AGENDA

CITY COUNCIL MEETING

MONDAY, SEPTEMBER 16, 2019

7:00 P.M.
CITY COUNCIL CHAMBERS, CITY HALL - 45 LYON TERRACE
BRIDGEPORT, CONNECTICUT

Prayer

Pledge of Allegiance

Roll Call

MINUTES FOR APPROVAL:

Approval of City Council Minutes: July 1, 2019 and August 5, 2019

COMMUNICATIONS TO BE REFERRED TO COMMITTEES:

137-18 Communication from Central Grants re: Grant Submission: U.S. Department of Justice FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program (#20312), referred to Public Safety and Transportation Committee.

138-18 Communication from Central Grants re: Grant Submission: State of Connecticut Court Support Services Division – Youth Violence Prevention Initiative (#20399), referred to Public Safety and Transportation Committee.

139-18 Communication from Central Grants re: Grant Submission: Firehouse Subs Public Safety Foundation – FY 2019 Grant Program (#20274), referred to Public Safety and Transportation Committee.

140-18 Communication from OPED re: Proposed Resolution adopting the 2019 Natural Hazard Mitigation Plan Update, referred to Economic and Community Development and Environment Committee.

141-18 Communication from Central Grants re: Grant Submission: State of Connecticut Department of Energy and Environmental Protection (DEEP) Grants-In-Aid Program for Capping of Seaside Landfill (#9C206), referred to Economic and Community Development and Environment Committee.

142-18 Communication from Central Grants re: Grant Submission: State of Connecticut Department of Energy and Environmental Protection (DEEP) Grants-In-Aid for Demolition of Pleasure Beach Bridge (#9C133), referred to Economic and Community Development and Environment Committee.

143-18 Communication from Central Grants re: Grant Submission: State of Connecticut Department of Children and Families – Youth Services Bureau Enhancement Grant (#20540), referred to Economic and Community Development and Environment Committee.

COMMUNICATIONS TO BE REFERRED TO COMMITTEES CONTINUED:

144-18 Communication from Central Grants re: Grant Submission: State of Connecticut Department of Children and Families – Youth Services Bureau Grant (#20532), referred to Economic and Community Development and Environment Committee.

146-18 Communication from City Attorney re: Twenty Day Notice to Settle Pending Litigation Pursuant to Municipal Code Section 2.10.130 with Antonio B. Goncalves, **ACCEPTED AND MADE PART OF THE RECORD.**

147-18 Communication from OPED re: Proposed Petition from New Cingular Wireless PCS, LLC ("AT&T") Connecticut for Access Authorization to City-Owned Light Poles and Traffic Signals pursuant to a Non-Exclusive Agreement that will improve and Enhance 5G Wireless Networks, referred to Joint Committee on Contracts and Public Safety and Transportation.

148-18 Communication from Public Facilities re: Proposed Professional Services Agreement with Wiss, Janney, Elstner Associates, Inc. for the Perry Memorial Arch Monument Study and Assessment located at Seaside Park, referred to Contracts Committee.

149-18 Communication from City Attorney re: Proposed Bridgeport Micro-Grid, LLC ("BMG") Clarification and Estoppel Agreement concerning the City Hall Micro-Grid Project, referred to Contracts Committee.

RESOLUTIONS TO BE REFERRED TO BOARDS, COMMISSIONS, ETC.:

145-18 Resolution presented by Council Member(s) Nieves & Valle re: Proposed resolution requesting that the Installation of "Speed Humps" be placed on Waterview Avenue adjacent to Barnum School, referred to Board of Police Commissioners.

MATTERS TO BE ACTED UPON (CONSENT CALENDAR):

***101-18** Public Safety and Transportation Committee Report re: Grant Submission: United States Department of Justice – Office of Juvenile Justice and Delinquency Prevention FY2019 Second Chance Act addressing the needs of Incarcerated Parents and their Minor Children (#19214).

***102-18** Public Safety and Transportation Committee Report re: Grant Submission: Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Port Security Grant Program (#20388, #20390, #20391, #20392 & 20393).

***105-18** Public Safety and Transportation Committee Report re: (Ref. #177-17) Resolution regarding a Modification of Curb-to-Curb Street Widths on North Washington Avenue and Crown Street relevant to the Pequonnock River Trail Extension Project.

MATTERS TO BE ACTED UPON:

123-18 Ordinance Committee Report re: Amendments to the Municipal Code of Ordinances, amend Chapter 12.16 – Street and Sidewalk Use Regulations.

124-18 Ordinance Committee Report re: Amendments to the Municipal Code of Ordinances, Chapter 10.32 – The Operation or Use of Dirt Bikes, All-Terrain Vehicles, Snowmobiles, Motor-Driven Cycles, or Mini-Cycles, amend Section 10.32.010 - Definitions.

THE FOLLOWING NAMED PERSON HAS REQUESTED PERMISSION TO ADDRESS THE CITY COUNCIL ON MONDAY, SEPTEMBER 16, 2019 AT 6:30 P.M., IN THE CITY COUNCIL CHAMBERS, CITY HALL, 45 LYON TERRACE, BRIDGEPORT, CT.

NAME	SUBJECT
John Marshall Lee 30 Beacon Street Bridgeport, CT 06605	Fiscal Governance.
Cecil Young 99 Carroll Avenue Bridgeport, CT 06607	Request regarding termination.
Michael J. Testani, BOE Acting Superintendent of Schools 45 Lyon Terrace Bridgeport, CT 06604	Budget Transfer to Facilitate increased Bridgeport Public Schools' Student Transportation.
John R. Weldon, Chairman Board of Education 45 Lyon Terrace Bridgeport, CT 06604	Budget Transfer to Facilitate increased Bridgeport Public Schools' Student Transportation.
Clyde Nicholson 396 Madison Avenue Bridgeport, CT 06604	Racism.
Odis Hart 323 Fairfield Avenue Bridgeport, CT 06604	Handicap Ramp at City Hall, 45 Lyon Terrace, Bridgeport, CT.

CITY COUNCIL MEETING
PUBLIC SPEAKING
MONDAY, SEPTEMBER 16, 2019
6:30 PM
City Council Chambers, City Hall
45 Lyon Terrace
Bridgeport, CT

CALL TO ORDER

Council President Aidee Nieves called the Public Speaking Session to order at 6:35 p.m.

ROLL CALL

The City Clerk Lydia Martinez called the roll.

130th District: Christina Smith, Pete Spain
131st District: Denese Taylor-Moye, Jack O. Banta
132nd District: Marcus Brown
133rd District: Jeannette Herron
134th District: Michelle Lyons
135th District: Rosalina Roman-Christy
136th District: Alfredo Castillo
137th District: Maria Valle, Aidee Nieves
138th District: Nessah Smith
139th District: Ernest Newton, Eneida Martinez

A quorum was present. Council President Nieves announced that Council Member Defilippo had an excused absence and Council Members Langan and Jackson were absent due to illness.

THE FOLLOWING NAMED PERSON HAS REQUESTED PERMISSION TO ADDRESS THE CITY COUNCIL ON MONDAY, SEPTEMBER 16, 2019 AT 6:30 P.M., IN THE CITY COUNCIL CHAMBERS, CITY HALL, 45 LYON TERRACE, BRIDGEPORT, CT.

NAME	SUBJECT
John Marshall Lee 30 Beacon Street Bridgeport, CT 06605	Fiscal Governance.

Fellow citizens of Bridgeport…

I am a Bridgeport resident and taxpayer for 32 years. I have been a financial sales professional since college some 55 years and still retain clients who care for my attention. I am white, a senior

and a believer in public participation in governance. I am current Communications Director for the Greater Bridgeport Regional NAACP that has required me to relearn American History.

My life has been filled with many other activities in the region as well as abroad. In the past decade I have paid attention to City governance with special attention to financial oversight. In operating combination the City Charter, the City Council process and practices and recent City administrations have maintained a status quo that fails to encourage economic development. Serious development happens in other towns, while our development gets news coverage, photo ops, and excitement, and then fades. Why is that?

We may be a diverse community but we are not using all of our human resources particularly well. One possible explanation is racism, beliefs, systems and history that is not discussed, not learned, and not challenged, whether in:

- Housing issues (public housing with 'reasonable accommodation' not fairly handled locally and in court with Department of Justice or private housing where since 2008 the backwash of bad financing decisions has caused major losses to minority communities with foreclosures).

- Education where minority students of color are preyed upon by others seeking to exert supremacy through bullying; and yet, even when blood flows, those in authority with the responsibility to report and control "climate" infractions hesitate, question and ultimately underreport; students learn at an increased rate according to research when they relate to educators of similar color- but a poor City stays poor and unable to package attractive educational career opportunities.

- Public Safety? We have seen YouTube videos of inhuman behavior, defying any respect or professional training by officers. We have court actions against the City for such failures against citizenry as well as between officers and management. Nothing of significance to encourage public trust especially among the young has come to Bridgeport in terms of "community policing". What good is "de-escalation training" when the people in blue, carrying weapons, have or hold beliefs similar to the now retired Captain who communicated multiple odious "racial comments" by text? What level of thorough investigation went into action to determine to what extent such attitudes and beliefs were present in other officer communications?

Were I to ask who in this room is a **racist** (defined on page 13 as 'one who is supporting a racist policy through their actions or inaction or expressing a racist idea') would anyone care to raise their hand? If I were to next ask who in the room is an **antiracist** ('someone who expresses the idea that racial groups are equals and none needs developing, and is supporting policy that reduces racial inequity' page 24), how many hands go up? Unfortunately there are folks in the room, when confronted with such choice think and act like they are really **non-racists**, meaning no skin in this game. And Ibram Kendi in his latest book, **How To Be An Antiracist**, provides plenty of information for our community to read learn about and see where "antiracism" can attack the underlying ills of our City. That is something that one or more of Council committees might discuss, even hold public sessions on??

Finally, you have heard me discuss "returning citizens" before. Where is your curiosity about where that subject is being dealt with capably in our City?? The Mayor's Initiative for Reentry Affairs, a "second chance" program, where is it today?

Hundreds are returning to the City from incarceration. To what effect?

Is Myron Dukes the only "returning citizen" to be confronted on February 23 with a request to leave a free public Black History Month event held by the city at City Hall? Welcome? Why no word from Mayor Ganim? Chief Perez? Or the City Council member who wished him a public ban but with no explanation? Time will tell.

Cecil Young
99 Carroll Avenue
Bridgeport, CT 06607

Request regarding termination.

Mr. Cecil Young came forward and said that he had previously asked the Director of Labor Relations to give him the documents regarding his termination. He said that he was an American citizen, born and bred.

Mr. Young said that he had previously displayed a photo of the person who was stalking and asked his Council Members to get the individual's name. He said that if the City had kept him working with the Community, many of the shootings and murders might not have happened because he is connected to the community. The police officers need to get out of their cars and do community policing. He said that he believes in helping people and saving lives. He recounted how both he and Council Member Newton helped some residents who were in trouble.

Michael J. Testani, BOE
Acting Superintendent of Schools
45 Lyon Terrace
Bridgeport, CT 06604

Budget Transfer to Facilitate increased Bridgeport Public Schools' Student Transportation.

Mr. Testani came forward and said that he would like to offer his gratitude and thanks for the Council's recent in approving the transportation funding. He added that he hopes that the Board and the Council will work together for the students' best interests.

John R. Weldon, Chairman
Board of Education
45 Lyon Terrace
Bridgeport, CT 06604

Budget Transfer to Facilitate increased Bridgeport Public Schools' Student Transportation.

Mr. Weldon came forward and said that he knew the Council had transferred funds for bus transportation. He said that he would like to thank the Council for that. In a perfect world, there would be enough money for the buses, but we live in an imperfect world.

Clyde Nicholson
396 Madison Avenue
Bridgeport, CT 06604

Racism.

Mr. Clyde Nicholson came forward to speak on racism that has been starting in Washington, D.C. and flowing all over the country. He said that people were saying all kinds of crazy things which hurt other people.

There is a real racism problem in Bridgeport and said that if certain people were shot in Bridgeport, something would be done about it. This is God's world and the racism is a crying shame. He said that there are no rights the constitution to bear arms. These people need to have a conversation with God. This is a God thing. Homeowners are being thrown out in the streets and the Mayor doesn't say a word. There is too much going on today like homelessness, and unemployment. He said that it is time to deal with the underlying issues.

Odis Hart
323 Fairfield Avenue
Bridgeport, CT 06604

Handicap Ramp at City Hall,
45 Lyon Terrace, Bridgeport, CT.

Council President Nieves called for Mr. Hart. There was no response. She called for him again and there was still no response.

Maria Pereira
Bridgeport, CT

Ms. Pereira said that Mr. Testani and Mr. Weldon just came forward to thank the Council for breaking the law. In-kind services are not allowed. These funds should be part of the MBR. She announced that she will be filing a complaint with the State Board of Education regarding this once she is done with her campaign. The law is meant to be followed and no one on the City side had the right to negotiate with the bus company for the District.

ADJOURNMENT

Council President Nieves adjourned the public speaking portion of the Council meeting at 6:58 p.m.

Respectfully submitted,

S. L. Soltes
Telesco Secretarial Services

CITY OF BRIDGEPORT

CITY COUNCIL MEETING

MONDAY, SEPTEMBER 16, 2019

7:00 PM

City Council Chambers, City Hall - 45 Lyon Terrace

Bridgeport, Connecticut

Mayor Ganim called the meeting of the City Council to order at 7:00 p.m.

PRAYER

Mayor Ganim requested Council Member Nessah Smith to lead those present in prayer.

PLEDGE OF ALLEGIANCE

Mayor Ganim requested that Council Member Martinez lead those present in reciting the Pledge of Allegiance.

ROLL CALL

The City Clerk called the roll.

130th District: Christina Smith, Pete Spain
131st District: Denese Taylor-Moye, Jack O. Banta
132nd District: Marcus Brown
133rd District: Jeannette Herron
134th District: Michelle Lyons
135th District: Rosalina Roman-Christy
136th District: Alfredo Castillo
137th District: Maria Valle, Aidee Nieves
138th District: Nessah Smith
139th District: Ernest Newton, Eneida Martinez

A quorum was present. Council President Nieves announced that Council Member Defilippo had an excused absence and Council Members Langan and Jackson were absent due to illness.

MINUTES FOR APPROVAL:

Approval of City Council Minutes: July 1, 2019 and August 5, 2019

**** COUNCIL MEMBER NEWTON MOVED THE MINUTES OF JULY 1, 2019 AND AUGUST 5, 2019.**

**** COUNCIL MEMBER MARTINEZ SECONDED.**
**** THE MOTION TO APPROVE THE MINUTES OF JULY 1, 2019 AND AUGUST 5, 2019 AS SUBMITTED PASSED UNANIMOUSLY.**

COMMUNICATIONS TO BE REFERRED TO COMMITTEES:

137-18 Communication from Central Grants re: Grant Submission: U.S. Department of Justice FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program (#20312), referred to Public Safety and Transportation Committee.

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149-18 Communication from City Attorney re: Proposed Bridgeport Micro-Grid, LLC ("BMG") Clarification and Estoppel Agreement concerning the City Hall Micro-Grid Project, referred to Contracts Committee.

**** COUNCIL MEMBER MARTINEZ MOVED THE COMMUNICATIONS TO BE REFERRED TO COMMITTEE.**
**** COUNCIL MEMBER NEWTON SECONDED.**
**** THE MOTION PASSED UNANIMOUSLY.**

RESOLUTIONS TO BE REFERRED TO BOARDS, COMMISSIONS, ETC.:

145-18 Resolution presented by Council Member(s) Nieves & Valle re: Proposed resolution requesting that the Installation of "Speed Humps" be placed on Waterview Avenue adjacent to Barnum School, referred to Board of Police Commissioners.

**** COUNCIL MEMBER BANTA MOVED THE ITEM.**
**** COUNCIL MEMBER MARTINEZ SECONDED.**

Council Member Lyons said she would like to amend the item.

**** COUNCIL MEMBER LYONS MOVED TO AMEND AGENDA ITEM 145-18 RESOLUTION PRESENTED BY COUNCIL MEMBER(S) NIEVES & VALLE RE: PROPOSED RESOLUTION REQUESTING THAT THE INSTALLATION OF "SPEED HUMPS" BE PLACED ON WATERVIEW AVENUE ADJACENT TO BARNUM SCHOOL, REFERRED TO BOARD OF POLICE COMMISSIONERS BY ADDING THE FOLLOWING:**

> **IN ADDITION, THE CITY COUNCIL RESPECTFULLY REQUESTS THAT THE BOARD OF POLICE COMMISSIONERS ACTING IN ITS CAPACITY AS THE CITY'S TRAFFIC AUTHORITY EXAMINE THE FEASIBILITY OF INSTALLING SPEED HUMPS ON ALL ROADWAYS WITHIN 500 FEET OF EACH SCHOOL WITHIN THE CITY OF BRIDGEPORT.**

**** COUNCIL MEMBER NEWTON SECONDED.**

**** THE MOTION PASSED UNANIMOUSLY.**

**** THE MOTION TO APPROVE AGENDA ITEM 145-18 RESOLUTION PRESENTED BY COUNCIL MEMBER(S) NIEVES & VALLE RE: PROPOSED RESOLUTION REQUESTING THAT THE INSTALLATION OF "SPEED HUMPS" BE PLACED ON WATERVIEW AVENUE ADJACENT TO BARNUM SCHOOL, REFERRED TO BOARD OF POLICE COMMISSIONERS AS AMENDED PASSED UNANIMOUSLY.**

Council Member Vizzo-Paniccia joined the meeting at 7:05 p.m.

MATTERS TO BE ACTED UPON (CONSENT CALENDAR):

***101-18 Public Safety and Transportation Committee Report re: Grant Submission: United States Department of Justice – Office of Juvenile Justice and Delinquency Prevention FY2019 Second Chance Act addressing the needs of Incarcerated Parents and their Minor Children (#19214).**

***102-18 Public Safety and Transportation Committee Report re: Grant Submission: Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Port Security Grant Program (#20388, #20390, #20391, #20392 & 20393).**

***105-18 Public Safety and Transportation Committee Report re: (Ref. #177-17) Resolution regarding a Modification of Curb-to-Curb Street Widths on North Washington Avenue and Crown Street relevant to the Pequonnock River Trail Extension Project.**

Mayor Ganim asked if there was any Council Member who would like to remove an item from the Consent Calendar. There were no requests from the Council Members to remove any item at this time.

**** COUNCIL MEMBER NEWTON MOVED THE FOLLOWING CONSENT CALENDAR:**

> ***101-18 PUBLIC SAFETY AND TRANSPORTATION COMMITTEE REPORT RE: GRANT SUBMISSION: UNITED STATES DEPARTMENT OF JUSTICE – OFFICE OF JUVENILE JUSTICE AND DELINQUENCY PREVENTION FY2019 SECOND CHANCE ACT ADDRESSING THE NEEDS OF INCARCERATED PARENTS AND THEIR MINOR CHILDREN (#19214).**
>
> ***102-18 PUBLIC SAFETY AND TRANSPORTATION COMMITTEE REPORT RE: GRANT SUBMISSION: DEPARTMENT OF HOMELAND SECURITY (DHS) FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) PORT SECURITY GRANT PROGRAM (#20388, #20390, #20391, #20392 & 20393).**
>
> ***105-18 PUBLIC SAFETY AND TRANSPORTATION COMMITTEE REPORT RE: (REF. #177-17) RESOLUTION REGARDING A MODIFICATION OF CURB-TO-CURB STREET WIDTHS ON NORTH WASHINGTON AVENUE**

AND CROWN STREET RELEVANT TO THE PEQUONNOCK RIVER TRAIL EXTENSION PROJECT.

**** COUNCIL MEMBER MARTINEZ SECONDED.**
**** THE MOTION PASSED UNANIMOUSLY.**

MATTERS TO BE ACTED UPON:

123-18 Ordinance Committee Report re: Amendments to the Municipal Code of Ordinances, amend Chapter 12.16 – Street and Sidewalk Use Regulations.

**** COUNCIL MEMBER BROWN MOVED AGENDA ITEM 123-18 ORDINANCE COMMITTEE REPORT RE: AMENDMENTS TO THE MUNICIPAL CODE OF ORDINANCES, AMEND CHAPTER 12.16 – STREET AND SIDEWALK USE REGULATIONS.**
**** COUNCIL MEMBER NEWTON SECONDED.**

Council Member Lyons said that she had submitted some suggestions regarding the scooters and bicycles. She said she would be voting no on the measures until the safety issues are fixed.

**** THE MOTION TO APPROVE AGENDA ITEM 123-18 ORDINANCE COMMITTEE REPORT RE: AMENDMENTS TO THE MUNICIPAL CODE OF ORDINANCES, AMEND CHAPTER 12.16 – STREET AND SIDEWALK USE REGULATIONS PASSED WITH THIRTEEN (13) IN FAVOR (C. SMITH, SPAIN, BANTA, TAYLOR-MOYE, BROWN, HERRON, ROMAN-CHRISTY, CASTILLO, NIEVES, VALLE, N. SMITH, MARTINEZ AND NEWTON) AND TWO OPPOSED (LYONS AND VIZZO-PANICCIA).**

124-18 Ordinance Committee Report re: Amendments to the Municipal Code of Ordinances, Chapter 10.32 – The Operation or Use of Dirt Bikes, All-Terrain Vehicles, Snowmobiles, Motor-Driven Cycles, or Mini-Cycles, amend Section 10.32.010 - Definitions.

**** COUNCIL MEMBER BROWN MOVED AGENDA ITEM 124-18 ORDINANCE COMMITTEE REPORT RE: AMENDMENTS TO THE MUNICIPAL CODE OF ORDINANCES, CHAPTER 10.32 – THE OPERATION OR USE OF DIRT BIKES, ALL-TERRAIN VEHICLES, SNOWMOBILES, MOTOR-DRIVEN CYCLES, OR MINI-CYCLES, AMEND SECTION 10.32.010 – DEFINITIONS.**
**** COUNCIL MEMBER MARTINEZ SECONDED.**
**** THE MOTION TO APPROVE AGENDA ITEM 124-18 ORDINANCE COMMITTEE REPORT RE: AMENDMENTS TO THE MUNICIPAL CODE OF ORDINANCES, CHAPTER 10.32 – THE OPERATION OR USE OF DIRT BIKES, ALL-TERRAIN VEHICLES, SNOWMOBILES, MOTOR-DRIVEN CYCLES, OR MINI-CYCLES, AMEND SECTION 10.32.010 - DEFINITIONS PASSED WITH THIRTEEN (13) IN FAVOR (C. SMITH, SPAIN, BANTA, TAYLOR-MOYE, BROWN, HERRON, ROMAN-CHRISTY, CASTILLO, NIEVES, VALLE, N. SMITH, MARTINEZ AND NEWTON) AND TWO OPPOSED (LYONS AND VIZZO-PANICCIA).**

ADJOURNMENT

**** COUNCIL MEMBER BROWN MOVED TO ADJOURN.**
**** COUNCIL MEMBER TAYLOR MOYE SECONDED.**
**** THE MOTION PASSED UNANIMOUSLY.**

The meeting adjourned at 7:10 p.m.

Respectfully submitted,

S. L. Soltes
Telesco Secretarial Services

City of Bridgeport, Connecticut
OFFICE OF CENTRAL GRANTS
999 Broad Street
Bridgeport, Connecticut 06604
Telephone (203) 332-5662
Fax (203) 332-5657

JOSEPH P. GANIM
Mayor

ISOLINA DeJESUS
Manager
Central Grants

Comm. #137-18 Ref'd to Public Safety & Transportation Committee
On 9/16/2019

August 28, 2019

Office of the City Clerk
City of Bridgeport
45 Lyon Terrace, Room 204
Bridgeport, Connecticut 06604

Re: **Resolution – U.S. Department of Justice FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program (#20312)**

Attached, please find a Grant Summary and Resolution for the **U.S. Department of Justice FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program** to be referred to the **Committee on Public Safety and Transportation** of the City Council.

Grant: **U.S. Department of Justice FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program**

If you have any questions or require any additional information, please contact me at 203-576-7134 or isolina.dejesus@Bridgeportct.gov.

Thank you,

Isolina DeJesus
Central Grants Office

RECEIVED
CITY CLERKS OFFICE
19 AUG 28 PM 4:15
ATTEST
CITY CLERK

GRANT SUMMARY

PROJECT TITLE: **U.S. Department of Justice FY 2019 Edward Byrne Memorial Justice Assistance (JAG) Program (#20312)**

NEW x RENEWAL CONTINUING

DEPARTMENT SUBMITTING INFORMATION: **Central Grants Office**

CONTACT NAME: **Isolina DeJesus**

PHONE NUMBER: **203-576-7134**

PROJECT SUMMARY/DESCRIPTION: The City of Bridgeport Police Department is seeking funding to support and improve law enforcement response. JAG funding is a statutory formula allocation based on violent crime and population for the purpose of improving the functioning of the criminal justice system, with emphasis on violent crime and serious offenders, by means which include the purchase of equipment, training, and information systems.

Funds will be used to upgrade and purchase Mobile Data Terminals for the School Resource Officer Division, Motorcycle Division, and Task Force Officer. In addition. a Use of Force/ Decision Making training simulator will be purchased. The simulator will be located in the Bridgeport Police regional training academy and will provide officers with realistic situations that are designed to enhance rapid problem-solving and reaction skills.

CONTRACT PERIOD: 10/1/18-9/20/2022

FUNDING SOURCES (include matching funds):	
Federal:	$ 154,461.00
State:	$ 0
City:	$ 0
Other:	$ 0

GRANT FUNDED PROJECT FUNDS REQUESTED	
Salaries/Benefits:	$ 0
Equipment:	$ 154,461.00
Other:	$ 0

MATCH REQUIRED		
	CASH	IN-KIND
Source: **N/A**		
Salaries/Benefits:	$ 0	$ 0
Equipment:	$ 0	$ 0

A Resolution by the Bridgeport City Council

Regarding the

U.S. Department of Justice
FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program
(#20312)

WHEREAS, the **U.S. Department of Justice** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through the **FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program;** and

WHEREAS, the JAG funding is a statutory formula allocation based on crime and population for the purpose of improving the functioning of the criminal justice system, with emphasis on violent crime and serious offenders, which may include the purchase of equipment, training, and information systems;

WHEREAS, funds under this grant will be used to support and improve law enforcement response; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport submits an application to the **U.S. Department of Justice** to acquire much needed equipment that will support the department's operations.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with **U.S. Department of Justice for** the purpose of the **FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program**; and

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the Director of Central Grants, to execute and file such application with the **U.S. Department of Justice** for the purpose of the **FY 2019 Edward Byrne Memorial Justice Assistance Grant (JAG) Program** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

City of Bridgeport, Connecticut
OFFICE OF CENTRAL GRANTS
999 Broad Street
Bridgeport, Connecticut 06604
Telephone (203) 332-5662
Fax (203) 332-5657

JOSEPH P. GANIM
Mayor

ISOLINA DeJESUS
Manager
Central Grants

Comm. #138-18 Ref'd to Public Safety & Transportation Committee On 9/16/2019

August 28, 2019

Office of the City Clerk
City of Bridgeport
45 Lyon Terrace, Room 204
Bridgeport, Connecticut 06604

Re: **Resolution –State of Connecticut Court Support Services Division- Youth Violence Prevention Initiative (#20399)**

Attached, please find a Grant Summary and Resolution for **State of Connecticut Court Support Services Division- Youth Violence Prevention Initiative** to be referred to the **Committee on Public Safety and Transportation** of the City Council.

Grant: **State of Connecticut Court Support Services Division- Youth Violence Prevention Initiative**

If you have any questions or require any additional information, please contact me at 203-576-7134 or isolina.dejesus@Bridgeportct.gov.

Thank you,

Isolina DeJesus
Central Grants Office

RECEIVED
CITY CLERKS OFFICE
19 AUG 28 PM 4:15

ATTEST
CITY CLERK

GRANT SUMMARY

PROJECT TITLE: **State of Connecticut Court Support Services Division- Youth Violence Prevention Initiative (#20399)**

NEW x RENEWAL CONTINUING

DEPARTMENT SUBMITTING INFORMATION: **Central Grants Office**

CONTACT NAME: **Isolina DeJesus**

PHONE NUMBER: **203-576-7134**

PROJECT SUMMARY/DESCRIPTION: The City of Bridgeport Police Department has been allocated funding through Public Act 19-117 to support youth violence prevention programs. Programs funded will provide a variety of services to ensure that youth have ample opportunities for leading healthy, safe, productive lives and that those who have made bad choices have rehabilitative services available to them.

CONTRACT PERIOD: TBD

FUNDING SOURCES (include matching funds):	
Federal:	$ 0
State:	$ 375,000.00
City:	$ 93,750.00
Other:	$ 0

GRANT FUNDED PROJECT FUNDS REQUESTED	
Salaries/Benefits:	$ 25,469.00
Supplies:	$ 0
Contractual:	$ 349,531.00
Other:	$ 0

MATCH REQUIRED		
	CASH	IN-KIND
Source: **Police General Fund**		
Salaries/Benefits:	$ 11,266.00	$ 37,500.00
Supplies:	$ 0	$ 0
Contractual:	$ 44,984.00	$ 0
Other:	$ 0	$ 0

A Resolution by the Bridgeport City Council

Regarding the

State of Connecticut Court Support Services Division
Youth Violence Prevention Initiative (# 20399)

WHEREAS, the **State of Connecticut Court Support Services Division** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through **Sec. 48 of Public Act 19-117** which allocates funds to the **Youth Violence Prevention Initiative** to support youth violence prevention programs in Bridgeport, New Haven, Hartford and Waterbury; and

WHEREAS, funds under this grant will be used to support programs that provide services to at-risk youth within the City for the purpose of offering opportunities to lead a healthy, safe, productive lives and that those who have made bad choices have rehabilitative services available to them; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport Police Department submits an application to the **State of Connecticut Court Support Services Division** to support youth violence prevention programs.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with the **State of Connecticut Court Support Services Division** for the purpose of the **Youth Violence Prevention Initiative**; and

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the Director of Central Grants, to execute and file such application with the **State of Connecticut Court Support Services Division- Youth Violence Prevention Initiative** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

City of Bridgeport, Connecticut
OFFICE OF CENTRAL GRANTS
999 Broad Street
Bridgeport, Connecticut 06604
Telephone (203) 332-5662
Fax (203) 332-5657

JOSEPH P. GANIM
Mayor

ISOLINA DeJESUS
Manager
Central Grants

Comm. #139-18 Ref'd to Public Safety & Transportation Committee On 9/16/2019

August 28, 2019

Office of the City Clerk
City of Bridgeport
45 Lyon Terrace, Room 204
Bridgeport, Connecticut 06604

Re: **Resolution –Firehouse Subs Public Safety Foundation- FY 2019 Grant Program (#20274)**

Attached, please find a Grant Summary and Resolution for the **Firehouse Subs Public Safety Foundation FY 2019 Grant Program** be referred to the **Committee on Public Safety and Transportation** of the City Council.

Grant: **Firehouse Subs Public Safety Foundation- FY 2019 Grant Program**

If you have any questions or require any additional information, please contact me at 203-576-7134 or isolina.dejesus@Bridgeportct.gov.

Thank you,

Isolina DeJesus
Central Grants Office

RECEIVED
CITY CLERKS OFFICE
19 AUG 28 PM 4:16

ATTEST
CITY CLERK

GRANT SUMMARY

PROJECT TITLE: **Firehouse Subs Public Safety Foundation- FY 2019 Grant Program (#20274)**

NEW x RENEWAL CONTINUING

DEPARTMENT SUBMITTING INFORMATION: **Central Grants Office**

CONTACT NAME: **Isolina DeJesus**

PHONE NUMBER: **203-576-7134**

PROJECT SUMMARY/DESCRIPTION: The City of Bridgeport Fire Department is seeking funding from Firehouse Subs Public Safety Foundation for the purchase of a LUCAS Chest Compression System. The foundation provides lifesaving equipment and educational tools to first responders and public safety organizations. The foundation mainly focuses its resources in areas served by Firehouse Sub Restaurants, applications will be considered if they are located more than 60 miles from a restaurant.

The LUCAS chest compression device will enhance our Fire Department's response to members of the community who are experiencing sudden cardiac arrest by allowing firefighters to provide consistent and constant chest compressions during treatment and transportation to the hospital.

CONTRACT PERIOD: To Be Determined

FUNDING SOURCES (include matching funds):	
Federal:	$ 0
State:	$ 0
City:	$ 0
Other:	$ 16,425.82

GRANT FUNDED PROJECT FUNDS REQUESTED	
Salaries/Benefits:	$ 0
Supplies:	$ 0
Construction:	$ 0
Equipment:	$ 16,425.82

MATCH REQUIRED		
	CASH	IN-KIND
Source: **N/A**		
Salaries/Benefits:	$ 0	$ 0
Supplies:	$ 0	$ 0
Construction:	$ 0	$ 0
Other:	$ 0	$ 0

A Resolution by the Bridgeport City Council

Regarding the

Firehouse Subs Public Safety Foundation
FY 2019 Grant Program (#20274)

WHEREAS, the **Firehouse Subs Public Safety Foundation** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through the **Firehouse Subs Public Safety Foundation FY 2019 Grant Program**; and

WHEREAS, funds under this grant will be used to support the purchase of a LUCAS Chest Compression Device; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport Fire Department submits an application to the **Firehouse Subs Public Safety Foundation** to support the purchase of much needed life saving equipment.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with the **Firehouse Subs Public Safety Foundation** for the purpose of the **FY 2019 Grant Program**; and

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the Director of Central Grants, to execute and file such application with the **Firehouse Subs Public Safety Foundation FY 2019 Grant Program** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

City of Bridgeport
OFFICE OF PLANNING & ECONOMIC DEVELOPMENT
Margaret E. Morton Government Center
999 Broad Street, Bridgeport, Connecticut 06604

JOSEPH P. GANIM
Mayor

THOMAS F. GILL
Director

WILLIAM J. COLEMAN
Deputy Director

COMM. #140-18 Ref'd to ECD&E COMMITTEE
on 09/16/2019

August 27, 2019

City Clerk
45 Lyon Terrace
Bridgeport, CT 06604

RE: Resolution Adopting Natural Hazard Mitigation Plan

Dear Madam City Clerk:

The attached resolution would adopt the 2019 Natural Hazard Mitigation Plan Update, as prepared by MetroCOG, with the support of the City of Bridgeport Planning Department, Engineering Department, and Office of Emergency Management & Homeland Security.

This item is to be referred to the Economic and Community Development and Environment Committee.

The Office of Planning and Economic Development is submitting this item in furtherance of Plan Bridgeport *Goal 5.8*, which requires that the City *"Enhance resilience against impacts of coastal storms and climate change."*

Both Patrick Carleton, Deputy Director of MetroCOG, and I will attend the Committee meeting to discuss the matter in greater detail and to answer any questions that the Council may have.

Sincerely,

Lynn M. Haig, AICP
Director of Planning

C: Thomas F. Gill, Director

RECEIVED
CITY CLERKS OFFICE
19 AUG 28 AM 10:58

ATTEST
CITY CLERK

RESOLUTION

WHEREAS, the City of Bridgeport has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of those natural hazards (e.g. *flooding, high wind, thunderstorms, winter storms, earthquakes, dam failure, and wildfires)*, resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Bridgeport City Council approved the Natural Hazard Mitigation Plan in 2014; and

WHEREAS, Connecticut Metropolitan Council of Governments (MetroCOG) worked collaboratively with each of the six (6) towns in the Greater Bridgeport Region during 2018 and 2019 to update the regional Natural Hazard Mitigation Plan (Plan) through a variety of public and committee meetings; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedures for the city of Bridgeport; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural hazards that impact the city of Bridgeport, with the effect of protecting people and property from loss associated with those hazards; and

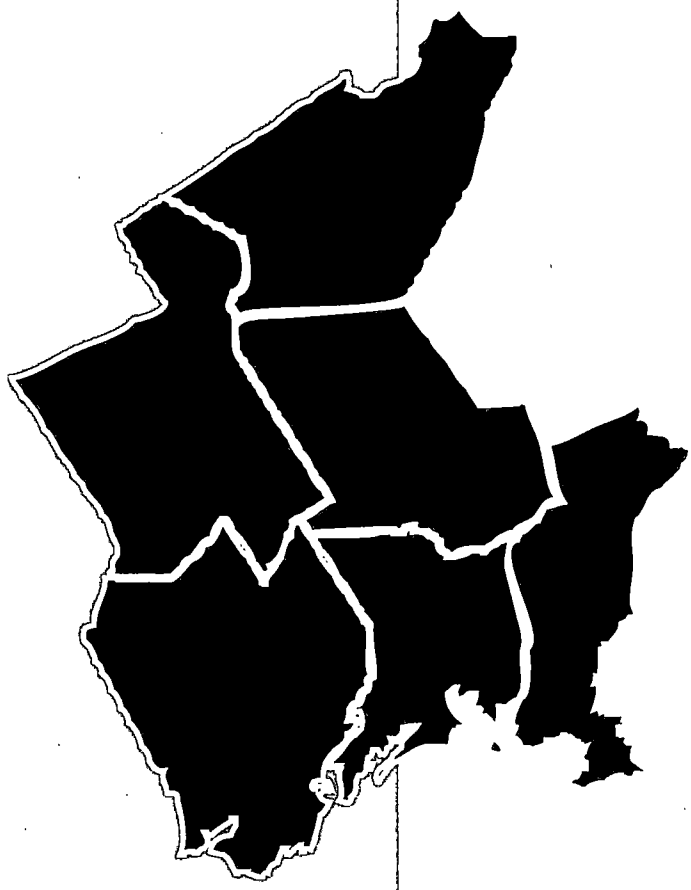
WHEREAS, adoption of this Plan will make the City of Bridgeport eligible for funding to alleviate the impacts of future hazards; and

WHEREAS, MetroCOG received conditional approval from the Federal Emergency Management Agency (FEMA) for the regional Natural Hazard Mitigation Plan Update, 2019 under the requirements of 44 CFR 201.6;

WHEREAS, the Planning Department and MetroCOG will update and maintained the Plan over the next five (5) years as required by 44 CFR 201.6 and FEMA;

NOW THEREFORE BE IT RESOLVED that the Natural Hazard Mitigation Plan Update, 2019 is adopted by the Bridgeport City Council, and respective departments identified in the mitigation strategies are hereby directed, authorized and empowered to administer and implement the recommended actions, and do all other things necessary in the furtherance of, and consistent with, this resolution in the best interest of the City.

2019 Natural Hazard Mitigation Plan Update



Prepared on Behalf of the Municipalities of the MetroCOG Region

Draft to DEMHS: May 13, 2019
Draft to FEMA: July 2, 2019
Approved Pending Adoption: July 12, 2019
Adopted: July 18, 2019
FEMA Approval: _____, 2019

Acknowledgements

MetroCOG thanks its member communities for their participation in this Natural Hazard Mitigation Plan Update. The time and dedication shown by local staff in advancing natural hazard mitigation efforts is significant and has helped create a more resilient region. MetroCOG also thanks the local boards, commissions, and general public who provided valuable insight into their communities.

Project Staff for Plan Update

MetroCOG
1000 Lafayette Boulevard
Bridgeport, Connecticut 06604
203-366-5405
info *at* ctmetro.org

Matt Fulda
Executive Director
203-366-5405 x28
mfulda *at* ctmetro.org

Patrick Carleton
Deputy Director
203-366-5405 x26
pcarleton *at* ctmetro.org

Meghan Sloan
Planning Director
203-366-5405 x23
msloan *at* ctmetro.org

Municipal Contacts / Local Coordinators

City of Bridgeport
Lynn Haig, AICP
Director of Planning, Office of
Planning & Economic Development
999 Broad Street
Bridgeport, CT 06604
203-576-7221
lynn.haig *at* bridgeportct.gov

Town of Easton
Captain Richard Doyle
Emergency Management Director
225 Center Road
Easton, CT 06612
203-268-4111
rdoyle *at* eastonct.gov

Town of Fairfield
Emmeline Harrigan, AICP, CFM
Assistant Planning Director
Plan & Zoning Department
725 Old Post Road
Fairfield, CT 06824
203-256-3050
eharrigan *at* fairfieldct.org

Town of Monroe
Chris Nowacki
Director of Public Works
7 Fan Hill Road
Monroe, CT 06468
203-452-2814
cnowacki *at* monroect.org
-and-
Scott Schatzlein, P.E.
Town Engineer
203-452-2809
sschatzlein *at* monroect.org

Town of Stratford
Jay Habansky, AICP
Planning & Zoning Administrator
2725 Main Street, Rooms 113 & 118
Stratford, CT 06615
203-385-4017
jhabansky *at* townofstratford.com
-and-
Susmitha Attota, AICP
Town Planner
(203) 385-4017
sattota *at* townofstratford.com

Town of Trumbull
William Maurer, P.E., LS
Town Engineer
5866 Main Street
Trumbull, CT 06611
203-452-5050
wmaurer *at* trumbull-ct.gov

Consultant Team

Milone & MacBroom, Inc.
David Murphy, P.E., CFM, Associate
Manager of Water Resources Planning
99 Realty Drive
Cheshire, CT 06410
203-271-1773 x295
dmurphy *at* mminc.com

The Nature Conservancy
Adam Whelchel, Ph.D.
Director of Science
55 Church Street, Third Floor
New Haven, CT 06510
203-568-6270
awhelchel *at* tnc.org

Notice to Readers

This document was prepared under a grant from the Federal Emergency Management Agency. Points of view or opinions expressed in this document are those of MetroCOG and its member communities and do not necessarily represent the official position or policies of the Federal Emergency Management Agency.

CONTENTS

1 Purpose & Regional Overview

The purpose of the multi-jurisdictional update to the Natural Hazard Mitigation Plan (NHMP) is to reduce the loss of life, personal injury and damage to property, infrastructure and natural, cultural and economic resources from a natural disaster in the Greater Bridgeport Region. The Plan emphasizes actions that can be implemented now to reduce or prevent damage from a future natural disaster. The assessments and evaluations are based on extensive data collection and outreach efforts to obtain information on the physical setting of the region existing hazards, and the occurrence, frequency, duration and potency of probable hazards.

The components of the Plan include:

- Identification of natural hazards that could occur in the region – inland flooding, coastal flooding, hurricanes, sea level rise, summer storms, winter storms (ice and blizzards), tornadoes, earthquakes, wildfires, and dam failure;
- Evaluation of vulnerabilities to structures and populations;
- Assessment of current mitigation measures included in the 2014 NHMP to determine which have been implemented and whether or not they have been effective in reducing vulnerabilities and risks;
- Identification and evaluation of potential mitigation measures that could be implemented to reduce risks and vulnerability;
- Development of response strategies to address hazard mitigation; and
- Recommendations for future mitigation actions.

1.1 Authority

The Plan is authorized under the federal Disaster Mitigation Act of 2000 (DMA), also known as the 2000 Stafford Act amendments. The purposes of the DMA are to establish a national program for pre-disaster mitigation and streamline administration of disaster relief. The Act encourages the development of disaster preparedness and mitigation plans and the implementation of measures to reduce the effects of natural hazards. Under DMA, communities are required to develop and submit a Natural Hazard Mitigation Plan as a condition of eligibility for certain funding opportunities offered by the Federal Emergency Management Agency (FEMA), including the Pre-Disas-

ter Mitigation (PDM) Program and post-disaster Hazard Mitigation Grant Program (HMGP).

1.2 Background

This plan update builds on the 2014 Update to the original 2006 NHMP for the former Greater Bridgeport Regional Planning Area, developed in cooperation with the City of Bridgeport and the Towns of Easton, Fairfield, Monroe and Trumbull. The consulting firm of Milone & MacBroom, Inc. was hired to provide technical assistance and conduct required vulnerability and risk assessments. The NHMP for the former Greater Bridgeport area was adopted and approved by FEMA in January 2007. Subsequent to its adoption, the Plan was amended to include the NHMP for the Town of Stratford (Annex, 2008).

FEMA requires that all local and multi-jurisdictional (regional) plans be updated every five years to remain valid. The original NHMP for the Greater Bridgeport Region expired on January 29, 2012. A NHMP Update was prepared by the Greater Bridgeport Regional Council and was approved by FEMA on July 22, 2014 with an expiration date of July 2019. Since the time the NHMP Update was adopted, the Greater Bridgeport Regional Council has been renamed the Connecticut Metropolitan Council of Governments (MetroCOG), with the composition of member municipalities unchanged.

Changes to Planning Process and NHMP Document

Numerous modifications were incorporated into the update of the NHMP. The following is a list of the key changes. Each is addressed in the appropriate section of the document.

- The current version of HAZUS-MH was utilized.
- The plan incorporates loss estimates from the State of Connecticut NHMP (2019) and other sources.
- The plan incorporates estimated population and housing unit data for the year 2017 to augment demographic data from the last U.S. census of 2010.
- The plan incorporates the sea level rise projection of 50 centimeters by 2050 as mandated by Connecticut Public Act 18-82.
- The plan includes updates to the historical record of many hazards including the severe riverine flooding of September 25, 2018 and the significant coastal flooding of October and November 2018.
- The plan incorporates a new exposure analysis that tabulates parcels and structures exposed to the risks profiled in the plan.
- The plan adds "Fact Sheets" to make the document livelier and give community planners the flexibility to pull stand-alone pages out of the plan document when pursuing specific projects, grants, etc.:
  - » Regional Challenges: Intense Precipitation
  - » Regional Challenges: Sea Level Rise
  - » Regional Challenges: Coastal Flooding
  - » Regional Challenges: Repetitive Loss Properties
  - » New Initiative: Regional Framework for Coastal Resilience
  - » New Initiative: Resilient Bridgeport
  - » New Initiative: Connecticut State Collages and Universities Hazard Mitigation Plan
  - » New Initiative: Hazardous Spills at Businesses
  - » New Initiative: Risks to Historic Resources
  - » New Initiative: Municipal Separate Stormwater System (MS4)
  - » New Initiative: Low Impact Development (LID) for Rural Resiliency
  - » New Initiative: Sustainable CT
  - » Mitigation Successes: Property Acquisitions in Trumbull
  - » Mitigation Successes: Microgrids
  - » Mitigation Successes: Fairfield Green Infrastructure
- The plan describes new Community Resilience Building (CRB) workshops conducted for five of the six communities. The Workshops included Chief Elected Officials, Board/Commission members, municipal staff and other local and regional stakeholders.
- With the completion of new CRB workshops, the action-by-action risk matrices developed in the previous CRBs were retired from the NHMP. Mitigation actions were addressed in two simplified sets of tables. The first set of tables provides the status of each mitigation action proposed in the 2014 NHMP. The second set of tables lists the current proposed actions for 2019-2024, including some actions carried forward and/or updated from the 2014 NHMP.
- The list of proposed mitigation actions for each community has been reduced relative to the 2014 edition of the plan by eliminating similar or redundant actions, retiring

completed and ongoing actions, and focusing on actionable items for the next five years.
- The plan adds a new appendix, "Critical Facilities" (Appendix A) to provide a starting point for municipalities to check and amend every 5 years. Critical facility information is often vital for developing mitigation actions and completing FEMA benefit-cost analysis.
- The plan adds a new appendix, "Historic Resources" (Appendix B) to provide a starting point for municipalities to understand where to focus resources on risk assessments and new historic resource surveys in accordance with new mitigation actions about historic resources.

1.3 Natural Hazard Mitigation Plan

This NHMP is divided into five sections. Section One describes the purpose of the plan, the MetroCOG Region and municipalities of the MetroCOG Region. Section Two details the planning process and the process of developing the NHMP. Section Three provides an identification and assessment of risks. Section Four describes development of mitigation strategies and documents the progress on previous mitigation strategies for the Region. Concluding the NHMP, Section Five presents current mitigation strategies for the Region, addresses how mitigation actions will be implemented, and describes the process of maintaining the plan.

The Update of the NHMP:
- Reflects the standards contained within Section 322 of DMA 2000;
- Expands on the previous hazard identification and risk assessments;
- Incorporates FEMA's current grant programs;
- Incorporates potential impacts due to climate change;
- Includes updated information; and
- Reassesses the goals, objectives, and activities presented in the 2014 NHMP.

The updated NHMP addresses only natural hazards and disasters and does not directly address terrorism, sabotage, human induced emergencies (structure fires, hazardous material spills, contamination and disease) or disaster response and recovery. However, efforts were undertaken to coordinate with the Region's emergency management directors.

1.4 Profile of the MetroCOG Region & Jurisdictions

The MetroCOG Region is located in Fairfield County, in Southwestern Connecticut, about fifty miles east of New York City and 150 miles west of Boston, Massachusetts. The NHMP is a multi-jurisdictional plan, encompassing the six municipalities of the region. Each community actively participated in the preparation of the NHMP Update and the hazards likely to impact each were identified and assessed. The six municipalities are:

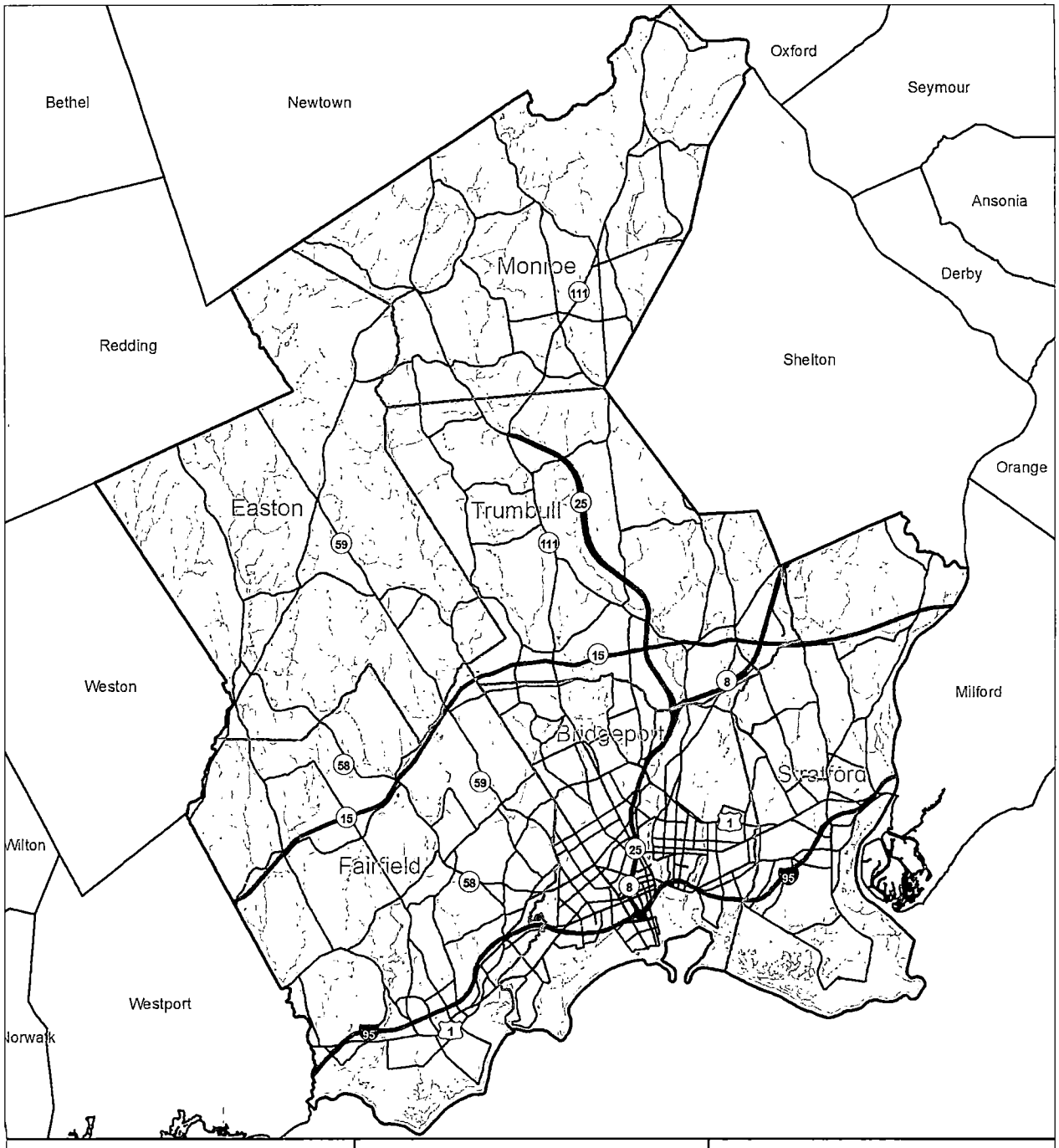
City of Bridgeport
Town of Easton
Town of Fairfield
Town of Monroe
Town of Stratford
Town of Trumbull

This section presents demographic information for the Region and its communities. The demographic information presented herein represents 2010 United States Census data where more recent estimates developed from the 2013-2017 American Community Survey (ACS) are not available. Occasionally other estimates are presented such as from the Connecticut Data Collaborative (CTDC) for comparison purposes.

Together, the MetroCOG communities encompass about 145 square miles with a combined population of over 325,000 people. The population density is the highest of any planning region in Connecticut. This density is reflected in the fact that almost all of the land lies within the designated urbanized area and about 98% of the residents live in the urban area. Bridgeport, Fairfield and Stratford are coastal communities, situated along Long Island Sound, and the inland communities to the north are Easton, Monroe and Trumbull (2017 CTDC Population Estimates & 2013-2017 ACS).

Despite the urban character of the Region, land use patterns vary. The coastal communities are more developed and urban in character. The inland communities and the northern part of Fairfield are more residential and exhibit rural characteristics.

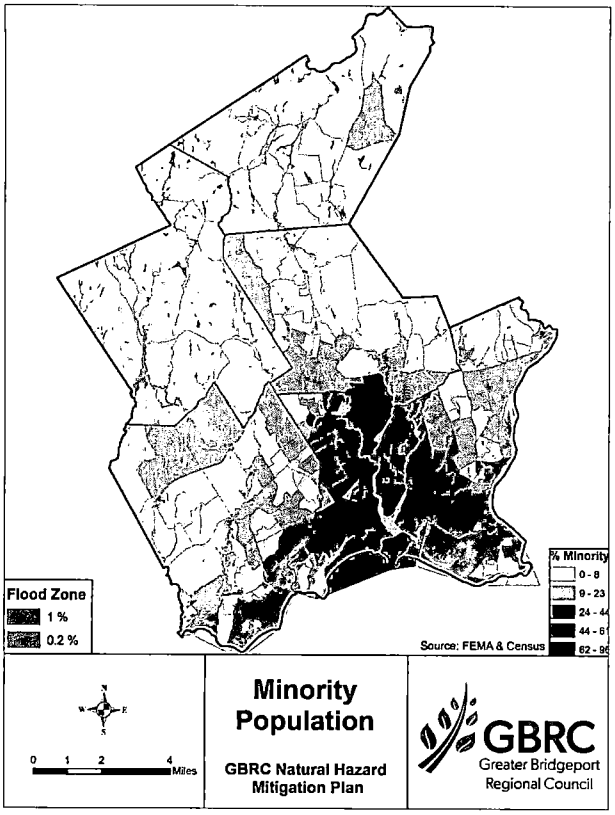
The Region is ethnically diverse as about 47% of the population is estimated as belonging to an ethnic minority. Approximately 61% of the minority population is classified as African American. Persons of Hispanic or Latino ethnicity account for about

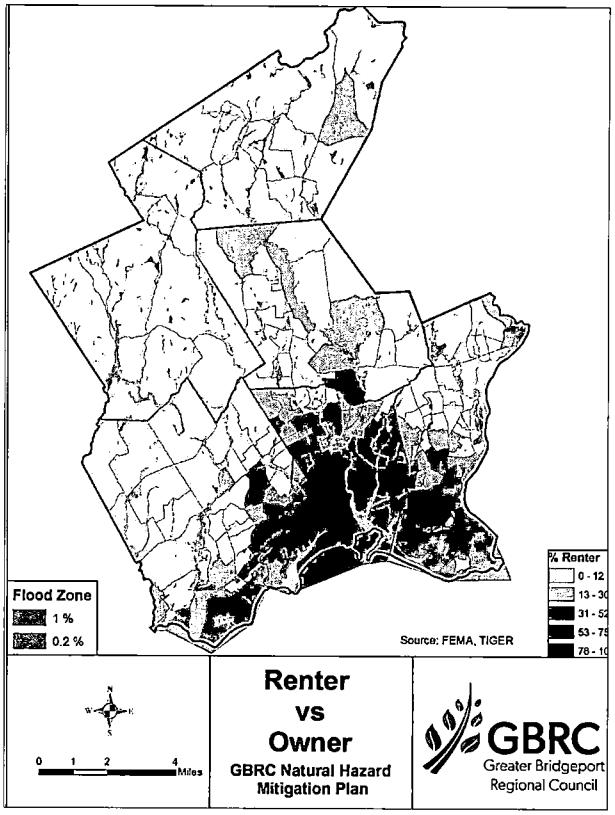


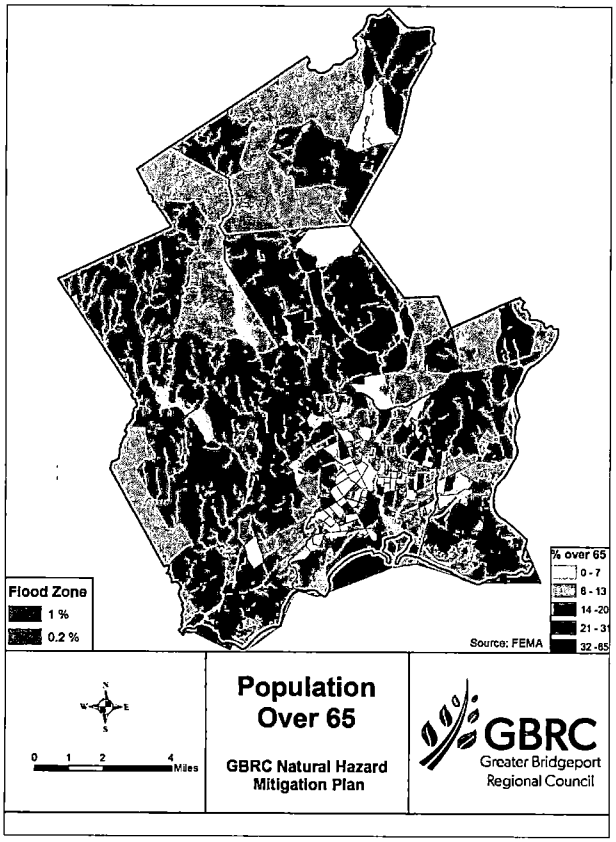
Base Map

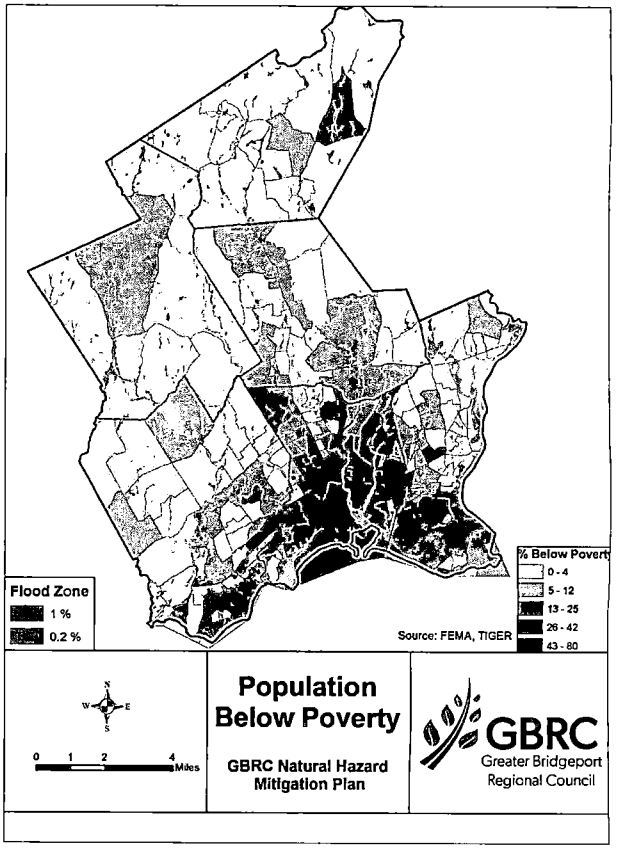
GBRC Natural Hazard Mitigation Plan

GBRC
Greater Bridgeport Regional Council


Flood Zone
1 %
0.2 %
% Minority
0 - 8
9 - 23
24 - 44
44 - 61
62 - 96
Source: FEMA & Census
0 1 2 4 Miles
Minority Population
GBRC Natural Hazard Mitigation Plan
GBRC
Greater Bridgeport Regional Council


Flood Zone
1 %
0.2 %
% Renter
0 - 12
13 - 30
31 - 52
53 - 75
76 - 10
Source: FEMA, TIGER
0 1 2 4 Miles
Renter vs Owner
GBRC Natural Hazard Mitigation Plan
GBRC
Greater Bridgeport Regional Council


Flood Zone
1 %
0.2 %
% over 65
0 - 7
8 - 13
14 - 20
21 - 31
32 - 65
Source: FEMA
0 1 2 4 Miles
Population Over 65
GBRC Natural Hazard Mitigation Plan
GBRC
Greater Bridgeport Regional Council


Flood Zone
1 %
0.2 %
% Below Poverty
0 - 4
5 - 12
13 - 25
26 - 42
43 - 80
Source: FEMA, TIGER
0 1 2 4 Miles
Population Below Poverty
GBRC Natural Hazard Mitigation Plan
GBRC
Greater Bridgeport Regional Council

23% of the Region's population. Although this data suggests diversity throughout the Region, minority populations are concentrated in Bridgeport and parts of Stratford (2013-2017 ACS).

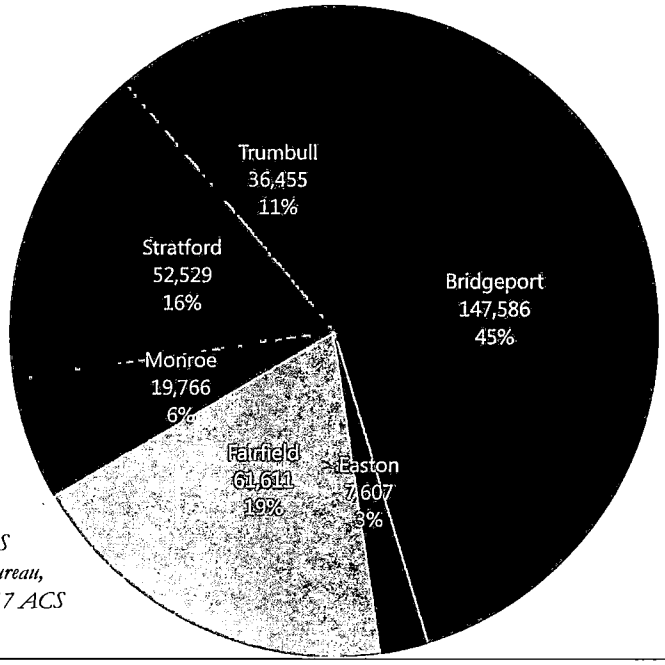
The median age of the Region's residents is about 38.1 years old. This is a younger population than the state-wide median age of 40.9 years (2010 Census). About 19% of the Region's population is younger than 15 years old and 14.3% are 65 years or older (2013-2017 ACS).

There are nearly 113,000 occupied housing units in the Region, with the majority (65.3%) owner occupied. About 9% of the Region's housing units are vacant (2013-2017 ACS). Seasonal or recreational units account for almost 10% of vacant units (2010 Census).

On average, the Region is a relatively wealthy area with an estimated annual median family income of $96,099. This is slightly higher than the state-wide estimate of $93,800. The per capita income is less than $38,000 annually, as compared to the state-wide estimate of $41,365. About 9,530 families or 12.1% of the total number of families in the Region earn less than $25,000 per year. 9.3% of all families in the Region earn an income that is below the poverty level. State-wide, only about 9.4% of all families earn less than $25,000 per year and the percentage of families that earn an income below the poverty level is about 7.0% (2013-2017 ACS).

The following sections describe the physical setting, population, demographics and generalized land use of each jurisdiction involved in the NHMP.

Population Breakdown: MetroCOG Region



Source: US Census Bureau, 2013-2017 ACS

Demographic Profile: MetroCOG Region		
Population		
Total Population	325,554	100.0%
White	171,129	52.6%
African American	58,796	18.1%
Other Race	21,490	6.6%
Hispanic or Latino	74,139	22.8%
Age		
Median Age	38.1	
< 15 years old	61,518	18.9%
> 65 years old	46,677	14.3%
> 75 years old	22,048	6.8%
Housing		
Total Housing Units	124,531	100.0%
Owner Occupied	73,747	65.3%
Renter Occupied	39,148	34.7%
Total Occupied Housing Units	112,895	100.0%
Vacant Units	11,636	9.3%
Seasonal Units	844	0.7%
Income		
Median Family Income	$96,099	
Per Capita Income	$37,952	
Families with Income <$25,000	9,530	12.1%
Families Below Poverty Level	7,292	9.3%

US Census Bureau, 2010 Census & 2013-2017 American Community Survey

City of Bridgeport

The City of Bridgeport is the most populous city in Connecticut

with a population of 147,586 people (2013-2017 ACS). The CTDC (2017) estimates that the population is 146,579, generally consistent with the ACS. Bridgeport is the central city in the MetroCOG region and is bordered by Fairfield to the west, Trumbull to the north and Stratford to the east. Long Island Sound is located along the city's southern border. The city has a land area of 16 square miles, a waterfront of 22 miles and an elevation that reaches to 310 feet in the northwest corner.

Bridgeport is the most urban, densely populated and diverse municipality in the Region, as it accounts for about 45% of the Region's population. The city is home to the majority of the Region's non-white population and persons of Hispanic or Latino ancestry. African American residents make up 33% of the city's population and 46% of the city's population is another, non-white race. Persons of Hispanic or Latino descent comprise about 39% of Bridgeport's population (2013-2017 ACS).

The median age of people living in Bridgeport is about 33.8 years old, making the city a relatively young place (2013-2017 ACS). The proportion of residents younger than 15 years old is not significantly higher than the Region or state, indicating that the lower median age is partly due to a higher number of persons between the ages of 20 and 40 years old. The proportion of elderly living in Bridgeport (11%) is lower than that of the Region (2013-2017 ACS).

The city has a total of 58,124 housing units, with about 13% listed as vacant (2013-2017 ACS). The majority of these housing units are renter-occupied. Although owner-occupied housing accounts for only about 42% of the total, this proportion is higher than the cities of Hartford and New Haven. A total of 163 units, 0.3% of the total, are considered seasonal or recreational (2010 Census).

The entire city meets the definition of an economically distressed area, due to both low per capita income and the high unemployment rate. The per capita income for Bridgeport workers is approximately $22,806 per year. About 30% of the city's families earn less than $25,000 per year. The median family income for Bridgeport is about $50,356 per year (2013-2017 ACS).

While the economies of the Region are interdependent, there is a significant disparity between Bridgeport and the other towns of the MetroCOG Region. The per capita income for the Region as a whole is about $37,952 per year. When the Bridgeport population is subtracted, the Region's per capita income rises to $50,512 annually, thus indicating that the city's per capita income is 75% of the rest of the Region. The disparity in median family income is also pronounced, with a regional estimate of $128,763 per year without the inclusion of Bridgeport's median family income.

Historically, Bridgeport experienced rapid growth in the late nineteenth and early twentieth centuries, increasing from approxi-

Demographic Profile: City of Bridgeport

Population		
Total Population	147,586	100.0%
White	31,603	21.4%
African American	48,807	33.1%
Other Race	9,256	6.3%
Hispanic or Latino	57,920	39.2%
Age		
Median Age	33.8	
< 15 years old	29,405	19.9%
> 65 years old	15,757	10.7%
> 75 years old	7,156	4.8%
Housing		
Total Housing Units	58,124	100.0%
Owner Occupied	21,138	42.0%
Renter Occupied	29,203	58.0%
Total Occupied Housing Units	50,431	100.0%
Vacant Units	7,783	10.1%
Seasonal Units	163	0.3%
Income		
Median Family Income	$50,536	
Per Capita Income	$22,806	
Families with Income <$25,000	7,303	22.3%
Families Below Poverty Level	5,737	17.5%

Source: US Census Bureau, 2010 Census & 2013-2017 American Community Survey

mately 29,000 residents in 1880 to 143,000 residents in 1920. Population growth came primarily from immigration, with most immigrants coming from Europe before World War I and African American and Hispanic migrants coming from the Southern United States during later periods. The population peaked in the 1950s, but steadily decreased throughout the late twentieth century as a result of suburban growth and the decline of industry in the area. This declining trend was reversed between 2000 and 2010, as the current population increased by about 3%.

Bridgeport was originally a part of the towns of Fairfield and Stratford and was incorporated in 1821. Because of access to Long Island Sound, shipbuilding and whaling were important early industries. Bridgeport has a rich history as a manufacturing center. With the construction of railroad lines and good harbor access, the city experienced rapid industrialization. The railroad lines connected Bridgeport to New York to the west, New Haven to the east and Pittsfield, Massachusetts to the north. Various goods were produced in Bridgeport and shipped around the world. Products included brass fittings, sewing machines, carriages, and ammunition.

The city has a rich diversity of housing styles that were built to support the rise of the industrial sector. Much of this housing is typical of the mid-to-late Victorian era, including the Italianate Villa and Queen Anne styles. Colonial Revival and neo-classic styles are also well represented. Work force housing was provided in "workers" cottages, brick "Philadelphia style" row houses and triple deckers.

Today, land use in the city reflects its industrial past. While many of the industrial plants have been demolished or left vacant, remnants of this past endures. Residential neighborhoods are close-knit and retain historic configurations. Many residential areas were built in proximity to factories so as to attract and retain the workers needed by industry. Commercial activities are interspersed within neighborhoods. Downtown Bridgeport remains a banking center and is home to Federal, State, and County courthouses. Bridgeport is a major center of medical care due to the presence of St. Vincent's Medical Center and Bridgeport Hospital. Three colleges are located in Bridgeport: the University of Bridgeport in the South End (just north of Seaside Park and Long Island Sound), Housatonic Community College in Downtown, and Sacred Heart University on upper Park Avenue.

Bridgeport remains a major transportation hub. Commuter (Metro North) and intercity (Amtrak) rail service is provided at the Bridgeport rail station, located at the Bridgeport Intermodal Transportation Center in Downtown. Connected to the rail station by an overhead, covered walkway, Greater Bridgeport Transit's main bus terminal is also located in the Downtown. Bus service radiates from the downtown terminal throughout Bridgeport and into Fairfield, Stratford and Trumbull. Interstate 95 traverses the southern half of the region and has an interchange with the Route 8/25 Expressway in Bridgeport.

The Port of Bridgeport, classified as a commercial harbor, is one of three deep water ports in Connecticut. Activities within the harbor include recreational boating and support facilities, commercial fishing, dry dock and boat repair facilities, tug boat docking and passenger and vehicle ferry service. The Bridgeport and Port Jefferson Steamboat Company operates the ferry service to Long Island and leases the Water Street Dock for loading and unloading. The Water Street Dock is strategically located in Downtown and is functionally connected to the Intermodal Transportation Center.

Future land use in Bridgeport is anticipated to reflect existing land uses, with potential mixed use development on large vacant and underutilized parcels of land that had previously supported industrial uses.

Town of Easton

The Town of Easton has the smallest population of all municipalities in the Region with a population of 7,607 people (2013-2017 ACS). The Town is located in the Region's northwest and is bordered by the MetroCOG communities of Fairfield (to the south), and Monroe and Trumbull (to the east). The towns of Redding and Newtown (to the north) and Weston and Westport (to the west) are served by the Western Connecticut Council of Governments (WestCOG).

Easton is one of the Region's three inland communities. With a land area of 28.8 square miles, the Town consists largely of rolling, hilly terrain. Elevations range from 110 feet at the Fairfield border to approximately 740 feet at the northern boundary with Newtown.

Easton is not ethnically diverse, as only 7.9% of the Town's residents report an ethnicity other than white and only 4.9% of residents are of Hispanic or

Latino ancestry. Easton's population has the highest median age of the Region at 49.0 years old, but the proportion older than 65 is not significantly higher than the Region or other member communities (2013-2017 ACS).

The total number of occupied housing units in Easton is 2,762, with 94.5% of units occupied by the owner. Rental units account for 5.5% of the Town's housing. About 2.7% of the housing stock is vacant (2013-2017 ACS), with 50 units classified as seasonal or recreational, about 1.8% of total units (2010 Census).

Easton is a wealthy community, as indicated by the annual median family income of $159,044. The Town's per capita income of $66,658 per year is among the higher income levels in the state. Only 2.7% of families in the Town of Easton were listed as having an income below the poverty line; 115 families earned less than $25,000 per year (2013-2017 ACS).

The Town is almost exclusively a residential community and is primarily composed of single-family houses on large lots. About 0.1% of land in Town is used for commercial purposes. The Town does not have a specific concentrated commercial area and no industry is located within the corporate limits. Over one third of Easton is preserved as either current water company owned lands or former water company property. Four public supply reservoirs (Easton, Aspetuck, Hemlock and Saugatuck) are partially or wholly located in the town.

About 2,300 acres of the Centennial Watershed State Forest are located in Easton. The Centennial Watershed State Forest was formed in 2002, with the primary function and purpose to protect water quality, wetlands and woodlands. The State of Connecticut, in partnership with The Nature Conservancy (TNC), acquired ownership of roughly 6,000 acres of public supply watershed lands, as well as conservation and public access easements on an additional 9,000 acres. The Centennial Watershed State Forest is a patchwork of hundreds of scattered parcels throughout mostly Fairfield County of varying size.

As Easton is devoted to maintaining a pure water supply, future land development will be limited.

Town of Fairfield

The Town of Fairfield has a population of 61,611 people (2013-2017 ACS). Fairfield is bordered by the MetroCOG communities of Easton (to the north), and Bridgeport and Trumbull (to the east). The western border is with the Town of Westport, which is located in the WestCOG Region. Long Island Sound makes up the Town's southern border. The Town has a land area of 30.6 square miles, rising to the north from its shoreline to an elevation of approximately 450 feet at Hoyden Hill near the northern border with Easton.

Demographic Profile: Town of Easton

Population		
Total Population	7,607	100.0%
White	7,008	92.1%
African American	1	0.0%
Other Race	228	3.0%
Hispanic or Latino	370	4.9%
Age		
Median Age	49.0	
< 15 years old	1,389	18.3%
> 65 years old	1,347	17.7%
> 75 years old	513	6.7%
Housing		
Total Housing Units	2,837	100.0%
Owner Occupied	2,610	94.5%
Renter Occupied	152	5.5%
Total Occupied Housing Units	2,762	100.0%
Vacant Units	75	2.6%
Seasonal Units	50	1.8%
Income		
Median Family Income	$159,044	
Per Capita Income	$66,658	
Families with Income <$25,000	115	5.3%
Families Below Poverty Level	58	2.7%

Source: US Census Bureau, 2010 Census & 2013-2017 American Community Survey

Fairfield's population is predominately white, with 85.0% of residents reporting to be white. Approximately 15.0% of the Town's residents claim a race other than white. Persons of Hispanic or Latino descent comprise 6.3% of the population. The median age of Fairfield residents is 41.2 years old, with the proportion older than 65 years old accounting for about 15.6% of the population (2013-2017 ACS).

The total number of occupied housing units is 20,365, with 82.8% owner-occupied. The 17.2% of renter occupied units account for a higher proportion of housing units as compared to Easton, Monroe and Trumbull. Vacant housing units comprise 5.8% of the total housing stock (2013-2017 ACS) with 1.6% of the units classified as seasonal or recreational (2010 Census).

Fairfield is a wealthy community, as indicated by an annual median family income of $154,937, only slightly less than the median family income in Easton. The per capita income is $62,541 per year, a relatively high amount. About 3.0% of the total families are estimated to have an income below the poverty line. Families earning less than $25,000 per year accounted for 4.3% of all families (2013-2017 ACS).

Fairfield is a town with two distinct development patterns. Although the Town is a predominantly residential community, more intense development patterns are concentrated in the eastern and southern areas of the Town and along the Metro-North New Haven Line and the Interstate 95 corridors. The major business and industrial areas are located along US Route 1 and the southern portion of Route 58 (Black Rock Turnpike and Tunxis Hill Road). The northwestern part of town is relatively rural with a concentration of large lot, single family homes. Residential distribution is denser in the eastern portion of the community. Coastal development is primarily residential and includes beaches and private marinas. Two colleges are located in Fairfield: Fairfield University and Sacred Heart University.

Fairfield is served by three commuter rail stations on the Metro-North New Haven Line: Fairfield Metro Center, Fairfield Center and Southport. Local bus service, oriented to and from Downtown Bridgeport is provided along the US Route 1 (Kings Highway East to the Post Road) and Route 58 corridors. In addition to Interstate 95, the Merritt Parkway (Route 15) passes through the northern part of Fairfield.

Town of Monroe

The Town of Monroe is the fastest growing community in the MetroCOG Region, with a population of 19,766 people (2013-2017 ACS). Monroe is located in the northern part of the Region and is bordered by the MetroCOG communities of Easton to the west and Trumbull to the south. To the east, the Town shares a border with Shelton, which is represented by the Naugatuck Valley Council of Governments (NVCOG). On the northeast, Monroe

Demographic Profile: Town of Fairfield

Population		
Total Population	61,611	100.0%
White	52,369	85.0%
African American	875	1.4%
Other Race	4,458	7.2%
Hispanic or Latino	3,909	6.3%
Age		
Median Age	41.2	
< 15 years old	12,120	19.7%
> 65 years old	9,634	15.6%
> 75 years old	4,796	7.8%
Housing		
Total Housing Units	21,615	100.0%
Owner Occupied	16,867	82.8%
Renter Occupied	3,498	17.2%
Total Occupied Housing Units	20,365	100.0%
Vacant Units	1,250	5.8%
Seasonal Units	353	1.6%
Income		
Median Family Income	$154,937	
Per Capita Income	$62541	
Families with Income <$25,000	655	4.3%
Families Below Poverty Level	457	3.0%

Source: US Census Bureau, 2010 Census & 2013-2017 American Community Survey

borders the Town of Oxford (NVCOG) along Lake Zoar and the Housatonic River. The land area of Monroe is 26.4 square miles and the Town has a high elevation of approximately 600 feet.

The ethnic mix of Monroe's population is similar to that of other suburban communities in the Region. The population is predominately white with 88.8% of residents reporting to be white. Approximately 11.2% of the Town's residents report a race other than white. Persons of Hispanic or Latino descent comprise 4.2% of the population. The median age of Monroe's residents is 44.5 years old. The proportion of the population older than 65 accounts for about 14.6% of the population and is lower than other communities in the region (2013-2017 ACS).

The total number of occupied housing units in Monroe is 6,865, with 90.2% of units occupied by the owner. This percentage is comparable to other similarly sized towns in the Region, such as Easton and Trumbull. Rental units account for 9.8% of total occupied units. Vacant housing units comprise 6.1% of the all housing units (2013-2017 ACS). Only 27 units are classified as seasonal or recreational (2010 Census).

The annual median family income for Monroe is $133,253, similar to the Region's average without considering income levels in Bridgeport. The per capita income is $47,991 per year. About 138 families or 2.7% of all families earn an income below the poverty line and 2.9% of the households earn less than $25,000 per year (2013-2017 ACS).

Monroe is a predominantly residential community comprised of single family, detached units on one to three acre lots. Several condominium complexes provide a higher concentration of housing. Commercial activities are concentrated along the Route 25 and Route 111 corridors, and several industrial parks are located along Pepper Street in the northern part of town. Future land use in Monroe is anticipated to be consistent with existing development patterns.

Demographic Profile: Town of Monroe		
Population		
Total Population	19,766	100.0%
White	17,558	88.8%
African American	33	0.2%
Other Race	1,338	6.8%
Hispanic or Latino	837	4.2%
Age		
Median Age	44.5	
< 15 years old	3,759	19.0%
> 65 years old	2,894	14.6%
> 75 years old	1,228	6.2%
Housing		
Total Housing Units	7,312	100.0%
Owner Occupied	6,192	90.2%
Renter Occupied	673	9.8%
Total Occupied Housing Units	6,865	100.0%
Vacant Units	447	6.1%
Seasonal Units	27	0.4%
Income		
Median Family Income	$133,253	
Per Capita Income	$47,991	
Families with Income <$25,000	148	2.9%
Families Below Poverty Level	138	2.7%

Source: US Census Bureau, 2010 Census & 2013-2017 American Community Survey

Town of Stratford

The Town of Stratford has a population of 52,529 people (2013-2017 ACS). Stratford is bordered by the MetroCOG communities of Bridgeport and Trumbull to the west. The Town borders the City of Shelton (NVCOG) to the north and the City of Milford (South Central Region Council of Governments) to the east. Long Island Sound makes up the town's southern border. The Housatonic River flows between Stratford and Milford. The land area of Stratford is 19.6 square miles. Rising north from the Town's shoreline, the Oronoque section of town has an elevation of approximately 240 feet.

The Town of Stratford's population is more ethnically diverse than the MetroCOG Region's other suburban communities. Although the population is predominately white at 64.4% of residents, 26.1% of the population is made up of ethnic minorities. Persons of Hispanic or Latino descent comprise about 15.3% of the population. The median age

of Stratford's residents is 44.1 years old, similar to other communities in the Region and the state average. The proportion of the population older than 65 is higher than several other communities in the Region, accounting for about 19.5% of the population. Similarly, the percentage of younger age persons is the lowest, comprising 14.7% of the population (2013-2017 ACS).

The total number of occupied housing units in Stratford is 20,179 with 79.7% owner-occupied. This percentage is lower than the Region's northern communities but comparable with that of Fairfield. Rental units account for 20.3% of total occupied units. Vacant housing units comprised 7.2% of total units (2013-2017 ACS), with 172 units classified as seasonal or recreational (2010 Census).

The annual median family income for Stratford is $90,718, the second lowest income in the Region. The per capita income is $36,043 annually, lower than that of Fairfield County and slightly lower than the state-wide median family income. About 834 families, or 6.1% of the total were listed as having an income below the poverty line and 8.4% of families earned less than $25,000 per year (2013-2017 ACS).

Although Stratford is a predominantly residential community, the Town has significant commercial and industrial corridors. Commercial activities are concentrated along the U.S. Route 1 (Barnum Avenue), U.S. Route 113 (Main Street), as well as in the vicinity of Route 110 (East Main Street, Barnum Avenue Cutoff, and Ferry Boulevard) and Route 130 (Stratford Avenue). Prime industrial areas are located in the south end of Stratford in Lordship and near the Sikorsky Memorial Airport. The Sikorsky Aircraft plant (Lockheed Martin) is located along the northern section of Route 110.

There is a wide range of housing types in Stratford. Medium density housing is prevalent in the central and southern areas of town, while the northern part has typical low density developments. Future land use plans include transit oriented and mixed use development, as well as light industrial and office park development.

Stratford is served by one commuter rail station on the Metro-North New Haven Line, located in Stratford Center. Local bus service is provided throughout the Town and provides access to most areas of activity. Interstate 95 traverses the southern half of Stratford and the Merritt Parkway is located in the northern part. The Sikorsky Airport, the Region's only airport, is located in the Lordship section of town. The airport is classified as a General Aviation airport, serving primarily private aircraft.

Town of Trumbull

The population of the Town of Trumbull is made up of 36,455 people (2013-2017 ACS). The Town is located in the center of the Region, bordered by the City of Bridgeport to the south, the Town of Easton to the west, the Town of Monroe

Demographic Profile: Town of Stratford

Population		
Total Population	52,529	100.0%
White	33,813	64.4%
African American	7,531	14.3%
Other Race	3,139	6.0%
Hispanic or Latino	8,046	15.3%
Age		
Median Age	44.1	
< 15 years old	7,738	14.7%
> 65 years old	10,233	19.5%
> 75 years old	4,844	9.2%
Housing		
Total Housing Units	21,745	100.0%
Owner Occupied	16,080	79.7%
Renter Occupied	4,099	20.3%
Total Occupied Housing Units	20,179	100.0%
Vacant Units	1,566	7.2%
Seasonal Units	172	0.8%
Income		
Median Family Income	$90,718	
Per Capita Income	$36,043	
Families with Income <$25,000	1,146	8.4%
Families Below Poverty Level	834	6.1%

Source: US Census Bureau, 2010 Census & 2013-2017 American Community Survey

to the north, and the Town of Stratford to the east. Trumbull is also bordered by the City of Shelton (NVCOG) to the east. The land area of Trumbull is 23.3 square miles and consists of low hills and steep ridges that rise above well-defined valleys. The highest elevation in the Town is approximately 520 feet, recorded in both Tashua and Booth Hill.

The ethnic mix of Trumbull's population is similar to that of the Region's other suburban communities. The population is predominately white: 78.9% of residents report to be white and 21.1% of residents report a race other than white. Persons of Hispanic or Latino descent comprise 8.4% of the Town's population. The median age of Trumbull residents is 43.5 years, making the Town's population slightly younger than other communities in the Region. The proportion of the population older than 65 is among the highest in the Region, accounting for about 18.7% of the population. The number of residents younger than 15 years old accounts for about 19.5% of the population and is similar to other communities in the Region (2013-2017 ACS).

The total number of occupied housing units in Trumbull is 12,383, with 87.7% owner-occupied households. Renter occupied units make up about 12.3% of total occupied units. These rates are comparable to other similarly sized towns in the Region. Approximately 4.0% of all housing units in the Town are vacant (2013-2017 ACS). Seasonal or recreational housing units make up about 1% of the total housing stock (2010 Census).

The annual median family income for Trumbull is $132,188 which is slightly higher than the average for the Region without considering income levels in Bridgeport. The per capita income is at $49,030 per year. About 68 families or 0.7% of families earn an income below the poverty line and 1.7% of all households earn less than $25,000 per year (2013-2017 ACS).

Demographic Profile: Town of Trumbull

Population		
Total Population	36,455	100.0%
White	28,778	78.9%
African American	1,126	3.1%
Other Race	2,468	6.9%
Hispanic or Latino	3,057	8.4%
Age		
Median Age	43.5	
< 15 years old	7,107	19.5%
> 65 years old	6,812	18.7%
> 80 years old	2,443	6.8%
Housing		
Total Housing Units	12,898	100.0%
Owner Occupied	10,860	87.7%
Renter Occupied	1,523	12.3%
Total Occupied Housing Units	12,383	100.0%
Vacant Units	515	4.0%
Seasonal Units	79	0.6%
Income		
Median Family Income	$132,188	
Per Capita Income	$49,030	
Families with Income <$25,000	163	1.7%
Families Below Poverty Level	68	0.7%

Source: US Census Bureau, 2010 Census & 2013-2017 American Community Survey

Trumbull is a predominantly residential community, comprised mostly of single-family houses on one half to one acre lots, with the smaller lots sizes located in the older parts of town. Several condominium complexes are scattered throughout the town. Commercial, office and industrial activities are concentrated in large parks with single accesses from main road corridors. The two largest shopping malls in the Region are located in Trumbull. Future land use in Trumbull is expected to maintain and enhance the existing colonial New England, residential character of the Town with some limited and managed vertical growth in industrial areas.

Local bus service is provided along main road corridors and is oriented to and from the Trumbull–Westfield Shopping Mall. The Merritt Parkway and Routes 8 and 25 pass through Trumbull.

1.5 Land Use

The land area of the region

is approximately 145 square miles. Land cover statistics were derived from data provided by the UConn Center for Land Use Education and Research (CLEAR).

The coastal towns, especially along the Interstate 95 corridor, are the most developed areas in the region. Overall, 40% of the region is developed. The inland communities, especially Easton and Monroe, are more forested. Overall, 38% of the region is forested. There is some agriculture but it is less than 2% of the entire region.

1.6 Development Trends

As mentioned in Section 1.4, the MetroCOG Region has the highest population density in the State of Connecticut. The majority of the population (45%) lives in the City of Bridgeport. Following the previous 2014 NHMP, estimates suggest that all towns have increased in population but that development trends have been relatively flat. The majority of new housing permits were in the coastal communities of Fairfield, Bridgeport, and Stratford which have been hard hit by previous coastal storms such as Superstorm Sandy. Thus an increase in development in these towns likely resulted in more people exposed to natural hazards.

From 2000 to 2010 the Region's population increased by 10,397 people. Again, Bridgeport and Fairfield had the largest increase in population, while Monroe and Easton had the smallest. The towns of Stratford and Trumbull also grew by over 1,400 people. From 2010 to 2017, the Region's population is estimated to have increased by 7,550 people, primarily in the coastal communities of Bridgeport, Fairfield, and Stratford. The coastal increase in population has put more people in

Source: UConn, CLEAR

2015 Land Cover

Land Cover	Area (acres)	%
Developed	36,630	39.9
Turf & Grass	13,228	14.4
Other Grasses	1,143	1.2
Agriculture	1,513	1.6
Deciduous Forest	31,088	33.9
Coniferous Forest	1,656	1.8
Water	2,514	2.7
Non-Forested Wetland	57	0.1
Forested Wetland	2,026	2.2
Tidal Wetland	977	1.1
Barren Land	708	0.8
Utility ROWs	154	0.2
Total	**92,692**	**100**

Source: US Census Bureau, 2010 Census, 2013-2017 ACS

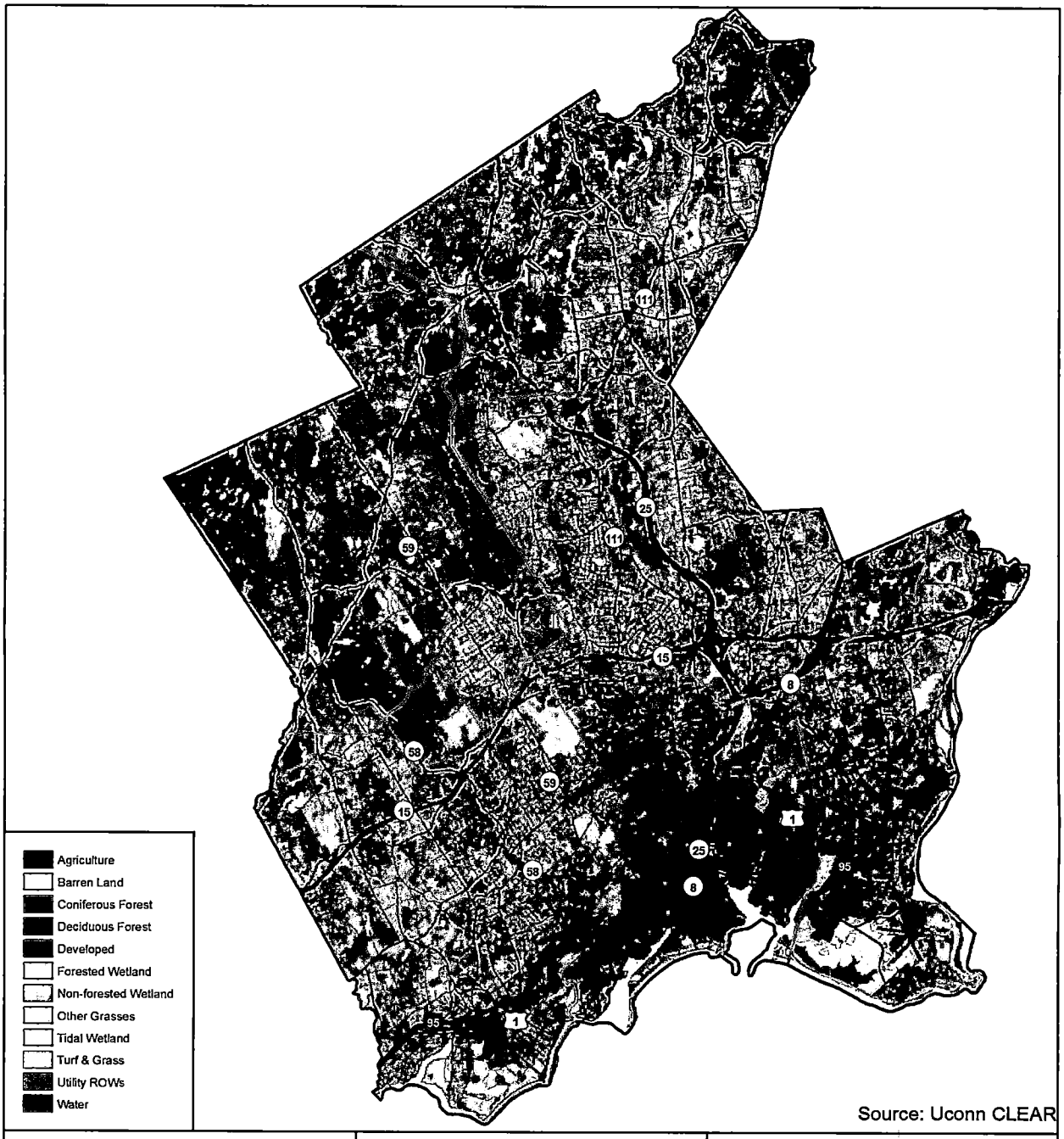
Population Change

Municipality	2000	2010	2017 Est.	Change, 2010-17
Bridgeport	139,529	144,229	147,586	3,357
Easton	7,272	7,490	7,607	117
Fairfield	57,340	59,404	61,611	2,207
Monroe	19,247	19,479	19,766	287
Stratford	49,976	51,384	52,529	1,145
Trumbull	34,243	36,018	36,455	437
Region	**307,607**	**318,004**	**325,554**	**7,550**

Source: Connecticut Department of Economic and Community Development

Housing Permit Data From 2012-2017

Municipality	2012	2013	2014	2015	2016	2017	Total
Bridgeport	175	16	134	119	69	31	544
Easton	3	8	5	5	6	7	34
Fairfield	50	154	111	98	258	111	782
Monroe	4	16	3	5	10	17	55
Stratford	9	270	13	37	25	84	438
Trumbull	7	11	4	8	8	6	44
Region	**248**	**475**	**270**	**272**	**376**	**256**	**1,897**


Agriculture
Barren Land
Coniferous Forest
Deciduous Forest
Developed
Forested Wetland
Non-forested Wetland
Other Grasses
Tidal Wetland
Turf & Grass
Utility ROWs
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Land Cover
GBRC Natural Hazard Mitigation Plan
GBRC
Greater Bridgeport Regional Council

danger of coastal storms which have been occurring regularly over the last decade.

City of Bridgeport

The previous NHMP noted that the primary land use objective for the City of Bridgeport was redevelopment. The focus was on infilling former manufacturing lots that have been left vacant, of which many are Brownfield sites. In addition, the City is working to develop Transit Oriented Development (TOD) in East Bridgeport with emphasis on multi-modal transit.

The City has continued to focus on redevelopment over the past five years. Notable projects include:

- A number of redevelopment projects are underway Downtown.
- The Ballpark at Harbor Yard is being converted to an amphitheater in 2019-2020.
- Public Service Enterprise Group (PSEG) constructed a new generating unit ("Unit 5"). This new plant has been elevated on fill material above the 0.2% flood elevation.
- Steele Point is being built out on land that is protected by new bulkheads and an elevated ground surface that exceeds the base flood elevation. Projected buildout of Steele Point is 10 to 15 years from 2019, extending into the timeframes of future hazard mitigation plan updates. A new site at the southern extent of Steele Point ("Dockmaster Building") is complete and ready for mixed use in 2019.
- Marina Village, a public housing complex consisting of two-story row-house buildings located near Seaside Park in the South End, is in the process of being rebuilt. The new development will include compliance with floodplain development standards, as the site is partially in the SFHA. The project will begin on the east side outside the flood zone and then extend to the west into the flood zone.
- "Civic Block" refers to an entire block on Stratford Avenue which is being redeveloped with a new library, grocery store, retail and other uses.
- The former Remington site at 60 Main Street will eventually be redeveloped in the coastal flood zone.
- The former ferry terminal site will eventually be redeveloped in the coastal flood zone, but not until after the ferry service completes its terminal relocation. This will likely occur in the five-year timeframe of this plan, between 2019 and 2024.
- The University of Bridgeport is planning for a variety of redevelopment projects in the south end.
- Both wastewater treatment facilities will be undergoing upgrades in their respective coastal flood zones in the next five years.
- Redevelopment is possible along and near Cedar Creek in the West End planning area.
- Cherry Street development near the railroad tracks is outside the flood zone.
- BMW is building a new building in the floodway that will be floodproofed. This area flooded in September 2018, and the redevelopment will likely lead to lower future damages at the site.
- Development is ongoing along the Seaview Avenue corridor north of Barnum Avenue.

To the extent necessary, some of the above redevelopment projects will intersect with components of Resilient Bridgeport which is the result of the Rebuild by Design (RBD) and National Disaster Resilience Competition (NDRC) awards. For example, RBD is primarily leading to elevation of Iranistan Avenue at Marina Village, which will necessarily impact the Marina Village redevelopment. NDRC is leading to elevation of University Avenue and construction of other segments of flood protection in the South End, which will impact properties such as the former Remington site at 60 Main Street. The City will need to continue coordinating its review of development projects with participation of the Resilient Bridgeport team.

Finally, the City of Bridgeport has also been investing in new community resources such as schools. The City has a new high school located at 840 Old Town Road. The City annexed this land from the Town of Trumbull. The City also built Harding High School at 379 Bond Street which opened in August 2018. Finally, various school renovations have also been completed during the timespan between the adoption of the 2014 NHMP and development of this update.

Town of Easton

The previous NHMP noted that the Town of Easton continued to preserve low residential character and ample amounts of public water supply watershed lands. It continued to encourage commercial and service growth in central areas while preserving open space.

The Town of Easton noted that major development is not underway as of 2019. The Town remains rural and wishes to retain its rural character.

Town of Fairfield

The 2014 NHMP noted that since the 2006 NHMP there were several completed developments in the Town of Fairfield. The Metro Center Train Station was constructed in December 2011. Fairfield University and Sacred Heart University constructed new dormitories and educational buildings. A Whole Foods Development and strip mall was completed as well as a Green Infrastructure "Delmar" mixed development project. There has also been construction of a joint Town and privately owned recreational complex. Finally, there was "in filling" of vacant lots and construction of minor subdivisions.

While the majority of Fairfield is residential, the Commerce Drive area represents an opportunity for development. In May 2011, the Town Planning and Zoning commission adopted an amendment to the Town Plan of Conservation and Development to implement new zoning regulations for the Commerce Drive area surrounding the new Metro Station to guide new development.

The Town has attempted to alleviate its vulnerability to natural hazards. There has been an increase in the number of houses being elevated after coastal storms Irene and Sandy. The Town of Fairfield has also continued to limit development on the Pine Creek side of Fairfield Beach Road due to its vulnerability to coastal natural hazards such as hurricanes and storm surge. Over the past five years, new resilient construction is underway throughout the town, with residential tear-down and reconstruction projects resulting in more than 100 elevated homes and approximately 200 replacement flood compliant structures.

Transit-Oriented Development (TOD) is ongoing as of 2019 in the vicinity of the Fairfield Metro Railroad Station. This development including 101 new housing units plus 160 housing units coming online soon. New resilient construction is underway throughout the town, and residential tear-downs/reconstruction projects are resulting in elevated homes where flood risks are present. A new solar farm was recently constructed on the closed landfill, as a result of increased interest in solar generation throughout New England.

Town of Monroe

The 2014 NHMP noted that since the 2006 NHMP there had been minor development in the Town of Monroe. Approximately 40% of the Pepper Street Industrial park was developed, leaving about 30% undeveloped (remaining) at this point. There has also been expected (typical) infilling and redevelopment along the Route 25 and Route 111 commercial corridors. Some sections of Route 25 will be elevated in 2019 to address flooding. There were no significant changes in residential development (subdivisions), with only one subdivision requiring a floodplain development permit since 2014.

As of 2019, the Town reported that very little development is occurring in floodplains. Backyards typically approach floodplains, but not structures. Pending projects include the following which are not located in areas of flood risk:

- New bulk propane storage
- A three-lot subdivision
- A two-lot subdivision
- Expansion of a non-residential use

By comparison, projects approved in 2018 included a five-lot industrial subdivision, a new distribution center, and a new gasoline service station. Prior to 2018 and 2019, the last residential subdivision approved by the town was in 2015, and the size was only ten lots.

Town of Stratford

The 2014 NHMP noted that since the 2008 Stratford NHMP, there had been several development projects completed. New apartment complexes designed by Forest City Enterprises were completed on Stratford Avenue and on Main St. The Stratford Avenue apartments were completed in September 2013. In addition, construction had begun on the Avalon Bay apartment complex located on Cutspring Road in the northern section of the Town.

In addition to development, the Town has removed structures as well. Sixty-three cottages on Long Beach West were removed in 2010-2011. These cottages were abandoned when the only vehicular bridge connecting the community to the mainland was lost to a fire. Instead of rebuilding the bridge, the Town opted to remove the structures to increase open space and environmental conservation. These structures were located on a barrier island, susceptible to coastal flooding, so

there removal reduces the Town's overall risk to natural hazards.

The Town of Stratford remains for the most part, built out. The majority of development will be in-fill residential development and redevelopment of existing industrial and commercial areas. The Town has also developed a updated Open Space Inventory designed to highlight potential open space acquisitions over the next several years.

As of 2019, development in the Transit Oriented Development District for mixed uses is a significant focus in the town. About 300 to 400 units are approved within ¼ mile of the railroad station. The Town believes this momentum will continue. Other projects include:

- Contract Plating on Honeyspot Road has been demolished and will be redeveloped.
- Large-scale warehouse development along Lordship Boulevard may continue.

Of particular interest to flood hazard risk reduction, the U.S. Army has selected a preferred developer for the former Army Engine Plant which is entirely in the coastal flood zone. Redevelopment of this large parcel will require compliance with regulations that control development in flood zones. Similarly, the former Shakespeare property is located partially in the flood zone and is planned for redevelopment.

Finally, the town believes that some development will be spurred by nearby development in Bridgeport (i.e. Steele Point).

Town of Trumbull

The 2014 NHMP noted that changes in development since 2006 included significant new building construction on Monroe Turnpike and Quarry Road. There were two to three other places in town where existing commercial buildings were significantly expanded during that time. Also, new subdivisions were built between 2006 and 2009, primarily in the northwestern part of Town.

According to Town staff, recent development since 2014 has avoided floodplains. Numerous apartment units are in development, and a new medical office building was recently developed.

Summary of Development Trends

As noted on page 1-14, an increase in development in the three coastal communities of the region likely resulted in more people exposed to natural hazards, and the moderate region wide increase in population has put more people in danger of storms. However, much of this development is occurring as redevelopment, and all of the development (new or otherwise) is regulated by current zoning and flood damage prevention regulations as well as the State Building Code.

Therefore, the region's mitigation goals, objectives, and strategies (described in Sections 4.2 and 4.3) were deemed appropriate and needed only minor revisions. Three objectives were added as noted on Pages 4-14 and 4-15. These are related to "code plus" construction, shoreline infrastructure, and robust public outreach through CRS participation. Significant revisions of this NHMP were not necessary for addressing development trends in the region.

2 Planning Process

Section Two documents the process of preparing the NHMP and the involvement of each MetroCOG municipality. Outreach to and engagement with neighboring communities, regional agencies and the public is described. Details of existing plans, policies, programs and government structures provides insight into the capacity of each community to plan for natural hazards and implement strategies that will mitigate the impacts of natural hazards.

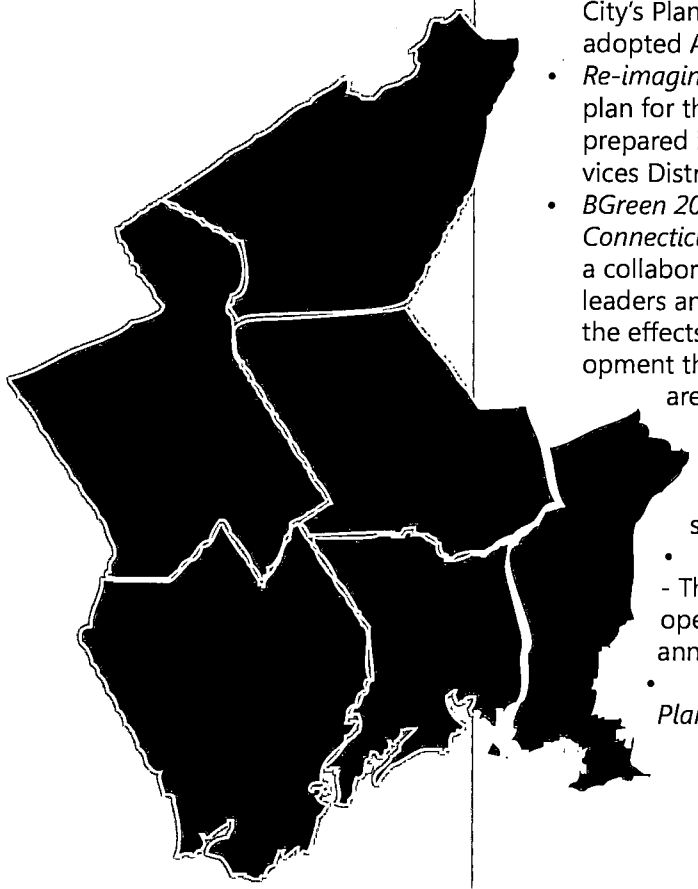
2.1 Review of Existing Plans

The existing Plans of Conservation and Development (POCD) for each of the six communities of the Metro-COG Region were reviewed. In addition, other pertinent reports or plans were examined for their relevance to developing the NHMP.

City of Bridgeport

The City has prepared and adopted several master plans to guide future development and use of land. Plans reviewed include the following:

- *Plan Bold - Plan Smart - Plan Bridgeport* - The City's Plan of Conservation and Development; adopted April 22, 2019.
- *Re-imagining Downtown Bridgeport* - A master plan for the revitalization of the downtown area; prepared in 2007 by the Downtown Special Services District.
- *BGreen 2020: A Sustainability Plan for Bridgeport, Connecticut* - The Plan was developed through a collaboration of city departments, community leaders and the business community to address the effects of climate change, encourage redevelopment that is sustainable, revitalize distressed areas of Bridgeport, implement renewable energy projects and programs, increase recycling and composting, and focus mobility on a transit first and complete streets policy.
- *All Hazards Emergency Operations Plan* - The current version of this plan was developed in 2011 and is reviewed and updated annually.
- *Pequonnock River Watershed Based Plan* - The Pequonnock River watershed is



located within the City of Bridgeport and the Towns of Trumbull and Monroe. The goal of the Plan is to identify actions that will address water quality impairments in the Pequonnock River and Bridgeport Harbor. While water quality is the primary focus of the plan, many recommendations to restore water quality will also mitigate flooding throughout the watershed. The Plan was adopted in 2011.

- *Rooster River Watershed Based Plan* - The goals and strategies of the Rooster River Plan are similar to those of the Pequonnock River Plan. The Rooster River flows from the Town of Trumbull to form the border between the Town of Fairfield and the City of Bridgeport. Via the Ash Creek Estuary, the River ultimately flows into Black Rock Harbor and Long Island Sound. The Plan was adopted in 2014.
- *Feasibility Study and Master Plan for Pleasure Beach Park* - Pleasure Beach Park is located on the largest portion of a barrier beach that extends from Stratford to Bridgeport. The Plan balances active and passive recreation uses with the park's value as a habitat for native and endangered species.
- *Waterfront Bridgeport Plan* - The Waterfront Plan focuses on recreating and transforming Bridgeport's waterfront from its industrial past to one focused on public access and resiliency. The Plan was adopted in 2017.
- *Regional Plan Association Fourth Regional Plan* - This Plan is intended to guide or inform improvements to various aspects of the region with a focus on the changing coastline and restoration of natural systems. This Plan was adopted in 2017.

Plan Bold - Plan Smart - Plan Bridgeport

The City's POCD presents several guiding principles for the next 10 years related to being a livable city, having a robust economy, being an equitable city, being a healthy community, valuing nature, and being a regional center. The goals and strategies presented in the plan are also aligned with four main strategic themes including waterfront, TOD, housing, and neighborhoods.

The POCD encourages waterfront redevelopment efforts while recognizing the risk of coastal storms and flooding. Redevelopment objectives include development of a 3.5-mile linear trail along the waterfront and 200 acres of redevelopment in the area. The POCD further encourages the City to support coastal resilience efforts either through barriers, elevation of structures, or reintroduction of marshes.

Another goal is to concentrate dense, mixed use and walkable development around upgraded multimodal transportation infrastructure. The POCD recommends that the City improve pedestrian and bicycle access, construct Barnum rail station in East Bridgeport, and set a development goal of 4,300 housing units within one-half mile of Bridgeport station (Downtown). The development of housing is considered a critical need as 40% of the existing housing stock in the city is more than 70 years old, and the existing housing stock is too expensive for many families to afford. To this end, new development will be encouraged through zoning changes, while redevelopment is encouraged for blighted and vacant properties.

Numerous goals and strategies in the POCD are related to hazard mitigation, including (but not limited to) enhancing the resiliency of Bridgeport's neighborhoods by encouraging development of neighborhood specific coastal resiliency plans, restricting development in high risk flood plains, and supporting development of a comprehensive flood protection system for the South End neighborhood. Other strategies include implementation of the Pequonnock River Watershed Based Plan, the Rooster River Watershed Based Plan, and the Ash Creek Estuary Master Plan.

Re-imagining Downtown Bridgeport

The Downtown Master Plan was incorporated as part of the previous 2008 POCD. The Plan's vision is to transform Downtown Bridgeport into an urban alternative for young adults through a dynamic mix of entertainment, recreation, restaurants, employment opportunities and housing. The key element of the Plan is to leverage the Downtown's assets, historic buildings and architectural qualities to attract real estate development and investment. The Plan's recommendations include the installation of green infrastructure to provide better storm water management and capacity, modified landscaping to reduce the amount of hard and impervious surfaces, and the creation of a greenway along the harbor and waterfront.

The BGreen 2020: A Sustainability Plan for Bridgeport, CT

The BGreen 2020 plan was developed to guide the City's future development and land use

policies. The BGreen Plan's intent is to establish goals and objectives to promote and encourage development that would reduce the City's carbon footprint, rely on alternative energy sources and change how people move about the City. The plan's overriding theme stresses that climate change and rising sea levels are occurring and will continue in the future. The City will face long term consequences that include stronger storm surges and greater coastal flooding. These hazards will threaten the City's infrastructure and vulnerable populations. While the Plan does not specifically address natural hazard mitigation, it includes a number of actions and strategies to reduce storm water runoff, increase resiliency to climate change, sea level rise and storm surges, and encourage sustainable development. Recommended actions include:

- Increase waterfront access opportunities;
- Expand street tree planting and urban forest programs;
- Limit storm water flows into the waste water system;
- Maintain the storm water system to prevent and reduce flooding; and
- Develop green building guidelines and install green infrastructure.

Pequonnock River Watershed Based Plan

In 2010, a partnership between the City of Bridgeport and the Towns of Monroe and Trumbull was formed to develop the Pequonnock River Watershed Based Plan. The Pequonnock River flows through the three municipalities and the watershed covers about 29 square miles. While degraded water quality is a prime issue, flooding along the river is common. In Bridgeport, flooding occurs because of intense urban development along the river. Steep slopes and limited floodplain storage capacity worsens flooding in Trumbull, while lowlands adjacent to the upper reaches of the Pequonnock River in Monroe flood.

In general, the priority actions for the Pequonnock River watershed are intended to improve the water quality. However, many actions will have the secondary benefit of reducing flooding and the associated impacts. These include the installation of green infrastructure to increase the storage capacity of storm water runoff and efforts to protect, preserve and expand buffers and setbacks from wetlands and the river channel.

Rooster River Watershed Based Plan

The Rooster River Watershed Based Plan (Approved 2013) was developed through a partnership with the City of Bridgeport, the Towns of Fairfield and Trumbull, the Southwest Conservation District and the Connecticut Department of Energy and Environmental Protection. The watershed management goals, and supporting actions to restore the water quality of the Rooster River are similar to those of the Pequonnock River Plan. Actions that will mitigate flooding and possibly other hazards include:

- Reduce the impacts of storm water on hydrology and water quality through the use of Low Impact Development (LID) practices and Green Infrastructure approaches.
- Implement municipal storm water management programs to comply with state and federal permit requirements.
- Identify and remove illicit wastewater and non-storm water discharges into the Rooster River and its tributaries.
- Protect and enhance forested areas and urban tree canopy within the watershed.
- Address flooding issues through a coordinated, watershed-wide approach.
- Preserve and protect existing open space and continue to protect/acquire open space that meets resource protection and recreational goals.

Feasibility Study and Master Plan for Pleasure Beach Park

The Feasibility Study and Master Plan for Pleasure Beach Park includes a site analysis of this environmentally valuable barrier beach, as well as a vision plan and list of projects for the park. Recommendations related to hazard mitigation include:

- Reduce impervious surfaces.
- Support surface conveyance, infiltration and natural treatment of storm water.
- Remove invasive plant material and plant native and non-invasive species.

Waterfront Bridgeport Plan

The Waterfront Bridgeport Plan (WBP) focuses on recreating and transforming Bridgeport's waterfront which still resembles the city's industrial past. The goals of this plan are to increase public access, create jobs and economic prosperity, repurpose vacant or abandoned properties, encourage water-based recreation and an active waterfront, and to boost resiliency against effects of climate change.

The plan was developed with input from the City of Bridgeport, public officials, community members, and waterfront stakeholders. The WBP is meant to be a guide for action rather than just a summary of design ideas.

The framework for the plan will play a role in decisions regarding land use, public space and access, neighborhood connections, pathway characteristics, and much more. This framework and its important elements are critical to the success of the revitalization projects. The overall framework includes strategies regarding zoning and compliance, economic development, public access and amenities, design standards, natural restoration and resiliency, and waterfront advocacy and programming.

As part of the zoning and compliance aspect of this plan, it was suggested that a Waterfront Overlay Zone (WOZ) be created. Properties located within this zone would be subject to certain WOZ requirements. These regulations would come into effect when there is construction or placement of a structure, when a site being filled is significantly changed, a change in property or structure use, demolition of structures, or alterations or renovations of existing buildings. The proposed WOZ regulations address both the goals and design standards of the WBP.

The natural restoration and resilience aspect of this plan aims to restore the functional ecology of the shoreline and protect inland development with the implementation of green infrastructure approaches. The plan also looks to integrate resiliency into all redevelopment projects along the waterfront area, not just intermittently. The plan references the regulatory changes made in 2013 by New York City, which passed a Flood Resilience Zone Text Amendment. It was also suggested that existing zoning in Bridgeport be modified to allow for storm protections, such as elevating buildings above FEMA flood levels.

Regional Plan Association Fourth Regional Plan

The Regional Plan Association (RPA) Fourth Regional Plan was developed to guide or inform improvements to various aspects of the Region including economic development, climate change adaptation, sustainable communities, and transportation and infrastructure. This plan is guided by four core values: equity, health, prosperity, and sustainability. Bridgeport is a part of the Region addressed by the Fourth Regional Plan, and RPA selected Bridgeport as one of the Region's Nine Flagship Places along with communities in New York City, Long Island, the Hudson Valley, and New Jersey.

This plan acknowledges the changes and effects that have already been experienced across the region related to climate change. These recommendations revolve around adapting to a changing coastline, bringing nature into communities, improving the natural and built systems, and to create a greener energy system with more capacity.

For the region to adapt to the changing coastline, multiple recommendations are made.

- One is to protect the densely populated communities that are vulnerable to storms and flooding. Two aspects of exposure are considered for this recommendation: physical and social. Many residents situated on the vulnerable shoreline are elderly, low-income, or otherwise socially vulnerable. Some ways to improve resiliency and protect these communities is to complete projects that are underway, provide support to municipalities or communities conducting their own resilience planning, and to create a long-term adaptation plan.
- There is also the recommendation to migrate away from places that likely cannot be protected. By improving buyout programs, implementing long term adaptation plans, and knowing what is at risk, costly outcomes can be avoided, such as infrastructure and property damage. The concept of migrating away from areas that cannot be protected could be considered.

The second set of recommendations made fall under the category of bringing nature into the community.

- One suggestion is to end the discharge of raw sewage into waterways. To reduce such discharges, municipal building and zoning requirements should be set to incorporate green infrastructure approaches, stormwater utility fees could be implemented, and studies should be conducted to also evaluate the applicability of green districts. The elimination of combined sewer outflows would help alleviate pollution, and in turn improve the health of surrounding ecosystems.
- There is also the recommendation to restore the region's harbors and estuaries. Methods of doing so include maintaining the existing

habitats, restoring lost habitat, provide space for wetland migration, and to clean contaminated sites. These methods could result in improved wetland health, regulations that promote wetland migration, and protection from storms and flooding.

- Another aspect of bringing nature into our communities is to cool our communities. By cooling the communities through green approaches and green infrastructure requirements, we are preparing for rising temperatures, reducing stormwater runoff, reducing heat stress, and creating more attractive communities.

By improving the natural built systems, communities can become more connected and sustainable.

- One method is prioritizing the protection of land to help adapt to a changing climate. To establish these prioritizations, there should be an increase in state funding, and collaborations should be pursued between government and community-based groups. It is suggested that this option is the most cost effective from both an economical and environmental perspective. It could also have positive effects on drinking water, air quality, and economic impacts.
- It is also recommended to build a regional trail system. This system would improve community connectedness throughout the region, which could boost habitat migration, have positive economic impacts to surrounding communities, and provide easier access to green and open space to millions of people. Another method of adaptation is to upgrade infrastructure to high standards of resilience. Older facilities that are being upgraded and replaced should incorporate climate change resiliency into their plans. Also, projects should be prioritized that include more natural solutions. By increasing the standards of resilience, critical infrastructure will be more prepared for future inundation.

The final category for climate change adaptation is to create a greener energy system with more capacity.

- This first recommendation is to modernize the electric grid. Increasing populations will soon overtax the outdated system across the region, therefore relying on increased fossil fuel usage. Plans should be developed to create a more renewable region. A tri-state task force could be created to join stakeholders and consider new alternatives, the existing grid should be adapted to be cleaner and renewable, pricing can be used to smooth energy demands, and enhance energy storage. By implementing upgrades and alternatives, a more reliable and cleaner grid would be available.
- Also, it is recommended to scale up renewable energy sources. The region has a goal of greenhouse gas reduction of 80% by 2050. Local communities should collaborate to promote renewable energies through land use planning and organization. New Jersey and Connecticut should follow the precedence New York set and require utilities to generate a minimum of 50% of their energy from renewable sources, and larger cities and public authorities should pursue renewable energy to power their operations and influence the market.
- To create a greener energy system, demand should be managed with energy efficient buildings and variable pricing. Building energy efficiency codes should be strengthened, and pricing and smart technology can be used to manage demand. By encouraging energy reductions, and adopting stricter efficiency regulations could improve air quality, reduce greenhouse gas emissions, and would promote renewable energy across the region.
- The final recommendation is to electrify buildings and vehicles. Large, old buildings across the region play a major role in greenhouse gas emissions, therefore a cap should be implemented on large, urban buildings therefore promoting efficiency and reducing emissions. Also, electric vehicles should be increasingly promoted with regional incentive programs, and make the vehicle charging network more extensive. By electrifying cars and buildings, in conjunction with a cleaner grid, there would be a reduction in emissions, and subsequently limiting the effects of climate change.

Town of Easton

The Town of Easton is a low density residential community. The newly adopted POCD (2018) notes that in the previous ten years population has aged, school enrollments have declined, and housing values have risen while demand has changed.

Due to the high proportion of land that is set

aside as public water supply watershed areas, the Town's land pattern provides substantial natural open spaces, wetlands and watercourse buffers and limited impervious surface land cover. Flooding problems are limited to certain areas along the Aspetuck River, but the flooding is generally limited due to the existing land patterns.

The POCD discusses various natural hazards that may affect the Town, including wind storms, flooding, drought, and other events such as winter storms. The Plan includes recommendations for regulations that will increase oversight and the control of activities within the floodplain, limiting the possibility of flooding and related damage to properties. The Plan also states that the Town is committed to collaborating with MetroCOG in the Regional Hazard Mitigation Planning process.

Town of Fairfield

The Fairfield POCD was last adopted in 2016 to incorporate a variety of local and regional planning efforts. However, as the majority of the current POCD is carried over from the 2000 POCD with respect to goals and policies, a more comprehensive POCD update is currently underway with the goal of completion in 2020.

As a coastal community with a substantial and diverse shore area, the possible consequences from sea level rise and more extensive storm surges are considered an imminent threat to the Town. These concerns were incorporated into the 2000 POCD by integrating the recommendations of the Town's Shoreline Advisory Committee and its Shore Area Management Plan (2000) and subsequently were carried forward into the 2016 POCD.

The Fairfield POCD recognizes the inherent dangers from flooding and erosion of beach areas. A long list of actions to help protect the shoreline and reduce damage to property and personal injury is included in the POCD. The key goals and objectives from the POCD relating to the shoreline area are preserving existing natural resources, limiting development in sensitive areas, protecting tidal and shoreline inland wetlands, acquiring sensitive parcels, and continuing participation in the National Flood Insurance Program.

While the POCD recommends non-structural actions where possible, several physical systems have been installed to help stabilize beaches and to protect and stabilize waterfront properties. The POCD recognizes the value of these systems and recommends their maintenance. Furthermore, the POCD recommends that certain coastal developments begin to take precautions to mitigate vulnerabilities.

Town of Monroe

Monroe's POCD was drafted in March of 2010. The Town anticipates beginning an update in 2019. The following discussion is based on the 2010 edition of the POCD.

The Plan describes the Town as containing a large quantity of inland wetlands, streams, lakes and rivers. To designate the minimum regulatory jurisdiction of the Monroe Inland Wetlands Commission for any disturbances and alterations, an upland review area was added around these features. Any activity that might have an impact on wetlands, including excavation, filling, building, obstructions, potential pollution sources, clearing and grading is regulated, whether or not the activity occurs in the wetland itself or on land adjacent to the wetland.

One of the key goals of the Plan is to exercise stewardship over Monroe's natural features, such as wetlands, streams and Lake Zoar. The Plan recommends the protection and conservation of natural resources including wetlands, as they function as a natural storage basin for floodwaters. The responsibility for reviewing and regulating activities within and adjacent to these natural resources is vested in Monroe's Planning and Zoning Commission (P&Z) and Inland Wetlands Commission.

While the Plan focuses on actions to ensure the character of the Town and guide future land development, many of the recommendations also mitigate adverse impacts caused by extreme weather events. Establishing undisturbed buffers and setbacks along river edges and wetlands and discouraging impervious surfaces provides storage capacity for flood waters, limits damage to property and reduces the hazards and costs associated with flooding. In addition, the Plan recommends restricting the types of land uses that may be located within the designated 100 year flood elevation. Floodplains and wetlands would be retained in their natural state to the maximum extent possible so as to preserve water quality, protect water retention capabilities, and facilitate flood flow levels.

The Plan includes a section on sustainable de-

velopment. While many of the suggested policies are not specifically targeted at mitigating natural hazards, they have a beneficial impact on Monroe and will help reduce flooding and storm damage.

Town of Stratford

Stratford on the Housatonic

The Town of Stratford POCD was adopted in 2014. Reflecting current perspectives and recent events, the draft Plan includes a chapter on "Climate Change Action & Preparedness." With 14 miles of waterfront along the Housatonic River and Long Island Sound, the Town is concerned with the possible effects of sea level rise and excessive storm surges and is actively considering actions to lessen potential impacts. A recommended action step included in the Plan is to work with MetroCOG and other regional entities on addressing climate change and hazard mitigation issues to ensure an environmentally sustainable region.

Inland and coastal flooding and impacts from storm surges are specifically addressed in the Town of Stratford's POCD. The Plan indicates that flooding along the Housatonic River is generally limited to adjacent properties and does not extend far inland. Heavy rain events cause some flooding along Bruce Brook, Pumpkin Ground Brook and Raven Brook. The coastal area of Stratford experiences flooding from storm surges. However, the Lordship section is generally not impacted because of higher base elevations.

Several actions are included in the Plan to increase awareness of the potential impacts from climate change and to mitigate these impacts:

- Minimize impacts of development upon natural landscapes, habitats and watercourses;
- Protect and preserve the Great Salt Marsh, Long Beach, Short Beach and area between Stratford Point and Short Beach;
- Develop and adopt a town sustainability plan and identify critical areas at risk from the impacts of climate change;
- Prioritize acquisition of land and conservation easements for habitats most at risk from climate change;
- Acquire land and conservation easements to provide upslope "advancement zones" to accommodate rises in water levels adjacent to tidal marshes;
- Remove threatened structures from vulnerable shorelines, especially those exposed to the Long Island Sound;
- Implement the recommendations contained in the Natural Hazard Mitigation Plan; and
- Perform engineering studies to determine the best way to protect infrastructure subject to extreme flooding.
- Work with MetroCOG and other regional entities to address climate change and hazard mitigation issues to ensure an environmentally-sustainable region
- Enroll in the FEMA Community Rating System (which has occurred).

Stratford Coastal Community Resilience Plan

The Stratford Coastal Community Resilience Plan (2016) presents an overview of coastal flooding hazards facing the town in the future, including sea level rise, tidal flooding, and extreme flooding. The vulnerability and risk assessment identifies that the employment growth district and the South End neighborhood are at high risk of being affected by sea level rise. Other components at risk of sea level rise include sanitary sewer infrastructure, stormwater management systems and tide gates, hazardous materials facilities, state and primary roads, vulnerable populations, and natural resources. Specific flood mitigation projects are identified within the three resiliency strategies of Retreat, Accommodate, and Protect.

Roosevelt Forest Management Plan

The 2011 Plan was developed to guide management of the 401-acre Roosevelt Forest in northern Stratford. At the time of the plan, the forest had not received any active forest management for more than 40 years. Major recommendations include improving trailheads and signage, development of management techniques for controlling growth with timber harvesting, and development of cooperative agreements with other groups for maintenance and public education activities.

Town of Trumbull

The POCD for the Town of Trumbull was adopted in 2014. The Plan contains a section devoted to minimizing impacts from flooding and natural hazards, describing such practices as avoiding the placement of new development in vulnerable areas, avoiding placing vulnerable populations in vulnerable areas, and ensuring critical facilities are accessible during an emergency. Additional strategies discussed that are related to hazard mitigation

include the importance of protecting wetlands, limiting development within buffers as a flood control measure, green infrastructure, low impact development and a more reliable and resilient electrical system.

The Plan describes the Town as a largely built-up, residential community. The main goal of the Plan is to preserve the current high quality of life valued by Town residents. As an inland community, Trumbull is more often affected by flooding caused by severe and extensive rain events. The Plan encourages the promotion of greenway trails (such as the Pequonnock River Trail) to interconnect parks and open spaces. Ensuring adequate waste water capacity to meet future development is also emphasized in the Plan.

The Plan provides improved design guidance and an improved design review process. Property owners are encouraged to preserve and maintain historic structures. A village style and walkable development patterns at the Town Hall area, Town Center and Long Hill Green are emphasized. In office parks, a campus-style development is promoted and allowing taller buildings in appropriate areas may also be considered. A "complete streets" approach to accommodate pedestrians, bicycles, and transit, and to address access management and transit improvements is also recommended in the POCD. The Plan also recommends that Trumbull enter into the FEMA Community Rating System, which subsequently occurred.

2.2 Review of Municipal Websites

Each municipality of the MetroCOG region has developed and maintains a website highlighting their community, town services and other important information. The websites were examined to understand how residents are informed about natural hazards and disasters and about how to prepare for, plan for and endure an event. In general, each municipality has established an office or department of emergency management with the responsibility for preparing and handling a wide range of emergencies, including natural hazards.

The webpages that describe emergency procedures vary in detail and are provided either as a direct link on the municipal website or as link to another department's website, usually the fire department.

City of Bridgeport

The City of Bridgeport has Department of Emergency Management and Homeland Security, headed by a Director of Emergency Management and Homeland Security. The main webpage for the department provides an overview of its mission and lists current alerts and updates. Additional links are provided for various emergency planning resources, including the following:

Bridgeport 311: This system allows citizens and city employees to automatically and immediately contact the department responsible for an issue, such as to request a recycling bin, report a pothole or confirm a tax payment.

City of Bridgeport Hazards: This webpage lists a series of links to one to two page pamphlets that explain how to prepare for a hazard and how to endure one. Among the natural hazards covered are:

- Earthquakes
- Extreme Heat
- Extreme Cold
- Flood Planning and Preparedness
- Severe Storms
- Thunderstorms and Lightning
- Tornadoes
- Winter Storm Planning and Preparedness
- Hurricane Storm Surge (SLOSH) Map
- Flood Zone Map

Planning Toolkits

This webpage provides links to a series of one to two page pamphlets on how to prepare for a disaster, reasons to prepare and how to cope with a disaster. The webpage includes an emergency supply checklist.

Emergency Registration

The City operates a Reverse 911 (R911) system that notifies residents of an emergency, including natural disaster alerts. The webpage explains why and how to register a home landline telephone number to receive notification. Registration is especially important for those with special needs.

Hurricane Preparedness

This webpage provides links to various news and press releases by the Emergency Operations Center (EOC) and the Mayor's Office in advance of, during and after a hurricane. Links are provided to the websites of the National Weather Service, United Illuminating Company and Southern Con-

necticut Gas Company.

The Emergency Management and Homeland Security webpage may be accessed under the listing of Departments on the City's main webpage (www.bridgeportct.gov).

Town of Easton

Contact information for the Town's Emergency Management Director is posted online. The Town's website provides links for the National Weather Service, CT Alerts, United Illuminating, the American Red Cross, and other agencies.

Town of Fairfield

Emergency information for the Town of Fairfield is provided on the Town website (www.fairfieldct.gov) under the major heading "Public Safety". The Public Safety page provides links to the Community Emergency Response Team, CodeRED (R911), Emergency Management, Emergency Medical Services, Emergency Preparedness Resources, the Fairfield Citizen Corps Council, Storm Information, the Fire Department, and the Police Department. Some of these have extensive pages described in detail below:

Emergency Management

The Emergency Management Team webpage describes the Emergency Management Team, the town's Emergency Operations Center, and advertises the Town emergency information hotline that residents can call to hear recorded messages (203-254-4899).

Emergency Preparedness Resources

This section outlines the various public notification methods used by the town to notify residents in case of emergency, including CodeRED (R911), the Storm Information page, email list, and the Town emergency information hotline. The page also provides links to various emergency information brochures and pamphlets on disaster planning, severe weather preparation, power failures, and public health emergencies as well as providing links to a variety of informational websites.

Storm Information Page

This page provides a feed of announcements related to Town office closing information, and a real-time road closure map updated with information reported to the Town's Emergency Operations Center. Links are also provided for information on storm preparedness, power outages, downed cable and telephone lines, and general storm-related resources.

Flood Protection Page

This page (https://fairfieldct.org/floodprotection) provides links to various flooding-related resources. It explains how residents can access FEMA flood insurance information as well as providing information on the town's Flood and Erosion Control Board and other flood control measures. The also provides links to recent efforts conducted under FEMA grant programs.

Town of Monroe

Emergency information for the Town of Monroe is provided on the Town website (www.monroect.org) under the major heading "Public Safety". The Public Safety page provides links to the Police Department, Fire Departments, Emergency Medical Services, and the Community Emergency Response Team.

An additional page dedicated to Emergency Preparedness encourages residents to sign up for emergency notifications through the CodeRED (R911) system, check the town webpage for urgent messages scrolling in a red banner at the top of the page, and to sign up for the Town's *News and Announcements* email list. The page also provides links to various emergency information brochures and pamphlets on disaster planning, severe weather preparation, power failures, and public health emergencies as well as providing links to a variety of informational websites.

Town of Stratford

Emergency information for the Town of Stratford is provided under the Emergency Management Director heading under the Town Hall section of the website (www.townofstratford.com). This page provides a variety of information about the Emergency Management Director's role, as well as a variety of fire safety tips and information. The page also provides instructions for how to compile a basic emergency kit, as well as downloadable pamphlets regarding preparing for, surviving, and recovering from floods, winter storms, extreme cold, hurricanes, power outages, and using a generator.

The Town has a dedicated page for flood-

ing (http://www.townofstratford.com/content/39832/39846/39911/40359.aspx) that discusses major causes and types of flooding. The webpage also provides guidance on preparing for floods, what to do during a flood, and how to recover from a flood.

Town of Trumbull

Emergency information for the Town of Trumbull is provided on the Town website (www.trumbull-ct.gov) under the major heading "Public Safety". The Public Safety page describes the Office of Emergency Management and encourages residents to sign up for the Trumbull Citizen Alert Emergency and Community Notification (R911) program. The page also provides links to the Community Emergency Response Team, Emergency Management Office, Emergency Medical Services, Fire Departments, and Police Department. Additional pages are also dedicated to Emergency Preparedness and Storm Information as described below. Note that parking bans, closing information, and other cancellations due to storms are posted in a red banner in the header of the Town's website.

Emergency Preparedness Information

This section encourages residents to sign up for the R911 program as well as alerts from the local electric utilities (United Illuminating and Eversource). The page also provides instructions on preparing for a disaster by creating a first aid kit, stockpiling food, gathering tools and supplies, making a family emergency plan, and protecting your possessions. Links are also provided for assistance in preparing for extreme cold or heat.

Storm Information Page

This page provides a series of links to where to find information regarding forecast information, town closures and cancellations, utility outages, and links to other general storm-related resources.

2.3 Government Structure

The government structure of each MetroCOG jurisdiction varies, as the structure typically relates to the respective size and complexity of the community.

City of Bridgeport

The City of Bridgeport has a Mayor-Common Council form of government. The Mayor is the Chief Executive Official, while the twenty members of the City Council act as the legislative body for the City. The two major responsibilities of the Council are enacting ordinances necessary to govern the City and adopting the annual budget. Members of the City Council serve and are elected for two-year terms, while the Mayor is elected for a four-year term.

The Chief Administrative Officer, appointed by the Mayor is responsible for coordinating department management and operational policies. The following departments have jurisdiction and responsibility for ensuring the health, safety and welfare of the City's residents:

Building Department

The Building Department issues permits and inspects work done to all buildings and other structures. Applications for permits are reviewed for conformance to all applicable laws, codes and ordinances. Permits and inspections ensure public safety, health and welfare insofar as they are affected by building construction, through structural strength, adequate exit facilities, fire safety, light and ventilation and sanitary equipment.

Emergency Management & Homeland Security

The mission of the Office of Emergency Management is to protect the lives and property of citizens in the City of Bridgeport. This is accomplished through providing 24-hour emergency assistance by mobilizing and deploying personnel and resources, updating emergency operations plans and strategies, training emergency personnel, managing the emergency operations system, and warning and informing the public of emergencies and disasters.

Engineering Department

The Engineering Department provides engineering services to the City's Departments and Commissions to ensure a safe and efficient traffic system. The Engineering Department makes recommendations, administers public improvement projects, provides technical data, assistance, survey, and design and prepares and maintains City record maps.

Health Administration & Social Services

The mission of the Health Administration is to promote and protect the health of the people of Bridgeport through the provision of essential health services, monitoring of programs, enforcement of laws and ordinances, and collection of health information. Social Services provides for the social and economic well-being of Bridgeport's indigent and working poor residents.

Parks & Recreation Department

The Parks Department provides well-maintained, enjoyable park grounds and facilities to enhance the quality of life for City residents and visitors. The department's goals are to preserve and protect open spaces, provide opportunities for active and passive recreation, and maintain the landscapes, structures, streams, and woodlands within these areas.

Office of Planning & Economic Development

The Office of Planning & Economic Development (OPED) is a multi-disciplinary organization responsible for economic development, neighborhood revitalization, business development, planning and zoning, historic districts, land use, design review, building permits and inspections and related issues.

Public Facilities Administration

The mission of Public Facilities is to provide residents with the services that are required to ensure a clean, safe and healthy environment for the City of Bridgeport.

Planning & Zoning Commission & Zoning Board of Appeals

The mission of the Planning and Zoning Commission and the Zoning Board of Appeals is to promote health, safety, quality of life and the overall general welfare of the community through the enforcement of Bridgeport's Zoning Regulations.

Park City Communities

Formerly known as the Bridgeport Housing Authority, Park City Communities (PCC) was created in 1936 to address poor housing conditions in Bridgeport and to develop and maintain affordable housing. The PCC provides nearly 2,600 public housing equivalent units that serve low income families, seniors, and people with disabilities. The PCC is diversifying its housing stock by developing new housing for low and moderate income residents.

Water Pollution Control Authority

The Water Pollution Control Authority (WPCA) operates Bridgeport's two wastewater treatment facilities and maintains the City's sewer system.

Town of Easton

The Town of Easton is governed by a Board of Selectmen, made up of three Selectmen elected together for two-year terms. The Board is responsible for the administration of town affairs. The First Selectman serves as the Town's Chief Administrative Officer and highest elected official. Easton does not have a town charter and is governed by the Connecticut General Statutes. An annual Town Meeting is held to decide budgetary matters. The annual budget, prepared by the Board of Finance, is adopted at the Annual Town Meeting. Special town meetings may be called throughout the year by the Board of Selectmen or by petition of town residents.

Various town departments and commissions have jurisdiction and responsibility for ensuring the health, safety and welfare of its residents:

Building Department

The Building Department issues permits and inspects work done to all buildings and other structures. All types of new construction are reviewed and permitted by the Building Department. The Building Department ensures buildings are constructed in conformance to all applicable laws, codes and ordinances.

Public Works Department

The mission of Public Works Department is to maintain and improve the town's road system and perform responsibilities that include snow and ice removal, street sweeping, roadside mowing, tree and brush removal, drainage installation and catch basin cleaning.

Planning & Zoning Commission & Planning Department

The Planning and Zoning Commission enforces the Town's Zoning and Subdivision Regulations and studies and debates proposed revisions to the regulations.

Conservation Commission

The Conservation Commission acts as the Town's Inland Wetlands and Watercourses Agency and enforces the State's regulations pertaining to wetlands and watercourses. The Conservation Commission reviews applications to conduct activities in regulated areas.

Parks & Recreation Commission

The Parks and Recreation Commission oversees and manages parks and open spaces. The goals of the Commission are to preserve and protect open spaces and provide opportunities for active and passive recreation.

Town of Fairfield

The Town of Fairfield operates under a Representative Town Meeting (RTM) form of government. RTM members are elected to two year terms by the residents of the Town's voting districts. There are ten voting districts and each district elects five members to the RTM. The Board of Selectmen is Fairfield's executive policy board and is comprised of three members. The First Selectman serves as the Chief Elected Official for a four year term. The other two members are elected to two year terms.

Various town departments and commissions have jurisdiction and responsibility for ensuring the health, safety and welfare of residents:

Fairfield Citizen Corps Council

The Citizen Corps Council is comprised of volunteer residents and representatives from the Police, Fire, and Health Departments, as well as from the First Selectman's Office. The Council was established as part of ongoing homeland security plans to educate the public on public safety procedures, help citizens take active roles in protecting themselves during events and provide information on what to do in an event. The Council also works with the American Red Cross. A partner group of the Citizen Corps is the Community Emergency Response Team (CERT). This team is a group of volunteers who have completed basic FEMA training on how to assist and support emergency personnel and participate in the response to a major event or disaster.

Office of Emergency Management

The Office of Emergency Management coordinates resources for Fairfield's first responders and plans and trains for response to extended situations. The Office prepares local emergency plans.

Conservation Department

The Conservation Department addresses the Town's broad environmental quality goals through work to enhance and restore Fairfield's natural resources, as well as to educate the public concerning the natural environment. Efforts include the restoration of stream water flows, water polluted by industrial wastes, and public trust lands. The Conservation Department cooperates with community groups in removing debris and trash from coastal waters and establishing outreach projects.

Public Works Department

The Public Works Department maintains and improves the town's road system and performs other responsibilities that include snow and ice removal, street sweeping, roadside mowing, tree and brush removal, drainage installation and catch basin cleaning.

Office of Community & Economic Development

The Office of Community & Economic Development develops and administers programs to stimulate and encourage economic development, revitalize and strengthen neighborhoods, facilitate and promote affordable housing and preserve and enhance the overall well-being of the community.

Engineering Department

The Engineering Department provides engineering services to other Town Departments and Commissions to ensure a safe and efficient traffic system by making recommendations, administering public improvement projects, providing technical data, assistance, survey and design and the preparation and maintenance of Town record maps.

Parks & Recreation Department

The Parks Department manages and maintains various recreational facilities, including 170 acres of active parks and five miles of beaches. The Department's facilities provide enjoyable park grounds that enhance the quality of life for Town residents.

Town Plan & Zoning Department

The Town Plan and Zoning Department (TPZ)

works with the development community to guide them through the Town's regulatory processes, neighborhood and redevelopment plans, and other siting issues associated with investment opportunities. The TPZ is responsible for preparing and maintaining the Town's Plan of Conservation and Development. The TPZ also administers the Town's floodplain management requirements and coordinates the Town's Community Rating System applications and recertifications.

Town of Monroe

The Town of Monroe is governed by a First Selectman and a nine-member Town Council, all of whom serve two-year terms. The First Selectman serves as the Chief Executive Officer of the Town and is responsible for the administration and supervision of all departments, agencies and offices of the Town. The First Selectman also holds all of the executive powers vested by law or by the Town Charter. The Town Council serves as the Legislative Branch and has the power to enact, amend and repeal ordinances and the power to create or abolish by ordinance boards, commissions, departments and offices of the Town, in addition to other general powers and duties.

Various town departments and commissions have jurisdiction and responsibility for ensuring the health, safety and welfare of Monroe's residents. Town departments typically provide reviews and reports to the Boards and Commissions upon request.

Building Department

The mission of the Building Department is to maximize building safety for the general public and uphold the State Building Code, efficiency and public relations. The Building Department conducts plan reviews, issues permits and Certificates of Occupancies, performs inspections and coordinates all Town department approvals to achieve the maximum building safety for the general public.

Economic Development Commission

The Monroe Economic Development Commission (EDC) conducts research into economic conditions and trends, makes recommendations to the appropriate officials and agencies and promotes economic development and assists with business development, recruitment and retention.

Emergency Management Department

The Emergency Management Department coordinates resources for Monroe's first responders and plans and trains for responding to extended situations. The Emergency Management Department also prepares local emergency plans.

Public Works Department

The mission of Public Works Department is to enhance the quality of life of Monroe residents and maintain and improve the town's road system.

Planning & Zoning Commission & Planning Department

The Planning and Zoning Commission is responsible for the physical, social and economic planning and coordinated development of Monroe. The Commission prepares, adopts, and implements a Plan of Conservation and Development, reviews and recommends municipal improvements, and adopts and amends both zoning and subdivision regulations.

Engineering Department

The Engineering Department provides technical assistance to the public and other town departments relating to development within the town, traffic issues, drainage and utility work.

Inland Wetlands Commission

The Inland Wetlands Commission enforces the provisions of the State's Wetlands and Watercourses Act pertaining to wetlands and watercourses. The Commission reviews applications to conduct activities in regulated areas, issues permits and considers amendments to the Town's regulations. The Commission also provides enforcement and educational services.

Conservation Department

The Conservation Department addresses the Town's broad environmental quality goals through its work to enhance and restore Monroe's natural resources.

Parks & Recreation Department

The Parks Division oversees and manages parks and open spaces. The Department's goals are to preserve and protect open spaces and provide opportunities for active and passive recreation.

Town of Stratford

Stratford has a Mayor-Town Council form of government, with the Mayor designated as the Chief Executive Officer. The Town Council acts as the Town's legislative body and is comprised of ten members whom serve two year terms. The Mayor is elected to a four-year term.

Various town departments and commissions have jurisdiction and responsibility for ensuring the health, safety and welfare of Stratford's residents:

Building Division

The Building Division is responsible for the enforcement of all construction and building codes and issues building permits and Certificates of Occupancies. Flood zone information is available through this office.

Office of Economic Development

The Office of Economic Development promotes goals, strategies and plans for attracting and retaining businesses to Stratford. The Office reviews and evaluates proposed projects.

Office of the Mayor/Chief Administrative Officer

The Chief Administrative Officer heads mitigation efforts and is responsible for coordinating with the Emergency Management Director in the Emergency Operations Center (EOC), which opens during major events to coordinate resources and response. The Emergency Management Director acts as the liaison between the Chief Administrative Officer/Office of the Mayor, first responders, local businesses, other cities and towns and the State.

Public Works Department

The mission of the Public Works Department is to maintain and improve the infrastructure of the Town of Stratford. The Department includes several offices and divisions, including engineering, highways, conservation, parks, and inland wetlands.

Planning & Zoning Department

The Planning and Zoning Department has the primary responsibility for managing land use in Stratford. The office handles applications for zoning compliance, changes and waivers, reviews plans for the subdivision of land, coastal site plan reviews, erosion and sedimentation control actions, and special case approvals. The office is involved in long-range planning and prepares the Town's Plan of Conservation and Development.

Health and Community Services Departments

The Stratford Health and Community Services Departments are responsible for health emergency preparedness and planning efforts, and coordinates these efforts with state, regional and local agencies responsible for emergency planning.

Engineering Division

The Engineering Division is responsible for construction administration and the management of municipal capital improvement projects, plan reviews, map record keeping, permitting and inspection for work relating to sewers, roads, sidewalks and curbs.

Highway Division

The Highway Division is responsible for maintaining the Town's highway system, including the pavement structure, storm drains, drainage inlets and outlets, and sanitary sewers.

Inland Wetlands and Watercourses Agency

The Inland Wetlands and Watercourses Agency enforces the provisions of the State's Wetlands and Watercourses Act pertaining to wetlands and watercourses. The Agency reviews applications to conduct activities in regulated areas, issues permits and considers amendments to the Town's regulations.

Parks Division

The Parks Division provides clean, safe and aesthetically pleasing areas where the public can enjoy outdoor activities. The mission of the Parks Department is to improve the appearance and the functionality of park facilities, fields, playgrounds and beaches. The Division has responsibility for maintaining all town trees.

Stratford Public Schools

Several Stratford Public School facilities are used as shelters, in the event residents have to evacuate an area.

Stratford Housing Authority

The Stratford Housing Authority is independent of the Town of Stratford. This quasi-public corporation owns and manages 514 family and

elderly apartments, and, through the Federal Housing Choice Voucher Program, assists another 280 families residing in private apartments in the Town of Stratford.

Town of Trumbull

The Town of Trumbull is governed by a Town Council and a First Selectman, each serving two year terms. The administration of town affairs lies with the twenty-one elected members of the Town Council. The First Selectman is Trumbull's Chief Administrative Officer and highest elected official.

Various town departments and commissions have jurisdiction and responsibility for ensuring the health, safety and welfare of Trumbull's residents:

Building Department

The Building Department reviews construction documents for compliance with State Building Codes and issues building permits.

Economic and Community Development

The Economic and Community Development Department promotes goals, strategies and plans for attracting and retaining businesses to Trumbull and strengthens the Town's economic base in a manner with the Town's goals and vision.

Office of Emergency Management

The Office of Emergency Management (OEM) develops plans for preparing for and responding to natural and man-made emergencies. Responsibilities include documenting emergency response plans and procedures, training personnel, acquiring equipment, and coordinating with other departments. In the event of an emergency, the OEM mobilizes and deploys personnel and resources, notifies the public and manages the emergency event to maximize resources and minimize any negative impact.

Public Works Department

The mission of the Public Works Department is to maintain and improve the infrastructure of the Town of Trumbull.

Planning & Zoning Department

The Planning and Zoning Department handles all administrative functions of the Planning and Zoning Commission and the Zoning Board of Appeals and has the primary responsibility for managing land use in the Town. The Department is involved in long-range planning and prepares Trumbull's Plan of Conservation and Development.

Engineering Department

The Engineering Department is the technical service advisory division of the Public Works Department and provides adequate controls to ensure responsible construction within the Town. The Department designs projects carried out by the Highway Department, provides technical advice to the Planning and Zoning Commission and Inland Wetlands and Watercourses Commission (IWWC), and provides engineering services and advice to other Town departments.

Inland Wetlands and Watercourses Commission

The Inland Wetlands and Watercourses Commission evaluates Trumbull's wetlands and acts on any permit requests that affect designated wetlands. The Commission conducts field investigations of all properties in question and enforces the provisions of the State's Wetlands and Watercourses Act.

Conservation Commission

The Conservation Commission is a science-based advisory commission that oversees the protection and supervision of natural resources in Trumbull. The Commission acts in an advisory capacity to the Town's regulatory land use boards and makes recommendations regarding open-space, watershed plans, and natural resource preservation.

Parks Department & Commission

The Trumbull Parks Commission and Department are responsible for the care, management and control of all parks and grounds used for park and recreational purposes and all structures thereon. Together with other municipal departments, their mission is to maintain and enhance park and recreational facilities.

2.4 Planning Teams

MetroCOG is the Council of Governments (COG) and Regional Planning Organization (RPO) for the Greater Bridgeport Region. MetroCOG is composed of six member municipalities:

City of Bridgeport Planning Team

Name	Title
Lynn Haig	Director of Planning
Jon Urquidi	City Engineer
Megha Jain	Engineering

Town of Easton Planning Team

Name	Title
Adam Dunsby	First Selectman
Ed Nagy	Director, Public Works/Engineer

Town of Fairfield Planning Team

Name	Title
William Hurley	Town Engineer
Laura Pulie	Assistant Town Engineer
Brian Carey	Conservation Director
Emmeline Harrigan	Planning & Zoning
Jim Wendt	Planning Director
Dennis McCarthy	Emergency Management Director
Joseph Michelangelo	Director, Public Works

- City of Bridgeport
- Town of Easton
- Town of Fairfield
- Town of Monroe
- Town of Stratford
- Town of Trumbull

At the onset of the planning process, Metro-COG contacted local coordinators to assemble local planning teams to coordinate and provide direction in the development of the regional NHMP update and to provide local input into the plan, including updates to the lists of critical facilities (Appendix A). The tables on the next page present the Planning Teams from each community. They provided information, data, studies, reports, and observations; and were involved in the development of the Plan update.

In contrast to the 2014 NHMP Update, the Planning Teams were smaller in each community with the exception of Monroe. See Appendix C for a description of the previous planning process. This downsizing is attributable to the Region's two

Town of Monroe Planning Team

Name	Title
Ken Kellogg	First Selectman
Scott Schatzlein	Town Engineer
Keith White	Police Department
Dave York	Emergency Management Director
William Agresta	Planning & Zoning Administrator
Chris Nowacki	Director of Public Works
Rick Schultz	Town Planner
James Sandor	Chief Building Official

Town of Stratford Planning Team

Name	Title
Laura Hoydick	Mayor
Jay Habansky	Planning and Zoning Administrator
Susmitha Attota	Town Planner
John Casey	Town Engineer
Larry Ciccarelli	Director of Public Safety
Mary Dean	Economic Development Director
Thomas Albert	Public Works Director
Christina Batoh	Conservation Administrator
Michael Downes	Chief of Staff to Mayor

Town of Trumbull Planning Team

Name	Title
Frank Smeriglio	(Former) Town Engineer
William Maurer	Assistant Town Engineer
Rob Librandi	Land Use Planner

previous NHMPs and other planning initiatives that are being implemented at the local or regional level. Additionally, MetroCOG also worked with The Nature Conservancy to host Community Resilience Building (CRB) Workshops, which provided Planning Team members and other key stakeholders the opportunity to provide input into the NHMP Update.

An extensive data collection, evaluation, and outreach program was undertaken to compile information about existing hazards and mitigation efforts in the Region. Direct input from the local Planning Teams, which typically included municipal engineers, planners, public safety officials, chief

elected officials, and other applicable staff was essential to identifying priority areas for hazard mitigation.

2.5 Conservation Technical Advisory Committee

The Conservation Technical Advisory Committee (CTAC) is an advisory body to the MetroCOG. The primary responsibility of the CTAC is to serve as the regional forum for consideration of any activity related to the enhancement of the natural environment within the region. These include the maintenance and implementation of the recommendations within the Pequonnock River Watershed Management Plan, guidance on brownfield projects, monitoring of coastal resilience initiatives and other activities as they relate to the protection and conservation of the natural environment within the region. Each MetroCOG municipality is formally represented on the CTAC with a member of the local Conservation Commission and a staff member with responsibilities related to conservation. Meetings of the CTAC are held quarterly and are open to the public. In addition to the appointed members, meeting attendees typically include local conservation organizations, residents, staff of the Connecticut Department of Energy and Environmental Protection and other regional stakeholders.

Throughout late 2018 and 2019, MetroCOG staff provided continuous updates regarding the NHMP Update at each CTAC meeting. CTAC members and attendees were able to provide comments, feedback and guidance as the NHMP Update was being drafted. Members typically commented on the progress but also suggested points of contact and areas of specific concern. Once the NHMP Update was drafted, CTAC was provided an opportunity to review the narrative and mitigation strategies and members submitted feedback and other potential mitigation strategies.

2.6 Hazard Mitigation Workshops

In response to recent extreme events, the need to increase resilience and adapt to these events has become more apparent, especially for coastal communities. As part of the NHMP Update, MetroCOG partnered with The Nature Conservancy (TNC) to sponsor and conduct Community Resilience Building (CRB) Workshops. The Workshops were held to provide a more robust planning process and to also offer an opportunity for key stakeholders to provide valuable input into the development of the NHMP Update. Workshops were held on the following dates:

- Fairfield: February 26, 2019
- Bridgeport: March 12, 2019
- Easton, Monroe, & Trumbull: March 13, 2019

Municipal staff and key stakeholders were invited to participate in the workshops for each respective community. The focus was on engaging those most involved in planning for and responding to natural hazards in conversations about risks and vulnerabilities. Through this effort, concerns and challenges facing the municipalities were discussed and vulnerable populations and locations were identified. By focusing on the concerns and challenges that face each community, workshop participants identified and prioritized actions to mitigate the impact of natural hazards, and identified opportunities to collaboratively advance actions to increase community resilience. Summary reports from each workshop provide an overview of the top hazards affecting each community, the current concerns and challenges, current strengths, and proposed actions.

The key element of the workshops was breaking participants into small groups to facilitate discussions and the exchange of ideas, concerns and perspectives. This approach was successful in producing rich information and experiences on recent natural events and recommendations to improve resilience to natural hazards.

Copies of the 2019 CRB reports are presented in Appendix C.

The CRB workshops were also conducted in 2013 to support the 2014 NHMP. Based on positive feedback from public officials, municipal staff, and local stakeholders, MetroCOG decided to conduct the CRB Workshops during this NHMP Update. The narrative below has been updated to support the current CRB findings.

City of Bridgeport

The workshop in the City of Bridgeport was held on March 12, 2019. Staff from TNC and MetroCOG facilitated the workshop and ensured interactive discussions about the natural hazard risks facing the Town. A total of 11 people attended the workshop. These participants represented a wide

City of Bridgeport CRB Attendees

Name	Title or Affiliation
Ellie Angerame	Green Village Initiative
Scott Appleby	City of Bridgeport Director of Emergency Management and Homeland Security
Jim Gilroy	PSEG Power Connecticut, LLC
Lynn Haig	Director of Planning
Megha Jain	Engineering Department
Ed Lavernoich	Bridgeport Economic Development Corp., Bridgeport Regional Business Council
Kris Lorch	Alloy Engineering Co., Inc.
Lauren Mappa	Water Pollution Control Authority
Joe Provey	Seaside Village
Kai Starn	Seaside Village
Steve Tyliszczak	Bridgeport Landing Development

range of city departments, non-government organizations, private sector interests, and residents as presented below.

The participants were asked to identify natural hazards that impact and affect Bridgeport. The hazards identified were based on the experiences and knowledge of recent events. Recent events influenced the discussions and most spoke about the impacts of storm surge from hurricanes, inland flooding from intense precipitation events such as the September 2018 storm, nor'easters, and heat waves.

These and other events have had direct and severe impacts on several neighborhoods and natural areas of the city. Neighborhoods most vulnerable to natural disasters were the Black Rock, South End, East End, East Side, and Chopsey Hill sections of the City. Impacts to natural features and ecosystems were mostly found along the shoreline, including Ash Creek, Johnson's Creek, Seaside Park and Pleasure Beach, as well as Rooster River, Island Brook, and the Pequonnock River. Because of the urban and built-up character of Bridgeport, various facilities and infrastructure are at risk from the effects of extreme storms. Concerns were raised about damage to cultural facilities, such as museums, libraries and schools; vital infrastructure, such as oil tank farms, transportation systems, marinas and waste water treatment plants, and critical care facilities, such as hospitals, nursing homes, low income housing and shelters.

Because of recent experiences, many attendees voiced concerns related to the potential impacts from extreme events. A key concern identified by the group was the ability of the City to respond effectively. Access to certain areas of the city is limited or restricted due to flooding of major transportation routes. The issue presents a particular challenge to emergency responders evacuating at-risk populations, including the high proportion of disabled persons and elderly living in vulnerable neighborhoods. The issue is further complicated by the diversity of the city's population and the need to communicate in different languages.

While Bridgeport faces challenges during extreme weather events, it has addressed these challenges and benefits from a highly professional and skilled emergency response team. The City of Bridgeport has been recognized by the National Weather Service as a "Storm Ready Community," the first in Connecticut, and has rigorous protocols and operations plans in place that are activated and followed from the first indication of an approaching storm. The City's new, state-of-the-art Emergency Operations Center (EOC) is capable of monitoring the response to any event and directing resources effectively and efficiently. At the neighborhood level, strong social service networks, including faith-based institutions, provide resources and communication that can assist at-risk population with awareness, sheltering and vital supplies.

Top recommendations from the workshop included:

- Seek to complete and implement the "West End Resiliency Plan" and leverage to other at-risk neighborhoods and locations across the city
- Look to aggregate engineering studies and other resource materials for all inland rivers and waterways across City (i.e. Ox Brook, Rooster River, Island Brook, etc.) and initiate a comprehensive identification, assessment, and prioritization of flood reduction projects that integrate immediate and longer-term vulnerabilities and strengths of infrastructure such as bridges and culverts
- Secure additional funding to implement priority flood reduction projects involving city infrastructure (bridges and culverts), roadways, and parks.
- Continue commitment and progress towards the complete separation of combined sewer

system to eliminate overflows by 2039
- Continue to strengthen communications channels to ensure all segments of Bridgeport's population are reached in times of crisis
- Continue to plan for economic growth in Bridgeport by redeveloping or developing amenities and housing that is attractive to a diverse demographic (young professionals to retired) to ensure a resilient and engaged community
- Continue to maintain and look for ways to strengthen evacuation plans and procedures for residents, businesses, and vulnerable populations
- Install green infrastructure including rain gardens, bioswales, and trees in many priority locations across Bridgeport to reduce the impacts of inland flooding and heat effects
- Replicate designs and utility approaches that can reduce flooding impacts at critical power substations in the city
- Continue to see ways to minimize the long term implications to various neighborhoods due to flooding that build on previous examples (Seaside Village)

Town of Fairfield

The workshop in the Town of Fairfield took place on February 26, 2019. Staff from TNC and MetroCOG facilitated the workshop and ensured interactive discussions about the natural hazard risks facing the Town. A total of 24 people attended the workshop. These participants represented a wide range of elected officials, town departments, boards and commissions, committees and task forces, and community organizations as presented below.

Town of Fairfield CRB Attendees

Name	Title or Affiliation
Beverly Balaz	Chamber of Commerce
Mark Barnhart	Director of Community & Economic Development
David Becker	Board of Finance
Misty Beyer	Forestry Committee
Ed Bomen	Asst. Director of Public Works
Becky Bunnell	Flood & Erosion Control Board
Nancy Carberry	Chief of Staff to First Selectman
Sands Cleary	Director of Health
Joe D'Avanzo	Community Emergency Response Team, WPCA
Dick Dmockowski	Flood & Erosion Control Board
Kyran Dunn	Deputy Fire Chief
Emmeline Harrigan	Assistant Planning Director
Mary Hogue	Sustainable Fairfield Task Force
William Hurley	Engineering Manager
Dave Kelley	Information Technology Director
Cristin McCarthy Vahey	State Representative
Cindy O'Neill Vitale	Community Emergency Response Team
Laura Pulie	Engineering Department
Don Smith	Police Department
Mike Tetreau	First Selectman
Bob Wall	Sustainable Fairfield Task Force
Jim Wendt	Planning Director
John Wynne	Strategic Plan Committee
Patti Zecchi	Fairfield Beach Peninsula Assn.

The participants were asked to identify the natural hazards that most frequently impact Fairfield. The answers were influenced by experiences and knowledge of recent events. The two events that had the most impact on the Town were Tropical Storm Irene (August, 2011) and Super-storm Sandy (October, 2012). The top hazards related to those events were:
- Severity and extent of storm surge flooding along the shoreline, especially the Fairfield Beach, Southport Center and Town Center areas;
- Inland flooding along the Mill River and Ash Creek related to tropical storms and hurricanes; and
- Power outages from downed trees and power lines.

Those events had direct and severe impacts on several neighborhoods and natural areas of the Town. Fairfield has two different and distinct areas. The coastal areas are prone to coastal flooding from storm surges. The most significant concerns in the rural and suburban northern sections of the Town are downed trees and power outages. Neighborhoods most vulnerable to a storm surge are the Town Center, Southport and Fairfield Beach. The Greenfield Hill area north of the Merritt Parkway is substantially affected by downed trees

and power lines, causing extensive power outages. Isolation was a great concern as the downed trees prevented or severely restricted access into and out of the area. Residents experienced difficulty in obtaining necessary supplies and recovery crews were hindered in their efforts to clear blocked streets and restore power.

Impacts to natural features and ecosystems were mostly found along the shoreline, including Ash Creek, Mill River, Marina Channels and the Fairfield, Jennings and Penfield Beaches. Various facilities and infrastructure were at risk from the effects of these extreme storms, including the police headquarters, fire station, sewage treatment plant and public works garage, all of which are located in flood prone areas. Concerns were also raised about the vulnerability of at risk populations. Several senior centers, long term care facilities and affordable housing complexes are also located in areas susceptible to a high storm surge.

Other top hazards of concern for Fairfield include winter storms, inland flooding, flash floods from high precipitation events, extreme heat and drought, and high wind events. Winter storms drop excessive snow, knocking out power and isolating residents and neighborhoods. More frequent and intense rain events such as the September 25, 2018 storm are leading to more inland flooding concerns. There was a general concern among participants that emergency contingency planning needs to account for worst-case scenarios at varying times of the year due to changing climate.

Some coastal areas are protected by a system of Army Corps of Engineers (ACOE) dikes and berms. These barriers help prevent flood waters from reaching the South Pine Creek neighborhood. However, erosion is evident along the creek side of the dikes, indicating a need to improve and repair the structures. Attendees also suggested that the height of some dikes need to be increased to handle higher than expected flood elevations and wave runup, and the need for better pre- and post-storm coordination to remove built-up debris behind the 31 tide gates in town was identified.

According to attendees, inland flooding is occurring more often under both routine and extreme rain events. In particular, the September 25, 2018 storm was noted as a high-impact event that awakened the need to reexamine flood risks in the Town's riverine corridors. It was noted that the Town's Information Technology (IT) facilities are located in the Town Hall basement, and that the basement experiences water damage during extreme rain events. The increased potential for dam failure from more intense rain events was also discussed.

Other threats identified include:

- Roads made impassible due to temporary flooding or falling trees
- Single access choke-points which can be blocked and restrict access to entire neighborhoods
- The vulnerability of coastal resources to sea level rise
- The need to support inland advancement of salt marsh and beaches
- The vulnerability of power lines from trees along travel corridors

Workshop participants emphasized the need for further protection of the Town's wastewater treatment facility. The facility is located within a flood hazard area and there was consensus that the berm surrounding the facility needs to be raised to improve protection against storm surge and sea level rise. The secondary concern is that the facility's capacity to process sewer inflows is overwhelmed during heavy precipitation events, resulting in the bypass of untreated sewage to Long Island Sound.

Top recommendations from the workshop included:

- Relocate 9-1-1 Center from the floodprone basement of the Police Station
- Continue to advance the installation of flood reducing measures at the wastewater treatment plant
- Encourage removal of structures from floodways
- Relocate IT services and equipment from Town Hall basement
- Improve the reach of the Code Red reverse 9-1-1 communication services
- Develop a longer-term plan to proactively address the increasing threat of more intense and frequent storms and sea level rise, including the longer-term needs for road elevation
- Conduct a detailed study of Rooster River to determine flood mitigation solutions
- Strengthen emergency management planning to enhance recovery of social services following a disaster
- Improve access to critical facilities such as public works, school bus yard, fire/police

training area, and transfer station following extreme weather events
- Better coordination with Aquarion Water Company regarding contingency planning for dam failure
- Perform an engineering assessment to reduce viaduct flooding
- Contribute to regional dialogues regarding transportation resilience for interstate highway and rail
- Advance and complete South Benson storm-water pump station improvements

Town of Stratford

The Town of Stratford planned to hold a CRB Workshop to support this NHMP update on March 6, 2019, but TNC needed to cancel the workshop. It was ultimately not possible to reschedule the CRB Workshop during the NHMP planning period, but the Town of Stratford would like to have one before the next NHMP update. The following discussion describes the 2013 CRB Workshop presented in the 2014 NHMP.

The one day hazard mitigation workshop held in the Town of Stratford took place on October 4th. Staff from TNC facilitated the workshops and ensured interactive discussions about the risks facing the Town. A total of 17 people attended the workshop. These participants represented a wide range of town departments, boards and commissions, including:

Town of Stratford Departments and Offices:
- Emergency Management & Homeland Security
- Conservation Department
- Fire Department
- Health Department
- Environmental Health Services
- IT Department
- Community Services
- Community Development Department
- Economic Development Department
- Public Works Department
- Highway Department
- Recreation Department
- Building Department
- Planning & Zoning Department
- Engineering Department

A list of attendees is attached in Appendix C.

The participants were asked to identify the natural hazards that most frequently impact and affect the Town. There was general consensus that coastal and inland/riverine flooding are major issues facing Stratford. The top hazards identified by participants were:
- Coastal flooding, especially in the South End area bounded by Surf Avenue, South Avenue, Main Street, Access Road and Lordship Boulevard. This area is home to the more vulnerable populations and includes housing operated by the Stratford Housing Authority.
- Inland flooding along Bruce Brook, Tanner's Brook and Ferry Creek. Sections of watercourses through the Town Center area have been channelized or buried. This exacerbates flooding potential as the infrastructure cannot handle large volumes of runoff during heavy rain events.
- Ice storms create problems related to power outages, frozen pipes, and mobility, which causes difficulty traveling on Interstate 95. Ice build-up on the electrical wires along the New Haven rail line disrupts train service.
- Wind causes tree limbs to fall and can cause power outages.

While the Town of Stratford was less severely impacted by the recent storm events, widespread flooding resulted from both Tropical Storm Irene and Super-Storm Sandy. The South End was affected by both storms and is vulnerable to coastal flooding, even from a moderate storm surge or during a storm that produces heavy rain. Access is limited to the South End and flooding on these routes essentially cuts off the area from the rest of the Town. A sizeable vulnerable population lives in the South End which includes seniors, disabled persons and low income families. Flooding of the South End also impacts operations at the Sikorsky Memorial Airport. Base elevations at the airport are approximately 10 feet, which makes the area susceptible to flooding from a major event. In addition, the Lordship Boulevard area is the location of one of the Town's main commercial-enterprise districts. Several industrial buildings are located in the district and are adjacent to the Great Salt Marsh and Lewis Gut.

By contrast, the Lordship area, located in close proximity to Long Island Sound, lies on an upland bluff and is at a high enough base elevation that it is not prone to flooding. However, the access routes into the area are subject to closure during a storm, which isolates the area.

The workshop attendees discussed inland flooding in the Town Center. The Town Center is

susceptible to flooding because it lies in a low, flat area that had historically been made up of wetlands and crossed by several streams and creeks. Channelization projects from the 1930s to the 1950s altered the flow of these watercourses and the infrastructure is unable to handle rapid increases in runoff.

Potential impacts to the town's infrastructure were also identified. The wastewater treatment plant is located within the recently modified flood hazard area. A berm was built in the 1970s to protect the plant from flood waters but there is a concern that the berm's height is insufficient to accommodate more intense coastal flooding. In addition, the Town operates 16 pump stations; seven of these are located in flood prone areas, including one at the end of Oak Bluff Road near Long Beach and the Great Salt Marsh and one on Sniffens Lane, close to the Housatonic River. Flooding is a concern at underpasses for the New Haven rail line especially at Bruce Avenue, King Street, West Broad Street, Main Street and East Main Street. The Interstate 95 underpass on Surf Avenue also regularly floods.

Workshop attendees suggested actions to address the vulnerabilities and risks facing Stratford. The recommendations focused on infrastructure improvements as well as better information and communications, as the 2008 Annex had. However, the vulnerability of the waste water treatment plant, pumping stations in flood prone areas and the need for adequate generators in shelters received a significant amount of attention from attendees – three areas of concern that were not detailed in the 2008 Annex. Like the workshops in neighboring communities, participants also emphasized the importance of the natural environment as a mitigation measure and a tree management plan, two shifts in focus when compared with the 2008 Annex.

Key recommendations included:

- Improve and expand existing infrastructure:
- Consider increasing the height of the berm surrounding the wastewater treatment plant.
- Harden pump stations or set up barriers to protect from flood waters.
- Reconstruct New Haven rail line underpasses to eliminate flooding either by raising the road or installing pumps to handle the runoff.
- Ensure community shelters have up-to-date and adequate alternate electrical power generation. Attendees mentioned that the generator at Bunnell High School (the Town's main public shelter) is undersized and inadequate.
- Provide adequate generators for the housing authority.
- Enhance building codes and encourage homeowners to flood proof their houses and if possible, increase the base elevation.

Enhance and improve the natural environment:

- Prepare a natural resources management plan or an urban forest canopy study to address the existence of Norway Maples throughout town and in Roosevelt forest. This species is especially susceptible to damage from high winds.
- Implement a tree removal and maintenance program to reduce trees susceptible to high

Towns of Easton, Monroe, and Trumbull CRB Attendees

Name	Title or Affiliation
Shaquaisha Andrews	Trumbull Health Inspector
Karen Burnaska	Monroe Conservation Comm.
Rhonda Capuano	Trumbull Health Director
Jeanne Gibbs	Trumbull Economic & Community Development Comm.
Rich Infante	Trumbull Public Works Dept.
Ken Kellogg	Monroe First Selectman
Mary Ellen Lemay	Trumbull Conservation Comm.
Shelby LeVino	Trumbull Economic & Community Development Comm.
Bill Maurer	Trumbull Town Engineer
Fred Micha	Trumbull WPCA Administrator
Megan Murphy	Trumbull Emergency Management Director
Joanne Parsons	Trumbull Conservation Comm.
Dale Parsons	Trumbull Resident
Richard Post	Trumbull Conservation Comm.
Tony Schirillo	Trumbull Deputy Director of Emergency Management
Tatiana Smotritskaya	Trumbull Engineering Department
Vicki Tesoro	Trumbull First Selectman
Don Watson	Trumbull Resident
David York	Monroe Emergency Management Director

winds.
- Long Beach acts as a barrier between Long Island Sound and the South End. The beach is separated from the mainland by Lewis Gut and the Great Salt Marsh.
- Conduct a cost benefit analysis for beach replenishment of the engineered beach at Short Beach. The beach is susceptible to coastal erosion from an excessive storm surge.
- Increase the stream channel along flood prone watercourses, especially Bruce Brook, to better manage water flow.

Towns of Easton, Monroe and Trumbull

A CRB Workshop was held for the towns of Easton, Monroe and Trumbull. Because these communities are inland, they are less vulnerable to the coastal effects of tropical storms and hurricanes. The workshop took place on March 13, 2019. Staff from TNC and MetroCOG facilitated the workshops and ensured interactive discussions about the risks facing the three communities. A total of 20 people attended the one-day workshop, including three attendees from the Town of Monroe; and 17 attendees from the Town of Trumbull (one did not sign in). Workshop attendees represented a wide range of town departments, boards and commissions, and residents as presented below.

The participants were asked to identify the natural hazards that most frequently impact and affect their respective town. As these towns are inland from Long Island Sound and do not suffer as severe effects from hurricanes, tropical storms or storm surges, the primary hazard impacting the area is inland flooding caused by excessive rain events. Wind damage was also a common hazard identified, as well as winter nor'easters.

The following areas of concern were identified by participants:

Inland flooding:
- Monroe: along Route 25 adjacent to the West Branch of the Pequonnock River, and street access to the Jockey Hollow and Chalk Hill Middle School complex.
- Trumbull: Long Hill drainage corridor parallel to Route 111 (Main Street) between Lake Avenue and the Merritt Parkway; and along the Pequonnock River in Trumbull Center, especially at Daniels Farm Road, in the Twin Brooks Park neighborhood, and in the vicinity of Quarry Road and the residential neighborhood west of Route 127 (White Plains Road).
- Because of the land use patterns and the fact that much of Easton is either water company owned lands or former water company lands that have been permanently preserved, inland flooding is not a special concern in Easton. Watercourses susceptible to flooding lie within large areas of undeveloped land.
- Other flooding concerns in all three communities included storm drains clogged with debris and flooding of septic systems.

Wind, ice and winter storms:
- Ice storms and freezing rain create problems related to downed trees and result in power outages and inaccessible roads. Easton, Monroe and Trumbull are susceptible to these problems due to the extensive tree coverage and age of the urban forest. The hazard potential is greater when leaves are still on the trees.
- Wind was identified as a critical hazard as it can cause trees to fall which then cause power outages and closed streets. The problems in these communities are exacerbated by the age of trees and extensive tree cover. As a result of Super-Storm Sandy, about 130 acres of forested lands of predominantly white pine owned by the Aquarion Water Company were severely damaged and required emergency timber removal. These lands were located along Route 58 in the vicinity of the Aspetuck and Hemlock Reservoirs. Because of the extensive damage, the Aquarion Company worked with the DEEP on conducting an emergency timber cutting and salvage program.
- Winter storms: The February 2013 blizzard resulted in snow accumulations of up to 36 inches. In general, the towns were able to adequately handle the event and clear roads in a reasonable time period. The primary concern during the storm was access to vital emergency services, especially hospital facilities in Bridgeport.

While the three communities have a lot of common experiences, there were several specific hazards that participants identified. The principal concern in the Town of Easton is maintaining the supply of public drinking water, as the Town is home to three public supply reservoirs that are the primary source of drinking water in the Region. A large filtration plant, located at the base of

the Easton Lake Reservoir dam, was built several years ago to ensure clean and safe water. The Easton Emergency Management Director's primary concern is to ensure the plant remains operational during any hazard.

Monroe's elderly population was identified as the primary vulnerable population in the Town. The Town operates a senior center and senior housing facility. During past events, evacuation of the senior housing facility has not been necessary and the facility have been able to remain self-sufficient. However, if evacuation were required, a severe strain would be placed on the Town's resources and there would be some difficulty in accommodating facility residents.

All properties in Monroe are served by on-site septic systems. During heavy rains and subsequent flooding, on-site septic systems close to the Pequonnock River and the river's branches may fail, resulting in increased pollutants entering the river. Increased water may not cause flooding or property damage but could be sufficient to prevent septic systems from operating properly. There was some discussion on the need to install public sewers to serve the main parts of town, especially along Route 25 and Route 111.

In Trumbull, undersized culverts at several locations prevent adequate flow during heavy rain events. Locations that consistently flood include Daniels Farm Road near Trumbull Center, Lake Avenue near the north end of Canoe Brook Lake and Melrose Avenue. Culverts under the Merritt Parkway (Route 15), Route 8 and Route 25 also create "pinch" points of stream flows and cause flooding upstream of the culverts.

The Trumbull Public Works staff voiced concern that several of the town's sewer pump stations are located in flood hazard areas. Attendees from Trumbull also expressed a concern regarding the potential hazard posed by dam failures. Pinewood Lake is privately owned and the Pinewood Lake Association is responsible for maintaining the lake's dam. While the Association has permission to release water prior to a storm, the flood gate on the dam is broken. Failure of the dam has the potential to devastate approximately 100 homes downstream. Attendees felt that this potential dam failure poses a high risk to the safety of residents.

Attendees agreed that pre-disaster planning and good communication during a natural disaster were key to mitigation. Most residents are unaware that they live in a watershed or flood hazard area. Better education and outreach is needed. Coordination and communication with utility companies and crews is essential. Improved coordination between public works crews and electrical power crews is needed to make safe areas with downed trees and allocate resources to priority locations. Attendees agreed that some improvement has occurred since the difficulties and problems experienced after Tropical Storm Irene and Super-storm Sandy, but more needs to be done. Discussions with the Aquarion Water Company should be held about possibly increasing the diversion of the Pequonnock River to the Easton Lake Reservoir in advance of a storm, as well as the release of water from reservoirs to provide storage capacity.

All three communities have had past problems from downed trees because of high winds, ice or heavy wet snow. Tree maintenance programs need to be implemented that remove dead and diseased trees and branches on an on-going basis. Residents should be educated about maintaining trees on their property. The towns also need to coordinate with utility tree trimming programs. Proper tree maintenance on public and private land, enhanced communications with utilities and access to emergency services (on roads blocked by downed trees, as well as snow) have received increased attention from these three communities in recent years.

Higher priority recommendations for all three communities included:

- Conduct watershed-wide assessment of flooding extent and causes and seek to prioritize activities in each community based on local and watershed needs.
- Identify, catalogue, assess and prioritize replacement, repairs, and retrofits for all culverts across each community in the context of future rain events with increased intensity, frequency, and magnitude. Ensure the study focuses on culverts that cause back-up and subsequent flooding of roadways and structures as well as floodwater storage opportunities via better land use and/or open space protection.
- Work directly with utilities to develop a tree management plan for powerlines across each community and adjoining municipalities along critical corridors to ensure continuity of power and quicker recovery during major storm events.
- Continuously increase the effectiveness of the each town's evacuation plan.

Higher priority recommendations specific to Monroe included:

- Continue to encourage self-reliance amongst residents resulting in the ability to shelter in place for extended periods during major events.
- Upgrade communications to better reach residents and busineses during emergencies

Higher priority recommendations specific to Trumbull included:

- Look to establish a communications recovery and response plan between the Town and the seven communications companies that service Trumbull.
- Continue to communicate and facilitate grant applications to make improvements for two private dams (Pinewood and New Brook).
- Look to establish back-up Emergency Operations Center to increase service continuity in the event of an unprecedented disaster.
- Look to install or make available alert radios to help improve emergency communications to municipal buildings, particularly the high school and Senior Center.
- Conduct routine extreme weather communications and emergency drills, and provide extreme weather training courses for teachers and administrators at schools, day care facilities, and after school programs.
- Secure an entirely new radio system for emergency communications and coordination to help increase reliability and effectiveness for first responders during major events.

2.7 Community Outreach

In an effort to develop a more comprehensive and publicly supported Multi-Jurisdictional NHMP, MetroCOG followed a proactive public involvement process. This process included creating a page on the MetroCOG website, developing an online survey and holding a series of public information meetings. MetroCOG's website presented an overview of the purpose of the NHMP and summary of the plan development process. MetroCOG also posted the Press Releases, a Survey link, and Public Meeting Information.

Screen shots of the webpage are included as Appendix D.

Web-based Survey

A public survey was posted online through the website www.surveymonkey.com. The goals of the survey were to inform local officials of the general public awareness regarding natural hazards, and to collect information that may lead to potential mitigation strategies. The survey was posted from January 16 through March 14, 2019, and a total of 171 survey responses were received.

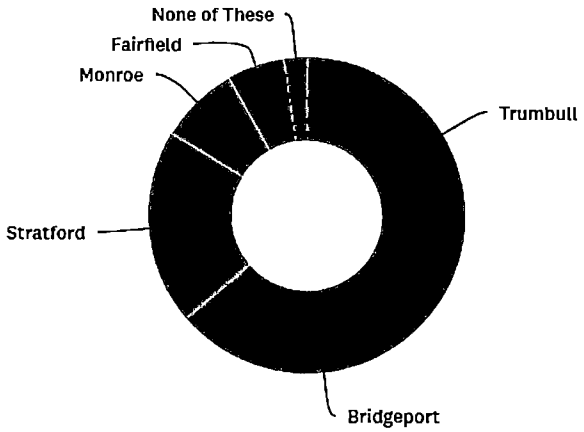
The responses provide an indication of the public perception regarding the level of risk, awareness of natural hazard mitigation planning, and emergency response in the MetroCOG region. Some write-in responses deemed relevant to this plan are included in this summary.

Summary of Respondents

Of the 171 survey respondents, 56 (33%) live or own property in Trumbull, 53 (31%) in Bridgeport, 34 (20%) in Stratford, 14 (8%) in Monroe, and ten (6%) in Fairfield. No residents or property-owners in Easton participated in the survey. A majority of respondents (80%) have lived in or worked in the MetroCOG region for more than 10 years. Four respondents (2%) live outside the region in New Haven, Shelton, and Oxford.

The number of respondents who work within the MetroCOG region is 106 (37%), and an additional 20 (12%) indicated that they are retired or do not work. The remaining 43 individuals who responded to this question (25% of respondents) commute outside the region for work.

Only 40 respondents (27% of those who answered this question) were aware that MetroCOG maintains a Natural Hazard Mitigation Plan for the region. An additional 21 individuals skipped this question.



Hometown of Respondent

Participants were asked which recent events, if any, have generated awareness of natural hazards. The table below summarizes the responses. The majority of respondents reported that they were already aware of the danger of natural hazards, and no recent events have increased that awareness. Seventy-one respondents (50%) reported that their awareness had been increased by Superstorm Sandy in October 2012.

Many respondents noted other events or trends that had raised their awareness; these write-in responses included:

- Rainstorm and flooding (specifically of the Rooster River) in Bridgeport and Fairfield on September 25, 2018 (multiple respondents referred to this event)
- Constant flooding at Seaside Village
- Chronic flooding along Iranistan Avenue and Burnham Street in Bridgeport
- Historic events including the 1938 hurricane
- Nor'easters in general
- Impacts to personal properties from flooding and storms
- Street flooding during rain events
- My awareness has not increased, but my concern has.

Note that the responses above have been edited and consolidated for clarity and are not necessarily verbatim.

Perceived Risk from Natural Hazards

The next question asked responders to rate hazards on a scale of 1 (low threat) to 3 (high threat), indicating the level of perceived threat or concern each presents to their homes or to the functions of their businesses.

The hazards with the highest perceived threat for the majority of respondents include hurricanes and tropical storms, flooding due to poor drainage, winter storms and blizzards, and sea level rise. Earthquakes, wildfires, dam failure, and drought were ranked as the lowest perceived risk.

Respondents wrote-in additional or more specific hazards of concern, including:

- Failure of tide gates
- Falling trees and branches
- Beach erosion
- Rooster River flooding
- Climate change
- Floods causing contamination of lake water
- Sewer back-up

The follow-up question asked which hazards have affected the participant or their businesses. A majority of respondents reported being affected by hurricanes and tropical storms (65%), by winter storms and blizzards (61%), and by flooding due to poor drainage (60%). Severe thunderstorms, flooding from rivers, extreme cold weather, and sea level were also reported to have impacted many respondents (over 25% for each). The reported experiences of respondents closely match

Survey Question: Which recent events have made you more aware of the dangers of natural hazards?

Answer	Percentage
I was already aware; my awareness has not increased	51%
I did or do not think that natural hazards pose a threat to the region	3%
Statewide tornadoes of 2018	19%
Winter storms of 2017-2018	24%
Winter storms of January 2015	16%
Winter Storm Nemo in February 2013	21%
"Superstorm" Sandy in October 2012	48%
Tropical Storm Irene in August 2011	32%
Other (please specify)	11%

Survey Question: How concerned are you about each of the following natural hazards impacting your home, business, or community?

Answer	Weighted Average (1 is low concern, 3 is high concern)
Hurricanes and Tropical Storms	2.53
Flooding due to Poor Drainage	2.41
Winter Storms (including snow or ice) and Blizzards	2.28
Sea Level Rise	2.19
Tornadoes and other High Wind Events	2.18
Severe Thunderstorms (including hail and lightning)	2.11
Flooding from Rivers	2.06
Extreme Cold Weather	2.00
Extreme Hot Weather	1.78
Drought	1.50
Dam Failure (could be caused by other hazards)	1.43
Wildfires and Brush Fires	1.37
Earthquakes	1.23

the levels of concern reported.

97 respondents entered answers when asked if any specific areas of their communities were vulnerable to any of the above hazards. The top mentions were:

- Seaside Village and Lower Iranistan Avenue in Bridgeport
- Breakwater Key and Sniffens Lane, in Stratford
- Bridgeport's South End, generally
- The Black Rock neighborhood in Bridgeport
- The Ash Creek area of Bridgeport and Fairfield
- Trumbull Center

Survey takers were asked what actions they had taken to protect their own families, homes, or businesses. Specific actions taken by respondents include:

- Removed large oak tree to prevent wind from felling it onto home
- Removed hot water tank in basement, put tankless water heater on first floor
- Relocated furnace to attic
- Added extra caulking around windows & doors facing the water
- Acquired a backup generator (multiple responses)
- Participated in Resilient Bridgeport efforts
- Increased insulation in attic, insulated in-home water pipes, updated weatherproofing.
- Constantly clear and repair drainage ditches
- Purchased a home at a high elevation
- Participated in Rebuild by Design meetings
- Installed a sump pump (many responses) and french drain
- Purchased flood insurance
- Communicated with municipal officials to make the town aware of concerns
- Keep brush cut back
- Installed tidal gates and channels
- Changed the grade of back yard
- Minor improvements to drainage on property

Note that the responses above have been edited and consolidated for clarity and are not necessarily verbatim.

Important Tools for Hazard Mitigation

Survey takers were presented a list of common hazard mitigation tools and asked to note which they believed were important, which they had believed had been used successfully in the past, and which they believed should be a priority moving forward.

The top-ranked actions in terms of importance to mitigation were public outreach and education, tree trimming and removal, risk zone identification, and land-use regulations.

The top ranked actions in terms of priority moving forward were drainage improvements, public outreach and education, risk zone identification, back-up power for critical facilities, emergency alerts, emergency response training, and land-use regulations.

Fewer than 50% of respondents selected any specific action as having been used successfully in the past. Nevertheless, the top ranked action in terms of being used successfully in the past were emergency alerts, tree trimming and removal, and snow clearing.

Public outreach / education was the most commonly selected action as being important to hazard mitigation (72 selecting) and for being a priority moving forward (78 selecting), but was also ranked near the bottom for having been used successfully in the past (15 selecting). Similarly-ranked actions (highly important, a priority moving forward, but successful use in the past) include drainage improvements, land-use regulations, and floodproofing.

Availability and Use of Local Resources

The survey asked respondents to note which local resources are important and which were available to support or assist with hazard preparation, response, or recovery.

Local Government, followed by State Government, were identified as the most useful or important (74% and 70% of respondents), and 48% of respondents also indicated those resources are available to them. Emergency responders were also identified as being important (68% of respondents), and were also identified by most respondents as being available (61% of respondents).

Higher Education institutions were ranked lowest in terms of availability (23% of respondents) while being considered important by about half (46%) of respondents. Nonprofit organizations and community or neighborhood associations were both ranked relatively low in availability (31% and 32% selecting, respectively) but somewhat higher in importance (53% and 55% selecting, respectively).

Survey Question: Which response activities are priorities?

Answer	Weighted Average (9 is highest priority, 1 is lowest priority)
Address Injuries and Casualties	7.75
Continue Operation of Medical Facilities	7.08
Restore Utilities (electric, water, wastewater, communication)	6.63
Re-open Roads	6.21
Re-open Gas Stations & Grocery Stores	4.77
Clean/Repair Home	3.89
Re-open Schools	3.77
Resume Business/Tourism Activities	2.97
Restore Parks, Beaches, and other Natural Resources	2.42

Survey-takers were asked to rank a set of recovery activities from most important (1) to least important (9). The inverse of the average rating of each action was taken to calculate the overall importance of each.

Addressing injuries and casualties, continuing operation of medical facilities, restoring utilities, and re-opening roads are seen as the most important actions after a hazard event.

Sea Level Rise and Climate Change

Survey-takers were also asked about their thoughts about planning for climate change and sea level change. Most respondents (74%) believe that it is appropriate to plan for storm events to become more severe and more frequent in the future.

The opinions of responders were less distinct with regards to planning for sea level rise. 25% feel it is appropriate to plan for sea level rise to continue at the current rate, 32% for sea level rise to accelerate, and 43% for it to accelerate dramatically, with several feet of rise by 2100.

Thoughts on Flood Insurance

Responders were asked about their thoughts on flood insurance, specifically with regards to increasing insurance premiums. Most respondents were interested in lowering premiums.

In the comments section, two respondents indicated that flood insurance rates should more accurately reflect risk and be less subsidized, to discourage development in hazard zones.

Potential Projects

Participants were asked what one action could be taken in their community to reduce risks of natural hazards. Drainage improvements and education and awareness actions were the most commonly suggested.

Finally, participants were asked for additional comments, which included:

- "Create a booklet of emergency resources for homeowners."
- "Sewer and storm drains need to be separated in the South End of Bridgeport."
- "Towns like Fairfield affected by natural disasters like Sandy should evaluate their responses to that disaster and determine how they can do better the next time."
- "Organize an evacuation plan specific to each community."
- "There is only one street to access the condo complex where I live. It has been known to flood, making it impassible. Emergency responders need to be aware of this."
- "Drainage systems are flooding every time it rains. Areas for temporary water storage during storms should be created throughout the community."
- "Identify older, mentally/physically ill, and veterans and check on them first."
- "Ensure shelters are prepared to sustainably provide for communities vulnerable to environmental hazards."
- "Outflow pipe at end of Sniffens Lane needs repair. Street becomes flooded during full moon high tides due to water from the river being pushed up the outflow pipe."
- "Fix drainage system in Seaside Village."
- "Mandate that homeowners affected by hazards be given preparedness training."
- "A robust and actionable plan is key not only for safety but also for fiscal stability and economic development."
- "Create both a short-term plan (5 - 10 years) as well as a long term plan (50 years)."
- "Communities such as Seaside Village need a consultant to help us create a recovery plan for storm surges."
- "Storm drain failure proved to be an issue in Trumbull in September 2018. Efforts should be made to improve structures and ensure they remain free of debris."
- "Send out mailings to make the community more aware of issues."
- "Get as many community members and or-

ganizations as possible to participate in this reflection. It is informative for them as well as your organization."

- "Work to get our State Legislature to put statutes in place that prioritize protection of existing residential properties (our municipal tax base) from severe storms."
- "Expanding community education about the risks, solutions, and plans to deal with climate change is a priority for me."
- "It will be increasingly important to prioritize safety improvements and hazard mitigation efforts while respecting environmental law and regulations. However, it should be understood that improvements must take place and should not be hindered by unnecessary or overly conservative environmental constraints."
- "Get the state back on solid financial ground before looking for places to spend additional money. Eliminate entitlements to pay for hazard mitigation."
- "Drainage in the town of Trumbull should be looked at."
- "Reduce conversion of pervious land to impervious surfaces."
- "Educate the public on which department to reach out to at Town Hall for each type of disaster."
- "Snow, hurricanes and high wind storms pose a unique threat to the New England area. The high populations of trees in our region have the potential to cause havoc on our roads and utility systems. Extensive tree damage could require weeks to clear, holding up numerous other emergency services. Our communities must begin aggressively thinning tree populations in close proximity to roads and utilities."

Public Requests for Follow-up

A total of 44 participants provided contact information and expressed interest in following the progress of this plan update.

Summary and Key Takeaways

From the responses above, a number of key patterns and takeaways can be seen:

- Superstorm Sandy: Half of the respondents noted that Superstorm Sandy had increased their awareness of natural hazards – these are communities that are clearly still affected by that storm.
- Flooding: primary concerns for respondents were flood events, including those caused by including hurricanes and tropical storms, poor drainage, and sea level rise. Winter storms and blizzards were also a common concern.
- Bridgeport: Many respondents reported that the Seaside Village, South End, Black Rock, and Ash Creek areas of Bridgeport are at risk from hazards
- Other At-Risk Areas: The Breakwater Key area of Stratford, Ash Creek in Fairfield, and Trumbull Center were all commonly identified as having high natural hazard risk.
- Outreach and Education: Based on survey responses, public outreach and education should be a focus for the region moving forward; it was commonly identified as being important and a priority, but was not noted as being used successfully in the past. Many respondents listed outreach and education actions in the open-ended Question 18.
- Drainage Improvements: As with outreach and education, drainage improvements were often pointed to as important actions that should be prioritized moving forward.

Based on this survey, communities in the MetroCOG region should strongly pursue public outreach and education programs as well as encouraging local communities to seek improvements to drainage systems. It will also be important to perform studies and assessments to identify best practices for hazard mitigation, and to improve the region's evacuation planning. It is important to note that, despite the relatively high response rate, this survey only represents a small segment of the region's population, and the needs and interests of the rest of the area's residents should be solicited and addressed.

The survey is attached in Appendix D.

Public Outreach

MetroCOG provided the public an opportunity to learn about the Regional Natural Hazard Mitigation Plan and the value of mitigation planning. In addition to a web-based approach, MetroCOG hosted two Regional Public Information Meetings. The 1st meeting was held on January 17, 2019 at the Margaret E. Morton Government Center in Bridgeport. The 2nd meeting was held on April 25th, 2019 at the Fairfield Regional Fire School in Fairfield.

Advertising and Promotion

To advertise and promote the series of Public Information Meetings, a Press Release and article was prepared and published in the Connecticut Post (https://www.ctpost.com/local/article/Officials-discuss-preparing-for-disaster-13517729.php). The Connecticut Post has a wide, regional circulation and is the primary source for printed news and information in the region. The article was in the Tuesday, January 8, 2019 edition of the newspaper.

The Press Release of each Public Information Meeting was also sent to the Chief Elected Official of each municipality as well as members of the Planning Teams. These municipal representatives were asked to post the Press Release to their municipal website and place the Meeting Notice at visible locations in City/Town Hall and other key locations. In addition, some communities put out an e-mail blast to their listserv, reaching hundreds, if not thousands of residents across the Region.

Web-based advertising was also undertaken. The times, dates and locations of the public meetings were listed in a sidebar on the main MetroCOG News webpage and featured on the MetroCOG Events page. Links for more information were embedded. Social media was utilized by posting public meeting information on the MetroCOG Facebook page.

For each forum, a member of the MetroCOG staff presented on the process of updating the Regional Natural Hazard Mitigation Plan, as well as the impacts from recent events. Hazard profiles and the likelihood of events happening in the future were also discussed. The primary focus of the public meetings was to solicit information and comments from the public on how the community should address natural hazards and what actions, strategies and projects should be implemented to reduce the effects of future natural hazards.

01/04/19

Natural Hazard Mitigation Press Release

Public Input Needed on Reducing Impacts of Natural Disasters

Natural Hazard Mitigation Plan Update Underway

Elected officials in Bridgeport, Easton, Fairfield, Monroe, Stratford, and Trumbull are seeking public input on ideas for preparing for natural disasters such as the flood of September 25, 2018. Events such as floods, hurricanes, thunderstorms, winter storms, and other natural hazards affect residents and businesses every year. These events damage property, cause power outages, block roads, and can cause injuries.

The Connecticut Metropolitan Council of Governments (MetroCOG), which represents the six municipalities in the region, is in the process of updating the multi-jurisdiction Natural Hazard Mitigation Plan. A Natural Hazard Mitigation Plan is a tool that helps communities understand risks and take specific steps to reduce property damage, injuries, and loss of life. This plan discusses the occurrence and consequences of floods, coastal changes, winter storms, tornadoes, hurricanes and tropical storms, earthquakes, and dam failure. The plan identifies activities that communities can perform before natural hazards occur in order to minimize property damage, risk of life, and the costs that are shared by all. This update will identify significant changes in risks, vulnerabilities, capabilities, and mitigation actions that have developed since adoption of the previous plan in 2014.

MetroCOG is offering an opportunity for the public to attend an informational meeting where residents can learn about the plan, ask questions, and provide input. The meeting will be held on January 17, 2019, 6 PM, Bridgeport City Hall, 45 Lyon Terrance, Bridgeport, CT 06604.

Additionally, all are encouraged to share their thoughts through an online survey available at https://www.surveymonkey.com/r/metrocoghazards

Comments or questions can also be emailed to Patrick Carleton at pcarleton@ctmetro.org.

Town of Fairfield News

4/8/2019 - Public Meeting on Regional Natural Hazard Mitigation Plan

The Connecticut Metropolitan Council of Governments (MetroCOG), which represents the municipalities of Bridgeport, Easton, Fairfield, Monroe, Trumbull and Stratford is pleased to invite residents, local businesses and other stakeholders to a Public Meeting on the Regional Natural Hazard Mitigation Plan.

The Public Meeting will occur on Thursday, April 25th at 7:00PM at the Fairfield Regional Fire School, 205 Richard White Way, Fairfield, Connecticut 06824 (entrance to Richard White Way across from Veteran's Park on Reef Road).

A Natural Hazard Mitigation Plan is a tool that helps a community understand risks and take specific steps to reduce property damage, injury, and loss of life. This plan discusses the occurrence and consequences of floods, coastal changes, winter storms, tornadoes, hurricanes and tropical storms, earthquakes, and dam failure. The plan identifies activities that communities can perform before natural hazards occur in order to minimize property damage, risk of life, and the costs that are shared by all. This update will identify significant changes in risks, vulnerabilities, capabilities, and mitigation actions that have developed since adoption of the previous plan in 2014.

The Public Meeting will include a presentation of the some of the proposed mitigation actions for 2019 – 2024. All interested parties and members of the public will have an opportunity to participate as well as voice their opinions and provide feedback on the Plan.

Fairfield First Selectman Mike Tetreau, who serves as Chairman of MetroCOG, stated, "I encourage the public to attend this important meeting to give your input on our Region's Natural Hazard Mitigation Plan. It is especially important for coastal communities like Fairfield to continue to be proactive in our mitigation efforts and have the best, most up-to-date information available to help prepare and protect our community in the wake of a natural hazard event."

The Natural Hazard Mitigation Plan Update is a result of a FEMA Pre-Disaster Mitigation Grant that was awarded to MetroCOG by the State of Connecticut's Department of Emergency Management and Homeland Security.

Anyone interested in the Regional Natural Hazard Mitigation Plan is encouraged to attend the Public Meeting. For further information, please contact Patrick Carleton at MetroCOG at pcarleton@ctmetro.org.

MetroCOG Logo Source: http://ctmetro.org/

Public Information Meeting Notices

Public Information Forums

January 17, 2019 – City of Bridgeport

The meeting was held in City Hall. Kenneth Flatto, Finance Director for the City of Bridgeport was the only attendee. MetroCOG staff and Milone & MacBroom, Inc. presented an overview of the purpose and need for updating the Regional NHMP. Discussion following the presentation focused on plan implementation and funding of projects.

April 25, 2019 - Town of Fairfield

The meeting was held at the Fairfield Regional Fire School in Fairfield. Thirteen people attended and participated in the discussion (attendance list is attached in Appendix E). The attendees included members of the Fairfield Flood and Erosion Control Board, Fairfield Beach Residents Association, Fairfield Fire Department, and members of the public. Participants were not limited to those from Fairfield. A resident of the Black Rock neighborhood of Bridgeport and a resident of the Town of

Stratford also attended this meeting. Residents from other communities expressed interest in the meeting to MetroCOG staff via e-mail but ultimately did not attend the meeting.

The Town of Fairfield First Selectman, MetroCOG staff, and Milone & MacBroom, Inc. presented an overview of the purpose and need for updating the Regional NHMP. At the conclusion of the presentation, the discussion focused on answering questions and addressing concerns expressed by attendees. Discussion topics following the presentation included microgrid installation in Fairfield, implementation of the Riverside Drive / Ash Creek Flood Protection Study, using the NHMP to acquire grant funding for projects, and flooding along Pine Creek. Following the meeting, there was additional discussion regarding a CIRCA study that considered the differences in wind shear for elevated vs. non-elevated homes.

Contact with Adjacent Communities

The involvement of other communities and regions was accomplished by direct contact with the municipal staff of adjacent cities and towns. The MetroCOG region is bordered by seven municipalities:

- City of Milford: Borders Stratford along the Housatonic River.
- Town of Newtown: Borders Easton and Monroe. The watersheds of the Aspetuck River, Halfway River and Pootatuck River overlap the town boundaries. The Housatonic River forms the eastern border of Newtown.
- Town of Oxford: Borders Monroe along the Housatonic River.
- Town of Redding: Borders Easton. The watersheds of the Aspetuck River and Saugatuck River overlap the town boundaries.
- City of Shelton: Borders Monroe, Trumbull and Stratford. The watersheds of the Booth Hill Brook, Farmill River, Means Brook, and Pumpkin Ground Brook overlap the town boundaries. The Housatonic River forms the eastern border of Shelton.
- Town of Weston: Borders Easton. The watersheds of the Aspetuck River and Saugatuck River overlap the town boundaries.
- Town of Westport: Borders Fairfield. The watersheds of the Aspetuck River and Sasco Brook overlap the town boundaries.

Letters were sent to each of the surrounding seven communities listed above requesting input into the hazard mitigation planning process. The letters also advised the towns of the availability of the public survey. Letters were also sent to the Western Connecticut Council of Governments, Naugatuck Valley Council of Governments and the South Central Regional Council of Governments in January 2019 requesting input from the adjacent COGs.

Copies of the letters are attached in Appendix E..

None of the surrounding communities or COGs provided input during the planning process.

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3 Hazard Identification and Risk Assessment

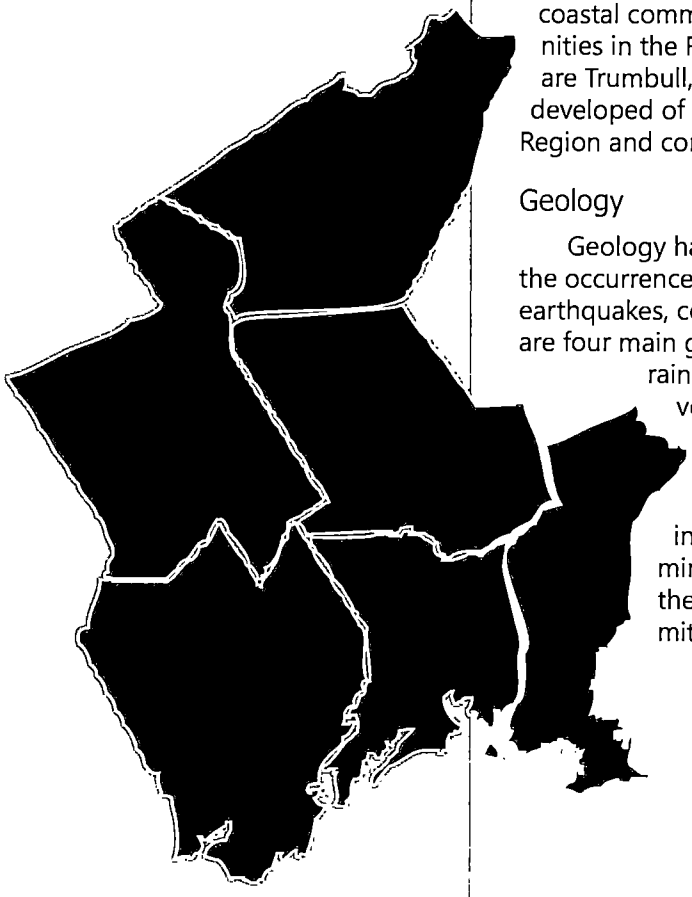
This risk assessment provides sufficient information to enable each jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The natural hazards that have the potential of affecting the region were identified through the planning process via the respective planning teams.

In this chapter, the location and extent of the natural hazards is described. Information on previous occurrences of hazard events was collected through a review of NOAA databases, interviews with municipal staff and research of historical records and archives. Based on this research, the probability of future hazard events was determined.

3.1 General Description of Region

Physical Setting

The Region consists of six communities located in Fairfield County, in Southwestern Connecticut. There are three coastal communities; the City of Bridgeport, the Town of Fairfield, and the Town of Stratford. These coastal communities are the most populated communities in the Region. The inland towns in the Region are Trumbull, Monroe and Easton. Easton is the least developed of all the communities. Figure 3.1 shows the Region and corresponding road network.



Geology

Geology has an important role in understanding the occurrence and severity of natural hazards such as earthquakes, coastal flooding and inland flooding. There are four main geologic forces that have shaped the terrain within the MetroCOG Region: tectonic, volcanic, glacial and human activity. Glacial and human activities have significant impacts on large scale and natural hazards. Tectonic and volcanic activity, discussed in the Bedrock Geology section below, have minor significance as natural hazards, as the only hazard of importance can be easily mitigated.

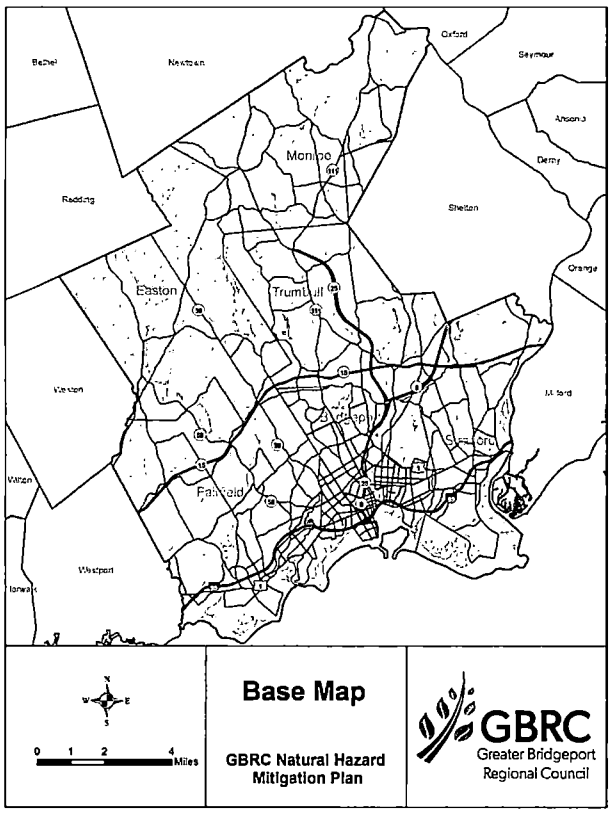


Figure 3.1: Base map of the Region.

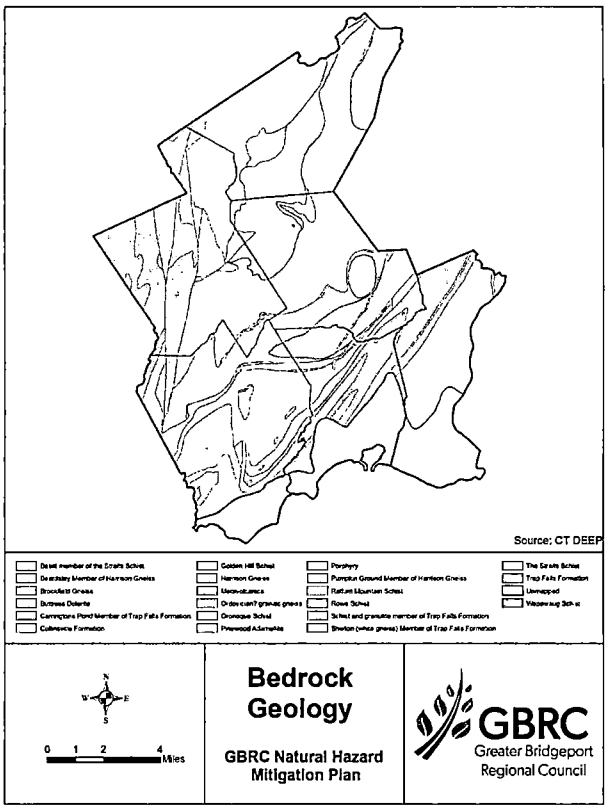


Figure 3.2: Bedrock Geology. Source: CTDEEP.

Bedrock Geology

The region is currently within a stable portion of the North American tectonic plate. This means that at present time, the region does not experience significant earth moving events that generate earthquakes or volcanic activity. In the geologic history of the region, this is not the case. Evidence of this is seen in the bedrock geology of the region which consists of two major geologic terranes. The primary terrane is the Iapetos Terrane which consists of Ordovician Silurian and Devonian (360-500 million year old) metamorphic schists and gneiss created during a period of tectonic activity. The majority of these metamorphic rocks have a sedimentary and igneous beginnings indicating near shore formation prior to deformation into metamorphic rocks. The predominant direction of faults, bedrock contacts and rock cleavage trends northeast to southwest. These faults are no longer active and thus pose little earthquake hazard. There is one bedrock outlier within the predominantly gneiss/schist Iapetos Terrane: the Pinewood Adamelite formation in Trumbull. This is a light-gray, medium-grained granite with a chemical makeup that tends to produce high levels of Radon. The other terrane is the product of volcanic activity that formed the large trap rock ridges of central Connecticut. The Buttress Diorite dike is a northeast to southwest trending Jurassic age (140-205 million years ago) formation created by the remnants of the cooling magma that once fed the major volcanic activity occurring in the present central Connecticut valley. The bedrock in the Region can be seen in Figure 3.2. Town maps of bedrock can be found in Appendix F.

In terms of natural hazards, the occurrence of Radon bearing rocks has a significant risk factor over long periods of exposure but can be easily mitigated. Radon (chemical symbol Rn) is a colorless, odorless, heavy gas that seeps up to the surface out of the rocks of the earth. Radon is a product of the decay of uranium (U), which is present in most rocks in small amounts, but U is also fairly concentrated in some areas of granite, pegmatites, and mineral veins in Connecticut. Although radon is quite radioactive, it is not very dangerous itself because it has a neutral electromagnetic charge (not ionic), so it does not stick well to other molecules. You breath it into your lungs, but you also breath it back out again. However, radon has a short half-life (3.8 days), meaning it rapidly breaks down into other radio-

active elements, which are ionic and do stick to your lung cells. Some of these "daughter" ions are radioactive isotopes of lead, bismuth, and polonium. Being so close up to your lung cell DNA, the radioactive particles can and do cause damage that eventually leads to tumors.

We need to pay more attention to radon, because it probably causes most of the lung cancer deaths that are not directly due to smoking. The National Academy of Science concluded in 1998 that about 15,400 to 21,800 lung cancer deaths per year in the United States are caused by breathing high levels of indoor radon, meaning hundreds of deaths in Connecticut every year. In addition, there may be other problems such as stomach and esophagus cancer leading to years of pain and misery or death. Figure 3.3 shows potential indoor risk levels from radon in various areas of our state, based on many measurements of radon in water wells and in the air of our buildings. No matter where you are on the map, you will not know if your house has high radon until you test for it, which is pretty cheap and easy.

Over the course of geologic history, glaciers and the polar ice caps have grown and contracted with changes in climate and geologic conditions. The glacial history of the region is evident to only the last 100,000 years or so. The advance and retreat of the continental glaciers often create new glacial landforms and erase the evidence of previous glacial epochs. The glaciers that have formed have a core in eastern Canada and over a period of several thousand years, the glaciers grew and extended southward into New England and other northern states. The glacier acts as a bulldozer, breaking down bedrock and pushing debris on its forward moving side but unlike a bulldozer, some debris is incorporated into a flowing glacier. Beneath the glacier, bedrock is plucked and scraped, then the debris is broken down into finer and finer material. When combined with melting glacial water, the debris smears the remaining bedrock with a variable thickness veneer of hard-pan or glacial till. Some glacial till formations are larger and thicker, creating spoon shaped hill formations oriented in the direction the glaciers flowed, called drumlins. There are drumlins throughout the region, with prominent examples along the shoreline such as Sasco Hill in Fairfield and Grover Hill in Bridgeport. The drumlins keep those areas out of harm's way from rising tides and storm

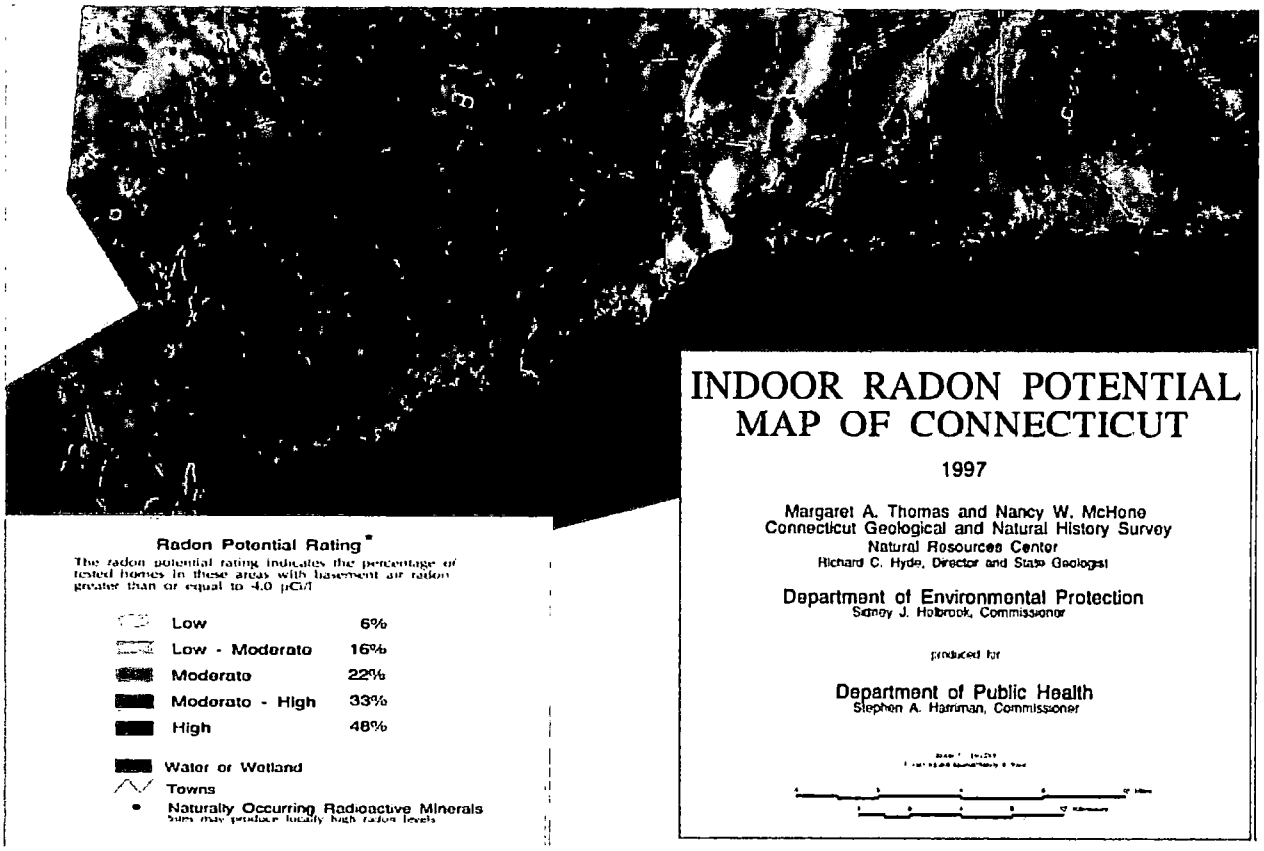


Figure 3.3: Radon in Connecticut. Source: http://www.ct.gov/deep/lib/deep/geology/radon/RadonPotential.pdf

surges. After a glacier reaches its peak size and begins to retreat back north, glacier melt-waters, gush out of the glacier from below, above and from the interior of the glacier. The melting waters contain the glacial debris that form stratified sand and gravel formations commonly found along current rivers and waterways. These outwashes led to present day Long Island Sound, once a fresh water lake called Glacial Lake Connecticut. There are underwater formations in Long Island Sound that attest to this history. Once Glacial Lake Connecticut transitioned to Long Island Sound, tidal action reworked existing glacial deposits and outgoing fluvial sediments, forming post-glacial beach deposits at Southport Harbor, Fairfield Beach, Black Rock Harbor, and Pleasure Beach. Important Salt Marshes developed in conjunction with the post-glacial beach building activities. Figure 3.4 shows the surficial geology of the Region. Town maps of surficial geology can be found in Appendix F.

Human Activity

We have shaped our environment and terrain since we have inhabited the region beginning the early 1600s. These have included constructing dams for mill operations, filling in salt marshes, wetlands and other low-lying areas to allow increases in the amount of developable land and constructing homes in areas that will be most likely be wiped out in the next major storm. Unfortunately, these feats of engineering have come at a price, whether it was compromised fisheries with the closure of spawning habitat from dam construction or the loss of valuable flooding buffers salt marshes provide. We have a record of these filling activities through the USGS Topographic Quadrangles, starting with the initial set produced around 1893 through versions in 1950s, 1960s, 1970s, 1980s and current GIS information. These show salt marshes and open water being transformed into land for development purposes. Much of the filling occurred prior to the 1970s and the National Flood Program.

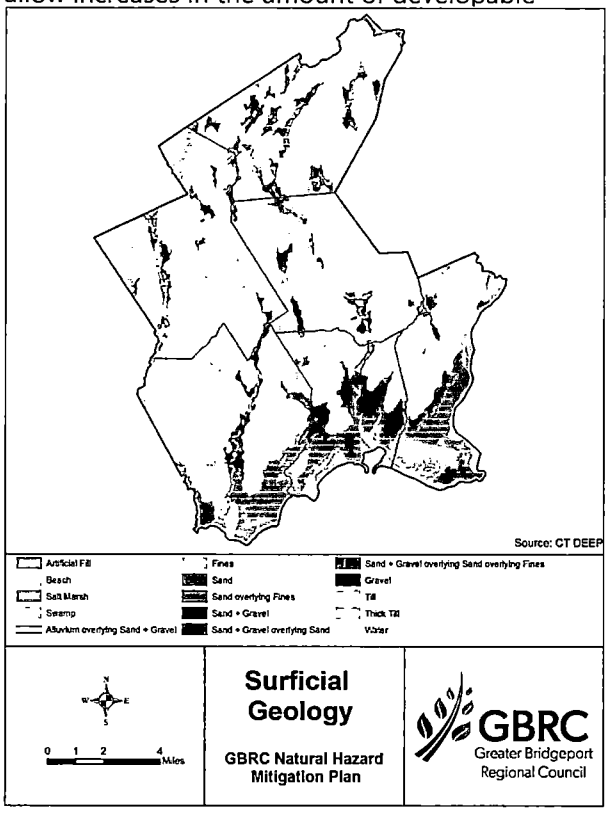


Figure 3.4: Surficial Geology for the Region. Source: CT DEEP

Climate and Climate Change

Climate is defined as the expected frequency of specific states of the atmosphere, ocean, and land including variables such as temperature (land, ocean, and atmosphere), salinity (oceans), soil moisture (land), wind speed and direction (atmosphere), current strength and direction (oceans), etc. Climate encompasses the weather over different periods of time and also relates to mutual interactions between the components of the earth system. Weather, on the other hand, is defined as the state of the atmosphere at a given time and place, with respect to variables such as temperature, moisture, wind speed and direction, and barometric pressure.

The Region has a moderate climate with distinct seasons. Based on observations at the weather station located at Bridgeport/Sikorsky Airport, the average temperature between 1980 and 2012 was approximately 52.5 degrees Fahrenheit (F), with summer temperatures averaging nearly 72 degrees and winter temperatures in the low 30s. Extreme conditions may raise summer temperatures to near 100 degrees and winter temperatures to below zero. However, the Region averages only about eight days a year with temperatures over 90 degrees and one day a year with temperatures below zero degrees.

Figure 3.5 plots the annual average temperature from 1980 to 2018 and shows an increasing temperature trend. The range in annual temperatures was between 50.5 degrees and 55.6 degrees. Figure 3.6 plots the average maximum and minimum temperatures over the same period.

By comparison, the statewide annual average temperature over the same time period was 49.5 degrees, or three degrees cooler on average. As is

the case with the data from the Bridgeport-Sikorsky Airport, annual average temperatures for Connecticut are trending upwards.

Over the course of a year, the region receives, on average, 43.1 inches of precipitation. Annual totals have ranged from a low of 33 inches in 1995 to a high of 60.2 inches in 2018. Mean snowfall amounts are approximately 27 inches per year, with a high total recorded in 2003 of 68.5 inches. Figure 3.7 charts the annual precipitation.

The average precipitation total for Connecticut was 50.5 inches per year or over seven inches more precipitation fell state-wide than on the Region. Total annual precipitation in Connecticut, as well as for the Region, has increased over time.

Subsequent to the development of the 2014 NHMP, the Connecticut NHMP Updates (2014 & 2019) were adopted with enhanced discussions relative to climate change; the State established the Connecticut Institute for Resilience and Climate Adaptation (CIRCA); and the Water Planning Council supervised the development of the State Water Plan (2018) with a chapter devoted to Climate Change. The conclusions of the Connecticut Natural Hazard Mitigation Plan Update and State Water Plan include statements regarding the impacts of climate change on floods, droughts, tropical storms and hurricanes, severe winter storms, thunderstorms, and wildfires. This information is presented in the subsections of this chapter within the discussion of each hazard.

The State Water Plan (2018) includes an analysis associated with four scenarios (warm/wet, warm/dry, hot/wet, and hot/dry) and notes that "Precipitation projections are more variable, although consistently projecting a generally wetter future for all four scenarios. The largest precipitation increases are projected for the wetter months (higher percentiles), including extreme wet months. It follows, then, that the seasonality plots show that winter and

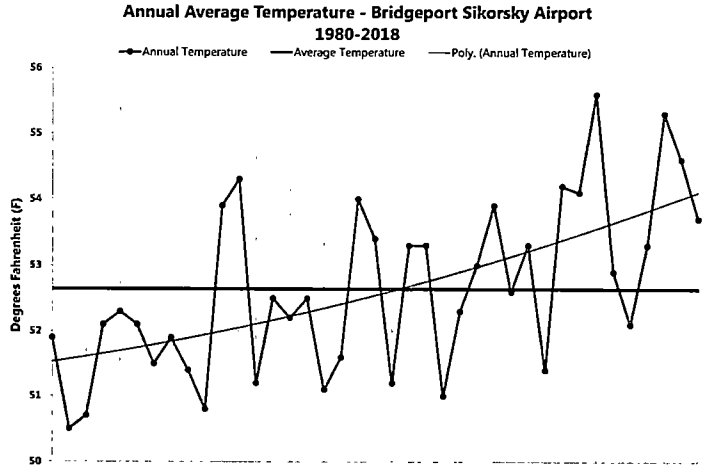


Figure 3.5: Average annual temperature at Bridgeport Sikorsky Airport. Source: NOAA

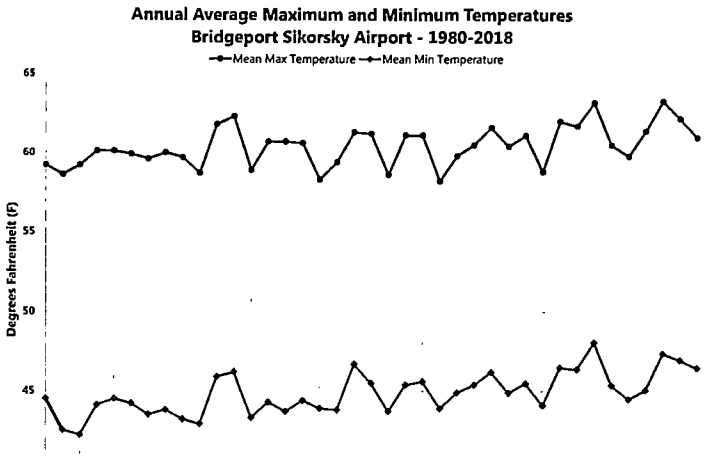


Figure 3.6: Average annual maximum and minimum temperatures. Source: NOAA

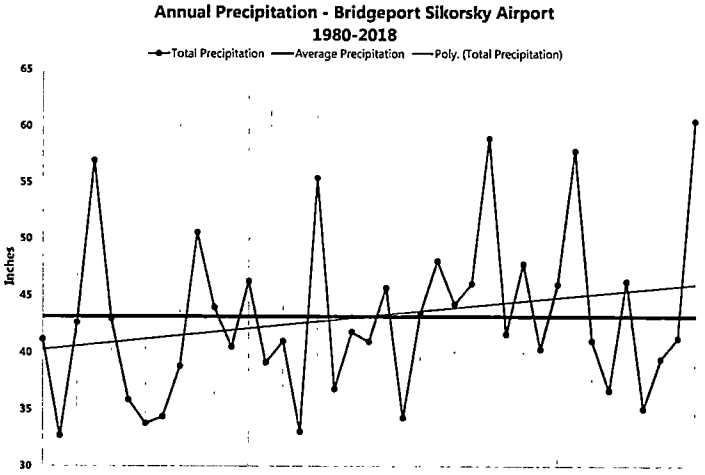


Figure 3.7: Annual precipitation at Bridgeport/ Sikorsky airport. Source: NOAA

spring precipitation changes are projected to be larger than summer and autumn changes. Drier months are generally projected to remain about the same in terms of both frequency and rainfall level." The State Water Plan further notes that "The largest increases in streamflow are generally projected for the winter months (Dec. - Feb.), for all four climate ensembles. This is likely attributable to a combination of both greater winter precipitation and reduced snow accumulation."

Hydrology

The MetroCOG region lies within four regional drainage basins: the Housatonic River, the Saugatuck River, the Southwest Shoreline and the Southwest Eastern basin. The basins drain the numerous rivers and streams that flow through the Region, primarily in a north-to-south direction, and eventually empty into Long Island Sound.

Four sub-regional drainage basins cover the City of Bridgeport, relating to the Ash Creek/ Rooster River, Pequonnock River, the Yellow Mill Channel and Bruce Brook/Johnsons Creek. In addition, Bridgeport's coastal areas lie within the direct drainage basin of Long Island Sound, referred to as the Southwest Shoreline sub-regional drainage basin. It includes the Cedar Creek inlet, Black Rock Harbor, Bridgeport Harbor, Lewis Gut and Johnsons Creek.

The Town of Easton lies primarily within three sub-regional drainage basins corresponding to the Aspetuck River, Saugatuck River and Mill River. In addition, very small areas of the town are within the drainage basins of the Pootatuck River, in the north part of town, and Sasco Brook, in the southwestern part.

The Town of Fairfield is drained by the Saugatuck River, Sasco Brook, Mill River, and Ash Creek/Rooster River. In addition, coastal areas of Fairfield are within the direct drainage basin of Long Island Sound. This area includes Pine Creek.

Seven sub-regional drainage basins flow through parts of the Town of Monroe. The river systems include the Pootatuck River, Halfway River, Mill River, Pequonnock River, Farmill River, Means Brook, and Housatonic River. A large portion of Monroe (approximately 8.4 square miles) is drained by the Pequonnock River, comprising much of the developed part of the Town.

Much of the land area of the Town of Stratford drains towards the Housatonic River, including the sub-regional drainage corresponding to the Farmill River and Pumpkin Ground Brook. The other drainage basins are associated with Bruce Brook, the Yellow Mill Channel, and Lewis Gut. The immediate shoreline along Long Island Sound is part of the Southwest Shoreline basin.

The Town of Trumbull lies within seven sub-regional drainage basins corresponding to the Mill River, Ash Creek/Rooster, Pequonnock River and its tributaries, the unnamed tributaries of Yellow Mill Channel, Booth Hill Brook, Farmill River, and Pumpkin Ground Brook.

The regional drainage basins are comprised of sub-regional and local basins. These are described in Table 3.1 on the next page and shown in Figure 3.8. Town maps of drainage basins can be found in Appendix F.

Housatonic River Main Stem Regional Basin

The Housatonic River is one of Connecticut's largest rivers, extending about 139 miles from its source in Massachusetts to its mouth at Long Island Sound. The watershed and its component river systems are classified as a Major drainage basin, draining an area of about 1,939 square miles in Connecticut, Massachusetts, and New York. The regional Housatonic River basin is about 932.66 square miles.

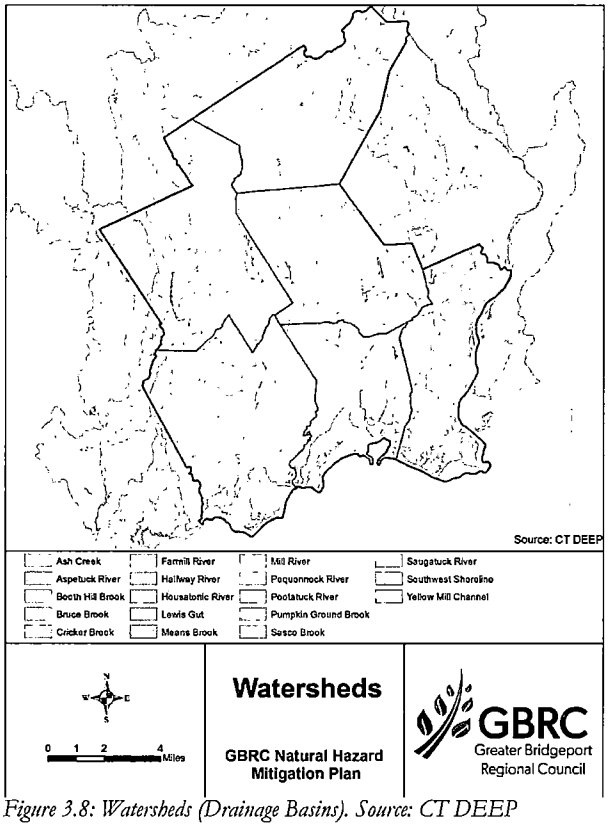


Figure 3.8: Watersheds (Drainage Basins). Source: CT DEEP

The drainage basins associated with the Pootatuck River, Halfway River, Farmill River, Pumpkin Ground Brook, and Means Brook flow into and are sub-regional basins of the Housatonic main stem. The lower sections of the Housatonic River are designated as a sub-regional drainage basin.

Housatonic River

In the Region, the Housatonic River forms the northeast boundary between Monroe and the Town of Oxford and is the municipal boundary between Stratford and the City of Milford.

The Stevenson Dam impounds the river and forms Lake Zoar. The lake is long and narrow and provides flood control, recreational opportunities, and hydroelectric power to the area. The Stevenson Dam is one of the largest dams in the Region, and the largest in Monroe. Downstream of the Stevenson Dam the river flows in a southerly direction through the City of Shelton and Stratford before entering Long Island Sound.

One perennial watercourse known as Boys Halfway River drains the far eastern end of Monroe, an area of 0.7 square miles, and joins Lake Zoar near the Stevenson Dam. Most of the east-central part of Stratford, as well as the lands immediately adjacent to the river, drain directly to the Housatonic River.

Farmill River

The Farmill River begins in south-central Monroe and flows in a southeasterly direction into Shelton and forms the town line between Stratford and Shelton. Combined with its Beardsley Brook tributary, the Farmill River drains about three square miles in the town. The area drained by the Farmill River comprises much of the developed part of Monroe. As a result, a number of chronic flooding problems do occur along the river and its tributaries.

The Farmill River does not flow through Trumbull and only a small portion of the northern part of the Town is in its drainage basin. The river ultimately joins the Housatonic River. The drainage area of the Farmill River totals about 15 square miles.

Halfway River

The Halfway River begins in Rowledge Pond, just north of the Monroe town line in the Town of Newtown. The Pine Swamp area of Monroe also drains into the river. From its source, the river flows

Table 3.1: Drainage basins. Source: CT DEEP

REGIONAL AND SUB-REGIONAL DRAINAGE BASINS - METROCOG PLANNING REGION

Regional Basin	Sub-Regional Drainage Basin	Towns	Size (Square Miles)
Housatonic Main stem	Farmill River	Monroe & Trumbull	15.09
Housatonic Main stem	Halfway River	Monroe	10.68
Housatonic Main stem	Housatonic River	Monroe & Stratford	623.54
Housatonic Main stem	Means Brook	Monroe	10.95
Housatonic Main stem	Pootatuck River	Monroe & Easton	20.78
Housatonic Main stem	Pumpkin Ground Brook	Trumbull & Stratford	5.94
Saugatuck	Aspetuck River	Easton & Fairfield	71.60
Saugatuck	Saugatuck River	Easton & Fairfield	71.60
Southwest Coastal Eastern	Ash Creek/Rooster River	Bridgeport & Fairfield	15.33
Southwest Coastal Eastern	Booth Hill Brook	Trumbull	5.09
Southwest Coastal Eastern	Bruce Brook/Johnsons Creek	Stratford & Bridgeport	3.44
Southwest Coastal Eastern	Lewis Gut	Stratford & Bridgeport	3.98
Southwest Coastal Eastern	Mill River/Cricker Brook	Monroe, Easton & Fairfield	32.02
Southwest Coastal Eastern	Pequonnock River	Monroe, Trumbull & Bridgeport	24.03
Southwest Coastal Eastern	Sasco Brook	Fairfield	10.21
Southwest Coastal Eastern	Yellow Mill Channel	Trumbull, Stratford & Bridgeport	4.52
Southwest Coastal Shoreline	Pine Creek (Local)	Fairfield	2.00
Southwest Coastal Shoreline	Southwest Shoreline	Fairfield, Bridgeport & Stratford	7.80

in a northeasterly direction, eventually forming the boundary between Newtown and Monroe. The Halfway River joins the Housatonic River at Lake Zoar. The Halfway River has a total drainage area of about 10.5 square miles.

The Copper Hill Brook and its tributary Smith Pond Brook drain the central part of Monroe, with a combined drainage area of roughly 2.5 square miles, before joining the Halfway River.

Means Brook

Means Brook begins in eastern Monroe near Boys Halfway River, where Hurds Brook was diverted from Boys Halfway River to Means Brook. It has a total drainage area of 11 square miles. Upstream of Means Brook, the drainage area includes Hurds Brook, which is approximately two square miles. The portion of the Means Brook drainage basin in Monroe is relatively rural. Means Brook flows to the south, and most of its drainage area lies in Shelton, where it joins the Farmill River upstream of the Housatonic River.

Pootatuck River

The Pootatuck River is one of the few rivers with a drainage area in the Region that flows in a northerly direction. The river rises in the far west corner of Monroe near the Easton town line, and flows north through Newtown to the Housatonic River. A tributary of the river drains the far west section of Monroe, including the area around Guskie Pond. The total size of the drainage basin is about 21 square miles, with only about one square mile located in Monroe.

Pumpkin Ground Brook

The northwest corner of Stratford and southeast corner of Trumbull lie in the Pumpkin Ground Brook drainage basin. The brook begins in the Trap Falls Reservoir in southern Shelton, and flows generally in a southeasterly direction through Shelton and Stratford before joining the Housatonic River. A majority of the area flows through Beaver Dam Lake. A number of short, unnamed brooks flow into the Pumpkin Ground Brook system. The total drainage basin is 6 square miles.

Saugatuck River Regional Basin

The Saugatuck River regional basin lies along the western edge of the Region and covers mostly the towns of Redding, Weston and Westport. The basin drains 89.5 square miles.

The drainage areas associated with the Aspetuck River and Saugatuck River are two of the three sub-regional basins comprising the Saugatuck River Regional Basin.

Saugatuck River

The Saugatuck River drainage basin encompasses about 48.5 square miles, with headwaters in Danbury and Ridgefield. The river flows in a southerly direction and enters the Saugatuck Reservoir, a public water supply reservoir. The reservoir lies along the western edge of Easton. Downstream of the reservoir, the Saugatuck River flows through the Town of Weston and the Town of Westport before entering Long Island Sound. Adjacent land in Easton drains either directly into the reservoir or into the Saugatuck River downstream of its dam. Most of the land is preserved as open space, either as water-company owned lands or as parts of the Centennial Watershed state forest.

Aspetuck River

The Aspetuck River has its headwaters in southwestern Newtown and flows in a southwesterly direction toward the Saugatuck River. It forms the southwest border between the Town of Easton and the Town of Weston as well as the northwest border of the Town of Fairfield with the Town of Weston. The west side of Easton and northwest corner of Fairfield are drained by the Aspetuck River. The total size of the drainage basin is 23 square miles.

The river flows through the Aspetuck Reservoir, a public water supply reservoir, and joins the Saugatuck River downstream of Easton in the Town of Westport. Several unnamed streams flow into the Aspetuck River.

The areas drained by the Aspetuck River are very rural, and flooding problems are infrequent. Land use in this part of the watershed is typical of Easton and the northern part of Fairfield: large lot residential.

Southwest Eastern Regional Complex Basin

The Southwest Eastern Regional Complex is a part of the Southwest Coastal Major Basin that drains most of Fairfield County. The regional complex covers most of the Region, except for the eastern half of Monroe and northeast part of Stratford. It is associated with Ash Creek, Booth Hill Brook, Bruce Brook, Cricker Brook, Lewis Gut (Great Salt Marsh), the Mill River, the Pequonnock River, Sasco Brook and the Yellow Mill Channel. The drainage area is about 98.5 square miles.

Ash Creek/Rooster River

Ash Creek is the tidal estuary of the Rooster River and is coincident with the boundary between Fairfield and the Black Rock section of Bridgeport. The watercourse is known as Rooster River upstream of the New Haven rail line bridge. The entire drainage basin includes the tributaries Ox Brook and Horse Tavern Brook and has an area of roughly 15.5 square miles.

The section of the watercourse named Rooster River is only two miles in length, formed by the junction of Horse Tavern Brook and Londons Brook in the eastern section of Fairfield. Londons Brook begins in northeast Fairfield and flows in a southerly direction through Fairfield, having a drainage area of 1.5 square miles. In Trumbull, the area associated with the Ash Creek/Rooster River drainage basin surrounds the Horse Tavern Brook. Horse Tavern Brook begins at Canoe Brook Lake in Trumbull and flows in a southerly direction through southwest Trumbull, the northwest corner of Bridgeport, and eastern Fairfield, having a drainage area of almost six square miles

The Horse Tavern Brook watershed is densely developed in Trumbull, and it flows in a culvert under the Westfield/Trumbull Shopping Mall before crossing the town line into the northwest corner of Bridgeport. Horse Tavern Brooks joins Londons Brook in Fairfield to form the Rooster River.

Ox Brook is a tributary of Rooster River, rising at the municipal boundary between Trumbull and Bridgeport. The brook flows in a southerly direction only 500 feet from Horse Tavern Brook in northern Bridgeport, passes through residential neighborhoods, and joins Rooster River in the western section of Bridgeport, with a total drainage area of a little more than two square miles.

The flow of Rooster River was modified in the past to reduce flooding. It is directed into a culvert beneath Laurel Avenue, bypassing the bend in the channel. This culvert rejoins the river a short distance downstream, leaving the channel dry except during storms.

Ox Brook has been modified along its entire length. Many sections of the brook are underground in culverts, and the exposed portions of the brook have been heavily channelized. The lowest section of the brook is directed into a nine-foot diameter culvert beneath Capitol Avenue that joins the Rooster River culvert. The bypassed sections of the brook channel located downstream of Capitol Avenue have been filled or remain as disjointed dry segments.

Booth Hill Brook

Booth Hill Brook is a larger tributary of the Pequonnock with a total drainage area of five square miles. Most of this area is within Trumbull, with a small area located in Shelton. Booth Hill Brook begins in the north eastern part of Trumbull near the Farmill River watershed. It flows in a southerly direction and through Pinewood Lake before merging with the Pequonnock River.

Bruce Brook

Bruce Brook rises in northwest Stratford and flows in a southerly direction from its headwaters. It forms the border between Bridgeport and Stratford from about US Route 1 to a small dam immediately upstream of the New Haven rail line crossing. Downstream of the railroad tracks, the outlet is protected by a tide gate maintained by the Connecticut Department of Transportation. At this point, Bruce Brook becomes Johnson's Creek, which flows into Bridgeport Harbor and is the tidal estuary of Bruce Brook.

The Bruce Brook drainage area is almost 3.5 square miles, with most of its area within Stratford. A small area is located in Bridgeport. The watershed is densely developed with primarily residential property but with some commercial development in the southern portion.

Lewis Gut

The Lewis Gut watershed is located in the South End of Stratford and consists of land draining directly to or through unnamed streams to the Great Salt Meadows, a component of the Stewart McKinney National Wildlife Refuge. The area is densely developed with residential and commercial properties and includes the Sikorsky Airport and Lordship section of town. The total area is approximately four square miles and the area drains in several locations to the salt marsh. Besides the Lordship area, which is higher in elevation, a majority of this watershed is flat land lying, below the base flood elevation and subject to coastal flooding.

Mill River and Cricker Brook

The Mill River begins in the vicinity of the town line between Monroe and Easton, very close to the headwaters of the Pootatuck River and flows in a southerly direction forming the Easton Reservoir, a public water supply. Downstream of the reservoir, it

serves as a short section of the town line between Fairfield and Easton, and then flows through the central part of Fairfield before ending at Southport Harbor. The entire drainage area for the Mill River is 32 square miles.

Only the extreme west side of Monroe is drained by the Mill River. The northwest section of Trumbull drains to the east side of the reservoir via a number of small streams and as overland flows. The entire eastern half of Easton and the central part of Fairfield lie within the Mill River watershed.

Main tributaries of the Mill River include Browns Brook and Cricker Brook. Both join the Mill River in Fairfield. Cricker Brook begins in the center of Easton. The impoundment of Cricker Brook created the Hemlock Reservoir, a public water supply reservoir. The northern half of this reservoir is located in Easton, with the southern half in Fairfield. Cricker Brook has a drainage area of approximately 7 square miles and Browns Brook has a drainage area of about 1.5 square miles.

Pequonnock River

In the Town of Monroe, the West Branch and East Branch of the Pequonnock River join to form the main stem. The river flows in a southerly direction through the Town of Trumbull and the City of Bridgeport, forming the Bridgeport Harbor and emptying into Long Island Sound. The total drainage of the Pequonnock River area is 24 square miles.

In north-central Bridgeport, a dam on the river forms Bunnells Pond, a 33-acre lake. The dam has been reinforced and is designed to safely overtop during peak flows. The pond is relatively small in relation to the flow rate of the river.

The Pequonnock River has a number of tributaries over its entire length. In Bridgeport, the primary tributary is Island Brook. This brook begins in Ehrsam Pond in Trumbull, flows in a southerly direction into Lake Forest, and then continues through central Bridgeport to the Pequonnock River. Island Brook has a total drainage area about 2.5 square miles, with roughly half of the area upstream of Lake Forest in Trumbull.

Island Brook has been modified along its entire length, although to a lesser extent than nearby Ox Brook. Some upstream sections of the brook are underground in culverts, as is the lower section between Park Cemetery and its outlet to the Pequonnock River. Several exposed portions have been channelized.

Much of the area drained by the Pequonnock River and its tributaries are highly developed, including the central part of Monroe and most of Bridgeport. As a result, a number of chronic flooding problems do occur along the river and its tributaries. The Pequonnock River floodplain is largely undeveloped in Trumbull, as the river flows through a step-walled valley and several town parks. Land use is predominantly suburban residential on large lots.

Sasco Brook

Sasco Brook rises in northern Fairfield and flows in a southerly to southwesterly direction, forming the boundary with the Town of Westport closer to its outlet on Long Island Sound. Sasco Brook has a number of tributaries in Fairfield, including Great Brook. It drains roughly the western third of the Town. The entire drainage area for the Sasco Brook and its tributaries is about ten square miles. Land use within the watershed is rural to suburban. Flooding problems are infrequent and limited to sections of Great Brook.

Yellow Mill Channel

Yellow Mill Channel is a tidal estuary extending from Bridgeport Harbor to the New Haven rail line, just under a mile in length. The watercourses that flow into the Yellow Mill Channel begin as two streams in the southeast corner of Trumbull. Each stream begins just north of the Merritt Parkway, flows in a southerly direction through residential areas and under the Route 8 expressway, and enters the northeast corner of Bridgeport and Success Lake. Only a small portion of the watershed is located in Stratford.

Downstream of Success Lake, the Yellow Mill Channel Stream flows through a very heavily industrialized section of Bridgeport; including the former Remington Arms munitions grounds and the former Remington Arms factory. The area around Success Lake has been designated as the site of the proposed Lake Success Eco-Business Park. The stream is constricted at four locations; one just north of Boston Avenue (US Route 1) that forms Stillman Pond and at Grant Street, Barnum Avenue and Crescent Avenue. Collectively these latter three impoundments are referred to as the Pembroke Lakes. The stream passes under the New Haven rail line through a culvert before entering the Yellow Mill Channel.

The total drainage area of the channel is 4.5 square miles.

Southwest Shoreline Complex Basin

The Southwest Shoreline basin consists of the lands immediately adjacent to and along the coastline. It stretches from the Town of Greenwich at the New York state line to Housatonic River. The drainage area is about 41.5 square miles.

Along the coast in the Region, areas that are included in the Southwest Shoreline basin include:

- Southport Center and land west of Southport Harbor, totaling 0.5 square miles. Land use is predominately residential with commercial use in the center area and adjacent to the harbor.
- Fairfield Town Center and the lands associated with Pine Creek. Pine Creek is a tidal estuary that begins as a small watercourse in the Town Center area. It has a drainage area of roughly 3 square miles. Although the area remains relatively undeveloped, the Pine Creek tidal wetlands area has been extensively modified by drainage canals, tide gates and dikes. Where the creek flows parallel to and behind a barrier beach, the floodplain has been extensively altered with bulkheads due to dense residential development.
- Black Rock and South End neighborhoods in Bridgeport, including land on both sides of Black Rock Harbor. The area stretches to the north to encompass the eastern half of the West End and parts of the Hollow neighborhoods. Land use is highly developed with medium-to-density housing and commercial strips along the main road arteries. The area includes Cedar Creek and Seaside Park. The drainage area totals about three square miles.
- Steele Point peninsula in Bridgeport. This area juts into Bridgeport Harbor and is surrounded by the Pequonnock River on the west and the Yellow Mill Channel on the east. The site is undergoing redevelopment into a mixed-use complex on the property, including a new marina.
- Lower East End in Bridgeport. The area is adjacent to Bridgeport Harbor and is bordered by the Yellow Mill Channel on the west and Johnson's Creek on the east. The eastern half of the area is predominately medium density housing and the western half is controlled by the Bridgeport Port Authority. The Cilco Terminal and other port facilities are located on this side. It is about 0.5 square miles.
- East side of Johnson's Creek in Stratford. This small area, about 0.2 square miles, covers an industrial area of Stratford.
- Long Beach, including Pleasure Beach in Bridgeport, and the Lordship section of Stratford. This area is comprised of the barrier beach that separates Long Island Sound from the Great Meadows Salt Marsh. About half of the barrier beach drains directly to Long Island and the other half is associated with the Lewis Gut sub-regional basin. The eastern part of the drainage area is comprised mainly of residential units. Most of this area of Lordship is located on high ground and less susceptible to storm surge flooding. However, coastal properties were initially built as seasonal dwellings and many have been converted to year-round use. The area is about 0.5 square miles.

Critical Infrastructure and Facilities

Numerous public and private facilities and infrastructure are critical to the assessment of risks from natural hazards and are important in mitigating the possible effects of events. Critical structures include facilities that support responses and recovery efforts, such as, police headquarters, emergency management operations centers, fire stations, hospitals, medical centers, and governmental offices. In addition, facilities that house vulnerable populations are considered in this category. This category includes long-term care facilities, as these house populations of individuals that would require special assistance during an emergency. Educational institutions are often considered critical facilities, as these are often used to house persons displaced from their homes.

The City of Bridgeport is the central city of the Region. It serves as the transportation hub and is home to several essential and critical facilities that serve the Region. The State of Connecticut's Emergency Operations Center (EOC) is located in the Troop G State Police barracks in Downtown. The EOC for the City is the back-up facility for the State EOC and can handle regional emergency response as necessary. The Region's main medical facilities are Bridgeport Hospital and St. Vincent's Medical Center, both located in Bridgeport.

Major transportation infrastructure is critical for evacuation and response, and to ensure that emergencies are addressed while day-to-day management of the Region continues. Critical infrastructure located in flood prone areas are subject

to flooding and therefore vulnerable to closure in the event of a natural disaster. Flooding is not the only concern, as infrastructure can be impacted by downed powerlines, trees, and other debris.

Commuter rail service offers a vital transportation mode for travel within and beyond Connecticut, especially lower Fairfield County and New York City. The Metro-North Railroad operates commuter trains through the Bridgeport on the electrified New Haven Main Line (NHL-ML). The NHL-ML runs east-west along the southwestern shoreline of the state between New Haven and New York City. The Region has five rail stations:

- Stratford Center at 2520 Main Street, Stratford
- Bridgeport at 525 Water Street, Bridgeport
- Fairfield Metro Center at 61 Constant Comment Way, Fairfield
- Fairfield Center at 165 Unquowa Road, Fairfield
- Southport at 400 Center Street, Fairfield

The state also operates the East Bridgeport Rail Yard located at 664 Hollister Avenue. The rail yard is used to store rail cars not in use and is the location of its Maintenance of Way facility. This area is also the site of the proposed Barnum Station, the second rail station in Bridgeport.

Fixed-route and demand responsive public bus service is provided by Greater Bridgeport Transit (GBT) to five of the six towns in the Region. The only town with no public transit service is Easton. The local, fixed-route bus system consists of 19 routes, with various route extensions and branches to extend coverage. The system is radial in that most routes begin, end, or pass-through Downtown. The downtown terminal, located at 710 Water Street, acts as a pulse point to facilitate transfers between routes and better coordinate operations. The GBT's Maintenance Garage and Administrative Offices are located at 1 Cross Street.

Places where impacted populations can go before, during and while recovery occurs are needed and are essential during an emergency. Most often, schools are used as public shelters, as they have gymnasiums that can accommodate large numbers of residents, and are structurally capable of withstanding the forces endured during an event. In addition to structural rigidity, schools maintain the necessary facilities such as lavatories, showers, and food service areas as well as other spaces for recreation. Emergency back-up power generation is usually available, but in some instances may not provide sufficient power for the entire shelter.

The American Red Cross (ARC) has been chartered by the US Congress to respond to all disasters and be the lead agency for mass care and sheltering. It coordinates emergency services at the local level through its regional chapters. The municipalities of MetroCOG are served by the Mid-Fairfield Chapter. Depending on the extent and duration of the emergency, the mass care of residents may be handled through the activation of local shelters for routine incidents or the municipality may request ARC assistance. At that point, the municipal shelter may become a Red Cross shelter, and serve a regional function.

The ARC conducts assessments of shelter facilities to determine effectiveness in providing for the needs of residents during an emergency. The assessment evaluates site accessibility, capacity, utilities available, and lavatory and food service capacity. While the assessment provides an opportunity for determining the appropriateness of the facility to function as a shelter, it does not mean that the facility would be operated by the Red Cross. For instance, in specific scenarios a shelter may be staffed and managed by the municipality or a private organization, but with a level of ARC assistance. In other situations, the ARC may be the responsible party for providing supplies such as cots, shelter kits, etc.

By ARC policy, Red Cross shelters do not restrict access by residence status. Conversely, shelters operated by municipal authorities retain and often exercise the right to restrict access to local residents only. Therefore, any ARC shelter could be viewed as a "regional" shelter. Whereas most disasters are of limited scope, the distinction between local and regional shelters is seldom of concern. During a catastrophic regional event, however, this distinction may have more relevance.

The Region has approximately 44 designated emergency shelters, capable of accommodating approximately 18,200 individuals. The town by town breakdown of these shelters can be seen in Table 3.2. Note that these figures are approximate and subject to change. Many communities only intend to use these facilities on a temporary basis for providing shelter until hazards such as hurricanes diminish. However, there may be instances that longer term sheltering is required.

The City of Bridgeport has the most emergency shelters and has the capability of housing the highest number of residents. Nearly 30 shelters

Table 3.2: Shelters in the Region
Numbers and Capacities Approximate

Bridgeport	
Number of Shelters	29
Capacity	13,000
Easton	
Number of Shelters	1
Capacity	200
Fairfield	
Number of Shelters	8
Capacity	3000
Monroe	
Number of Shelters	1
Capacity	200
Stratford	
Number of Shelters	4
Capacity	1,000
Trumbull	
Number of Shelters	1
Capacity	800
Region	
Number of Shelters	44
Capacity	18,200

are located in Bridgeport, mostly in schools. These shelters can accommodate about 13,000 people. In addition, Bridgeport has designated some of its shelters to accommodate persons with special needs. One of the shelters is located within a flood zone.

Critical infrastructure can be found in the FEMA Flood Maps in Appendix F and as a list in Appendix A.

3.2 Natural Hazards

This 2019 NHMP Update includes hazards identified in the 2014 NHMP as well as additional hazards that were identified during the planning process, including meetings with the local Planning Teams, the CRB Workshops, and through feedback provided via our online survey and Public Information Meetings.

The first step in assessing risks from extreme weather events or other natural disasters was to identify the hazards that might affect the region and determine which are most likely to occur. The term hazard means *"an event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agriculture loss, damage to the environment, interruption of business, or other harm or loss"* (Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, Federal Emergency Management Agency, 1997).

The original 2006 NHMP identified the following natural hazards that can potentially affect the Region:

- Inland and Coastal Flooding
- Sea Level Rise
- Summer and Winter Storms
- Earthquakes
- Dam Failure

The risk assessment of these hazards was based on the understanding that a single hazard may be caused by multiple events. For example, flooding may occur as a result of heavy rains, a hurricane/tropical storm, or a winter storm. And the extent of the flooding problem may differ depending on the event. The problems of inland and coastal flooding were addressed separately, as the extent, cause and risks associated with each varies.

The 2014 NHMP Update used the above list as a starting point. Additional natural hazards were defined through holding hazard mitigation and resiliency workshops, public outreach (meetings and surveys), and research and documentation of recent events.

Participants at the workshop held in the City of Bridgeport identified the top hazards facing the City as:

1. Frequency and severity of coastal and inland flooding
2. Storm surge from tropical storms and hurricanes
3. Sea level rise and rising groundwater
4. Snow, ice, rain and wind storms
5. Drought and extreme heat
6. Tornados and earthquakes

From the Fairfield workshop, the top hazards were similar:

1. Coastal flooding
2. Inland flooding
3. Storms (including wind, rain, ice, and snow)
4. Sea level rise
5. Extreme precipitation events
6. Extreme temperature events (heat and cold)

For the workshop that included stakeholders from Easton, Monroe and Trumbull, the principal hazards were:

1. Inland flooding caused by extreme precipitation events
2. Wind damage that downs trees and power lines

From the workshop held in Stratford, the top hazards were similar to the other coastal communities:

1. Coastal flooding
2. Sea level rise
3. Storm surge from tropical storms and hurricanes

Based on the discussions at various workshops, the following natural hazards were assessed:

- Hurricanes
- Inland flooding
- Coastal flooding
- Sea level rise
- Summer storms/tornadoes
- Winter storms (blizzards/ice storms)
- Earthquakes
- Dam failures

While extreme heat and cold were considered potential hazards that might affect the region, these events were not assessed in detail as the Region is not susceptible to prolonged periods of excess temperatures or temperatures below zero degrees Fahrenheit. Climate data for the Region available from the National Climate Data Center were reviewed. Since 1895, the average temperature during July is 69.5 degrees and the mean temperature during January is 23.2 degrees. The Region averages only about eight days with temperatures over 90 degrees and only about one day with a temperature below 0 degrees.

For the 2019 Plan Update, the existing list of hazards addressed in the plan were compared to those addressed in the 2019 Connecticut NHMP Update. Two hazards addressed in the State NHMP that were not previously addressed in the MetroCOG Region NHMP are wildfires and droughts.

In general, drought is considered to be a minimal hazard in the region, as only 1.6% of the region is in agriculture. The largest consideration for drought is its effect on Aquarion Water Company's ability to provide water service to customers in the region, but the utility has drought management measures in place as part of its Water Supply Plan on file with the Connecticut Department of Public Health. A detailed discussion of drought is therefore not included herein.

As more than 40% of the region is forested, a discussion of wildfires was considered appropriate for the plan. A new section has been added to discuss the wildland-urban interface and the potential impacts of wildfires in the region.

Exposure Analysis

Whereas certain hazards such as hurricanes may affect the entire region, other hazards such as flooding typically affect defined areas. Thus, the extent of exposure to a particular natural hazard may vary depending on the extent of the hazard.

Vulnerable assets were identified by intersecting GIS-based asset inventories and demographic data with hazard risk boundaries to determine the number of parcels, buildings, critical facilities (Appendix A), historic resources (Appendix B), and populations exposed to each hazard. This results in an estimation of exposure by hazard. Tables 3.3 through 3.8 present vulnerable assets for each MetroCOG community. The following inventories were used to conduct the exposure analysis:

- Coastal erosion exposure was mapped using the 2014 publication *Analysis of Shoreline Change in Connecticut* by DEEP, Sea Grant, and UConn/CLEAR.
- Dam failure exposure was determined based on dam failure inundation mapping available from DEEP for the high hazard dams in the planning area.
- Flooding exposure was based on existing digital flood insurance rate maps (DFIRMs) for each community. Note that the 0.2% annual chance flood areas include the areas mapped under the 1% annual chance flood areas.
- Historic resources were mapped using spatial data developed by SHPO in 2015-2017.
- Sea level rise extent was mapped using the "bathtub model" methodology, with all land areas below the elevation of Mean Higher High Water (MHHW) plus the sea level rise projections developed by CIRCA (see Section 3.7 for projections).
- Storm surge exposure was based on the 2008 Sea, Lake, and Overland Surges from Hurricanes (SLOSH) analysis prepared by the United States Army Corps of Engineers. This GIS shapefile is available from DEEP.
- Wildfire exposure was determined using a methodology that highlights land cover, extent of contiguous forested or grassed areas, and distance from water sources. Starting with the entire land area of each community,

Table 3.3: Exposure Summary for Bridgeport
Number or Value (Millions)

Hazard	Number of Parcels	Value of At-Risk Parcels	Number of Buildings	Value of At-Risk Buildings	Number of Critical Facilities	Value of At-Risk Critical Facilities	Number of Historic Assets	Value of At-Risk Historic Assets
Dam Failure	735	$154	399	$51	0	$0	47	$3
Coastal Erosion	75	$69	99	$26	0	$0	21	$5
Earthquake	36,275	$7,909	39,549	$5,951	83	$1,364	1,804	$580
Flooding								
1% Annual	5,304	$2,153	3,147	$1,678	15	$710	258	$88
0.2% Annual	7,190	$2,513	4,243	$1,900	19	$730	323	$95
Storm Surge								
Category 1	1,426	$1,295	482	$1,094	5	$599	97	$25
Category 2	3,187	$1,797	1,765	$1,461	12	$699	354	$46
Category 3	4,685	$2,234	2,789	$1,808	20	$867	760	$69
Category 4	5,164	$4,245	3,308	$3,415	27	$873	1,318	$121
Hurricane / Tropical Storm	36,275	$7,909	39,549	$5,951	83	$1,364	1,804	$580
Sea Level Rise	744	$537	123	$421	6	$33	36	$4
Thunderstorm	36,275	$7,909	39,549	$5,951	83	$1,364	1,804	$580
Tornado	36,275	$7,909	39,549	$5,951	83	$1,364	1,804	$580
Winter Storm	36,275	$7,909	39,549	$5,951	83	$1,364	1,804	$580
Wildfire	363	$79	$395	$60	0	$0	18	$6

Table 3.4: Exposure Summary for Easton
Number or Value (Millions)

Hazard	Number of Parcels	Value of At-Risk Parcels	Number of Buildings	Value of At-Risk Buildings	Number of Critical Facilities	Value of At-Risk Critical Facilities	Number of Historic Assets	Value of At-Risk Historic Assets
Dam Failure	75	$48	24	$34	0	$0	0	$0
Earthquake	3,247	$1,331	5,311	$648	8	$12	45	$12
Flooding								
1% Annual	567	$207	130	$44	0	$0	12	$6
0.2% Annual	700	$278	168	$150	0	$0	20	$11
Hurricane / Tropical Storm	3,247	$1,331	5,311	$648	8	$12	45	$12
Thunderstorm	3,247	$1,331	5,311	$648	8	$12	45	$12
Tornado	3,247	$1,331	5,311	$648	8	$12	45	$12
Winter Storm	3,247	$1,331	5,311	$648	8	$12	45	$12
Wildfire	3,247	$1,331	5,311	$648	8	$12	45	$12

Table 3.5: Exposure Summary for Fairfield
Number or Value (Millions)

Hazard	Number of Parcels	Value of At-Risk Parcels	Number of Buildings	Value of At-Risk Buildings	Number of Critical Facilities	Value of At-Risk Critical Facilities	Number of Historic Assets	Value of At-Risk Historic Assets
Dam Failure	3,007	$1,537	3,048	$643	3	$56	224	$234
Coastal Erosion	226	$468	94	$145	0	$0	5	$12
Earthquake	19,597	$10,407	29,973	$4,783	49	$251	411	$422
Flooding								
1% Annual	6,269	$1,070	5,489	$408	7	$182	211	$211
0.2% Annual	8,530	$1,929	6,542	$808	7	$235	264	$232
Storm Surge								
Category 1	3,308	$1,709	2,878	$633	0	$0	130	$135
Category 2	3,367	$1,841	5,692	$698	7	$50	212	$212
Category 3	4,547	$3,449	7,425	$1,375	11	$61	256	$263
Category 4	6,143	$4,833	9,021	$1,982	14	$120	353	$331
Hurricane / Tropical Storm	19,597	$10,407	29,973	$4,783	49	$251	411	$422
Sea Level Rise	1,471	$931	773	$330	9	$87	57	$75
Thunderstorm	19,597	$10,407	29,973	$4,783	49	$251	411	$422
Tornado	19,597	$10,407	29,973	$4,783	49	$251	411	$422
Winter Storm	19,597	$10,407	29,973	$4,783	49	$251	411	$422
Wildfire	6,859	$3,642	10,491	$1,674	0	$0	144	$148

Table 3.6: Exposure Summary for Monroe
Number or Value (Millions)

Hazard	Number of Parcels	Value of At-Risk Parcels	Number of Buildings	Value of At-Risk Buildings	Number of Critical Facilities	Value of At-Risk Critical Facilities	Number of Historic Assets	Value of At-Risk Historic Assets
Dam Failure	22	$41	19	$36	0	$0	3	$31
Earthquake	7,827	$2,100	11,546	$1,369	14	$72	134	$102
Flooding								
1% Annual	1,548	$431	236	$326	6	$58	20	$34
0.2% Annual	1,691	%519	281	$387	8	$60	27	$67
Hurricane / Tropical Storm	7,827	$2,100	11,546	$1,369	14	$72	134	$102
Thunderstorm	7,827	$2,100	11,546	$1,369	14	$72	134	$102
Tornado	7,827	$2,100	11,546	$1,369	14	$72	134	$102
Winter Storm	7,827	$2,100	11,546	$1,369	14	$72	134	$102
Wildfire	7,827	$2,100	11,546	$1,369	14	$72	134	$102

Table 3.7: Exposure Summary for Stratford
Number or Value (Millions)

Hazard	Number of Parcels	Value of At-Risk Parcels	Number of Buildings	Value of At-Risk Buildings	Number of Critical Facilities	Value of At-Risk Critical Facilities	Number of Historic Assets	Value of At-Risk Historic Assets
Dam Failure	3,561	$1,109	3,422	$711	2	$71	168	$84
Coastal Erosion	297	$83	144	$43	0	$0	2	$1
Earthquake	22,868	$4,839	26,719	$3,162	27	$196	416	$138
Flooding								
1% Annual	7,449	$1,820	4,586	$1,274	3	$103	105	$76
0.2% Annual	7,941	$2,070	4,759	$1,449	4	$107	105	$76
Storm Surge								
Category 1	1,801	$782	798	$495	1	$56	18	$57
Category 2	3,253	$1,075	2,431	$677	3	$71	61	$67
Category 3	6,186	$2,118	4,800	$1,329	3	$71	162	$73
Category 4	8,648	$2,975	6,538	$1,848	5	$75	246	$82
Hurricane / Tropical Storm	22,868	$4,839	26,719	$3,162	27	$196	416	$138
Sea Level Rise	1,061	$478	87	$305	1	$56	13	$4
Thunderstorm	22,868	$4,839	26,719	$3,162	27	$196	416	$138
Tornado	22,868	$4,839	26,719	$3,162	27	$196	416	$138
Winter Storm	22,868	$4,839	26,719	$3,162	27	$196	416	$138
Wildfire	5,717	$1,210	6,680	$791	7	$49	104	$35

Table 3.8: Exposure Summary for Trumbull
Number or Value (Millions)

Hazard	Number of Parcels	Value of At-Risk Parcels	Number of Buildings	Value of At-Risk Buildings	Number of Critical Facilities	Value of At-Risk Critical Facilities	Number of Historic Assets	Value of At-Risk Historic Assets
Dam Failure	451	$118	271	$64	0	$0	1	$0
Earthquake	14,048	$4,215	18,175	$2,498	33	$158	154	$25
Flooding								
1% Annual	1,509	$752	466	$218	1	$15	0	$0
0.2% Annual	2,731	$1,395	935	$377	2	$31	0	$0
Hurricane / Tropical Storm	14,048	$4,215	18,175	$2,498	33	$158	154	$25
Thunderstorm	14,048	$4,215	18,175	$2,498	33	$158	154	$25
Tornado	14,048	$4,215	18,175	$2,498	33	$158	154	$25
Winter Storm	14,048	$4,215	18,175	$2,498	33	$158	154	$25
Wildfire	3,512	$1,054	4,544	$625	8	$40	39	$6

areas of land, impervious surfaces, areas served by public water systems, and water bodies (rivers, streams, lakes, ponds) were removed. Contiguous areas of 50 acres or more were then identified and analyzed against 2010 CT ECO land cover data, with areas classified as a type of forested or grassed area selected as wildfire risk areas. These areas, plus a 50-foot buffer, represented the exposure area for wildfires.

- For the remaining hazards (earthquakes, hurricanes, thunderstorms, tornadoes, and winter storms), it was assumed that all buildings and populations were at equal risk. The exposure values are equal to the total exposure of the community.

3.3 Loss Estimates

Annualized loss estimates by community were developed for each natural hazard likely to impact the MetroCOG region. These were developed based on existing loss information collected by the communities, data published by FEMA or other sources, derived from county-wide data developed for the 2019 Connecticut NHMP Update, or developed using HAZUS-MH.

HAZUS-MH is a multi-hazard loss estimation model developed by the FEMA and the National Institute of Building Sciences (NIBS). It is run as an extension in ArcGIS, a Geographic Information System (GIS), and is designed to assist communities in identifying and reducing risk from natural hazards. In particular, HAZUS-MH is used to estimate the physical, economic, and social impacts of earthquakes, hurricanes, and floods.

A Level 1 analysis was performed using the HAZUS-MH Hurricane, Flood and Earthquake models. Level 1 analysis uses HAZUS-MH provided inventory and hazards information. HAZUS-MH has a robust inventory from which numeric estimation of loss from modeled hazards can be calculated. The inventory is from 2010 census data and includes information about buildings, population distribution and other community specific data represented by census tract and census blocks. In addition, it contains site-specific data such as emergency operation centers, fire stations, police stations, schools and medical care facilities. Results from HAZUS-MH and the corresponding loss estimates will be discussed in appropriate Hazard Profiles. Specific results can be found in Appendix G.

Annualized loss estimates were prepared for each hazard using the following methods, with results presented in Table 3.9:

- Dam failure data was downloaded from the National Performance of Dams (NPDP) for the Region for 1877 through present and adjusted for inflation. The regional damage was divided by the number of years of data (141) to develop annualized loss, which was attributed by the percentage of the population of each community to the region.
- Earthquake annualized loss was developed using HAZUS-MH.
- Flooding annualized loss was developed based on National Flood Insurance Program (NFIP) damage data for 1978 through 2018 for each community, plus the requested FEMA Public Assistance grants for each community attributable to flooding divided by the years of record available.
- Hurricane wind annualized loss was calculated from probabilistic simulations in HAZUS-MH. The equation presented in the FEMA HAZUS-MH Technical Manual was used to process the probabilistic data into annualized loss for each community.
- Thunderstorm and tornado annualized loss was calculated based on county-wide damages for each hazard presented in the 2019 State NHMP, which was attributed by the percentage of the population of each community to the county.

Table 3.9: Annualized Loss Estimates by Natural Hazard

Value (Thousands)

Hazard	Bridgeport	Easton	Fairfield	Monroe	Stratford	Trumbull	Region
Dam Failure	$8	$0	$3	$1	$3	$2	**$17**
Earthquake	$470	$30	$270	$70	$190	$140	**$1,170**
Flooding	$376	$6	$1,697	$4	$364	$24	**$2,472**
Hurricane Wind	$3,651	$127	$2,040	$322	$1,764	$729	**$8,635**
Thunderstorm	$102	$5	$43	$14	$36	$25	**$226**
Tornado	$20	$1	$9	$3	$7	$5	**$45**
Winter Storm	$143	$23	$107	$30	$99	$85	**$487**
Wildfire	$1	$30	$4	$11	$3	$5	**$55**

- Winter storms annualized loss was based on the requested FEMA Public Assistance grants for each community attributable to winter storms divided by the years of record available.
- Wildfire annualized loss was calculated based on average fire size and number of events per year for Fairfield County in the 2014 State NHMP, an estimated average response cost of $2,000 per event, and the population density of each community compared to the county.

3.4 Hazard Profile – Hurricanes and Tropical Storms

Setting

Hurricanes and tropical storm systems threaten Connecticut residents with the possibility of storm surges, powerful winds, and heavy rains. These elements can lead to devastating inland and coastal flooding, as well as the loss of power and structural damage to homes and businesses. The coastal communities of the Region (Bridgeport, Fairfield & Stratford) are the municipalities most at risk to inundation from a tropical event. Both our coastal and inland communities are also vulnerable to inland flooding and wind damage that could be associated with hurricanes and tropical systems. Further repercussions from tropical systems include substantial and widespread property damage, and loss of utility services, including electricity, water, telephone, cell service, sewage, and internet.

Hazard Assessment

Hurricanes and tropical storms fall under the broader class of storm systems known as tropical cyclones. A tropical cyclone is defined by the National Weather Service as a non-frontal, large scale, low pressure system that has developed over tropical or subtropical water and has a definite organized circulation. Tropical cyclones are categorized based on the speed of the sustained (1-minute average) surface winds near the center of the storm. These categories are:

- Tropical Depression – winds less than 39 mph,
- Tropical Storm – winds 39-to-74 mph, inclusive, and
- Hurricanes – winds at least 74 mph.

The geographical areas affected by tropical cyclones are called tropical cyclone basins. The Atlantic tropical cyclone basin is one of six in the world and includes much of the North Atlantic Ocean, the Caribbean Sea, and the Gulf of Mexico. The official Atlantic hurricane season begins on June 1st and extends through November 30th of each year, although occasionally hurricanes occur outside this period.

Storm Surge

Storm surge can be the greatest threat to human life and property from a hurricane or tropical system. While other storm types can bring a surge, they are most notably associated with systems of tropical origin. According to the National Hurricane Center, storm surge is an abnormal rise of water generated by a storm system that is over and above the predicted astronomical high tide levels. This rapid and occasionally extreme rise in water can cause substantial inundation along coastal areas, especially when it coincides with the astronomical high tide. When this occurs, a storm tide of up to twenty feet or more can occur. A storm tide is the combination of the tide elevation and the storm surge.

The storm surge is generated through water being pushed ashore by the force of winds moving cyclonically around the storm system. The magnitude of a storm surge within a coastal basin is governed by both the meteorological parameters of the hurricane and the physical characteristics of the basin. The meteorological aspects include the hurricane's size, measured by the radius; the intensity, measured by sea level pressure and maximum surface wind speeds at the storm center; the path, or forward track of the storm; and the storm's forward speed. Furthermore the ocean floor can play a major role with regards to the impact of a storm surge event.

While Long Island does buffer Connecticut from the open ocean, the geomorphology of Long Island Sound causes the basin to be particularly vulnerable to storm surge. The configuration of Long Island and the Connecticut coast causes a natural funneling influence on ocean waters as they are driven east to west into the Sound by a tropical event, amplifying surges.

The Saffir-Simpson Scale

While storm surge may have great impact

in coastal areas, wind is still the defining characteristic of tropical cyclones. The Saffir-Simpson Hurricane Scale, which has been adopted by the National Hurricane Center, categorizes hurricanes based upon their intensity. The Scale uses the sustained surface winds (1-minute average) near the center of the system to classify hurricanes into one of five categories:

Category 1

Sustained winds of 74-to-95 mph and has the potential to generate a storm surge four-to-five feet above predicted tide levels. Well-constructed frame homes may suffer damage to roofs, shingles, vinyl siding, and gutters. Large branches will break and shallowly rooted trees will likely be uprooted. Widespread damage to power lines and poles will likely cause power outages that could last from several days to a week or more. Additionally, minor to moderate coastal flooding is to be expected.

Category 2

Sustained winds of 96-to-110 mph. A storm surge from a Category 2 Hurricane is generally six-to-eight feet above predicted tide levels. Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted, posing a threat to structures, vital infrastructure and making roads impassable. Extensive power outages would be expected, with outages lasting up to a week or more. Low-lying coastal areas could flood two-to-four hours before the arrival of the storm. Damage to small craft and moored vessels should also be expected.

Category 3

Sustained winds of 111-to-130 mph, with a storm surge generally nine-to-twelve feet above predicted tide levels. Well-constructed frame homes may incur severe damage, including the removal of roof decking and gable ends. A large portion of trees will be either snapped or uprooted, leading to property and infrastructure damage. Electricity and water could be unavailable for several weeks. Low-lying coastal areas could flood three-to-five hours before the system's landfall. Inundation from flood waters will be extreme, causing damage to structures and property. Shoreline evacuations should be mandated to prevent loss of life.

Category 4

Sustained winds of 131-to-155 mph. A storm surge generally 13-to-18 feet above predicted tide levels is to be expected. Well-constructed frame homes will likely incur severe damage, with loss of most of the roof structure along with possible damage or loss of exterior walls. A majority of trees will either be snapped or uprooted. Almost universal power outages and impassable roads will isolate communities. Power could be unavailable for weeks or months, and hard hit areas will not be habitable for the same length of time.

Category 5

Sustained winds in excess of 155 mph and a storm surge generally greater than 18 feet above predicted tide levels. A majority of framed homes will be destroyed, with roof failure and wall collapse. Recovery of utilities could take from several weeks to months, with many areas uninhabitable during that period. Low-lying areas closest to the shore could be inundated by rising waters three–to-five hours before land fall. Major damage to lower floors of all structures located less than 15 feet above sea level and within 500 yards of the shoreline is to be expected. Large scale evacuations of low lying coastal communities within five-to-ten miles of the shoreline should be enforced.

The Saffir-Simpson Hurricane Scale assumes an average, uniform coastline for the contiguous United States and was intended as a general guide for use by public safety officials during hurricane emergencies. It does not reflect the effects of varying localized bathymetry, coastline configuration, astronomical tides, barriers and/or other factors that may modify surge heights or storm effects at the local level.

Historic Record

Through research efforts by NOAA's National Climate Center in cooperation with the National Hurricane Center, records of tropical cyclone occurrences within the Atlantic Cyclone Basin have been compiled from 1851 to present. Forty-five hurricanes and tropical systems have passed within a 65 mile buffer of the City of Bridgeport between 1851 and 2018, and 123 hurricanes and tropical storms passed within a 200 mile buffer. Based on these data, the Bridgeport area is impacted by a close tropical event or hurricane once every 3.7 years, and could be impacted by a tropical event or hurricane tracking farther afield every 1.4 years.

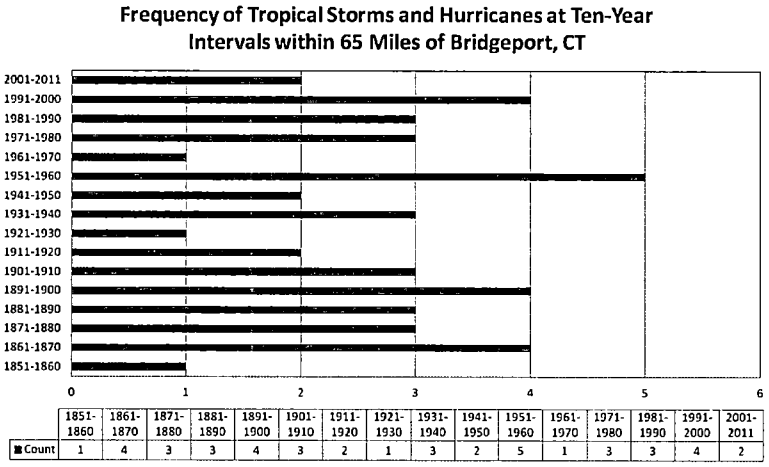


Figure 3.9: Tropical Cyclone Frequency. Data courtesy of NOAA's National Hurricane Center

While it is difficult to predict when a tropical storm or hurricane will strike the area, there is some consistency in the frequency of these storms. Figure 3.9 shows the historical record which has a range of 1-5 storms every 10 years.

Of the 45 tropical storms and hurricanes that have passed within 65 miles of Bridgeport, the majority (35 storms) have been classified as either a tropical storm or a tropical depression at landfall. However, six of the hurricanes made impact as either Category 2 or 3.

The storm tracks of the each hurricane event are displayed in Figure 3.10.

The following are detailed historical accounts of the major tropical storm systems that have affected the state of Connecticut. The accounts are compiled from the National Oceanic and Atmospheric Administration (NOAA). The records cover events from 1900 until present.

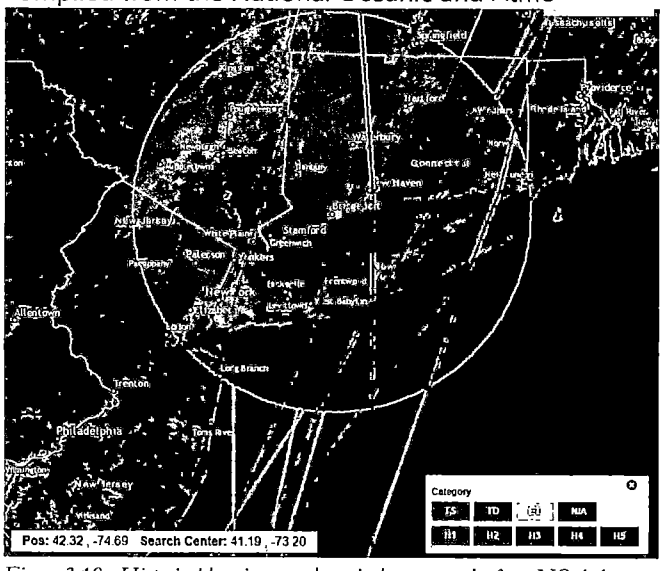


Figure 3.10: Historical hurricane and tropical storm tracks from NOAA

September 21, 1938

While this storm has no official name, it is often referred to as the Great New England Hurricane. It was classified as a Category 3 hurricane when it made landfall in Milford, Connecticut and is regarded as the most intense hurricane to ever strike Connecticut during the twentieth century. Sustained winds of 91 mph and gusts to 121 mph were reported on Block Island in Rhode Island. In Connecticut, high winds caused downed power lines in many areas and resulted in two catastrophic fires in New London and Mystic. While three-to-six inches of rain fell across most portions of the state, isolated amounts of 14-to-17 inches were reported in central Connecticut. The Connecticut River rose close to 20 feet above flood stage in Hartford as a result of the heavy rains. Further damage was caused from storm tides that reached up to 25 feet in portions of eastern Connecticut, while western sections saw storm tides of 14-to-18 feet. Many of the shorelines homes and cottages were destroyed, with far more experiencing varying degrees of damage.

September 14 and 15, 1944

Due to the system's large size and immense strength, the Miami Hurricane Warning Office named this storm the "Great Atlantic Hurricane". While there was no direct landfall made over Connecticut many places across the state saw hurricane force winds, with a gust of 109 mph being reported in Hartford, Connecticut. However, it was the heavy rain, not strong winds that produced the greatest storm impact for the state. More than ten inches of rain fell in the City of Bridgeport, which was the highest total in the State.

August 31, 1954

Hurricane Carol arrived as a Category 3 system and was the most destructive tropical system to strike southern New England since the Great New England Hurricane of 1938. The storm made land fall near the mouth of the Connecticut River in Old Saybrook. The system brought sustained winds of 80-to-100 mph across much

of the shoreline and through Rhode Island, and Cape Cod in Massachusetts. Heavy devastation occurred from large numbers of uprooted and snapped trees, and miles of downed power lines. Along Connecticut's coast, storm surge values varied greatly from five-to-eight feet in the west, to ten-to-fifteen in eastern portions of the state. There was also heavy crop damage, with 40 percent of apple, corn, peach, and tomato crops being destroyed along portions of eastern Connecticut to Cape Cod. It is reported that 48 people lost their lives and damages to possessions and property exceeded one billion dollars (in 1954 dollars) for the Northeast.

August 11 and 12, and 18 through 20, 1955

In an unusual occurrence, two named hurricanes, Connie and Diane, passed within proximity of the state within nine days. While neither storm directly struck Connecticut, their combined impact was immense.

Hurricane Connie was the first system, passing to the west. The system produced four-to-six inches of rain across southern New England. The rain saturated the ground and caused river and reservoir water levels to be well above normal.

When Hurricane Diane impacted Connecticut, the State's watercourses were already inundated from Connie and the ground was unable to absorb the additional rainfall. Over the two day period, up to 20 inches of rain fell in parts of the State. At the headwaters of the Farmington River, 18 inches of rain within a 24-hour period was recorded. This resulted in arguably the most devastating inland floods to ever hit the state. Roads and bridges were washed out across the state, residents lost drinking water and public utilities were inoperable. More than 90 people were confirmed dead from the storm and another dozen were missing and presumed dead. The damage was estimated to have exceeded 1.5 billion dollars (1955 dollars).

September 27, 1985

Hurricane Gloria formed off Cape Verde on September 15, 1985. It reached tropical storm status on the September 17th but was downgraded to a tropical depression as optimal conditions deteriorated. The storm continued its west-northwest movement and strengthened to a major hurricane by September 24th. As the storm tracked further northward along the Atlantic coast it weakened significantly. Gloria was downgraded from a Category 4 hurricane near the Bahamas, to a Category 2 storm by the time it made landfall on the Outer Banks of North Carolina. Gloria maintained its strength through landfalls on Long Island, New York, and Bridgeport, Connecticut. It was only downgraded to Category 1 after passing to the west of Hartford, Connecticut. Gloria brought devastation to the state primarily in the form of heavy wind damage. The storm toppled thousands of trees and caused major structural damage statewide. Relatively light rain from the storm meant that there was little flooding accompanying the wind damages and the power outages.

September 16, 1999

Torrential and record rainfall brought from Tropical Storm Floyd caused widespread urban, small stream, and river flooding. Fairfield, Hartford and Litchfield Counties were declared disaster areas. Serious wide spread inland flooding throughout low elevation and poor drainage areas was prevalent, and resulted in the closure of numerous roads and the flooding of many basements.

Recent Events

Connecticut and the Greater Bridgeport Region were impacted by two recent events that occurred in back-to-back years: Tropical Storm Irene and Superstorm Sandy.

August 28, 2011

Irene began as a tropical wave, moving off the coast of western Africa on August 15, 2011. After passing over Puerto Rico on August 22nd, Irene gained hurricane status and reached to Category 3 on August 24th with peak wind intensities of 120 mph.

As the storm proceeded north it passed offshore of Florida and Georgia, weakening along the way. Irene made landfall as a Category 1 near Cape Lookout, North Carolina on August 27th. After moving offshore, Irene tracked further north-northeastward along the Delmarva Peninsula making its second US landfall near Atlantic City, New Jersey as a tropical storm with maximum sustained winds of 69 mph. The system tracked up the Hudson River Valley before turning east across the northern Litchfield Hills of Connecticut on August 28th.

In Connecticut, Irene had been predicted to make landfall as a strong Category 1 or weak Category 2 hurricane, but it had been downgraded to a tropical storm by the time it reached the state.

Irene produced average maximum wind gusts of 52 mph and downed approximately one-to-two percent of the trees in Connecticut. The extensive number of downed trees resulted in over 800,000 power outages. Restoration of power took up to twelve days. Heavy rains, up to six inches, caused widespread coastal flooding. Damage and inundation of seawater along the coast was worsened by a large wind envelop that pushed water into western Long Island Sound. Although Irene was a tropical storm by the time it reached Connecticut, it created a storm surge of about four feet, which is consistent with a Category 1 or 2 hurricane.

On September 2, 2011, President Obama issued a presidential disaster declaration for the entire state as a result of the damage caused by Tropical Storm Irene.

October 29, 2012

Sandy was considered to be a classic late-season Caribbean hurricane, originating from the remnants of a tropical wave that moved westward from the west coast of Africa. It made landfall in Jamaica as a Category 1 and increased in strength to a Category 3 east of Cuba. Despite weakening to a Tropical Storm as it moved out of the Caribbean Sea, it continued to grow in size. As it continued north-northwest and parallel to the US coast, Sandy re-strengthened into a Category 1 hurricane.

As Hurricane Sandy moved northward, several other atmospheric conditions affected it size, direction and damage potential. Typically, a high pressure system is established over Bermuda that causes tropical storms to veer to the northeast away from land. This high was not present to deflect the storm away from the Northeast. Secondly, a low pressure frontal system was forming in the central US. This pattern typically creates conditions for a nor'easter to form. Instead, this trough combined with Sandy to increase its size and intensity. Finally a large high pressure system built-up over northeastern North America and blocked Sandy from moving out to sea turning it westerly toward the Mid-Atlantic coast. It accelerated at an average forward speed of 23 mph, but, at the same time, the colder waters weakened the system and caused Sandy to lose its tropical characteristics. As shown in Figure 3.11, it made landfall in New Jersey as a post-tropical (extratropical) storm with maximum sustained winds of about 65 mph. However, because of its size, Sandy created a catastrophic storm surge into the New York and New Jersey coastlines.

In Connecticut, highest storm tide and greatest inundation occurred along western sections of the Connecticut coast. The National Oceanic Service tide gauge in Bridgeport measured the storm surge at 9.83 feet above normal tide levels. The average surge along the Fairfield County coast was between four-and-six feet, with inundation up to six feet above ground level. Various estimated values of flood water inundation based on USGS high-water marks and storm tide pressure sensors are listed below (Tropical Cyclone Report Hurricane Sandy, National Hurricane Center, February 2013):

- Fairfield: Estimated Inundation = 4.3 feet
- Southport: Estimated Inundation = 4.0 feet
- Bridgeport (South End): Estimated Inundation = 3.5 feet
- Bridgeport (South End): Estimated Inundation = 3.2 feet
- Bridgeport (Enterprise Zone): Estimated Inundation = 3.1 feet
- Bridgeport (South End): Estimated Inundation = 3.0 feet
- Stratford (Lordship): Estimated Inundation = 2.8 feet
- Bridgeport (Black Rock): Estimated Inundation = 1.3 feet
- Stratford: Estimated Inundation = 1.4 feet
- Stratford (Lordship): Estimated Inundation = 1.2 feet

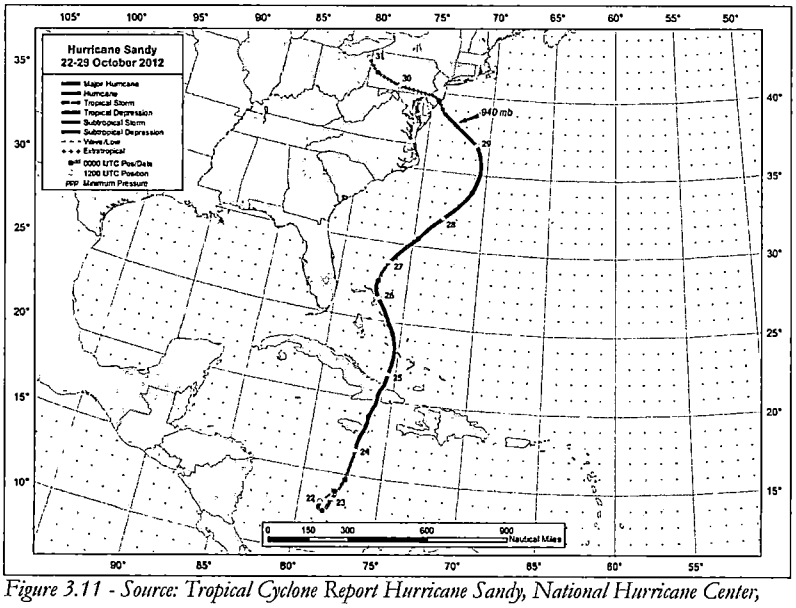


Figure 3.11 - Source: Tropical Cyclone Report Hurricane Sandy, National Hurricane Center, February 2013 - Figure 2: Best Track Positions for Hurricane Sandy, 22 – 29 October 2012.

In Connecticut, Superstorm Sandy was responsible for the deaths of five people and caused damage to approximately 3,000 homes. The preliminary estimated value of the damage was about $360 million state-wide.

Hazard Probability

Based on review of historical records, Connecticut and the Greater Bridgeport Region are likely to be hit and severely impacted by a tropical storm or hurricane at least once every 3.7 years, and may be moderately affected by such a storm every 1.4 years. According to Figure 2.61 in the Connecticut 2019 Natural Hazard Mitigation Plan, a Category 1 hurricane can be expected to hit Connecticut every 17 years, a Category 2 every 39 years and Category 3 every 58-70 years. Despite these rates, it remains a possibility that a destructive storm will hit the area anytime during the hurricane season and the frequency of these storms is independent of when the last storm occurred. As historical examples, the Region has experienced severe tropical events in each of the past two years, and in 1955 the state was impacted by two hurricanes within a nine day period. Because of the Region's location on Long Island Sound, the area lies in the path of tropical systems and is susceptible to their destructive forces.

According to the Geophysical Fluid Dynamics Laboratory (GFDL) at NOAA, tropical cyclone intensities are expected (greater than 66% chance) to increase 1% to 10% globally due to global warming and to also bring higher rainfall rates. More intensive tropical cyclones are likely to have higher wind speeds and storm surges. Fortunately, according the GFDL, overall frequency of tropical cyclones in the North Atlantic does not appear to be increasing at this time.

Risk Assessment

Tropical storms and hurricanes impact Connecticut with heavy rains, storm surge, and strong winds. Heavy rains can lead to flooding which will be covered more in-depth in subsection 3.6. Storm surge and devastating winds, while not unique to hurricanes and tropical storms, have the largest impact when associated with tropical events. Therefore we will discuss impacts from these conditions in this section.

Storm Surge

When a tropical storm or hurricane passes through the Region, it will impact the entire area. However, because these storms have the capability of producing excessive surge of water, inundation of coastal areas is more likely, and, as a result, these areas are more vulnerable and at a greater risk. Hurricane storm surge maps depict the inundation of flood waters that would be expected from a worst case scenario of different categories of hurricane. Further detail on property damage will be discussed in subsection 3.6.

Hurricane surge inundation maps for Bridgeport, Fairfield and Stratford are included in Appendix F. Please note that storm surge zones depicted on these maps are not necessarily cumulative. Based on these maps and other GIS data developed by MetroCOG, the exposure of parcels, buildings, historic resources, and critical facilities has been developed for each storm surge zone. Tables 3.3, 3.5, and 3.7 presented the exposure for the coastal towns of Bridgeport, Fairfield, and Stratford, respectively. Note that the inland towns of Easton, Monroe, and Trumbull do not have any areas that lie within storm surge zones.

In Fairfield (Figure 3.12), a Category 1 hurricane is likely to cause widespread flooding along the shoreline south of Old Post Road between Sasco Hill Road and Ash Creek. Parts of Southport would be inundated by flood waters during a Category 2 or 3 storm. Small areas along the Mill River would be affected by more severe hurricanes and the Town Center area along US Route 1 would become flooded as the result of a Category 3 or 4 hurricane. Although many coastal properties in Fairfield have elevated their homes since Superstorm Sandy in 2012 to mitigate damage from coastal flooding and storm surge, a recent CIRCA study found that elevated homes are more susceptible to wind shear damage. Potential risks from wind are presented in the next section.

In Stratford, a Category 1 hurricane would cause flooding throughout the majority of the South End, including the industrial areas along Route 113 (Lordship Boulevard and Main Street), the Sikorsky Memorial Airport and the residential neighborhoods bounded by Interstate 95, Lordship Boulevard, Access Road, Main Street and South Avenue. A Category 2 hurricane would expand the extent of flooding in these areas. The only part of the South End unaffected by a Category 1 hurricane would be the Lordship neighborhood,

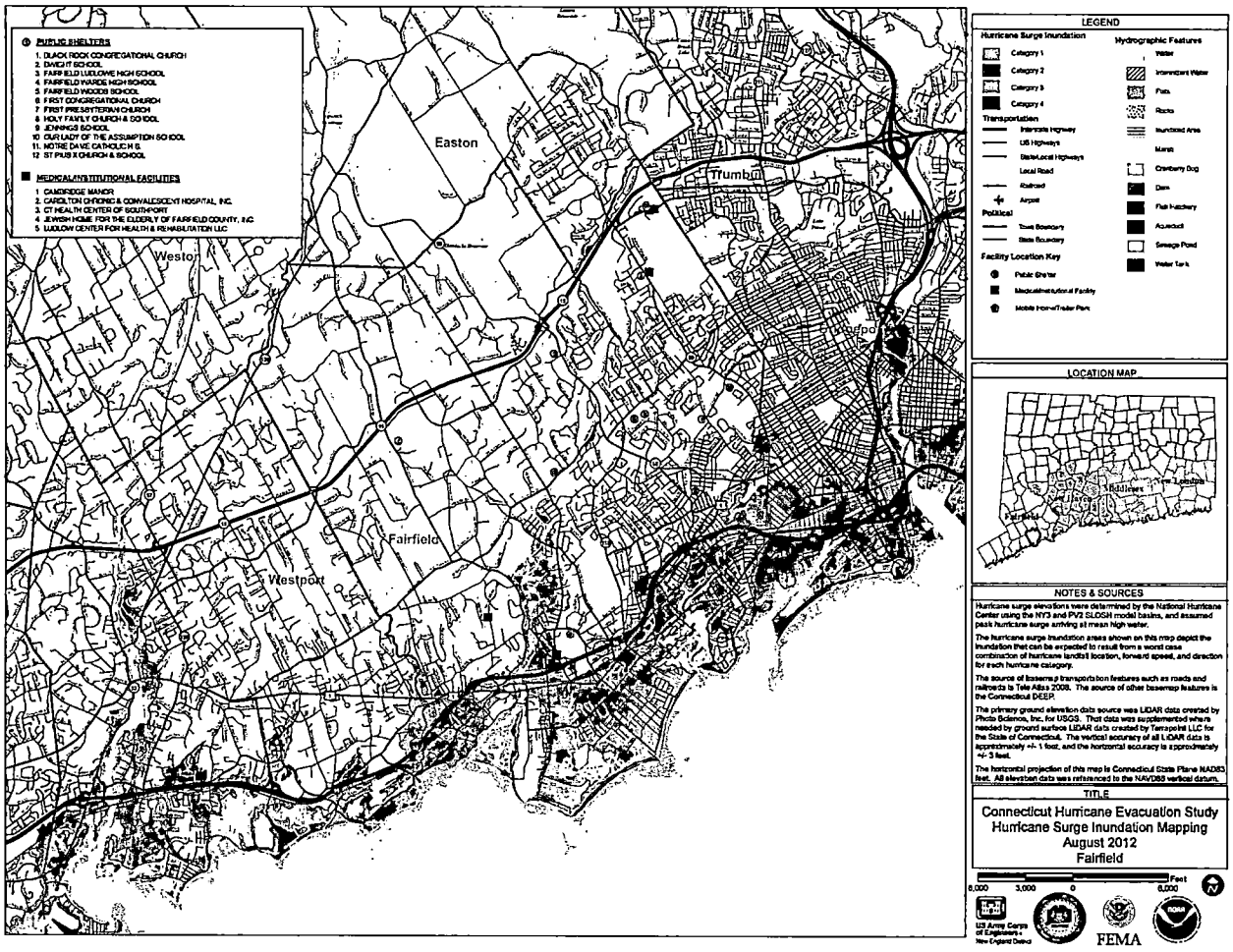


Figure 3.12: Hurricane Surge Inundation Map for Fairfield, CT

because of its higher elevation. A Category 3 or 4 hurricane would cause flooding north of Interstate 95 and within Stratford Center. Areas in the northern part of Stratford would be flooded by various categories of hurricane, but the extent of the damage would be limited to existing marsh areas. A severe hurricane has the potential to impact the Sikorsky Aircraft Manufacturing Plant.

In Bridgeport, most of the South End and West End would be flooded from a Category 1 hurricane. In addition, the shorelines of the Black Rock, East Side, and East End neighborhoods would be inundated with flood waters. Steele Point, which is a peninsula, was previously prone to flood waters but the area has since been raised. The extent of flooding in those areas would be somewhat limited to the immediate shore area. If the City were hit by a Category 3 or 4 hurricane, flooding would extend farther north from the shore and impact neighborhoods and commercial properties along Fairfield Avenue and State Street in the West End and along Route 130 (Connecticut Avenue and Stratford Avenue) in the East End. Flood waters would also extend along the Pequonnock River, reaching as far north as the US Route 1 and Route 8/25 interchange area, and along the Yellow Mill Channel, as far north as US Route 1. Flooding would also occur along the Rooster River.

Wind

Wind damage from tropical cyclones affects the entire Region. To quantify the impact of these storms the HAZUS-MH 4.2 Hurricane Model was utilized.

HAZUS-MH does not estimate damage based on hurricane category but rather runs a probabilistic analysis similar to terminology associated with flooding. For hurricanes, probabilistic scenarios of 10, 20, 50, 100, 500, and 1000 year wind events were separately modeled for each municipality.

Building Damage

The default building stock from HAZUS-MH was used for all the HAZUS-MH analyses in this report. According to this database there are 95,528 buildings in the Region. Bridgeport has the most buildings with 31,041.

HAZUS-MH uses a hazard-load-resistance-damage-loss methodology to produce loss estimations. Using wind models along with damage probabilities, expected building losses were estimated. The descriptions of damage can be found in Table 3.10.

Table 3.10: Damage description from Hazus-MH Hurricane Model Technical Manual

Damage State	Qualitative Damage Description	Roof Cover Failure	Window Door Failures	Roof Deck	Missile Impacts on Walls	Roof Structure Failure	Wall Structure Failure
0	**No Damage or Very Minor Damage** Little or no visible damage from the outside. No broken windows, or failed roof deck. Minimal loss of roof over, with no or very limited water penetration.	≤2%	No	No	No	No	No
1	**Minor Damage** Maximum of one broken window, door or garage door. Moderate roof cover loss that can be covered to prevent additional water entering the building. Marks or dents on walls requiring painting or patching for repair.	>2% and ≤15%	One window, door, or garage door failure	No	<5 impacts	No	No
2	**Moderate Damage** Major roof cover damage, moderate window breakage. Minor roof sheathing failure. Some resulting damage to interior of building from water	>15% and ≤50%	> one and ≤ the larger of 20% & 3	1 to 3 panels	Typically 5 to 10 impacts	No	No
3	**Severe Damage** Major window damage or roof sheathing loss. Major roof cover loss. Extensive damage to interior from water.	>50%	> the larger of 20% & 3 and ≤50%	>3 and ≤25%	Typically 10 to 20 impacts	No	No
4	**Destruction** Complete roof failure and/or, failure of wall frame. Loss of more than 50% of roof sheathing.	Typically >50%	>50%	>25%	Typically >20 impacts	Yes	Yes

In the Region, no buildings were damaged in a 10 year event and severely damaged buildings were first estimated in a 50 year event. The coastal communities had the highest number, as well as, highest percentage of buildings damaged.

Table 3.11 aggregates the data for a regional projection. Town specific projections can be found in Appendix G. The numbers of buildings damaged by wind in the region is less in the current version of HAZUS-MH than was estimated under the previous version in 2014. In the region, 201 buildings are at least moderately damaged in a 100-year event but that number increases to over 7,400 buildings at least moderately damaged in a 1000-year event with 286 buildings being completely destroyed.

Essential Facilities Damage

The essential facilities in the region were provided in the HAZUS-MH default dataset. Therefore there may be some facilities that were not included in this analysis. In the Region, HAZUS-MH models 2 Emergency Operation Centers (EOC), 16 fire stations, three hospitals (Bridgeport Hospital, Saint Vincent's Medical Center, and Southwest Connecticut Mental Health System), 16 police stations and 130 schools. Table 3.12 summarizes the number of essential facilities damaged for each wind event.

HAZUS-MH provided data on damage to essential facilities as well as loss of use estimates. Loss of use refers to the inability of the essential facility to provide its normal function to the community. For example, schools are closed to students. After hurricanes this is normally due to loss of electricity. Town-specific results can be found in Appendix G. Results showed that schools were the only facilities that experienced loss of use, with the majority of schools being closed for more than one day for a 500-year event or greater.

Debris Generated

HAZUS-MH generated estimates for the

Table 3.11: Hazus-MH building damage from hurricane impact

# of Buildings Damaged

Damage (2014)	10 yr	20 yr	50 yr	100 yr	200 yr	500 yr	1000 yr
None	99,625	99,536	98,483	92,764	80,386	55,290	38,210
Minor	0	84	1,053	6,128	15,918	30,899	35,921
Moderate	0	4	83	718	3,049	11,018	18,541
Severe	0	0	4	27	193	1,645	4,637
Destruction	0	0	0	4	55	774	2,304
Damage (2019)	**10 yr**	**20 yr**	**50 yr**	**100 yr**	**200 yr**	**500 yr**	**1000 yr**
None	95,528	95,454	95,143	93,209	88,173	75,380	64,654
Minor	0	76	360	2,119	6,517	16,480	23,458
Moderate	0	3	23	192	795	3,333	6,429
Severe	0	0	2	9	37	243	702
Destruction	0	0	0	0	6	92	286

Table 3.12: Hazus-MH essential facility damage from hurricane impact
# of Facilities Damaged

Damage (2014)	Total	10 yr	20 yr	50 yr	100 yr	200 yr	500 yr	1000 yr
EOC	2	0	0	0	0	0	0	0
Fire	16	0	0	0	0	0	0	0
Hospitals	4	0	0	0	0	3	3	3
Police	16	0	0	0	0	0	0	0
Schools	130	0	0	0	5	114	130	130
Damage (2019)	**Total**	**10 yr**	**20 yr**	**50 yr**	**100 yr**	**200 yr**	**500 yr**	**1000 yr**
EOC	2	0	0	0	0	0	0	0
Fire	16	0	0	0	0	0	0	0
Hospitals	3	0	0	0	0	0	0	0
Police	16	0	0	0	0	0	0	0
Schools	130	0	0	0	0	0	72	106

Table 3.13: Hazus-MH debris generated from hurricane impact
Debris Generated (tons)

Damage (2014)	10 yr	20 yr	50 yr	100 yr	200 yr	500 yr	1000 yr
Bridgeport	0	233	5,120	19,193	43,198	102,998	172,667
Easton	0	28	259	7,891	12,765	35,975	68,845
Fairfield	0	244	2,547	13,878	27,550	72,897	128,989
Monroe	0	99	602	8,954	13,463	36,906	66,468
Stratford	0	212	3,011	10,737	23,949	62,343	110,031
Trumbull	0	36	689	8,166	15,554	44,908	74,897
Total	**0**	**852**	**12,228**	**68,819**	**136,479**	**356,027**	**621,897**
Damage (2019)	**10 yr**	**20 yr**	**50 yr**	**100 yr**	**200 yr**	**500 yr**	**1000 yr**
Bridgeport	0	16	2,931	12,391	28,497	62,556	94,461
Easton	0	7	287	1,186	10,210	14,646	24,295
Fairfield	0	71	1,481	6,053	16,284	34,440	50,772
Monroe	0	3	462	1,488	9,752	15,111	23,555
Stratford	0	172	1,777	6,876	13,917	30,347	43,347
Trumbull	0	10	304	3,169	9,297	17,157	28,511
Total	**0**	**279**	**7,242**	**31,163**	**87,957**	**174,257**	**264,941**

amount of debris generated from wind damage. Table 3.13 provides the total debris generated for the various probabilistic events. The current HAZUS-MH model estimates less debris will be generated than the previous model. Bridgeport had the most debris generated in each hurricane scenario. The Region was projected to have 31,163 tons of debris in a 100- year event and 264,941 tons in a 1000-year event.

Shelter Needs

HAZUS-MH generated the number of households displaced due to damage and loss off electricity and water. The number of people requiring shelter was a fraction of those displaced households and can be found in Table 3.14. The current HAZUS-MH model estimates that less people will need shelter than the previous HAZUS-MH model. Bridgeport, expectably due to its high population, has the highest shelter needs. Overall, only 1 person requires shelter in a 100-year event or less. However, 1,044 people could require shelter in a 1000-year event.

Economic Loss

Economic loss was calculated from both direct property damage and business interruption. Direct property damage includes the estimated costs to repair or replace the damage caused to the buildings and its contents. The business interruption costs are those associated with the inability of a business to function due to the hurricane. The breakdown of economic loss in these categories can be found in Appendix G. Again, these estimates are from wind damage only.

Table 3.15 summarizes the combined economic loss for each town. The current HAZUS-MH model estimates less damages overall for the region than the previous model. The combined economic loss for the region from the 100-year wind event was estimated at $169.6 million, while the combined economic loss from the 1000-year wind event was estimated at $1.86 billion.

Table 3.14: Hazus-MH shelter needs from hurricane impact

People Requiring Shelter

Damage (2014)	10 yr	20 yr	50 yr	100 yr	200 yr	500 yr	1000 yr
Bridgeport	0	0	0	3	55	462	1,322
Easton	0	0	0	0	0	0	0
Fairfield	0	0	0	0	0	13	93
Monroe	0	0	0	0	0	0	1
Stratford	0	0	0	0	1	35	234
Trumbull	0	0	0	0	0	1	18
Total	**0**	**0**	**0**	**3**	**56**	**511**	**1,668**
Damage (2019)	10 yr	20 yr	50 yr	100 yr	200 yr	500 yr	1000 yr
Bridgeport	0	0	0	1	47	381	953
Easton	0	0	0	0	0	0	0
Fairfield	0	0	0	0	0	2	16
Monroe	0	0	0	0	0	0	0
Stratford	0	0	0	0	1	15	66
Trumbull	0	0	0	0	1	6	9
Total	**0**	**0**	**0**	**1**	**49**	**404**	**1,044**

Table 3.15: Hazus-MH economic loss to the region from hurricane impact.

Economic Loss (in thousands of dollars)

Damage (2014)	10 yr	20 yr	50 yr	100 yr	200 yr	500 yr	1000 yr
Bridgeport	$0	$1,226	$22,419	$90,810	$242,139	$761,937	$1,549,089
Easton	$0	$9	$814	$3,167	$7,441	$26,975	$62,130
Fairfield	$0	$630	$11,519	$38,585	$107,356	$377,908	$823,051
Monroe	$0	$63	$2,111	$7,689	$18,673	$66,306	$143,184
Stratford	$0	$525	$9,902	$35,397	$104,330	$402,300	$885,214
Trumbull	$0	$81	$4,269	$15,295	$42,487	$171,402	$354,233
Total	**$0**	**$2,534**	**$51,034**	**$190,944**	**$522,427**	**$1,806,828**	**$3,816,901**
Damage (2019)	10 yr	20 yr	50 yr	100 yr	200 yr	500 yr	1000 yr
Bridgeport	$0	$82	$16,122	$69,590	$172,900	$454,157	$802,611
Easton	$0	$23	$613	$2,661	$6,061	$14,852	$26,858
Fairfield	$0	$386	$13,294	$42,148	$89,460	$234,741	$410,133
Monroe	$0	$101	$1,789	$6,855	$15,759	$36,201	$63,784
Stratford	$0	$208	$9,689	$33,266	$72,827	$210,106	$400,688
Trumbull	$0	$95	$3,924	$15,061	$33,328	$82,588	$157,021
Total	**$0**	**$894**	**$45,432**	**$169,581**	**$390,334**	**$1,032,645**	**$1,861,095**

3.5 Hazard Profile – Inland Flooding

Setting

Inland flooding is a well-documented natural hazard that threatens many areas and neighborhoods throughout the Region. It is one of the most commonly occurring natural hazards and has the potential to damage property and disrupt the quality of life for many residents. An in depth review and analysis of records and feedback from residents indicates that inland flooding affects the Region with moderate to frequent regularity. It should also be noted that flooding affects the Region with varying degrees of intensity, dependent on season, setting, and recent weather pattern.

Bridgeport

Although Bridgeport is a heavily developed urban environment, waterways still exist within its limits and have the potential to pose inland flooding concerns. Furthermore, due to the urban nature of the City, much of the water courses have undergone large-scale channel modifications or have been buried. This has resulted in many unintentional constrictions that have the potential to create flooding issues during heavy precipitation events. Of particular concern are the channels of Island Brook and Ox Brook, along with several tributaries of the Yellow Mill River in the northeastern section of the City. In addition, smaller more localized areas experience flooding, such as the Rooster River, Ash Creek, and Bruce Brook. Flooding is also typical along the banks of the Pequonnock River downstream of Bunnells Pond.

The areas in Bridgeport at risk to inland flooding from 1% and 0.2% probability storms are depicted in FEMA Firm maps, included in Appendix F.

Easton

Unlike the other towns in the Region, Easton has a very low population density. Large-lot zoning regulations and a large portion of the town being preserved as water company-owned lands have reduced property damage from flooding. Roadway flooding can be handled using barricades and signs to prevent loss of life, and alternate routes are available in almost every case.

Specific problem areas include flooding from the Aspetuck River at Silver Hill Road and at Wells Hills Road, Morehouse Brook at Morehouse Road, Cricker Brook at Beers Road, and Cricker Brook at Morehouse Road. In addition, flooding occurs at the headwaters of Patterson Brook at Route 136 and Tatetuck Brook at Route 59.

Flood risk areas in Easton, based on FEMA Firm data, are depicted on the map located in Appendix F.

Fairfield

The Town of Fairfield contains four primary drainage basins that flow in a primarily north to south direction. The system most susceptible to inland flooding is along the Mill River, which flows from the Easton Reservoir through the center of the Town. Extensive flooding is caused by a 1% storm as well as from a more severe storm. Inland flooding is also a problem along the Rooster River and Ash Creek and their tributaries. To a lesser extent, inland flooding poses a threat during extreme weather events along Great Brook and Saco Brook.

Much of the property directly abutting the Mill River falls within the 1% flood contour, while a smaller portion falls within the 0.2% flood contour. These flooding concerns extend the length of river and remain a very real threat. With regards to the Rooster River and Ash Creek, flooding is more commonly caused by man-made constriction. A specific location is where the river passes under Interstate 95. The flow is controlled by a culvert system. During times of heavy precipitation, the culvert can be overwhelmed and flooding can occur in the neighborhood surrounding Royal Avenue and Camden Street. Homes in this neighborhood are in the floodplain, and a viaduct is the only way in and out. Further specific flooding concerns exist where Metro-North New Haven Line bridges cross the river. The bridges tend to have low vertical clearances and narrow horizontal spans. These features can act as a constriction point and cause flooding of neighborhoods up river. Low-lying homes adjacent to London's Brook and downstream of the Fairchild Wheeler Golf Course are also prone to flooding. Great Brook can flood in the area of Merwins Lane.

Flood risk areas in Fairfield are depicted on the FEMA Flood Zone map attached in Appendix F.

Monroe

The areas of Monroe which are most frequently subject to flooding are adjacent to the Pequonnock River. This river consistently overflows its banks from major storm events. Flooding also occurs in areas along the West Branch of the Pe-

quonnock River and along the Farmill River.

Flooding occurs along the West Branch of the Pequonnock River in a variety of locations. The Aquarion Water Company operates several reservoirs throughout Fairfield County and owns extensive tracts of land around these reservoirs. A small impoundment is located along Route 25 about mid-way between Judd Road and Pepper Street. Water is diverted from the impoundment through a pipeline to Easton Reservoir. It lies only a few feet below the roadway elevation and flooding occurs during heavy rain events. Stop logs are in place at the dam that can be removed to allow for greater water flow, either during or before a severe weather event. While this measure is in place to help mitigate flooding, it does not remove the possibility of flood occurrences entirely. The impact felt by flooding in this area is limited to roadway closures, as there are no homes or businesses within the vicinity. Although traffic has the potential to be impacted, no homes or buildings would be affected by flooding in this area.

Another critical flooding area is where the West Branch crosses under Old Newtown Road. The river has a tendency to back up at the under sized culvert resulting in repetitive losses for many properties near Chuck's Corner. However, there are secondary roads that could be taken in the event of flooding to circumvent the blocked or impassable roadways.

In addition to the flooding associated with the Pequonnock River and the West Branch, many of its other tributaries experience flooding as well. The neighborhood bounded by Pastor's Walk and Wiltan Drive is subject to backyard flooding and drainage problems. A swale, or intermittent stream, flows parallel to the roads through the backyards. The swale was likely constructed when the neighborhood was developed. Additionally, a low-gradient stream under Bart Road and along Verna Road has virtually no gradient and is only a few feet below backyard elevations. During heavy precipitation events the potential exists for the stream to over flow its banks and inundate the area. Lile the streams in the Pastor's Walk and Wiltan Drive area, this stream was likely constructed when the neighborhood was developed. A very small diameter culvert at Bart Road may cause upstream flooding during high flows. The culvert under Cottage Street near Brookside Trail, on the Boys Halfway River, may be also under capacity.

Flood risk areas in Monroe are depicted on the FEMA Flood Zone map attached in Appendix F.

Stratford

Inland flooding in Stratford occurs with moderate to frequent regularity, with major events being seen on average once every five years. Areas that are most frequently reported flooded during rain events include Main Street at Stratford Center, Broadbridge Avenue, Terrill Road, Hamilton, Reed Street, Bunnell Avenue, and Parkwood Road.

Flooding can also occur in localized areas from storm drains backing up. Areas affected from this variety of inland flooding include the regions of Albert Avenue and Albright Avenue where several residents have reported repeated flooding, with one resident having to file multiple flood insurance claims. Additional flooding is also experienced in the areas of Reed's Lane, St. Michael's Avenue, Tyrone Place and West Avenue in the vicinity of Barnum Avenue. However, it appears that the problems in these areas are not widespread.

Properties along the Pumpkin Ground Brook also experience frequent flooding, especially in the area of Cutspring Road and Chapel Street. Flooding impacts the Oronoque Village condominium complex, an over-55 community consisting of 929 homes spread across about 300 acres. The property is crossed by the Freeman Brook and a small unnamed brook. Both have buried sections through the Village. During more severe rain events these streams tend to overflow and cause flooding, primarily in the FEMA designated flood zones. Property damage from these events has exceeded $300,000 with loss of vehicles, furnaces, hot water heaters and damage to basements/lower levels and garages.

The areas in Stratford where inland flooding typically occurs are depicted in FEMA Flood Zone map included in Appendix F.

Trumbull

Trumbull contains fewer waters courses than the other towns in the Region; however, inland flooding remains a concern as the Town is traversed by the Pequonnock River, Horse Tavern Brook, and Island Brook. The most frequent flooding occurs along sections of Horse Tavern Brook, especially where it crosses under Chestnut Hill Road and Blackhouse Road. Severe flooding occurs from major rail events along sections of the Pequonnock River from about Daniels Farm Road, through the Twin Brooks Park area and the neigh-

borhoods between the river and White Plains Road near the town line with Bridgeport.

Horse Tavern Brook flows through a fairly developed section of Trumbull on its southwestern corner. The brook and its tributaries cause moderate flooding during periods of heavy rain. A comprehensive flood control study has been completed for this area that addresses recurring flooding and recommends mitigation actions.

With regards to the Pequonnock River, the neighborhood along Manor Drive is especially susceptible to flooding. This section of town is in a low-lying flat area directly abutting the river. The houses in the area are very close to the river's elevation, which only augments their flood risk. Furthermore, the gradient of the floodplain along Route 127 causes flooding at the bend in the river.

The flood risk areas in Trumbull are depicted in the FEMA Flood Zone map included in Appendix F.

Hazard Assessment

Flooding, whether coastal or inland represents the most common and costly natural hazard in Connecticut. The state typically experiences flooding in early spring due to snowmelt and heavy spring rains and then again in late summer to early autumn when tropical storms are most active. This pattern has been evident in the past with Tropical Storm Irene arriving in late August of 2011 and Superstorm Sandy impacting the area in late October of 2012, as well as other coastal storms. However, severe thunderstorms are possible throughout the summer months and have the potential to produce substantial rainfall totals over short periods of time. In addition, weather patterns can produce low pressure systems that form over the ocean and cause north-easterly wind patterns. These "nor'easters" can result in heavy rain and high winds.

In order to provide a national standard without regional discrimination, the 100-year flood and the 500-year flood, which had been the standard adopted by FEMA as the base flood for flood plain management purposes, has recently been revised. In order to eliminate the idea that a 100-year flood will only occur once every hundred years, FEMA has since adopted the 1% flood. This means that during any given year there is a 1% chance that a storm of sufficient precipitation flood will occur that will cause flooding and that it will reach or exceed FEMA's base flood levels. Similarly, the 500-year flood designation has been converted to a 0.2% flood, meaning that in any given year there is a 0.2% chance of a flood at that magnitude occurring.

Flood plains are lands along watercourses that are subject to periodic flooding; floodways are those areas within floodplains that convey floodwaters. The floodways are subject to water being carried through them at relatively high velocities and forces. Beyond the floodway, lies the floodway fringe, this is an area that remains in the floodplain yet is out of the floodway. The floodways and floodplains are the areas within the region that are vulnerable to flooding.

In certain areas of the region flooding occurs with greater frequency than documented by FEMA mapping. In these instances the higher rate of flooding is due to a combination of heavy rainfall with insufficient drainage.

Repetitive Loss Properties

Properties that experience damage from recurring flooding and have made multiple claims under the National Flood Insurance Program (NFIP) are referred to as "repetitive loss" properties. Due to the multiple claims under the NFIP, these properties are considered costly to insure and a strain on FEMA resources. The FEMA offers grant programs to assist communities and states in implementing actions that reduce or eliminate the long-term risk of flood damage to focus on repetitive loss properties. The primary objective of these programs is to eliminate or reduce the damage to residential property caused by repeated flooding. Funds are provided to implement various mitigation measures that will reduce future flooding losses. Possible mitigation actions include acquisition or relocation of severe repetitive loss properties and elevating existing structures.

A Fact Sheet on the next page provides more detailed information regarding repetitive loss properties in the region. FEMA has defined two classes of repetitive loss properties:

A Repetitive Loss (RL) property is defined as a residential property that is covered under an NFIP flood insurance policy and meets one of the following criteria:

1. Has incurred flood-related damage on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25% of the market value of the structure at the time of each such flood event; and

REGIONAL CHALLENGES

REPETITIVE LOSS PROPERTIES

Typical non-residential RL property in Bridgeport

RL property in Trumbull that has been acquired and converted to open space

FOR MORE INFORMATION

Diane Ifkovic
State NFIP Coordinator
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106
(860) 424-3537
Diane.ifkovic@ct.gov

WHAT IS THE CHALLENGE?

According to FEMA, a Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. A total of 409 RL properties are listed in the municipalities that comprise the six-town MetroCOG region. A breakdown is as follows:

- Bridgeport – 94 RL properties
- Easton – 1 RL property
- Fairfield – 210 RL properties
- Monroe – 1 RL property
- Stratford – 77 RL properties
- Trumbull – 26 RL properties

If a property is not insured against flood losses, or is insured but the owner does not submit claims, then the property cannot appear on the RL list. Therefore, the RL list is not an absolute reflection of flood risk in a community. Nevertheless, the RL list can provide a starting point for evaluating flood risk in a community, and it may indicate that flooding may be a problem in a specific area even when not obvious upon a cursory review of the setting.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

Examination of the RL list may indicate that flooding is a problem in a specific area. For a risk evaluation to be effective, each RL first must be accurate. Communities must carefully check and offer corrections to their individual RL lists. Misplaced properties must be formally transferred to the correct municipality, duplicates must be cleared, and mitigation status should updated to ensure that resources are directed to the properties with most risk and highest flood losses. Examination of the current list reveals that the RL property in Monroe is likely not located in the Town of Monroe.

It is important for MetroCOG communities to further reduce flood losses, and these efforts must include the RL property losses that have represented a strain on the NFIP. Before targeting specific properties for technical assistance, each municipality must know with certainty which RL properties are accurately represented by the information on the list. This plan therefore recommends that municipalities with RL properties should work with DEEP to conduct a list validation, making corrections as needed and removing incorrect listings such as the property listed in Monroe.

2. At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

A Severe Repetitive Loss (SRL) property is defined as a residential property that is covered under an NFIP flood insurance policy and meets one of the following criteria:

1. Has had at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
2. For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building; and
3. For both criteria, at least two of the referenced claims must have occurred within any ten-year period.

A list of RL properties was obtained from the CTDEEP. These data were used to identify general areas where properties are susceptible to recurring flooding that cause repetitive losses. These properties are discussed in more detail in the Risk Assessment sections for inland and coastal flooding.

In total, 407 properties in the Region have experienced repetitive losses, and 14 of these met the criteria for SRL properties. Not surprising, the vast majority of the RL properties are located the coastal communities:

- Bridgeport has 95 RL properties (23.3% of total), of which 11 are non-residential and 84 are residential.
- Easton has one residential RL property (0.2% of total).
- Fairfield has 209 RL properties (51.4% of total), of which eight are non-residential and 201 are residential.
- Stratford has 76 RL properties (18.7% of total), of which 10 are non-residential and 66 are residential.
- Trumbull has 26 RL properties (6.4% of total), of which one is non-residential and 25 are residential.

Of the 14 SRL properties, 9 are in Fairfield, four are in Stratford, and one is in Trumbull. All of the SRL properties in the region are residential.

Note that there are no RL properties in Monroe. While disclosure regulations prohibit the identification of the addresses of RL properties, areas that have experienced repeated flooding that has resulted in losses have been mapped. These were then aggregated into Census blocks to maintain property anonymity but allow the aggregated data to be displayed in Figure 3.13.

Historical Record

On average, severe flooding occurs approximately once every five years throughout the region, with minor flooding events occurring more frequently. Since the early 1900s there have been eleven major flooding events to impact the state and particularly the MetroCOG region. These events occurred in March 1936, September 1938, August 1955, October 1955, June 1982, May and June 1984, October 2005, April 2007, August 2011, and September of 2012 on two separate occasions. The 1955 flood has been estimated to be a two percent to a 0.2% flood event across Connecticut, with flood frequencies of greater than a one percent storm in southwestern Connecticut. The other storms had variable effects, depending on the location.

The Pequonnock River flows through the Region and drains into Long Island Sound at Bridgeport. Rain events typically cause the river to overflow its banks and subject the Region to occasional flooding, with some being severe. Based

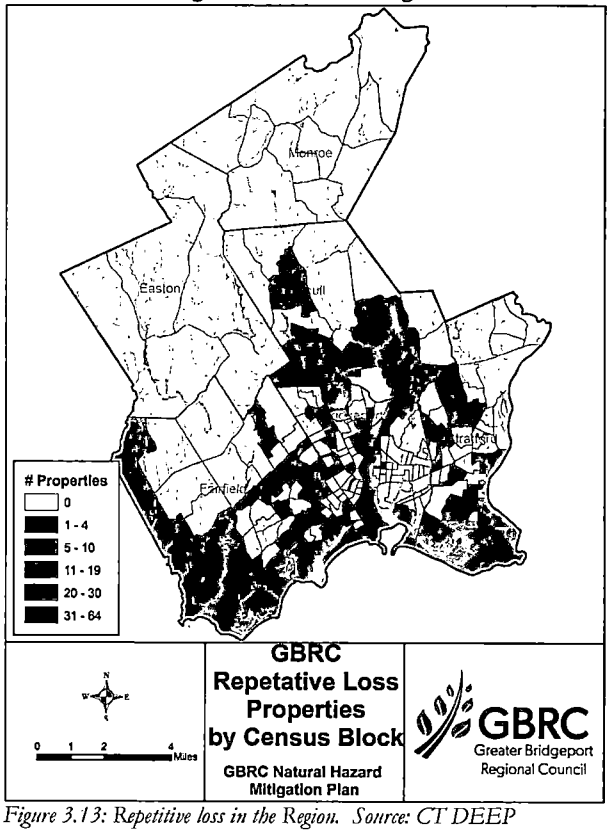


Figure 3.13: Repetitive loss in the Region. Source: CT DEEP

on the Federal Emergency Management Agency (FEMA) Federal Insurance Study (FIS), the largest flood events occurred in July 1897, July 1905, March 1936, September 1938, December 1948, August 1955, October 1955 and April 2007.

Due to the generally steep topography of Trumbull, waterways in the Town are subject to rapid rates of rise at high velocities. This geographical factor combines with the river system's relatively large drainage area to produce augmented flood levels. Major floods occurred in 1905, 1936, 1938, 1955, and 1972.

In the Town of Monroe the upper reaches of the Pequonnock River are subject to overtopping their banks with every major precipitation event. In March of 1936, two closely occurring storms combined with a considerable amount of snowmelt produced major flooding. The flood of October 1955 far exceeded any prior flood on record in Monroe. Certain low lying areas directly adjacent to the Pequonnock River and the West Branch of the Pequonnock River experienced high levels of devastation from that event.

The flood of October 1955 also exceeded any prior recorded flood within the Town of Easton. Due to the minimal quantity of developed land along the stream, little is known of the exact severity of the flooding that took place during this storm. However, through resident reports, a general idea of the level of damage can be ascertained. According to Easton citizens, the 1955 flood washed out the bridges on Valley Road and Center Road which crossed the Aspetuck River, upstream of the Aspetuck Reservoir. The Mill River overtopped its banks destroying public and private property. However, according to the Aquarion Water Company, none of the four water supply reservoirs (Easton, Aspetuck, Hemlock, or Saugatuck) were in danger of overtopping during the flood of October 1955.

Recent Events

The following are additional descriptions and examples of more recent major flooding events in the Region. These examples are drawn from the National Climatic Data Center, Storm Events Database, and from correspondence with municipal officials.

April, 1980: A spring rainstorm caused severe flooding along all watercourses in the Town of Easton. Due to the frozen ground the heavy precipitation had no way of penetrating the surface and combined with excessive snowmelt to create extensive flooding. As reported by town residents, the Aspetuck River overflowed its banks and flooded Route 136 downstream of the Aspetuck Reservoir.

September 16, 1999: Torrential and record rainfall brought by Tropical Storm Floyd caused widespread urban, small stream, and river flooding. Fairfield County was declared a disaster area, along with Hartford and Litchfield Counties. Serious wide spread inland flooding throughout low elevation and poor drainage areas was prevalent, and resulted in the closure of numerous roads and the flooded basements.

April 21, 2000: A series of intense thunderstorms moved north to northeast across Southeast Fairfield and New Haven Counties. The thunderstorms were accompanied by torrential rainfall that produced widespread flooding of small streams, brooks, rivers, and low-lying and poorly drained areas. They also produced lightning strikes. Rainfall amounts ranged from around 2-to-4 inches. Significant and widespread ponding of water caused road flooding in Stratford and Milford. Selected rainfall amounts for southeast Fairfield County included 3.57 inches at Bridgeport and 3.56 inches in Stratford. Cost estimates of property damage were unavailable.

August 11 and 12, 2000: From the east side of Bridgeport and through Stratford, torrential rain caused widespread and extreme flooding in low lying and poor drainage areas along area streams and rivers. Rainfall totals from the event ranged from 4.0-to-7.5 inches in under two hours. The heavy rains were reported to fall in "sheets" at a rate estimated by the National Weather Service (NWS) of between 3.5-to-4.0 inches per hour. Property damage from the event was extensive with a total of 471 residents experiencing flooding. The flood waters deposited up to several feet of water into 447 residents' basements, and another 24 reported flooding of their first floors.

August 21, 2004: Severe thunderstorms developed to the west over the Hudson Valley and moved into Connecticut through the afternoon. The storm systems produced heavy rainfall and caused significant street flooding.

September 18, 2004: The remnants of Hurricane Ivan pushed across the state producing heavy rain, totaling up to five inches in certain spots. The result was localized flash flooding of roadways.

June 29, 2005: Slow moving thunderstorms

developed over Connecticut on the afternoon of June 29th in association with a slow moving front. The atmosphere was very moist, which allowed the thunderstorms to produce significant hourly rainfall rates of greater than two inches. In a matter of 2-to-4 hours, some locations in Fairfield County picked up anywhere from 3-to-5 inches of rain.

August 2, 2008: A stationary low in the region produced severe thunderstorms with torrential downpours. This resulted in flash flooding, with many streets in the East End of Bridgeport inundated, and properties damaged. Sections of Fairfield and Stratford experienced similar flooding from this event.

August 7, 2008: Strong thunderstorms produced heavy rainfall, causing flash flooding across portions of southwest Connecticut. The Town of Stratford was particularly hard hit. Some of the worst flooding occurred on sections of Terrill Road, where water levels were close to two feet high. Residents used kayaks along with other small floatation devices to navigate through the flooded streets. The same event brought flooding along East Main Street and Crescent Avenue in Bridgeport. In this location a car became stranded under high flood waters and the two occupants had to be rescued by local firefighters. Additionally, a school on Waterview Avenue in Bridgeport was flooded.

November 1, 2010: A low pressure system tracking up the eastern seaboard combined with the remnants of Tropical Storm Nicole to produce heavy rain and flooding throughout portions of Fairfield and New Haven Counties. Sections of Route 25 in Monroe, along with roads in the vicinity of Interstate 95 at Exit 33 in Stratford, were closed due to flooding.

June 23, 2011: Several rounds of thunderstorms produced heavy rain across portions of southern Connecticut. This resulted in localized flash flooding; specifically, the intersection of State Street and Iranistan Avenue in Bridgeport was closed due to three feet of standing water.

June 7, 2013: In Bridgeport, the intersections of Iranistan Ave. and State St., and Fairfield Ave. and Railroad Ave., as well as Bishop Ave., River St., Savoy St. and Amsterdam Ave. were all closed due to flooding. Total reported rainfall amounts in Fairfield County ranged from 3.34 inches in Stamford to 4.60 inches at Sikorsky Airport in Stratford.

July 14, 2014: A car was stuck in high water under an overpass at the intersection of Bishop St. and Connecticut Ave. in Bridgeport. In Fairfield, the Rooster River flooded nearby streets.

April 16, 2017: Fire departments responded to a water rescue call at the intersection of Barnum Avenue and Bishop Avenue in the Mill Hill area of Bridgeport.

April 16, 2018: The intersection of Bruce Avenue and Stratford Avenue and the intersection of King Street and Broadbridge Avenue in Stratford were impassable due to flooding.

July 17, 2018: A vehicle was trapped in floodwaters under the railroad overpass on West Broad Street between Knowlton Street and Linden Avenue in Stratford.

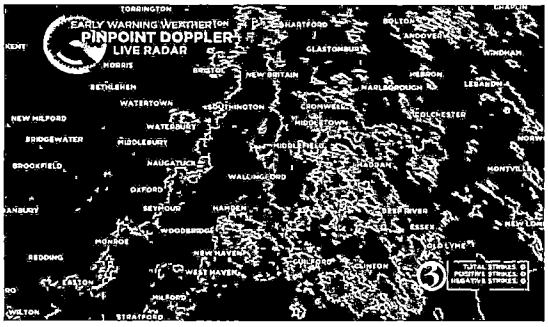
September 25, 2018: Rain developed ahead of an approaching warm front, resulting in rainfall amounts of four inches or more across southern Connecticut. A total of 7.32 inches of rain was recorded in Trumbull. Widespread flash flooding occurred throughout the region. For more details regarding information on the September 25, 2018 storm, please refer to the Fact Sheet on the next page.

- Flooding occurred along the Rooster River, Island Brook, and the Pequonnock River in Bridgeport. A few homes in Bridgeport flooded during the storm and foundation damage was reported. A total of 15 water rescues for people trapped in vehicles were performed by local emergency management personnel.
- Congress Street was flooded in Easton by the Mill River for the first time since 1982. Dogwood Drive in Easton was overtopped in two locations by Morehouse Brook and a tributary. Two homes were directly flooded in Easton, and 50 water rescues were performed by Easton emergency personnel per the NCDC Storm Event database.
- Flooding occurred along the Rooster River, Mill River, and other streams town-wide in Fairfield, with bank erosion occurring in many areas. Numerous people were trapped in vehicles on Bennet Street and at the intersection of Brookside Drive and Samp Mortar Drive due to flood waters.
- In Monroe, flooding occurred along Hurds Brook at East Village Road west of Robin Road, on Route 25 in front of the Fire Department, and on Hattertown Road west of Knapp Street along tributaries to the Mill River.
- Localized flooding occurred in Stratford.

REGIONAL CHALLENGES

CASE STUDY: INTENSE PRECIPITATION

Flood of September 26, 2018
Pictures sourced from social media



Radar Image showing potent line of thunderstorms which caused the flooding of September 26, 2018

WHAT IS THE CHALLENGE?

Precipitation events have become increasingly intense over the last several decades. The total precipitation received over the course of the year has increased, as has the number of events with total precipitable moisture over 2". This means that storms are becoming more intense, while aging infrastructure has not, or can not always be updated in a timely manner to reduce the rising flood risk. As a result, incidences of flash flooding have become a more common occurrence.

On September 26, 2018, a severe thunderstorm complex lingered over Connecticut, dropping as much as 6 inches of rain in the span of several hours. This led to heavy localized flash flooding in several areas of the state. The images to the left show the floodwaters inundating parking lots and buildings in the Town of Trumbull.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

The communities in the MetroCOG region are united in their concerns about flooding related to intense precipitation events. All six of the municipalities were heavily impacted by the flooding of September 26, 2018, whether rural or urban in character. Even before this event, the communities were taking actions to reduce flood losses. For example:

- Three of the communities have joined the CRS program (Fairfield, Trumbull, and Stratford) and Bridgeport has submitted a letter of interest to FEMA regarding the program.
- Fairfield is evaluating areas of flood storage in the Rooster River watershed.
- Trumbull has teamed with property owners to apply for FEMA funds to acquire properties.
- Easton has upsized stream crossings and drainage infrastructure.

This hazard mitigation plan update contains additional actions that the communities plan to take for reducing losses associated with intense precipitation events.

FOR MORE INFORMATION

Diane Ifkovic
State NFIP Coordinator
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106
(860) 424-3537
Diane.ifkovic@ct.gov

- All mapped floodplains in Trumbull experienced flooding. Overwhelmed drainage systems contributed to widespread basement flooding, and Route 111 was overtopped by the Pequonnock River. A sewer pumping station on Reservoir Avenue was flooded and offline due to pump chamber damage. The flash flooding restricted access to Daniels Farm Road from Route 127.

Photos of flooding during this event, as well as impacts following this event are shown on the next page.

Hazard Probability

Based on the review of historical records, severe rain storms that result in moderate-to-severe inland flooding occur at fairly frequent rate. The occurrence of these flood-producing rain totals between 2000 and 2018 suggest that one such storm has the potential to happen once every year.

According to the discussion in the State Water Plan (2018), the modeled scenarios project a generally wetter future, with the largest precipitation increases projected for the winter and spring months. Summer and autumn months are projected to remain about the same in terms of both frequency and rainfall level. The models suggest that the region may be at risk of increased winter and spring flooding in the future due to climate change.

Risk Assessment

RL properties in the region provide one method of quantifying the risk of inland flooding in the region. Out of the 407 RL properties in the region, 128 appear to have experienced losses from inland flooding along streams and rivers, or from other sources such as poor drainage:

- Bridgeport has the most RL properties susceptible to inland flooding (41). Nine of these RL properties are non-residential and 32 are residential.
- Easton has one residential RL property susceptible to inland flooding.
- Fairfield has 38 RL properties susceptible to inland flooding, with five of the RL properties being non-residential and 33 residential.
- Stratford has 22 RL properties susceptible to inland flooding, with five of the RL properties being non-residential and 17 residential.
- Trumbull has 26 RL properties susceptible to inland flooding, with one of the RL properties being non-residential and 25 being residential.

Of the 14 SRL properties in the region, only two (one residential property in Fairfield and one residential property in Trumbull) appear to be due to inland flooding. As noted previously, Monroe does not have any RL properties.

Losses experienced by RL properties is only a portion of the total flooding damage experienced by the region. Annualized loss estimates were prepared for flooding for each community as presented in Section 3.3.

A "Level 1" analysis was modeled using the HAZUS-MH version 4.2 flood model in order to quantify potential damages from inland flood events of specific magnitudes. Analyses were run separately for each town and riverine flooding was modeled independently of coastal flooding. The analysis used HAZUS-MH stock inventory as well as National Elevation Dataset (NED) Digital Elevation Models (DEMs) to model hydrology.

Estimated damages generated by HAZUS-MH version 4.2 (2019) are presented herein in comparison to the results generated by a previous version of HAZUS-MH for the 2014 NHMP. Some of the results differ significantly than those estimated for the 2014 NHMP. It is believed that the differences are due to the updated methodology for estimating flood damages in version 4.2 as well as the updated base data used for the analysis.

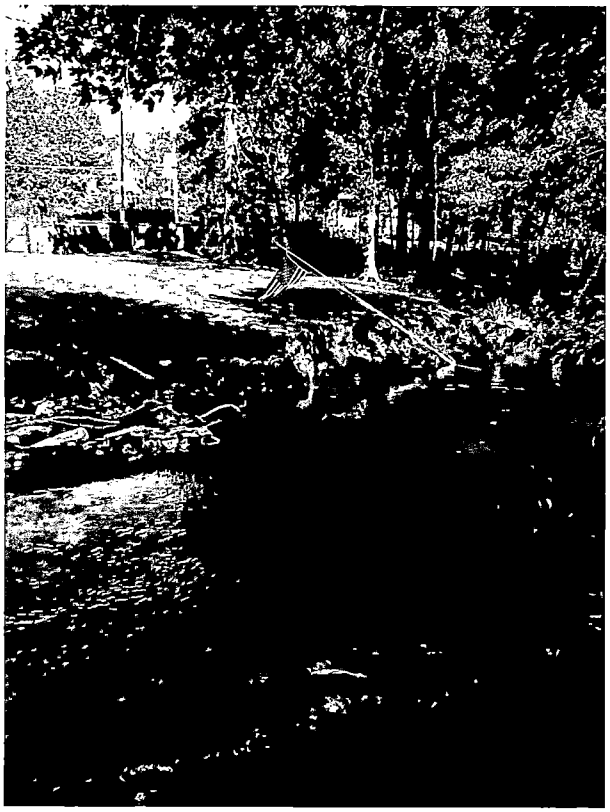
Building Damage

Building damage was based on a flood depth grid that was created by overlaying the flood depth by the DEM. This flood depth was then used with a depth-damage curve to estimate damages to buildings expressed as percent of the building damaged. Table 3.16 shows the results for the region. The current HAZUS-MH results generally show that more buildings in the region are susceptible to damage than the previous model, but that the percentage of damage expected is lower than previously modeled. Town specific data can be found in Appendix G.

Essential Facilities Damage

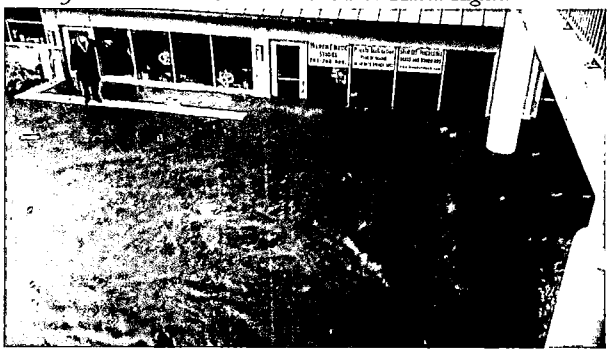
Damage, as well as loss of use estimates, was generated for all essential facilities. Damage was calculated in the same method as building damage. Loss of use estimates were calculated by assuming a default depth of flood to which the

Flooding at Sacred Heart University - September 25, 2018 Storm.
Photo contributed to NBC Connecticut



Bank Erosion along Rooster River from September 25, 2018 Storm.
Photo by Town of Fairfield

Flooding on Cartright Street in Bridgeport - September 25, 2018 Storm.
Photo by Daniel Morcarski contributed to New Haven Register



Flooding at Trumbull Music Studios - September 25, 2018 Storm.
Photo Posted on Social Media by Trumbull Music Studios

Flooding at Trumbull Music Studios - September 25, 2018 Storm.
Photo Posted on Social Media by Trumbull Music Studios

Flooding Debris along Rooster River from September 25, 2018 Storm.
Photo by Town of Fairfield

Table 3.16: Hazus-MH building damage from inland flooding
Region (All Towns) Building Damage

Damage (2014)	10 yr	25 yr	50 yr	100 yr	500 yr
1-10%	1	1	0	1	1
11-20%	18	21	24	25	29
21-30%	4	5	8	11	16
31-40%	37	51	56	59	100
41-50%	31	48	63	70	106
>50%	53	53	66	76	104
Total	**144**	**179**	**217**	**242**	**356**
Damage (2019)	**10 yr**	**25 yr**	**50 yr**	**100 yr**	**500 yr**
1-10%	215	239	270	397	943
11-20%	142	165	205	280	441
21-30%	29	36	48	60	65
31-40%	4	4	6	11	12
41-50%	2	2	1	4	3
>50%	2	2	3	3	7
Total	**394**	**448**	**533**	**755**	**1,471**

facility may close. This depth threshold for functionality is different for each essential facility type. Loss of use projections can be found in Table 3.17. Town specific results can be found in Appendix G. Very few essential facilities are affected by any inland flooding event. Only four schools in Fairfield and one police station in Easton were impacted.

Debris Generated

HAZUS-MH generated estimates for the amount of debris generated from inland flooding. The overall debris generated is in Table 3.18. The current HAZUS-MH results generally show that less debris is generated from inland flooding than the previous model. Bridgeport had the most debris generated with 2,510 tons in a 1% event, while Trumbull had the most debris generated for a 0.2% event with 2,880 tons. Overall, the Region is projected to have 8,682 tons of debris in a 1% flood and 9,725 tons in a 0.2% flood.

Shelter Needs

Shelter needs were generated in HAZUS-MH by the number of households displaced due to the flood and potential evacuation. Displaced houses include not only areas in the flood but near the flood in potential evacuation zones. The number of people requiring shelter was a fraction of those displaced households and can be found in Table 3.19. The current HAZUS-MH results generally show that less people will require shelter than the previous model.

Table 3.17:
Hazus-MH essential facility damage from inland flooding
Number of Facilities Damaged

Damage (2014)	Total	10 yr	25 yr	50 yr	100 yr	500 yr
EOC	2	0	0	0	0	0
Fire	16	0	0	0	0	0
Hospitals	4	0	0	0	0	0
Police	16	0	0	0	1	1
Schools	130	0	0	0	0	2
Damage (2019)	**Total**	**10 yr**	**25 yr**	**50 yr**	**100 yr**	**500 yr**
EOC	2	0	0	0	0	0
Fire	16	0	0	0	0	0
Hospitals	3	0	0	0	0	0
Police	16	1	1	1	1	1
Schools	130	0	2	3	3	4

Table 3.18: Hazus-MH debris generated from inland flooding
Debris Generated (tons)

Damage (2014)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	1,316	1,437	1,664	1,786	2,222
Easton	615	733	860	980	1,290
Fairfield	7,864	8,297	8,806	9,307	10,166
Monroe	364	556	737	864	1,375
Stratford	547	717	915	1,031	1,469
Trumbull	1,340	1,516	1,816	2,095	3,112
Total	**12,046**	**13,256**	**14,798**	**16,063**	**19,634**
Damage (2019)	**10 yr**	**25 yr**	**50 yr**	**100 yr**	**500 yr**
Bridgeport	1,090	1,199	1,404	2,510	2,039
Easton	291	433	549	839	960
Fairfield	1,058	1,367	1,755	2,116	1,984
Monroe	180	236	289	379	679
Stratford	724	821	927	1,029	1,183
Trumbull	1,244	1,425	1,628	1,769	2,880
Total	**4,587**	**5,481**	**6,552**	**8,642**	**9,725**

Economic Loss

Economic loss was calculated from both direct property damage and business interruption. Table 3.20 summarizes the combined economic loss for each town. The current HAZUS-MH results predict more economic loss due to flood damage than the

Table 3.19: Hazus-MH shelter needs from inland flooding
People Requiring Shelter

Damage (2014)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	720	816	1,002	1,055	1,964
Easton	20	24	31	32	44
Fairfield	867	1,041	1,165	1,270	1,738
Monroe	196	243	278	313	483
Stratford	743	915	1,001	1,053	1,565
Trumbull	124	146	177	213	428
Total	**2,670**	**3,185**	**3,636**	**3,936**	**6,222**
Damage (2019)	**10 yr**	**25 yr**	**50 yr**	**100 yr**	**500 yr**
Bridgeport	65	71	80	146	172
Easton	0	0	0	0	0
Fairfield	9	11	14	19	135
Monroe	1	1	2	2	7
Stratford	18	22	23	28	43
Trumbull	6	8	8	12	16
Total	**99**	**113**	**127**	**207**	**373**

Table 3.20: Hazus-MH economic loss from inland flooding
Economic Loss (in millions of dollars)

Damage (2014)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	$56.5	$64.2	$70.8	$74.2	$78.3
Easton	$10.7	$12.9	$14.9	$16.5	$19.6
Fairfield	$74.1	$85.1	$94.9	$103.6	$120.0
Monroe	$14.3	$21.0	$26.1	$30.2	$42.5
Stratford	$34.6	$42.4	$51.2	$57.8	$76.6
Trumbull	$43.1	$51.6	$59.8	$65.5	$88.5
Total	**$233.2**	**$276.3**	**$317.6**	**$347.8**	**$425.4**
Damage (2019)	**10 yr**	**25 yr**	**50 yr**	**100 yr**	**500 yr**
Bridgeport	$96.6	$106.3	$118.1	$171.9	$173.3
Easton	$15.0	$19.0	$22.0	$28.9	$31.5
Fairfield	$67.8	$77.3	$99.9	$125.7	$269.2
Monroe	$25.7	$31.5	$39.0	$50.2	$61.1
Stratford	$67.3	$81.2	$92.3	$106.2	$129.9
Trumbull	$60.2	$71.9	$82.6	$110.7	$147.4
Total	**$332.6**	**$387.2**	**$453.8**	**$593.6**	**$922.4**

previous model. Fairfield could expect the most losses of any MetroCOG municipality. Overall, the Region can expect $594 million dollars in loss from a 1% annual chance event and $922 million from a 0.2% annual chance event.

3.6 Hazard Profile – Coastal Flooding

Setting

Coastal flooding is a natural hazard that threatens the MetroCOG Region. Much like inland flooding, coastal flooding represents a common naturally occurring event that causes damage to property and residents' quality of life. The three member communities that are directly impacted by coastal flooding are the City of Bridgeport and the Towns of Fairfield and Stratford.

Bridgeport Harbor is one of three deep water harbors in Connecticut. The harbor is fed by three main tributaries, the largest being the Pequonnock River, followed by the Yellow Mill Channel, and Johnson's Creek/Lewis Gut. The Harbor area includes the United Illuminating plant and a City-owned marina, and many residential neighborhoods lay near the harbor's edge and two marinas exist along the banks of Johnson's Creek. Since the adoption of the 2014 NHMP Update, Steele Point redevelopment is underway on land that is protected by new bulkheads on an elevated ground surface that exceeds the base flood elevation. The redevelopment effort is expected to extend into the 2030s.

Much of Fairfield's population resides south of the Interstate 95 corridor. The neighborhoods within the vicinity of Fairfield Beach and Pine Creek have undergone a monumental shift over the recent decades, transitioning from summer cottages to full time residences. This increased the region's year-round population density, which in turn increased concerns for public safety and possible damage inflicted from a coastal flooding event.

A significant portion of the population of Stratford lives along the shoreline and, much like the shift seen in Fairfield, many of Stratford's shoreline cottages have been converted to year round residencies. Cottages located on Long Beach, a barrier beach connecting Stratford with Pleasure Beach in Bridgeport, were removed and the area converted to permanent open space. In addition to the immediate shoreline along Long Island Sound, the threat of coastal flooding exists for residents that reside along the lower reaches of the Housatonic River.

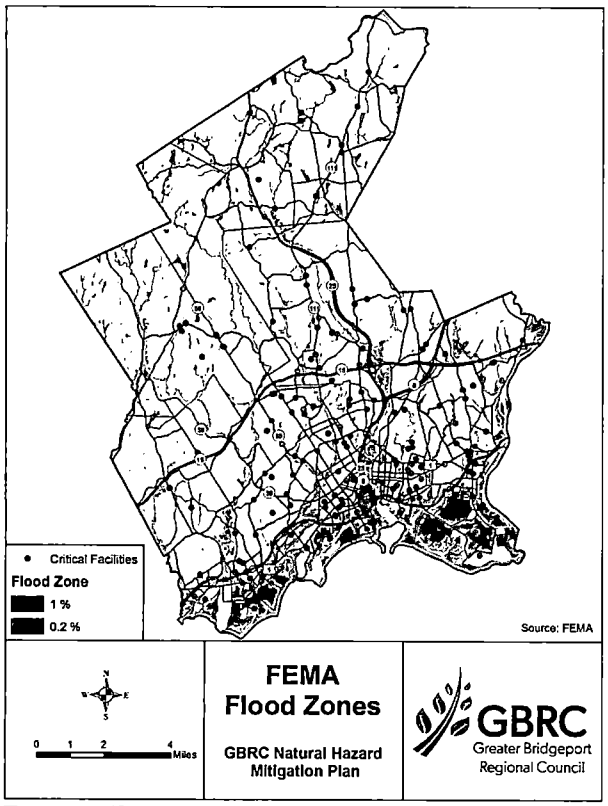


Figure 3.14: Flood zones and critical facilities

Hazard Assessment

In Bridgeport, Fairfield and Stratford, severe flooding can result from astronomically high tide levels along coastal areas. Commonly these extreme high tide events are brought on by a "nor'easter." Characterized by slow moving low-pressure zones, this storm system can occur throughout the year, although it most often occurs during the winter months. Further events can be brought on by tropical systems of varying intensities that pass through the area.

The extent of coastal flooding is depicted in the Figure 3.14. It is based on the flood zones relating to a 1% and a 0.2% storm event, as determined by FEMA. Town maps for coastal flooding with enhanced critical facilities can be found in Appendix F.

As explained in the previous section, a 1% flood means that in any given year there is a one percent chance that there will be a storm that will cause a certain level of flooding. Similarly, the flooding associated with a 0.2% flood has 0.2% chance of occurring in a year, and would affect a greater area than the 1% flood.

The majority of the Region's coastal flooding occurs from storm systems that move up the Atlantic Coast and carry heavy precipitation. This includes tropical storms, hurricanes, and nor'easters. These systems typically carry very low pressure gradients and strong winds. The direct coastal flooding associated with these storms can migrate into tidal and estuarine stream systems.

In addition, floods of smaller magnitudes can occur with more frequent regularity. For example, areas within the Region that are proximate to low-lying coastline may be more prone to flooding from unusually high tides. While these events can occur with greater frequency, they are typically far less severe in duration and impact. This type of flooding is discussed in more detail in Section 3.7 (Sea Level Rise).

The Fact Sheet on the next page provides more information regarding coastal flooding in the region.

Historical Assessment

As mentioned above, flooding, whether coastal or inland, represents the most common and costly natural hazard in Connecticut. The FEMA FIS identifies the coastal storm events that had the most effect on Fairfield, Stratford and Bridgeport as occurring in 1815, 1938, 1944, 1954, 1955, 1960, 2011, and 2012. The major unnamed hurricane of September 21, 1938, was estimated to cause 600 deaths in New England. Another unnamed hurricane hit the Connecticut coast in September 1944, and Hurricane Carol struck the Connecticut coast in August of 1954. In the following year, 1955, back-to-back hurricanes Connie and Diane caused torrential rains in Connecticut, with up to 12 inches of rainfall in areas from Connie and an additional 10 to 20 inches of rain from Diane.

Recent Events

More recently, flooding and winds associated with hurricanes and storm events have caused extensive shoreline erosion and related damage. In 1985, Connecticut was impacted by Hurricanes Bob and Gloria, with Gloria directly hitting the coastline. Tropical and extratropical storms have produced periods of locally heavy rainfall. These events have been recorded on June 4 through 7, 1982, May 16, 1989, October 31, 1991, December 10 through 12, 1992, and May 27-June 2, 1994.

Recent events have also demonstrated that the extent of coastal flooding has exceeded the limits indicated on FEMA mapping. Inundation of flood

REGIONAL CHALLENGES

CASE STUDY: COASTAL FLOODING

Fairfield Daily Voice Photo

Hartford Courant Photo

WHAT IS THE CHALLENGE?

Connecticut's coastlines boast a range of economic and recreational benefits for the state. Unfortunately, increasingly strong storms and densely populated shorelines mean that coastal flooding has been an increasingly common, but unwelcome guest to our shoreline communities. Coastal flooding occurs during hurricanes and other strong cyclones including nor'easters. The direction and strength of wind play a role in forcing water into Long Island Sound from the open ocean to the east. The effects of flooding are exacerbated during high tide, and especially astronomically high tide.

Estimates from the previous hazard mitigation plan report that economic losses in the MetroCOG region could be as high as $2.4 billion during a 100 year coastal flood event. Clearly coastal flooding has the ability to cause vast economic and commercial destruction in the area if not mitigated. The pictures on the left show coastal flooding in the MetroCOG area in the wake of Hurricane Sandy.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

Coastal flooding is on the rise due to the effects of climate change, so a proactive approach is necessary to ensure the safety and economic security of the region. Historical data is no longer the best way to predict the future extent and ferocity of coastal flood events. The latest modeling and predictions by local and national scientists have been incorporated into the plan in order to better inform MetroCOG communities.

This hazard mitigation plan update focuses on a multifaceted approach for mitigating coastal flood impacts. Mitigation is not a one-size-fits-all action. While some buildings may be adequately protected through elevation, other properties may benefit from a FEMA subsidized buyout. The Plan's strategies focus on education and outreach, working collectively to initiate change, and looking at past actions to inform future decisions that influence regulations, policies, and enforcement actions that influence behavioral changes to produce tangible results.

FOR MORE INFORMATION

Diane Ifkovic
State NFIP Coordinator
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106
(860) 424-3537
Diane.ifkovic@ct.gov

waters from both Tropical Storm Irene and Superstorm Sandy extended farther inland than expected. Furthermore, the Town of Fairfield reports that the need to plow sand from roads is becoming more frequently necessary due to deposition from coastal floods. This occurred three times in 2018, whereas in previous years it was not necessary at all.

The following are additional descriptions and examples of more recent major flooding events in the region. These examples are drawn from the National Climatic Data Center Storm Events Database, as well as from discussions with municipal stakeholders.

March 19, 1996

A strong low pressure system moving northeast off the Delmarva Coast brought strong winds of 40 to 50 MPH across much of the region. The strong winds pushed water inland producing tides two-to-four feet above normal. This resulted in a moderate flooding along much of western Connecticut's shoreline.

October 19, 1996

A system that developed over the Delmarva Peninsula brought easterly gale force winds (40 mph) across Long Island that persisted from late Friday through Saturday. This caused tides to exceed their astronomical means, and produced tide levels of three-to-five feet above normal. In turn, varying amounts of coastal flooding were reported along with varying degrees of beach erosion. In Stratford, roadways were covered with up to three feet of water leaving residents stranded. The Fairfield Beach area also experienced flooding. Sand was pulled from the beaches and deposited yards away in the basements and first floors of residential homes.

March 13, 2010

The right combination of high and low pressure in the region created a prolonged period of strong easterly winds. This resulted in tidal heights of three to five feet above normal, with many locations reporting higher levels than seen in 20 years. The National Oceanic Service (NOS) tidal gauge in Bridgeport reported a maximum tide level of 10.4 feet. This produced moderate flooding which closed many roads close to the shoreline. Roads crews had to be brought in to remove sand and debris from roadways.

October 29, 2012

Superstorm Sandy produced a storm surge of 8-to-9 feet along much of western Long Island Sound, with its effects further exacerbated by its coincidence with the high tide. This produced up to two to five feet of inundation that spread several blocks inland in many places. In certain areas the inundation reached north of Interstate 95, including areas along the Pequonnock River in Bridgeport and along Ash Creek and the Mill River in Fairfield.

February 27, 2013

Strong onshore winds were produced from a complex low tracking northeast system through the Ohio Valley. The winds produced a two to three foot storm surge for much of southwest Connecticut, resulting in widespread minor to locally moderate flooding. The Birdseye Marina in Stratford experienced moderate inundation of up to three feet; similar flooding was experienced along Housatonic River.

April 16, 2018

The entrance ramp to Interstate 95 from Surf Avenue in Stratford was closed due to flooding.

October and November, 2018

Bridgeport, Fairfield, and Stratford were subject to many coastal flood watches and warnings in 2018, with flooding reported during storms on October 27 and November 26. In Fairfield, vehicles such as passenger cars and a mail truck were lost to coastal flooding. In Stratford, the flooding associated with the November 26, 2018 storm approached the limits of flooding sustained during Tropical Storm Irene.

Hazard Probability

Based on the review of historical records, storms that result in moderate-to-severe coastal flooding occur about once every three-to-four years. According to the NOAA GFDL, the effects of climate change will also include changes to the magnitude of tropical storms.

Risk Assessment

Coastal flooding may result in direct flooding damage to properties and infrastructure as well as result in coastal erosion that may result in additional areas becoming floodprone overtime.

RL properties in the region provide one method of quantifying the risk of coastal flooding in the region. Out of the 407 RL properties in the region, 279 have losses from coastal flooding along the shoreline or along the tidal sections of streams and rivers:

- Bridgeport has 54 RL properties susceptible to coastal flooding, with 2 of the RL properties being non-residential and 52 residential.
- Fairfield has 171 RL properties susceptible to coastal flooding, with 3 of the RL properties being non-residential and 168 residential.
- Stratford has 54 RL properties susceptible to coastal flooding, with 5 of the RL properties being non-residential and 49 residential.

Of the 14 SRL properties in the region, 12 (eight in Fairfield and four in Stratford) appear to be due to coastal flooding. All are residential.

Losses experienced by RL properties is only a portion of the total flooding damage experienced by the region. Annualized loss estimates were prepared for flooding for each community as presented in Section 3.3.

A Level 1 HAZUS-MH analysis was run using the HAZUS-MH 4.2 flood model. The analysis used HAZUS-MH stock inventory as well as NED DEMs to model hydrology. The NED DEM is a low resolution (30 meter) dataset. This low resolution may have led to overestimation of damage from small events which is evident in the following results. The coastal flooding model was run independently for the three coastal communities (Bridgeport, Fairfield, Stratford).

Building Damage

Building damage was assessed using the same methodology described in subsection 3.5. Town specific damage can be found in Appendix G. Table 3.21 summarizes the damage for the Region. In general, the current HAZUS-MH results predict that fewer buildings will be damaged by coastal flooding than the previous model. The model estimates that more than 100 buildings would be more than 50% damaged from a 1% annual chance coastal flood and nearly 300 buildings in a 0.2% annual chance coastal flood event.

Essential Facilities Damage

Essential Facility damage and loss of use estimates were calculated in the same method described above in subsection 3.5. Town specific loss of use projections can be found in Appendix G. As apparent in Table 3.22 essential facilities are impacted in every flood scenario. In general, the HAZUS-MH results show that less essential facilities are at risk of coastal flooding than the previous model. Schools were the most impacted by coastal flooding.

Table 3.21: Hazus-MH building damage from coastal flooding.

Region (Coastal Towns) Building Damage

Damage (2014)	10 yr	25 yr	50 yr	100 yr	500 yr
1-10%	8	9	8	8	2
11-20%	307	337	265	235	236
21-30%	820	1,052	970	794	537
31-40%	458	771	1,604	1,283	899
41-50%	385	657	1,500	2,195	2,063
>50%	36	136	500	1,000	3,406
Total	**2,014**	**2,962**	**4,847**	**5,515**	**7,143**
Damage (2019)	**10 yr**	**25 yr**	**50 yr**	**100 yr**	**500 yr**
1-10%	91	90	201	253	132
11-20%	152	154	493	798	1,071
21-30%	51	49	197	469	979
31-40%	2	2	57	101	458
41-50%	0	0	9	36	168
>50%	7	6	42	107	291
Total	**303**	**301**	**999**	**1,764**	**3,099**

Table 3.22: Hazus-MH essential facility damage from coastal flooding

Region (Coastal Towns)
Essential Facilities (Loss of use)

Damage (2014)	Total	10 yr	25 yr	50 yr	100 yr	500 yr
EOC	2	0	0	0	0	0
Fire	16	0	0	2	2	2
Hospitals	4	0	0	0	0	0
Police	16	1	1	3	4	3
Schools	130	2	3	7	8	14
Damage (2019)	**Total**	**10 yr**	**25 yr**	**50 yr**	**100 yr**	**500 yr**
EOC	2	0	0	0	0	1
Fire	16	0	0	0	0	2
Hospitals	3	0	0	0	0	0
Police	16	1	1	1	1	3
Schools	130	1	1	2	2	7

Debris Generated

HAZUS-MH generated estimates for the amount of debris generated from coastal flooding. The amount of debris generated was much larger than those from inland flooding hazards, but less than hurricane wind. Table 3.23 summarizes the debris generated from different flooding scenarios. In general, the current HAZUS-MH model estimates significantly less debris will be generated than the previous model.

Table 3.23: Hazus-MH debris generated from coastal flooding

Debris Generated (tons)

Damage (2014)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	1,415	4,324	11,168	25,449	110,450
Fairfield	39,215	63,245	107,645	172,718	272,594
Stratford	9,536	16,252	43,665	83,154	229,056
Total	**50,166**	**83,821**	**162,508**	**281,321**	**612,100**
Damage (2019)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	162	162	1,125	2,755	10,870
Fairfield	2,848	2,820	16,361	38,033	102,259
Stratford	976	976	4,729	10,112	33,377
Total	**3,986**	**3,958**	**22,215**	**50,900**	**146,506**

Shelter Needs

Shelter needs were generated in HAZUS-MH by the number of households displaced do to the flood and potential evacuation. Displaced houses include not only areas in the flood but near the flood in potential evacuation zones. The number of people requiring shelter was a fraction of those displaced households and can be found in Table 3.24. In general, the current HAZUS-MH results predict a lower sheltering need in the region from coastal flooding than the previous model results.

Table 3.24: Hazus-MH shelter needs from coastal flooding

People Requiring Shelter

Damage (2014)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	1,901	3,356	6,819	9,677	18,511
Fairfield	5,512	6,187	7,069	7,578	9,442
Stratford	4,646	5,943	7,638	8,597	9,904
Total	**12,059**	**15,486**	**21,852**	**25,852**	**37,857**
Damage (2019)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	**4**	**4**	**235**	**442**	**1,037**
Fairfield	**169**	**165**	**347**	**403**	**458**
Stratford	**60**	**60**	**339**	**493**	**664**
Total	**233**	**229**	**921**	**1,338**	**2,159**

Economic Loss

Economic loss was calculated as in the subsection 3.5. Table 3.25 summarizes the combined economic loss for each town. Overall, the current HAZUS-MH model predicts less economic loss due to coastal flooding than the previous model, with the greatest economic loss predicted for Fairfield. The Region is projected to lose over $1.6 billion in a 1% annual chance coastal flood event and over $2.9 billion in a 0.2% annual chance coastal flood.

Table 3.25: Hazus-MH results for economic loss from coastal flooding

Economic Loss (in millions of dollars)

Damage (2014)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	$55.4	$11.4	$357.6	$645.8	$1,343.5
Fairfield	$247.5	$394.5	$655.9	$795.2	$1,257.2
Stratford	$320.0	$486.5	$764.4	$967.1	$1,198.3
Total	**$642.9**	**$1,000.5**	**$1,777.9**	**$2,408.1**	**$3,799.1**
Damage (2019)	10 yr	25 yr	50 yr	100 yr	500 yr
Bridgeport	$23.0	$23.0	$142.0	$340.7	$896.4
Fairfield	$148.6	$143.3	$423.0	$661.7	$1,092.6
Stratford	$91.7	$91.7	$427.0	$635.1	$957.6
Total	**$263.3**	**$258.0**	**$992.0**	**$1,637.5**	**$2,946.6**

3.7 Hazard Profile – Sea Level Rise

Setting

Sea level rise has the potential to impact all low-lying areas near the shore and unlike other natural hazards, is one that is constant and ongoing.

Hazard Assessment

Sea level rise results from thermal expansion of seawater and the melting of land based ice sheets and glaciers. The Intergovernmental Panel on Climate Change (IPCC) estimated that the global mean sea level rose by 17 centimeters (~6.7 inches) in the 20th Century. The IPCC also reported an observed rate increase of 1.8 millimeters/year (~0.07 inches) between 1961 and

2003, while the rate was almost double from 1993 to 2003 to an average yearly rise at 3.1 millimeters (~0.12 inches).

Local sea level change, which is of more direct concern to coastal communities, is caused by a combination of global sea level rise, changes in local and global ocean currents, and local changes in land elevation. Weakening Atlantic currents and local land subsidence accelerate the rate of sea level rise occurring in Long Island Sound. Coastal communities experiencing increases in mean sea level are at greater risk to the effects of coastal flood hazards as natural, protective buffers such as coastal wetlands and dunes are lost and property and infrastructure become more exposed to the frequency and severity of coastal flood and storm surge inundation.

As sea level rises, tidal marshes and barrier islands will be the first areas to experience damage. Within the MetroCOG Region, the three coastal communities of Bridgeport, Fairfield and Stratford, will be highly susceptible to damage from sea level rise. These municipalities have a coastline that extends about 15.5 miles and contain many tidal marshes, inlets, embayments, rivers and creeks, all of which will be affected by sea level rise.

Historic Record

Sea levels have been constantly rising since then end of the last ice age. However, it is only in the last 20 years that this change has been increasing at a more rapid rate, and its threat realized. Along the Atlantic Coast, it is estimated that by the end of the century sea levels could rise anywhere from 20-to-40 inches, with higher amounts possible depending on the effect of melting polar ice.

Connecticut is experiencing a relative sea level rise greater than that of the rest of the globe. During the past ice age much of the northern hemisphere was covered in up to a mile of ice. The immense size of these glaciers warped the Earth's crust, causing the northeast to be slightly uplifted. Since the ice has melted, the crust is slowly evening out, leading to Connecticut sinking at approximately 0.76-to-0.89 millimeters per year (≈0.03-to-0.035 inches). This only further complicates assessing and predicting the long term effects of continued sea level rise.

The IPCC concluded that there has been a global mean rise in sea level between 10 and 25 centimeters (~4-to-10 inches) over the last 100 years. Relative sea level rise in Connecticut in the same time period is estimated between 15 and 30 centimeters (~6-to-12 inches). The IPCC further estimates that global sea level will rise 9 to 88 centimeters (~3.5 to 34.5 inches) during the 21st century.

A long-term tide gauge has been operated by the National Oceanic and Atmospheric Administration (NOAA) at Steele Point in Bridgeport since 1964. The historic mean sea level trend at that gauge has been a rise of 2.83 millimeters per year (0.93 feet in 100 years) with a 95% confidence interval of plus-or-minus 0.44 millimeters per year, based on monthly mean sea level data from 1964 to 2016.

Risk Assessment

Sea level rise is a slow onset hazard, and its severity or magnitude is measurable only over long periods of time as further described below. "Nuisance flooding" refers to the inundation of low-lying areas under "blue sky," non-storm conditions; this phenomenon has already been noted in Fairfield and will continue to become a problem with regards to access and asset-degradation as water more regularly renders roads impassable and affects structures and infrastructure systems.

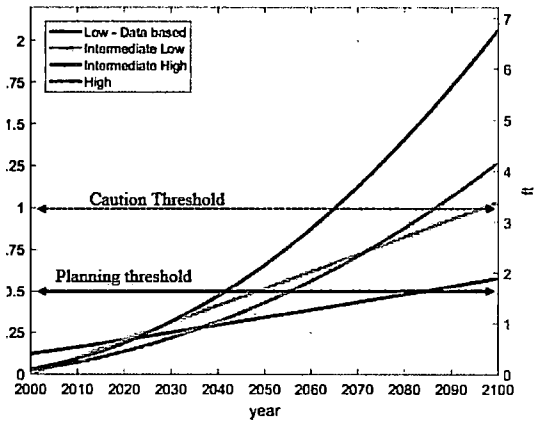
Global mean sea level is projected to rise between 0.98 and 8.2 feet over the 21st century. Sea level rise is not consistent around the world, and as noted above is affected by local variations in currents, temperature, and changes in land surface elevation. It has long been expected that the rate of sea level rise in Connecticut will be slightly higher than the global projections due to the effects of regional subsidence. However, more recent studies have asserted that changes in ocean circulation will increase the relative sea level rise along the Atlantic coast even more than previously thought.

The Connecticut Institute for Resilience and Climate Adaptation (CIRCA) has developed sea level rise projections for use in Connecticut. A Fact Sheet discussing these projections follows. CIRCA has established a "planning threshold" of a 0.5-meter (1.64 feet) rise in sea level expected by 2050, and has defined a "caution threshold" of 1.0 meters (3.28 feet) in sea level rise expected in the period 2060-2090.

Rising sea levels will impact both the natural and man-made coastal environments. It could

REGIONAL CHALLENGES

SEA LEVEL RISE



Connecticut sea level rise projections showing observation and model based predictions, with the planning and caution thresholds.

Flooding in Fairfield County, Photo by Daily Voice

FOR MORE INFORMATION

James O'Donnell, Executive Director
Connecticut Institute for Resilience and Climate Adaptation (CIRCA)
University of Connecticut
Avery Point Campus
1080 Shennecossett Rd
Groton, CT 06340
(860) 405-9214
circa@uconn.edu

WHAT IS THE CHALLENGE?

Global sea level rise (SLR) is occurring at an increasing rate due to the melting of land ice and the expansion of ocean water due to heat absorption associated with climate change. Global sea level represents a global mean; regional variations need to be considered for local planning. Observations and extrapolations show that the sea level in Long Island Sound is rising at a more rapid rate than the global SLR projections.

The Connecticut Institute for Resilience and Climate Adaptation (CIRCA) has conducted regional projections for Connecticut, and has recommended that planning anticipates a 0.5 m (1ft 8 inch) rise in sea level by 2050. There is significant diversion between projections after 2050; for 2050, the difference between the lowest and highest projection is approximately 0.3 m, and for 2100 the difference is almost 1.5 m.

Sea level rise (SLR) impacts both human development and the environment. With rising seas comes increased flooding events along the coast, and along water bodies connected to the coast. This flooding affects homes, business, utilities and infrastructure, and can seriously affect a municipality during a large enough event.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

The region is comprised of three coastal towns, which may become increasingly impacted by sea level rise. Bridgeport, Fairfield and Stratford, the three coastal communities in the MetroCOG region, already experience nuisance flooding as tide levels rise.

As tides begin to further inundate the coastline on a regular basis, storms may result in an increased level of flooding. Mitigation actions should be continuously identified and implemented in order to minimize damages during storms and high tide events.

Connecticut's lawmakers adopted Public Act No. 18-82 "An Act Concerning Climate Change Planning and Resiliency" in 2018. This Act mandates that sea level rise be taken into account when planning, and also requires municipalities to consider sea level rise scenarios when preparing hazard mitigation plans.

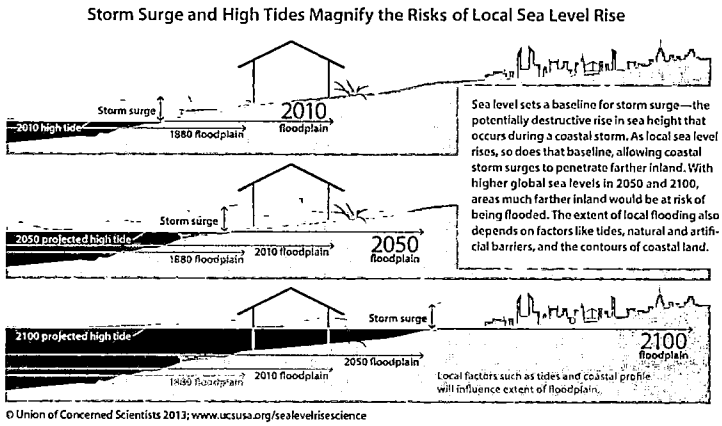


Figure 3.15: Effects of sea level rise on storm surge.
Source: Union of Concerned Scientists 2013

result in the disappearance of a large portion of Connecticut's tidal wetlands, and the conversion of upstream wetlands to saltwater marshland. Beachfront communities will see increased erosion of the sand and dune structures, which potentially will lead to more extreme and frequent flooding. Dikes and sea walls that are in place now could see a rapid decline in their effectiveness, potentially increasing the frequency and extent of flooding of coastal areas.

As sea levels rise, drainage systems will become less effective, leading to the potential for greater flooding from even moderate rain events. Bridgeport already experiences problems with inadequate storm drainage in coastal neighborhoods; a higher water table will only exacerbate this problem. Future storm events, especially those with an accompanying strong storm surge, will pose an even greater threat to coastal and low lying communities. Storm surges from hurricanes and nor'easters will reach further inland, impacting a greater portion of the region. The flooding and inundation that typically occurs from a Category 3 hurricane could, by the end of this century, result from a Category 1 storm. This phenomenon is portrayed in Figure 3.15. Sea level rise for the Region is shown in Figure 3.16. Town specific sea level rise maps can be found in Appendix F.

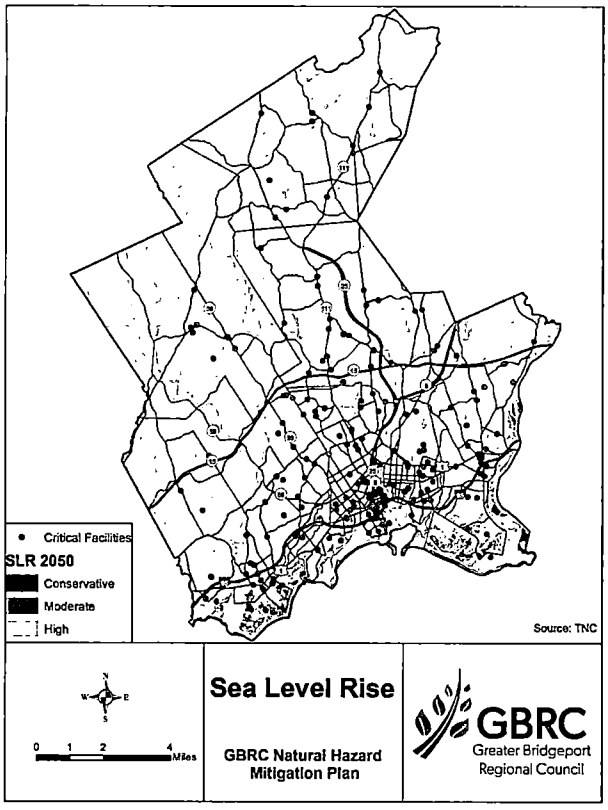


Figure 3.16: Sea level rise projections. Source: The Nature Conservancy

Of great concern is the influence sea level rise will have on the severity of episodic hazard events such as storm surge and coastal flooding, as well as long term coastal erosion. It can be expected that sea level rise will be an amplifier of the magnitude for these other coastal hazards.

Annualized loss estimates were prepared for sea level rise for each coastal community as presented in Section 3.3.

3.8 Hazard Profile – Winter Storms

Setting

Winter weather affects the Region indiscriminately, bringing not only the typical threats of snow, wind, and ice, but concerns of extreme cold and flooding. Furthermore, the results of any one these events can create tertiary hazards as well; these include loss of power and heat. While severe winter weather is commonly associated with the months of December, January, and February, the potential exists for occurrences from late September through mid-May.

Although the entire Region is susceptible to winter storms, the geography, topography and its location along Long Island Sound influence the severity of different events. Because of their proximity to Long Island Sound, the coastal and low lying areas receive less snow amounts then the more northern reaches. However, the tempera-

ture variations can affect precipitation mix during a winter storm. Warmer temperatures can create changeable conditions. Along the coast, it is not uncommon for a mixture of snow, sleet and freezing rain to occur, while most of Easton, Monroe and Trumbull are receiving only snow. These conditions affect driving conditions, damage to trees and power distribution.

Hazard Assessment

Winter storms and weather range from blizzards, ice storms, heavy snow, sleet, freezing rain and extreme cold. Most deaths from winter storms result from traffic accidents on icy roads and hypothermia from prolonged exposure to cold. Damage to trees and tree limbs and the resultant downing of utility cables are a common effect of these types of events. Secondary effects include loss of power and heat.

The possible weather events that can impact the region are described below:

Blizzard

The main characteristic of a blizzard is that it has conditions of sustained winds or frequent gusts of 35 mph or more. The high winds cause blowing and drifting of snow and reduction of visibility. By definition, visibility is reduced to less than one-quarter mile for three or more hours. Extremely cold temperatures are often associated with blizzard conditions.

Winter Storm

A heavy snow event results in a snow accumulation of more than six inches in twelve hours, or more than twelve inches in twenty-four hours. Unlike a blizzard, a heavy snow event does not have the high, sustained winds that can cause reduced visibility and down trees and power lines.

Freezing Rain

Temperatures at higher levels are warm enough for rain to form but surface temperatures are below 32 degrees. The rain freezes on contact and coats objects such as trees, cars or roads, forming a glaze of ice. Freezing rain is generally associated with an approaching warm front and cold air is trapped at lower levels in the atmosphere. When a substantial amount of freezing rain occurs and at least one-quarter inch of ice accumulates, it is referred to as an "Ice Storm." The freezing rain from an ice storm can create hazardous walking and driving conditions, and cause trees and branches to break from the weight of built-up ice. Power lines are susceptible to spanning from the weight of ice build-up.

Nor'easter

The classic winter storm in New England is the nor'easter. It forms as a low-pressure disturbance along the south Atlantic coast, moves northeast along the Middle Atlantic and the New England coasts and collides with a cold, dry high pressure system moving down from the north. Strong northeast winds are created and wind driven waves can batter the coastline, causing flooding and severe beach erosion. Coupled with a high tide, the low pressure of a nor'easter can have an effect similar to a storm surge from a hurricane. During the winter months and if the temperatures are right, heavy snow totals are possible.

Sleet

Unlike freezing rain, sleet is formed by water droplets that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects. However, it can accumulate like snow and cause a hazard to motorists. It typically falls as a mix of snow and freezing rain.

Historical Record

The National Oceanic and Atmospheric Administration (NOAA) has developed a Regional Snowfall Index (RSI) for the northeast that rates winter storms into five descriptive categories by score: Extreme, Crippling, Major, Significant, and Notable. The index considers the impact the storm had on the area and is based on snowfall amounts, size of the area impacted and the population within the path of the storm. Winter storms from 1956 to 2018 were reviewed. During that time period, 64 high impact snowstorms that affected the northeast were identified and rated:

Two were rated Extreme:

- March 12, 1993
- January 6, 1996

Ten were rated Crippling:

- February 14, 1958
- March 2, 1960
- February 2, 1961
- January 11, 1964
- December 25, 1969

- January 19, 1978
- February 10, 1983
- February 15, 2003
- January 21, 2005
- January 22, 2016

Twenty-two were rated Major:

- December 11, 1960
- January 18, 1961
- January 29, 1966
- February 22, 1969
- February 18, 1972
- February 5, 1978
- February 17, 1979
- January 21, 1987
- February 8, 1994
- February 12, 2006
- February 12, 2007
- February 4, 2010
- February 9, 2010
- February 23, 2010
- December 24, 2010
- January 9, 2011
- February 1, 2011
- February 7, 2013
- January 29, 2014
- February 11, 2014
- January 29, 2015
- March 12, 2017

Fourteen were rated Significant:

- March 18, 1958
- December 23, 1966
- February 5, 1967
- February 8, 1969
- April 6, 1982
- January 24, 2000
- December 18, 2009
- March 15, 2007
- March 4, 2013
- December 13, 2013
- December 30, 2013
- January 25, 2015
- March 5, 2018
- March 11, 2018

Sixteen were rated Notable:

- March 18, 1956
- January 25, 1987
- February 22, 1987
- February 2, 1995
- March 31, 1997
- December 30, 2000
- March 1, 2009
- January 26, 2011
- October 29, 2011
- January 20, 2014
- November 26, 2014
- December 9, 2014
- February 8, 2015
- January 3, 2018
- March 1, 2018
- March 20, 2018

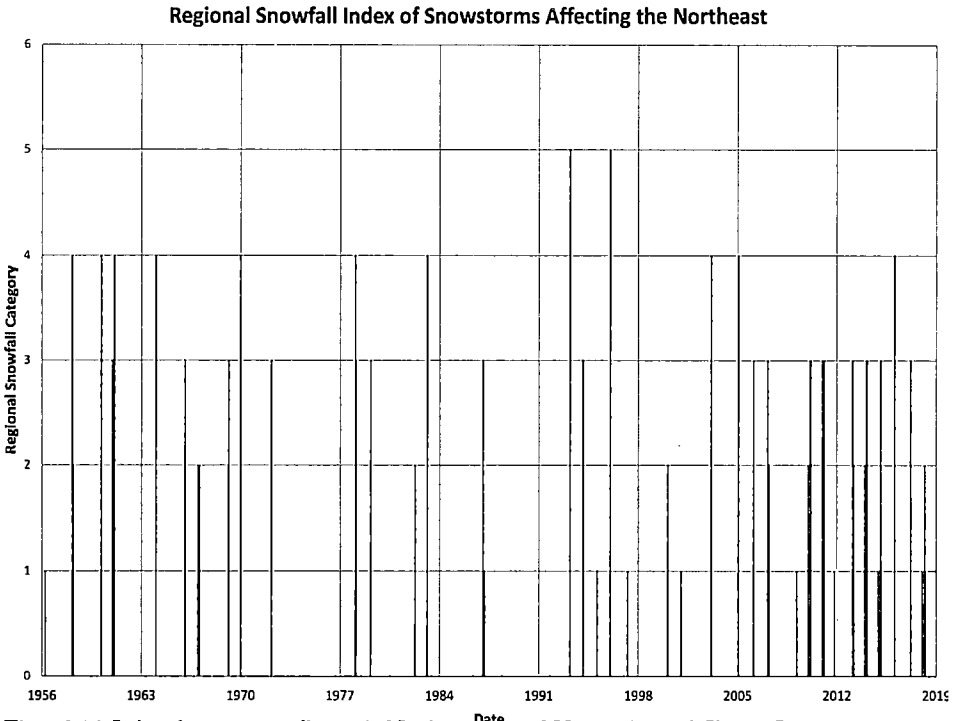


Figure 3.17: Index of snowstorms affecting the Northeast. Source: NOAA National Climate Center

The start date for these events are illustrated in Figure 3.17. In general, there has been an increased frequency of occurrence of notable or stronger winter storms over the last 15 years as compared to the earlier parts of the RSI record.

Severe winter storms can produce an array of hazardous weather conditions, including heavy snow, blizzards, freezing rain and ice pellets and extreme cold. Based on the RSI, nearly one-quarter of

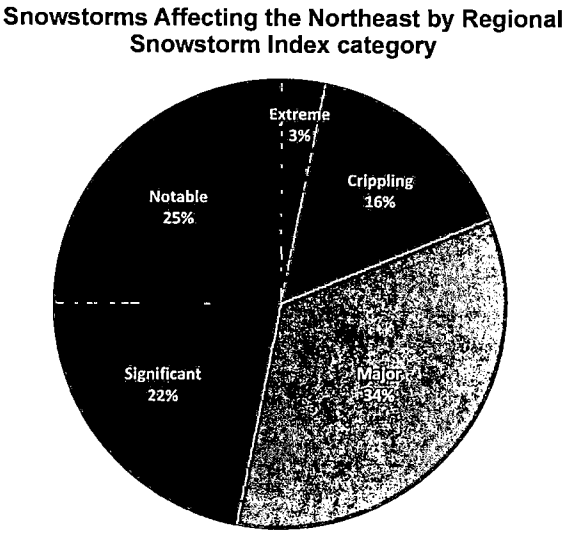


Figure 3.18: RSI rating for winter storm occurrences. Source: NOAA

the snowstorms were considered either extreme or crippling to the Northeast, while the majority were categorized as major. The remainder of the snowstorms were listed as significant or notable as seen in Figure 3.18.

Recent Events

On February 11th and 12th, 2006, Connecticut received record snowfall from a relatively minor system that started along the southern Appalachian range. It intensified over the Atlantic and developed into a nor'easter and became known as the North American Blizzard of 2006. State highways were closed to facilitate clean-up and the state was declared a federal disaster area. About 27.8 inches of snow was recorded in Fairfield as seen in Figure 3.19.

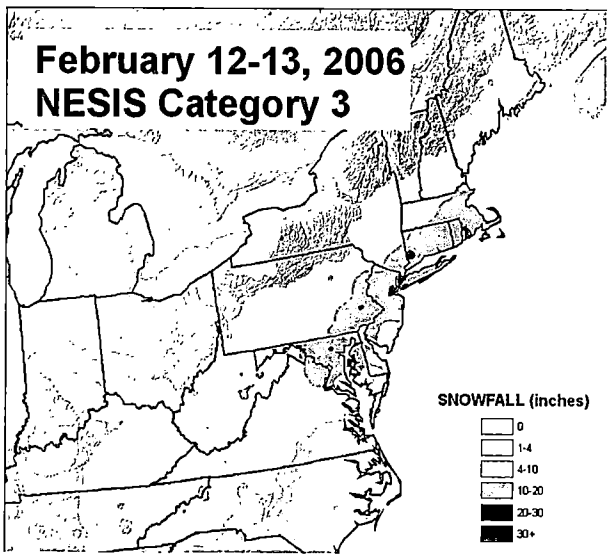


Figure 3.19: Snowfall totals from NOAA for February 2006 storm

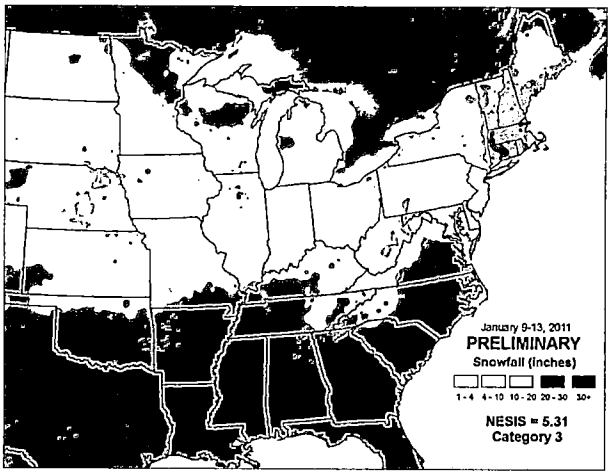


Figure 3.20: Snowfall totals from NOAA for January, 2011 storm

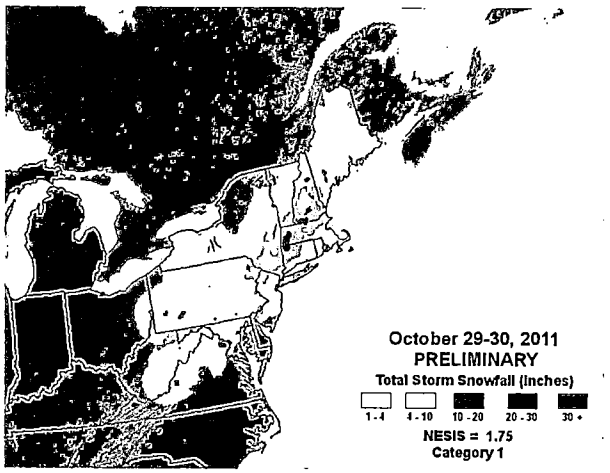


Figure 3.21: Snow totals from NOAA for Winter Storm Alfred

On January 9, 2011, Connecticut was hit by a winter storm that dropped up to two feet of snow, with 24.1 inches recorded in Danbury, 29 inches in Newtown and 22.5 inches in Hartford. In the Region, snowfall amounts totaled 16.5 inches in Bridgeport and were up to 20 inches in several northern areas as seen in Figure 3.20. Colder-than-expected temperatures resulted in the higher snowfall totals.

In late October 2011, a historic and unprecedented early-season winter storm impacted the area with up to 18 inches in some parts of Connecticut as seen in Figure 3.21. This was the first time a winter storm of this magnitude occurred in October. The storm is often referred to as the 2011 Halloween nor'easter or Storm Alfred. The combination of high winds and wet, heavy snow caused trees and power lines to snap. About 830,000 customers lost power throughout the state, and

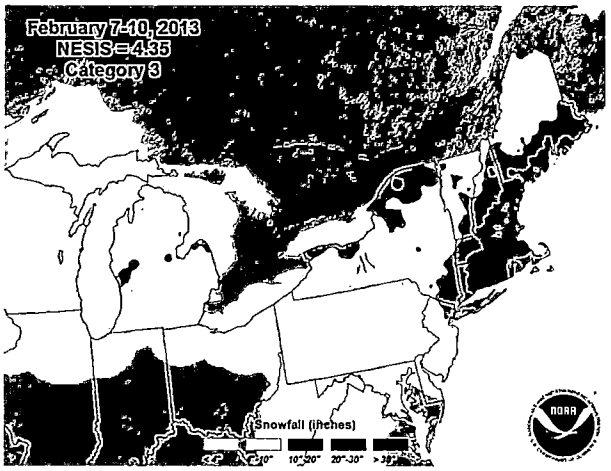


Figure 3.22: Snow totals from NOAA for Winter Storm NEMO

many remained without electricity for over a week. Almost the entire state was declared a federal disaster area; New London County was the only exception.

The February 2013 nor'easter, commonly referred to as Winter Storm Nemo, developed from the combination of two areas of low pressure, one originating in the northern plains and the other forming over Texas. The National Weather Service issued blizzard warnings for all of Connecticut on February 7th and Governor Malloy declared a state of emergency on February 8th and ordered the closure of all limited access highways. The snowstorm resulted in heavy snowfall and blizzard force winds. The highest amounts were recorded in Hamden at 40 inches, while 30-to-36 inches blanketed the Region as seen in Figure 3.22. During the evening and overnight, snow was falling at an extreme rate of six inches per hour.

Recent winter storms over the last five years have produced up to 16 inches of snow and occasionally freezing rain or ice throughout the region. However, such storms have generally been more manageable than the more severe storms described earlier in the historic record.

Hazard Probability

Connecticut experiences at least one severe winter storm every five years. However, a variety of small and medium snow and ice storms occur nearly every winter. The probability of a nor'easter or any other winter storm occurring in any given winter is likely. The data from the NCDC suggest that the Northeast experiences a severe snowstorm every 1.2 years or, effectively, the area can expect at least one notable snow event every year.

According to the climate change models performed for the State Water Plan (2018), Connecticut is expected to experience higher temperatures during the winter months in the future as well as increased rainfall during the winter. This may result in fewer snow events overall and more wintry-mix storms consisting of snow, sleet, freezing rain, and potentially ice. However, given the increased overall precipitation, there may be a potential for higher snowfall amounts during the snowstorms that do occur.

Risk Assessment

The entire Region is vulnerable to the impacts of winter storms. While there may be damage to structures directly from the winter weather, the tertiary effects are what impact the Region the most.

Transportation is severely impacted by winter storms as heavy snowfall and icy conditions can make roadways dangerous and in some cases impassible. This greatly restricts access to hospitals and other medical care facilities which puts everyone at risk during an event. People in more rural areas of the Region are also more impacted as travel is mostly limited to personal vehicles. In addition, rural areas often take longer to clear the roads often forcing people to stay in their homes. Even when roads are cleared, vulnerable populations such as the elderly and disabled may be unable to clear their own walks and driveways, leaving them trapped inside.

In addition to travel impediment, winter storms also have the potential to knock out power in the Region. Without power many individuals will be without heat, again putting certain populations such as the elderly more at risk.

Annualized loss estimates were prepared for winter storms for each community as presented in Section 3.3.

3.9 Hazard Profile – Summer Storms and Tornadoes

Setting

Unlike many other natural hazard events that are more likely to affect only certain portions of the Region, summer storms and tornadoes have the potential to affect the Region indiscriminately. These systems can bring with them torrential rains, damaging winds, dangerous lighting, and large

hail. Furthermore, due to the complex nature of these storms, the affected area from an event could be very small, perhaps only a few blocks within a single town, or a system could impact the entire Region.

Hazard Assessment

Severe summer storms include tornadoes, downbursts, lightning, high winds, heavy rain and hail. These weather systems can cause flash floods, as well as, downed trees and power lines. The possible weather events that can impact the region are described below:

Summer Storms

The development of a thunderstorm occurs in several stages. These stages include growth, development, electrification, and finally dissipation. For all of these stages to occur a precise combination of atmospheric conditions must be present. The formation of these storm cells often begins early in the morning when the sun's rays begin to warm the lower levels of the atmosphere; this warmer air mass begins to rise. It is these rising pockets of warm air that produce cumulus clouds. As the day progresses and the atmosphere warms further the clouds grow vertically, creating towering cumulus clouds. The rapid vertical growth is the first sign that a potentially severe thunderstorm is developing. The final maturation of the cloud structure occurs when the very top of the cloud expands outward, producing a cloud that resembles mushroom or an anvil.

To help warn residents to the arrival of potentially severe and destructive storms systems the National Weather Service utilizes a system of watches and warnings to designate the potential for damaging weather. The following definitions are pulled directly from the National Oceanic and Atmospheric Administration's webpage.

Severe Thunderstorm Watch

A Severe Thunderstorm Watch outlines an area where organized episodes of hail one inch in diameter or larger, and/or damaging winds are expected during a three-to-eight hour period. Winds for a severe thunderstorm must be in excess of 58 miles per hour or 50 knots. Typical watches cover about 25,000 square miles.

Severe Thunderstorm Warning

A Severe Thunderstorm Warning outlines an area where organized episodes of hail one inch in diameter or larger, and/or damaging thunderstorm winds have developed and are occurring, or are imminent. Winds for a severe thunderstorm must be in excess of 58 miles per hour or in excess of 50 knots. Unlike a watch, a Severe Thunderstorm Warning is generally only issued for small areas where the severe weather is likely to impact the region in the very near future.

Hail

Hail is a severe weather phenomenon that can occur within strong thunderstorms where large updrafts are present. Water droplets at the base of the cloud structure are carried upwards by strong updrafts where much colder temperatures at the top of the cloud freeze the droplets. As they fall back down towards earth the droplets are caught again by an updraft and carried to the upper level of the cloud structure. With each trip from the bottom to the top of the cloud the frozen droplets become larger, forming the hailstones. This process repeats itself until the mass of the hailstones exceeds the capacity of the updraft to carry it aloft once more. This means that the stronger the updraft within a storm, the larger hailstones it is capable of producing.

Hail has the potential to be extremely devastating; with hail above ¾ of an inch in diameter capable causing significant damage to crops, persons, and property. While correlations can be drawn between the presence of hail and a tornado, primarily because of the updrafts and downdrafts required for both to occur. The presence of hail does not mean a tornado is imminent nor does its absence mean there is no risk of a tornado.

Lightning

Lightning is an exceptionally dangerous hazard that is most commonly associated with thunderstorms. According to NOAA, It is reported to have killed 17 Connecticut residents from 1959 to 2016, ranking the state 41st in the country for the number of lightning fatalities out of 51 (50 states and Washington D.C.) during this period.

A lightning strike is the product of a completed circuit between positive and negative charges within the thunderstorm cloud or between that thunderstorm cloud and the ground. Initially the atmosphere acts as an insulator between the positive and negative charges, however when the potential between the two becomes too great a rapid discharge of electricity occurs, producing a

lightning strike.

Lightning can occur, primarily, in two different forms. Intra-cloud lightning occurs between oppositely charged particles within the thunderstorm cloud structure. Because the discharge occurs within the cloud structure, it poses little threat to human life or destruction of property. The second form of lightning is cloud-to-ground lightning. This form occurs either between negatively charged particles at the base of the cloud and positively charged particles on the ground; or positively charged particles at the top of the thunderstorm structure and negatively charged particles on the ground. Unlike the intra-cloud lightning mentioned, cloud-to-ground lightning can pose a great threat to both human life and property.

Downbursts

Downbursts are a severe weather occurrence that occasionally accompany a severe thunderstorm. While much of a thunderstorm's life cycle is dominated by strong updrafts that carry warm, moist, and unstable air aloft, a downburst develops when large portions of unstable air mass begin to fall, creating a downdraft. As the air mass falls it begins to gain immense speed. When the air mass contacts the ground it expands outwards rapidly forming the actual downburst. These straight line winds can easily exceed 100 mph. Downbursts can occur in two forms depending on their size: 1) if the affected area is less than 2.5 miles in diameter the occurrence is categorized as a microburst, and 2) for those occurrences that affect an area greater than 2.5 miles in diameter, it is categorized as a macroburst.

Tornadoes

In meteorological terms defined by NOAA, "a tornado is a violently rotating column of air, usually pendant to a cumulonimbus [cloud structure], with circulation reaching the ground. It nearly always starts as a funnel cloud and may be accompanied by a loud roaring noise. On a localized basis, it is the most destructive of all atmospheric phenomena." Tornadoes are the product of a severe thunderstorm that has progressed in such a way to produce the low level rotation needed for tornado development. Since the last adaptation of the Regional Natural Hazard Mitigation Plan, the scale by which the severity of a tornado is measured has been modified. The original scale was created in 1971 by Dr. Ted Fujita, a University of Chicago severe storms research scientist. This original scale was dubbed the F-scale, from F-0 to F-5, with the severity of a tornado based upon wind speed. While the current scale is similar to the F-scale, the wind speeds and parameters by which the damage is assessed have been greatly improved. The severity of a tornado is now measured using the Enhanced Fujita scale which ranks tornados based on their estimated wind speeds and the reported damage from the event. The scale ranks tornadoes from EF-0 to EF-5, with an EF-0 being the least severe and an EF-5 being the most severe as seen in Table 3.26. The new scale uses 28 damage indicators that are each assigned a value of 1 through 8.

Table 3.26: Enhance Fujita Scale.
Source: National Weather Service

ENHANCED FUJITA SCALE FOR TORNADOES

EF Scale	Intensity	Wind Speed (mph)
EF-0	Gale	65-85
EF-1	Weak	86-110
EF-2	Strong	111-135
EF-3	Severe	136-165
EF-4	Devastating	166-200
EF-5	Incredible	>200

Historic Record

Severe Thunderstorms

Records of severe thunderstorm events within the Region were gathered from NOAA's National Climatic Data Center, Storm Events Database. The data provides detailed information on the events and their affects and is for time period from January 1, 1996 to present. Of special note is the severe thunderstorm that occurred on June 24, 2010. This storm caused severe damage throughout the Region.

On June 24, 2010 a cold front and strong upper level trough moved across New England, and this unstable air mass spawned lines of severe thunderstorms across southwestern Connecticut during the afternoon hours. The accompanying super-cells and squall lines produced an EF-1 tornado in Bridgeport and severe winds and hail across the remainder of the region. The extent of the damage from this single event was vast.

The City of Bridgeport was impacted more greatly than the remainder other parts of the Region. The devastation was caused by exceptionally powerful straight line winds, believed to be in excess of 100 mph, along with a small EF-1 tornado.

This led to the total collapse of five buildings and severe damage to at least nine other structures, including the Morton Government Center and Barnum Museum in the downtown area. Damage also included a billboard being blown off the roof of an apartment building, blown out windows, building façade damage, and over-turned vehicles on Interstate 95 and Route 8/25, including a tractor trailer. The vicious storm was also responsible for the downing of hundreds of trees, with two falling on a house.

At the Sikorsky Memorial Airport a wind gust tore a roof off of a hanger, shattering the structure's windows and cracking its foundation. Several planes suffered minor damage from the incident. The winds also caused structural damage to the old terminal building. Debris from the two buildings also damaged a local bar adjacent to the property. The damage sustained to the airport totaled $50,000.

The National Weather Service (NWS) determined that an EF-1 tornado did impact the City, in a very localized area to the north of Interstate 95 from about Route 8/25 to Pembroke Street. The NWS survey found signs of rotation in the area, including blown-in windows, pealed-off exterior façades from homes, and sheared off trees tops. Reports from eyewitnesses described near zero visibility, with a rain wrapped tornado surrounded by swirling debris. Three residents were directly injured from the tornado. The sum of this damage led to the partial closure of at least 57 streets, and the displacement of around two dozen residents. The cost of the damage in the City totaled $3,200,000.

In Easton, significant tree damage resulted from straight line winds believed to be in excess of 80 mph. Some of the toppled trees damaged residents' homes, causing in excess of $30,000 in damages.

While the Town of Monroe was hit far less severely by the thunderstorms, winds believed to be around 60 mph sporadically toppled trees and downed power lines.

Hundreds of trees were lost in Stratford, with the Lordship and Paradise Green sections being hardest hit. Fallen trees were reported to have damaged a number of homes and several cars. One resident was injured while in their car when it was stuck by a fallen limb. Strong winds were reported, believed to be close to 90 mph. The cost of the damage totaled $100,000.

In Trumbull, sporadic damage from winds believed to be around 70 mph was reported, mainly from downed trees and power lines. A falling tree struck a car on Daniels Farm Road, injuring the vehicle's occupant. In addition, two homes were damaged when trees fell on them. The damages from the event totaled $40,000.

Other recent severe thunderstorm events and tornadoes that produced damage within the Region are listed below.

May 16, 2007

Severe thunderstorms developed ahead of an approaching cold front across the region and produced potent straight line winds along with an EF-1 tornado in northern Fairfield County. The Town of Easton experienced exceptional winds which downed countless trees throughout the town. The extent of the damage from these downed trees is unknown; however it is likely that power outages occurred in certain areas.

August 07, 2008

Unstable, moist air spawned several severe thunderstorms in southwestern Connecticut. This line of storms delivered a microburst in the Town of Stratford, where shingles were torn from homes, and many trees and power lines were downed. Several of the downed trees fell on residents' vehicles.

July 31, 2009

An approaching cold front approaching the Region spurred a cluster of severe thunderstorms that caused damage in the southern Fairfield area. Further damage was caused from straight line winds. Two tornados were produced from the system, but occurred outside of the Region.

July 19, 2010

A cold front crossing through the northeast corridor spawned several clusters of severe thunderstorms across southern Connecticut. This led to sporadic tree damage in the Nichols section of Trumbull, including a tree that fell on a house.

June 06, 2011

Atmospheric instability spawned wide spread clusters of severe thunderstorms across the majority of southern Connecticut. Many trees were brought down by the strong winds associated with the storms in Stratford, along with sporadic tree loss in Monroe.

July 26, 2012

An approaching mass of warm air produced a cluster of severe thunderstorms in Fairfield and New Haven Counties. This led to downed tree limbs in Bridgeport and reports of a downed tree in Monroe.

September 6, 2014

High winds downed trees and wires that closed multiple roads throughout the town of Fairfield.

June 23, 2015

Widespread trees were reported down across the northern portion of Monroe. Several roads were closed.

July 25, 2016

Multiple trees and wires were reported down throughout Bridgeport.

July 22, 2018

Trees and powerlines were downed on Barnum Avenue during an overnight storm in Stratford. Tree limbs fell on a transformer on Pearl Street in the Success Hill portion of Bridgeport, resulting in a power outage.

Lightning and Hail

Severe thunderstorms that produce cloud-to-ground lightning strikes are listed below. Hail producing storms occur infrequently in the Region and NOAA records are limited. However, the potential exists for severe thunderstorms to produce hail and cause widespread damage. Instances of hail are included in the lightning records.

May 31, 1998

A line of severe thunderstorms formed in moist and unstable air ahead of an approaching cold front. The storms produced hail, a substantial number of lightning strikes, heavy rain, and powerful winds. At the Trumbull Police Headquarters, a lightning strike travelled down into the building through a telephone wire injuring a Communications Officer and damaging the radio system, rendering it temporarily useless.

August, 10, 2001

Several lines of severe thunderstorms developed across the state during the afternoon hours. These intense storms toppled trees, produced isolated flooding, and caused numerous power outages. Frequent cloud-to-ground lightning strikes occurred, with two lightning related injuries reported statewide. In Trumbull, lightning struck a nearby communications tower and travelled through a phone line into the Police Headquarters, injuring a police officer, who was working dispatch during the storms.

June 08, 2008

Several clusters of severe thunderstorms developed across the state producing strong winds, and numerous cloud-to-ground lightning strikes. A home in Stratford was hit by lightning, causing a fire.

August 07, 2008

Several severe thunderstorms developed in the southwestern part of the state during the afternoon hours and brought torrential rains, strong winds, and lightning. In the Nichols section of Trumbull lightning struck a tree behind a home, creating a hole in the exterior concrete wall of the home's basement.

May 24, 2009

An approaching cold front triggered small clusters of severe thunderstorms during the afternoon hours in southern portions of the state. Cloud-to-ground lightning from one of the storms injured three people who were camping at Webb Mountain Park in the Stevenson section of Monroe.

July 26, 2009

A strong cold front brought strong thunderstorms to portions of Fairfield County, creating numerous cloud-to-ground lightning strikes, two of which struck homes in the Sport Hill section of Easton, producing fires at both locations.

May 08, 2008

An area of low pressure moved northeast across the state bringing with it a cold front. This resulted in tightening pressure gradients as the system moved away from the Region and spawned several thunderstorms along this pressure gradient. Numerous cloud-to-ground lightning strikes were produced. Three men, who were fishing on a jetty in Seaside Park in Bridgeport, were struck by lightning. One of the men was killed.

June 03, 2010

A slow moving cold front brought scattered thunderstorms to southern Connecticut. A light-

ning strike from this line of storms struck the Stratfield Elementary School in Fairfield. A large portion of the school's chimney was knocked out of the surrounding structure.

May 22, 2014

A lingering trough of low pressure triggered multiple rounds of showers and thunderstorms. Lightning struck a tree in Easton, which resulted in damage to a garage and a portion of the associated house.

Tornadoes

The state and region are not highly susceptible to tornadoes, and, when they do occur, the severity tends to be at the lower end of the Fujita scale. Since 1950, 14 tornadoes have occurred in Fairfield County, with the most severe storm, rating an F-2, occurring in 1950. Four tornadoes struck somewhere in the Region, hitting Fairfield in 1958, Trumbull in 1992, Monroe in 1996 and Bridgeport in 2010. Table 3.27 shows confirmed tornadoes impacting Fairfield County; the data was extracted from the NOAA's National Climatic Data Center Storm Events Database.

Hazard Probability

Based on the review of recent events, the likelihood of a severe summer storm occurring in the Region is fairly high. Weather systems that spawn severe thunderstorms are prevalent in the area and the conditions needed for severe weather are fairly common during the summer months. However, these weather patterns tend not to result in extreme conditions that produce tornadoes or hail. Since 1950, only 4 tornadoes have been recorded in the Region. This indicates that the probability of the Region experiencing a tornado is about one every 15 years. Damaging hailstorms are more frequent but these events are also relatively rare. The risks from severe summer storms are related to thunderstorms that produce torrential rain that causes inland flooding or high winds that can cause downed trees and power lines.

Based on the climate change modeling performed for the State Water Plan (2018), summer temperatures are projected to increase. Combined with the projection for more precipitation, it is likely that there will be higher-intensity summer storms and thunderstorms that contribute to flash flooding interspersed with longer dry periods during the summer. The higher intensity storms are expected to contribute to an increased frequency of tornadoes over time.

Risk Assessment

These systems pose a great threat to the Region most notably from the torrential rains, damaging winds, dangerous lighting, and large hail that can be associated with a system of this type.

Table 3.27: Tornado activity in the region. Source: Storm Events Database, NCDC, NOAA

METROCOG REGION

Date	Location	Fujita Scale	Property Damage	Wind Speed
14-Jul-50	Ridgefield	F-2	$250,000	113-157
15-Aug-58	Fairfield	F-1	$3,000	73-112
9-Aug-68	Danbury	F-1	0	73-112
19-Jul-71	Norwalk	F-2	$25,000	113-157
18-Sep-73	Greenwich	F-1	0	73-112
29-Jun-90	Danbury	F-0	$3,000	40-72
5-Jul-92	New Fairfield	F-0	0	40-72
4-Aug-92	Trumbull	F-1	0	73-112
9-Jul-96	Monroe	F-1	0	73-112
31-May-02	Brookfield	F-1	0	73-112
12-Jul-06	North Greenwich	F-1	$2,000,000	73-112
16-May-07	Newtown	EF-1	0	86-110
31-Jul-09	Pine Rock Park, Shelton	EF-1	$10,000	86-110
24-Jun-10	Bridgeport	EF-1	$3,200,000	86-110

From this trees and power lines can be toppled, causing structure damage and the loss of power. Larger hail can crack windshields and dent the roofs of cars along with causing damage to homes and other structures. Finally, the torrential rains can produce flash flooding that has the potential to damage homes and strand motorists. Along with the physical impacts of summer storms, these systems arrive with incredible speed and ferocity. Residents can be unprepared and stranded in locations without adequate shelter.

Annualized loss estimates were prepared for each community for thunderstorms and tornadoes as presented in Section 3.3.

3.10 Hazard Profile – Earthquakes

Setting

An earthquake is a sudden rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. The entire Region is susceptible to earthquakes; however, the effects may be felt differently in some areas based on the type of geology. The US Geological Survey (USGS) monitors and reports on earthquake activity. Their records indicate a lack of historical and instrumental reports of strong earthquakes in Connecticut. This suggests that the State experiences only very minor seismic activity, even when compared to other States in the northeast region.

Hazard Assessment

Earthquakes can occur at any time without warning. Damage to buildings can range from minor cracking of walls and foundations to complete collapse. Earthquakes can cause disruption of utility services, landslides, flash floods, fires, avalanches, and tsunamis.

The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The magnitude and intensity of an earthquake is determined by the use of the Richter Scale and the Mercalli scale, respectively.

The Richter Scale was developed in 1935 and was used exclusively until the 1970s. It set the magnitude of an earthquake based on the logarithm of the amplitude of recorded waves. Being logarithmic, each whole number increase in magnitude represents a tenfold increase in measured strength. Earthquakes with a magnitude of about 2.0 or less are usually called "microearthquakes" and are generally only recorded locally. Earthquakes with magnitudes of 4.5 or greater are strong enough to be recorded by seismographs all over the world.

As more seismograph stations were installed around the world following the 1930s, it became apparent that the method developed by Richter was valid only for certain frequency and distance ranges, particularly in the southwestern United States. New magnitude scales that are an extension of Richter's original idea were developed for other areas . In particular, the Moment Magnitude Scale (Mw) was developed in the 1970s to replace the Richter Scale and has been in official use by the USGS since 2002.

According to the USGS, these multiple methods are used to estimate the magnitude of an earthquake because no single method is capable of accurately estimating the size of all earthquakes. Some magnitude types are calculated to provide a consistent comparison to past earthquakes, and these scales are calibrated to the original Richter Scale. However, differences in magnitude of up to 0.5 can be calculated for the same earthquake through different techniques. In general, Mw provides an estimate of earthquake size that is valid over the complete range of magnitudes and so is commonly used today.

Although Mw is the most common measure of earthquake size for medium and larger earthquakes, the USGS does not calculate Mw for earthquakes with a magnitude of less than 3.5. Localized Richter Scales or other scales are used to calculate magnitudes for smaller earthquakes. This is often the case in Connecticut.

Regionally, the Weston Observatory utilizes two scales to track the magnitude of earthquakes. These include the Nuttli Magnitude (Mn) for North America east of the Rocky Mountains and is more appropriate for the relatively harder continental crust in Connecticut compared to California. Weston Observatory also utilizes the Coda Duration Magnitude (Mc), which is based on the duration of shaking at a particular station. The advantages of the Coda Duration magnitude is that this method can quickly estimate the magnitude before the exact location of the earthquake is known.

The effect an earthquake has on the surface is

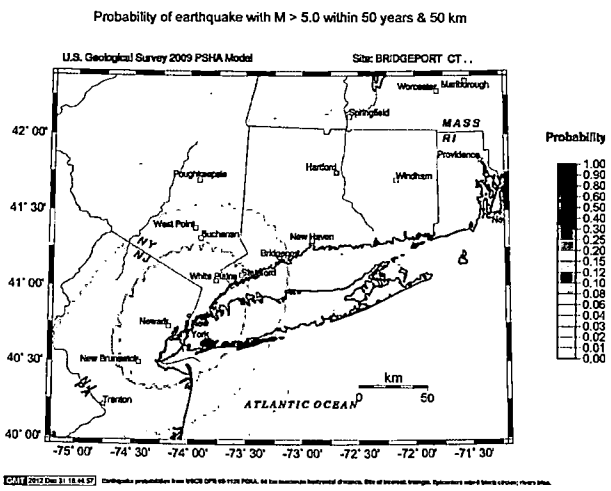


Figure 3.23: Earthquake probability. Source: United States Geological Survey, Earthquake Hazards Program, website

referred to its intensity. While numerous intensity scales have been developed over the last several hundred years, the current scale used in the US is the Modified Mercalli Intensity Scale. It consists of a series of key responses to an earthquake, ranging from how it was felt by people (at the low end of the scale) to observed structural damage. Unlike the Richter Scale, the Modified Mercalli Intensity Scale is an arbitrary ranking based on observed effects, with a more intense earthquake simply described as having a greater effect than a less intense earthquake, but not by how much. The scale is composed of 12 increasing levels of intensity that range from imperceptible shaking felt by very few people to catastrophic destruction.

Earthquakes in Connecticut are not associated with specific known faults, like in California, and are referred to as intra-plate activity. Bedrock in Connecticut and New England in general, is highly capable of transmitting seismic energy; thus, the area impacted by an earthquake in Connecticut can be four-to-40 times greater than that of California. In addition, the population density of Connecticut can potentially put a great number of people at risk. The built environment in Connecticut includes old, unreinforced masonry that is not seismically designed. People who live or work in unreinforced masonry buildings, especially those built on filled land or unstable soils, are at the highest risk for injury from an earthquake. However, the Region is unlikely to experience an earthquake in any given year and is not susceptible to an earthquake with a high magnitude or intensity. Figure 3.23, from the USGS indicates that the Region has only about a three percent probability of experiencing a 5.0 or greater magnitude earthquake within 50 years.

Historic Record

According to the USGS Earthquake Hazards Program, Connecticut is a region of very minor seismic activity. However, the New England states regularly register seismic events and earthquakes have occurred in the Region. Based on the USGS archives, there have been 137 earthquakes recorded in Connecticut between 1598 and 1990. However, only two are considered notable. Both were recorded in the Moodus/East Haddam areas, one in 1568 and the other in 1791. The most severe earthquake in Connecticut's history occurred at East Haddam on May 16, 1791. Stone walls and chimneys were toppled during this quake. In October 1845, an Intensity V earthquake occurred in Bridgeport.

As seen in Table 3.28, 49 earthquakes have been recorded in Connecticut between 1976 and 2016, ranging in magnitude from 1.1 to 3.8 on the Richter Scale, with only two having a magnitude greater than 3.0. These are relatively minor earthquakes. Although magnitude and intensity measure different characteristics, the USGS has related the magnitude of an earthquake to the typical intensity as measured by the Modified Mercalli Intensity Scale. Generally, the earthquakes that have occurred in Connecticut produce very little noticeable shaking, and are not felt by very many people. However, it is notable that 32 earthquakes occurred in Connecticut between 2012 and 2016, with the majority occurring in the Wauregan section of Plainfield.

In addition to the earthquakes that have occurred in Connecticut, the Region can feel the effects of earthquakes that happen outside the state. Most recently, on August 23, 2011, an earthquake that was centered in Virginia measured 5.8 on the Richter Scale. It was felt from Georgia to Canada, including by many in the Region. Despite, no damage was reported in the Region.

Hazard Probability

The conclusion by the USGS is that Connecticut is a region of minor seismic activity. The earthquakes that have occurred have been of low magnitude and intensity. Most people would not feel the shaking generated by an earthquake in Connecticut. While earthquakes have occurred outside the state, the impacts felt in Connecticut

Table 3.28: Connecticut Earthquakes. Source: USGS

RECENT EARTHQUAKES IN CONNECTICUT 1976 – 2018

Location	Magnitude	Depth	Date
Greenwich	0.8	2.4 km	12-Jan-16
Bristol	1.4	5 km	17-May-15
Plainfield	1.8	6.4 km	24-Feb-15
Plainfield	1.4	3.2 km	24-Feb-15
Plainfield	1.0	4.7 km	15-Jan-15
Plainfield	2.0	5.9 km	15-Jan-15
Plainfield	1.5	4.3 km	14-Jan-15
Plainfield	1.8	8.8 km	14-Jan-15
Plainfield	2.6	8.8 km	13-Jan-15
Plainfield (10)	0.6 - 3.3	1.7 - 4.6 km	12-Jan-15
Plainfield	2.3	4.6 km	8-Jan-15
Greenwich	1.5	2 km	20-Nov-14
Plainfield	0.8	4.2 km	9-Nov-14
Plainfield	1.5	4.4 km	9-Nov-14
Plainfield	1.5	5.3 km	14-Oct-14
Sterling	1.3	5 km	13-Oct-14
East Haddam	1.6	5 km	18-Aug-14
Deep River	1.7	4.5 km	14-Aug-14
Deep River	2.7	4.1 km	14-Aug-14
Stonington	2.0	5 km	29-Nov-13
Ledyard	2.0	6.3 km	29-Nov-13
Weston	1.4	12.6 km	4-Nov-12
Stamford	2.1	4 km	8-Sep-12
East Hartford	1.7	5 km	3-Jun-11
Clinton	2.3	2 km	11-Mar-08
Norwich	2.0	12 km	22-Aug-02
Greenwich	1.1	6 km	5-Mar-02
North Branford	1.8	2 km	3-Feb-01
Danbury	2.6	6 km	22-Aug-00
Groton	2.8	20 km	10-Mar-92
Stamford	3.0	10 km	28-Oct-91
Middletown	2.4	5 km	11-Sep-87
New Milford	3.0	7 km	26-Feb-83
Colchester	2.4	1 km	17-Jun-82
Colchester	3.0	2 km	17-Jun-82
Colchester	2.2	1 km	17-Jun-82
Madison	3.8	5 km	21-Oct-81
New Haven	3.0	0 km	25-Oct-80
East Haven	3.1	0 km	24-Oct-80
Middletown	2.2	0 km	24-Apr-76

from these events has also been minor. Based on this review of recent events, the likelihood of an earthquake of sufficient magnitude and intensity impacting the Region is low.

Climate change is not expected to affect the magnitude or frequency of earthquakes affecting the region.

Risk Assessment

Based on the historical record, the MetroCOG Region has a low risk for earthquake activity. However, it is not impossible that a significant event could occur and cause tremendous damage. While no earthquakes have been centered in Bridgeport, there have been historic earthquakes of estimated magnitude 5.0 and above in other parts of the state.

The State NHMP presents four "worst-case" scenarios for major earthquakes occurring in the state. These include a 6.4 magnitude earthquake in East Haddam, a 5.7 magnitude earthquake in Haddam, a 5.7 magnitude earthquake in Portland, and a 5.7 magnitude earthquake in Stamford. Each of these scenarios was modeled for each town in the Region using HAZUS-MH.

While these scenarios are unlikely, they would result in significant damage with the Stamford scenario causing the greatest loss in the region. As Table 3.29 shows, more than 4,800 buildings would be at least moderately damaged including 150 completely destroyed. Many essential facilities would lose functionality during the first day as shown in Table 3.30. For example, the HAZUS-MH model estimates that only 62% of available hospital beds would be available in Bridgeport immediately following the Stamford scenario earthquake.

The transportation system will also experience moderate damage in the earthquake however no facilities were completely damaged. Economic losses for transportation and utility systems are shown in Table 3.31.

The economic impact from the Stamford earthquake scenario would be devastating costing the region over 1.4 billion dollars in damage from building-related and lifeline-related losses. Table 3.32 summarizes the economic loss.

While a significant earthquake has never been centered in the Greater Bridgeport Region, the modeling suggests that a significant event in our developed and densely populated Region would have a serious impact.

Table 3.29: Hazus-MH building damage from earthquake
# of Buildings Damaged in Region

Scenario	None	Slight	Moderate	Extensive	Complete
East Haddam	83,802	8,767	2,542	375	40
Haddam	88,726	3,027	683	78	7
Portland	91,636	3,098	697	89	8
Stamford	76,268	13,300	4,841	968	152

Table 3.30: Hazus-MH essential facilities functionality
Essential Facilities Damage in Region (<50% functionality on day 1)

Facility	Total	East Haddam	Haddam	Portland	Stamford
EOC	2	0	0	0	0
Fire	16	0	0	0	1
Hospitals	3	0	0	0	0
Police	16	0	0	0	2
Schools	130	0	0	0	13

Table 3.31: Hazus-MH transportation and utility damage
Transportation and Utility Damage in Region (Millions)

Component	East Haddam	Haddam	Portland	Stamford
Highway Bridges	$69.46	$4.47	$4.45	$81.31
Railway Bridges, Facilities	$0.14	$0.05	$0.05	$0.28
Bus Facilities	$0.48	$0.20	$0.20	$0.81
Ferry Facilities	$0.07	$0.03	$0.03	$0.14
Port Facilities	$1.67	$0.64	$0.62	$3.30
Airport Facilities	$0.60	$0.25	$0.24	$0.84
Potable Water Systems	$1.65	$0.29	$0.30	$6.54
Wastewater Systems	$4.47	$0.84	$0.81	$15.72
Natural Gas Systems	$0.11	$0.04	$0.04	$0.17
Electrical Power Facilities	$3.46	$0.62	$0.60	$10.93
Communication Facilities	$0.02	$0.01	$0.01	$0.05

Table 3.32: Hazus-MH results for economic loss
Economic Loss in Region (in millions of dollars)

Town	East Haddam	Haddam	Portland	Stamford
Bridgeport	$270.08	$56.20	$56.32	$568.38
Easton	$11.37	$2.39	$2.56	$45.93
Fairfield	$122.80	$24.64	$24.94	$541.45
Monroe	$37.44	$9.66	$11.58	$50.29
Stratford	$125.42	$29.80	$29.27	$147.66
Trumbull	$73.53	$17.83	$19.28	$130.00
Total	**$640.64**	**$140.52**	**$143.95**	**$1,483.71**

Annualized loss estimates for earthquake damage were prepared for each community using HAZUS-MH as presented in Section 3.3.

3.11 Hazard Profile – Dam Failure

Setting

Dams are man-made or artificial barriers usually constructed across a stream channel to impound water. Various materials are used for dam construction such as timber, rock, concrete, earth, steel or a combination of these materials. However, in Connecticut, most dams are constructed of earth or combinations of earth and other materials. Spillways are commonly constructed of non-erosive materials such as concrete or rock. Spillway systems are typically provided along the dam to allow water to flow from the impounded area, and mechanisms are typically installed to control water levels of the impoundment.

The construction of dams began with the arrival of the first colonial settlers in the 1630s. Dams were essential for economic development and were used for manufacturing, water supply, mechanical power and for fire protection. In addition to the historic economic benefits, Connecticut's dams are also used for flood control, water supply, recreation and for mitigating the impact of increased runoff typically caused by land use changes associated with property development. Since 1878, the CTDEEP has exercised regulatory oversight of dams and reservoirs and regularly inspects dams. High hazard potential dams are inspected at a more frequent interval. Dam safety and inspection regulations are codified in state statutes.

The state classifies dams based on their hazard potential, that is, the damage that would likely occur if the structure failed. Five classes have been developed:

Class AA

Negligible hazard potential; no measurable damage to roadways, land and

structures. Economic loss would be negligible.

Class A

Low hazard potential; damage to agricultural land and unimproved roadways. Economic loss would be minimal.

Class BB

Moderate hazard potential; damage to normally unoccupied structures and low volume (less than 500 vehicles per day). Economic loss would be moderate.

Class B

Significant hazard potential; possible loss of life, minor damage to habitable structures, residences, and other critical infrastructure, damage to roadways that carry less than 1,500 vehicles per day, and impact on railroads. Economic loss would be significant.

Class C

High hazard potential; probable loss of life, major damage to habitable structures, residences, and other critical infrastructure, damage to main roadways that carry greater than 1,500 vehicles per day, and impact on railroads. Economic loss would be great.

The highest potential impact from a dam failure would result from Class B or Class C dams. The inundation of water released from a failure of these dams would result in loss of life and major damage to main roads and habitable structures.

There are 117 dams of varying size in the MetroCOG Region which are listed in Table 3.33. The majority of the dams are classified as having a negligible to low hazard potential – Class AA, A, or BB. Thirteen dams have been classified as Class C dams and two are Class B dams.

Table 3.33: Dams in Region. Source: CT DEEP

NUMBER OF DAMS BY CLASS METROCOG REGION

Town	Total	Class A/AA	Class BB	Class B	Class C
Bridgeport	11	6	2	0	3
Easton	20	14	3	1	2
Fairfield	31	20	9	0	2
Monroe	16	14	1	0	1
Stratford	10	7	1	1	1
Trumbull	29	16	9	0	4
Region	117	77	25	2	13

The dams are scattered throughout the Region and the area of the impoundment ranges from small detention ponds to large public water supply reservoirs. Fairfield is the home of the most dams, including those impounding the Hemlock Reservoir and the Samp Mortar Reservoir. Both are classified as Class C dams. The second highest number of dams is found in the Town of Trumbull, with 29 dams. While most have low hazard potential, there are four Class C dams in the town. The Class C dams are located at and impound Canoe Brook Lake and Pinewood Lake, both private lakes. Twenty dams are located in Easton, including those impounding the Easton Lake Reservoir and Saugatuck Reservoir, and 16 dams are in Monroe. The most critical dam in Monroe is the Stevenson Dam that impounds the Housatonic River to create Lake Zoar and is used to generate electricity. Route 34, a main highway, is located along the top the Stevenson Dam. The fewest number of dams are located in Bridgeport, with 11 dams, and Stratford with 10 dams. Three of the dams in Bridgeport have high hazard potential, while one of the dams in Stratford poses a high risk. The Class C and Class B dams are listed in Table 3.34. Figure 3.23 shows the location of these dams.

Hazard Assessment

Dam failures can be triggered suddenly, with little or no warning, due to other natural disasters, such as, heavy rains, floods and earthquakes. Excessive floodwaters cause pressure and additional force to build behind dams, and, depending on its condition, a failure can occur. In addition, a chain reaction from the sudden release of waters can cause the next dam downstream to fail. Earthquakes cause a violent and rapid shaking of the ground, which can severely damage a dam, causing it to fail.

Historical Assessment

Fortunately, there have been few dam failures in Connecticut. The most recent severe dam failure incident in southern Connecticut occurred in 1982. During a period of heavy rain over the weekend of June 5th and 6th, 1982, flooding throughout the state resulted in 17 dam failures and severe damage to another 31 dams. The total cost from this event was approximately $70 million.

Only one significant dam failure event has

Table 3.34 High hazard dams in the Region. Source: CT DEEP

SIGNIFICANT & HIGH HAZARD POTENTIAL DAMS

Dam Name	Downstream Watercourse	Town	Class
Lake Forest Dam	Island Brook	Bridgeport	C
Bunnells Pond Dam	Pequonnock River	Bridgeport	C
Island Brook Lagoon Dam	Island Brook	Bridgeport	C
Popps Mountain Dike	Saugatuck River	Easton	C
Easton Reservoir Dam	Mill Brook	Easton	C
Hemlock Reservoir Dam	Cricker Brook	Fairfield	C
Samp Mortar Reservoir Dam	Mill River	Fairfield	C
Stevenson Dam	Housatonic River	Monroe	C
Beaver Dam Lake Dam	Pumpkin Ground Brook	Stratford	C
Canoe Brook Lake Dike	Horse Tavern Brook	Trumbull	C
Canoe Brook Lake Dam	Canoe Brook	Trumbull	C
Canoe Brook Lake East Dike		Trumbull	C
Pinewood Lake Dam	Booth Hill Brook	Trumbull	C
Aspetuck Reservoir Dam	Aspetuck River	Easton	B
Brewster Pond Dam	Long Brook	Stratford	B

occurred in the Region. According to the National Performance of Dams Program (NPDP), on July 29, 1905 a cloudburst produced 11.32 inches of rain in 17 hours. Four dams in the Pequonnock River watershed (Berkshire Mill Dam, Toucey Dam, Ward's Mill Dam, and Bunnell's Lower Reservoir Dam) were affected. The Berkshire Mill Dam was undermined. The Toucey Dam in the Long Hill section of Trumbull breached and contributed to the failure of the Ward's Mill Dam downstream. Reports to the NPDP suggest that the Ward's Mill Dam probably failed by sliding on ledge. The combined damage contributed to the collapse of the Bunnell's Lower Reservoir Dam (used for public water supply) downstream. The collapse at Bunnell's Dam was due in part from overflow caused by blockage of the spillway by debris. The resulting floodwaters damaged several bridges, impeded traffic, and damaged ships at the mouth of the river. According to contemporary reports, the tide was at ebb

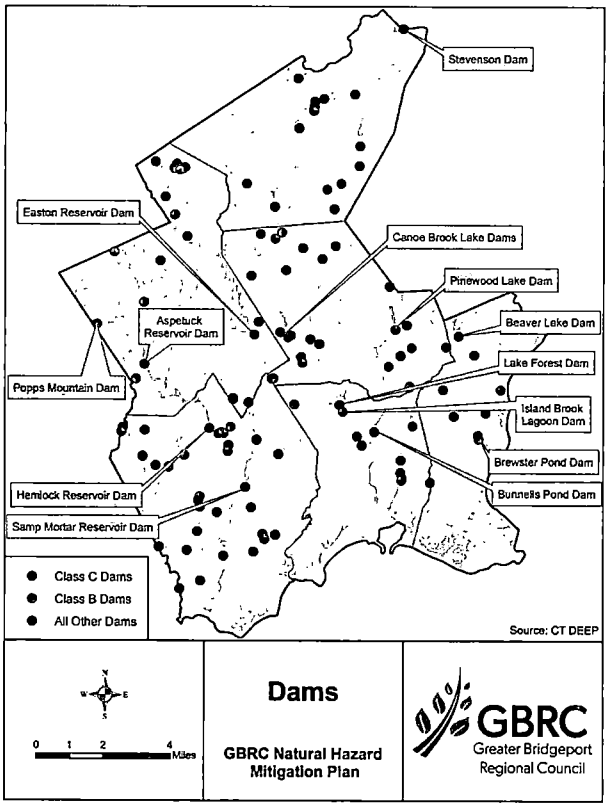


Figure 3.23: Dams in the Region. Source: CT DEEP

stage when the floodwave reached the mouth of the river which minimized damage to shipping. Total damages were estimated at $250,000, or $7.2 million in 2018 dollars.

Flooding from the September 25, 2018 storm washed out a small dam along Sasco Brook in Fairfield. A photo of the dam taken by Town staff is provided below.

Hazard Probability

Since the failure of a dam can occur without warning, there is no particular season that is more susceptible to dam failures than another. However, dams are at a greater risk of failure during heavy rain events as overtopping is a major cause of dam failure. To mitigate the potential hazards, the CTDEEP requires dams to be routinely inspected and those that have a higher hazard potential are inspected more frequently. Therefore, the likelihood of a dam failure impacting the Region is low.

CTDEEP and state regulations also require dams that are repaired or reconstructed to be designed to handle at least a 100-year rainfall event with at least one foot of freeboard. The dam safety statutes are codified in Section 22a-401 through 22a-411 inclusive of the Connecticut General

Minor Dam Washed Out along Sasco Brook.
Photo by Brian Carey, Town of Fairfield

Statutes. Sections 22a-409-1 and 22a-409-2 of the Regulations of Connecticut State Agencies, have been enacted which govern the registration, classification, and inspection of dams. Dams must be registered by the owner with CT DEEP, according to Connecticut Public Act 83-38.

Dams found to be unsafe under the inspection program must be repaired by the owner. Depending on the severity of the identified deficiency, an owner is allowed reasonable time to make the required repairs or remove the dam. If a dam owner fails to make necessary repairs to the subject structure, CT DEEP may issue an administrative order requiring the owner to restore the structure to a safe condition and may refer noncompliance with such an order to the Attorney General's Office for enforcement. As a means of last resort, the CT DEEP Commissioner is empowered by statute to remove or correct, at the expense of the owner, any unsafe structures which present a clear and present danger to public safety.

Important dam safety program changes occurred in Connecticut while the previous edition of this plan was being developed in 2013. Public Act No. 13-197, An Act Concerning the Dam Safety Program and Mosquito Control, passed in June 2013 and described new requirements for dams related to registration, maintenance, and emergency action plans (EAPs) moving forward. This act required owners of certain unregistered dams or similar structures to register them by October 1, 2015. The act generally shifted regularly scheduled inspection and reporting requirements from the CTDEEP to the owners of dams. The act also made owners responsible for supervising and inspecting construction work and established new reporting requirements for owners when the work is completed.

Effective October 1, 2013, the owner of any high or significant hazard dam (Classes B and C) was required to develop and implement an EAP after the Commissioner of DEEP adopts regulations. The EAP must be updated regularly, and copies must be filed with DEEP and the chief executive officer of any municipality that could potentially be affected in the event of an emergency. The new regulations were adopted in 2016 and subsequently established the requirements for EAPs, including (1) criteria and standards for inundation studies and inundation zone mapping; (2) procedures for monitoring the dam or structure during periods of heavy rainfall and runoff, including personnel assignments and features of the dam to be inspected at given intervals during such periods; and (3) a formal notification system to alert appropriate local officials who are responsible for the warning and evacuation of residents in the inundation zone in the event of an emergency.

Risk Assessment

As listed above, there are 13 Class C dams in the Region. These dams are considered to cause the greatest risk to life and property upon failure. Fortunately, the majority of dams in the region are well-maintained and the risk of failure is low. The overall risk of failure is likely to increase in the future due to the expected increased incidence of flooding due to the effects of climate change.

The following describes the land uses and hazards associated with each:

Bridgeport – Three Class C Dams

Bunnells Pond Dam

Impounds the Pequonnock River and creates an approximate 47-acre pond, located in Beardsley Park. The lake and dam are owned by the CT DEEP. Downstream of the dam is Glenwood Park, an active recreation area that includes tennis courts and ice skating facility. Farther downstream is the commercial area along US Route 1, as well as, densely populated residential neighborhoods. The dam was built in 1906 and is an earthen structure with a concrete spill-lay.

Lake Forest Dam

Impounds Island Brook and creates a privately owned lake with a surface area of about 66 acres.

The lake is surrounded by single family residential neighborhoods on relatively small lot sizes. Downstream is the Island Brook Lagoon, another impoundment of Island Brook that would be impacted by a failure of the Lake Forest Dam.

Island Brook Lagoon Dam

Impounds Island Brook and creates a small, privately owned lake, with a surface area of about five acres. It is surrounded by single family residential neighborhoods on relatively small lot sizes.

Easton – Two Class C Dams

Easton Lake Reservoir Dam

Impounds the Mill River to create the Easton Lake Reservoir, a public water supply reservoir. It is owned and maintained by the Aquarion Water Company. The dam is constructed of concrete and the reservoir has a surface area of about 488 acres. The area directly downstream of the reservoir is made up of sparsely developed residential land uses, consisting of single family homes on at least one-acre lots. Farther downstream, the residential patterns become denser but remain single family residential.

Popps Mountain Dam (Dike)

This dam is located on the Saugatuck Reservoir about 2,000 feet northeast of the main dam (Samuel P. Senior Reservoir Dam) that impounds the Saugatuck River to create the reservoir. The outflow from the dam drains primarily into the Town of Weston and undeveloped portions of Easton. The surface area of the Saugatuck Reservoir is about 827 acres. The dike is a concrete structure.

Fairfield – Two Class C Dams

Hemlock Reservoir Dam

Impounds the Cricker Brook to create the Hemlock Reservoir, a public water supply reservoir. It is owned and maintained by the Aquarion Water Company. The dam is constructed of concrete and the reservoir has a surface area of about 437 acres. The area directly downstream of the reservoir is low-to-medium dense residential development, consisting of single family homes on at least one-acre lots. Cricker Brook flows from the dam into Samp Mortar Reservoir. Farther downstream, the residential patterns become denser but remain single family residential.

Samp Mortar Reservoir Dam

Impounds Cricker Brook, entering on the west side, and the Mill River, entering from the north. The lake formed by the dam is owned and maintained by a private association. Residences line the banks of the Samp Mortar Reservoir, and land use downstream of the dam is moderately dense residential. The total surface area is about 35 acres.

Monroe – One Class C Dam

Stevenson Dam

Impounds the Housatonic River to create Lake Zoar. The concrete dam is owned and maintained by First Light Power Resources, and used for hydroelectric power generation. The area immediately downstream is largely undeveloped; although the Housatonic River is a very significant recreational resource, and numerous riverfront structures are present a short distance downstream from the dam in Derby and Shelton. Route 34, a main artery between New Haven and Newtown, is located on top of the dam.

Stratford – One Class C Dam:

Beaver Dam Lake Dam

Impounds the Pumpkin Ground Brook and creates Beaver Dam Lake, a private lake in the northwest corner of Stratford. It has a surface area of about 58 acres. The shoreline is sparsely developed and the large Roosevelt Forest is to the east of the lake. Downstream, land use patterns become medium density, single-family residential. The Trumbull Corporate Park lies downstream and just east of the dam.

Trumbull – Four Class C Dams

Canoe Brook Lake Dike

Impounds the Horse Tavern Brook and creates Canoe Brook Lake, a private lake in the northwest part of Trumbull. It has a surface area of about 64 acres. The lake and dike are owned and maintained by an association of property owners living on and near the lake. The shoreline is lined with homes on large lots and houses are setback from the edge of the water. The dike is located on the south edge of the lake and Canoe Brook Road is on top of the dike. Downstream, land use patterns are primarily medium density, single-family residential. Horse Tavern Brook flows into the land now occupied by the Westfield/Trumbull Shopping Park, about 1.2 miles downstream of the dike.

Canoe Brook Lake Dam

Impounds the Canoe Brook, entering Canoe Brook Lake (described above) on the west side. Land use on this side of the lake is more sparsely developed than downstream of the Canoe Brook Lake Dike along Horse Tavern Brook, although it is exclusively residential.

Canoe Brook Lake Dike, East Dike

This dike is located along the east side of Canoe Brook Lake (described above). Land use on this side of the lake consists of single-family residential homes on small-to-medium sized lots – one-half to one acre.

Pinewood Lake Dam

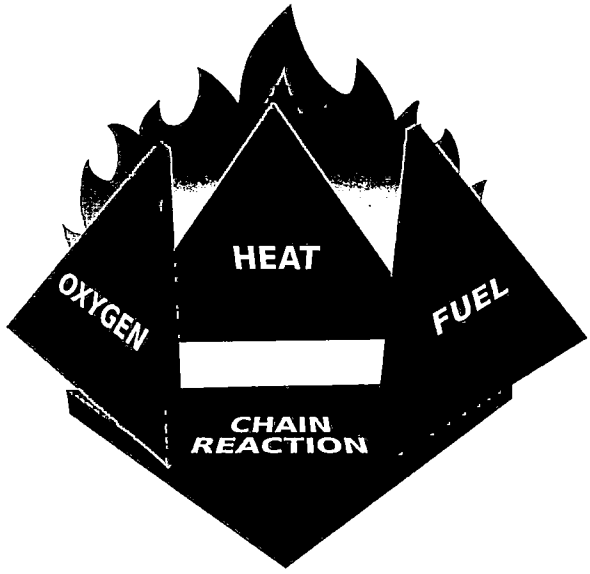
Impounds the Booth Hill Brook and creates Pinewood Lake, a private lake in the southeast part of Trumbull. It has a surface area of about 60 acres. The lake and dike are owned and maintained by an association of property owners living on and near the lake. The shoreline is lined with homes on large lots and houses are setback from the edge of the water. The dike is located on the south edge of the lake and West Lake Road runs along the top of the dike. Downstream, land use patterns are primarily medium density, single-family residential. Booth Hill Brook flows into Twin Brooks Park and joins the Pequonnock River.

3.12 Hazard Profile – Wildfires

Setting

Wildfires are a relatively common occurrence in Connecticut but are typically small and cause little to no damage to populated areas. Structural fires in higher-density areas of the region are not considered herein.

Wildfires typically occur in undeveloped rural or forested areas although smaller fires can also occur along highway medians. Wildfire damage is typically greatest at the wildland-urban interface where low-density suburban/rural developed areas border undeveloped wooded and shrubby areas. Wildfires are of particular concern for areas with limited firefighting access such as outlying areas without public water service and large contiguous forest parcels with limited access. Unlike the other hazards described in this Plan, the likelihood of damage due to wildfires in Connecticut typically decreases with increasing population density,



meaning that less developed communities such as Easton have a greater risk than heavily developed communities such as Bridgeport.

Hazard Assessment

Wildfires are also known as "wildland fires." Wildfires are any nonstructural fire, other than a prescribed burn, that occurs in undeveloped areas. They are considered to be highly destructive, uncontrollable fires. Although the term brings to mind images of tall trees engulfed in flames, wildfires can occur as brush and shrub fires, especially under dry conditions.

According to the National Fire Protection Agency, fuel, heat, oxygen, and an uninhibited chain reaction (known as the fire tetrahedron) must be present in order to have any type of fire.

The CTDEEP Forestry Division issues forest fire danger ratings. The ratings are low, moderate, high, very high, and extreme. These are based on an index of how quickly a fire is likely to spread and measures of drought. In addition, the National Weather Service issues "Red Flag Warnings". A Red Flag Warning means that if a fire occurs, firefighters can expect it to behave erratically due to weather conditions.

Historical Assessment

According to the CTDEEP Forestry Division, much of Connecticut was deforested by settlers and turned into farmland during the colonial period. A variety of factors in the 19th century caused the decline of farming in the state, and

forests reclaimed abandoned farm fields. In the early 20th century, deforestation again occurred in Connecticut, this time for raw materials needed to ship goods throughout the world. Following this deforestation, shipping industries in Connecticut began to look to other states for raw materials, and the deciduous forests of today began to grow in the state.

During the early 20th century, wildfires regularly burned throughout Connecticut. Many of these fires began accidentally by sparks from railroads and industry while others were deliberately set to clear underbrush in the forest and provide pasture for livestock. A total of 15,000 to 100,000 acres of land was burned annually during this period. This destruction of resources led to the creation of the position of the State Forest Fire Warden and led to a variety of improved coordination measures.

In 1999, the State was faced with a busy wildfire year due to drought conditions. The State's 2014 NHMP Update notes that the worst year for wildland fires in the past decade was 2012 when 577 separate fire events occurred throughout the state. The 2016 drought also exacerbated wildland fires, with over 900 acres burned in the state during that year (Table 3.35).

Hazard Probability

Nationwide, humans have caused approximately 90% of all wildfires in the last decade. Accidental and negligent acts include unattended campfires, sparks, burning debris, children playing with matches, and irresponsibly discarded cigarettes. The remaining 10% of fires are caused primarily by lightning.

There are three fire seasons in Connecticut. The spring season runs from mid-March to mid-May. Prior to leaf-out, fuels such as grasses, dead leaves, branches, and twigs on the forest floor are heated and dried out by the sun. These fuels cause spring fires that tend to spread quickly although they tend to cause little long-term damage to the forest. The summer fire season lasts from mid-May through September and is largely dependent on precipitation, or lack thereof. Summer fires tend to spread less quickly than spring fires because they burn deeper into the ground. However, the burning of organic material in the soil makes summer fires more difficult to suppress. Summer fires are the most destructive to vegetation. Consequently, erosion usually follows summer forest fires. The fall fire season runs from October through the first snowfall. Fall fires can spread rapidly because of drying leaves that have fallen.

Fire risk in the region is believed to be roughly the same as in the rest of the state. According to the USDA Forest Service Annual Wildfire Summary Report for 1994 through 2003, an average of 600 acres per year in Connecticut was burned by wildfires. The National Interagency Fire Center (NIFC) reports that a total of 4,975 acres of land burned in Connecticut from 2002 through 2018 due to 2,931 nonprescribed wildfires, an average of 1.7 acres per fire and 293 acres per year (Table 3.35).

The CTDEEP Forestry Division estimated the average acreage burned per year statewide to be much higher (1,300 acres per year) in the 2014 Connecticut NHMP Update. In general, wildland fires in Connecticut are small and detected quickly, with most of the largest wildfires being contained to less than 10 acres in size. While the overall incidence of forest fires is relatively low (an average of 180 fires per year from 2002 to 2017, or slightly more than one fire per Connecticut municipality per year), wildfires are a hazard communities must prepare for each year.

Based on the historic record, the average wildfire in Connecticut in a very dry year (1999) burned an average of 5 acres per fire while the average acres burned per fire has been 1.7 acres per year since 2002. These averages are also reasonable for the MetroCOG Region although it is expected that larger wildfires could occur, particularly in relatively undeveloped areas such as parts of Easton and Monroe.

Risk Assessment

The overall risk in the MetroCOG Region from wildfires is relatively low. The CTDEEP also states that the primary cause of wildland fires in seven of the eight counties is undetermined, with the secondary cause being arson or debris burning. Forest fires can cause not only long-term damage to vegetation and ecosystems but also damage to developments, especially as residential development has increased in woodland areas.

According to the 2010 USDA report *Wildland-Urban Interface of the Conterminous United States,* 65.6% of Connecticut lies in areas of wildland-urban interface. This area further includes 53.8% of all housing structures and 53.9% of the state's population. According to the mapping in this

Table 3.35: Wildland Fire Statistics for Connecitcut
Source: National Interagency Fire Center

Year	Number of Wildland Fires	Acres Burned	Number of Prescribed Burns	Acres Burned	Total Acres Burned
2018	52	40	0	52	40
2017	97	243	3	31	274
2016	268	778	3	152	930
2015	76	159	4	25	184
2014	28	69	4	34	103
2013	76	238	4	37	275
2012	180	417	4	42	459
2011	196	244	7	42	286
2010	93	262	6	52	314
2009	264	246	6	76	322
2008	330	893	6	68	961
2007	361	288	7	60	348
2006	322	419	6	56	475
2005	316	263	10	130	393
2004	74	94	12	185	279
2003	97	138	8	96	234
2002	101	184	13	106	290
Total	**2,931**	**4,975**	**103**	**1,192**	**6,167**

report, the coastal area of the MetroCOG region is generally considered outside of the wildland-urban interface and not prone to wildfires. The Town of Easton and Monroe as well as northern Fairfield and Stratford, and portions of Trumbull are located in the wildland-urban interface. These general risk areas were used to estimate vulnerable assets as presented in Tables 3.3 through 3.8.

Estimates of annualized loss have been determined based on data presented in the 2014 Connecticut Natural Hazard Mitigation Plan Update as presented in Table 3.9. The inverse of the population density of each town as compared to the population density of the county was used to adjust the wildfire statistics for average fire size and the number of annual events (Table 2-61 of the 2014 state plan). An estimated average cost of $2,000 per event was used to determine costs. This method generally allows for larger annualized wildfire losses to be estimated for the communities with a lower population density as these communities are known to generally be more prone to wildfires in Connecticut. Overall, the annualized losses for the MetroCOG Region due to wildfires are relatively modest.

The State Water Plan (2018) climate models suggest increased summer temperatures and longer dry periods in the summer months. This suggests that climate change will contribute to lower summer groundwater levels and drier soil conditions that will make the region more susceptible to wildfires in the future.

3.13 Hazard Summary

NOTE: Hazards Summary presented on the next page.

HAZARDS SUMMARY

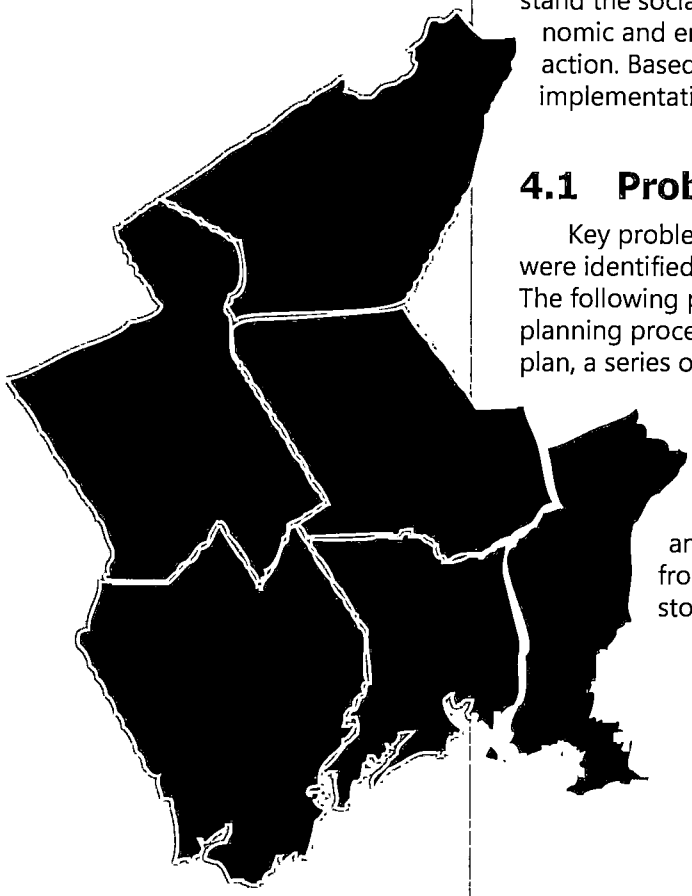
Hazard Type	Historical Extent	Probability of Future Occurence	Impacts	Vulnerable Areas
Hurricanes	Category 3 hurricane was strongest storm to strike Connecticut	• Tropical cyclone every 3.6 yrs • Cat 1 every 10-15 yrs • Cat 2 every 23-30 yrs • Cat 3 every 46-74 yrs	Loss of life, building damage, essential facility damage, debris, people requiring shelter, transportation disruption, loss of power, economic loss	Low-lying areas in or near flood zones vulnerable to inland flooding from rain; coastal low-lying areas vulnerable to coastal flooding and storm surge
Inland Flooding	The 1955 flood was estimated to be a 2% to 0.2% event for the region	Moderate to extreme flooding occurs at a fairly frequent rate. Based on historical record from 2000-2012 it suggests one such storm happens every year.	Loss of life, building damage, essential facility damage, debris, people requiring shelter, transportation disruption, economic loss, breach of dams	Low lying areas nears streams; especially those in the 1% and0.2% flood zones. Certain areas are more susceptible due to local conditions such as poor drainage.
Coastal Flooding	Category 3 hurricane was strongest storm to strike Connecticut creating largest storm surge	Based on historical record moderate to severe coastal flooding occurs once every three to four years	Loss of life, building damage, essential facility damage, debris, people requiring shelter, transportation disruption, economic loss	Low lying coastal areas especially those in FEMA 1% and 0.2% flood zones
Sea Level Rise	Relative sea level rise has been between 15-30 cm (~6-12 in) over last 100 years	IPCC reports 9-88cm (~3.5 to ~34.5 in) by 2100; CIRCA planning number of 0.5 m by 2050	More damage from coastal and inland flooding events	Low lying coastal areas especially those in FEMA 1% and 0.2% flood zones
Winter Storms	Recent storms have dropped up to 36 in of snow in the Region	Based on historical record severe winter storms occur once every 1.2 years in the Region	Transportation disruption, loss of power, moderate building damage, loss of life especially to at risk populations such (elderly/ disabled)	• Entire region • More rural areas where road clearing is more difficult and loss of power leads to loss of water
Summer Storms and Tornadoes	Most severe tornado in history was EF-2	Based on historic record tornadoes hit Region once every 15 years	Building damage, vehicular damage, debris, people needing shelter, power loss and downed trees, loss of life from lightning strikes and tornadoes	Entire region
Earthquakes	Magnitude 5 earthquakes have occurred historically in the State	Low probability of significant event	Loss of life, building damage, essential facility damage, debris, people requiring shelter, transportation disruption, economic loss, fires	Entire region
Dam Failure	Failure of a class C dam	Low probability but could occur during large rain events	Loss of life, building damage, essential facility damage, debris, people requiring shelter, transportation disruption, economic loss	Low lying areas downstream of dams
Wildfire	Undeveloped areas	Low probability for damaging fires	Building damage, debris, smoke, loss of life, people requiring shelter, economic loss	Structures near the urban-wildland interface

4 Mitigation Strategies

The previous section profiled hazards in the region and the impact, extent and probability of the hazard. Risks were assessed by data collection, research of past events, GIS, and HAZUS-MH analyses and the planning process discussed in Section 2. The risk assessment was utilized to identify assets most vulnerable to specific hazards. As a result of these assessments, problem statements were developed to inform the formulation of goals and objectives and to determine mitigation actions.

The NHMP discusses mitigation actions at both the regional and local scale. These recommended mitigation actions are a reflection of the risk and vulnerability assessments, problem statements and the Plan's goals and objectives. Regional mitigation actions address the challenges posed by hazards throughout the region, while local mitigation actions address the unique impacts of a hazard on a municipality or neighborhood. As this plan is an update to the 2014 NHMP, past mitigation actions were reviewed to determine whether they had been implemented, their effectiveness and their current applicability to the region or respective community. Those actions that are ongoing from the 2014 plans or that still must be implemented are included as mitigation actions for this update.

A cost benefit review tool, STAPLE+E was utilized to understand the social, technical, administrative, political, legal, economic and environmental costs and benefits of each mitigation action. Based on this review, actions were prioritized for future implementation.



4.1 Problem Statements

Key problem areas and critical issues for each municipality were identified through the risk and vulnerability assessments. The following problem statements were formed through the planning process and were utilized to develop a vision for the plan, a series of goals and objectives and mitigation actions.

City of Bridgeport

- Low lying neighborhoods and streets – Black Rock, Downtown, the East End, East Side and South End – are susceptible to coastal flooding from excessive storm surge from hurricanes, tropical storms, extratropical storms, and nor'easters.

- Vulnerable and at risk populations, including low income, minorities, persons with limited English proficiency, elderly and disabled persons disproportionately live in flood prone areas.
- Housing stock in areas at risk of coastal flooding from extreme weather is older and less able to withstand the forces of storm surges.
- Seaside Village, a housing cooperative, is at risk from severe flooding and has barriers to mitigation such as a complex combined sewer system and historic status.
- Several coastal features are vulnerable to damage from extreme weather, including Ash Creek, Seaside Park, Pleasure Beach and Johnson's Creek.
- Access to some parts of the City can be cut-off due to flooding, especially at underpasses of the Metro North New Haven Line and Interstate 95.
- Despite many years of planning and studies, flood risks remain present along confined urban watercourses such as Ox Brook, Island Brook, and the headwaters of Yellow Mill Channel.
- The City operates two wastewater treatment plants, both of which are located in flood hazard areas and flooding can cause overflows of waste water and pollution to enter Long Island Sound.
- Several sections of the City are served by combined sewer systems. These combined systems can be overwhelmed by excessive runoff from heavy rain events and cause overflows of wastewater from the sewage treatment plants.
- The City operates Reverse 9-1-1 and Everbridge systems to notify residents about approaching extreme weather or mandatory evacuation orders, but reaching those with limited English proficiency remains a challenge.
- Schools are used as emergency shelters. The schools are appropriate for short term shelter needs but are not appropriate for long term use as shelters, especially for people with medical needs.

When the prior edition of this plan was being developed in 2014, the City of Bridgeport and State of Connecticut were in the final stages of the design competition known as Rebuild by Design. The award for the City of Bridgeport was announced in 2014. The next year, the City and State of Connecticut participated in the National Disaster Resilience Competition, which also resulted in an award. As of 2019, the State of Connecticut is actively working toward implementation of the two awards, now known as "Resilient Bridgeport."

Resilient Bridgeport is a collaborative, integrative approach to coastal resiliency in the City. The project is funded by the United State Department of Housing & Urban Development through the Community Development Block Grant - Disaster Recovery (CDBG-DR) and National Disaster Recovery (CDBG-NDR) Programs. The funding is being administered by the Connecticut Department of Housing (DOH) and includes various other leveraged state and federal funds. Refer to the fact sheet on the next page for more information about the program. When executed, Resilient Bridgeport will provide flood protection to a large part of the City's South End.

Town of Easton

- A large proportion of Easton is forested and excessive damage and downing of limbs and trees occurs from severe winds. Downed trees cause power disruptions throughout the Town and restricts access to residential neighborhoods. Because of the development patterns in Easton, few alternate routes around downed trees exist, effectively isolating impacted areas.
- A water purification and filtration plant is located at the base of the Easton Lake Reservoir. The Region's public drinking water supply could potentially be severely limited if the plant is damaged during an extreme storm.

Town of Fairfield

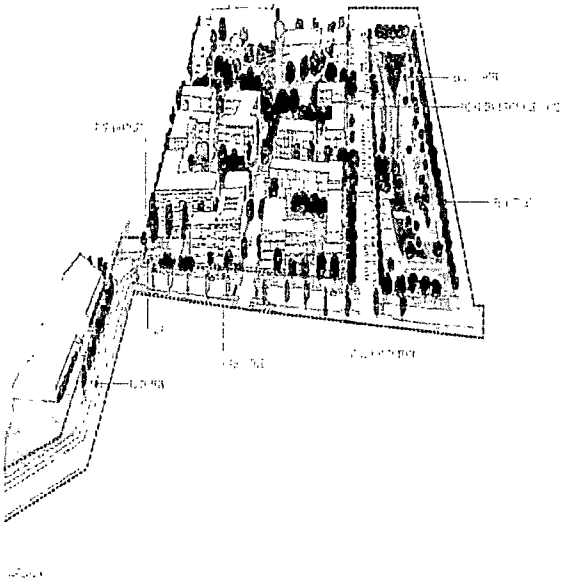
- Coastal flooding from excessive storm surge from hurricanes, tropical storms, extra-tropical storms, and nor'easters is a problem for areas of Fairfield south of US Route 1, especially the area just north of Fairfield Beach and Jennings Beach (and behind Fairfield Beach Club), which sits in a basin. Flood waters that over top the dunes or overflow from Ash Creek collect in the area as well. Sand deposited by the flood waters clogs storm drains, and water needs to be pumped.
- Coastal infrastructure, including roads, coastal shoreline protection elements, and water

NEW INITIATIVES

RESILIENT BRIDGEPORT

Above: Heavy street flooding in Bridgeport, CT Post

Below: Rebuild by Design project with stormwater park and elevated road for dry egress, Resilient Bridgeport



WHAT IS THE INITIATIVE?

Resilient Bridgepoint is a collaborative, integrative approach to coastal resiliency in the City of Bridgeport. The project is funded by the Federal Department of Housing and Urban Development (HUD) Community Development Block Grant Disaster Recovery (CDBG-DR) and National Disaster Recovery (CDBG-NDR) programs, as part of the Connecticut Department of housing Sandy Recovery and National Disaster Resilience programs as well as leveraged state and federal funding.

Overall, the project provides a framework that can be implemented in the city, and that can also be used as a model by other areas in Bridgeport and other cities in the region.

In addition to the framework, a pilot project has been designed for the South End of Bridgeport. The project includes multiple elements:

- The Rebuild by Design project to provide stormwater management and dry egress for public housing in the South End
- Flood Risk Reduction on the east side of the South End consisting of a coastal flood defense system to reduce risk from acute storms; and a combination of green infrastructure, pump station, and stormwater management solutions to address chronic flooding
- A Resilience Center to educate and facilitate increased resiliency within the community

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

The City of Bridgeport and the other coastal municipalities in the MetroCOG region are heavily developed along the majority of the coastline. As a result, resiliency strategies are being considered and tailored to individual communities' issues and needs.

The Resilient Bridgeport project aims to serve as a multifaceted solution to flooding in the South End, as well as an example to surrounding communities on resiliency strategies that can be implemented. By addressing the flooding issues in the South End, future storm impacts can be reduced, and public space and private property can ultimately benefit from the runoff reduction strategies to be constructed.

MetroCOG communities, and others in the region, are facing increasing challenges as sea levels rise and storms become more intense. Projects such as this will hopefully provide long term relief to the community, and the to the diverse resources the city has to offer.

FOR MORE INFORMATION

Rebecca French, Ph.D.
Director of Resilience
Connecticut Department of Housing
Rebecca.French@ct.gov
860) 270-8231
ResilientBridgeport.com

and sewer infrastructure are at risk of coastal flooding, coastal erosion, and sea level rise.
- The Pine Creek area is protected by a dike system, but recent events indicate a need to raise the height of the dikes.
- Fairfield's wastewater treatment plant is located in a flood hazard area. The berm that protects the facility from flooding needs to be raised. This project is underway.
- The northern part of Fairfield is forested and excessive damage and downing of limbs and trees occurs from high winds and heavy snow fall. Downed trees cause power disruptions throughout the area and restricts access to these residential neighborhoods. Because of the development patterns in this part of the Town, few alternate routes around downed trees exist, effectively isolating impacted areas.
- The severe storm of September 25, 2018 was a stark reminder that property owners are at risk of damaging riverine floods, especially along the Rooster River.
- Undersized culverts and low lying rail underpasses create chokepoints that cause isolated flooding in several areas. The most prominent is the culvert that carries Ash Creek under Interstate 95. The neighborhood north of this location experiences recurring flooding from even moderate intensity storms.
- The October and November 2018 storms caused surprising flood levels in Fairfield.

Town of Monroe

- The Town is susceptible to power disruptions from downed trees. Extensive tree coverage exists, especially in proximity of road rights-of-way. Damage and downing of limbs and trees occurs from high winds and heavy snow fall. Downed trees also restrict access to residential neighborhoods, effectively isolating impacted areas.
- Undersized culverts cause flooding at several locations, including along Route 25 in the vicinity of the West Branch of the Pequonnock River and the diversion to the Easton Lake Reservoir.
- Inland flooding occurs along the Pequonnock River behind Bart Shopping Plaza on Route 25 and behind Chuck's Corner on Route 25 near Purdy Hill Road.
- Alternate power generation at the high school needs to be addressed.

Town of Stratford

- Coastal flooding from excessive storm surge from hurricanes, tropical storms, extratropical storms, nor'easters, and heavy rain events during high tide is a problem for the South End neighborhood. This area also includes an industrial and commercial district located along Route 113. The adjacent Lordship area does not experience as much flooding from storms because it is a coastal upland with an elevation above base flood heights. However, the neighborhood can become isolated as access is cut-off by flood waters.
- Stratford's wastewater treatment plant is located in a flood hazard area. The berm that protects the facility from flooding has been sufficient, preventing the facility from being flooded. However, the berm needs to be raised to protect the plant against the newly calculated flood zone elevation and increased storm surges. The nearby animal shelter is also floodprone.
- A number of sewage pump stations are located in flood prone areas, and need to be protected.
- During thunderstorms and heavy rain events over a short period of time, inland flooding occurs in the South End, under railroad viaducts and along several smaller brooks and streams, especially in the Stratford Center area, Oronoque Village and along Bruce Brook and Raven Brook. These streams become overwhelmed by excessive runoff from heavy rain events. Several sections have been channelized and the structures exacerbate the flooding potential.
- Wind causes tree limbs to fall, block roads and cause power outages. The urban tree canopy of the Town is composed of many older trees and some species are not suitable for their locations.
- With limited options for addressing flooding from severe rain events, the Town is interested in siting green infrastructure. A study is needed to determine where it would be effective.

Town of Trumbull

- Inland flooding is a problem for areas of Trumbull along the Pequonnock River. Recurring problem areas include Trumbull Center

in the vicinity of Daniels Farm Road, the Twin Brooks Park area and west of Route 127 south of the Unity Park area.
- Trumbull does not operate its own wastewater treatment facility. Instead, sewage is collected by a sanitary sewer system that connects to the treatment plants located in Bridgeport. Because of the topography of Trumbull, pump stations are located throughout the Town. Many of these are located in flood hazard areas.
- There are three Class C dams located in Trumbull, and the failure of these structures would greatly impact residential neighborhoods downstream of the impoundments.
- Most streets throughout the Town are lined by mature trees that are susceptible to damage from high winds and heavy snow fall. Downed trees cause power disruptions throughout the Town and restricts access to some residential neighborhoods. The Town public works personnel can clear debris but must coordinate efforts with the utility company to ensure power to any downed lines has been deactivated.
- Undersized culverts create chokepoints that cause isolated flooding in several areas. Problem areas include: Daniels Farm Road over the Pequonnock River, Lake Avenue over the inlet to Canoe Brook Lake and Melrose Avenue over Island Brook.
- Like in Fairfield, the September 25, 2018 storm was a stark reminder that property owners are at risk of damaging riverine floods.
- The Town is planning to conduct a town wide Comprehensive Drainage and Flood Conveyance Study.

MetroCOG Region

Since the adoption of the 2014 NHMP Plan Update, MetroCOG has participated in a variety of regional resilience planning efforts. These efforts include:

- "Resilient Regional Framework for Coastal Resilience in Southern Connecticut" (2015-2017): The project was funded by the National Fish and Wildlife Foundation (NFWF) through a grant to the South Central Regional Council of Governments (SCRCOG). SCRCOG administered the grant and partnered with MetroCOG and The Nature Conservancy (TNC) to execute the project. The goal of the Regional Framework for Coastal Resilience was to foster collaboration among the ten participating municipalities (including Bridgeport, Fairfield, and Stratford in the MetroCOG Region) to identify and pursue green infrastructure and green coastal projects that would reduce risks to people and infrastructure. Through this collaboration, there was an assessment and advancement of opportunities to reduce risk from large-scale storm events, and increase the viability and resiliency of natural ecosystems along approximately thirty percent of Connecticut's coastline. Refer to the fact sheet on the next page for more information about the effort, as well as its outcomes.
- "Resiliency Planning for Historic & Cultural Resources" (2016-2018): Recognizing that historic and cultural resources are increasingly at risk to natural hazards and climate change, the State Historic Preservation Office (SHPO) conducted this planning initiative for the communities of Bridgeport, Fairfield and Stratford. Numerous examples were identified where historic and cultural resources were at risk now and could be at risk in the future due to climate change and the identification of more historic resources. Historic resources are difficult to floodproof, elevate, or relocate without potential loss of their historicity. Therefore, a thorough understanding of the options for each set of historic resources is necessary prior to disasters that could damage these resources, in order to avoid irreversible damage during recovery. Refer to the Fact Sheet on the next page for more information about the effort, as well as its outcomes.

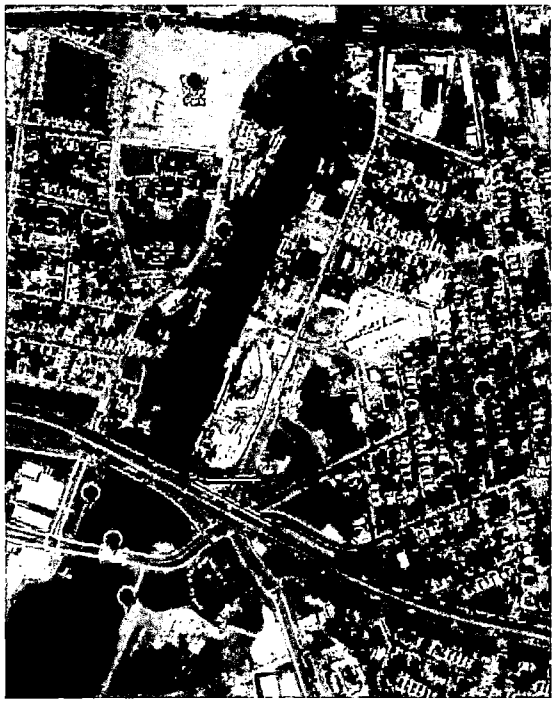
Statewide Efforts

In addition to MetroCOG's Regional efforts, the State of Connecticut and various state agencies have also advanced numerous hazard mitigation and resilience efforts since MetroCOG's 2014 NHMP Update. Fact sheets for five initiatives follow this page. Brief information is provided below:

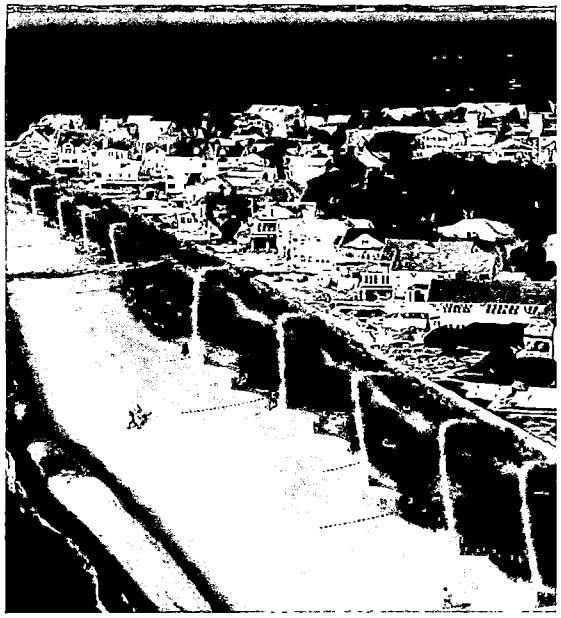
- In 2014, the Connecticut State Colleges & Universities (CSCU) began a process to develop a Multi-Campus Hazard Mitigation Plan for each of the CSCU campuses. The purpose of the CSCU Multi-Campus Hazard Mitigation Plan is to institute a consistent hazard mitigation planning approach across

NEW INITIATIVES

REGIONAL FRAMEWORK FOR COASTAL RESILIENCE



Above: ArcGIS Online viewer, Regional Framework for Coastal Resilience
Below: Conceptual design for dune ridge in Fairfield



:OR MORE INFORMATION

'atrick Carleton, AICP
/letroCOG
L00 Lafayette Boulevard
3ridgeport, CT 06604
203) 336-5405 x 26
)carleton@ctmetro.org

WHAT IS THE INITIATIVE?

The Towns of Fairfield and Stratford and the City of Bridgeport participated in the "Regional Framework for Coastal Resilience in Southern Connecticut" in 2015-2017. The project was funded by the National Fish and Wildlife Foundation (NFWF) through a grant to the South Central Regional Council of Governments (SCRCOG). SCRCOG administered the grant and partnered with MetroCOG and The Nature Conservancy (TNC) to execute the project.

The goal of the Regional Framework for Coastal Resilience was to foster collaboration among the ten participating municipalities to identify and pursue green infrastructure and green coastal projects that would reduce risks to people and infrastructure, if implemented. Through this collaboration, there was an assessment and advancement of opportunities to reduce risk from large-scale storm events, and increase the viability and resiliency of natural ecosystems along approximately thirty percent of Connecticut's coastline.

The project began with a planning phase in 2015, continued through an engagement and design phase in 2016, and concluded with report and plan publication in 2017. The project web page can be found at https://scrcog.org/regional-planning/coastal-resilience/

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

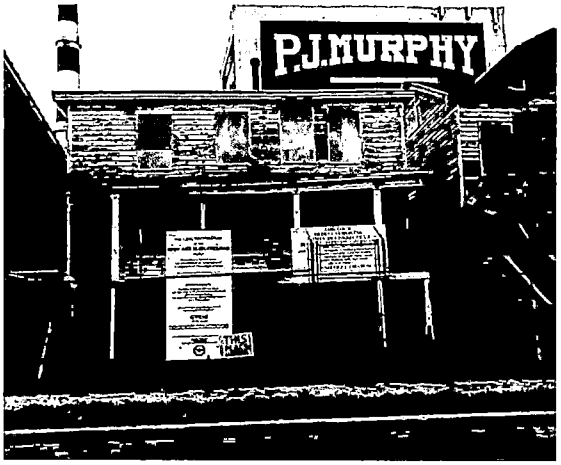
Approximately 120 individual coastal and non-coastal green infrastructure or gray-green resilience projects were identified in the three-town area of Fairfield, Bridgeport, and Stratford. Many of the projects were captured from the Greater Bridgeport Hazard Mitigation Plan Update (July 2014) and re-cast as potential green or green-gray projects.

Some of these potential projects included beach nourishment, dune creation or restoration, incorporating living shorelines along the coast, using bioengineered coastal bank stabilization techniques, and constructing rain gardens in non-coastal areas. One conceptual design for each municipality was produced. Fairfield's design was a dune ridge creation (pictured to the left). Bridgeport's design was a living shoreline at Johnsons Creek. Stratford's design was a bioengineered coastal bank stabilization near Russian Beach in the Lordship area.

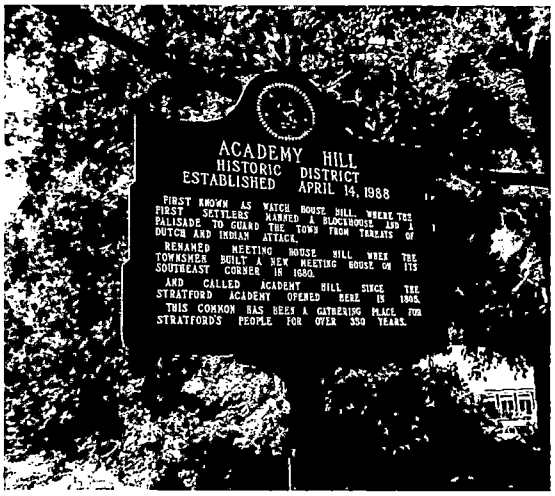
The Regional Framework for Coastal Resilience provided numerous potential projects that are closely aligned with the goals of hazard mitigation, and some of them were incorporated into the mitigation strategy of this plan.

NEW INITIATIVES

MITIGATION OF RISKS TO HISTORIC RESOURCES



Freeman House
Photo Weafer Design



Academy Hill Historic District
Photo Liz Davis

WHAT IS THE INITIATIVE?

Recognizing that historic and cultural resources are increasingly at risk to natural hazards and climate change, the State Historic Preservation Office (SHPO) conducted a resiliency planning study for historic and cultural resources from 2016 through 2018. Working with the State's Councils of Government and municipalities, numerous examples were identified where historic and cultural resources were at risk now and could be at risk in the future due to climate change and the identification of more historic resources. Historic resources are difficult to floodproof, elevate, or relocate without potential loss of their historicity. Therefore, a thorough understanding of the options for each set of historic resources is necessary prior to disasters that could damage these resources, in order to avoid irreversible damage during recovery. SHPO's planning process identified eight strategies that can be employed to make historic and cultural resources more resilient:

- Identify Historic Resources
- Revisit Historic District Zoning Regulations
- Strengthen Recovery Planning
- Incorporate Historic Preservation into Planning Documents
- Revisit Floodplain Regulations and Ordinances
- Coordinate Regionally and with the State
- Structural Adaptation Measures
- Educate

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

SHPO has produced three sets of resources that can be used to inform hazard mitigation planning:

- Individual reports produced for coastal communities include detailed recommendations that are application in the Capitol Region.
- A best practices guide for planning techniques to make historic resources more resilient was completed in 2017 and will be made available in 2018.
- The State Historic Preservation Plan is being updated and will provide policy direction to communities.

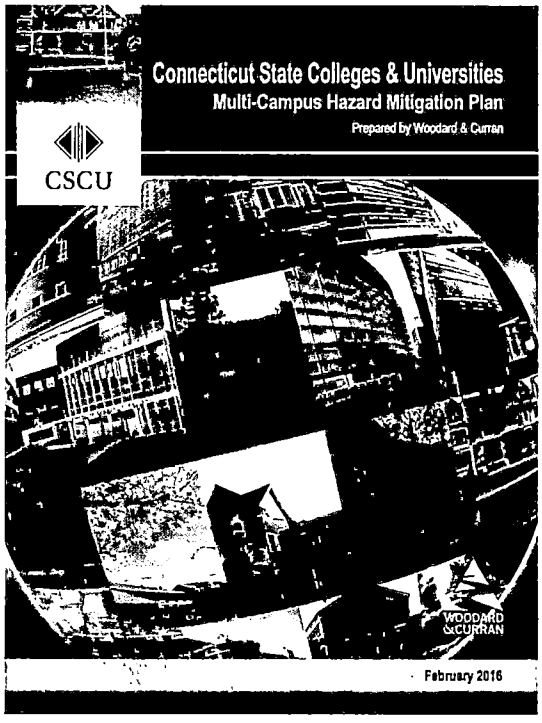
Because community planners often do not know which resources may be historic or cultural, or which are most likely to be considered historic in the next decade as structures built in the 1950s and 1960s become eligible, it can be difficult to evaluate risks to flooding and other hazards. Therefore, this plan suggests as a mitigation action that each MetroCOG municipality should conduct a survey of potential historic resources in cooperation with SHPO.

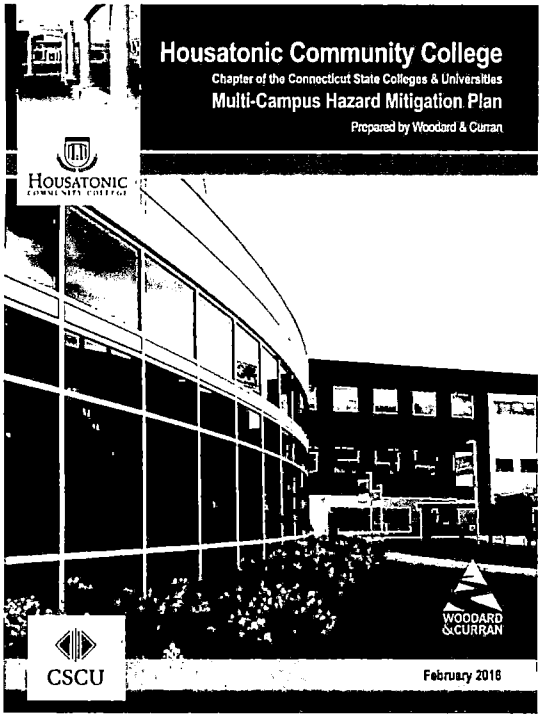
:OR MORE INFORMATION

)ouglas Royalty
lurricane Sandy Grant Administrator
tate Historic Preservation Office (SHPO)
50 Columbus Blvd, Suite 5
lartford, CT 06103
860) 500-2347
)ouglas.Royalty@ct.gov

NEW INITIATIVES

CONNNECTICUT STATE COLLEGES AND UNIVERSITIES HAZARD MITIGATION PLAN





FOR MORE INFORMATION

Chris Dupuis, Director of Capital Projects
Board of Regents
61 Woodland Street
Hartford, CT
(860) 723-0315
dupuisc@ct.edu

WHAT IS THE INITIATIVE?

In 2014, the Connecticut State Colleges & Universities (CSCU) began a process to develop a Multi-Campus Hazard Mitigation Plan for each of the CSCU campuses to fulfill federal, state, and local hazard mitigation planning requirements. The purpose of the CSCU Multi-Campus Hazard Mitigation Plan is to institute a consistent hazard mitigation planning approach across all campuses and understand past and potential risks associated with natural hazard events.

Hazard mitigation is important to CSCU because of its susceptibility to many types of natural hazard events to its campuses, assets, and people involved in its operations. Major activities involved in the development of this plan consisted of hazard identification and rankings, hazard event profiles, hazard vulnerability assessments and loss estimates, development of hazard mitigation goals and objectives, and formulation of hazard mitigation projects.

Housatonic is a two-year public community college located at 900 Lafayette Boulevard in the City of Bridgeport. Housatonic currently serves an eleven-town area in southwestern Connecticut and offers 40 associates degrees in arts and sciences and 24 certificates through the departments of Humanities, Mathematics and Science, Behavioral and Social Sciences, Business and Computer Sciences, and Developmental Studies. Housatonic employs 198 full-time staff and faculty to serve an undergraduate population of 4,431 students.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

The Housatonic Community College (Housatonic) Chapter of the Multi-Campus Hazard Mitigation Plan addresses hazards, vulnerabilities, and mitigation actions specifically for the Housatonic campus. The campus is comprised of two buildings, Lafayette Hall and Beacon Hall that are both multipurpose and house academic, administrative, and instructional spaces. While the campus does not have residential buildings, commuters have easy access to Housatonic, which is located at the confluence of three major highways including Interstate 95 and Connecticut Routes 8 and 25. Distinctive to the campus is the Housatonic Museum of Art located on the first floor of Lafayette Hall, which contains an art collection valued at over $13 million. The public can view the 4,000 works of art in the collection free of charge. The museum at Housatonic is one of the largest art collections of any community college in the nation.

Mitigation actions recommended in the plan include the following:

- Increase emergency power generator capabilities on campus to cover essential services (e.g., IT, boilers, phone, laboratory refrigerators/freezers, alarms, and security cameras, repeaters).
- Evaluate & implement raising of critical infrastructure components that currently exist below flood zone elevations.
- Install green roofs to remove heat from roof surface and reduce stormwater runoff.

NEW INITIATIVES

HELPING SMALL BUSINESSES MITIGATE IMPACTS OF NATURAL HAZARDS

Flooding in Downtown Fairfield
Photo Town of Fairfield

Ct.deep.gov

WHAT IS THE INITIATIVE?

In an effort to assist small business with reduction of property damage or loss due to natural hazards, CT DEEP has proposed strategies for towns to implement educational programs with recommendations for best management practices (BMPs) to prevent pollution from chemicals from getting out into the environment.

According to FEMA, 40% of businesses affected by disaster never reopen, and 25% that do reopen fail; other studies show that 90% of businesses fail within two years of being struck by a disaster. Damage during storm events result in property damage, loss of inventory, and environmental contamination and liabilities resulting from chemical releases into the environment.

The sample mitigation objectives for municipalities is to increase awareness by small businesses of any chemicals and toxic products they use, store and/or sell, and to use BMPs to improve safety. On a regional scale, the objectives are to improve chemical safety practices to prevent disruption of economic activity and protect the environment and public health.

Strategies for educational programs include providing information on municipal websites, social media, brochures and posters, or through workshops.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

The benefits of reducing damage to small businesses during a disaster are a reduction in property damage and losses, avoiding expensive cleanups, reducing liability and risk to public health, and a more rapid recovery and continued operations that result in less impacts to the municipality's economic base.

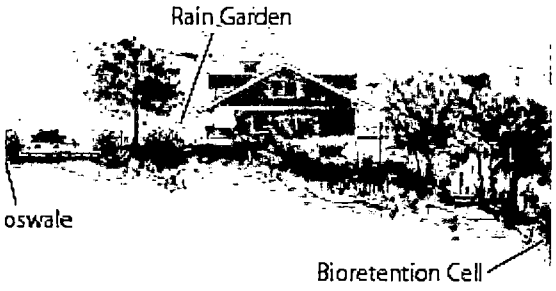
The municipalities of the MetroCOG Region can benefit from mitigation actions related to mitigating flood impacts to small businesses. DEEP has recommended that hazard mitigation plan strategic actions list the municipality as the lead agency, with assistance from CT DEEP, where DEEP would develop information for dissemination. Suggested action priority is on a medium scale, with a completion time frame of one year.

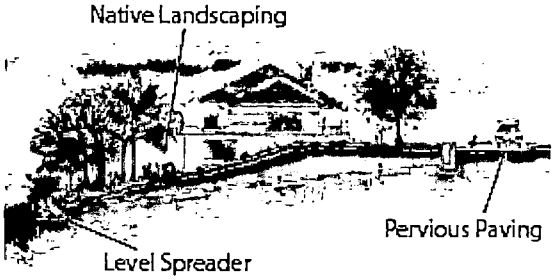
FOR MORE INFORMATION

Connie Mendolia
Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106-5127
(860) 424-3297
www.ct.gov/deep

NEW INITIATIVES

LOW IMPACT DEVELOPMENT FOR RURAL RESILIENCY





Images: nrcs.usda.gov

WHAT IS THE INITIATIVE?

Low-impact development (LID) prioritizes minimally invasive design, construction, and site operation techniques to reduce stormwater runoff quantity, undesirable water quality, and the corresponding negative impacts to receiving waters. Strategies such as reducing impervious services, installing infiltration systems, and zone-specific standards are used to address environmental impacts that come from typical development approaches such as extensive parking areas, box-building construction, and rapid stormwater removal from a site. LID helps to increase local resilience to climate change by mitigating the impacts of drought, protecting drinking water reserves, reducing flooding, and reducing stress on infrastructure.

A joint initiative between Northwest Hills Council of Governments, Northwest CT Conservation District, and CIRCA resulted in development of a municipal-scale manual for a sustainable approach to protect water sources and historic development patterns in rural communities. The manual presents techniques designed to help properly capture, infiltrate, and manage stormwater, which in turn recharges groundwater, reduces erosion, and protects sensitive habitats. The manual provides a framework to improve water quality through engineering specifications, enforcement tools and development standards to reduce erosion and impacts from pollution on aquatic and natural environments.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

LID can increase the resilience to the impacts of climate change on the natural, built, and human environments. The installation of LID infrastructure increases small and rural community resiliency in many ways, including:

- protecting drinking water supplies, streams, rivers and other water resources throughout the watershed
- protecting natural vegetation, hydrology and other resources on development sites
- reducing damage to local roads, bridges, the built environment, as well as to agricultural resources and human environments.

The development of a LID Manual for rural communities focuses on strategies achievable by rural municipalities, which tend to be different than urban communities such as Fairfield (which developed a downtown green infrastructure plan). Municipalities in the MetroCOG Region such as Easton and Monroe can benefit from mitigation actions related to increasing resiliency through LID.

FOR MORE INFORMATION

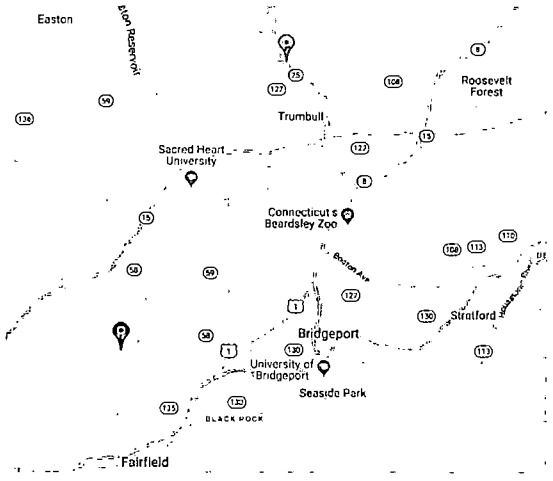
oanna Wozniak-Brown, PhD
Regional Planner
Northwest Hills Council of Governments
59 Torrington Road, Suite A-1
Goshen, CT 06756
860) 491-9884
brown@northwesthillscog.org

NEW INITIATIVES

"SUSTAINABLE CT"

Sustainable CT

Local Actions. Statewide Impact.



Images courtesy of Sustainable CT

WHAT IS THE INITIATIVE?

Sustainable CT is a voluntary certification program to recognize thriving and resilient Connecticut municipalities. An independently funded, grassroots, municipal effort, Sustainable CT provides a wide-ranging menu of best practices. Municipalities choose Sustainable CT actions, implement them, and earn points toward certification.

Sustainable CT also provides opportunities for grant funding to help communities promote economic well-being and enhance equity, all while respecting the finite capacity of the natural environment. The program is designed to support all Connecticut municipalities, regardless of size, geography or resources. Sustainable CT empowers municipalities to create high collective impact for current and future residents.

The mission statement is:

To provide municipalities with a menu of coordinated, voluntary actions, to continually become more sustainable; to provide resources and tools to assist municipalities in implementing sustainability actions and advancing their programs for the benefit of all residents; and to certify and recognize municipalities for their ongoing sustainability achievements.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

Sustainable CT provides a "Master Action List" to serve as a resource as communities track progress towards certification. Many actions are consistent with the goals of hazard mitigation and, if accomplished, may demonstrate progress with hazard mitigation. Examples include:

- Identify, or create and disseminate, a toolkit for pre-disaster business preparedness and for post-disaster conditions.
- Review and revise regulations to encourage and promote LID.
- Review the POCD and adopt a revised POCD that includes the Hazard Mitigation Plan goals and at least three other sustainability concepts.
- Conduct a Climate Vulnerability Assessment, identify how the impacts of climate change will likely affect the community, and demonstrate consideration has been given to low-income residents and their vulnerability to extreme weather events.

The town of Trumbull has registered for the Sustainable CT program, and the town of Fairfield has been Silver Certified.

FOR MORE INFORMATION

Sustainable CT Office:
372 High St
Willimantic, CT 06226
(860) 465-2813

Sustainable CT Mailing Address:
33 Windham St
Willimantic, CT 06226

https://sustainablect.org/about/contact-us/

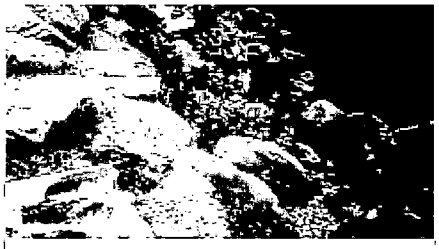
NEW INITIATIVES

REVISED MUNICIPAL SEPARATE STORMWATER SYSTEM (MS4) GENERAL PERMIT

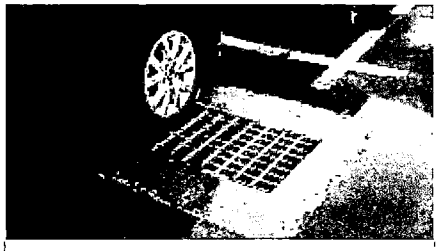
UCONN UNIVERSITY OF CONNECTICUT

CENTER FOR LAND USE EDUCATION AND RESEARCH | CT NEMO

Connecticut MS4 Guide



Illicit Discharge Detection & Elimination



Pollution Prevention & Good Housekeeping

http://nemo.uconn.edu/ms4/index.htm

FOR MORE INFORMATION

Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106-5127
(860) 424-3297

Amanda Ryan
Municipal Stormwater Educator
UConn CLEAR
Middlesex County Extension
PO Box 70, 1066 Saybrook Road
Haddam, CT 06438
(860) 345-5231

WHAT IS THE INITIATIVE?

The General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 General Permit) is the product of a mandate by the U.S. EPA as part of its Stormwater Phase II rules in 1999. This general permit requires municipalities to manage stormwater entering its storm sewer systems to protect watercourses.

DEEP issued a new General Permit in May 2018 (effective July 1, 2019) that applies to 121 towns and all state and federal institutions that operate a stormwater system. All municipalities within an "urbanized area" are required to comply with the General Permit. All municipalities in the MetroCOG region are required to comply.

Given the complexities of the new permit, the UConn Center For Land Use Education and Research (CLEAR) was charged with providing technical assistance to municipalities. The CLEAR web site (http://nemo.uconn.edu/ms4/index.htm) contains valuable information to help municipal staff navigate permit compliance.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

Because watershed boundaries do not coincide with political boundaries, the actions of municipalities upstream can have a significant impact on the downstream municipality's land and water resources. Stormwater management throughout an entire watershed, with commitment from all municipalities, is critical to protecting the health of the State's resources. MS4 compliance is there both community-specific and regional at the same time.

The basic requirements of the permit are to (1) submit a Stormwater Management Plan (SMP) identifying six minimum control measures to prevent and/or treat polluted runoff; (2) submit annual reports indicating implementation progress; and (3) monitor the quality of water. Many municipal planners and engineers have noted that the objectives of the MS4 permit are aligned with the objectives of flood hazard mitigation. Therefore, MS4 compliance is expected to help communities achieve progress with hazard mitigation.

all campuses and understand past and potential risks associated with natural hazard events. The Housatonic Community College campus is located in Bridgeport.

- In an effort to assist small business with reduction of property damage or loss due to natural hazards, CT DEEP has proposed strategies for towns to implement educational programs with recommendations for Best Management Practices (BMPs) to prevent pollution from chemicals from getting out into the environment.
- A joint "rural resiliency" initiative between CIRCA, Northwest Hills Council of Governments, and Northwest CT Conservation District resulted in development of a municipal-scale manual for a sustainable low impact development (LID) approach to protect water sources and historic development patterns in rural communities. The manual presents techniques designed to help properly capture, infiltrate, and manage stormwater, which in turn recharges groundwater, reduces erosion, and protects sensitive habitats.
- Sustainable CT is a voluntary certification program to recognize resilient Connecticut municipalities. The program provides a wide-ranging menu of best practices. Municipalities choose Sustainable CT actions, implement them, and earn points toward certification. Sustainable CT also provides opportunities for grant funding to help communities promote economic well-being and enhance equity, all while respecting the finite capacity of the natural environment. MetroCOG worked closely with SustainableCT, housing an intern at our office in Bridgeport to assist member municipalities enrolling in the program. Currently, the Town of Fairfield and the Town of Trumbull are registered with SustainableCT, two of the 85 communities registered statewide. Fairfield, which has a Silver Certification Status in the program is one of five highest certified communities in the state. Trumbull is a participating community.
- The General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 General Permit) is the product of a mandate by the U.S. EPA as part of its Stormwater Phase II rules in 1999. This general permit requires municipalities to manage stormwater entering its storm sewer systems to protect watercourses. DEEP issued a new General Permit in May 2018 (effective July 1, 2019) that applies to 121 Connecticut towns and all state and federal institutions that operate a stormwater system. All municipalities within an "urbanized area" are required to comply with the General Permit. All municipalities in the MetroCOG region are required to comply. Some of the goals of the permit are well-aligned with hazard mitigation. Refer to the Fact Sheet for more information.

4.2 Vision, Goals & Objectives

The primary goal of the NHMP is to reduce the loss of life, personal injury and damage to property, infrastructure, natural, cultural and economic resources from natural disasters. This goal has remained consistent since the original 2006 NHMP.

The following vision statement was prepared by the Planning Committee and regional stakeholders in 2012-2013 to establish the goals, objectives and mitigation actions of the Plan. Goals represent the plan's long term vision for addressing the impact of and building resiliency to natural hazards throughout the Region.

Vision

"The communities of the MetroCOG Region recognize the need, in light of recent severe and extreme weather events, to increase resilience to the devastating effects of natural hazards and mitigate future impacts through adaptation of existing infrastructure, improved planning and assessment, expanded education and awareness, and proactive response to emergencies caused by natural hazards." This vision statement was deemed appropriate for the 2019 NHMP Update.

Goals

The individual goals and objectives of the NHMP cover six functional areas. Most were deemed appropriate for the plan update. A few additions were made during the public review of the 2019 draft plan. These are noted by an asterisk (*). One additional CRS related objective was also added as denoted by a pound sign (#).

Prevention

Goal

Continue pre-disaster mitigation planning that assesses impacts from natural hazards and identifies effective strategies to mitigate future events and increase hazard resiliency.

Objectives

1. Adopt and keep current the Natural Hazard Mitigation Plan.
2. Adopt and enforce nationally recognized building codes and design standards in high hazard areas.
3. Implement management practices and techniques that go beyond minimum requirements.
4. Integrate the natural hazard mitigation objectives and strategies detailed in the NHMP with local land use policies and zoning regulations.
5. Continue to participate and comply with guidelines and requirements of the National Flood Insurance Program (NFIP).
6. Improve storm water management planning and adopt policies to reduce runoff.
7. Implement "No Adverse Impact" policies.
8. Implement low impact development techniques and green infrastructure policies and design guidelines.

Property Protection

Goal

Protect buildings from the impacts of natural hazards and implement projects to safeguard against the impacts of natural hazards.

Objectives

1. Rebuild damaged buildings to meet minimum design standards so as to withstand the impacts of natural hazards.
2. Acquire repetitive loss properties, as deemed necessary.
3.* Ensure that code plus construction is considered to reduce wind damage risk during building elevation projects.

Structural and Infrastructure Projects

Goal:

Protect infrastructure from the impacts of natural hazards and implement projects (structural and infrastructure) to safeguard against the impacts of natural hazards.

Objectives

1. Rebuild damaged infrastructure and buildings to meet the minimum design standards to withstand the impacts of natural disasters.
2. Implement floodplain management techniques above and beyond minimum NFIP requirements.
3. Construct flood control measures.
4. Maintain drainage systems.
5. Increase the capacity of drainage systems, including the separation of combined sewer systems, utilization of low impact development techniques and construction of green infrastructure.
6.* Ensure that green, green/gray, and gray (hard) shoreline infrastructure are all utilized in the region as appropriate.

Natural Systems Protection

Goal

Protect and restore natural systems and features that mitigate the impact of natural hazards.

Objectives:

1. Prohibit removal of natural vegetation dunes and use of riprap along stream channels.
2. Restrict development in floodplains and sensitive coastal areas.
3. Protect and restore riverbanks, wetlands, salt marshes, and dunes.
4. Establish vegetative riparian buffers.
5. Preserve floodplains as open space and acquire floodplain lands for open space.
6. Restore and replenish beaches.
7. Implement tree trimming programs that maintain healthy and appropriate urban forest and tree canopy.

Education and Awareness

Goal

Educate residents, businesses and stakeholders throughout the region about natural hazards and increase the awareness of severe and extreme weather events.

Objectives

1. Inform residents of shelter locations and evacuation routes.
2. Encourage homeowners to purchase flood insurance.
3. Educate citizens about actions to take in the

event of extreme weather – before, during and after.
4. Educate residents on the importance of wetlands and the need for the protection and maintenance of wetlands.
5. Conduct outreach to educate and advise homeowners about risks to life, health and safety.
6. Hold workshops to facilitate dissemination of information on technical assistance programs.
7. Encourage residents and businesses to prepare for extreme weather and for actions to take when an event occurs.
8. Develop pamphlets on emergency procedures and management and make available at city and town halls, libraries and on municipal websites.
9.# Accomplish a robust education program in communities that have joined and participate in the FEMA Community Rating System (CRS).

Emergency Services Protection Actions

Goal

Improve upon and ensure the continuity of emergency services during severe and extreme weather events.

Objectives

1. Conduct planning studies on evacuation policies, sheltering needs and capacity, hydrology, "Make Safe" procedures, and natural features.
2. Protect critical facilities and infrastructure necessary for emergency response.

4.3 Development of Hazard Mitigation Strategies

Many mitigation success stories can be found in the MetroCOG Region. For example, the Town of Trumbull has partnered with homeowners to secure funding for property acquisitions, and the Town of Fairfield has partnered with homeowners to secure funding for building elevations. Refer to the fact sheet on the next page for more information about the acquisitions in Trumbull.

Bridgeport, Fairfield, and Stratford were highly successful is obtaining CDBG-DR funding associated with Hurricane Sandy. Some of these grants were used for planning while other were used for projects, yielding many successful mitigation projects or phases of projects. For example, the Town of Fairfield prepared a green infrastructure plan and concept design for the downtown area, which represents a key phase in a larger effort to install green infrastructure downtown. Other communities in the region may be interested in pursuing green infrastructure. Refer to the fact sheet below for more information.

The Town of Fairfield has been successful in working through the State's Microgrid Program to implement a local microgrid. Most of the other funded microgrids in Connecticut have been outside the MetroCOG Region, but Fairfield's success may inspire other towns to pursue similar projects. Refer to the fact sheet below for more information about the microgrid in Fairfield.

The numerous mitigation successes in the Region demonstrate a strong capacity for the MetroCOG communities to continue implementing mitigation projects.

While the mitigation actions in the original 2006 NHMP were developed in direct coordination with local officials, the mitigation actions in the 2014 Plan were developed through The Nature Conservancy's CRB process combined with a review of actions from the 2006 NHMP. Each community utilized the TNC Risk Matrix to understand the risks associated with natural hazards and to understand vulnerabilities and strengths. Through this matrix, participants developed and prioritized actions to address the impacts of natural hazards.

For the 2019 NHMP Update, MetroCOG and the Consultant regularly communicated with the Local Planning Teams, which consisted of municipal staff from areas such as Engineering, Planning & Zoning, Public Works/Facilities, Emergency Management & Public Safety and various other disciplines. In addition, MetroCOG provided each community and other stakeholders an opportunity to attend CRBs to provide an opportunity to continue the discussion regarding the identification of hazards, assessment of risks and the development of strategies to establish a more resilient Region.

Mitigation actions are considered at the regional and local levels. Regional actions are general in nature and can be regarded as best practices. Mitigation actions at the local level address the unique characteristics of a community or the concerns expressed by the community.

Each mitigation action falls into one of the following six categories:

MITIGATION SUCCESS STORY

PROPERTY ACQUISITIONS: TRUMBULL, CONNECTICUT

View of the parcel before acquisition
Photo by Town of Trumbull

View of vacant parcel
Photo by Town of Trumbull

FOR MORE INFORMATION

Ken Dumais
State Hazard Mitigation Officer
CT Department of Emergency Services
and Public Protection
CT Division of Emergency Management
and Homeland Security
Strategic Planning and Community
Preparedness Unit
1111 Country Club Rd, 3rd Floor North
Middletown, CT 06457
(860) 685-8151
Kenneth.dumais@ct.gov

WHAT IS IT?

When repeatedly experiencing and recovering from flood events, along with the ever-rising cost of flood insurance, becomes too much of a hassle, homeowners may decide that it's time to relocate.

The Town of Trumbull has periodically partnered with property owners to apply for FEMA mitigation funds and acquire properties that have experienced flood losses. The photograph to the left depicts the property at 206 Lake Avenue that was acquired using a PDM grant from FEMA. By acquiring properties at risk, the Town relieves the owners of a financial burden and enables them to move to a less hazard-prone area.

Following property acquisitions, Trumbull has converted the areas to open space. These areas are now a valuable aesthetic with the added benefits of improving wildlife habitat and creating areas where floodwaters can safely accumulate, decreasing flood risks elsewhere.

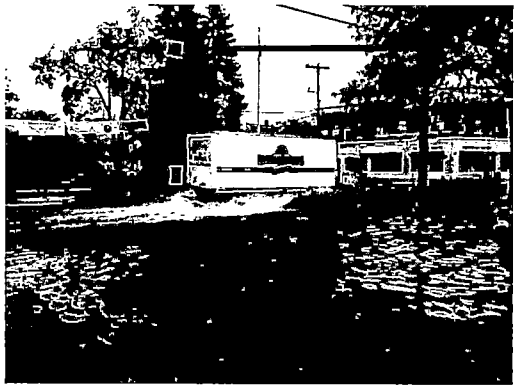
REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

If a property owner does decide it may be time to move, his or her town and state, as well as the federal government, may be able to help. Some local communities support property acquisition programs, and grants are available for application through the federal government. Property owners unable to sell their property on the market may be eligible for a property acquisition program or grant.

Acquisition and conversion to open space of flood prone properties aligns primarily with the Multi-Jurisdictional Hazard Mitigation Plan's Municipal Goal #4: Increase the use of natural, "green," or "soft" hazard mitigation measures, such as open space preservation and green infrastructure.

MITIGATION SUCCESS STORY

FAIRFIELD GREEN INFRASTRUCTURE



Street flooding in downtown Fairfield immediately downgradient from impervious surfaces

Concept design for rain garden in a parking area.

FOR MORE INFORMATION

Laura Pulie, P.E.
Senior Civil Engineer
Town of Fairfield
(203) 256-3015
lpulie@fairfieldct.org

WHAT IS IT?

The Town of Fairfield is currently experiencing challenges relating to an excess of urban stormwater runoff coupled with a restrictive storm drainage system that is inadequate to handle the large volume of runoff generated by the town's impervious surfaces. Due to the high-density surface and subterranean infrastructure, it is impossible to fully condition the storm drainage system to handle the current and future stormwater volumes. Additionally, climate change projections indicate that future storms may be more intense, with greater rainfall totals in shorter amounts of time.

Green infrastructure (GI), sometimes used synonymously with "low impact development" (LID), is an important tool in addressing climate change. Consider the following:

- Reducing stormwater runoff reduces downstream flooding.
- GI reduces heat-island effects through reduction of heat emission from pavements, which can cool temperatures by 20-45 degrees.
- GI captures pollutants such as particulate matter and contaminants, providing improved water quality and significant public health benefits for communities.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

Many GI techniques can prevent stormwater from being generated, reduce total runoff volume, and/or can sequester stormwater runoff and allow it to infiltrate into the ground without entering a municipal stormwater system. This not only reduces flood threats but also reduces pollutant loading into water bodies and can help recharge groundwater aquifers. Rain gardens, bioretention swales, green roofs, porous pavement/pavers and other methods can be both functional and aesthetic additions to any community.

The Town of Fairfield executed a study of how GI can reduce runoff in the downtown area and developed a downtown green infrastructure conceptual plan. The Town intents to implement components of the conceptual plan over the next decade, which will lead to reduced generation of stormwater and help alleviate flooding in the downtown area.

MITIGATION SUCCESS STORY

MICROGRID: FAIRFIELD, CONNECTICUT

Fairfield ; photo by Daily Voice

Fairfield microgrid area; photo by Schneider Electric Blog

WHAT IS IT?

A microgrid is a localized electric system that includes both electricity sources (such as power plants, generators, fuel cells, or solar panels) and electricity users. Under normal conditions, a microgrid is connected to regional electric grids, but during regional power outages a microgrid is able to act in "island mode," maintaining power to connected users.

In 2015, the Town of Fairfield installed a 300-kilowatt microgrid, that, in the event of an emergency, will be capable of keeping multiple municipal resources in operation. These resources include the police and fire headquarters, emergency communications center, a cell phone tower, and the Operation Hope's Homeless Shelter. The natural gas and solar powered power source is located adjacent to the Fairfield Police Department.

REGIONAL SIGNIFICANCE AND LINK TO HAZARD MITIGATION

Power outages caused by the effects of winter storms, hurricanes, lightning, and other natural hazards is one of the most commonly cited impacts of natural disasters in the region. Such outages can have direct impacts on health, safety, and the economy, as well as indirect impacts on hazard response and recovery efforts.

Developing microgrids that encompass critical facilities such as emergency response, shelter, and communications, can help make a community more resilient to natural disasters. Urgent needs of the community can be met and response and recovery efforts can move forward without delay while the regional grid is repaired.

Microgrid development aligns primarily with the Multi-Jurisdictional Hazard Mitigation Plan Municipal Goal #5: Improve the resilience of local and regional utilities and infrastructure using strategies including adaptation, hardening, and creating redundancies.

FOR MORE INFORMATION

Microgrid Program
CT Department of Energy and Environmental Protection
Bureau of Energy and Technology
(860) 827-2655
DEEP.EnergyBureau@ct.gov

- Prevention: actions that will keep problems from getting worse
- Property Protection: actions that address individual buildings
- Public Education & Awareness: actions that will inform the public
- Natural Resource Protection: actions that will protect natural resources
- Emergency Services Protection: actions that will protect emergency services before, during and immediately after an occurrence
- Structural Projects: actions that will control the hazard

STAPLE+E

Throughout the planning process, a wide range of actions to mitigate and increase resiliency to the impacts of natural hazards were identified and discussed. Prioritizing each action will determine its effectiveness in reducing or preventing future impacts. The STAPLE+E method was used to prioritize the mitigation actions.

The STAPLE+E method evaluates the costs and benefits of a specific action against social, technical, administrative, political, legal, economic and environmental criteria. This method is commonly used by planners and public administrators. Based on this review, actions were prioritized for future implementation. The previous NHMP used a similar approach.

The STAPLE+E cost benefit review evaluates the following:

Social

1. Is the proposed strategy socially acceptable to the Region or municipality?
2. Are there equity issues involved that would mean that one segment of the Region or municipality is treated unfairly?

Technical

1. Will the proposed strategy work?
2. Will it create more problems than it will solve?

Administrative

1. Can the Region or municipality implement the strategy?
2. Is there someone to coordinate and lead the effort?

Political

1. Is the strategy politically acceptable?
2. Is there public support both to implement and maintain the project?

Legal

1. Is the Region or municipality authorized to implement the proposed strategy?
2. Is there a clear legal basis or precedent for this activity?

Economic

1. What are the costs and benefits of this strategy?
2. Does the cost seem reasonable for the size of the problem and the likely benefits?

Environmental

1. How will the strategy impact the environment?
2. Will the strategy need environmental regulatory approvals?

The benefit of each criteria was ranked as low (1), medium (2) or high (3). Costs were ranked as low (-1), medium (-2) or high (-3). Criteria received a 0 if there was no cost or benefit, or if the criteria were not applicable to the mitigation action.

The workshop risk matrices informed the overall STAPLE+E process, as actions identified through the risk matrices obviously had some community or stakeholder support. Typically, these actions received a high ranking for the administrative, social and/or political benefits. High administrative and technical rankings were given to actions that were underway or in the process of implementation, since the community demonstrates the capacity to implement the action.

The economic costs of actions were evaluated based on a monetary estimate. Minimal cost actions require little staff time or municipal resources and could possibly be implemented through volunteer assistance. Low cost actions were less than $100,000. Moderate cost actions were between $100,000 and $500,000 and high cost items were over $1,000,000.

The results of the STAPLE+E review will inform how actions are prioritized and implemented. Implementation will be discussed in Section 5 of the NHMP.

4.4 Regional Actions

Natural hazards are not governed by state, regional or local boundaries and typically impact a large geographic area. The following mitiga-

tion actions are general and address the regional scale and impact of natural hazards. These provide a basis for hazard mitigation in the region as well as a template for identifying specific mitigation projects.

Inland and Coastal Flooding:

Through the risk assessment, vulnerability assessment and discussions throughout the planning process, the communities of the MetroCOG Region were found to be most at risk from flooding, both inland and coastal. Common impacts of flooding include damage to personal property, buildings, and infrastructure, closure of roads, disruptions of critical services, and injuries to persons in flood prone areas. General mitigation actions include:

Prevention

1. Incorporate flood mitigation in local land use regulations.
2. Enforce flood management regulations.
3. Develop storm water management regulations and programs
4. Develop regional watershed councils to prepare watershed management plans.
5. Improve storm water management planning and adopt policies to reduce storm water runoff, such as, requiring development projects have "zero discharge."
6. Comply with the NFIP and maintain FEMA elevation certifications.
7. Implement floodplain management techniques above and beyond minimum NFIP requirements, including increasing "freeboard" heights, adopting "No Adverse Impact" policies, notifying repetitive loss property owners, and participating in the Community Rating System (CRS) program.
8. Conduct hydrologic and hydraulic studies to evaluate risks and flood mitigation strategies.

Property Protection

1. Adopt and enforce building codes and increase "freeboard" requirements.
2. Remove existing structures from flood-prone areas.
3. Flood-proof basements and other areas.
4. Encourage elevation of structures.

Structural

1. Limit the amount of impervious surface.
2. Prohibit filling in floodplain areas.
3. Increase capacity of storm water drainage systems and separate combined sewer systems.
4. Increase capacity of detention and retention ponds and basins.
5. Maintain drainage systems by clearing sediment, removing debris and routinely repairing and cleaning storm drains.
6. Elevate structures, roads, and bridges above base flood elevation.
7. Construct flood control measures, such as, berms and dikes, and use hardened material to prevent erosion.
8. Install bioengineered bank stabilization techniques.

Natural Systems Protection

1. Protect and restore natural flood mitigation features.
2. Protect and restore riverbanks, wetlands and dunes.
3. Use vegetative buffers.
4. Establish riparian buffers.
5. Preserve floodplains and wetlands as open space.
6. Acquire floodplain lands and wetlands for open space.
7. Establish a green infrastructure program that requires more trees to be planted or preserved, encourages the use of porous pavement, and planting of vegetative buffers.
8. Develop stream buffer ordinances.
9. Continue beach nourishment programs.
10. Limit or restrict development in floodplain areas.

Education and Awareness

1. Increase awareness of flood risk and safety.
2. Encourage homeowners to purchase flood insurance.
3. Educate citizens about safety during flood conditions.
4. Conduct outreach to educate and advise homeowners about risks to life, health and safety.
5. Hold workshops to facilitate dissemination of information on technical assistance programs.

Emergency Services

1. Flood proof critical facilities in vulnerable locations, such as wastewater treatment plants, EOCs, police and fire stations, and

emergency shelters.
2. Locate critical facilities, such as wastewater treatment plants, EOCs, police and fire stations, and emergency shelters outside flood-prone areas.

Sea Level Rise

Many of the mitigation actions that address the impact of coastal and inland flooding will also mitigate the impacts of sea level rise. Sea level rise causes land loss in low-lying coastal areas. Sea level rise also exacerbates erosion and flooding as new areas become vulnerable to storm surge, wave action, and tides.

Prevention

1. Map and assess vulnerability to sea level rise, including modeling of various "what if" scenarios. At a minimum, utilize the sea level rise projection prepared by CIRCA and adopted by Public Act 18-82.
2. Use GIS to map at-risk areas and structures.
3. Regulate and manage development in high risk areas and create a sea level rise overlay zone.
4. Prohibit reconstruction and redevelopment in areas susceptible to chronic flooding.

Property Protection

1. Protect buildings by acquiring structures in high risk areas and either demolish or relocate.
2. Raise buildings above potential sea levels.

Structural

1. Protect infrastructure by acquiring structures in high risk areas and either demolish or relocate.
2. Raise infrastructure above potential sea levels.
3. Limit the amount of impervious surface.

Natural Systems Protection

1. Preserve open space and wetlands in high risk areas.
2. Acquire open space in high risk areas.
3. Protect and restore natural buffers.
4. Implement dune restoration projects.
5. Promote conservation and management of open spaces and wetlands within sea level rise areas.

Education and Awareness

1. Increase awareness and educate the public about sea level rise.
2. Encourage homeowners to purchase flood insurance.

Emergency Services

1. Locate critical facilities, such as wastewater treatment plants, EOCs, police and fire stations, and emergency shelters outside areas vulnerable to sea level rise.

Severe Winter Weather

Severe winter storms may include snow, sleet, freezing rain, or a mixed precipitation, and are often accompanied by high winds. The damage from these storms includes downed trees, widespread power outages, road closures and limited access to critical facilities, and can result in injury and death.

Prevention

1. Adopt and enforce building codes.
2. Improve tree maintenance.

Infrastructure

1. Protect power lines and infrastructure.
2. Establish and follow standards and guidelines for tree pruning around power lines and routine inspection of hazardous trees.
3. Establish debris management and clearing capabilities.
4. Reduce the impacts to roads by planning for snow removal and debris clearing.
5. Maintain and improve snow clearing equipment.

Education and Awareness

1. Increase awareness and educate the public about proper tree maintenance.
2. Educate citizens about safety during winter storms and power outages.
3. Provide residents with the locations of warming centers and shelters during a power outage.

Emergency Services

1. Ensure adequate power to critical facilities such as EOCs, police and fire stations, and emergency shelters.
2. Improve communication and cooperation with local utilities, "Make Safe" crews and power restoration regarding downed trees and power lines.
3. Ensure emergency access to vulnerable populations and critical facilities.

Earthquakes:

Property damage from earthquakes is primarily caused by the failure and collapse of structures. The Region is not at high risk to earthquakes.

Severe Summer Weather:

Severe summer weather comes in the form of thunderstorms and tornadoes, and is accompanied by lightning, hail and high winds. These events pose a threat to lives, property, and vital utilities primarily from downed trees, limbs, power lines and flying debris. Although infrequent in the Region, a tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. The destruction caused by tornadoes ranges from light to catastrophic depending on the intensity, size, and duration of the storm.

Prevention

1. Adopt and enforce building codes.

Structural

1. Install lightning protection and grounding on communications infrastructure and critical facilities.
2. Install surge protection on critical electronic equipment.

Education and Awareness

1. Develop a lightning brochure for distribution at recreation facilities and parks.
2. Ensure the public is aware of emergency cooling centers during severe hot weather.

Emergency Services

1. Ensure adequate power to critical facilities such as EOCs, police and fire stations, and emergency shelters.
2. Improve communication and cooperation with local utilities regarding downed trees and power lines, "Make Safe" crews and power restoration.
3. Ensure emergency access to vulnerable populations and critical facilities.

Wildfires:

1. Pursue the extension of public water supply for fire protection into outlying areas.
2. Pursue the installation of dry hydrants in areas without adequate fire protection.
3. Ensure off-road emergency vehicles are available to access wildfires.
4. Provide educational information to homeowners and businesses within the wildland-urban interface.

All Hazards:

1. Secure and install backup generators that are adequate to meet the needs of critical facilities and evacuation locations, both short term and long term.
2. Expand the use of GIS to inform municipal staff, residents, businesses and regional stakeholders of potential natural hazards and strategies to mitigate, prepare and/or respond to the impacts of natural hazards.

National Flood Insurance Program

As described in Section 3, inland and coastal flooding has severely impacted communities throughout the MetroCOG Region. All communities in the MetroCOG Region participate in the National Flood Insurance Program (NFIP) as presented in Table 4.1.

Communities that participate in the NFIP must adopt a local flood damage prevention ordinance with established minimum building standards for

Table 4.1: NFIP Adoption

NFIP Status

City or Town	NFIP Entry Date	Effective FIRM	Total Policy Holders (as of 11/18)	Policy Holders in SFHA (as of 11/18)	Average Premium	Insurance In Force
Bridgeport	10/15/80	07/08/13	1,669	1,056	$1,056	$325,636,800
Easton	09/30/83	06/18/10	33	9	$764	$9,918,100
Fairfield	08/15/78	07/08/13	2,330	1,844	$1,610	$631,856,500
Monroe	04/17/85	06/18/10	50	16	$1,000	$13,324,500
Stratford	06/01/78	07/08/13	1,891	1,214	$1,421	$442,417,900
Trumbull	12/04/79	06/18/10	163	91	$1,081	$45,669,800

the floodplain. All new buildings and substantial improvements to existing buildings are required to be protected from damage by floods with a 1% annual chance of occurring (the 100-year flood). Any new floodplain development may not aggravate existing flood problems or increase damage to other properties.

All communities in the MetroCOG Region have adopted and continue to enforce floodplain management regulations that are consistent with those required by the NFIP. Continued compliance with NFIP standards, active participation in the NFIP and application to the Community Rating System will mitigate the financial impacts of future flood events.

Mitigation Actions for Repetitive Loss Properties

Due to multiple claims under the NFIP, Repetitive Loss Properties are costly to insure and strain FEMA resources. FEMA offers grant programs to assist communities and states in implementing actions that reduce or eliminate the long-term risk of flood damage to focus on repetitive loss properties. The primary objective of these programs is to eliminate or reduce the damage to property caused by repeated flooding. Funds are provided to implement various mitigation measures that will reduce future flooding losses. Possible mitigation actions include acquisition or relocation of severe repetitive loss properties and elevating existing structures.

4.5 Review of Prior Hazard Mitigation Actions

In the 2006 and 2014 NHMPs, local actions were recommended to mitigate the impacts of natural hazards and address the specific concerns of each respective community. The following narrative of mitigation strategies explains the overall concerns of each community during the 2014 NHMP Update. The mitigation strategy matrices in the 2014 NHMP were the result of the workshop's risk matrices, discussions with municipal staff, the concerns gathered through the public outreach process and the STAPLE+E review method.

City of Bridgeport

The primary natural hazards impacting Bridgeport include coastal flooding from tropical storms and hurricanes and inland flooding from heavy rain events. Inland flooding is worsened by the past channeling and/or burying of water courses. Addressing the impacts of coastal and inland flooding continue to be priorities in Bridgeport, as they were in the 2006 and 2014 NHMPs. NHMP recommendations expanded to include a diverse and very comprehensive set of strategies to address the impacts caused by a variety of natural hazards.

As detailed in the BGreen Plan, the City has placed a priority on proactively addressing rising sea levels and the impacts of climate change. While improvements to and expansion of infrastructure and structural solutions remained as priority actions, as in the previous NHMPs, green infrastructure, low impact development and comprehensive, region-wide watershed management were also recommended as strategies to mitigate the impacts of natural hazards. A number of strategies to protect/nourish beaches, such as at Seaside Park and shoreline neighborhoods were also recommended throughout the update process.

New priorities for infrastructure improvements were also identified as part of the update. While the 2006 NHMP identified specific sewer separation projects, recommendations in the 2014 NHMP were focused on finding opportunities for a coordinated approach to the overall sewer separation project by a number of City departments. This includes upgrading to a separated sanitary sewer system during road improvement projects. Continuing to secure funding for the various phases of ongoing projects and completing these projects remains a City priority. Integrating low impact development best management practices into these projects was emphasized throughout the update.

The 2014 NHMP placed greater emphasis on pre-disaster planning and effective public education. Public education, outreach and early warning to residents is crucial to insuring a resilient community. These strategies ensured that the public has the information to adequately prepare (and recover) in the event of a disaster. Assisting residents of high density public housing, vulnerable populations, the transit dependent and those with special needs before, during and after severe weather events was another City priority. The City of Bridgeport will continue to provide universal shelters, which provide facilities for people with special needs and accept pets.

Hazards caused by severe ice, wind, snow-

storms and heat also received attention from stakeholders in Bridgeport. During periods of severe heat, ensuring that vulnerable populations are aware of and have access to cooling centers is a crucial task. Developing a plan to address City operations protocols for varying levels of snowfall and securing additional equipment for snow removal are priorities to address events such as Winter Storm Nemo in 2013. Increasing the effectiveness of emergency communications – among City departments and to the public are priority strategies that can be utilized during a variety of natural hazard events.

Town of Easton

Easton is sparsely developed and a large proportion of the Town is preserved as either existing or former water company owned lands. As such, the impacts from natural hazards are somewhat limited. Most recommendations for Easton were oriented to infrastructure projects so as to mitigate the impacts of flooding. These recommendations, such as warning of residents in areas that may become isolated or blocked during severe weather remain as priorities to the Town. In the 2014 NHMP, the public drinking water supply and tree management received greater attention and increased in priority.

Easton is home to four reservoirs that are the primary source of public drinking water in the Region. A large filtration plant, located at the base of the Easton Lake Reservoir dam, was built several years ago to ensure clean and safe water. The Easton Emergency Management Director's primary concern is to ensure the plant remains operational during any hazard. Ensuring the public drinking water supply is a priority to the Town of Easton and the MetroCOG Region.

Damage to trees, and the resulting power outages from downed trees and from severe winds during thunderstorms, hurricanes, tropical storms, nor'easters and snow storms have also impacted the Town of Easton. Priority strategies to mitigate the impacts of these hazards include tree maintenance programs, education of residents on proper tree maintenance and coordination with utility tree trimming programs. During disasters, enhanced communications with utilities and access to emergency services (on roads blocked by downed trees, as well as snow) are necessary. Back-up and alternate power generation at key facilities received greater priority in the 2014 NHMP.

Town of Fairfield

In Fairfield, a lot more attention has been given to coastal areas since hurricanes Irene and Sandy hit the Town. Unprecedented coastal flood damage has renewed the focus on mitigating against future damage. A Coastal Resiliency Plan has been developed with the assistance of Metro-COG and The Nature Conservancy. Many residents have or are planning to have their homes elevated for storm protection and to lower flood insurance rates. Many neighborhoods are demanding better flood protection in the form of pump stations or dikes. The Town is also examining methods to harden its infrastructure and is assisting home owners to prevent future damage by elevating homes to achieve FEMA flood regulation compliance. Due to the impact of hurricanes, snow storms and weather related events, utility issues have also been on the forefront.

Town of Monroe

The 2006 NHMP included recommendations focused on mitigating the impacts of flooding through maintenance and infrastructure improvements. However, both the range of hazards to prepare for and the range of strategies expanded in the 2014 NHMP. This reflected a shift in priorities due to the impacts of heavy snow, ice and storms as well recognizing the role green infrastructure and natural features can play in mitigation.

Strategies to mitigate the impacts of snow, ice and wind included an expansion of the Town's tree maintenance program and improving communication with utilities. Warning residents who may become isolated by blocked roads and insuring adequate power generators at shelters were other recommendations made.

All properties in Monroe are served by on-site septic systems. Systems close to the Pequonnock River and the river's branches may fail due to heavy rains and subsequent flooding and cause an increase in pollutants entering the river. The recognition of the impact that a failing septic system may have on the quality of local waterways was a new concern of the Monroe community that was not reflected in the 2006 NHMP. The need to upgrade septic systems to sanitary sewers in certain areas was emphasized by workshop participants and in the Town's Plan of Conservation and Development.

Since 2006, the Town of Monroe has diversi-

fied how storm water management and flooding are approached. Infrastructure projects and regular maintenance remained as stormwater management and flood mitigation strategies. However, low impact development BMPs received greater focus in the 2014 NHMP. Zoning regulations have been revised to require improved landscaping and less pavement at developments. Riparian buffers along waterways and an emphasis on storm water retention and quality are further examples of the priority placed on the protection of natural features.

Town of Stratford

Recommendations made in the 2008 annex to the NHMP were primarily focused on flood mitigation through infrastructure improvements and regular maintenance of infrastructure. Due to more severe weather events since 2008, recommendations made in the 2014 NHMP Update emphasized the importance of pre-disaster planning and coordination, the utility of natural features for flood mitigation and the impact of hazards related to wind, ice and snow.

Greater understanding of the urban tree canopy, encouraging utilities to follow recommended arboriculture practices and a regular tree maintenance plan were new strategies in the 2014 NHMP to address pre-disaster planning and hazards not related to flooding – such as the impacts of wind, ice and snow. Insuring adequate power generators at shelters, encouraging restaurants and businesses to install backup generators and educating the public on preparing for severe weather are other recommendations that reflect planning and preparation as a community priority.

Like the coastal jurisdictions of Bridgeport and Fairfield, the impacts of hurricanes Irene and Sandy expanded and diversified the range of mitigation strategies that the Town of Stratford considered in the 2014 NHMP Update. Additional improvements to facilities and infrastructure so as to protect against flooding were identified – such as the waste water treatment plant and pump stations. These vulnerabilities led to the Town developing a coastal resilience plan in 2016. In 2014, the Town has placed a greater priority on low impact development techniques, ordinances to reduce storm water runoff, increased protection and maintenance of Stratford's beaches and enhancing the flood protection features of all natural areas (such as forests, marshes and open space). The Roosevelt Forest Management Plan is one such example of the Town's commitment to management and protection of its natural areas.

Town of Trumbull

Mitigating the impacts of inland flooding in certain areas of the Town of Trumbull, tree maintenance, coordinated power restoration and assisting residents during severe weather events are priorities in the Town of Trumbull. Recommendations in the 2006 NHMP were primarily oriented to infrastructure improvements so as to mitigate flooding. Like the other communities discussed in the NHMP, recommendations made by Trumbull stakeholders expanded in the 2014 NHMP to include a diverse set of measures to mitigate the impacts caused by a variety of natural hazards.

The Town's Plan of Conservation and Development promoted low impact development and green infrastructure approaches to protect natural resources as development occurs. Assessing the capacity of open space for flood storage, education to residents about green infrastructure solutions and wetland protection and the implementation of the Pequonnock River and Rooster River watershed-based plans were some of the recommendations that recognize the utility of natural features as a flood mitigation method. The importance of natural features was a new priority in the 2014 NHMP.

Inland flooding continues to be a concern for the Town of Trumbull. In addition to natural mitigation measures, improvements to infrastructure and structures is a Town priority as well. This priority has not changed since the 2006 NHMP. However, the number of recommendations regarding infrastructure and structural improvements increased in the 2014 NHMP.

A reliant and resilient electrical system was a key concern in Trumbull's POCD and increased in priority due to long term power outages after hurricanes Irene and Sandy and Winter Storm Alfred (in October of 2011). Tree lined streets play an important role in the Town's atmosphere and quality of life, but downed limbs and trees also brought power lines down and prevented access to many roads – further delaying power restoration. Balancing the importance of trees to the Town with a proactive maintenance plan for trees close to power lines is necessary for both these priorities to be realized.

In addition to tree maintenance, additional

recommendations were made to assist residents during long term power outages and for improved power restoration. Improved access to information about services for at-risk residents during disasters, adequate generators at shelters, charging stations and multiple avenues for communications with residents were some examples of recommendations in regards to community assistance. A variety of opportunities to restore power more quickly were identified, including town staff workforce availability, enhanced communication with utilities, periodically revisiting the critical locations for immediate power restoration and updated maps/GIS.

While downed trees and tree limbs knock out power, they also block roads and prevent residents from accessing emergency services. Snow and ice storms limit access to emergency services and emergency responders as well. Since Trumbull is served by hospitals in Bridgeport, this access is a regional priority. The importance of access to the regional services located in the City of Bridgeport became apparent during Winter Storm Nemo, as the amount of snow that needed to be cleared severely burdened public works crews throughout the region.

Summary of Prior Mitigation Actions

A summary of the previous mitigation strategies presented for each community in the 2014 NHMP is presented on the following pages. The tables include a description of each prior action, the status of the action in 2019, and, if necessary, a determination of whether the action required revisions for inclusion within the implementation strategies presented in Section 5.

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
	Prevention		
1	Consider enrolling and participating in FEMA's Community Rating System (CRS) program. Identify and integrate building codes, land use policies and zoning regulation modifications that minimize exposure of existing buildings, future development and critical infrastructure to natural hazards and extreme weather.	This action represents several specific actions but all are meant to support CRS participation. The City sent a CRS letter of interest to FEMA in June 2018. A new action is "Complete CAV and initial steps to enter into the CRS program."	Complete CAV and initial steps to enter into the CRS program.
2	Adopt stream dumping regulations.	This is already required by the City Code ("No person shall throw or deposit any solid waste in any stream, sewer or other body of water"). Regulation is not needed.	Not Applicable
3	Identify and integrate building code, land use policies and zoning regulation modification that minimize exposure of existing and future development and critical infrastructure and facilities.	The process states that this is already practice through the State Building Code. The building code narrative is not needed, but specificity about regulations is needed. Carry Forward with Revision. The Zoning Regulations (currently amended to July 2018) will be rewritten beginning in 2019, with anticipated adoption in 2021. LID and resilience standards will be added.	Revise Zoning Regulations to include low impact development (LID) and resilience standards.
4	Continue the policy of "Universal" shelters, "Universal" means specific needs and pets are allowed for.	Complete and ongoing	Not Applicable
5	Consider tapping into new or alternate sources of funding for resilience/hazard mitigation projects.	The City has achieved significant success in this matter, with projects ranging from a small grant from CIRCA ($60,000 for a living shoreline design) to several million dollars from Rebuild By Design and the NDRC competition. The City's focus is to now shift toward execution of the many grants. Future editions of the hazard mitigation plan may include actions similar to this.	Not Applicable
6	Consider adopting standards to require two or more feet of freeboard when developing or redeveloping structures in tidally influenced floodplains. Initiate longer-term opportunity to adapt the City to flooding through new building siting to elevations well above FEMA's 1% flood zones (i.e., 500-year standard).	Progress toward adopting freeboard has not been made, although the revised State Building Code requires one foot of freeboard. Carry Forward with Revision.	Freeboard of greater than one foot will be considered as part of the Zoning Regulation rewrite.
7	Investigate opportunities for floodplain easements on properties.	Carry Forward	Identify opportunities for floodplain easements on properties.
8	Encourage low impact development techniques and green infrastructure for new developments.	The City has made significant progress installing green infrastructure on public properties and along streets. Additional efforts are needed to encourage GI and LID on private properties. Carry Forward with revision.	LID will be included with the Zoning Regulation rewrite
9	Secure funding for and initiate an urban forest canopy study. A study was conducted in 2010 but needs to be updated.	Complete. In 2013, the City engaged the Spatial Analysis Laboratory (SAL) at the University of Vermont's Rubenstein School of the Environment and Natural Resources to carry out an assessment of the existing and potential tree canopy in Bridgeport. In 2014, a municipal tree maintenance workshop was held by GBRC and study report was published.	Not Applicable
10	Factor climate change impacts into all critical infrastructure improvement plans (i.e., bridges, bus route realignment).	Public Act 18-82 has addressed this, with new resiliency standards enumerated in State statute for State-funded projects and federally-funded projects passed through the State. This accounts for many of the infrastructure projects in Bridgeport.	Factor climate change impacts into City-funded critical infrastructure improvement plans by requiring that the standards similar to those of Public Act 18-82 be applied to City-funded projects. As a first step, produce guidance document by 2021.
11	Continue to implement the comprehensive urban forest management plan.	This action represents a capability. Subsequent to revised action #9 above, this action may be revised	Not Applicable
12	Continue to expand Energy Improvement Districts	Complete	Not Applicable
13	Continue to amend the storm water management manual as necessary.	Complete	Not Applicable
14	Conduct a study to assess and prioritize the highest risk locations across the City.	This is being accomplished through several efforts described in the plan and represented in these actions.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
15	Continue to enforce V-zone requirements in sections of coastal A zones located waterward of waterfront roadways. Applicable ordinances are amended as FIRM maps are revised.	Complete	Not Applicable
16	Pending funding, proceed with the Storm water Authority Feasibility Study. Consider incentives to reduce the amount of impervious surface in the City.	Progress has been impeded by lack of funding. Carry forward.	Pending funding, proceed with the Storm water Authority Feasibility Study. Consider incentives to reduce the amount of impervious surface in the City.
	Property Protection		
17	Encourage property owners to elevate electrical and heating systems above the base flood elevation.	Complete; additional efforts will be made in connection with substantial damage and substantial improvement determinations.	Not Applicable
18	Continue to flood-proof structures, especially in the Seaview Avenue/Lower East End neighborhoods.	Complete; additional efforts will be made in connection with substantial damage and substantial improvement determinations.	Not Applicable
19	Elevate houses as they are renovated or constructed in the Black Rock Area.	Complete; additional efforts will be made in connection with substantial damage and substantial improvement determinations.	Not Applicable
20	Encourage property owners to elevate structures above the base flood elevation.	Complete; additional efforts will be made in connection with substantial damage and substantial improvement determinations.	Not Applicable
	Structural		
21	Consider moving sediment to preserve the hydrologic function of Ash Creek.	Progress has been impeded by lack of funding. Carry forward.	Conduct study of Ash Creek sedimentation to determine if sediment removal will enhance flood capacity.
22	Expand the separation of sanitary and storm drainage sewers. Implement and install green infrastructure and building modifications to improve on-site storm water management, retention and infiltration.	Significant progress has been made in these areas, with GI installed on public property and along city roadways. The Zoning Regulations revision will help encourage the same on private properties. Other actions on this list are addressing the Zoning Regulations. A revised action here addresses city property and streets.	Pursue a target of 30 additional GI installations on City-owned land and along streets in the 2019-2024 planning timeframe. Select some locations from the Regional Framework for Coastal Resilience.
23	Improve the drainage and catch basin system.	This is an ongoing effort that is funded by the City.	Not Applicable
24	Improve ability of drinking water supply reservoirs to accommodate high intensity, short duration rain events.	With the implementation of the Streamflow Standards and Regulations in Connecticut, Aquarion Water Company will have fewer opportunities for this approach. Action must be deleted in favor of alternate means of flood mitigation downstream of reservoirs. Additionally, none of the Aquarion reservoirs are upstream of rivers that flow through the City.	Not Applicable
25	Minimize the impact of new development	Significant progress has been made in these areas, with GI installed on public property and along city roadways. The Zoning Regulations revision will help encourage the same on private properties. Other actions on this list are addressing the Zoning Regulations.	See above actions #3, 8, and 22
26	Expand the separation of sewer and surface runoff across more of the City's water/sewer infrastructure (i.e., CSO separation).	Progress has been made. Additional progress is desired.	Make additional progress with combined sewer separations and CSO abatement as outlined in plans developed in 2018.
27	Consider retreat from the Cedar Creek shoreline where vacant properties have little probability of expansive redevelopment.	Ultimately, the Rebuild By Design award did not address the Cedar Creek area. Lower West End resiliency planning with BEDCO and the WECDC was completed in 2019 to address the northwest bank of Cedar Creek.	Implement findings of the Lower West End resiliency planning to draw appropriate businesses to the northwest bank of Cedar Creek, such as water-dependent and floodable land uses.
28	Address the number of derelict structures in the City.	OPED and DPF are continuing to demolish or rehabilitate derelict structures, but additional progress is desired. Carry forward.	Continue to remove derelict structures in flood zones and other areas of high risk; and redevelop or convert to open space. The target for 2019-2024 is ten additional properties.
29	Continue to protect vital transportation infrastructure working with GBT, local, state and federal Agencies as well as providing safe and secure access to and from transit hubs as preparation for any future storm response and/or evacuation.	This is established practice and is updated as needed.	Not Applicable
30	Continue to implement the recommendations from the Pleasure Beach Master Plan. Phase I work is in construction. The City is seeking funding for Phase II and hopes to build in more resilience measure into plans.	Complete; additional efforts will be undertaken as part of the NDRC award execution. The project is known as "Resilient Bridgeport."	Complete the components of the "Resilient Bridgeport" project execution that are scheduled for 2019-2024.

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
31	Implement recommendations made by the Seaside Park flood control study.	Complete; additional efforts will be undertaken as part of the NDRC award execution through "Resilient Bridgeport." Ultimately, the Rebuild by Design award did not address this area.	See action #30 above.
32	Initiate a waterfront recapture program and consider waterfront easements.	OPED implementing a zoning amendment requiring an easement along the waterfront so as to provide a waterfront pathway. Additional execution is desired.	Secure waterfront easements as available.
33	Improve drainage as part of road improvement projects.	Underway; this is now practice and a new action is not needed.	Not Applicable
34	Initiate strategically placed green infrastructure and roof leader and other building modification projects to improve on-site storm water runoff retention and infiltration. Continue working to find physical locations for 'green solutions' called for in the WPCA Long Term Control Plan (LTCP).	Significant progress has been made in these areas, with GI installed on public property and along city roadways. The Zoning Regulations revision will help encourage the same on private properties. Other actions on this list are addressing the Zoning Regulations and GI installations.	See above actions #3, 8, and 22
35	Protect beach at Seaside Park	This beach is re-nourished as needed. The action is not needed.	Not Applicable
36	Continue to clean catch basins annually.	This is an ongoing effort that is funded by the City.	Not Applicable
37	Continue the aggressive street sweeping program and cleaning streets prior to forecasted storms to keep storm grates clear and accommodate higher flows.	This is an ongoing effort that is funded by the City.	Not Applicable
38	Continue to frequently clean the racks at Bowe Street.	This is an ongoing effort that is funded by the City.	Not Applicable
39	Aggressively maintain culverts and remove debris from channels along Ash Creek/Rooster River.	This is an ongoing effort that is funded by the City.	Not Applicable
40	Use signage and large, visible staffs to indicate depths of water so that vehicles can avoid flooded viaducts when necessary.	This is an ongoing effort that is funded by the City.	Not Applicable
41	Aggressively maintain culverts and remove debris from channels along Johnson Creek, Pequonnock River, and Yellow Mill.	This is an ongoing effort that is funded by the City.	Not Applicable
42	Install an automated flood control gate system to measure flooding at viaducts. This system will insure timely police response to close the viaducts and prevent cars from getting stuck. The City has installed flood depth signage and posts to indicate the depth of water at critical locations to inform motorists to avoid flooded viaducts when necessary and has developed well-marked, color-coded evacuation routes for residents to follow.	Progress has been hindered by lack of funding and staff resources. The City wishes to make progress in this area and the action is carried forward with a revision to be more specific.	Pilot test an automated viaduct closure system for one viaduct.
43	Improve beach protection in the Black Rock Area.	These areas will be addressed as needed. Current beach conditions are considered appropriate.	Not Applicable
44	Proceed with creation of a storm water detention area at the north end of Roger's Park. The design phase of the project has been bonded. The project's scope and fee negotiation for design is anticipated to be complete by the end of 2013.	Complete	Not Applicable
45	Improve drainage when completing roadway projects in the future to address flooded viaducts.	This is an ongoing effort that is funded by the City.	Not Applicable
46	Continue the drainage maintenance program for inspections of private drainage facilities to be maintained and cleaned.	Ongoing; action not needed.	Not Applicable
47	Systematically replace culverts and bridges and upgrade drainage systems.	This is an ongoing effort that is funded by the City through the Capital Improvement Plan.	Not Applicable
48	Repair/replace the State Street Ext/Commerce Drive Bridge and upgrade the catch basins and drainage system.	Progress has been hindered by lack of funding. Carry forward.	Repair/replace the State Street Ext/Commerce Drive Bridge and upgrade the catch basins and drainage system.
49	Protect the Cedar Creek bank with bulkheads or other creative hard solutions.	Because the bank consists of privately-owned parcels, this must be accomplished during redevelopment or when existing owners approach the City with proposals.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
50	Raise the height of two harbor breakwaters to protect the inner harbor, St. Mary's at Ash Creek and the Fayerweather lighthouse breakwater from the reach of higher waves and to reduce damage from wave action.	Progress has been impeded by lack of funding. This very costly project would need significant design and permitting efforts. The action is carried forward with a revision.	Conduct a feasibility study for increasing the heights of the breakwaters.
51	Implement physical enhancements of beach protection infrastructure, including breakwaters, groins, and hardscape along Seaside Park, in the Black Rock neighborhood and in the lower East Side, as necessary and appropriate.	Breakwaters are addressed by the City, whereas groins, walls, and bulkheads are addresses by property owners.	Not Applicable
52	Acquire additional land as needed for the creation of a detention area.	This action is in relation to Island Brook and Ox Brook. See revised action #53 below.	Not Applicable
53	Implement Flood Control Project to divert 400 cfs from Island Brook at Old Town Road to Ox Brook at Roger's Park. This flow is to be diverted back to Island Brook at Fairview Avenue through a large detention basin at Shriva Park. The final phase of the Ox Brook project will address this issue.	Progress has been hindered by lack of funding. Carry forward with the first phase.	Execute design of the flood mitigation project for Island Brook and Ox Brook.
54	In the Northeast section, continue with the Feasibility/Flood Control Study that takes the downstream constriction at the GE Property into consideration, and implement recommendations as appropriate.	Progress has been hindered by lack of funding. Carry forward with the first phase.	Execute design of the flood mitigation project for northeast Bridgeport.
55	Remove existing bridges at Feroleto Steel and Scofield Avenue and replace with new bridges that increases the base height of the structures and minimizes flood impacts.	Refer to Town of Fairfield. Action no longer addressed by Bridgeport.	Not Applicable
56	Build in extra flood storage at Island Brook, Bruce Brook and Rooster River/Ash Creek.	Progress has been made in some of these areas. The Town of Fairfield completed a study in 2019 to evaluate options for flood storage in the Rooster River watershed. Bridgeport has installed GIS citywide. Additional progress is desired for Island Brook and Ox Brook as noted above.	See action #53 for Island Brook/Ox Brook.
57	Replace or maintain the culverts along the Ox Brook to adequately handle the flow of water.	Progress has been hindered by lack of funding. Carry forward with the first phase.	See action #53 for Island Brook/Ox Brook.
58	Increase, and in some cases introduce, bank protection along the Yellow Mill Channel.	Progress has varied along the Yellow Mill Channel. Privately-owned sections have been addressed (i.e., at the Bass Pro Shop property). City-owned sections have been evaluated (i.e. in the Regional Framework for Coastal Resilience). Additional progress is desired.	Pursue funds for design of a demonstration project for green coastal bank protection opportunities along the Yellow Mill Channel.
59	Consider elevating Waterview Avenue, especially in connection with redevelopment projects.	The southern portion of the road was elevated for the Steel Point project. The northern section will not be elevated.	Not Applicable
60	Allow Barnum Boulevard to be submerged during a storm surge.	The currently plan for this road is to allow is to be submerged during coastal flood events that exceed the road elevation.	Not Applicable
61	Consider elevating the road and parking lots in the Cedar Creek area, especially in connection with redevelopment projects.	Recent planning efforts on both sides of Cedar Creek have been predicated on an assumption that roads will not be elevated. Property-specific options and limited use of flood protection systems will be considered on a case-by-case basis.	Not Applicable
62	Elevate low-lying roads, including the south end of Seaview Avenue, Waterview Avenue, Seabright Avenue and Gilman Street.	At the present time, the only roads contemplated for elevation are those identified as such in the "Resilient Bridgeport" project area. The City will continue to look for opportunities to elevate roads, but none are proposed at this time.	Not Applicable
63	Raise the electrical boxes at Seaside Park in areas vulnerable to flooding. Some of this has occurred following Super Storm Sandy.	Progress has been made but this is not yet complete. Carry forward.	Raise the remaining unmitigated electrical boxes at Seaside Park in areas vulnerable to flooding.

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
64	Protect the banks along Cedar Creek and upstream of Black Rock Harbor with construction of a hurricane barrier, bulkheads and other hardscape and elevated streets and parking lots in vicinity of or adjacent to Cedar Creek.	Potential hurricane barrier locations for Cedar Creek were initially identified in the Rebuild By Design competition, but they are not part of the project at this time. Lower West End planning (completed in 2019) was predicated on an assumption that a hurricane barrier was unlikely to be feasible, and therefore the focus for this area is to attract businesses that can tolerate flooding and businesses that will address the bank of Cedar Creek.	See action #27 above.
65	Upgrade the Bridgeport Harbor Seawall.	Progress has been impeded by lack of funding. This very costly project would need significant design and permitting efforts. The action is carried forward with a revision.	Conduct a feasibility study for increasing the heights of the seawalls.
66	Upgrade improvements along Ash Creek/Rooster River from a 50-year storm to 100-year storm.	The approach for flood mitigation in the Rooster River/Ash Creek area has been more recently focused on reducing flood flows by identifying areas for flood storage (Town of Fairfield completed a study in 2019) and installing GI in Bridgeport. This action is not needed.	Not Applicable
67	Encourage the owner of the rail line to raise the grade of the railroad.	CTDOT owns this land and Metro North is the operator. Over the long-term, DOT involvement will be needed. An action is not needed for the five-year timeframe of this edition of the hazard mitigation plan.	Not Applicable
68	Replace the Charcoal Pond dam (private).	Because this dam is privately-owned, the City cannot make progress in this matter. CT DEEP involvement will address the dam.	Not Applicable
69	Realign Bruce Brook and soften the bends from Sage Street to Bowe Street.	The Town of Stratford is continuing to make progress with Bruce Brook. The Bruce Brook CLOMR at Barnum Avenue is still underway. Action will be carried forward with revision.	Continue to work with the Town of Stratford to complete the Bruce Brook improvements near Barnum Avenue.
70	Create dike and pumping system for low-lying areas along Ash Creek/Rooster River.	This action is no longer being pursued due to potential costs vs. benefits. Other flood mitigation efforts will be pursued if needed.	Not Applicable
71	Continue to monitor the replaced dam at Lake Forest.	Ongoing; action not needed.	Not Applicable
72	Install a hurricane barrier to connect Black Rock to Seaside Park to minimize storm surge and act as a flood control gate.	Potential hurricane barrier locations for Cedar Creek were initially identified in the Rebuild By Design competition, but they are not part of the project at this time. Lower West End planning (completed in 2019) was predicated on an assumption that a hurricane barrier was unlikely to be feasible, and therefore the focus for this area is to attract businesses that can tolerate flooding and businesses that will address the bank of Cedar Creek. Seaside Park improvements on the southeast side of Cedar Creek will continue to be made resilient to coastal flood events.	See action #27 above.
73	Reconstruct New Haven rail line bridges over city streets to prevent flooding.	Over the long-term, DOT involvement will be needed. As part of Barnum Station project, the City will be addressing drainage/flooding at Seaview Avenue. This project is in early design phases and the responsible department is OPED/PF.	Execute the design to address drainage and flooding at Seaview Avenue where it crosses the railroad line.
	Natural Systems Protection		
74	Preserve open space and wetlands in high risk areas.	Ongoing; action not needed.	Not Applicable
75	Utilize GIS to map open space, wetlands and ecologically valuable areas.	Ongoing; action not needed.	Not Applicable
76	Protect and restore natural buffers, natural systems on the watershed and full coastline scales	Progress has been slow but continues. The Regional Framework for Coastal Resilience identified potential coastal green infrastructure and living shoreline sites. Individual sites have been partly addressed (i.e. Johnson Creek design for a living shoreline). Additional progress is desired.	Pursue funds for design of a demonstration project for green coastal enhancement and restoration opportunities (similar to action #58 above).

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
77	Acquire open space in high risk areas. Identify and seek further conservation through acquisition of marsh "Advancement Zones" and riparian corridor restoration projects throughout the City.	Progress has been impeded by lack of staff resources. Carry Forward with revisions, but defer the marsh advancement zone portion of the action to action #78 below.	Identify open space to acquire in high risk areas.
78	Implement the recommendations from the Pequonnock River Watershed Plan to improve water quality and alleviate flooding.	Progress has been impeded by lack of funding. Carry Forward with revision.	Select one recommendation from the Pequonnock River Watershed Plan to improve water quality and alleviate flooding, and secure funding.
79	Implement the recommendations from the Rooster River Watershed Plan to improve water quality and alleviate flooding.	Progress has been impeded by lack of funding. Carry Forward with revision.	Select one recommendation from the Rooster River Watershed Plan to improve water quality and alleviate flooding, and secure funding.
80	Plan for beach nourishment at Seaside Park.	This beach is re-nourished as needed. The action is not needed.	Not Applicable
81	Implement dune restoration projects.	Dune restoration projects will be identified as needed in future editions of the hazard mitigation plan.	Not Applicable
82	Promote conservation and management of open spaces and wetlands within sea level rise areas. Restore and protect natural systems in Bridgeport including replanting the Remington Woods riparian zone, Pleasure Beach and along Ash Creek.	Progress has been made in this area as described above. Several mitigation actions will address this.	See actions #58, 76, 77, and 80.
83	Identify parcels within the marsh advancement zone that could be acquired, including properties along Cedar Creek that have low potential for redevelopment.	Progress has been impeded by lack of staffing. Carry Forward with revision.	Identify parcels within potential marsh advancement zones that may be acquired, including properties along Cedar Creek that have low potential for redevelopment.
84	Introduce land forms to minimize vulnerability to storm surge in the South End community.	The South End neighborhood is being addressed by the NDRC funding and "Resilient Bridgeport" project.	Complete the components of the "Resilient Bridgeport" project execution that are scheduled for 2019-2024.
85	Mitigate erosion from flooding at Ash Creek.	Progress has been impeded by lack of staffing and funding. Carry Forward with revision.	Identify potential areas of erosion along Ash Creek that may require mitigation, and secure funding for feasibility studies.
	Education & Awareness		
86	Implement outreach programs to educate citizens regarding flood management ordinances, flood insurance programs, and other flood relevant issues, including creditable activities in the CRS program and GIS.	Progress has been hindered due to lack of staffing resources. If the City enters the CRS program, these actions may enhance the City's rating. Carry forward.	Implement outreach programs to educate citizens regarding flood management ordinances, flood insurance programs, and other flood relevant issues, including creditable activities in the CRS program and GIS.
87	Increase community awareness and preparedness through education and outreach via the religious community, public libraries and higher education and implement neighborhood specific emergency and communications plans.	Progress has been hindered due to lack of staffing resources. If the City enters the CRS program, these actions may enhance the City's rating. Carry forward.	Increase community awareness and preparedness through education and outreach via the religious community, public libraries and higher education and implement neighborhood specific emergency and communications plans.
88	Finalize specific neighborhood plans for emergency management and communications and implement plan provisions. Each plan should be translated into the top five languages spoken in the City of Bridgeport. The 2013 Clean Air Cool Planet fellow developed draft versions of Neighborhood Plans for the 3 coastal neighborhoods.	Progress has been hindered due to lack of staffing resources. If the City enters the CRS program, these actions may enhance the City's rating. Carry forward.	Finalize specific neighborhood plans for emergency management and communications and implement plan provisions. Each plan should be translated into the top five languages spoken in the City of Bridgeport.
89	Increase education and communications on response procedures for residents of high density public housing areas, especially those located in the coastal area.	Progress has been hindered due to lack of staffing resources. If the City enters the CRS program, these actions may enhance the City's rating. Carry forward.	Increase education and communications on response procedures for residents of high density public housing areas, especially those located in the coastal area.
90	Assess/augment local areas of the public refuge system across the City and ensure residents are aware of uses and procedures during emergencies.	Progress has been hindered due to lack of staffing resources. If the City enters the CRS program, these actions may enhance the City's rating. Carry forward.	Assess/augment local areas of the public refuge system across the City and ensure residents are aware of uses and procedures during emergencies.
91	Encourage homeowners to purchase flood insurance.	Progress has been hindered due to lack of staffing resources. If the City enters the CRS program, these actions may enhance the City's rating. Carry forward.	Encourage homeowners to purchase flood insurance.
92	Proactively reduce the disbursement of toxic substances from flooded homes and facilities.	Progress has been hindered due to lack of staffing resources. Carry forward with revision.	Help reduce the disbursement of toxic substances from flooded homes and facilities by conducting outreach regarding this topic.
93	Strengthen existing communication systems with new technology to ensure widespread and rapid alert and continue implementing a Reverse 9-1-1 system to alert residents in the case of impending floods	This is mostly complete and established practice.	Not Applicable

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	Emergency Services		
94	Continue to follow the State Debris Management Plans and FEMA Regulations regarding coordinated post-disaster clean-up and contamination remediation efforts.	This is established practice and is a City capability.	Not Applicable
95	In high density and public housing developments, address evacuation routes, communication, transportation needs and the age of basement utilities.	Progress has been hindered due to lack of staffing resources. Carry forward with revision.	In high density and public housing developments, post the evacuation routes, enhance communication, and evaluate additional transportation needs.
96	Additional snow removal equipment, such as back hoes and plows is needed for severe winter storms, such as Nemo.	Additional equipment is acquired as needed and in accordance with the City's capital planning.	Not Applicable
97	Reassess current capacity and needs of sheltering, cooling and medical network across City as well as adjoining municipalities in the Greater Bridgeport Region. The City has pre-identified mass care shelters, cooling/warming centers, and are discussing a regional approach to mass care sheltering.	The City has identified mass care shelters and cooling/warming centers, and is discussing a regional approach to mass care sheltering. Additional progress is desired.	Once during the timeframe of this plan update, assess capacities and needs of sheltering, cooling, and medical network across City as well as adjoining municipalities in the Greater Bridgeport Region.
98	Install a warning siren system in areas vulnerable to inland and coastal flooding to alert residents to evacuate.	Progress has been hindered by lack of funding. Carry forward.	Secure funding to install a warning siren system in areas vulnerable to inland and coastal flooding to alert residents to evacuate.
99	Continue to increase the effectiveness of the current emergency communication system and infrastructure with residents (i.e., communication trees) and commuters. Reassess effectiveness and shortfalls of emergency systems and infrastructure after major events.	This is established practice and is a City capability.	Not Applicable
100	Implement a system for the GPS tracking of trucks used for snow removal and cleanup.	Complete	Not Applicable
101	In coastal and low-lying areas, raise/repair bridges for evacuation routes, viaducts for pumping stations and back up generators.	These items have been scoped by the Public Facilities and Emergency Management departments to understand costs, prioritization and phasing. Coordination with state agencies may be necessary. Additional progress is desired for the bridges. Viaducts and generators are addressed elsewhere in this table.	Pursue funding to complete a feasibility study for raising bridges and their connecting roads in one specific pilot area.
102	Upgrade Emergency Operations Center equipment to include a complete camera board for Situational Awareness and display board for public facilities equipment tracking.	Progress has been hindered by lack of funding. Carry forward.	Secure funding to upgrade Emergency Operations Center equipment to include a complete camera board for situational awareness and display board for public facilities equipment tracking.
103	Update and integrate new technology across multiple platforms within the City, State and Federal storm response activities and provide additional training to staff.	Complete	Not Applicable
104	Install a camera system to more thoroughly understand storm surge and to enhance evacuation.	Progress has been hindered by lack of funding. Carry forward.	Secure funding to install a camera system to more thoroughly understand storm surge and to enhance evacuation.
105	Develop an annex to the All Hazards Emergency Operations Plan to specify police, fire and public facilities protocols for varying levels of snowfall. The City conducted a study of management operations following the 2013 Nemo Snowstorm and is working to increase mapping and emergency response protocols.	Complete	Not Applicable

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	Prevention		
1	Develop a tree management plan to prioritize actions and tree removal due to the white pine infestation.	Ongoing. Priority lists are maintained for trees. The more significant challenge is Emerald Ash Borer. Action can be removed in favor of #2 below.	Not Applicable
2	Implement a routine tree maintenance and inspection program and remove hazardous trees and branches.	Carry forward with revision. Priority lists are maintained for trees. The more significant challenge is Emerald Ash Borer.	Increase funding for the routine tree maintenance and inspection program and remove a greater number of hazardous trees and branches each year.
	Property Protection/Structural		
3	Improve the culverts under Morehouse Road that carry Morehouse Brook and Cricker Brook.	Both culvert replacements have been completed as of fall 2018.	Not Applicable
4	Consider elevating Morehouse Road in the vicinity of its crossing over Morehouse Brook at Morning Glory Drive	This has been considered and the Town does not believe it is necessary given the other work that has been conducted.	Not Applicable
5	Erect signs and install barricades at Silver Hill Road and at Wells Hill Road where they cross the Aspetuck River to prevent access during floods.	Ongoing capability.	Not Applicable
6	Erect signs and install barricades at Beers Road where it crosses the East Branch of Cricker Brook to prevent access during floods.	The culvert capacity has been doubled at this location and the action is no longer needed.	Not Applicable
7	Maintain the Emergency Telecom/Center Road area to keep clear of debris and vegetation.	Ongoing capability.	Not Applicable
8	Consider elevating Beers Road where it crosses the East Branch of Cricker Brook.	The culvert capacity has been doubled at this location and the action is no longer needed.	Not Applicable
	Public Education & Awareness		
9	Educate the dispersed elderly population on responses during disasters.	Ongoing capability. The Senior Center is used to distribute information and ensure that these efforts are reaching as many people as possible.	Not Applicable
	Emergency Services		
10	Improve warning of residents that would be isolated by flooding along Morehouse Brook at Pond Road	Complete. The Town utilizes a Reverse 911 system. This area was handled with direct outreach during the September 2018 flood event.	Not Applicable
11	Improve warning of residents that would be isolated by flooding along Morehouse Brook at Dogwood Drive	Complete. The Town utilizes a Reverse 911 system. This area was handled with direct outreach during the September 2018 flood event.	Not Applicable
12	Improve warning of residents that may become isolated by downed trees during an extreme weather event.	Complete. The Town utilizes a Reverse 911 system. Furthermore, this would be accomplished by direct outreach such as telephone calls.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
	Prevention		
1	Enroll Fairfield in FEMA's Community Rating System (CRS) program to improve resilience and lower flood insurance premiums for residents and private entities in the National Flood Insurance Program.	Complete	Not Applicable
2	Develop a tree cutting and maintenance plan.	Complete	Not Applicable
3	Require underground utilities on new streets.	Complete	Not Applicable
4	Consider adopting standards to require two or more feet of freeboard when developing or redeveloping structures in tidally influenced floodplains.	One foot of freeboard is required per Zoning Regulations and is consistent with the State Building Code. Action can be retired.	Not Applicable
5	Integrate hazard mitigation plans and policies into town building codes, planning and zoning regulations, and the Town's Plan of Conservation and Development.	Complete. The POCD is being updated for adoption in 2020 and the Town follows the State Building Code, which was amended in 2018 with important flood hazard mitigation components.	Not Applicable
6	Develop a comprehensive protective infrastructure analysis of the Town's coast and waterways that incorporates natural infrastructure (salt marshes, beaches, dunes and floodplains) and existing engineered infrastructure.	Significant progress has been made including the Flood and Erosion Control Board's Flood Mitigation Plan, the Regional Framework for Coastal Resilience (resulting in a conceptual design for a dune ridge in the area south of Penfield Beach), and the Riverside Drive/Ash Creek flood protection system plan. In addition, the U.S. Army Corps of Engineers continues to evaluate flood protection for Fairfield. Future actions may include pursuing individual findings and conceptual designs.	Not Applicable
7	Reassess the viability and cost-benefit of direct future capital investment in the coastal floodplain as an immediate and longer-term, proactive risk reduction action.	As noted above for #6, significant progress has been made. The Town evaluates individual segments of green infrastructure and flood protection as funds and time allow.	Not Applicable
8	Consider expanding town-wide energy efficiency policies and building codes with the goal of substantially reducing Fairfield's carbon footprint.	The Clean Energy Task Force was established and meets on a monthly basis to identify and pursue actions.	Not Applicable
9	Increase design standards for tidal flood control structures and improve inspection and maintenance requirements to avoid failures during future coastal storm events.	The Town has proceeded with design of two tide gate system replacements, taking future conditions into consideration as well as manual and automatic controls to ensure that they remain operational.	Secure funds and proceed with construction of the Riverside Drive tide gate system.
10	Assess the current conditions and potential impact from catastrophic dam failure; assess previous inundation contingency plans.	Complete. Significant progress has been made subsequent to the State dam safety regulations of 2014-2015. Dam failure EAPs are available for all Class B and C dams, and these include detailed inundation mapping and procedures.	Ensure that dam failure EAPs are on file at the Town Hall and with the Emergency Management Department.
11	Develop a better debris management plan with designated lead for flood control structures before and after extreme events, particularly for the 28 town-owned and three state-owned tide gates in Fairfield.	Complete	Not Applicable
12	Modify and integrate building codes, land use policies, and zoning regulations to minimize the exposure to sea level rise, storm surge, and inland flooding of existing and future development, infrastructure, critical facilities, and natural resources.	Complete. The POCD is being updated for adoption in 2020 and the Town follows the State Building Code, which was amended in 2018 with important flood hazard mitigation components. Furthermore, Public Act 18-82 codified additional resilience measures for State-funded critical infrastructure and facilities.	Not Applicable
13	Assess the safety and viability of existing water and sewer infrastructure in the coastal flood zone.	Progress has been made. Most recently, the dike around the WWTP has been addressed. Water system infrastructure is owned by Aquarion Water Company and not addressed by the Town.	Not Applicable
14	Prepare an action plan to reduce the susceptibility of the low lying Fairfield Beach area to storm surges from Long Island Sound. Specifically the Plan should address the feasibility of installing a "hurricane barrier" and a storm water pump station.	Significant progress has been made including the Riverside Drive/Ash Creek flood protection system plan which addresses how storm surge affects this area; and the South Benson Road pumping station which has been designed and would pump stormwater and coastal waters from the area north of Fairfield Beach. Future phases will include securing funds for construction of the pumping station.	Break into two actions: (1) Advance the South Benson Road pumping station to final design and construction. (2) Pursue an executable phase of the Riverside Drive/Ash Creek flood protection system by focusing on design of a segment that affects only Town-owned land.

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15	Reassess long-term viability of the wastewater treatment facility and determine the feasibility of hardening and flood proofing the existing structure versus siting a new facility in a lower risk area.	The reassessment has been completed and the Town elected to continue supporting the current location. The WWTP dike project is underway with completion in 2019. A microgrid has been proposed for the WWTP, animal shelter, and other municipal buildings in the vicinity.	Secure funds for a microgrid at the WWTP to include adjacent and nearby municipal buildings.
16	Reassess the capacity of existing flood control structures (berms/dikes, tide gates, culverts, dams, reservoirs) in light of accelerating rates of sea level rise and likelihood of more significant precipitation events.	Consideration of sea level rise and the former Federal Flood Risk Management Standard was a key component of the Riverside Drive/Ash Creek study and conceptual plan. The Town has the capability to use this approach on future evaluations.	Not Applicable
17	Factor sea level rise into all critical infrastructure, development plans, and public amenity improvements and consider planning for a worse-case scenario based on a 0.2% storm event or flood or a Category-3 Hurricane.	Public Act 18-82 has addressed this and codified considerations for State-funded critical actions and critical facilities. The Town can use the same approach for Town-funded projects. Even prior to Public Act 18-82, the Town considered sea level rise in the WWTP dike project and the Riverside Drive/Ash Creek study and plan.	Not Applicable
	Property Protection		
18	Strategically consider the acquisition of chronically flood prone and repetitive loss properties, as well as those properties that can assist in the implementation of flood drainage improvements to protect against storm surge or to allow flood waters to recede after a flood event.	Some progress has been made with potential property acquisitions using FEMA grants and private funds. Additional progress will likely be made as a result of CRS participation, which will require and enable annual outreach to properties in RL areas.	Not Applicable
19	Address equipment in library basements to prepare for when flooding occurs.	This project has been funded and is pending. Carry forward.	Address equipment in library basements to prepare for when flooding occurs.
20	Encourage home elevations for properties below the base flood elevation to comply with or exceed the standards of the National Flood Insurance Program.	Significant progress has been made. Over 50 home elevations were funded by HMGP, and numerous elevations have been pursued by property owners using their own funds. The Town has demonstrated capacity to administer these projects and the action does not need to be carried forward.	Not Applicable
21	Promote elevating private properties in the flood hazard zones to the required base flood elevations plus a 2-to-3 foot freeboard above the base levels.	The Town has adopted one foot of freeboard to be consistent with the State Building Code. FEMA-funded elevations will be performed with additional freeboard as required by the State. The intent of this action has been met.	Not Applicable
22	Ensure that the design criteria for future structures in the coastal floodplain include a determination of the probable factors of obsolescence during the structure's lifespan so that the design-service-life and value of a structure approximate the time when sea level rise or other factors would render the structure obsolete.	Progress has been made through several efforts. A policy discussion was included in the POCD Update. State-funded or assisted projects will be subject to Public Act 18-82 which codified standards for resilient critical activities and actions.	Not Applicable
	Structural		
23	Install flood protection and harden existing berms to protect critical municipal facilities, including the wastewater treatment plant and pump station.	Complete for the WWTP. Other berms in the area of the WWTP such as the Pine Creek dike system are being studied by the Army Corps of Engineers.	Not Applicable
24	Raise the berm around the wastewater treatment plant.	Complete	Not Applicable
25	Install storm water pump stations and upgrade storm systems to keep up with rising sea levels, especially in the area bounded by Old Post Road, Fairfield Beach Road, Reef Road and South Benson Road.	As noted above for #14, design of the South Benson Road pumping station has been completed. Additional progress is desired. Carry forward with revision.	Advance the South Benson Road pumping station to final design and construction.
26	Increase the height of the dike along Pine Creek by 2' to 3' to provide additional protection for several hundred homes, the sanitary sewer pump station, the municipal athletic complex, and Town roads. This project will also reduce potential flooding from a FEMA-defined 1% storm.	The Pine Creek dike system is being studied by the Army Corps of Engineers.	Coordinate with the Army Corps of Engineers to determine a feasible option for future improvements to the dike system.
27	Consider increasing beach nourishment.	The Town completed an assessment of five municipal beaches and conceptual design for developing engineered beaches.	Secure funds for beach nourishment in accordance with the engineered beach study and design.

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28	Improve and elevate tide gates and dikes to keep up with rising sea levels.	As noted above for #9, the Town has proceeded with design of two tide gate system replacements, taking future conditions into consideration as well as manual and automatic controls to ensure that they remain operational. Regarding dikes, the Town plans to ensure that new flood protection systems (if constructed) will take sea level rise into account.	See #9: Secure funds and proceed with construction of the Riverside Drive tide gate system. See #26: Coordinate with the Army Corps of Engineers to determine a feasible option for future improvements to the dike system. See #14: Pursue an executable phase of the Riverside Drive/Ash Creek flood protection system by focusing on design of a segment that affects only Town-owned land.
29	Address the continued periodic tidal flooding of streets and properties in the coastal flood plain by making concerted efforts to design, construct, and maintain flood relief and drainage structures (e.g., dikes, tide gates, detention and natural marsh basins, storm sewers and natural channels) to ensure the discharge of flood waters during the receding tidal cycles immediately following the flood event.	This action is focused on ensuring that rapid draining of flooded areas will occur after flooding. Significant progress has been made relative to new tide gates and the South Benson Road pumping station as noted above. If additional projects are identified in the next five years, the Town will incorporate them into the next edition of this plan.	Refer to above carried forward and revised actions
30	Continue to maintain flood gates on the McLevy property.	This is an ongoing capability. The action can be removed.	Not Applicable
31	Continue to keep debris clear of drainage systems; plan for improvement/implementing routine management.	This is an ongoing capability. The action can be removed.	Not Applicable
32	Waterproof manhole covers.	Progress has been made and this action has been incorporated as a Public Works capability. The action can be removed.	Not Applicable
33	Continue to perform culvert maintenance and debris removal in the Rooster River, Ash Creek/Royal Avenue and Camden Street areas.	This is an ongoing capability. The action can be removed.	Not Applicable
34	Relocate the sanitary sewer transmission truck line from the flood prone Rooster River and Ash Creek corridor.	This project is underway. Carry forward for completion.	Relocate the sanitary sewer transmission truck lines from areas of significant flood risk.
35	Encourage green development and rehabilitation of existing impervious structures to reduce runoff generated in urbanized areas.	The Town has made significant progress through ongoing reviews of development proposals and completion of the Downtown Green Infrastructure Study and Conceptual Plan in 2018. Carry forward with revision to ensure progress resulting from the study and plan.	Secure funds for execution of a portion of the Downtown Green Infrastructure Study and Conceptual Plan.
36	Explore building modifications, use of pervious road materials and green infrastructure designs to improve on-site storm water retention and reduce storm water inflows into Fairfield's wastewater treatment system.	As noted immediately above, the Town has made significant progress through ongoing reviews of development proposals and completion of the Downtown Green Infrastructure Study and Conceptual Plan in 2018. Carry forward with revision to ensure progress resulting from the study and plan	Secure funds for execution of a portion of the Downtown Green Infrastructure Study and Conceptual Plan.
37	Prior to a storm, lower the volume of water in the wastewater treatment plant to increase capacity.	This is an ongoing capability. The action can be removed.	Not Applicable
38	Design culverts for a 50-year or 100-year storm in the Rooster River, Ash Creek/Royal Avenue and Camden Street areas.	Study and design has been completed for some areas. Carry forward with revision.	Allocate funds for replacements of culverts to alleviate flooding in the Rooster River, Royal Avenue, and Camden Street areas.
39	Consider improving the culvert at Merwins Lane.	Additional progress is desired. Carry forward.	Determine whether the culvert at Merwins Lane can be replaced to increase capacity.
40	Evaluate methods to increase storage or improve drainage to alleviate flooding downstream of the Fairchild Wheeler golf course.	A flood detention/storage study was completed in 2019 to augment previous studies in the Rooster River watershed. Carry forward with revision.	Identify the next steps to set aside land for detention/watershed storage in the Rooster River watershed.
41	Install on site detention, relay new storm lines, incorporate bioswales and/or rain gardens in developed areas to help reduce or redirect runoff that contributes to flooding. For example, in the Fairfield Center and Railroad parking lot.	As noted above for #35, the Town has made significant progress through ongoing reviews of development proposals and completion of the Downtown Green Infrastructure Study and Conceptual Plan in 2018. Carry forward with revision to ensure progress resulting from the study and plan.	Secure funds for execution of a portion of the Downtown Green Infrastructure Study and Conceptual Plan.
42	Continue to maintain/improve critical culverts and associated outlets/swales to remove debris, especially in advance of storms.	This is an ongoing capability. The action can be removed.	Not Applicable

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43	Elevate Fairfield Beach Road as needed to keep up with rising sea levels.	Some progress has been made in the past, with two sections elevated, but significant buy-in from property owners will be needed for future efforts. The action will be carried forward with revision.	Conduct a feasibility study for elevating Fairfield Beach Road, including public outreach and incorporation of public input.
44	Extend the dike system along the shoreline from the Riverside Drive and Post Road area to Sasco Hill. Obtain easements to extend and complete the system in areas where it does not presently exist.	See #6 above. This action is essentially the same, but calls for a dike system rather than alternate approaches. Significant progress has been made including the Flood and Erosion Control Board's Flood Mitigation Plan, the Regional Framework for Coastal Resilience (resulting in a conceptual design for a dune ridge in the area south of Penfield Beach), and the Riverside Drive/Ash Creek flood protection system plan. In addition, the U.S. Army Corps of Engineers continues to evaluate flood protection for Fairfield. Future actions may include pursuing individual findings and conceptual designs.	Not Applicable
45	Extend the dike in Southport along Harbor Road in the AE flood zone.	Additional progress is desired. Carry forward.	Conduct a study to determine the feasibility of extending the dike in Southport along Harbor Road.
46	Improve the drainage system in the Downtown area, along Sanford and Reef Roads	The Town has determined that modifying the drainage systems on these roads may not be feasible. In lieu of modifying drainage systems, the Town will be pursuing green infrastructure in the downtown area that drains to these systems as noted above.	Not Applicable
47	Incorporate drainage improvements and best management practices to the Grasmere Brook watershed to reduce flooding.	?	?
48	Consider acquisition of properties where it is prudent and feasible to extend and construct the dike system.	This action cannot be achieved until the initial steps toward feasibility studies and designs are completed. Property acquisitions would be beyond the timeframe of this plan. The action should be removed in favor of the other actions listed above.	Not Applicable
49	Install pump stations to address flooding in the underpasses of New Haven rail line bridges.	This action will require ongoing coordination with the owner of the railroad. Carry forward with revision.	Determine the feasibility of installing pumping stations beneath the railroad underpasses to remove floodwaters.
50	Expand and repair flood gates along the Mill River.	?	?
51	Consider increasing the approved bulkhead elevation along Pine Creek to account for sea level rise.	Property owners along the bulkhead are opposed. The action can be removed.	Not Applicable
52	Consider elevating all roads within the AE and VE flood zones, including Fairfield Beach Road and surrounding neighborhoods.	Refer to #43 above. Some progress has been made in the past, but significant buy-in from property owners will be needed for future efforts. The action will be retired in favor of the action listed above for Fairfield Beach Road.	Not Applicable
53	Implement a dike system in the Rooster River, Holland Street, Ash Creek/Royal Avenue and Camden Street areas.	A flood protection system is not believed feasible due to the limited space available. Other options will be pursued here.	Not Applicable
54	Consider elevating Merwins Lane. This would require the abutting property owner's permission and permits.	This action is no longer desired as a method of addressing flood risk. The action can be dropped.	Not Applicable
55	Reconstruct New Haven rail line bridges over town streets to prevent flooding, including at North Pine Creek Road, Mill Plain Road, and Round Hill Road.	This action will require coordination with the owner of the railroad, Metro North, and Amtrak beyond the timeframe of this plan. Future editions of the plan will address this.	Not Applicable
56	Reconstruct and expand the culvert conveying Ash Creek and Rooster River under I-95 to reduce flooding in the Camden Street and Royal Avenue neighborhoods and to meet a 1% storm event. Include other local bridges on Rooster River in this project, so as to increase hydraulic capacity and reduce flooding.	A flood detention/storage study was completed in 2019 to augment previous studies in the Rooster River watershed. The Town plans to pursue these types of flood mitigation methods rather than upsizing the I-95 culverts.	Not Applicable

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57	Improve and install flood control outlet pipes and tide gates along Pine Creek and Ash Creek to increase the removal of flood waters.	Complete, although additional projects are planned as noted above.	Not Applicable
	Natural Systems Protection		
58	Incorporate improvements listed in the Rooster River Watershed based Plan.	Some progress has been made with actions listed in the watershed management plan. Revise for more specificity.	Select one action from the Rooster River Watershed Management Plan and secure funding for its execution. Focus on an action that has multiple hazard mitigation benefits.
59	Implement a comprehensive tree health, maintenance, and removal plan to reduce the number of downed trees and limbs during a storm event.	Complete	Not Applicable
60	Update the Town's Plan of Conservation and Development to include riparian corridor restoration as well as acquisitions of open space and marsh advancement zones for storm surge defense and floodwater storage.	The update is underway with a planned adoption in 2020. This is being incorporated.	Not Applicable
61	Protect and restore natural systems (salt marshes, beaches, dunes, floodplains/riparian areas, forested lands) on both watershed and full coastline scales, as well as diked and isolated wetlands to better withstand and absorb storm surges and flooding.	Significant progress has been made. For example, tidal wetlands along Reef Road were restored in 2017. The Town participated in the Regional Framework for Coastal Resilience (2015-2017) to identify specific green coastal infrastructure opportunities such as living shorelines and beach/dune creation and restoration. Additional progress is desired.	Conduct outreach and feasibility study for the conceptual dune ridge design that addresses the Penfield/Shoal Point area.
62	Renourish engineered beaches, Town and private beaches after storm events, including Fairfield Beach, Jennings Beach, Sasco Hill Beach and Southport Beach.	As noted above for #27, the Town completed an assessment of five municipal beaches and conceptual design for developing engineered beaches.	Secure funds for beach nourishment in accordance with the engineered beach study and design.
63	Restore upland storm water discharges in Pine Creek to their historical locations around the marsh and thereby utilize the large acre-foot-volume of storage capacity of the diked marshes with tide gates closed during storms to detain floodwaters during a high tide and heavy rain.	?	?
	Education & Awareness		
64	Train and equip neighborhood storm response teams (i.e., CERT), especially in neighborhoods that have in the past been cut off from emergency services by floodwaters or downed trees, as well as to assist lower-income populations.	Progress has been made and the CERT is active. Refer to https://www.fairfieldct.org/content/15561/12843/17868.aspx. Additional progress is desired. CRS participation will encourage progress with this action. Carry forward.	Train and equip neighborhood storm response teams (i.e., CERT), especially in neighborhoods that have in the past been cut off from emergency services by floodwaters or downed trees, as well as to assist lower-income populations.
65	Ensure that residents are aware of the location and operations of emergency shelters, warming/cooling centers, and charging stations and establish procedures for their use via routine notifications	This is an ongoing capability. The action can be removed.	Not Applicable
66	Communicate with residents about the importance of removing debris in marshes after storms.	This is an ongoing capability. The action can be removed.	Not Applicable
67	Develop tree planting guidelines.	Some progress has been made. Carry forward with revision.	Develop tree planting guidelines that are aligned with hazard mitigation goals.
68	Improve warning of residents that may become isolated by downed trees during an extreme weather event.	This is an ongoing capability. The action can be removed.	Not Applicable
69	Utilize GIS to inform responders and residents during a severe weather event, or in the event of an evacuation.	This is an ongoing capability. The action can be removed.	Not Applicable
70	Erect signs and install barricades on Merwins Lane to encourage residents to take alternate routes during flooding events.	Conducted on an as-needed basis.	Not Applicable
	Emergency Services		
71	Address road access by prioritizing snow clearing during storms, providing water pump-outs during flooding and identifying alternate routes to closed-off areas.	This is an ongoing capability. The action can be removed.	Not Applicable
72	Reassess needs and capacity for shelters, warming/cooling centers, and charging stations.	This is regularly conducted, and is an ongoing capability. The action can be removed.	Not Applicable
73	Continue use of pre-disaster communications (code red), social media and EOC communications.	This is an ongoing capability. The action can be removed.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
74	Use vehicles (school buses, etc.) to transport vulnerable, senior and disabled populations to shelters.	The Town has an agreement with the Senior Center for bus transport, and acquired an Army transport truck for evacuations. The action is considered complete and can be removed.	Not Applicable
75	Protect/ flood-proof town services and data. Develop a plan for stockpiling food, water and gas in case of emergencies.	This is an ongoing capability. The action can be removed.	Not Applicable
76	Identify demographics so as to plan to prevent shut-ins during emergency events.	This is regularly conducted, and is an ongoing capability. The action can be removed.	Not Applicable
77	Clarify relationship with UI for downed power lines.	Significant progress has been made working with UI. This action can be removed.	Not Applicable
78	Identify vulnerable neighborhood egress chokepoints and identify alternate access routes to neighborhoods and facilities when those chokepoints are not passable; harden and flood proof these chokepoints as necessary to ensure they remain open.	The Town has identified these potential access problems and focuses on notifications and evacuations to address sections that cannot be kept open. Future projects include some road elevations as noted above (for Fairfield Beach Road). Turney Road is another possible corridor of interest. Elevating Turney Road was partly addressed during the public engagement associated with the Riverside Drive/Ash Creek flood protection study and conceptual plan.	Conduct a feasibility study for elevating Turney Road, including public outreach and incorporation of public input.
79	Reinstitute the Fairfield University and Sacred Heart University MOU with EOC.	Agreements are in place and this is an ongoing capability. The action can be removed.	Not Applicable
80	Build redundancies into EOC/EEC emergency communications systems and networks to ensure continuity of communications between town emergency services and residents. Utilize existing community networks (churches, etc.) as supplements to "technological" methods of communication.	This is an ongoing capability. The action can be removed.	Not Applicable
81	Provide and install generators to senior housing complexes and other complexes that serve vulnerable populations to allow them to shelter in place.	Progress has been hindered by lack of funding. Carry forward.	Provide and install generators to senior housing complexes and other complexes that serve vulnerable populations to allow them to shelter in place.
82	Provide adequate generators to evacuation facilities (Ludlowe High School, Warde High School and Ludlowe Middle School).	Complete	Not Applicable
83	Ensure Emergency Operation Plans of private dam facilities are adequate, including Aquarion Water Company facilities at Aspetuck Reservoir and Hemlock Reservoir.	The State's revisions to dam safety regulations in 2014 has resulted in new Emergency Action Plans (EAPs) for Class B and C dams. Complete.	Ensure that the current EAPs are filed with pertinent Town departments.
84	Enter into a mutual aid agreement with long term care facilities to share generators during an evacuation.	Complete	Not Applicable
85	Provide water/ice/showers for owners of private systems without power.	This is an ongoing capability. The action can be removed.	Not Applicable
86	Ensure the ability of cell phone towers to generate power; talk to cell companies about generation/ disaster recovery plans.	Significant progress has been made in tower coverage and redundancy.	Not Applicable
87	Consider alternate locations for ECC and EOC during weather events	Complete; Fairfield University is an alternate location.	Not Applicable
88	Expand the energy reliability of critical Town facilities, including the use of distributed generation and micro-grids. Relocate IT equipment out of municipal building basements in low lying areas.	Complete. A microgrid has been installed and IT equipment relocation is being executed. The microgrid can provide electricity for critical services at the Police and Fire Headquarters, the Emergency Communications Center, the nearby cell phone tower, and Operation Hope's homeless shelter which is located behind Police Headquarters.	Not Applicable
89	Enhance flood protection at the DPW (immediate and surrounding areas) garage or consider feasibility of moving garage to an alternate location Study/explore how to evacuate water and relocate equipment prior to a threatening event.	Progress has been hindered by lack of funding. Carry forward.	Enhance flood protection at the DPW (immediate and surrounding areas) garage or consider feasibility of moving garage to an alternate location.
90	Conduct a study to identify the highest risk locations for prioritized mitigation and emergency response efforts before, during and/or after an extreme event during a variety of hazard scenarios.	The intent of this action has been met through numerous studies and plans conducted over the past five years. The Town continuously updates this information as needed, and the action can be removed,	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
	Prevention		
1	Explore building modifications, use of pervious road materials, and green infrastructure design to improve on-site storm water retention and reduce storm water runoff	The town encourages responsible stormwater management and includes elements of LID during review of individual projects. Compliance with the MS4 permit also leads to these efforts. However, with the POCD update in 2019-2020, the Town wishes to directly address LID and green infrastructure within a stormwater discussion or chapter.	During the update of the POCD, include a strong focus on stormwater management that sets policy for LID and green infrastructure, and encourages update of regulations to formalize the current practices of requiring onsite management of stormwater.
2	Establish a pre-storm drawdown process of Stepney Dam to increase storage capacity and prevent down stream flooding	Drawdowns and diversions by Aquarion have occurred on occasion, including prior to the September 25, 2018 flood event (at the direction of CT DEEP). The Town would like to formalize this process to ensure that it become standard practice and can be accomplished without intervention.	Work with Aquarion to ensure that informal practices of impoundment drawdown and water diversions are formalized in Aquarion operations plans.
3	Hold discussions with the Aquarion Water Company about the possibility of increasing the diversion of the Pequonnock River to the Easton Lake Reservoir in advance of a storm	Drawdowns and diversions by Aquarion have occurred on occasion, including prior to the September 25, 2018 flood event (at the direction of CT DEEP). The Town would like to formalize this process to ensure that it become standard practice and can be accomplished without intervention.	Work with Aquarion to ensure that informal practices of impoundment drawdown and water diversions are formalized in Aquarion operations plans.
4	Enforce rigorous storm water controls and encourage the installation of green infrastructure to reduce runoff generated at industrial and corporate parks, Strategies include on-site detention, bioswales and rain gardens	The town encourages responsible stormwater management and includes elements of LID during review of individual projects. Compliance with the MS4 permit also leads to these efforts. However, with the POCD update in 2019-2020, the Town wishes to directly address LID and green infrastructure within a stormwater discussion or chapter.	During the update of the POCD, include a strong focus on stormwater management that sets policy for LID and green infrastructure, and encourages update of regulations to formalize the current practices of requiring onsite management of stormwater.
5	Assess the impacts and location of septic systems impacted by flooding	The Health Department addresses this on an ongoing basis and the action can be dropped.	Not applicable
6	Conduct a town-wide hydrologic analysis of flooding/storm water impacts and water conveyance needs to minimize risk to people and infrastructure	A townwide hydrologic/drainage study has been in the Town's CIP for several years and has not been conducted due to budgetary constraints.	Conduct a townwide hydrologic analysis that addresses flooding, stormwater, and water conveyance needs to identify projects that can be implemented to reduce risks to infrastructure and people.
7	Improve coordination between the Monroe Department of Public Works crews and local utility crews to make safe areas with downed trees and allocate resources to priority locations.	This is an ongoing capability.	Not applicable
	Public Education & Awareness		
8	Encourage residents to take alternate routes during flooding events on Pepper Street	This is an ongoing capability.	Not applicable
9	Improve warning of residents that may become isolated by downed trees during an extreme weather event	Communications have improved with CodeRED, social media, and other platforms. This is an ongoing capability.	Not applicable
	Natural Resources Protection Actions		
10	Implement various strategies included in the Pequonnock River Initiative Watershed Management Plan, including increasing buffers, installing green infrastructure (rain gardens, bio-swales, storm water planters), and repairing stream channels.	The Town has made progress with this action. For example, a 319 grant was secured and used for a stream buffer enhancement project within the last five years. However, additional projects are desired outside the limited resources of the 319 program.	Implement one additional project identified in the watershed management plan, with a focus on flood risk reduction.
11	Continue and expand the proactive tree maintenance program by removing dead/diseased trees and branches and coordinate with the local utilities' tree trimming program	The program was expanded and the tree warden's budget was increased 25% between 2018 and 2019. The current level of effort is believed appropriate, although future expansions are not off the table.	Not applicable
	Emergency Services Protection Actions		
12	Upgrade the power supply at critical facilities with new generators, include the Town Garage, High School, Jockey Hollow and Chalk Hill School, all Town Shelters , the Emergency Operations Center, the Senior Center and senior housing facilities	The only remaining standby power need is the high school.	Acquire and install a generator for the high school that enables its use as a shelter.
13	Upgrade windows at the Emergency Operations Center, High School, and Shelters	All necessary upgrades are complete.	Not applicable
	Structural		
14	Incorporate additional power generation into the new Marian Heights facility under construction	This has been completed.	Not applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
15	Upgrade the surge protection on the Town's computer server	This has been completed.	Not applicable
16	Replace and increase the size of culverts at key locations on Route 25 and Route 111, including the in vicinity of Chuck's Corner and Bart's Shopping Center	Culverts on Route 111 have been upgrades and culverts on Route 25 will be upgraded within the life span of this update.	Ensure that CT DOT completes the upgrades of culverts on Route 25.
17	Reconstruct and elevate a section of Route 25 in the vicinity of the West Pequonnock Reservoir	This project is part of DOT's ongoing Route 25 improvements.	Ensure that CT DOT completes the Route 25 drainage and flood risk reduction projects.
18	Replace or retrofit undersized culverts	As noted above, a townwide hydrologic/drainage study has been in the Town's CIP for several years and has not been conducted due to budgetary constraints. Once completed, additional culvert needs can be identified.	Conduct a townwide hydrologic analysis that addresses flooding, stormwater, and water conveyance needs to identify projects that can be implemented to reduce risks to infrastructure and people.
19	Install new culverts to address flooding on Main Street	This project is part of DOT's ongoing Route 25 improvements.	Ensure that CT DOT completes the Route 25 drainage and flood risk reduction projects.
20	Remove the Beaver Dam on Sammis Brook and replace with a constructed dam that has water level controls	A beaver dam is no longer a problem in this area. The Town wishes to re-evaluate conveyance between the two sides of the road, which could potentially address flood risk.	Prepare a hydraulic study of this section of the brook and determine if improvements are needed to reduce flood risk.
21	Replace and expand the culvert conveying the West Branch of the Pequonnock River under Pepper Street along Brook Street	As noted above, a townwide hydrologic/drainage study has been in the Town's CIP for several years and has not been conducted due to budgetary constraints. Once completed, additional culvert needs can be identified.	Conduct a townwide hydrologic analysis that addresses flooding, stormwater, and water conveyance needs to identify projects that can be implemented to reduce risks to infrastructure and people.
22	Consider elevating Pepper Street	This potential action should be deferred until studies are completed.	Not applicable
23	Improve the culverts conveying a low-gradient stream under Bart Road and along Verna Road and remove debris and blockages of the channel to maintain free flow	This area is characterized by wetlands and a low-gradient watercourse. Damage from flood has not occurred, as only backyards are affected. The action can be dropped.	Not applicable
24	Construct a proper channel for the swale of the tributary of the West Branch of the Pequonnock River in the backyards of residences along Pastor's Walk and Wiltan Drive	This area is characterized by wetlands and a low-gradient watercourse. Damage from flood has not occurred, as only backyards are affected. The action can be dropped.	Not applicable
25	Upgrade power lines and poles in the vicinity of Barn Hill and Webb Mountain	The need for this area was addressed through backfeed capabilities, and the action is no longer needed.	Not applicable
26	Remove debris and clear blockages of culverts at key river crossings throughout the Town, including the West Branch of the Pequonnock River at Route 25, Purdy Hill Road and Pepper Street, the Boys Halfway River at Cottage Street and the Far Mill River at Moose Hill Road	Ongoing MS4 compliance screening and work with CT DOT will reveal where these actions are needed. The action can be dropped from the update to this plan.	Not applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
	Prevention		
1	Integrate Low Impact Development techniques in the land use process, as well as in the new zoning regulations for the Transit Centered Development District in the vicinity of the Town Center.	Progress as been hindered by lack of staffing resources. This recommendation has been re-written because the previous one is too vague. The Town is looking into revising regulations to incorporate MS4 requirements while simultaneously addressing LID techniques. Carry forward with revision.	Develop comprehensive stormwater regulations that address both quality and quantity control measures including MS4 requirements and Low Impact Development (LID) techniques for transit oriented district at Town Center.
2	Flood audits on Masarik Avenue & Benton Street: after the permitting process has been completed, begin cleaning a downstream channel from Benton Street to Hathaway Drive.	This action item must be discontinued. Private property would be involved. It is not feasible for the Town to implement this action. However, see #40 below.	Not Applicable
3	Adopt ordinances that call for reductions in storm water runoff in new developments	See #1 above. Progress as been hindered by lack of staffing resources. The Town is looking into revising regulations to incorporate MS4 requirements while simultaneously addressing LID techniques. Carry forward with revision.	See #1: Develop comprehensive stormwater regulations that address both quality and quantity control measures including MS4 requirements and Low Impact Development (LID) techniques for transit oriented district at Town Center.
4	Evaluate ways to use the Stratford High School ball fields to increase protection of the Downtown.	Action should be discontinued. The Stratford High School was re-built recently. The Town will pursue other options for flood mitigation in this area.	Not Applicable
	Property Protection		
5	Develop a contingency plan and notification process to ensure buses are relocated prior to flooding events.	Complete; the Town revisits this plan on an ongoing basis. Action can be removed.	Not Applicable
6	Elevate structures in the Lordship area to meet or exceed FEMA requirements for Base Flood Elevation	Some progress has been made when projects trigger substantial damage or substantial improvement thresholds. Additional progress is desired. Carry forward with additional specificity.	Elevate private homes in Lordship area to meet or exceed FEMA requirements for Base Flood Elevation. Phase I to include homes on Washington Parkway. Pursue funding through Pre-disaster mitigation grants to elevate five homes on Washington Parkway.
7	Reassess existing and future risks to the South End and employment growth area identified in the Stratford Plan of Conservation and Development. The Plan should consider all costs of redeveloping land in vulnerable areas and consider less vulnerable areas; evaluate existing buildings and ensure new building are higher than unelevated existing ones; identify building codes that would reduce flood risk in at-risk locations.	Progress has been made. The new State Building Code effective 2018 incorporates freeboard for all flood zones. A coastal resiliency plan was developed in 2015-2016. Several action items were identified for implementation as part of this plan. Carry forward with revision that focuses on flood protection.	Pursue funding to mitigate existing and future risks to the South End and employment growth area identified in the Stratford Plan of Conservation and Development. Funds may be used to install flood control systems and/or elevate and extend seawalls where necessary.
8	Flood proof structures in the Lordship area where appropriate.	Structures in Lordship are mostly residential and will be elevated as noted above. Action can be removed.	Not Applicable
9	Flood proof structures and construct drainage improvements in the Town Center, as well as encourage Low Impact Development techniques to mitigate flooding in this area.	Floodproofing of structures is not practical because private properties are involved. The Town will be addressing overall drainage improvements as part of Complete Streets Phase I. LID will be addressed by regulations as noted above for #1.	Not Applicable
10	Relocate private contractor's equipment in flood zones to secure flood proofed location prior to events; Surf Avenue, Barnum Avenue, Bowe Avenue, Greenfield Avenue, Albright Avenue.	The Town encourages private property owners to take care of floodproofing of their properties. Limited budget available for addressing private properties otherwise. Action can be removed.	Not Applicable
11	Consider acquiring properties that have experienced repetitive loss from storms and flooding and maintain a list of properties with owner interest for future acquisition, and as NRCS funding becomes available.	The Town has not made progress in the area of property acquisitions. The Town's Coastal Resiliency Plan recommended various mitigation measures for properties severely impacted by flooding. These actions should be prioritized and properties that should be acquired should be identified.	Maintain a list of properties that have experienced repetitive loss from storms and flooding (with owner interest for future acquisition) and pursue open space funding as it becomes available. Acquire properties based on this list (this action calls for list development and applications for funding in the timeframe of this plan; acquisitions are deferred to future editions of this plan).
	Structural		
12	Proceed with roadway reconstruction on the Lordship Boulevard/State Route 113. The Connecticut Department of Transportation has initiated a project to elevate Route 113 in the vicinity of Sikorsky Airport.	Complete.	Not Applicable
13	Continue to clean catch basins on a regular basis.	This is a capability and the action can be removed.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
14	Address recurring flooding on Surf Avenue at the I-95 overpass.	The design of Surf Avenue culvert replacement project is on-going. Funding is needed for implementation. Carry forward with revision.	Pursue funding to design and initiate multiple culverts and channels on Surf Avenue at the I-95 overpass along with the flood wall to reduce chronic coastal flooding.
15	Complete the design phase and initiate construction to replace multiple culverts and channels at Barnum Avenue between Sage Avenue and Bowe Avenue to alleviate flooding of Barnum Avenue and West Avenue.	Significant progress has been made relative to design along this section of Bruce Brook. Carry forward with revision.	Pursue funding to design and initiate multiple culverts and channels at Barnum Avenue between Sage and Bowe Avenues.
16	Maintain the project to replace and enlarge the structured channel and culverts conveying Tanners Brook from the ball fields at Stratford High School, from Broadbridge Avenue and King Street and along the New Haven rail line.	Brook improvements are complete and the Stratford High School was rebuilt in 2018. Action can be removed. See #23 below for an additional action related to Tanners Brook.	Not Applicable
17	Develop a maintenance protocol with the US EPA to address flood mitigation strategies at the Raymark (Superfund) site. Work with the Raymark waste site at Ferry Creek and Lockwood Avenue to ensure planting and stabilization of land to prevent mobilization during events.	Progress has been made and the action can be removed. The Town and EPA are working together to address the site. If redevelopment occurs in the future, the Town will require the development to be resilient and compliant with flood damage prevention regulations and the State Building Code.	Not Applicable
18	Assess feasibility of elevating Main Street - from 5 1/2' to 7'.	Complete (see #12 above).	Not Applicable
19	Coordinate a full scale survey of Short Beach with the Army Corp of Engineers so that it may meet FEMA's definition of an engineered beach.	Survey was completed. Carry forward with revision.	Secure funding to build Short Beach to the elevations and grades of survey design recommendations conducted by US Army Corps of Engineers.
20	Increase protection around the wastewater treatment plant by raising the existing flood control berm.	The Town used a CDBG-DR grant to conduct a planning study of Town infrastructure and develop a Coastal Resiliency Plan. The plan recommended enhancements including this Mitigation Measure. A portion of funding is in place through CDBG grant for implementation. 40% match is needed to implement through federal or state grants. Carry forward with revision to focus on securing the funds.	Secure funding to implement flood protection measures around the wastewater treatment plant by raising the existing flood control berm.
21	In the South End neighborhood, evaluate installing twin 6' X 8' box culvert with regulating tide gate to allow tidal flushing while preventing tidal flooding up to elevation 9' on Lordship Boulevard.	The Town used a CDBG-DR grant to conduct a planning study of Town infrastructure and develop a Coastal Resiliency Plan. The plan recommended enhancements including this Mitigation Measure. Carry forward with revision to focus on securing the funds.	Secure funding to design and build twin 6' X 8' box culvert with regulating tide gate to allow tidal flushing while preventing tidal flooding along Lordship Boulevard.
22	Work with the local utility to harden utilities (bury lines); maintain contractor on call list; tree trimming and maintenance efforts; secure funding for tree removal.	Ongoing efforts are undertaken by the Tree Warden and Director of Public Works. An on-call contractor is also available. These efforts have addressed the intent of this action, and it can be removed.	Not Applicable
23	Continue with the project to increase the width of the channelized stream downstream of Broadbridge Avenue to reduce flooding at a condominium parking lot. The replacement and enlargement of the structured channel and natural channel that conveys Tanners Brook from Broadbridge Avenue South to King Street has been designed and is in the permitting phase. Funds have been allocated for construction.	The project to increase the width of channelized Tanners Brook downstream of Broadbridge Avenue is in permitting phase. CT DEEP and FEMA CLOMR application have been applied for. When approved, the Town will proceed with the balance of funding request to bid the project. Following the bid and fully funding the project, a contract will be awarded and the Town will oversee construction to fully implement the project. Additional progress is desired relative to other streams in the town that can potentially be daylighted. The action will be divided into two actions to carry forward.	1. Pursue funding to evaluate the feasibility of daylighting of streams and prioritize actions to reduce hazards. 2. Continue with the project to increase the width of the channelized stream downstream of Broadbridge Avenue to reduce flooding at a condominium parking lot. The replacement and enlargement of the structured channel and natural channel that conveys Tanners Brook from Broadbridge Avenue South to King Street has been designed and is in the permitting phase. Funds have been allocated for construction. Execute construction in the timeframe of this plan.
24	Complete the bridge project to elevate Broad Street over Ferry Creek.	This project is under preliminary design. The Town is currently proceeding with further study based on FEMA revisions to the Base Flood Elevation. Permitting and funding will be the next step in this design. Once completed, the Town will bid and oversee construction to fully implement the project.	Pursue funding to complete the bridge project to elevate Broad Street over Ferry Creek. Town currently pursuing funding through LOTCIP grant.

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25	Increase the capacity of the wastewater treatment system by reducing inflows, such as with flood proofed manhole covers.	Based on completion of assessment of its operations, the Town conducted a study to determine the areas where Inflow and Infiltration (I/I) can be reduced. In addition, the Coastal Resiliency Plan evaluated manholes and other infrastructure that needs to be protected during coastal flooding. Based on this evaluation, the Town applied for and received $700,000 of Clean Water Act grant funds. Carry forward with revision.	Reduce I/I through execution of projects utilizing the Clean Water Act grant funds.
26	Complete the design phase for a 36" relief pipe to Long Brook and proceed to construction.	Funding for this, which was obtained through a CDBG-DR grant, was de-commissioned recently. This project is currently being designed and will proceed to local permitting in the near future. The project should be implemented and constructed in less then two years.	Secure funding to design and build a 36" relief pipe to Long Brook and proceed to construction.
27	Complete the bridge project to elevate Broad Street over Ferry Creek.	Duplicate with #24 above	Duplicate with #24 above
28	Complete the West Broad railroad viaduct renovation project. Assess the feasibility of other locations in need (Bruce Avenue, King Street, East Main). Utilize green infrastructure to reduce drainage "upstream" from viaducts (catchment basins, swales, storm water gardens, etc...).	This project is approaching the construction phase. State funding in the amount of $ 6 million is in place. Carry forward to focus on execution. The green infrastructure component of this action will be addressed as explained in #1 above.	Execute the West Broad Street project to reduce drainage-related flooding and flooding associated with Tanners Brook.
29	Consider a quantitative study to determine which manhole covers within the existing or new flood zones to waterproof to prevent inundation of flood waters into the sanitary sewer system, and secure funding for this project.	See #25 above. This action is similar and the intent will be addressed with the CWA grant funds.	See #25 above.
30	Respond to future needs as appropriate at Oronoque Village.	The Health Department has reached out to Oronoque residents providing them with emergency preparedness information. In addition, staff have provided on-site instructions on how to enroll in the Stratford Electronic Notification System so they can be sure to receive timely emergency notifications. The Town needs additional equipment for providing emergency management services to Oronoque Village. However, limited funding has impeded this progress.	Secure funding to respond to future needs as appropriate at Oronoque Village. Specifically, acquire additional equipment to provided enhanced emergency management related to the development.
31	Flood proof critical buildings south of Stratford Avenue: raise equipment and generators, install projectile proof windows (municipal buildings, private residents, community buildings).	The Town used a CDBG-DR grant to conduct a planning study of Town infrastructure and develop a Coastal Resiliency Plan. The plan recommended enhancements including this Mitigation Measure. Carry forward with revision to focus on securing the funds.	Pursue funding to floodproof municipal buildings in the town by raising equipment and generators and installing projectile proof windows where necessary.
32	Complete the replacement of storm water culverts under Old Spring Road with new box culverts.	Permitting and design are underway. The Town is considering applying for local bridge program to pursue funding and implement. Carry forward with revision to focus on securing the funds.	Secure funds to replace the stormwater culverts under Old Spring Road with new box culverts.
33	The Town has selected a consultant to design a 7X3 culvert as part of the West Broad St roadway improvements. This will alleviate flooding at the West Broad St RR underpass at Tanner's Brook.	See #28 above	See #28 above
34	Proceed with increasing the size of the culvert at Reed St. to 500' of 12' X 4' box culvert.	Action can be removed. This is on a private property that was sold to another owner recently. Only this property floods on Reed Street and the property owner floodproofed it. No further work is needed at this time.	Not Applicable
35	An assessment of drainage system components through specific areas of Oronoque Village is underway. Continue to monitor improvements to drainage system completed by Association in 2004.	A stream improvement project was completed on Freeman Brook, which flows through this area. The action is no longer needed.	Not Applicable
36	Consider installing twin 6' X 8' box culverts on Lordship Boulevard with regulating tide gate to allow tidal movement while preventing flooding in the South End neighborhood.	Same as #21 above	Not Applicable
37	Consider replacing the storm water culverts under Quail Street with new box culverts. Due to the status of an adjacent Superfund site, the Town has been unable to proceed with this project.	The action can be discontinued. This location is Bruce Brook near Wooster Pond. No flood mitigation is required. The pond is believed to acts as a flood storage facility.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
38	Conduct an investigation to examine the implications of various flooding scenarios on the wastewater treatment plant and identify appropriate and feasible responses, such as raising the berm.	Same as #20 above	Not Applicable
39	Assess approaches to maintain the functionality of the Birdseye boat docks and ramp under flooded conditions to ensure continued use during disasters.	Complete. In 2018, a consultant was hired to conduct an assessment of the Birdseye ramp to maintain functionality during storm events. No implementation has been undertaken yet although $14,000 was budgeted. EMS Department is currently seeking approval from DEEP and the Town Council. Carry forward with revision for next stage.	Pursue funding to implement the best approach to maintain the functionality of the Birdseye ramp under flooded conditions to ensure continued use during disasters.
40	Structural flood proofing on Massarik Avenue/Benton Street.	This action was recommended in the Coastal Resilience Plan. Progress has been impeded by lack of funding. Carry forward with revision.	Pursue funding to implement structural flood proofing on Massarik Avenue/Benton Street.
41	Evaluate a flood control structure at Stratford High School ball field on King St. to create 2.5 MG of flood storage for 1% storm event	This action can be discontinued in favor of the above descriptions of actions in the Tanners Brook watershed (i.e. #16 above).	Not Applicable
42	Consider bank erosion protection east of Diane Terrace.	Progress has been impeded by lack of funding. The Town will include in the CIP and prioritize this project and schedule the design, permitting and construction in the order of prioritized capital improvements.	Pursue funding to mitigate bank erosion at Diane Terrace and engage private properties on that street.
43	Maintain the Beaver and Brewster dam studies (inspection reports conducted by the State of Connecticut) and continue to identify mitigation actions to reduce loss. Assess current condition and impacts of catastrophic failure for all dams. Access previous inundation contingency plans for the Beaver Dam, Brewster Pond Dam, Pecks Mill Pond Dam, Cooks Pond Dam.	Beaver Dam and Cooks Pond Dam are privately owned sites, and Cooks Pond Dam does not exist now. An EAP exists for Brewster Dam. The Town's Conservation Administrator is updating the Brewster Dam study. The intent of this action has been met and it can be removed.	Not Applicable
44	Consider integrating the animal shelter into improvements at the wastewater treatment plant, such as by extending the protective berm around the shelter.	This action was recommended in the Coastal Resilience Plan. Progress has been impeded by lack of funding. Carry forward with revision.	Floodproof the animal shelter adjacent to the Wastewater Treatment Plant.
45	Strengthen and extend the Lordship Beach seawall.	Progress has been impeded by lack of funding. Carry forward with a revision to focus on a feasibility study,	Conduct a feasibility study to determine whether the Lordship seawall can be modified to increase its resilience to future storms.
46	Assess and scope the feasibility of hardening facilities associated with 2 pump stations; assess impact of temporary loss of multiple pump stations; consider alternative sites for relocation of vulnerable stations long term	The Town is currently addressing resiliency of pumping stations both in North End and South End. The Town Engineer has applied for funding provided by the WPCA; Clean Water Fund is being used for construction.	Secure funds for pumping station improvements to incorporate resiliency; and implement the improvements.
	Natural Systems Protection		
47	Protect and maintain Long Beach as an effective barrier beach.	The property is currently under a Conservation Restriction so that no future building can occur on the beach. The Town will continue to maintain Long Beach West as a natural and effective barrier beach.	Not Applicable
48	Implement a routine tree maintenance and inspection program and remove hazardous trees and branches.	This is a capability and the action can be removed.	Not Applicable
49	Protect and maintain Short Beach, including replenishing the beach (engineered beach) after a major event. Coordinate with federal agencies to conduct a cost/benefit analysis for Short Beach replenishment over time.	The Town executed a study in order to operate and maintain the beach as a "engineered beach" in relation to FEMA DAP 9580.8. In 2017, the beach was replenished with >520 cubic yards of sand. The sand was placed in accordance with engineered designs in order to ensure stability and maximum retention. The Town has an annual documented maintenance plan for the beach. The action can be discontinued.	Not Applicable
50	Assess the impacts on Long Beach/Pleasure Beach and adjoining National Wildlife refuge and built structures (roads, commercial/industrial, residential, airport) from breach of barrier island during future extreme weather events; cost/benefit analysis of beach restoration/replenishment over time.	This group of actions was addressed in the Coastal Resilience Plan and is addressed above within other actions.	Not Applicable
51	Renourish and replenish beaches and regenerate dunes after major events.	Progress has been made at Short Beach as noted above. Action has not been needed at other beaches.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
52	Secure funding for and initiate the urban forest canopy study (an application for funding through an America the Beautiful grant was submitted in November 2013)	This project was completed by November 2014 and contributed to MetroCOG Tree Canopy Assessment.	Not Applicable
53	Assess the impacts of hazards on natural areas: Roosevelt Forest, Booth Memorial Park, Far Mill River, Wooster Park; identify ways to enhance defensive/protective features for additional flood protection longer-term.	Some progress was made via the Coastal Resilience Plan, but some of these areas are not coastal. Additional progress is desired but funding and staffing limitations have hindered progress. Carry forward with revisions and divide the action into separate studies.	Pursue funding to address the impacts of hazards on natural areas, focusing on individual studies for Roosevelt Forest, Booth Memorial Park, Far Mill River, and Wooster Park. The studies should identify ways to enhance defensive/protective features for additional flood protection in the long term.
54	Work with private land owners to understand the importance and benefits of maintaining and leaving vegetation in place to stabilize riverbanks	The Town is in the process of developing an educational program as part of Community Rating System (CRS) program that teaches residents and businesses about the importance of maintaining an adequate vegetative buffer to maintain stream channels and prevent erosion based on flooding. The program aims to educate the public through flyers and discussions at public events. Carry forward with revision.	Educate private land owners to understand the importance and benefits of maintaining and leaving vegetation in place to stabilize riverbanks
55	Consider a "Living Shoreline Plan" for the Stratford coastline.	Complete. The Town's Coastal Resilience Plan and its part of the Regional Framework for Coastal Resilience have together addressed the intent of this action and mapped out potential living shorelines.	Not Applicable
56	At Russian Beach, assess the ongoing and long-term impacts from hazards towards developing a sustainable course of action.	Partially complete. The Regional Framework for Coastal Resilience included a bioengineered bank stabilization design for Russian Beach. Landowner buy-in is needed. Additional steps will include final design and construction.	Secure landowner permissions and funding for design and execution of the bank stabilization project.
57	Work with local utilities to develop a replanting plan and maintenance plan for trees consistent with recommended arboriculture practices and that is supportive of the "right tree, right place" policy	Over the past five years the Town has attempted to work with utilities companies conducting right of way clearance and trimming of trees to support a replanting program in Town. The utility companies assert that they do not have the funding to support such a program. The Town applied for and was awarded an America the Beautiful grant by CT DEEP in 2016 to plant nearly 50 trees in public parks, schools, and open spaces in accordance with the "right tree right place" practice. The shade trees are now thriving and plans for future plantings are being developed. The Town has also encouraged residents to plant shade trees on their private property by offering a discount on tree purchases at a local garden exchange. Carry forward with revision for additional progress.	Develop a tree replanting plan and maintenance plan consistent with recommended arboriculture practices and that is supportive of the "right tree, right place" policy. The Town's Tree Warden will work to establish a regular tree planting program and obtain grants (as available) in support of the initiative. The Tree Warden will also develop an ordinance that mandates a tree replanting program/schedule in accordance with "right tree, right place" policy.
	Education and Awareness		
58	Highlight the Living Shoreline project on Stratford Point.	Over the past five years, the Town of Stratford Conservation Commission and the general public has been updated on the "Living Shoreline Project" via public meetings and outreach events at Stratford Point (i.e. Earth Day, Forest to Shore Day). Town residents, local students, and volunteers across the region have participated in planting saltmarsh cordgrass and coastal upland vegetation at the site, under the direction of Sacred Heart University and Audubon CT. Protective dunes on site have also been restored and stabilized through grant-funded projects overseen by Sacred Heart university. The Town will continue to work with Audubon CT and Sacred Heart University to educate the public on the importance of restoring coastlines via living shorelines methodologies. A specific mitigation action is not needed at this time.	Not Applicable
59	Utilize GIS for the purposes of notification, evacuation and awareness of the location of floodplains and mitigation projects.	Additional progress in this area is needed. Refer to #67 below for more information.	Refer to #67 below

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
60	Focus public education on safety tips and reminders to individuals about how to prepare for cold weather, heat waves and severe weather events.	Participation in the CRS program will provide opportunities to make progress in this area. To raise public awareness on disaster preparedness and mitigation, and to maintain good standing with the program, a Program for Public Information (PPI) outlining the schedule and implementation of all outreach activities should be adopted by the Town. This PPI will serve as a guide in educating general public and local officials on all types of hazards.	Develop, adopt, and implement a PPI as part of the Town's participation in the CRS program.
61	Businesses in the Main Enterprise and Lordship Boulevard areas need to find solutions to minimize impacts to facilities and improve business continuity after major events; additional generators needed.	Participation in the CRS program will provide opportunities to make progress in this area. To raise public awareness on disaster preparedness and mitigation, and to maintain good standing with the program, a PPI outlining the schedule and implementation of all outreach activities should be adopted by the Town. This PPI will serve as a guide in educating general public and local officials on all types of hazards.	Develop, adopt, and implement a PPI as part of the Town's participation in the CRS program.
62	Implement outreach programs to educate citizens regarding Ordinances, Insurance, and other flood relevant issues.	Participation in the CRS program will provide opportunities to make progress in this area. To raise public awareness on disaster preparedness and mitigation, and to maintain good standing with the program, a PPI outlining the schedule and implementation of all outreach activities should be adopted by the Town. This PPI will serve as a guide in educating general public and local officials on all types of hazards.	Develop, adopt, and implement a PPI as part of the Town's participation in the CRS program.
63	Encourage restaurants throughout town to acquire and install backup generators to increase food preparation and ice availability.	Participation in the CRS program will provide opportunities to make progress in this area. To raise public awareness on disaster preparedness and mitigation, and to maintain good standing with the program, a PPI outlining the schedule and implementation of all outreach activities should be adopted by the Town. This PPI will serve as a guide in educating general public and local officials on all types of hazards.	Develop, adopt, and implement a PPI as part of the Town's participation in the CRS program.
64	Use signage and public information to make the public aware of evacuation routes and available shelters, especially those individuals living within hurricane storm surge evacuation zones.	This has largely been completed but participation in the CRS program will provide additional opportunities. To raise public awareness on disaster preparedness and mitigation, and to maintain good standing with the program, a Program for Public Information (PPI) outlining the schedule and implementation of all outreach activities should be adopted by the Town. This PPI will serve as a guide in educating general public and local officials on all types of hazards.	Develop, adopt, and implement a PPI as part of the Town's participation in the CRS program.
65	Continue use of QAlert (online) system for complaint tracking to maintain a database of calls received by the Town.	This is a capability and the action can be removed.	Not Applicable
	Emergency Services		
66	Continue to implement and operate the Stratford Electronic Notification System to alert residents and businesses in the case of impending storms and floods.	This is a capability and the action can be removed.	Not Applicable
67	Use of GIS to document evacuation plans.	The Town's EMS has plans to update the system. The Town will work with the Stratford Fire Department, Police Department, and MetroCOG to update the evacuation plans and make these routes available on the new Regional GIS system. The evacuation routes will be made available to the public on the Town's website.	Update the evacuation plans and make these routes available on the new Regional GIS system. The evacuation routes will also be made available to the public on the Town's website.
68	Improve coordination with utilities in response to disasters and increase "make safe" crews.	The Town is currently working with the Regional Homeland Emergency Preparedness Team to improve communications during storm events. This team will directly work with United Illuminating (UI) to streamline and improve the policy for administrating the use of "Make Safe" Crews. The action can be discontinued.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
69	Provide adequate back-up power to Bunnell High School, Birdseye Municipal Complex, Flood Middle School, Stratford Housing Authority units and the Baldwin Senior Center.	The Town secured approximately $40,000 through the CIP and installed an emergency generator at Bunnell High School. Generators will be installed at other sites as additional funding is available.	Pursue funding to provide adequate back-up power to Birdseye Municipal Complex, Flood Middle School, Stratford Housing Authority units, and the Baldwin Senior Center; and to make improvements to the existing generator at Stratford Fire Station .
70	Update evacuation plans to factor lack of access to transportation routes during peak events (CAT-3). Integrate into notification of voluntary and mandatory evacuation orders.	Progress has been made in related areas. Fire, Police and Health coordinate to utilize the Stratford Electronic Notification System in a planned series of pre-event notifications warning people about the dangers of waiting too long to evacuate. For those not heeding voluntary or mandatory evacuations, the local National Guard unit may be called in to evacuate in the areas of highest risk. The Town currently has a multi-tiered approach to creating a communication flow with redisents. The Town's EMS works with CAO's office to disseminate messages through social media. The Town has plans to display digital signage with disaster preparedness and recovery messages at select locations in the town in the near future.	Pursue funding to update evacuation plans to factor lack of access to transportation routes during peak events such as a severe hurricane, and display them using digital signage at select locations. Integrate notification of voluntary and mandatory evacuation orders into these messages.
71	Prioritize use of evacuation sites/warming centers for storm events.	Complete	Not Applicable
72	Keep access to Birdseye Municipal Complex open as it is a critical sheltering facility	Discontinue action. EMS is working on alternative approaches. EMS staff are working on training town employees for sheltering people.	Not Applicable
73	Make Police Station more resilient during events	Components of this were completed two years ago using $170,000 from CIP funds.	Not Applicable
74	Clearly define roles of the Community Emergency Response Teams (CERT) to minimize response functions of emergency services.	Some progress has been made. The CERT team has been trained to provide support in sheltering and mass care activities. The Emergency Operation Plan has been updated to delineate the CERT functions. The Town's EMS Department has goals to re-focus on this program to determine usage, how to keep CERT members engaged, how to train and recruit CERT members, etc. Carry forward with revision.	Clearly define roles of the Community Emergency Response Teams (CERT) to optimize response functions of emergency services.
75	Address gas stations without generators by securing support and funding to provide generators to enable gas pumping.	This action is no longer believed necessary, as many gasoline service stations have upgraded standby power.	Not Applicable
76	Work with the Stratford Housing Authority to develop evacuation plans.	This is being addressed as parts of other actions that address evacuation routes and logistics such as #69 and #70 above.	Not Applicable
77	Improve warning of residents that may become isolated by downed trees during an extreme weather event.	Complete and ogling as part of the Town's notification systems.	Not Applicable

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
	Prevention		
1	Participate in FEMA's Community Rating System (CRS) program.	Complete	Not Applicable; action removed
2	Improve the tree management plan.	The tree warden has an annual budget and the Town conducts some tree work. UI conducts tree maintenance which is also helpful. This action is not needed.	Not Applicable; action removed
3	Conduct a comprehensive assessment and study of all drainage easements in the Town to assess condition, map locations, prioritize and develop action plans for maintaining and upgrading as needed.	Progress has not been made, due to staff and budget constraints. Carry forward with revision.	Secure funds and develop a scope of work to study a portion of the Town's drainage easements and drainage network.
4	Modify regulations to provide incentives and/or credits for installation of green infrastructure for the on-site retention and control of storm water runoff.	Carry forward with revision. The Town encourages use of LID during development reviews. However, while the Town has made some progress, it does not have a policy in place or locations identified for additional green infrastructure, not are regulations in place to require such.	Replace with "Conduct a feasibility study to determine where green infrastructure can be installed" (#31 below) and "Prepare a draft of municipal regulations that can be used to require low impact development and green infrastructure."
5	Conduct a tree inventory and canopy assessment in Trumbull and identify locations for planting of trees. An application for an America the Beautiful grant to fund an unban tree canopy for the Greater Bridgeport Region has been submitted.	The study was completed.	Not Applicable; action removed
6	Conduct a drainage study at critical locations known to flood, including White Plains Road and Route 127 at the Town Center.	Progress was made on Horse Tavern Brook and Booth Hill Brook, and upgrades have resulted (i.e. Booth Hill Brook culvert replacement). Any remaining lack of progress is due to staff and budget constraints. Carry forward with revision.	"Secure funds and develop a scope of work to study one of the Town's watercourses and watersheds. Island Brook will be prioritized next."
7	Conduct hydrologic studies of water conveyance and obstacles for water courses throughout the Town, including Horse Tavern Brook, Island Brook and Booth Hill Brook, as well as in floodplains and at culverts and crossings.	Progress was made on Horse Tavern Brook and Booth Hill Brook, and upgrades have resulted (i.e. Booth Hill Brook culvert replacement). Any remaining lack of progress is due to staff and budget constraints. Carry forward with revision.	"Secure funds and develop a scope of work to study one of the Town's watercourses and watersheds. Island Brook will be prioritized next."
8	Utilize GIS to assess and identify the locations and extent of exposure from flooding for all structures within the SFHA.	This will occur in connection with CRS participation. The GIS capability already exists. Action can be removed.	Not Applicable; action removed
9	Review the Town's storm water management policy for green infrastructure projects.	Carry forward with revision. The Town encourages use of LID during development reviews. However, while the Town has made some progress, it does not have a policy in place or locations identified for additional green infrastructure, not are regulations in place to require such.	Replace with "Conduct a feasibility study to determine where green infrastructure can be installed" (#31 below) and "Prepare a draft of municipal regulations that can be used to require low impact development and green infrastructure."
10	Assess the flood storage capacity of existing open space as part of an upcoming inventory.	Progress has not been made, but this will be accomplished as hydrologic studies are completed.	"Secure funds and develop a scope of work to study one of the Town's watercourses and watersheds. Island Brook will be prioritized next."
11	Conduct a flood drainage study across the Long Hill drainage corridor.	Progress was made on Horse Tavern Brook and Booth Hill Brook, and upgrades have resulted (i.e. Booth Hill Brook culvert replacement). Any remaining lack of progress is due to staff and budget constraints. Carry forward with revision.	"Secure funds and develop a scope of work to study one of the Town's watercourses and watersheds. Island Brook will be prioritized next."
12	Review flood risks in areas north and west of the Route 25 and Route 111 intersection.	This will occur in connection with CRS participation. The GIS capability already exists. Action can be removed.	Not Applicable; action removed
13	Update Town drainage regulations for new development and redevelopment projects.	Subsequent to progress related to the actions regarding drainage (#3) and watercourses (#6, 7, 10, and 11), the Town will determine if regulation changes are needed.	Not Applicable; action removed
14	Improve drainage maintenance of vegetated swales.	Subsequent to progress related to the actions regarding drainage (#3) and watercourses (#6, 7, 10, and 11), the Town will determine if vegetated swale maintenance is needed.	Not Applicable; action removed
	Property Protection		
15	Consider elevating repetitive loss structures, structures in the floodplain, homes along the Pequonnock River and homes on Manor Drive and Larkspur Lane.	Carry forward with revision. The Town has encouraged property owners to elevate structures and requires this when substantial improvement limits are triggered.	Revise action to "Annually send a letter to property owners in RL areas to inform them of options for elevating or acquiring structures to reduce flood risk."

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
16	Determine base flood elevations for homes located in high flood hazard areas, including along Manor Drive and the Twin Brooks Park neighborhoods (Larkspur/Seneca).	Limited progress has been made, but this will be conducted as part of CRS participation. Carry forward.	"Provide 100 year floodplain locations on our GIS Website for residents."
17	Evaluate potential locations in the Island Brook Park/Island Brook area and Melrose (south of Island Brook) for detention and pursue property acquisition as needed.	Progress was made on Horse Tavern Brook and Booth Hill Brook, and upgrades have resulted (i.e. Booth Hill Brook culvert replacement). Any remaining lack of progress is due to staff and budget constraints. Carry forward with revision.	"Secure funds and develop a scope of work to study one of the Town's watercourses and watersheds. Island Brook will be prioritized next."
18	Acquire repetitive loss properties.	The Town has teamed with RL property owners to acquire and demolish several residential structures. Additional acquisitions will be considered depending on results of outreach conducted through CRS participation.	Revise action to "Annually send a letter to property owners in RL areas to inform them of options for elevating or acquiring structures to reduce flood risk" (see #15 above).
	Structural		
19	Upgrade snow removal and response equipment where needed.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
20	Implement the proposed floodplain management plan at Horse Tavern Brook, including the proposed detention ponds and basins.	Floodplain mapping in this area has been revised with a LOMR and the Town believes the appropriate risk is represented.	Not Applicable; action removed
21	Continue catch basin maintenance in the Pequonnock River watershed, along Pequonnock River tributaries and Pinewood Lake.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
22	Continue to maintain critical culverts and remove debris, especially in advance of storms.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
23	Flood-proof exposed pump stations in low-lying, floodprone areas	A master plan for pumping stations has been completed. The Town is currently rehabilitating and floodproofing the Beardsley pump station. Improvements were completed to the Reservoir Pump station to prevent flooding.	Design for other pumping stations is ongoing. Revise to demonstrate commitment to completing other pumping stations.
24	Continue to inspect and maintain existing dams in the Horse Tavern Brook area.	Significant progress has been made statewide relative to dam safety due to regulation changes in 2014-2015. Dams are inspected at the owner's cost as required by CT DEEP.	Not Applicable; action removed
25	Coordinate with the State to improve flood water conveyance at the culvert on Route 15.	This occurs as needed through typical DOT coordination.	Not Applicable; action removed
26	Continue to inspect and maintain existing dams and reexamine the safety and condition of Class A and B dams, including Canoe Brook Lake.	Significant progress has been made statewide relative to dam safety due to regulation changes in 2014-2015. Dams are inspected at the owner's cost as required by CT DEEP.	Not Applicable; action removed
27	Install back-up generation at sewage pump stations through the Town.	Complete	Not Applicable; action removed
28	Improve management of and conduct controlled drainage of Pinewood Lake prior to storm events to maximize retention capacity.	Progress has not been made, due to staff and budget constraints. A scope of work has been developed for this. Carry forward with revision.	Secure funds and complete study to determine how water level can be controlled to mitigate downstream flooding.
29	Complete storm sewer projects in the Pequonnock River and Pinewood Lake drainage basin.	Storm sewer projects in both Pequonnock & Pinewood drainage basins are ongoing. As the Town completes roadway improvements in these drainage basins areas, it makes stormwater system improvements. Because this is ongoing and in the capital improvement plan budgets, the action can be removed.	Not Applicable; action removed
30	Replace existing culverts conveying the Pequonnock River at Daniels Farm Road, in the Twin Brooks area and at the Merritt Parkway with higher capacity structures.	The Town has replaced many drainage pipes over the last five years and some of them were upgrades. These locations were not yet upgraded due to other replacement priorities that came up. The Merritt Parkway location cannot be modified with CT DOT taking the lead.	Replace with "Allocate funds and conduct design for enlarged conveyance at Daniels Farm Road/Pequonnock River and downstream in e Twin Brooks Park area"
31	Install green infrastructure, including bioswales, rain gardens, vegetative roofs and permeable pavement, to retain storm water runoff and promote infiltration.	Carry forward with revision. The Town encourages use of LID during development reviews. However, while the Town has made some progress, it does not have a policy in place or locations identified for additional green infrastructure.	Replace with "Conduct a feasibility study to determine where green infrastructure can be installed."
32	Continue to ensure the culvert maintenance plan is updated and implemented, particularly in advance of a major rain event and specifically in the Twin Brooks area.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
33	Regrade the floodplain at the bend in the Pequonnock River at Route 127 to improve conveyance.	Progress has been impeded by lack of funding. The Town will determine if this is needed during the five-year plan timeframe.	Replace with "Determine if floodplain enhancement at the bend of the Pequonnock River near Route 127 is feasible and would be effective for flood mitigation, and secure funding if found to be cost effective."
34	Assess the condition of existing dams in Town, including at Canoe Brook Lake and Pinewood Lake, and install new drainage valves and other control devices necessary to draw down water levels in advance of approaching storms and limit the potential hazards to downstream properties.	Significant progress has been made statewide relative to dam safety due to regulation changes in 2014-2015. Action should be carried forward in light of this progress.	Replace with "Allocate funds and retain consultant to review dam safety files and EAPs for dams in Trumbull; and determine which dams may have the ability to be modified for flood mitigation capabilities."
35	Address road flooding by replacing high capacity flood control/conveyance structures at Twin Brooks and Trumbull Center.	Progress has been impeded by lack of funding. The Town will determine if this is needed during the five-year plan timeframe.	Replace with "Determine if bridge and culvert replacements at Twin Brooks and Trumbull Center will effectively reduce flooding, and secure funding if found to be cost effective."
	Natural Systems Protection		
36	Implement various strategies included in the Pequonnock River Initiative Watershed Management Plan, including increasing buffers, installing green infrastructure (rain gardens, bio-swales, storm water planters), and repairing stream channels.	Some progress has been made with actions recommended in the watershed management plan. However, additional progress is desired.	Replace with "Conduct a feasibility study to determine where green infrastructure can be installed" (see #31 above).
37	Implement a tree trimming and maintenance program, coordinated with utility companies, to remove diseased and hazardous trees and branches; and increase homeowner awareness and public outreach regarding the need to properly maintain trees.	The tree warden has an annual budget and the Town conducts some tree work. UI conducts tree maintenance which is also helpful. This action is not needed.	Not Applicable; action removed
38	Acquire land in flood prone and hazard areas for open space.	This action was geared toward converting acquired RL properties to open space. The Town has succeeded in acquiring and clearing a few properties. Going forward, this will be considered on a case-by-case basis in connection with CRS participation.	Not Applicable; action removed
	Public Education & Awareness		
39	Expand awareness of the benefits and opportunities of green infrastructure and pervious pavement.	Targeted outreach will be conducted as part of participation in CRS.	Carry forward as written.
40	Improve tree management through outreach and public education.	Carry forward	Same wording
41	Expand outreach to residents on the importance of wetlands and drainage swales for risk reduction from flooding. Look to increase the protection of additional floodplains.	Targeted outreach will be conducted as part of participation in CRS.	Carry forward as written.
42	Expand outreach efforts regarding how to prepare for extreme weather and what to do in the event of a natural disaster, including enhancing the Town's website, preparing pamphlets to be available at Town Hall and the Trumbull Library and enhancing hazard-related mapping.	Targeted outreach will be conducted as part of participation in CRS.	Carry forward as written.
43	Improve access to information on services for at-risk populations during disasters.	Targeted outreach will be conducted as part of participation in CRS.	Carry forward as written.
44	Continue to update websites with information and maps to aid in preparedness and mitigation.	Complete	Not Applicable; action removed
45	Increase warning and notification of anticipated flood events to residents, especially those who live along the Pequonnock River and in the Manor Drive area.	Complete	Not Applicable; action removed
	Emergency Services Protection		
46	Improve the Town's make safe plan for downed power lines and power outages. Improve communication and cooperation with local utilities.	Complete	Not Applicable; action removed
47	Continue to periodically revisit top 10 list of first power restoration sites and critical locations in the Town Center for immediate power restoration.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
48	Wire the Trumbull Library to serve as a recharging location for personal electronic devices.	Complete	Not Applicable; action removed
49	Improve access to and availability of information on services during an emergency.	Targeted outreach will be conducted as part of participation in CRS.	Carry forward as written.

ID	Description of Action	Status of Action in 2019	Revision for 2019-2024, if Applicable
50	Continue to operate CT ALERT system	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
51	Improve coordination and communications during an extreme weather event.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
52	Continue to examine longer-term needs for power continuity and generator placement	Most facilities now have standby power, including the high school.	Not Applicable; action removed
53	Review workforce availability and increase disaster training as needed to ensure adequate and trained workforce for facilities during emergencies.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
54	Secure and install back-up generation equipment at critical and priority facilities, especially for adequate back-up power at Trumbull High School.	Most facilities now have standby power, including the high school.	Not Applicable; action removed
55	Secure support and funding to provide generators at gas stations to enable gas pumping.	Progress has been made by the owners of gasoline service stations. Action can be removed.	Not Applicable; action removed
56	Annual review of Region 1 Memorandum of Understanding and work to improve communications with the SHMO.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
57	Continue to explore opportunities to improve communications and coordination with the EMS Department.	Ongoing; this is standard practice and is one of the Town's capabilities.	Not Applicable; action removed
58	Evaluate the need for emergency access into and from the Trumbull Corporate Park and the Westfield/Trumbull Shopping Mall and construct access roads as deemed necessary.	Progress has been impeded by lack of staff resources for this type of evaluation. Carry forward with revision to focus on the evaluation, with construction deferred to a future hazard mitigation plan timeframe.	Evaluate the need for emergency access into and from the Trumbull Corporate Park and the Westfield/Trumbull Shopping Mall.

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5
Implementation

This section describes the process by which recommendations developed based on the discussions in the previous chapters will be implemented. The funding sources and planning mechanisms through which recommendations will be implemented are described. Plan monitoring and evaluation, public participation and the role that the Conservation Technical Advisory Committee (CTAC) and CRS program will play in these activities is explained.

The strategies with which to implement mitigation recommendations are discussed at the local and regional scales. The mitigation action matrices from the previous section have been used as the framework to form an implementation plan for each community. A description of technical and financial resources concludes this section.

5.1 Adoption & Responsibilities for Implementation

MetroCOG will guide the updated NHMP through the FEMA approval process and will assist the governing bodies of member communities throughout the process of adopting the updated NHMP.

The updated NHMP will be considered current for five years from the date that the first MetroCOG community adopts the plan. Once the plan has been formally adopted by the community's governing body, the community is eligible for certain funding programs administered by FEMA. Communities that have not adopted the plan will not be eligible for these programs but will not prevent the eligibility of other communities that have adopted the plan.

After adoption by the community and as funding becomes available, local officials will be responsible for assigning the appropriate resources to implement mitigation actions. If and when recommendations from this NHMP are implemented, they will most likely be administered by the municipal departments that oversee these activities. These departments include Engineering, Public Works, Planning, and Emergency Management. MetroCOG will work with local communities to pursue mitigation actions by providing technical assistance to identify and pursue funding opportunities detailed later in this section.

5.2 Planning Mechanisms

Each community in the MetroCOG Region will integrate recommendations of the NHMP through existing planning mechanisms, such as Plans of Conservation and Development (Table 5.1), Zoning Regulations, Capital Improvement Plans, operating budgets and local programs or initiatives. By taking advantage of existing mechanisms, the recommendations of the NHMP are more likely to be successfully implemented.

Table 5.1: Status of Plans of Conservation and Development in the MetroCOG Region

Community	Date of Effective POCD	Is Hazard Mitigation Included?	Is POCD Update Underway?	Will Hazard Mitigation Be Included?
Bridgeport	2019	Yes	No	N/A
Easton	2018	Yes	No	N/A
Fairfield	2016	Yes	Yes	Yes
Monroe	2010	Yes	Yes	Yes
Stratford	2014	Yes	No	N/A
Trumbull	2014	Yes	No	N/A

As these hazard mitigation recommendations become institutional practices throughout the MetroCOG Region, new mechanisms to implement these actions are anticipated. New public-private partnerships, strengthened relationships with community organizations and local incentives will further realize the goals of the NHMP.

5.3 Progress Monitoring, Public Participation and Plan Maintenance

Each municipality has a local coordinator who will be responsible for a local annual review of the NHMP and will convene a meeting of public officials to discuss progress. At these local meetings, the status of local actions will be discussed, and new mitigation actions will be added if appropriate. Minutes from the local annual NHMP meetings will be provided to MetroCOG to track plan maintenance.

The Conservation Technical Advisory Committee (CTAC) of MetroCOG will monitor the regional progress of the NHMP implementation. Each MetroCOG municipality is formally represented on the CTAC with a member of the local Conservation Commission and a staff member with responsibilities related to conservation. Meetings of the CTAC are held quarterly and are open to the public. In addition to the appointed members, meeting attendees typically include local conservation organizations, residents, staff of the CTDEEP and other regional stakeholders. Throughout the process of developing the NHMP, the CTAC has provided guidance and will continue to monitor the implementation of mitigation actions post-adoption.

The agenda of each quarterly CTAC meeting will include an item regarding the NHMP. CTAC members will provide updates on the implementation of recommended NHMP mitigation actions in their respective communities. MetroCOG will keep track of these updates through the implementation matrix framework.

MetroCOG will annually report on the progress of implementing NHMP recommendations and will be responsible for coordinating an annual meeting with the CTAC to review the plan. In addition to CTAC members, participants in the review will include representatives of the departments listed in the implementation matrices including the local coordinators. Matters to be reviewed will include an assessment of the goals and objectives of the NHMP, a review of hazards or disasters that occurred during the preceding year, an evaluation of the mitigation activities that have been accomplished to date, a discussion of why implementation of mitigation activities may be behind schedule, and recommendations for new projects and revised activities. The maintenance schedule for the NHMP (post adoption) is presented in Table 5.2.

Continued public involvement will be sought regarding the monitoring, evaluation of and updating of the NHMP. Public input may be solicited through community meetings and input to web-based information gathering tools. Public comment on changes to the Plan may be sought through notifications posted to the websites of the MetroCOG, as well as through the websites and social media accounts of individual municipalities.

5.4 Community Rating System Program

FEMA's Community Rating System (CRS) is a voluntary program that offers discounts on flood insurance premiums to communities that undertake activities beyond minimum flood insurance standards. Activities include public outreach and

Table 5.2
Post-Adoption Plan Maintenance Schedule

2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
MetroCOG staff will seek funding for regional projects and provide technical assistance to municipalities for local funding opportunities.	MetroCOG staff will seek funding for regional projects and provide technical assistance to municipalities for local funding opportunities.	MetroCOG staff will seek funding for regional projects and provide technical assistance to municipalities for local funding opportunities.	MetroCOG staff will seek funding for regional projects and provide technical assistance to municipalities for local funding opportunities.	MetroCOG staff will seek funding for regional projects and provide technical assistance to municipalities for local funding opportunities.
Municipalities will integrate NHMP recommendations into local plans, ordinances and budgets.	Municipalities will integrate NHMP recommendations into local plans, ordinances and budgets.	Municipalities will integrate NHMP recommendations into local plans, ordinances and budgets.	Municipalities will integrate NHMP recommendations into local plans, ordinances and budgets.	Municipalities will integrate NHMP recommendations into local plans, ordinances and budgets.
Quarterly meetings of the Conservation Technical Advisory Committee, hosted by the MetroCOG. Meeting agendas will include an item for municipalities to provide updates on the status of natural hazard mitigation actions.	Quarterly meetings of the Conservation Technical Advisory Committee, hosted by the MetroCOG. Meeting agendas will include an item for municipalities to provide updates on the status of natural hazard mitigation actions.	Quarterly meetings of the Conservation Technical Advisory Committee, hosted by the MetroCOG. Meeting agendas will include an item for municipalities to provide updates on the status of natural hazard mitigation actions.	Quarterly meetings of the Conservation Technical Advisory Committee, hosted by the MetroCOG. Meeting agendas will include an item for municipalities to provide updates on the status of natural hazard mitigation actions.	Quarterly meetings of the Conservation Technical Advisory Committee, hosted by the MetroCOG. Meeting agendas will include an item for municipalities to provide updates on the status of natural hazard mitigation actions. The CTAC will serve as a forum to discuss the status of the NHMP update.
Local coordinators will host a meeting with local staff to track progress on local mitigation actions and add new actions if appropriate. A summary of the meeting will be recorded to inform the next NHMP Update.	Local coordinators will host a meeting with local staff to track progress on local mitigation actions and add new actions if appropriate. A summary of the meeting will be recorded to inform the next NHMP Update.	Local coordinators will host a meeting with local staff to track progress on local mitigation actions and add new actions if appropriate. A summary of the meeting will be recorded to inform the next NHMP Update.	Local coordinators will host a meeting with local staff to track progress on local mitigation actions and add new actions if appropriate. A summary of the meeting will be recorded to inform the next NHMP Update.	Local coordinators will host a meeting with local staff to track progress on local mitigation actions and add new actions if appropriate. A summary of the meeting will be recorded to inform the next NHMP Update.
			MetroCOG will integrate NHMP recommendations into the Regional Plan of Conservation & Development. MetroCOG staff will work with municipalities to seek funding for the 2024 update of the NHMP.	MetroCOG, CTAC, municipalities and regional stakeholders submit the draft update of the NHMP to CT DEEP and FEMA. Ultimate adoption of NHMP by local legislative bodies.

information on flood protection, open space protection, storm water management and floodplain mitigation. Since the 2014 Plan Update, the Towns of Fairfield, Stratford and Trumbull have been admitted to the CRS Program. The City of Bridgeport submitted a Letter of Intent in 2018 and is the process of conducting the CRS application process. Due to the rigorous requirements of the CRS Program, the NHMP will be monitored, evaluated and updated as a CRS activity.

The CRS program requires that communities with ten or more repetitive loss properties (Category C communities) prepare a floodplain management plan that covers the repetitive loss areas. All coastal communities in the MetroCOG Region are Category C Repetitive Loss Communities. To enhance its CRS participation, the Town of Stratford plans to prepare a Repetitive Loss Area Analysis (RLAA) should grant funding be available.

Multi-jurisdictional Natural Hazard Mitigation Plans that are prepared in accordance with the CRS Floodplain Management Planning process qualify for floodplain management planning credit in the CRS Program. Each CRS community has been awarded approximately 200 points for adopting the NHMP. CRS Program requirements for the NHMP, post-adoption, are as follows:

- An annual evaluation report on progress towards plan implementation must be prepared at least once each year and submitted with the community's annual CRS recertification. The report must be submitted to the governing body, released to the media, and made available to the public.
- If a community receives credit as a result of participation in a multi-jurisdictional plan that includes action items for each community, the annual evaluation report must cover those action items. This can be done either by a multi-jurisdictional planning committee or through separate submittals by each community. However, a community will not receive credit if it did not participate in the meeting at which the annual report was prepared. Therefore, the submittal needs to show who participated in the preparation of the report.
- The community must update the plan at least every five years.

As public information activities are an important and required component of CRS, NHMP public participation requirements and recommendations of the NHMP regarding public education and awareness are being implemented through the CRS Program.

5.5 Mitigation Actions for Each Community

This 2019 NHMP Update includes mitigation actions for each community in the MetroCOG Region. New mitigation strategies were identified through a variety of meetings with local officials, the results of the 2019 CRB Workshops and the public participation process which included meetings, online surveys and reviews of the Plan. Other recommendations from the 2014 NHMP are carried forward as presented in Section 4.5. These actions are presented after Section 5.5, following the discussion of the top five priorities for each community presented below.

The STAPLE+E method was used to prioritize each action for each community. The STAPLE+E worksheet for each community is in Appendix H.

The STAPLE+E scores were reviewed to determine the top five priority actions for each community. It is important to note that other factors unrelated to the scores, such as availability of funding, may influence community priorities from 2019 through 2024. Nevertheless, the top five actions for each community represent a cross section of the primary concerns in each.

City of Bridgeport - Top Five Priorities

- #2 - Revise Zoning Regulations to include LID and resilience standards.
- #3 - Consider additional freeboard (> 1 foot) as part of the Zoning Regulation rewrite.
- #4 - Factor climate change impacts into City-funded critical infrastructure improvement plans by requiring that the standards similar to those of Public Act 18-82 be applied to City-funded projects. As a first step, produce guidance document by 2021.
- #11 - Identify open space to acquire in high risk areas.
- #44 - Carefully regulate the 60 Main Street and ferry terminal site redevelopments to ensure flood resiliency; these are key waterfront sites and the City has an opportunity for supporting innovative designs.

Four of the City's high priority actions are related to future regulation of development and redevelopment projects in the city, which is ap-

propriate given the densely-developed nature of the community and the regulations revision which is upcoming.

Town of Easton - Top Five Priorities

- #1 - Increase funding for the routine tree maintenance and inspection program and remove a greater number of hazardous trees and branches each year.
- #3 - Consider the pros and cons of incorporating LID in the upcoming regulations revision, and incorporate if found appropriate.
- #6 - Work with CTDEEP to complete a formal validation of the RL list (currently one property) and update the mitigation status of each listed property.
- #7 - Contact the owners of RL properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.
- #8 - Acquire a generator for the Senior Center to enhance its use as a heating and cooling center.

Two of the Town's actions are related to its rural, forested character which has contributed to loss of power due to damage to utilities from trees.

Town of Fairfield - Top Five Priorities

- #6 - Address equipment in library basements to prepare for when flooding occurs.
- #7 - Coordinate with the USACE to determine a feasible option for future improvements to the Pine Creek dike system.
- #10 - Secure funds for execution of a portion of the Downtown Green Infrastructure Study and Conceptual Plan.
- #24 - Enhance flood protection at the DPW (immediate and surrounding areas) garage or consider feasibility of moving garage to an alternate location.
- #32 - Develop a written plan for inspection of Town-owned bridges that may experience scour during flood events. The plan should set a time frame for inspections after floodwaters have receded.

The Town's high-priority actions cover a wide range of flood-related concerns from basement flooding to a dike system to green infrastructure to bridge scour. These actions reflect the diverse nature of flood risk in Fairfield.

Town of Monroe - Top Five Priorities

- #1 - During POCD update, include an appropriate focus on stormwater management that sets policy for LID and green infrastructure, and encourages update of regulations to formalize the current practices of requiring onsite management of stormwater.
- #2 - Work with Aquarion to ensure that informal practices of Stepney Dam impoundment drawdown is formalized in Aquarion operations plans.
- #4 - Conduct a town wide hydrologic analysis that addresses flooding, stormwater, and water conveyance needs to identify projects that can be implemented to reduce risks to infrastructure and people.
- #12 - Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.
- #14 - Work with CTDEEP to complete a formal validation of the RL list (the sole listed RL property is not located in Monroe).

Monroe's concerns largely remain focused on flooding and drainage, and all of the high priority actions reflect this concern.

Town of Stratford - Top Five Priorities

- #3 - Pursue funding to mitigate existing and future risks to the South End and employment growth area identified in the Stratford Plan of Conservation and Development. Funds may be used to install flood control systems and/or elevate and extend seawalls where necessary.
- #5 - Pursue funding to design/build multiple culverts and channels on Surf Avenue at the Interstate 95 overpass along with the flood wall to reduce chronic coastal flooding.
- #8 - Secure funding to implement flood protection measures around the wastewater treatment plant by raising the existing flood control berm.
- #13 - Reduce inflow and infiltration through execution of projects utilizing the Clean Water Act grant funds.
- #17 - Pursue funding to floodproof municipal buildings in the town by raising equipment and generators and installing projectile-proof windows where necessary.

Similar to Fairfield, the Town of Stratford's

high-priority actions cover a wide range of flood-related concerns from structural projects to flood-proofing. These actions reflect the diverse nature of flood risk in Stratford.

Town of Trumbull - Top Five Priorities

- #2 - Prepare a draft of municipal regulations that can be used to require low impact development and green infrastructure.
- #7 - Provide FEMA Special Flood Hazard Area locations on the GIS Website.
- #16 - Expand awareness of the benefits and opportunities of green infrastructure and pervious pavement.
- #17 - Improve tree management through outreach and public education.
- #20 - Improve access to information on services for at-risk populations during disasters.

With suburban characteristics, the Town's priorities reflect an interest in LID, green infrastructure, and tree maintenance and management. These actions are meant to prevent flood risks and power outage risks from increasing.

5.6 Implementation Capabilities

Development patterns in the region have not significantly changed since the 2014 NHMP. FEMA's updated Digital Flood Insurance Rate Maps (DFIRMs) and the impacts of Hurricanes Sandy and Irene continue to affect communities throughout the Region. For many coastal communities, the Coastal V (Velocity) Zone widened to include structures that had previously been located in the A Zone (1% annual chance floodzone without wave action). Furthermore, the revised DFIRMs required communities to enforce local floodplain regulations for structures that were once located outside of the floodplain. Thus, recommendations from the previous NHMP regarding increased elevation standards and extending V Zone regulations to the A Zone have been implemented or partially realized by several communities since 2014.

The impacts of Hurricanes Irene and Sandy, as well as inland flooding, reinforce local awareness of the need to plan for and mitigate the potential impacts from flooding and high winds. While flooding had long-term devastating impacts on many properties along the coast, widespread power outages that lasted several days to a week or longer had severe impacts on residents, businesses and institutions throughout the Region. Improved tree maintenance programs, enhancing communication with utilities and prioritizing critical access roads for clearing of blockages from fallen tree limbs continue throughout the Region.

Each community has developed a number of capabilities relative to NHMP implementation as presented on the following pages.

MetroCOG

MetroCOG developed a regional website to inform residents, businesses, and regional stakeholders about natural hazards (http://www.ct-metro.org/projects/environment-sustainability-2/flood-protection/#.XNHr9RRKhpg). While primarily aimed at addressing flooding, the website also considers other hazards such as hurricanes, summer storms, tornadoes, winter storms, and earthquakes. The website details potential impacts and how residents and businesses should prepare for such events.

City of Bridgeport

The City of Bridgeport has demonstrated a commitment to implementing NHMP recommendations regarding regulations, infrastructure and public education and awareness. A storm water management manual was updated in 2008 and the Department of Public Facilities has the authority to amend the City's stormwater regulations. The CT-DEEP completed reconstruction of the Lake Forest dam in 2010. Over 200 seminars on flooding and public safety are provided to residents by the City of Bridgeport every year. A Reverse 911 system and the online Bridgeport 311 keeps residents and concerned citizens informed of issues and problems in the city.

Bridgeport has a universal shelter policy which helps to meet specific needs of attendees including allowing pets. Furthermore, the City has made significant progress installing green infrastructure on public property, completed an assessment of the existing and potential tree canopy in 2013, and has encouraged the elevation and/or floodproofing of homes and electrical systems. The City also continues to implement recommendations from the Pleasure Beach Master Plan, cleans catch basins, storm grates, and river channels regularly, and created a storm water detention area at the north end of Rogers Park (2013). New technology has also been established to track cleanup such as GPS

Proposed Mitigation Actions for Bridgeport, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
1	1	Complete CAV and initial steps to enter into the CRS program.	CF	PP, PR, PE, ES, NR	PF with assistance from OPED	The Engineering Department has been designated as the CRS coordinator (by letter to FEMA dated April 2018). The OPED staff will be brought into the process as needed, given the emphasis on reviewing building and development permits.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
2	3	Revise Zoning Regulations to include low impact development (LID) and resilience standards.	CF	PR	OPED	OPED has retained a consultant for assistance.	1/2019-6/2020	<$100,000	City capital funds to retain consultant
3	6	Consider freeboard of greater than one foot as part of the Zoning Regulation rewrite.	CF	PR	OPED	OPED has retained a consultant for assistance.	7/2019-6/2020	<$100,000	City capital funds to retain consultant
4	10	Factor climate change impacts into City-funded critical infrastructure improvement plans by requiring that the standards similar to those of Public Act 18-82 be applied to City-funded projects. As a first step, produce guidance document by 2021.	CF	PR, ST, PP	PF and OPED	PF and OPED will collaborate to develop this guidance, using the State's guidance related to Public Act 18-82.	1/2020-12/2020	<$100,000	Operating budget; existing staff to coordinate.
5	30	Complete the components of the "Resilient Bridgeport" project execution that are scheduled for 2019-2024.	CF	ST, PP	PF and OPED	The State is managing this project. The City will continue to coordinate and participate as needed.	7/2019-6/2024	>$1 Million	U.S. HUD, CT Department of Housing
6	26	Make additional progress with combined sewer separations and CSO abatement as outlined in plans developed in 2018.	CF	ST	PF and WPCA	PF to continue this effort.	7/2019-6/2024	>$1 Million	City capital funds and EPA CWA Funds
7	16	Pending funding, proceed with the Storm water Authority Feasibility Study. Consider incentives to reduce the amount of impervious surface in the City.	CF	PR	PF	PF will coordinate this project.	7/2020-6/2021	<$100,000	City capital funds to retain consultant
8	22	Pursue a target of 30 additional GI installations on City-owned land and along streets in the 2019-2024 planning timeframe. Select some locations from the Regional Framework for Coastal Resilience.	CF	ST, NR	PF and OPED	PF to continue this effort.	7/2019-6/2024	>$1 Million	City capital funds, grant funds, and in-kind services from non-profits such as The Nature Conservancy
9	7	Identify opportunities for floodplain easements on properties.	CF	NR	PF and OPED	PF and OPED will collaborate to identify these opportunities.	7/2019-6/2024	$100,000-$500,000	City capital funds to retain legal expertise
10	32	Secure waterfront easements as available.	CF	NR	PF and OPED	PF and OPED will collaborate to identify these opportunities.	7/2019-6/2024	$100,000-$500,000	City capital funds to retain legal expertise
11	77	Identify open space to acquire in high risk areas.	CF	NR	PF and OPED	PF and OPED will collaborate to identify these opportunities.	7/2019-6/2024	<$100,000	Operating budget; existing staff to coordinate (action is to identify only).
12	83	Identify parcels within potential marsh advancement zones that may be acquired, including properties along Cedar Creek that have low potential for redevelopment.	CF	NR	PF and OPED	PF and OPED will collaborate to identify these opportunities.	7/2019-6/2024	<$100,000	Operating budget; existing staff to coordinate (action is to identify only).
13	21	Conduct study of Ash Creek sedimentation to determine if sediment removal will enhance flood capacity.	CF	ST	PF	Public Facilities and engineering to work together and assess feasibility, using a consultant as needed.	7/2021-6/2022	<$100,000	City capital funds to retain consultant

Proposed Mitigation Actions for Bridgeport, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
14	85	Identify potential areas of erosion along Ash Creek that may require mitigation, and secure funding for feasibility studies.	CF	ST	PF	Public Facilities and engineering to work together and assess feasibility, using a consultant as needed.	7/2021-6/2022	<$100,000	City capital funds to retain consultant
15	27	Implement findings of the Lower West End resiliency planning to draw appropriate businesses to the northwest bank of Cedar Creek, such as water-dependent and floodable land uses.	CF	PP	OPED	OPED will work with the Bridgeport Economic Development Corporation (the agency that completed the planning study) to implement recommendations during the regulations revision process referenced above.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate.
16	28	Continue to remove derelict structures in flood zones and other areas of high risk; and redevelop or convert to open space. The target for 2019-2024 is ten additional properties.	CF	NR	PF and OPED	PF and OPED will collaborate to identify these opportunities.	7/2019-6/2024	>$1 Million	U.S. HUD, CT Department of Housing, FEMA HMA
17	48	Repair/replace the State Street Ext/Commerce Drive Bridge and upgrade the catch basins and drainage system.	CF	ST	PF	PF to lead this project.	7/2019-6/2024	>$1 Million	CT DOT and City capital funds
18	53	Execute design of the flood mitigation project for Island Brook and Ox Brook.	CF	ST	PF	PF to retain consultant or consultant team to complete this design.	7/2020-6/2022	$100,000-$500,000	City capital funds to retain consultants
19	54	Execute design of the flood mitigation project for northeast Bridgeport.	CF	ST	PF	PF to retain consultant or consultant team to complete this design.	7/2020-6/2022	$100,000-$500,000	City capital funds to retain consultants
20	58	Pursue funds for design of a demonstration project for green coastal bank protection opportunities along the Yellow Mill Channel.	CF	ST, NR	PF	PF to identify and secure funds. Potential funds are NOAA, NFWF, and CIRCA (state) grant programs.	7/2019-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
21	76	Pursue funds for design of a demonstration project for green coastal enhancement and restoration opportunities (similar to the action for Yellow Mill Channel, above).	CF	ST, NR	PF	PF to identify and secure funds. Potential funds are NOAA, NFWF, and CIRCA (state) grant programs.	7/2019-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
22	69	Continue to work with the Town of Stratford to complete the Bruce Brook improvements near Barnum Avenue.	CF	ST	PF	PF to collaborate as needed.	7/2019-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to work with Stratford).
23	73	Execute the design to address drainage and flooding at Seaview Avenue where it crosses the railroad line, potentially coinciding with the proposed Barnum RR Station.	CF	ST	PF	This item requires extensive coordination with CT DOT, MTA, and Metro North Rail. PF to retain consultant or consultant team to complete this design.	7/2021-6/2023	$100,000-$500,000	City capital funds to retain consultants
24	78	Select one recommendation from the Pequonnock River Watershed Plan to improve water quality and alleviate flooding, and secure funding.	CF	ST, NR	PF and OPED	PF and OPED to identify and secure funds. Potential funds are NOAA, NFWF, and EPA Section 319 (state) grant programs.	7/2020-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
25	79	Select one recommendation from the Rooster River Watershed Plan to improve water quality and alleviate flooding, and secure funding.	CF	ST, NR	PF and OPED	PF and OPED to identify and secure funds. Potential funds are NOAA, NFWF, and EPA Section 319 (state) grant programs.	7/2020-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
26	42	Pilot test an automated viaduct closure system for one viaduct.	CF	ES	PF and EMHS	EMHS to lead, but PF needed for coordination and design considerations.	7/2022-6/2024	$100,000-$500,000	City capital funds with potential DHS emergency preparedness funding
27	50	Conduct a feasibility study for increasing the heights of the breakwaters.	CF	ST	PF	PF to retain consultant or consultant team to complete this study.	7/2022-6/2024	$100,000-$500,000	City capital funds to retain consultants

Proposed Mitigation Actions for Bridgeport, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
28	63	Raise the remaining unmitigated electrical boxes at Seaside Park in areas vulnerable to flooding.	CF	PP	PF	PF to complete these efforts.	7/2020-6/2021	<$100,000	City capital funds
29	65	Conduct a feasibility study for increasing the heights of the seawalls.	CF	ST	PF	PF to retain consultant or consultant team to complete this study.	7/2021-6/2023	$100,000-$500,000	City capital funds to retain consultants
30	86	Implement outreach programs to educate citizens regarding flood management ordinances, flood insurance programs, and other flood relevant issues, including creditable activities in the CRS program and GIS.	CF	PE	PF and EMHS	Conduct in connection with CRS entry, if CRS entry timeframe allows. If CRS participation does not proceed as planned, complete the action as a standalone action.	7/2020-6/2024	<$100,000	Operating budget; existing staff to coordinate in connection with CRS
31	87	Increase community awareness and preparedness through education and outreach via the religious community, public libraries and higher education and implement neighborhood specific emergency and communications plans.	CF	PE	PF and EMHS	Conduct in connection with CRS entry, if CRS entry timeframe allows. If CRS participation does not proceed as planned, complete the action as a standalone action.	7/2020-6/2024	<$100,000	Operating budget; existing staff to coordinate in connection with CRS
32	88	Finalize specific neighborhood plans for emergency management and communications and implement plan provisions. Each plan should be translated into the top five languages spoken in the City of Bridgeport.	CF	ES	PF and EMHS	Conduct in connection with CRS entry, if CRS entry timeframe allows. If CRS participation does not proceed as planned, complete the action as a standalone action.	7/2020-6/2024	<$100,000	Operating budget; existing staff to coordinate
33	89	Increase education and communications on response procedures for residents of high density public housing areas, especially those located in the coastal area.	CF	PE	EMHS	EMHS to lead. Coordinate with action #34 below.	7/2020-6/2024	<$100,000	Operating budget; existing staff to coordinate
34	95	In high density and public housing developments, post the evacuation routes and evaluate additional transportation needs.	CF	ES	EMHS	EMHS to lead.	7/2020-6/2024	<$100,000	Operating budget; existing staff to coordinate
35	90	Assess/augment local areas of the public refuge system across the City and ensure residents are aware of uses and procedures during emergencies.	CF	ES	EMHS	EMHS to lead.	7/2020-6/2024	<$100,000	Operating budget; existing staff to coordinate
36	91	Encourage homeowners to purchase flood insurance.	CF	PP	PF and EMHS	Conduct in connection with CRS entry, if CRS entry timeframe allows. If CRS participation does not proceed as planned, complete the action as a standalone action.	7/2021-6/2024	<$100,000	Operating budget; existing staff to coordinate in connection with CRS
37	92	Help reduce the disbursement of toxic substances from flooded homes and facilities by conducting outreach regarding this topic.	CF	ES	PF and EMHS	Conduct in connection with CRS entry, if CRS entry timeframe allows. If CRS participation does not proceed as planned, complete the action as a standalone action.	7/2020-6/2024	<$100,000	Operating budget; existing staff to coordinate
38	97	Once during the timeframe of this plan update, assess capacities and needs of sheltering, cooling, and medical network across City as well as adjoining municipalities in the Greater Bridgeport Region.	CF	ES	EMHS	EMHS to lead.	7/2021-6/2023	$100,000-$500,000	City capital funds to retain consultants

Proposed Mitigation Actions for Bridgeport, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
39	98	Secure funding to install a warning siren system in areas vulnerable to inland and coastal flooding to alert residents to evacuate.	CF	ES	EMHS	EMHS to lead.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
40	101	Pursue funding to complete a feasibility study for raising bridges and their connecting roads in one specific pilot area.	CF	ST	PF	PF to retain consultant or consultant team to complete this study.	7/2022-6/2023	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
41	102	Secure funding to upgrade Emergency Operations Center equipment to include a complete camera board for situational awareness and display board for public facilities equipment tracking.	CF	ES	EMHS	EMHS to lead.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
42	104	Secure funding to install a camera system to more thoroughly understand storm surge and to enhance evacuation.	N	ES	EMHS	EMHS to lead.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
43	--	Closely monitor Marina Village reconstruction to ensure that the project is flood resilient.	N	PP	OPED	This is an ongoing project. The action is geared toward ensuring that the design and construction is resulting in a resilient housing complex.	7/2019-6/2023	<$100,000	Operating budget; existing staff to coordinate.
44	--	Carefully regulate the 60 Main Street and ferry terminal site redevelopments to ensure that the projects are flood resilient; these are key waterfront sites and the City has an opportunity for supporting innovative designs.	N	PP	OPED	These are anticipated high-visibility projects. The action is geared toward ensuring that the designs and construction are resulting in resilient development.	7/2019-6/2023	<$100,000	Operating budget; existing staff to coordinate.
45	--	Incorporate flood resiliency in the WWTP upgrades that occur in the near future.	N	PP	WPCA	WPCA to lead when project occurs.	7/2020-6/2024	>$1 Million	City capital funds and EPA CWA Funds
46	--	Complete permitting and design of Johnson Creek Living Shoreline demonstration project.	N	NR	PF	PF to pick up design from MetroCOG and continue.	7/2020-6/2021	<$100,000	City capital funds to retain consultant
47	--	Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.	N	PE	EMHS	Coordinate directly with CT DEEP on this statewide initiative.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
48	--	Secure funding from SHPO to conduct a historic resources survey focusing on potential historic resources in coastal flood risk areas.	N	PP	OPED	Coordinate directly with CT SHPO on this statewide initiative.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
49	--	Work with CT DEEP to complete a formal validation of the RL list and update the mitigation status of each listed property.	N	PP	PF and OPED	Coordinate directly with CT DEEP. Conduct in connection with CRS entry, if CRS entry timeframe allows. If CRS participation does not proceed as planned, complete the action as a standalone action.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.

Proposed Mitigation Actions for Bridgeport, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
50	--	Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.	N	PP	PF and OPED	Conduct in connection with CRS entry, if CRS entry timeframe allows. If CRS participation does not proceed as planned, complete the action as a standalone action.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.

Type of Action:

PP = property protection
PR = prevention
NR = natural resources protection or restoration
ST = structural projects
ES = emergency services
PE = public education

Proposed Mitigation Actions for Easton, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
1	2	Increase funding for the routine tree maintenance and inspection program and remove a greater number of hazardous trees and branches each year.	CF	PP	DPW	Work with Board of Selectmen and Finance to increase funding, with target for accomplishing this within two years.	7/2019-6/2021	<$100,000	Town budget
2	--	Consider the costs and benefits associated with registering in the Sustainable CT program, which includes some objectives aligned with hazard mitigation.	N	PR, NR, PE	Board of Selectmen	Reach out to neighboring towns such as Fairfield and Trumbull to seek advice about the program. Estimate staff and volunteer time to enter and remain in the program.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
3	--	Consider the pros and cons of incorporating low impact development (LID) in the upcoming regulations revision, and incorporate if found appropriate.	N	PR, NR	PZC	During the upcoming regulations revision process, review and consider the findings and recommendations of the rural LID guidance funded by CIRCA and published on the CIRCA web site.	7/2019-6/2022	<$100,000	Operating budget; existing staff to coordinate.
4	--	Secure funding from SHPO to conduct a historic resources survey focusing on potential historic resources in flood risk areas.	N	PP	PZC	Coordinate directly with CT SHPO on this statewide initiative.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
5	--	Complete bridge replacement projects funded by the LOTCIP program.	N	ST	DPW	Work with MetroCOG and CT DOT as needed to execute projects.	7/2019-6/2023	>$1 Million	LOTCIP
6	--	Work with CT DEEP to complete a formal validation of the RL list (currently one property) and update the mitigation status of each listed property.	N	PP	DPW	Contact the NFIP coordinator at CT DEEP to get started and obtain the appropriate forms.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
7	--	Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.	N	PP	DPW	Contact the NFIP coordinator at CT DEEP to obtain the template for a letter.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
8	--	Acquire a generator for the Senior Center to enhance its use as a heating and cooling center.	N	ES	Board of Selectmen	Secure funding and assign project to appropriate staff to execute.	7/2021-6/2022	$100,000-$500,000	FEMA HMA, DHS emergency preparedness

Type of Action:

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ST = structural projects
ES = emergency services
PE = public education

Proposed Mitigation Actions for Fairfield, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
1	9, 28	Secure funds and proceed with construction of the Riverside Drive tide gate system.	CF	ST	Conservation and Engineering	Conservation and DPW are collaborating on this project.	7/2019-6/2020	>$1 Million	Capital improvement funds
2	10, 83	Ensure that the current dam failure EAPs are filed with pertinent Town departments.	CF	ES	OEM	EMD to obtain copies and file them with departments such as DPW and Planning.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate (action is to obtain and distribute).
3	14, 25	Advance the South Benson Road pumping station to final design and construction.	CF	ST	DPW and Engineering	DPW/Engineering is coordinating this project.	7/2019-6/2022	>$1 Million	Capital improvement funds
4	14, 28	Pursue an executable phase of the Riverside Drive/Ash Creek flood protection system by focusing on design of a segment that affects only Town-owned land.	CF	ST	Conservation, Engineering, and FECB	Conservation and DPW collaborated on the Riverside Drive/Ash Creek project in 2016-2017 and should collaborate on the design phase.	7/2020-6/2022	$100,000-$500,000	Grant funds for design
5	15	Secure funds for a microgrid at the WWTP to include adjacent and nearby municipal buildings.	CF	PP, ES	WPCA	The Town has been successful with the State's microgrid program. Leverage this experience to pursue a microgrid at the WWTP and nearby buildings.	7/2019-6/2022	>$1 Million	State microgrid program
6	19	Address equipment in library basements to prepare for when flooding occurs.	CF	PP	Library/DPW	Continue this project to completion.	7/2019-6/2020	$100,000-$500,000	Capital improvement funds
7	26, 28	Coordinate with the Army Corps of Engineers to determine a feasible option for future improvements to the Pine Creek dike system.	CF	ST	FECB and Engineering	Although the Town's FECB has been discussing and promoting various means of improving the dike system, the Army Corps of Engineers is proceeding with a study of flood protection. The Town should try to participate more directly, either through CT DEEP or with the Corps.	7/2019-6/2022	<$100,000	Operating budget; existing staff to coordinate.
8	27, 62	Secure funds for beach nourishment in accordance with the engineered beach study and design.	CF	NR	Conservation and Engineering	The Town has conducted beach nourishment in the past and will utilize similar procedures going forward.	7/2020-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
9	34	Relocate the sanitary sewer transmission truck lines from areas of significant flood risk.	CF	ST	WPCA	This project is underway. Carry forward for completion.	7/2019-6/2022	>$1 Million	Capital improvement funds
10	35, 36, 41	Secure funds for execution of a portion of the Downtown Green Infrastructure Study and Conceptual Plan.	CF	ST, NR	Engineering	The Town applied for a grant from NFWF in 2018 but was not successful. Additional funding opportunities will be pursued.	7/2019-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
11	38	Allocate funds for replacements of culverts to alleviate flooding in the Rooster River, Royal Avenue, and Camden Street areas.	CF	ST	Engineering	Study and design has been completed for some areas. The Town will begin allocating funds through the CIP.	7/2022-6/2024	>$1 Million	Capital improvement funds

Proposed Mitigation Actions for Fairfield, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
12	39	Determine whether the culvert at Merwins Lane can be replaced to increase capacity.	CF	ST	Engineering	Due to neighbor opposition, the action should focus on determining whether the project is feasible, whether it can achieve the desired result, and whether issues with the neighbor can be resolved. If one of these is not favorable, this project should be retired from consideration.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
13	40	Identify the next steps to set aside land for detention/watershed storage in the Rooster River watershed.	CF	ST, NR	Engineering and DPW	A flood detention/storage study was completed in 2019 to augment previous studies in the Rooster River watershed. Utilize the momentum surrounding this issue to define the next steps to further explore feasibility.	7/2020-6/2021	<$100,000	Operating budget for existing staff and/or consultant
14	43	Conduct a feasibility study for elevating Fairfield Beach Road, including public outreach and incorporation of public input.	CF	ST, ES	Engineering, DPW, and OEM	Due to the dual needs of this project (engineering feasibility and public buy-in), a formal feasibility study will be conducted that directly incorporates public input.	7/2020-6/2021	$100,000-$500,000	Operating budget for existing staff and/or consultant
15	45	Conduct a study to determine the feasibility of extending the dike in Southport along Harbor Road.	CF	ST	FECB and Engineering	This feasibility study can proceed in a manner similar to the Ash Creek/Riverside Drive study and conceptual plan. Public input should be directly incorporated.	7/2021-6/2022	$100,000-$500,000	Operating budget for existing staff and/or consultant
16	49	Determine the feasibility of installing pumping stations beneath the railroad underpasses to remove floodwaters.	CF	ST	Engineering and DPW	Engineering should retain a consultant for this feasibility study if possible, but may be able to complete in-house if time permits.	7/2021-6/2022	$100,000-$500,000	Operating budget for existing staff and/or consultant
17	58	Select one action from the Rooster River Watershed Management Plan and secure funding for its execution. Focus on an action that has multiple hazard mitigation benefits.	CF	ST, NR	Conservation	Conservation to identify and secure funds. Potential funds are NOAA, NFWF, and EPA Section 319 (state) grant programs.	7/2020-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
18	61	Conduct outreach and feasibility study for the conceptual dune ridge design that addresses the Penfield/Shoal Point area.	CF	ST, NR	Conservation, Engineering, and FECB	Conservation to identify and secure funds, working with the FECB and Engineering. Potential funds are NOAA, NFWF, and CIRCA (state) grant programs.	7/2021-6/2022	$100,000-$500,000	Operating budget for existing staff and/or consultant
19	64	Train and equip neighborhood storm response teams (i.e., CERT), especially in neighborhoods that have in the past been cut off from emergency services by floodwaters or downed trees, as well as to assist lower-income populations.	CF	ES	OEM and CERT	The EMD and CERTs will collaborate to accomplish this action.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate.
20	67	Develop tree planting guidelines that are aligned with hazard mitigation goals.	CF	PP	DPW and Conservation	Conservation and DPW will team to develop guidelines.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate.

Proposed Mitigation Actions for Fairfield, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
21	78	Conduct a feasibility study for elevating Turney Road, including public outreach and incorporation of public input.	CF	ST, ES	Conservation, Engineering, FECB, and OEM	Because elevating Turney Road was partly addressed during the public engagement associated with the Riverside Drive/Ash Creek flood protection study and conceptual plan, this past effort should be used to initiate the study. Consultant services may be secured for further evaluating the feasibility and engaging the public. However, unlike the Riverside Drive/Ash Creek study, this action should directly involve emergency management personnel.	7/2022-6/2023	$100,000-$500,000	Operating budget for existing staff and/or consultant
22	81	Provide and install generators to senior housing complexes and other complexes that serve vulnerable populations to allow them to shelter in place.	CF	ES, PP	OEM and DPW	Assigned staff should begin securing funds early in the lifespan of the plan update.	7/2021-6/2024	>$1 Million	FEMA HMA, DHS preparedness grants
24	89	Enhance flood protection at the DPW (immediate and surrounding areas) garage or consider feasibility of moving garage to an alternate location.	CF	ST, PP	DPW	DPW will commence this action with a feasibility study that addresses flood protection vs. relocation.	7/2022-6/2023	$100,000-$500,000	Operating budget for existing staff and/or consultant
25	--	Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.	N	PE	P&Z	Coordinate directly with CT DEEP on this statewide initiative.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
26	--	Secure funding from SHPO to conduct a historic resources survey focusing on potential historic resources in coastal flood risk areas.	N	PP	P&Z	Coordinate directly with CT SHPO on this statewide initiative.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
27	--	Work with CT DEEP to complete a formal validation of the RL list and update the mitigation status of each listed property.	N	PP	P&Z	Coordinate directly with CT DEEP. Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
28	--	Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner. Coordinate with CRS participation.	N	PP	P&Z	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
29	--	Contact the owners of properties that experience frequent flooding (which may not be RL properties) to suggest options for mitigating flooding. This should be accomplished with a letter directly mailed to each property owner.	N	PP	P&Z	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.

Proposed Mitigation Actions for Fairfield, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
30	--	Achieve additional objectives associated with the Sustainable CT program, focusing on those aligned with hazard mitigation.	N	PR, NR	Existing volunteer committee	Encourage the existing volunteer committee to achieve additional actions, with direction to focus on those aligned with hazard mitigation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
31	--	Work with USGS or NOAA to establish a tide gauge in Long Island Sound to provide real-time water level data. The nearest USGS gauge is in Stamford and the nearest NOAA gauge is in Bridgeport.	N	ES	Engineering and OEM	This action will require considerable coordination. Initial contacts should be made with NOAA and USGS, as both agencies host tide gauges in Long Island Sound.	7/2020-6/2022	<$100,000	Operating budget; existing staff to coordinate. Funding for execution will be addressed in future updates.
32	--	Develop a written plan for inspection of Town-owned bridges that may experience scour during flood events. The plan should set a timeframe for inspections after floodwaters have receded.	N	ST	DPW and Engineering	DPW and Engineering will collaborate on this action. Consultant services are not likely needed.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
33	--	Provide suggested "code plus" strategies to make structures more resilient to wind when applications are processed for elevating buildings.	N	PP	Building	The Building Department staff will commence this action in the next fiscal year and then make it common practice.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.

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Proposed Mitigation Actions for Monroe, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
1	1	During the update of the POCD, include an appropriate focus on stormwater management that sets policy for LID and green infrastructure, and encourages update of regulations to formalize the current practices of requiring onsite management of stormwater.	CF	PR, NR	PZ	The POCD Update will commence by mid-2019. The Town and consultant will work together to address LID and GI.	7/2019-6/2020	<$100,000	Town operating budget for staff resources plus allocation for consultant services during POCD update
2	2	Work with Aquarion to ensure that informal practices of Stepney Dam impoundment drawdown is formalized in Aquarion operations plans.	CF	ST, ES	ENG and EMD	This action has appeared in the hazard mitigation plan several times. During the timeframe of this update, the appropriate departments will make contact with Aquarion management to address and formalize this practice.	7/2020-6/2022	<$100,000	Town operating budget for staff resources
3	3	Work with Aquarion to ensure that informal practices of Pequonnock River water diversions are formalized in Aquarion operations plans.	CF	ST, ES	ENG and EMD	This action has appeared in the hazard mitigation plan several times. During the timeframe of this update, the appropriate departments will make contact with Aquarion management to address and formalize this practice.	7/2020-6/2022	<$100,000	Town operating budget for staff resources
4	6	Conduct a townwide hydrologic analysis that addresses flooding, stormwater, and water conveyance needs to identify projects that can be implemented to reduce risks to infrastructure and people.	CF	ST	ENG	A townwide hydrologic/drainage study has been in the Town's CIP for several years and has not been conducted due to budgetary constraints. The Engineering Department will work to secure the funding and execute this project.	7/2020-6/2022	$100,000-$500,000	Town capital funds combined with grant funds
5	10	Implement one additional project identified in the watershed management plan, with a focus on flood risk reduction.	CF	PR, NR	PW	The Town has made progress with this action. For example, a 319 grant was secured and used for a stream buffer enhancement project within the last five years. However, additional projects are desired outside the limited resources of the 319 program. The Town has experience in this matter and will apply for additional funds.	7/2021-6/2023	$100,000-$500,000	Town capital funds combined with Section 319 grant funds
6	12	Acquire and install a generator for the high school that enables its use as a shelter.	CF	ES, PP	PW	The Town will secure funds and prioritize this installation.	7/2021-6/2023	>$1 Million	FEMA HMA and DHS preparedness grants
7	16	Ensure that CT DOT completes the upgrades of culverts on Route 25.	CF	ST	ENG/CT DOT	Route 25 work is underway with completion scheduled for the timeframe of this plan update. The Town will continue to work with CT DOT.	7/2019-6/2023	>$1 Million	CT DOT
8	17	Ensure that CT DOT completes the Route 25 drainage and flood risk reduction projects.	CF	ST	ENG/CT DOT	Route 25 work is underway with completion scheduled for the timeframe of this plan update. The Town will continue to work with CT DOT.	7/2019-6/2023	>$1 Million	CT DOT
9	20	Prepare a hydraulic study of the part of Sammis Brook where a beaver dam has been a problem in the past, and determine if improvements are needed to reduce flood risk.	CF	ST	ENG	The necessary scope of this evaluation is believed understood. The Engineering Department will secure the appropriate funds and either complete internally, or retain a consultant for, the study.	7/2020-6/2021	<$100,000	Town capital funds combined with grant funds

Proposed Mitigation Actions for Monroe, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
10	--	Address (in the Subdivision Regulations) tree heights and appropriate street trees.	N	PP	PZ	Conduct simultaneous with the POCD Update noted above.	7/2019-6/2020	<$100,000	Town operating budget for staff resources plus allocation for consultant services during POCD update
11	--	Consider the costs and benefits associated with registering in the Sustainable CT program, which includes some objectives aligned with hazard mitigation.	N	PR, NR	PZ	Reach out to neighboring towns such as Fairfield and Trumbull to seek advice about the program. Estimate staff and volunteer time to enter and remain in the program.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
12	--	Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.	N	PE	EMD	Coordinate directly with CT DEEP on this statewide initiative.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
13	--	Secure funding from SHPO to conduct a historic resources survey focusing on potential historic resources in flood risk areas.	N	PP	PZ	Coordinate directly with CT SHPO on this statewide initiative.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
14	--	Work with CT DEEP to complete a formal validation of the RL list (the sole listed RL property is not located in Monroe).	N	PP	ENG	Coordinate directly with CT DEEP to obtain the appropriate forms. Only one property is listed in Monroe.	7/2019-6/2020	Minimal	Operating budget; existing staff to coordinate.

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Proposed Mitigation Actions for Stratford, 2019-2024

Current ID (2019-2024)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
1	1, 3	Develop comprehensive stormwater regulations that address both quality and quantity control measures including MS4 requirements and Low Impact Development (LID) techniques for transit oriented district at Town Center.	CF	PR	Engineering and Planning	Develop regulations based on model stormwater ordinance that will be released by the State.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
2	6	Elevate private homes in Lordship area to meet or exceed FEMA requirements for Base Flood Elevation. Phase I to include homes on Washington Parkway. Pursue funding through Pre-disaster mitigation grants to elevate five homes on Washington Parkway.	CF	PP	Engineering and Planning	Over the next five years, pursue funding through Pre-disaster mitigation grants to elevate five homes on Washington Parkway.	7/2020-6/2024	>$1 Million	FEMA HMA
3	7	Pursue funding to mitigate existing and future risks to the South End and employment growth area identified in the Stratford Plan of Conservation and Development. Funds may be used to install flood control systems and/or elevate and extend seawalls where necessary.	CF	ST, PP	Engineering and Planning	Planning and Engineering will collaborate to pursue options for the South End, consistent with findings of the Coastal Resilience Plan.	7/2021-6/2024	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
4	11	Maintain a list of properties that have experienced repetitive loss from storms and flooding (with owner interest for future acquisition) and pursue open space funding as it becomes available. Acquire properties based on this list (this action calls for list development and applications for funding in the timeframe of this plan; acquisitions are deferred to future editions of this plan).	CF	NR	Engineering and Planning	The Town's Coastal Resiliency Plan recommended various mitigation measures for properties severely impacted by flooding. These actions should be prioritized and properties that should be acquired should be identified.	7/2020-6/2024	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
5	14	Pursue funding to design and initiate multiple culverts and channels on Surf Avenue at the I-95 overpass along with the flood wall to reduce chronic coastal flooding.	CF	ST	Engineering and PW	Currently, the design of Surf Avenue culvert replacement project is on-going. Funding is needed for implementation.	7/2020-6/2023	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
6	15	Pursue funding to design and initiate multiple culverts and channels at Barnum Avenue between Sage and Bowe Avenues.	CF	ST	Engineering and PW	Significant progress has been made relative to design along this section of Bruce Brook. Funding is needed for construction.	7/2020-6/2023	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
7	19	Secure funding to build Short Beach to the elevations and grades of survey design recommendations conducted by US Army Corps of Engineers.	CF	ST	Engineering and PW	Departments to collaborate on securing funding for this project.	7/2020-6/2023	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
8	20	Secure funding to implement flood protection measures around the wastewater treatment plant by raising the existing flood control berm.	CF	ST	Engineering and PW	A portion of funding is in place through CDBG grant for implementation. 40% match is needed to implement through federal or state grants.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
9	21	Secure funding to design and build twin 6' X 8' box culvert with regulating tide gate to allow tidal flushing while preventing tidal flooding along Lordship Boulevard.	CF	ST	Engineering and PW	This action was recommended in the Coastal Resilience Plan. Funding is needed for design and construction.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).

Proposed Mitigation Actions for Stratford, 2019-2024

Current ID (2019-2024)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
10	23	Pursue funding to evaluate the feasibility of daylighting of streams and prioritize actions to reduce hazards.	CF	ST, NR	Engineering and PW	This action came from a separation of previous strategies related to Tanners Brook. The section of Tanners Brook near Broadbridge Avenue is addressed below. The Town will leverage its experience with Tanners Brook to evaluate whether other streams can be partially restored by removing channelized sections.	7/2022-6/2024	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
11	23	Continue with the project to increase the width of the channelized stream downstream of Broadbridge Avenue to reduce flooding at a condominium parking lot. The replacement and enlargement of the structured channel and natural channel that conveys Tanners Brook from Broadbridge Avenue South to King Street has been designed and is in the permitting phase. Funds have been allocated for construction. Execute construction in the timeframe of this plan.	CF	ST	Engineering and PW	This project is in the permitting phase. CT DEEP permits and a FEMA CLOMR application have been applied for. When approved, the Town will proceed with the balance of funding requests and to bid the project. Following bid and fully funding the project, a contract will be awarded and the Town will oversee construction to fully implement the project.	7/2019-6/2024	>$1 Million	Capital improvement funds
12	24, 27	Pursue funding to complete the bridge project to elevate Broad Street over Ferry Creek. Town currently pursuing funding through LOTCIP grant.	CF	ST	Engineering and PW	This project is under preliminary design. The Town is currently proceeding with further study based on FEMA revisions to the Base Flood Elevation. Permitting and funding will be the next step in this design. Once completed, the town will bid and oversee construction to fully implement the project.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
13	25, 29	Reduce I/I through execution of projects utilizing the Clean Water Act grant funds.	CF	ST	Engineering and PW	Based on completion of assessment of its operations, the Town conducted a study to determine the areas where Inflow and Infiltration can be reduced. The Town applied for and availed $ 700,000 from State Clean Water Fund Grant Money.	7/2020-6/2023	>$1 Million	Clean Water Act funds.
14	26	Secure funding to design and build a 36" relief pipe to Long Brook and proceed to construction.	CF	ST	Engineering and PW	Funding for this, which was obtained through a CDBG-DR grant, was de-commissioned recently. This project is currently being designed and will proceed to local permitting in the near future. The project should be implemented and constructed in less then two years.	7/2022-6/2024	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
15	28, 33	Execute the West Broad Street project to reduce drainage-related flooding and flooding associated with Tanners Brook.	CF	ST	Engineering and PW	This project is currently getting ready to go into construction phase. State funding in the amount of $ 6 million is in place.	7/2019-6/2021	>$1 Million	State funding

Proposed Mitigation Actions for Stratford, 2019-2024

Current ID (2019-2024)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
16	30	Secure funding to respond to future needs as appropriate at Oronoque Village. Specifically, acquire additional equipment to provided enhanced emergency management related to the development.	CF	ES	Emergency Management	The Health Department has reached out to Oronoque residents providing them with emergency preparedness information. In addition, staff have provided on-site instructions on how to enroll in the Stratford Electronic Notification System so they can be sure to receive timely emergency notifications. The Town needs additional equipment for providing emergency management services to Oronoque Village.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
17	31	Pursue funding to floodproof municipal buildings in the town by raising equipment and generators and installing projectile-proof windows where necessary.	CF	PP	PW	Staff will pursue funds from FEMA and other mitigation and preparedness grant programs.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
18	32	Secure funds to replace the stormwater culverts under Old Spring Road with new box culverts.	CF	ST	Engineering and PW	Permitting and design are underway. Staff is considering applying for local bridge program to pursue funding and implement.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
19	39	Implement the best approach to maintain the functionality of the Birdseye boat ramp under flooded conditions to ensure continued use during disasters.	CF	ES	PW and Emergency Management	In 2018, a consultant was hired to do assessment of the Birdseye ramp to maintain functionality during events. No implementation has been undertaken yet although $14,000 was budgeted. EMS Department is currently seeking approval from DEEP and the Town Council.	7/2019-6/2021	>$1 Million	Capital improvement funds
20	40	Pursue funding to implement structural flood proofing on Massarik Avenue/Benton Street.	CF	PP	Engineering and Planning	Staff will pursue funds from FEMA and other mitigation and preparedness grant programs.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
21	42	Mitigate bank erosion at Diane Terrace and engage private properties on that street.	CF	ST	Engineering and PW	The Town will include in CIP and prioritize this project and schedule the design, permitting and construction in the order of prioritized capital improvements	7/2020-6/2022	>$1 Million	Capital improvement funds
22	44	Secure funds to floodproof the animal shelter adjacent to the Wastewater Treatment Plant.	CF	PP	Engineering and PW	Staff will pursue funds from FEMA and other mitigation and preparedness grant programs.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
23	45	Conduct a feasibility study to determine whether the Lordship seawall can be modified to increase its resilience to future storms.	CF	ST	Engineering and PW	Staff will pursue funds from municipal budgets and other mitigation and resiliency grant programs, and then conduct the study in-house or retain consultants.	7/2020-6/2021	$100,000-$500,000	Combination of municipal and other funds (NOAA, CIRCA, etc.)

Proposed Mitigation Actions for Stratford, 2019-2024

Current ID (2019-2024)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
24	46	Secure funds for pumping station improvements to incorporate resiliency; and implement the improvements.	CF	ST	Engineering and PW	Town Engineer is currently applying for funding provided by WPCA; Clean Water Fund is being used for construction. Town is currently addressing resiliency of pumping stations both in North End and South End. These will be shovel ready in 2019.	7/2019-6/2021	>$1 Million	Clean Water Act funds.
25	53	Pursue funding to address the impacts of hazards on natural areas, focusing on individual studies for Roosevelt Forest, Booth Memorial Park, Far Mill River, and Wooster Park. The studies should identify ways to enhance defensive/protective features for additional flood protection in the long term.	CF	NR	Engineering and Conservation	Staff will pursue funds from municipal budgets and other mitigation and resiliency grant programs, and then conduct the study in-house or retain consultants.	7/2020-6/2021	$100,000-$500,000	Combination of municipal and other funds (NOAA, CIRCA, etc.)
26	54	Educate private land owners to understand the importance and benefits of maintaining and leaving vegetation in place to stabilize riverbanks	CF	PE	Conservation	The Town is in the process of developing an educational program as part of CRS program that teaches residents and businesses about the importance of maintaining an adequate vegetative buffer to maintain stream channels and prevent erosion based on flooding. The program aims to educate the public through flyers and discussions at public events.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate.
27	56	Secure landowner permissions and funding for design and execution of the bank stabilization project at Russian Beach.	CF	ST, NR	Engineering and Conservation	Staff will pursue funds from mitigation and resiliency grant programs, and engage legal counsel for landowner coordination.	7/2020-6/2021	$100,000-$500,000	Operating budget; existing staff and legal counsel to coordinate.
28	57	Develop a tree replanting plan and maintenance plan consistent with recommended arboriculture practices and that is supportive of the "right tree, right place" policy. The Town's Tree Warden will work to establish a regular tree planting program and obtain grants (as available) in support of the initiative. The Tree Warden will also develop an ordinance that mandates a tree replanting program/schedule in accordance with "right tree, right place" policy.	CF	PP	PW	The Town's Tree Warden will work to establish a regular tree planting program and obtain grants (as available) in support of the initiative. The Tree Warden will also develop an ordinance that mandates a tree replanting program/schedule in accordance with "right tree, right place" policy.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate.
29	60-64	Develop, adopt, and implement a PPI as part of the Town's participation in the CRS program.	CF	PE	Planning	The Town of Stratford is now officially a CRS community. It received a preliminary rating of Class 8 from FEMA. To raise public awareness on disaster preparedness and mitigation, and to maintain good standing with the program, a Program for Public Information (PPI) outlining the schedule and implementation of all outreach activities should be adopted by the Town. This PPI will serve as a guide in educating general public and local officials on all types of hazards.	7/2019-6/2021	<$100,000	Operating budget; existing staff to coordinate.

Proposed Mitigation Actions for Stratford, 2019-2024

Current ID (2019-2024)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
30	59, 67	Update the evacuation plans and make these routes available on the new Regional GIS system. The evacuation routes will also be made available to the public on the Town's website.	CF	ES	Emergency Management	The Town's EMS has plans to update the system. The Town will work with the Stratford Fire Department, Police Department, and MetroCOG to update the evacuation plans and make these routes available on the new Regional GIS system. The evacuation routes will be made available to the public on the Town's website.	7/2019-6/2020	$100,000-$500,000	Operating budget; existing staff to coordinate.
31	69	Pursue funding to provide adequate back-up power to Birdseye Municipal Complex, Flood Middle School, Stratford Housing Authority units, and the Baldwin Senior Center; and to make improvements to the existing generator at Stratford Fire Station .	CF	ES, PP	PW	The Town secured approximately $40,000 through CIP and installed an emergency generator at Bunnell High School. Generators will be installed at other sites as additional funding is available.	7/2020-6/2022	>$1 Million	FEMA HMA and preparedness grant programs
32	70	Pursue funding to update evacuation plans to factor lack of access to transportation routes during peak events such as a severe hurricane, and display them using digital signage at select locations. Integrate notification of voluntary and mandatory evacuation orders into these messages.	CF	ES, PE	Emergency Management	Fire, Police and Health will coordinate to utilize the Stratford Electronic Notification System in a planned series of pre-event notifications warning people about the dangers of waiting too long to evacuate. For those not heeding voluntary or mandatory, the local National Guard unit may be called in to evacuate in the areas of highest risk. The Town currently has a multi-tiered approach to creating a communication flow with residents. The Town's EMS works with CAO's office to disseminate messages through social media. The Town has plans to display digital signage with disaster preparedness and recovery messages at select locations in the town in the near future.	7/2019-6/2020	$100,000-$500,000	Operating budget; existing staff to coordinate.
33	74	Clearly define roles of the Community Emergency Response Teams (CERT) to optimize response functions of emergency services.	CF	ES	Emergency Management	The CERT team has been trained to provide support in sheltering and mass care activities. The Emergency Operation Plan has been updated to delineate their function. The Town's EMS Department has goals to re-focus on this program to determine usage, how to keep CERT members engaged, how to train and recruit CERT members, etc.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
34	--	The Town's EMS has identified the need to rehabilitate the dispatch center which has outdated technology and equipment. Pursue funding to rehabilitate the dispatch center with new technology and furniture, and conduct evaluation to improve the data center.	N	ES	Emergency Management	The Town's EMS has identified the need to rehabilitate the dispatch center which has outdated technology and equipment.	7/2019-6/2021	$100,000-$500,000	Operating budget; existing staff to coordinate.

Proposed Mitigation Actions for Stratford, 2019-2024

Current ID (2019-2024)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
35	--	Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.	N	PE	Planning and Emergency Management	Coordinate directly with CT DEEP on this statewide initiative.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
36	--	Secure funding from SHPO to conduct a historic resources survey focusing on potential historic resources in coastal flood risk areas.	N	PP	Planning	Coordinate directly with CT SHPO on this statewide initiative.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).
37	--	Work with CT DEEP to complete a formal validation of the RL list and update the mitigation status of each listed property.	N	PP	Planning	Coordinate directly with CT DEEP. Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
38	--	Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner. Coordinate with CRS participation.	N	PP	Planning	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
39	--	Prepare a Repetitive Loss Area Analysis (RLAA) in support of the Town's CRS program including education and outreach to homeowners.	N	PP	Planning	This study will prioritize flood mitigation activities to reduce impacts to the 77 repetitive loss properties and neighboring properties in the RLAs. The study will set priorities using a systematic approach for evaluating the feasibility of FEMA-approved flood mitigation activities including a benefit/cost analysis of feasible activities. The results of this study will enable to Town to then pursue additional funding based on the highest priorities outlined in the study.	7/2020-6/2021	$100,000	Grant funds.

Type of Action:

PP = property protection
PR = prevention
NR = natural resources protection or restoration
ST = structural projects
ES = emergency services
PE = public education

Proposed Mitigation Actions for Trumbull, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
1	4, 9, 31, 36	Conduct a feasibility study to determine where green infrastructure can be installed.	CF	PR, NR	P&Z and PW	The Town encourages use of LID during development reviews. However, while the Town has made some progress, it does not have a policy in place or locations identified for additional green infrastructure, nor are regulations in place to require such. A feasibility study will help the Town understand where effective GI can be installed.	7/2020-6/2021	$100,000-$500,000	Grant funding from Section 319, CIRCA, or other
2	4, 9	Prepare a draft of municipal regulations that can be used to require low impact development and green infrastructure.	CF	PR, NR	P&Z and PW	Review and consider the findings and recommendations of the rural LID guidance funded by CIRCA and published on the CIRCA web site. Potential regulations can be taken from this guidance.	7/2020-6/2022	<$100,000	Operating budget; existing staff to coordinate.
3	3	Secure funds and develop a scope of work to study a portion of the Town's drainage easements and drainage network.	CF	ST	PW	The Town intends to secure funds and retain consultant services for this study.	7/2021-6/2022	$100,000-$500,000	Capital budget combined with operating budgets and grant funds such as STEAP or other
4	6, 7, 10, 11, 17	Secure funds and develop a scope of work to study one of the Town's watercourses and watersheds. Island Brook will be prioritized next.	CF	ST	PW	The Town intends to secure funds and retain consultant services for this study.	7/2021-6/2022	$100,000-$500,000	Capital budget combined with operating budgets and grant funds such as STEAP or other
5	15, 18	Annually send a letter to property owners in RL areas to inform them of options for elevating or acquiring structures to reduce flood risk.	CF	PP	PW	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
6	16	Provide 100 year flood plain locations on the GIS Website for residents.	CF	PE	P&Z	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
7	23	Floodproof remaining sewer pumping stations in accordance with master plan, as designs are completed.	CF	PP	PW	A master plan for pumping stations has been completed. The Town is currently rehabilitating and floodproofing the Beardsley pump station. Improvements were completed to the Reservoir Pump station to prevent flooding. The Town will continue with remaining pumping stations.	7/2019-6/2023	>$1,000,000	Operating sewer budget and CWA funds as appropriate.
8	28	Secure funds and complete study to determine how water level in Pinewood Lake can be controlled to mitigate downstream flooding.	CF	ST	PW	The Town intends to secure funds and retain consultant services for this study.	7/2021-6/2022	$100,000-$500,000	Capital budget combined with operating budgets and grant funds such as STEAP or other
9	35	Determine if bridge and culvert replacements at Twin Brooks and Trumbull Center will effectively reduce flooding, and secure funding if found to be cost effective.	CF	ST	PW	This action may be possible to complete internally without outside services, as the need is to make a determination and then secure funding (if appropriate).	7/2022-6/2023	<$100,000	Operating budget; existing staff to coordinate (action is mainly to secure funding).
10	30	Allocate funds and conduct design for enlarged conveyance at Daniels Farm Road/Pequonnock River and downstream in the Twin Brooks Park area.	CF	ST	PW	The Town intends to secure funds and retain consultant services for this study.	7/2021-6/2022	$100,000-$500,000	Capital budget combined with operating budgets and grant funds such as STEAP or other (funds are for design stage).

Proposed Mitigation Actions for Trumbull, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
11	33	Determine if floodplain enhancement at the bend of the Pequonnock River near Route 127 is feasible and would be effective for flood mitigation, and secure funding if found to be cost effective.	CF	ST	PW	The Town intends to secure funds and retain consultant services for this study.	7/2022-6/2023	$100,000-$500,000	Capital budget combined with operating budgets and grant funds such as STEAP or other (funds are for design stage).
12	34	Allocate funds and retain consultant to review dam safety files and EAPs for dams in Trumbull; and determine which dams may have the ability to be modified for flood mitigation capabilities.	CF	ST	PW	The Town intends to secure funds and retain consultant services for this study. The Town may be able to couple this effort with action #10 above (Pinewood Lake).	7/2021-6/2022	$100,000-$500,000	Capital budget combined with operating budgets and grant funds such as STEAP or other.
13	39	Expand awareness of the benefits and opportunities of green infrastructure and pervious pavement.	CF	PE	P&Z and PW	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
14	40	Improve tree management through outreach and public education.	CF	PE	P&Z and PW	Although tree limb maintenance is not related to CRS participation, the Town may be able to leverage CRS-related efforts to conduct this outreach.		<$100,000	Operating budget; existing staff to coordinate.
15	41	Expand outreach to residents on the importance of wetlands and drainage swales for risk reduction from flooding. Look to increase the protection of additional floodplains.	CF	PE	P&Z and PW	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
16	42	Expand outreach efforts regarding how to prepare for extreme weather and what to do in the event of a natural disaster, including enhancing the Town's website, preparing pamphlets to be available at Town Hall and the Trumbull Library and enhancing hazard-related mapping.	CF	PE	OEM	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
17	43	Improve access to information on services for at-risk populations during disasters.	CF	PE	OEM	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
18	49	Improve access to and availability of information on services during an emergency.	CF	PE, ES	OEM	Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
19	58	Evaluate the need for emergency access into and from the Trumbull Corporate Park and the Westfield/Trumbull Shopping Mall.	CF	ES	OEM	OEM to conduct.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate.
20	--	Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.	N	PE	OEM	Coordinate directly with CT DEEP on this statewide initiative.	7/2020-6/2021	<$100,000	Operating budget; existing staff to coordinate.
21	--	Secure funding from SHPO to conduct a historic resources survey focusing on potential historic resources in flood risk areas.	N	PP	P&Z	Coordinate directly with CT SHPO on this statewide initiative.	7/2021-6/2022	<$100,000	Operating budget; existing staff to coordinate (action is to secure funds only).

Proposed Mitigation Actions for Trumbull, 2019-2024

Current ID (2019-2014)	Former ID (2014-2019)	Action for 2019-2024	Carried Forward or New Action?	Type of Action	Responsible Department	Process for Implementation	Timeframe	Cost	Funding
22	--	Work with CT DEEP to complete a formal validation of the RL list and update the mitigation status of each listed property.	N	PP	PW	Coordinate directly with CT DEEP. Conduct in connection with CRS participation.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.
23	--	Take steps to become certified in the Sustainable CT program, focusing on actions that achieve hazard mitigation benefits.	N	PR, NR	P&Z	Existing coordinator to work on this.	7/2019-6/2020	<$100,000	Operating budget; existing staff to coordinate.

Type of Action:

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tracking of snow removal vehicles. The City has also completed an All-Hazards Emergency Operations Plan Annex for winter storms. Furthermore, City Hall, the Police Department, and the Senior Center are served by a new microgrid.

Lastly, the City has begun implementing the first phase of the Ox Brook flood control project, which is rehabilitating the dam at Elton Rogers Park. The project is currently in the final stages of design and permitting, with construction planned for late 2019 or early 2020. The City has also been addressing stormwater issues through changes to the stormwater regulations and through the WPCA's efforts to implement items required by the MS4 permit. These include efforts to disconnect directly connected impervious areas from collection systems, and installation of bioswales to remove roadway runoff from the sewer system.

Town of Easton

The Town of Easton continues to ensure the safety of residents by erecting barricades at roads vulnerable to flooding during heavy rain events and by warning residents that may become isolated by flooded roads or downed trees. Tree management and maintenance plans, as well as structural projects to mitigate the impact of flooding on state and local roads are new recommendations.

The Town of Easton has recently completed culvert replacements to address previously flood-prone culverts on Morehouse Brook and Cricker Brook (2018), and has established a Reverse 911 system that, combined with direct outreach, was effective at warning residents of flooded areas during the September 2018 storm.

Town of Fairfield

The Town of Fairfield's coastline was severely impacted by coastal flooding and storm surge from both Hurricanes Irene and Sandy. The Town adopted FEMA's new DFIRMs in 2013, and many property owners in the coastal floodplain have elevated their homes.

Since the 2014 NHMP Update, the Town of Fairfield has made significant strides in implementing actions related to hazard mitigation. The Town has enrolled in the CRS Program, developed tree health, cutting and maintenance plans, and requires any new streets to utilize underground utilities. Other initiatives have included:

- The Town has also completed the Riverside Drive/Ash Creek Flood Protection and Coastal Resiliency Study and has developed conceptual plans for green infrastructure projects throughout Fairfield Center.
- Design of the South Benson Road Pump Station has been completed with the Town seeking funds for implementation.
- The berm protecting the Wastewater Treatment Facility has also been hardened and regular maintenance to the Town's culvert and drainage system continues.
- The Town was successful in installing a microgrid to provide electricity to critical facilities such as Police & Fire Headquarters, the Emergency Operations Center, a nearby cell tower and homeless shelter. Generators have also been installed at evacuation facilities around Town.
- Finally, since the destruction caused by Superstorm Sandy, approximately 50 home elevations have occurred using FEMA Hazard Mitigation Grant Program (HMGP) funds or other federal funding sources. Approximately 50 more homes were elevated using solely private funds, and approximately 200 homes were torn down and rebuilt to flood-compliant standards.

Town of Monroe

The Town of Monroe continues proactive maintenance of culverts and keeping debris out of streams. In addition, the Town continues to encourage residents to use alternate routes in areas prone to flooding during flood events via public service announcements, notices, and postings on the Town web site.

The Town of Monroe continues to improve coordination between the Department of Public Works and local "Make Safe" utility crews before, during and after a high wind or storm event. This coordination ensures that resources are allocated to priority locations, downed trees and limbs are cleared from roads and the ultimate restoration of power to homes and businesses. Communication with residents who may become isolated because of downed tree limbs is another ongoing activity in the Town.

The Town of Monroe has also installed generators at the Town Garage, Jockey Hollow Middle School, all town shelters, the EOC, the Senior Center, and Fairway Acres (the Town's senior hous-

ing complex). Furthermore, the windows at the EOC, Masuk High School, and shelters have been upgraded to be storm resistant.

Finally, the Connecticut Department of Transportation is replacing Bridge 02220 and Bridge 02219 on Route 25 (Main Street). The project involves the replacement of two box culverts, installation of new drainage and a water main, and associated road repairs and paving.

Town of Stratford

Since the 2014 NHMP Update, the Town of Stratford has implemented a number of recommendations. Improvements to the storm drainage system were made in the Main Street/Stratford Center viaduct and Massarik Avenue/Benton Street locations. The King Street culvert (to Main Street) has been upgraded to increase hydraulic capacity. Since 2014, the Connecticut Department of Transportation completed a project to elevate Route 113 in the vicinity of Sikorsky Airport. The Everbridge electronic notification system was implemented to replace the Citywatch Reverse 911 system. In addition to the recommendations from the 2014 NHMP Update, some manhole covers have been waterproofed and a backup generator has been secured for the Stratford Housing Authority offices and community center.

More recently, the Town of Stratford has enlarged the Tanners Brook channel to mitigate flooding downstream of Stratford High School. Numerous studies have been completed presenting recommendations that, if funding is secured, will mitigate damage from natural hazards. The Town also completed a Coastal Resilience Plan, and entered into the CRS program in 2019.

Town of Trumbull

The Town of Trumbull continues to provide timely information, notifications and warnings to residents through a reverse 911 system and regular website updates. Long term needs for power continuity and generator upgrades continue to be assessed. Improvements to communication and coordination with Region 1, local utility crews and the EMS Department are ongoing.

More recently, the Town of Trumbull has joined FEMA's CRS Program, replaced several floodprone culverts, and installed generators at sewage pump stations throughout town.

5.7 Technical & Financial Resources

This section is comprised of a list of resources that may potentially provide technical and financial assistance for completion of the actions as described in the NHMP. This list is not inclusive of all resources and should be updated periodically.

Federal Resources

Federal Emergency Management Agency (Region I)
99 High Street, 6th floor, Boston, MA 02110
(617) 956-7506 http://www.fema.gov/

FEMA provides funding for mitigation activities through several programs. Each MetroCOG municipality is eligible to apply for funding through the State of Connecticut as a subgrantee. The State of Connecticut (as well as online resources) can provide application development and project eligibility assistance.

Federal Insurance and Mitigation Administration (FIMA): FIMA is comprised of three divisions that administer FEMA's hazard mitigation programs. The Risk Analysis Division applies engineering and planning practices in conjunction with advanced technology tools to identify hazards, assess vulnerabilities, and develop strategies to manage the risks associated with natural hazards. The Risk Reduction Division works to reduce risk to life and property through the use of land use controls, building practices, and other tools. These activities address risk in both the existing built environment and in future development, and they occur in both pre- and post-disaster environments. The Risk Insurance Division helps reduce flood losses by providing affordable flood insurance for property owners and by encouraging communities to adopt and enforce floodplain management regulations that mitigate the effects of flooding on new and improved structures.

FEMA programs administered by the **Risk Analysis Division** include:

- **Flood Map Modernization:** maintains and updates NFIP maps.
- **National Dam Safety Program:** provides state assistance funds, research, and training in dam safety procedures.
- **National Hurricane Program:** conducts and supports projects and activities that help protect communities from hurricane hazards.

- **Multi-Hazard Mitigation Planning (HMGP):** a process for states and communities to identify policies, activities, and tools that can reduce or eliminate long-term risk to life and property from a hazard event.

FEMA programs administered by the **Risk Reduction Division** include:

- **Hazard Mitigation Grant Program (HMGP):** provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration.
- **Flood Mitigation Assistance Program (FMA):** provides funds to assist states and communities to implement measures that reduce or eliminate the long-term risk of flood damage to structures insurable under the National Flood Insurance Program (NFIP).
- **Pre-Disaster Mitigation Grant Program (PDM):** provides program funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.
- **Community Rating System (CRS):** a voluntary incentive program under the NFIP that recognizes and encourages community floodplain management activities.
- **National Earthquake Hazards Reduction Program (NEHRP):** in conjunction with state and regional organizations supports state and local programs designed to protect citizens from earthquake hazards.

The **Risk Insurance Division** oversees the National Flood Insurance Program (NFIP), which enables property owners in participating communities to purchase flood insurance. The NFIP assists communities in complying with the requirements of the program and publishes flood hazard maps and flood insurance studies to determine areas of risk.

- **The Office of Response & Recovery:** As part of the National Disaster Recovery Framework, the Office of Response & Recovery provides information on dollar amounts of past disaster assistance including Public Assistance, Individual Assistance, and Temporary Housing. Information on retrofitting and acquisition/relocation initiatives is maintained by the division. The Office also provides mobile emergency response support to disaster areas, supports the National Disaster Medical System, and provides urban search and rescue teams for disaster victims in confined spaces. Federal disaster assistance programs are coordinated by this Office. This includes the **Public Assistance Grant Program (PA)**, which provides 75% grants for mitigation projects to protect eligible damaged public and private nonprofit facilities from future damage. "Minimization" grants at 100% are available through the **Individuals and Family Grant Program**. The **Hazard Mitigation Grant Program** and the **Fire Management Assistance Grant Program** are also administered by this division.
- **Emergency Management Performance Grants (EMPG) Program:** The Fiscal Year (FY) 2019 Emergency Management Performance Grants (EMPG) Program provides resources to assist state, local, tribal, and territorial governments in preparing for all hazards, as authorized by the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.). The FY 2013 EMPG Program plays an important role in the implementation of the National Preparedness System (NPS) by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal (NPG) of a secure and resilient Nation. Delivering core capabilities requires the combined effort of the whole community, rather than the exclusive effort of any single organization or level of government. The FY 2019 EMPG's allowable costs support efforts to build and sustain core capabilities across the prevention, protection, mitigation, response, and recovery mission areas.

Title VI of the Stafford Act authorizes FEMA to make grants for the purpose of providing a system of emergency preparedness for the protection of life and property in the United States from hazards, and to vest responsibility for emergency preparedness jointly in the Federal government and the states and their political subdivisions. The Federal government, through the EMPG Program, provides necessary direction, coordination, guidance, and necessary assistance, as authorized in this title so that a comprehensive emergency preparedness system exists for all hazards.

FEMA is also offering High Hazard Potential Dams Rehabilitation Grants in 2019. These grants provide up to $1.25 million for technical, planning, design, and construction assistance to non-Federal governmental organizations or nonprofit organiza-

tions for the rehabilitation of eligible high hazard dams.

Small Business Administration (Region I)
10 Causeway Street, Suite 812
Boston, MA 02222-1093
(617) 565-8416 http://www.sba.gov/

The Small Business Administration has the authority to "declare" disaster areas following disasters that affect a significant number of homes and businesses but that would not need additional assistance through FEMA (SBA assistance is triggered by a FEMA declaration, however.) SBA can provide additional low-interest funds (up to 20% above what an eligible applicant would "normally" qualify for) to install mitigation measures. They can also loan the cost of bringing a damaged property up to state or local code requirements. These loans can be used in combination with the new "mitigation insurance" under the NFIP or in lieu of that coverage.

Environmental Protection Agency - Region I
1 Congress Street, Suite 1100
Boston, MA 02114-2023
(888) 372-7341

Grants for restoration and repair and educational activities, including:

Capitalization Grants for State Revolving Funds: Low interest loans to governments to repair, replace, or relocate wastewater treatment plants damaged in floods. The grants do not apply to drinking water or other utilities.

Clean Water Act Section 319 Grants: Cost-share grants to state agencies that can be used for funding watershed resource restoration activities, including wetlands and other aquatic habitat (riparian zones). Only those activities that control non-point pollution are eligible. Grants are administered through the CT DEEP, Bureau of Water Management, Planning and Standards Division.

U.S. Department of Housing and Urban Development
20 Church Street, 19th Floor
Hartford, CT 06103-3220
(860) 240-4800
http://www.hud.gov/

The U.S. Department of Housing and Urban Development offers Community Development Block Grants (CDBG) to communities with populations greater than 50,000, who may contact HUD directly regarding CDBG. One program objective is to improve housing conditions for low and moderate income families. Projects can include acquiring flood prone homes or protecting them from flood damage. Funding is a 100% grant and can be used as a source of local matching funds for other funding programs such as FEMA's "404" Hazard Mitigation Grant Program. Funds can also be applied toward "blighted" conditions, which is often the post-flood condition. A separate set of funds exists for conditions that create an "imminent threat." The funds have been used in the past to replace (and redesign) bridges where flood damage eliminates police and fire access to the other side of the waterway. Funds are also available for smaller municipalities through the state-administered CDBG program participated in by the State of Connecticut.

U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751
(978) 318-8520

The Corps provides 100% funding for floodplain management planning and technical assistance to states and local governments under several flood control acts and the Floodplain Management Services Program (FPMS).

U.S. Department of Commerce
National Weather Service
Northeast River Forecast Center
445 Myles Standish Blvd.
Taunton, MA 02780
(508) 824-5116
http://www.nws.noaa.gov/

The National Weather Service provides weather, water, and climate data, forecasts and warnings for the protection of life and property and the enhancement of the national economy.

U.S. Department of the Interior

National Park Service
Steve Golden, Program Leader
Rivers, Trails, & Conservation Assistance
15 State Street
Boston, MA 02109
(617) 223-5123
http://www.nps.gov/rtca/

The National Park Service provides communities with technical assistance to conserve rivers, preserve open space, and develop trails and greenways and assists with the identification of nonstructural options for floodplain development.

U.S. Fish and Wildlife Service

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
(603) 223-2541
http://www.fws.gov/

The U.S. Fish and Wildlife Service provides technical and financial assistance to restore wetlands and riparian habitats through the North American Wetland Conservation and Partners for Fish and Wildlife programs.

U.S. Department of Agriculture

Natural Resources Conservation Service (formerly SCS)
Connecticut State Office
344 Merrow Road, Suite A
Tolland, CT 06084-3917
(860) 871-4011

The Natural Resources Conservation Service works cooperatively with landowners, conservation districts, federal, state, and local governments, and citizens from urban and rural communities to restore and enhance the landscape. NRCS soil conservationists, soil scientists, agronomists, ecologists, engineers, planners, and other specialists promote land stewardship by providing technical assistance through teams to address surface and groundwater quality; wetlands, riparian areas, and biodiversity; aquatic and terrestrial habitat; and impacts of land use changes.

State Resources

Connecticut Department of Economic and Community Development (DECD)

505 Hudson Street
Hartford, CT 06106-7106
(860) 270-8000
http://www.ct.gov/ecd/

The Connecticut Department of Economic and Community Development administers HUD's State CDBG Program, awards smaller communities and rural areas grants for use in revitalizing neighborhoods, expands affordable housing and economic opportunities and improves community facilities and services.

Connecticut Department of Energy & Environmental Protection

79 Elm Street
Hartford, CT 06106-5127
(860) 424-3000
http://www.dep.state.ct.us/

The Connecticut DEEP provides technical assistance to subapplicants for planning efforts and hazard mitigation assistance projects. The department includes several divisions with various functions related to hazard mitigation:

Bureau of Water Protection and Land Reuse, Inland Water Resources Division: This division is generally responsible for flood hazard mitigation in Connecticut, including administration of the National Flood Insurance Program.

National Flood Insurance Program State Coordinator: Provides flood insurance and floodplain management technical assistance, floodplain management ordinance review, substantial damage/improvement requirements, community assistance visit, and other general flood hazard mitigation planning including the delineation of floodways.

Flood & Erosion Control Board Program: Provides assistance to municipalities with active Flood and Erosion Control Boards to solve flooding, beach erosion, and dam repair problems. The program has the power to construct and repair flood and erosion management systems. Certain nonstructural measures that mitigate flood damages are also eligible. Funding is provided to communities that apply for assistance through a Flood & Erosion Control Board on a noncompetitive basis.

Inland Wetlands and Watercourses Management Program: Provides training, technical, and planning assistance to local Inland Wetlands Commissions and reviews and approves municipal regulations for localities. Also controls flood management and natural disaster mitigation.

Dam Safety Program: Charged with the responsibility for administration and enforcement of Connecticut's dam safety laws. The program regulates the operation and maintenance of dams in the state. Permits the construction, repair, or alteration of dams, dikes, or similar structures and maintains a registration database of all known dams statewide. This program also operates a statewide inspection program.

Clean Water Fund: Funding and grants under the Clean Water Act involving sewage treatment plant construction and upgrades, combined sewer overflow remediation, nutrient removal and nonpoint source pollution control projects that protect Long Island Sound, collection system improvements, water pollution control and river restoration.

Bureau of Water Management Planning and Standards Division: administers the Section 319

nonpoint source pollution reduction grants and municipal facilities program, which deals with mitigating pollution from wastewater treatment plants.

Office of Long Island Sound Programs (OLISP): Administers the Coastal Area Management (CAM) Act program and Long Island Sound License Plate Program.

Department of Emergency Services and Public Protection

25 Sigourney Street, 6th Floor
Hartford, CT 06106-5042
(860) 256-0800
http://www.ct.gov/demhs/

The Department of Emergency Services and Public Protection (DESPP) houses the Division of Emergency Management and Homeland Security (DEMHS). DEMHS includes emergency preparedness, response and recovery, mitigation and an extensive training program. DESPP/DEMHS is the state point of contact for most FEMA grant and assistance programs.

State Hazard Mitigation Officer: The State Hazard Mitigation Officer (SHMO) is responsible for hazard mitigation planning and policy, oversight of administration of the Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, and Pre-Disaster Mitigation Program. The Officer also has the responsibility of making certain that the State Natural Hazard Mitigation Plan is updated every five years.

Connecticut Department of Administrative Services

1111 Country Club Road
Middletown, CT 06457
(860) 685-8190
http://www.ct.gov/das/

Office of the State Building Inspector: The Office of the State Building Inspector is housed under the Division of Construction Services. The Office is responsible for administering and enforcing the Connecticut State Building Code and is also responsible for the municipal Building Inspector Training Program.

Connecticut Department of Transportation

2800 Berlin Turnpike
Newington, CT 06131-7546
(860) 594-2000
http://www.ct.gov/dot/

The Department of Transportation (CT DOT) administers the federal surface transportation bill, Fixing America's Surface Transportation Act (FAST Act), that includes grants for projects that promote alternative or improved methods of transportation. Funding through grants can often be used for projects with mitigation benefits such as preservation of open space in the form of bicycling and walking trails. CT DOT is also involved in traffic improvements and bridge repairs that could be mitigation related.

Private and Other Resources

Association of State Dam Safety Officials (ASDSO)

450 Old Vine Street
Lexington, KY 40507
(859) 257-5140
http://www.damsafety.org

ASDSO is a nonprofit organization of state and federal dam safety regulators, dam owners/operators, dam designers, manufacturers/suppliers, academia, contractors and others interested in dam safety. Their mission is to advance and improve the safety of dams by supporting the dam safety community and state dam safety programs, raising awareness, facilitating cooperation, providing a forum for the exchange of information, representing dam safety interests before governments, providing outreach programs, and creating a unified community of dam safety advocates.

The Association of State Floodplain Managers (ASFPM)

2809 Fish Hatchery Road, Suite 204
Madison, WI 53713
(608) 274-0123
http://www.floods.org/

ASFPM is a professional association with a membership of over 6,000 that provides education to assist state and local governments with the NFIP, CRS, and flood mitigation. ASFPM has developed a series of technical and topical research papers and a series of proceedings from their annual conferences. Many "mitigation success stories" have been documented through these resources and provide a good starting point for planning.

Connecticut Association of Flood Managers (CAFM)

P.O. Box 270213
West Hartford, CT 06127
ContactCAFM@gmail.com
http://ctfloods.org

CAFM is a professional association of private consultants and local floodplain managers that provides training and outreach regarding flood management techniques. CAFM is the local state chapter of ASFPM.

Insurance Institute for Business & Home Safety (IBHS)

4775 East Fowler Avenue
Tampa, FL 33617
(813) 286-3400
http://www.ibhs.org/

IBHS conducts objective, scientific research to identify and promote effective actions that strengthen homes, businesses, and communities against natural disasters and other causes of loss. The institute advocates the development and implementation of building codes and standards nationwide and may be a good source of model code language.

Multidisciplinary Center for Earthquake Engineering and Research (MCEER)

University at Buffalo
State University of New York
Red Jacket Quadrangle
Buffalo, NY 14261
(716) 645-3391
http://mceer.buffalo.edu/

Originally a source for earthquake statistics, research, engineering and planning advice, MCEER's mission has expanded from earthquake engineering to the technical and socioeconomic impacts of a variety of hazards, both natural and man-made, on critical infrastructure, facilities, and society.

The National Association of Flood & Storm water Management Agencies (NAFSMA)

1301 K Street, NW, Suite 800 East
Washington, DC 20005
(202) 218-4122
http://www.nafsma.org

NAFSMA is an organization of public agencies whose function is the protection of lives, property and economic activity from the adverse impacts of storm and flood waters. The Association advocates public policy, encourages technologies and conducts education programs which facilitate and enhance the achievement of the public service function of its members.

National Emergency Management Association (NEMA)

P.O. Box 11910
Lexington, KY 40578
(859)-244-8000
http://www.nemaweb.org/

NEMA provides national leadership and expertise in comprehensive emergency management, serves as a vital emergency management information and assistance resource and advances continuous improvement in emergency management through strategic partnerships, innovative programs, and collaborative policy positions.

Natural Hazards Center

University of Colorado at Boulder
482 UCB
Boulder, CO 80309-0482
(303) 492-6818
http://www.colorado.edu/hazards/

The Natural Hazards Center advances and communicates knowledge on hazards mitigation and disaster preparedness, response and recovery. Using an all-hazards and interdisciplinary framework, the Center fosters information sharing and integration of activities among researchers, practitioners, and policy makers from around the world, supports and conducts research and provides educational opportunities for the next generation of hazards scholars and professionals. The Floodplain Management Resource Center is a free library and referral service of the ASFPM for floodplain management publications.

City of Bridgeport, Connecticut

OFFICE OF CENTRAL GRANTS

999 Broad Street
Bridgeport, Connecticut 06604
Telephone (203) 332-5662
Fax (203) 332-5657

JOSEPH P. GANIM
Mayor

ISOLINA DeJESUS
Manager
Central Grants

Comm. #141-18 Ref'd to ECD&E Committee on 09/16/2019

August 28, 2019

Office of the City Clerk
City of Bridgeport
45 Lyon Terrace, Room 204
Bridgeport, Connecticut 06604

Re: **Resolution – State of Connecticut Department of Energy and Environmental Protection (DEEP) Grants-In-Aid Program for Capping of Seaside Landfill (#9C206)**

Attached, please find a Grant Summary and Resolution for **State of Connecticut Department of Energy and Environmental Protection (DEEP) Grants-In-Aid Program for Capping of Seaside Landfill** to be referred to the **Committee on Economic and Community Development and Environment** of the City Council.

Grant: **State of Connecticut Department of Energy and Environmental Protection (DEEP) Grants-In-Aid Program for Capping of Seaside Landfill**

If you have any questions or require any additional information, please contact me at 203-576-7134 or isolina.dejesus@Bridgeportct.gov.

Thank you,

Isolina DeJesus
Central Grants Office

RECEIVED
CITY CLERKS OFFICE
19 AUG 28 PM 4:15

ATTEST
CITY CLERK

GRANT SUMMARY

PROJECT TITLE: **State of Connecticut Department of Energy and Environmental Protection (DEEP) Grants-In-Aid Program for Capping of Seaside Landfill (#9C206)**

NEW x RENEWAL CONTINUING

DEPARTMENT SUBMITTING INFORMATION: **Central Grants Office**

CONTACT NAME: **Isolina DeJesus**

PHONE NUMBER: **203-576-7134**

PROJECT SUMMARY/DESCRIPTION: The City of Bridgeport Public Facilities Department is seeking funding made available through Sec. 9-16 of Public Act #44,2010, to cover costs associated with the capping of the Seaside Landfill. On October 22, 2018, DEEP approved the proposed Seaside Landfill Closure Plan which includes closure of the RCRA metal hydroxide cell. The State of Connecticut Bond Commission approved the use of $1.2M of Grants-In-Aid funds for this purpose at the September 20, 2018 Bond Commission meeting.

CONTRACT PERIOD: To Be Determined

FUNDING SOURCES (include matching funds):	
Federal:	**$**
State:	$ 1,200,000
City:	$
Other:	$

GRANT FUNDED PROJECT FUNDS REQUESTED	
Salaries/Benefits:	$
Supplies:	$
Construction:	$ 1,200,000
Other:	$

MATCH REQUIRED		
	CASH	IN-KIND
Source: **N/A**		
Salaries/Benefits:	$	$
Supplies:	$	$
Construction:	$	$
Other:	$	$

A Resolution by the Bridgeport City Council

Regarding the

State of Connecticut
Department of Energy and Environmental Protection (DEEP)

Grant-in-Aid for Capping of Seaside Landfill (#9C206)

WHEREAS, the **State of Connecticut Office of Policy and Management** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through **Grants-in-Aid** for infrastructure projects and programs in the City of Bridgeport; and

WHEREAS, the State of Connecticut Bond Commission approved the use of $1.2M via approval of Public Act #44,2010, Section 9-16 at the September 20, 2018 Bond Commission Meeting for the Capping of the Seaside Landfill; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport Public Facilities Department submits an application to the **State of Connecticut Department of Energy and Environmental Protection to** conduct activities associated with the closure of the former RCRA Metal Hydroxide Cell at the Seaside Park Landfill.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with the **State of Connecticut Department of Energy and Environmental Protection** for the purpose of the **Grants-In-Aid Program**; and

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the Director of Central Grants, to execute and file such application with the **State of Connecticut Department of Energy and Environmental Protection** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

City of Bridgeport, Connecticut
OFFICE OF CENTRAL GRANTS
999 Broad Street
Bridgeport, Connecticut 06604
Telephone (203) 332-5662
Fax (203) 332-5657

JOSEPH P. GANIM
Mayor

ISOLINA DeJESUS
Manager
Central Grants

Comm. #142-18 Ref'd to ECD&E Committee on 09/16/2019

August 28, 2019

Office of the City Clerk
City of Bridgeport
45 Lyon Terrace, Room 204
Bridgeport, Connecticut 06604

Re: **Resolution – State of Connecticut Department of Energy and Environmental Protection (DEEP) – Grants-In-Aid Program for Demolition of Pleasure Beach Bridge (#9C133)**

Attached, please find a Grant Summary and Resolution for the **State of Connecticut DEEP – Grants-In-Aid Program** to be referred to the **Committee on Economic and Community Development and Environment** of the City Council.

Grant: **State of Connecticut Department of Energy and Environmental Protection – Grants-In-Aid Program**

If you have any questions or require any additional information, please contact me at 203-576-7134 or isolina.dejesus@Bridgeportct.gov.

Thank you.

Isolina DeJesus
Central Grants Office

RECEIVED
CITY CLERKS OFFICE
19 AUG 28 PM 4:16
ATTEST
CITY CLERK

GRANT SUMMARY

PROJECT TITLE: **State of Connecticut Department of Energy and Environmental Protection (DEEP) – Grants-In-Aid Program for Demolition of Pleasure Beach Bridge (#9C133)**

NEW x RENEWAL CONTINUING

DEPARTMENT SUBMITTING INFORMATION: **Central Grants Office**

CONTACT NAME: **Isolina DeJesus**

PHONE NUMBER: **203-576-7134**

PROJECT SUMMARY/DESCRIPTION: The City of Bridgeport Public Facilities Department is seeking funding made available through Sec. 9-16 of Public Act #44,2010 to cover costs associated with the demolition of a portion of the Pleasure Beach Bridge. The State of Connecticut Bond Commission approved the use of $1.6M of Grants-In-Aid funds at the September 20, 2018 Bond Commission Meeting.

CONTRACT PERIOD: To Be Determined

FUNDING SOURCES (include matching funds):	
Federal:	**$**
State:	$ 1,600,000
City:	$
Other:	$

GRANT FUNDED PROJECT FUNDS REQUESTED	
Salaries/Benefits:	$
Supplies:	$
Construction:	$ 1,600,000
Other:	$

MATCH REQUIRED		
	CASH	IN-KIND
Source: **N/A**		
Salaries/Benefits:	$	$
Supplies:	$	$
Construction:	$	$
Other:	$	$

A Resolution by the Bridgeport City Council

Regarding the

State of Connecticut
Department of Energy and Environmental Protection

Grants-In-Aid for Demolition of Pleasure Beach Bridge (#9C133)

WHEREAS, the **State of Connecticut Office of Policy and Management** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through **Grants-in-Aid** for infrastructure projects and programs in the City of Bridgeport; and

WHEREAS, the State of Connecticut Bond Commission allocated the use of $1.6M via approval of Public Act #44,2010, Section 9-16 at the September 20, 2018 Bond Commission Meeting for the Demolition of the Pleasure Beach Bridge; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport submits an application to the **State of Connecticut Department of Energy and Environmental Protection to** conduct activities associated with demolition and removal of debris.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with the **State of Connecticut Department of Energy and Environmental Protection** for the purpose of the **Grants-In-Aid Program**; and

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the Director of Central Grants, to execute and file such application with the **State of Connecticut Department of Energy and Environmental Protection – Grants-In-Aid Program** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

City of Bridgeport, Connecticut
OFFICE OF CENTRAL GRANTS
999 Broad Street
Bridgeport, Connecticut 06604
Telephone (203) 332-5662
Fax (203) 332-5657

JOSEPH P. GANIM
Mayor

ISOLINA DeJESUS
Manager
Central Grants

Comm. #143-18 Ref'd to ECD&E Committee on 09/16/2019

August 27, 2019

Office of the City Clerk
City of Bridgeport
45 Lyon Terrace, Room 204
Bridgeport, Connecticut 06604

Re: Resolution – **State of Connecticut Department of Children and Families – Youth Services Bureau Enhancement Grant (#20540)**

Attached, please find a Grant Summary and Resolution for the **State of Connecticut Department of Children and Families – Youth Services Bureau Enhancement Grant (#20540)** to be referred to the **Committee on Economic and Community Development and Environment** of the City Council.

Grant: City of Bridgeport application to the **State of Connecticut Department of Children and Families – Youth Services Bureau Enhancement Grant (#20540)**

If you have any questions or require any additional information, please contact me at 203-576-7134 or isolina.dejesus@Bridgeportct.gov.

Thank you,

Isolina DeJesus, Director
Central Grants Office

RECEIVED
CITY CLERKS OFFICE
19 AUG 28 PM 4:16
ATTEST
CITY CLERK

GRANT SUMMARY

PROJECT TITLE: **State of Connecticut Department of Children and Families – Youth Services Bureau Enhancement Grant (#20540)**

NEW RENEWAL x CONTINUING

DEPARTMENT SUBMITTING INFORMATION: **Central Grants Office**

CONTACT NAME: **Isolina DeJesus**

PHONE NUMBER: **203-576-7134**

PROJECT SUMMARY/DESCRIPTION: The City of Bridgeport **Department of Health and Social Services/Youth Services Division** seeks funding to provide community youth with enhancements to existing juvenile justice, mental health, child welfare, pregnancy prevention, parental education, community outreach and positive youth development services. The City will subcontract with Bridgeport's Juvenile Review Board.

CONTRACT PERIOD: July 1, 2019 – June 30, 2020

IF APPLICABLE

FUNDING SOURCES (include matching/in-kind funds):	
Federal:	$0
State:	$17,440
City:	$0
Other:	$0

GRANT FUNDED PROJECT FUNDS REQUESTED	
Contractual	$17,440

A Resolution by the Bridgeport City Council

Regarding the

State of Connecticut Department of Children and Families

Youth Services Bureau Enhancement Grant (#20540)

WHEREAS, the **State of Connecticut Department of Children and Families** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through the **Youth Services Bureau Enhancement Grant**; and

WHEREAS, funds under this grant will be used to provide case management services to youth; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport submits an application to the **State of Connecticut Department of Children and Families** to support positive interventions including mentoring, tutoring, pro-social activities and special events.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with the **State of Connecticut Department of Children and Families** for the purpose of its **Youth Services Bureau Enhancement Grant**; and

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the **Director of the Central Grants**, to execute and file such application with the **State of Connecticut Department of Children and Families – Youth Services Bureau Enhancement Grant** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

City of Bridgeport, Connecticut
OFFICE OF CENTRAL GRANTS
999 Broad Street
Bridgeport, Connecticut 06604
Telephone (203) 332-5662
Fax (203) 332-5657

JOSEPH P. GANIM
Mayor

ISOLINA DeJESUS
Manager
Central Grants

Comm. #144-18 Ref'd to ECD&E Committee on 09/16/2019

August 27, 2019

Office of the City Clerk
City of Bridgeport
45 Lyon Terrace, Room 204
Bridgeport, Connecticut 06604

Re: Resolution – **State of Connecticut Department of Children and Families – Youth Services Bureau Grant (#20532)**

Attached, please find a Grant Summary and Resolution for the **State of Connecticut Department of Children and Families – Youth Services Bureau Grant (#20532)** to be referred to the **Committee on Economic and Community Development and Environment** of the City Council.

Grant: City of Bridgeport application to the **State of Connecticut Department of Children and Families –Youth Services Bureau Grant (#20532)**

If you have any questions or require any additional information, please contact me at 203-576-7134 or isolina.dejesus@Bridgeportct.gov.

Thank you,

Isolina DeJesus, Director
Central Grants Office

GRANT SUMMARY

PROJECT TITLE: **State of Connecticut Department of Children and Families – Youth Services Bureau Grant (#20532)**

NEW RENEWAL x CONTINUING

DEPARTMENT SUBMITTING INFORMATION: **Central Grants Office**

CONTACT NAME: **Isolina DeJesus**

PHONE NUMBER: **203-576-7134**

PROJECT SUMMARY/DESCRIPTION: The City of Bridgeport **Department of Health and Social Services/Youth Services Division** seeks funding to support youth programs funded by the Youth Services Bureau grant. Funding from this program will support recreation and outreach programs for Bridgeport youth. Services included in this program address critical issues such as juvenile justice, mental health, child welfare, teenage parenting, and youth development. The City will subcontract with nonprofit organizations to help carry out these activities.

CONTRACT PERIOD: July 1, 2019 – June 30, 2020

IF APPLICABLE

FUNDING SOURCES (include matching/in-kind funds):	
Federal:	$0
State:	$115,763
City:	$65,763
Other:	$50,000 (CDBG)

GRANT FUNDED PROJECT FUNDS REQUESTED	
Personnel	$50,716
Contractual	$64,500
Supplies	$547

MATCH PROJECT FUNDS REQUESTED	
Contractual:	$114,763
Supplies	$500
Travel:	$500 (Bus tokens)

A Resolution by the Bridgeport City Council

Regarding the

State of Connecticut Department of Children and Families

Youth Services Bureau Grant (#20532)

WHEREAS, the **State of Connecticut Department of Children and Families** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through the **Youth Services Bureau Grant**; and

WHEREAS, funds under this grant will be used to fund administrative staff and direct service programs for youth; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport submits an application to the **State of Connecticut Department of Children and Families** to support the Bridgeport Youth Services Bureau.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with the **State of Connecticut Department of Children and Families** for the purpose of its **Youth Services Bureau Grant**; and

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the **Director of the Central Grants**, to execute and file such application with the **State of Connecticut Department of Children and Families – Youth Services Bureau Grant** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

CITY OF BRIDGEPORT
OFFICE OF THE CITY ATTORNEY
999 Broad Street
Bridgeport, CT 06604-4328

CITY ATTORNEY
R. Christopher Meyer

DEPUTY CITY ATTORNEY
John P. Bohannon, Jr.

ASSOCIATE CITY ATTORNEYS
Michael C. Jankovsky
Richard G. Kascak, Jr.
Bruce L. Levin
John R. Mitola
Lawrence A. Ouellette, Jr.
Tyisha S. Toms
Lisa R. Trachtenburg

ASSISTANT CITY ATTORNEYS
Dina A. Scalo
Eroll V. Skyers
Tamara J. Titre

Telephone (203) 576-7647
Facsimile (203) 576-8252

COMM. #146-18 ACCEPTED AND MADE PART OF THE RECORD ON 9/16/2019

September 10, 2019

The Honorable City Council
City of Bridgeport
45 Lyon Terrace
Bridgeport, CT 06604

Re: **Settlement of Claim, Antonio B. Goncalves v. Louis DeBiase & City of Bridgeport**

Dear Honorable Members:

The Office of the City Attorney proposes to settle the above referenced litigation in the amount of $17,500.00 payable to Owens, Schine & Nicola, PC, Trustee, and Antonio B. Goncalves. The action was claiming injuries sustained arising out of a motor vehicle accident near the intersection of Seaside Avenue and Beardsley Street in Bridgeport, CT on April 20, 2016.

Pursuant to the City Council's Ordinance Section 2.10.130, this office hereby provides notice of its intent to settle this matter in accordance with the terms set forth in said Section 2.10.130.

If you wish to discuss the details of this case or have any questions, please feel free to contact me. If I am not immediately available, please speak with Paralegal Amanda Keppler who will then follow up with me. Further, if I do not hear from you within the twenty (20) day time period provided by the Ordinance, I will proceed to finalize settlement of this matter.

Very truly yours,

R. Christopher Meyer, Esq.
City Attorney

Cc: City Clerk
Mark T. Anastasi, Esq.
Eroll V. Skyers, Esq.
Amanda Keppler, Paralegal

City of Bridgeport
OFFICE OF PLANNING & ECONOMIC DEVELOPMENT
Margaret E. Morton Government Center
999 Broad Street, Bridgeport, Connecticut 06604

JOSEPH P. GANIM
Mayor

THOMAS F. GILL
Director

WILLIAM J. COLEMAN
Deputy Director

COMM. 147-18 Ref'd to Joint Committee on Contracts and Public Safety & Transportation on 09/16/2019.

August 28, 2019

Lydia Martinez, City Clerk
Office of the City Clerk
45 Lyon Terrace
Bridgeport, CT 06604

RECEIVED
CITY CLERK'S OFFICE
19 AUG 28 PM 3:32

ATTEST _____
CITY CLERK

Re: Submittal of Petition From AT&T Connecticut to Install Small Cell Antennas on City-Owned Light Poles and Traffic Signals to Enhance 5G Wireless Networks

Dear Madam Clerk and City Council Members:

Enclosed you will find a Petition from AT&T Connecticut to distribute a 5G Small Cell Network in the City of Bridgeport.

Other Cities like Denver, Detroit, Minneapolis, Providence and Washington, DC have installed and are continuing to install 5G small cell antenna systems. The 5G network means for the average consumer:

- Faster internet speeds
- High-speed mobile broadband for police, fire, emergency services, schools, hospitals and doctors
- Video streaming and flash downloading in seconds rather than in minutes

These antennas consist of small boxes that are mounted on light poles, traffic lights, and public buildings at a height of 30' off the ground—they are <u>not</u> poles or towers. The 5G system is mandated by the FCC Small Cell Order and under its exclusive jurisdiction. It is supported by the State of Connecticut pursuant to Public Act 19-163, "An Act Accelerating the Deployment of 5G Wireless Facilities". The City will receive a license fee established by the FCC but in certain cases may seek reimbursement of additional costs in particular situations. Any activity in a public Right-of-Way will also be subject to the City's usual permitting process and permit fees.

Respectfully submitted,

Thomas F. Gill

Enclosures

LICENSE AGREEMENT FOR
WIRELESS INSTALLATIONS ON PUBLIC STRUCTURES

This License Agreement For Wireless Installations on Public Structures ("Agreement") is made and entered into as of the Effective Date by and between the City of Bridgeport, a municipal corporation of the State of Connecticut ("Licensor") and NEW CINGULAR WIRELESS PCS, LLC, a Delaware limited liability company ("Licensee").

RECITALS

WHEREAS, Licensee seeks to attach Wireless Installations to certain Structures and to utilize certain Infrastructure upon the terms and conditions set forth below;

WHEREAS, Licensor is willing to accommodate Licensee's non-exclusive use of such Structures and Infrastructure in accordance with Laws and the terms and conditions of this Agreement; and

WHEREAS, any capitalized terms in this Agreement shall have the meaning ascribed to them in Exhibit 1 attached hereto and incorporated herein by reference.

NOW, THEREFORE, FOR VALUABLE CONSIDERATION, receipt of which is hereby conclusively acknowledged, the Parties agree as follows:

1. GRANT OF LICENSE

1.1 Grant of License. To the extent not already governed by Laws, Licensor hereby grants Licensee a license for Licensee's use of the Licensed Site as necessary to utilize, replace or upgrade Licensor's Structures and Infrastructure, as provided herein and as provided in the individual Site License Agreements signed by the Parties pursuant to this Agreement. The license granted herein is revocable only in accordance with the terms and conditions of the Agreement. No use of Licensor's Structures or Infrastructure under this Agreement shall create or vest in Licensee any ownership or property rights in such Structures or Infrastructure. Nothing in this Agreement grants Licensee the right to make any Wireless Installation, or to install other facilities, including Wireless Installations, that do not conform to this Agreement.

1.2. Permitted Use. Licensee may use Licensor's Structures and Infrastructure for the Permitted Use, subject to the terms and conditions of this Agreement.

1.3 Access. Licensee and its employees, agents, and subcontractors, shall have, at no additional charge, twenty-four (24) hour per day, seven (7) day per week pedestrian and/or vehicular access ("Access") to and over the Structures or Infrastructure, including the Wireless Installations, from an open and improved public road to the Structures or Infrastructure, for the installation, operation, maintenance, repair, removal, or modification of the Wireless Installations and any utilities serving the Structures or Infrastructure. When accessing the Structures or Infrastructure, Licensee may be subject to Licensor's reasonable security procedures and protocol as set forth in the applicable Site License Agreement. Licensor may require evidence of insurance prior to accessing the Structures or Infrastructure.

2. TERM

2.1 Agreement Term. This Agreement shall commence as of the Effective Date, and, if not lawfully terminated sooner, remain in full force and effect for the Agreement Initial Term. The Agreement Initial Term will automatically renew for four (4) successive five (5) year renewal terms, unless Licensee provides Licensor written notice of termination at least ninety (90) days prior to the expiration of the Agreement Initial Term or the then applicable renewal term, as the case may be.

2.2 Site License Agreement Term.

(a) The initial term for each individual Site License Agreement shall commence on the Commencement Date and shall be for the Site License Initial Term. Promptly following Licensee's receipt of Licensor's written request, the Parties shall confirm in an Acknowledgment the Commencement Date and expiration date of the Site License Initial Term.

(b) Each Site License Agreement shall be automatically extended for four (4) successive Site License Renewal Terms unless Licensee notifies Licensor in writing of Licensee's intent not to renew the Site License at least thirty (30) days prior to the expiration of the Site License Initial Term or the then applicable Site License Renewal Term, as the case may be.

(c) Unless (i) Licensor or Licensee notifies the other in writing of its intention to terminate the Site License Agreement at least six (6) months prior to the expiration of the final Site License Renewal Term, or (ii) the Site License Agreement is terminated as otherwise permitted by this Agreement prior to the end of the final Site License Renewal Term, then upon the expiration of the final Site License Renewal Term this Agreement shall continue in force upon the same covenants, terms and conditions for an Annual Term, and for Annual Terms thereafter until terminated by either party by giving to the other written notice of its intention to so terminate at least six (6) months prior to the end of any such Annual Term. The yearly Fee during each Annual Term shall be equal to the Fee paid for the last year of the final Site License Renewal Term. If Licensee remains in possession of the Structure and/or Infrastructure after the termination of the Site License Agreement, then Licensee will be deemed to be occupying the Structure and/or Infrastructure on a Holdover Term basis, subject to the terms and conditions of this Agreement, irrespective of whether the Agreement has expired or been terminated.

(d) Notwithstanding anything herein, after the expiration or earlier termination of this Agreement, the terms and conditions of a Site License Agreement which was signed during the Term of the Agreement shall survive and remain in full force and effect until the expiration or earlier termination of such Site License Agreement.

3. CHARGES, BILLING AND PAYMENT

3.1 Annual Fee.

(a) Licensee shall pay Licensor a Fee of two hundred and seventy and No/100 Dollars $270.00) per Wireless Installation located in Licensor's right-of-way for each year of the Site License Term. The Fee is per Wireless Installation, and includes all Structure, Infrastructure, appurtenant equipment and facilities used in connection with each Wireless Installation. Except in the event of a voluntary termination of a Site License Agreement pursuant to Section 13.4(b) below, the Fee will be prorated for any partial year based on a 360-day calculation. Notwithstanding the foregoing, in the event Licensor's actual and reasonably incurred costs for an individual Wireless Installation exceed the Fee, Licensor reserves the right, in accordance with the provisions of the FCC Small Cell Order, as may be amended from time to time, to request a Fee in excess of the $270.00 amount, subject to Licensor providing evidence of such increased actual costs and further provided such actual and reasonable costs are incurred and requested on a nondiscriminatory basis . In the event Licensor requests an increased Fee, Licensee may, in its sole discretion, decide to forego the installation of the Wireless Installation at such location(s).

(b) On the fifth (5^{th}) anniversary of the Commencement Date during the Site License Initial Term and thereafter on the commencement of each Site License Renewal Term exercised by Licensee, the Fee shall increase by Ten Percent (10%) over the Fee paid during the previous five (5) year period.

3.2 Timing of Payment. Licensee shall make the first payment of the Fee under any Site License Agreement within ninety (90) days of the full execution of the Acknowledgment. Thereafter, the Fee shall be paid on or before each anniversary of the Commencement Date during the Site License Term.

3.3 Billing and Payment Generally. All bills and other requests for payment to Licensor under this Agreement (other than the payment of the Fee) shall be presented in writing to Licensee and accompanied with reasonable substantiation of the costs incurred by Licensor. Properly presented invoices shall be paid by Licensee within ninety (90) days of receipt of invoice accompanied by such substantiation. All charges payable under this Agreement shall be billed by Licensor within one (1) year from the end of

the calendar year in which the charges were incurred. Any charges beyond such period shall not be billed by Licensor, and shall not be payable by Licensee.

4. SITE LICENSE PROCESS

4.1 Site License Application. Subject to Section 4.4 below, before installing any new or additional Wireless Installation onto any Structure or utilizing any Infrastructure, Licensee shall apply for a Site License Agreement from Licensor using a Site License Application in the form attached as Exhibit 2. Licensee will identify in the Site License Application any Licensor Work it believes needs to be performed in connection with Licensee's use of the Structure and/or Infrastructure.

4.2 Processing of Site License Application. Unless Laws provide otherwise, Licensor will take reasonable steps to notify Licensee of the specific deficiencies in any Site License Application within ten (10) days of its submission, and Licensor will take reasonable steps to approve or reject each Site License Application within forty-five (45) days of its submission. Licensor may, on Technical Grounds, deny all or part of a Site License Application, or limit the number and/or technical characteristics (*e.g.*, weight or size) of any Wireless Installation on any Structure or Infrastructure. In the event Licensor determines, based upon Technical Grounds, that inadequate space or structural capacity exists on its Structure(s) or inadequate space or capacity exists on its Infrastructure to accommodate any proposed Wireless Installation, Licensee may elect to have such Structure(s) replaced or upgraded as part of Licensor Work or such Infrastructure replaced or upgraded as part of Licensor Work, at Licensee's sole expense, with Structure(s) or Infrastructure with adequate space and structural capacity to accommodate the proposed Wireless Installation. In the event of rejection on Technical Grounds of a Site License Application, Licensor shall provide a written explanation to Licensee of the basis for the rejection. In the event that Licensor approves Licensee's Site License Application, then the Parties shall promptly proceed in good faith to sign and deliver a Site License Agreement for the Wireless Installation in the form attached as Exhibit 3 fully consistent with Licensor's approval of the Site License Application.

4.3 Consolidated Site License Application. For small cell networks involving Wireless Installations on multiple Structures and/or Infrastructure, Licensee may, in its discretion, file a consolidated application for utilization of multiple Structures and Infrastructure, and upon approval by Licensor, the parties shall enter into a separate Site License Agreement for each approved Structure and/or Infrastructure location.

4.4 Modifications and Replacements. Except for any Wireless Installation installed upon a decorative Structure or upon a Structure located within either a scenic or historic district, subsequent to the original Wireless Installation approved by Licensor, Licensee may, without submitting a new Site License Application, modify or replace all or a portion of the Wireless Installation so long as such modification or replacement (a) results in the installation of equipment within the spaces designated or depicted in the Site License Application and (b) the resulting installation does not increase the load on the applicable Structure or the utilization of the Infrastructure beyond the loading or utilization, if any, that was established in the original Site License Application.

4.5 Pre-Approved Wireless Installations. Once a Wireless Installation design has become a Pre-Approved Wireless Installation for Licensee's use of a Structure and/or Infrastructure, then Licensee shall be allowed to install a Wireless Installation using any such Pre-Approved Wireless Installation without further land use review or approval by Licensor, subject to space and structural capacity and loading review by Licensor during the building permit review process. All other municipal reviews and approvals, including the execution of a Site License Agreement, building permits and right of way permits, shall apply to the installation of any Pre-Approved Wireless Installation.

5. LICENSOR WORK FOR STRUCTURES AND INFRASTRUCTURE

5.1 Licensor Work. At the time of approving the Site License Application, Licensor will advise Licensee whether Licensor is willing to perform Licensor Work identified in the Site License Application. If Licensor indicates it is willing to perform the Licensor Work, Licensor will provide Licensee with a Licensor Work Cost Estimate within thirty (30) days of Licensor authorizing the Site License

Agreement in accordance with Section 4.2, unless Laws provides a different deadline. Licensee shall have sixty (60) days from the receipt of such a Licensor Work Cost Estimate to accept the estimate, unless Laws provides a different deadline.

5.2 Licensor Work Timeline. Licensor will begin Licensor Work promptly after it has received Licensee's Approved Licensor Work Cost Estimate and full payment thereof and complete all Licensor Work within sixty (60) days thereafter. If Licensor does not indicate that it is willing to perform the Licensor Work, Licensee may perform the Licensor Work itself.

5.3 Licensor Work Reconciliation. If the actual and reasonable costs incurred by Licensor in completing a Licensor Work exceed the pre-paid Approved Licensor Work Cost Estimate, Licensee shall pay Licensor the shortfall amount of such costs within ninety (90) days of receipt of the invoice accompanied by reasonable substantiation (the "Due Date"). If such Licensor Work costs are less than the pre-paid Approved Licensor Work Cost Estimate, Licensor will refund the excess Licensor Work payment to Licensee within ninety (90) days following completion of the Licensor Work. Any amounts due for Licensor Work costs and not paid by the Due Date shall be subject to a penalty in the amount of 12% per annum for such period the amount remains unpaid past the due date. Any excess amounts which Licensor fails to refund to Licensee may be credited against future payments due to Licensor.

5.4 Costs To Rearrange/Adjust Facilities of Others. If a Person, other than Licensor, must rearrange or adjust any of its facilities to accommodate a new Wireless Installation, Licensee shall coordinate such activity at Licensee's sole expense; provided, however, that Licensee shall not be responsible for any third-party or Licensor costs necessary to correct third party or Licensor attachments that are non-compliant with Laws.

6. GENERAL LICENSEE OBLIGATIONS

6.1 Technical Requirements and Specifications. At its own expense, Licensee shall erect, install, repair and maintain its Wireless Installations in safe condition and good repair in accordance with (a) the requirements and specifications of Safety Codes; (b) Licensor's reasonable standards of which Licensee is given notice or which are otherwise reasonably promulgated on a non-discriminatory basis to similarly situated occupants and users of Licensor's Structures or Infrastructure, and (c) any current or future rules or orders of the FCC, the State public utility commission, or any other federal, state or local authority having jurisdiction. Changes to the requirements, specifications, standards, rules and orders in subsections (a), (b) and (c) shall not apply retroactively unless required by Laws, and Licensor shall give at least sixty (60) days' written notice of changes to the standards in subsection (c).

6.2 No Liens. Licensee will not create or allow to exist any lien with respect to any Structure or Infrastructure or other Licensor property or facility resulting from any work performed by or on behalf of Licensee pursuant to this Agreement, or any act or claim against Licensee or any of its contractors, agents, or customers. Licensee will, at its sole expense, promptly bond or otherwise discharge any such lien within thirty (30) days of receipt of written notice Licensor of the existence of such lien.

6.3 Worker Qualifications; Responsibility for Agents and Contractors. Each Party shall ensure that its employees, agents or contractors which perform work in furtherance of this Agreement are adequately trained and skilled to access Structures and Infrastructure in accordance with all applicable industry and governmental standards and regulations.

7. UTILITIES. Licensee shall be solely responsible for arrangement and payment for electric service necessary in connection with Wireless Installations; provided, however, that if Licensee elects to utilize Licensor's electrical service serving Licensor's Structure or Infrastructure for a particular Wireless Installation, then commencing on the first (1st) day of the month following the date that Licensee first utilizes Licensor's electrical service to provide power for the Wireless Installation, Licensee shall pay the amount set forth on the Site License Application per month until such use is discontinued by Licensee. Additionally, Licensee shall have the right, at Licensee's sole cost, to replace existing lighting on a Structure utilized by Licensee either with LED or other form of energy saving lighting design aesthetics reasonably approved by Licensor, and Licensor will own, operate, maintain and repair the replacement mismatched

lighting.

8. OPERATION AND MAINTENANCE SAFETY; PUBLIC NOTICE

8.1. RF Emissions. Licensee's operation of its Wireless Installations will comply with all FCC regulations regarding RF emissions and exposure limitations. Licensee shall install signage and other mitigation, such as a power cut-off switch on Structures, to allow workers and third parties to avoid excess exposure to RF emissions. Except in an Emergency Licensor's authorized field personnel will contact Licensee's designated point of contact with reasonable advance notice, but in no event less than one (1) business day in advance, to inform Licensee of the need for a temporary power-shut-down. In the event of an unplanned outage or cut-off of power or an Emergency, the power-down will be with such advance notice as practicable. Once the work has been completed and the worker(s) have departed the exposure area, the party who accomplished the power-down shall restore power and inform Licensee as soon as possible that power has been restored. The Parties acknowledge that they understand the vital nature of Licensee's Wireless Installations and agree to limit the frequency of power-downs and to restore power as promptly as much as reasonably possible.

8.2 Interference.

(a) Licensee will operate its Wireless Installations in compliance with all FCC regulations regarding Interference with the radio signal transmissions of Licensor and other third parties in or upon a Structure, which transmissions are operated in compliance with Laws.

(b) Licensor will not grant after the date of this Agreement a permit, license or any other right to any third party if, at the time such third party applies to use a Structure or Infrastructure, Licensor knows or has reason to know that such third party's use may cause Interference with the Licensee's existing Wireless Installations, Licensee's use of the Structure or Infrastructure, or Licensee's ability to comply with the terms and conditions of this Agreement.

(c) Licensor will not, nor will Licensor knowingly permit its employees, tenants, licensees, invitees, agents or independent contractors to cause Interference with Licensee's existing Wireless Installations, Licensee's use of the Structure or Infrastructure, or Licensee's ability to comply with the terms and conditions of this Agreement. If Licensee reasonably determines that Interference is occurring, then Licensor will meet and confer with Licensee within five (5) days of Licensor's receipt of notice of Interference from Licensee, and otherwise diligently work in good faith with Licensee to determine the root cause of the Interference and to develop workable solutions to resolve the Interference in a mutually acceptable manner, at no cost to Licensor.

9. RELOCATION AND ABANDONMENT

9.1 Relocation for Public Improvement Projects. In the event Licensor desires to replace, relocate, modify, demolish, or in any way alter the Structure and/or Infrastructure in connection with a Public Improvement Project in a manner likely to cause Interference with Licensee's Wireless Installation, Licensor shall have the right to cause Licensee to relocate the Wireless Installation subject to the terms and conditions set forth herein; provided, however, Licensor shall use reasonable efforts to fully accommodate Licensee's continuing use of the Structure and/or Infrastructure as the case may be, without relocation if it is reasonably possible to do so at Licensee's expense.

(a) Relocation. If Licensor's Public Improvement Project requires Licensee to relocate its Wireless Installation from all or any portion of the Structure and/or Infrastructure, Licensor shall have the right to require Licensee to relocate the Licensed Space upon the following terms and conditions: (i) Licensor shall deliver to Licensee a Relocation Notice to relocate the Wireless Installation; (ii) Licensor shall identify a suitable Relocation Licensed Space to ensure that the Relocation Licensed Space provides substantially similar signal coverage for the Wireless Installation as that of the Licensed Space being relocated; (iii) such relocation will be performed exclusively by Licensee with costs allocated in accordance with Laws, at Licensee's expense; (iv) Licensee shall have the right to operate a temporary cell site if feasible in a mutually agreeable location in the vicinity of the Licensed Space during such relocation with no additional fee due to Licensor; and (v) the Licensee Fee applicable to such Licensed

Space shall abate until the Wireless Installation achieves full on-air operation in the ordinary course of Licensee's business in the Relocation Licensed Space. Licensee shall not be required to pay any additional application, review or other Licensor fees in connection with any relocation initiated by Licensor. If in Licensee's reasonable judgment no suitable Relocation Licensed Space can be found, then Licensee shall have the right to terminate the applicable Site License Agreement for which Licensor is requiring relocation upon written notice to Licensor, and without penalty or further obligation.

(b) Relocation In The Event of An Emergency. Notwithstanding Section 9.1(a) above, in the event of an Emergency, Licensor will endeavor to provide as much notice to Licensee for the relocation of the Wireless Installation as warranted by the circumstances pertaining to the Emergency.

9.2 Abandonment. If Licensor determines to Abandon any Structure and/or Infrastructure and Licensor so determines that the Structure and/or Infrastructure does not need to be permanently removed for reasons of public safety or security, then Licensor shall give Licensee ninety (90) days' prior written notice of Licensor's intent to Abandon the Structure or Infrastructure, as the case may be. Within such time, Licensee shall remove or otherwise dispose of its Wireless Installations at which time the Site License Agreement shall automatically terminate without further liability to Licensee. In the event Licensee fails to remove or otherwise dispose of its Wireless Installations in accordance with the foregoing and after thirty (10) days written notice from Licensor, Licensor may do so at Licensee's cost, with such costs accruing interest at 18% per annum until paid by Licensee.

10. INSURANCE

10.1 Certificate of Insurance. Licensee shall at its sole expense maintain the insurance coverage and limits required by this Section during the Term of this Agreement. Licensee agrees to procure the required insurance from an insurance company having and maintaining an A.M. Best rating of at least A VII and deliver to a Licensor a Certificate of Insurance evidencing the types of insurance and policy limits required.

10.2 Required Insurance.

(a) Workers' Compensation and Employer's Liability insurance, as required by statute, with Employer's Liability limits of $500,000 each accident, $500,000 by disease policy limits, and $500,000 by disease each employee. To the extent allowed by Laws, the policy must include a blanket waiver of subrogation in favor of Licensor.

(b) Commercial General Liability insurance written on Insurance Services Office (ISO) Form CG 00 01 or a substitute form providing equivalent coverage, with limits of:

$2,000,000 General Aggregate Limit

$1,000,000 Each Occurrence

$1,000,000 Each Occurrence - Personal Injury and Advertising Injury

$2,000,000 Products/Completed Operations Aggregate Limit

The required Commercial General Liability policy must include Licensor as an additional insured by policy endorsement on a primary and non-contributory basis and a waiver of subrogation in favor of Licensor.

(c) Business Automobile Liability insurance with limits of $1,000,000 Combined Single Limit for each Accident for Bodily Injury and Property Damage, extending to all company owned, leased, and non-owned vehicles.

10.3 Notice of Cancellation. Licensee may meet the required insurance coverage and limits with any combination of primary and umbrella/excess liability insurance. Licensee shall provide at least thirty (30) days advance written notice of cancellation or non-renewal of any required insurance that is not replaced. Notwithstanding the foregoing, Licensee may self-insure, in accordance with Connecticut Law the required insurance under the same terms and conditions as outlined above.

11. LIMITATION OF LIABILITY. NOTWITHSTANDING ANY PROVISION OF THIS AGREEMENT TO THE CONTRARY, IN NO EVENT SHALL EITHER PARTY BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, PUNITIVE, EXEMPLARY OR INDIRECT DAMAGES SUFFERED BY THE OTHER PARTY OR BY ANY CUSTOMER OR ANY PURCHASER OF SUCH PARTY OR ANY OTHER PERSON, FOR LOST PROFITS OR OTHER BUSINESS INTERRUPTION DAMAGES, WHETHER BY VIRTUE OF ANY STATUTE, IN TORT OR IN CONTRACT, EXCEPT THAT THE EXPRESS INDEMNIFICATION OBLIGATIONS MADE BY THE PARTIES IN SECTION 12 OF THIS AGREEMENT SHALL STILL APPLY.

12. INDEMNIFICATION

12.1 Indemnification By Licensee. To the extent permitted by Laws, Licensee shall indemnify, hold harmless and, at Licensor's sole option, defend Licensor Indemnitees, and each of them, from and against any and all liabilities, damages or claims for damage, including but not limited to all actual and reasonable costs, attorneys' fees, and other charges and expenditures that Licensor Indemnitees, or any of them, may incur, asserted by third parties against Licensor Indemnitees, or any of them, by reason of the negligent installation, operation, use, repair, or removal of Wireless Installations or breach of the terms of this Agreement by Licensee, including acts or omissions by its agents, contractors, or subcontractors, except to the extent that such liabilities, damages or claims are a result of the negligence or willful misconduct of Licensor Indemnitees, or any of them.

12.2 Indemnification By Licensor. To the extent permitted by Laws and except for the waiver of subrogation granted by Licensee under Section 10.2(a) above, Licensor shall indemnify, hold harmless and, at Licensee's sole option, defend Licensee Indemnitees, and each of them, from and against any and all liabilities, damages or claims for damage, including but not limited to all actual and reasonable costs, attorneys' fees, and other charges and expenditures that Licensee Indemnitees, and any of them, may incur, asserted by third parties against Licensee Indemnitees, or any of them, by reason of the negligent installation, operation, use, repair, or removal of Licensor's Structures and/or Infrastructure or breach of the terms of this Agreement by Licensor, including acts or omissions by its agents, contractors, or subcontractors except to the extent that such liabilities, damages or claims are a result of the negligence or willful misconduct of Licensee Indemnitees, or any of them.

13. DEFAULT AND TERMINATION

13.1 Licensee's Default and Licensor's Remedies. If Licensee does not cure its Default, then thereafter Licensor may elect any of the following remedies:

(a) suspend Licensee's access to the Structure or Infrastructure to which the Default pertains;

(b) terminate the specific Site License Agreement(s) or affected portion thereof covering the Structure(s) or Infrastructure to which the Default pertains;

(c) require Licensee's obligation to which the Default has been declared to be specifically performed; or

(d) maintain an action at law against Licensee for damages directly incurred by Licensor arising directly from Licensee's uncured Default.

13.2 Licensor's Default and Licensee's Remedies. If Licensor does not cure its Default, then thereafter, Licensee may elect to pursue any rights or remedies available to Licensee at law or in equity.

13.3 Voluntary Termination of Site License Agreement.

(a) A Site License Agreement may be terminated by Licensee for any reason or no reason, and without further liability to Licensee, at any time prior to the Commencement Date effective upon written notice to Licensor.

(b) A Site License Agreement may be terminated by Licensee after the Commencement Date for any reason or no reason effective upon the later of (i) thirty (30) days' following

written notice to Licensor and (ii) the date of removal of the Wireless Installation, as long as Licensee pays Licensor a termination fee equal Twenty-Five Percent (25%) of the Fee, at the then-current rate. Notwithstanding the foregoing, no such termination fee will be payable on account of the termination of a Site License Agreement by Licensee under any termination provision contained in any other Section of this Agreement, including the following: Section 9.1(a), 9.2, 13.2, 13.3(a) or 14. Additionally, in the event Licensee has paid a Fee to Licensor for the use of the Licensed Site, then Licensor shall have the right to retain the Fee without refund or other credit to Licensee.

14. CASUALTY. In the event of damage to a Structure and/or Infrastructure due to a Casualty Event that cannot reasonably be expected to be repaired within forty-five (45) days following such Casualty Event or which Licensor elects not to repair, or if such Casualty Event is reasonably be expected to disrupt Licensee's operations on the Structure and/or Infrastructure, for more than forty-five (45) days, then Licensee may, at any time following such Casualty Event; (i) terminate the applicable Site License Agreement or affected portion thereof upon fifteen (15) days' written notice to Licensor; (ii) place a temporary facility, if feasible, at a location equivalent to Licensee's current use of the Structure and/or Infrastructure, as the case may, be until such time as the Structure and/or Infrastructure is restored and the Wireless Installation is returned to full on-air operation in the ordinary course of Licensee's business; or (iii) submit a new Site License Application for an alternate location equivalent to Licensee's current use of the Structure and/or Infrastructure, in which case Licensor shall waive the application fee and transfer all remaining rights to the new Structure and Infrastructure, as the case may be, as long as such relocation was due to a Casualty Event not caused by Licensee. If Licensee elects to terminate the Site License Agreement, notice of termination shall cause the applicable Site License Agreement or affected portion thereof to terminate with the same force and effect as though the date set forth in such notice were the date originally set as the expiration date of the applicable Site License Agreement. Licensee will be entitled to collect all insurance proceeds payable to Licensee on account thereof, and to be reimbursed for any prepaid Fee on a pro rata basis. If Licensee does not elect to terminate the applicable Site License Agreement, then the Fee shall fully abate during the period of repair following such Casualty Event until the date that the Wireless Installation is returned to full on-air operation in the Licensed Site in the ordinary course of Licensee's business.

15. MISCELLANEOUS PROVISIONS

15.1 Notices. All notices, requests and demands hereunder will be given by first class certified or registered mail, return receipt requested, or by a nationally recognized overnight courier, postage prepaid, to be effective when properly sent and received, refused or returned undelivered. Notices will be addressed to the parties as follows:

If to Licensee (including invoices):	**If to Licensor:**
New Cingular Wireless PCS, LLC Attn: Tower Asset Group – Lease Administration Re: Wireless Installation on Public Structures (City of Bridgeport MAA) (CT) FA No.: _____ 1025 Lenox Park Blvd NE, 3rd Floor Atlanta, GA 30319	Mayor, City of Bridgeport Margaret E. Morton Government Center 999 Broad Street Bridgeport, CT 06604
With a copy to the AT&T Legal Department: New Cingular Wireless PCS, LLC Attn: AT&T Legal Dept. - Network Operations Re: Wireless Installation on Public Structures	**With a copy to:** City Attorney, City of Bridgeport Margaret E. Morton Government Center 999 Broad Street Bridgeport, CT 06604

(City of Bridgeport MAA) (CT) FA No: _____ 208 S. Akard Street Dallas, TX 75202-4206	

Contact Number for day to day operation:

Licensor: _____
Licensee: 1-800-638-2822

Any Party may change its address or other contact information at any time by giving the other Party, and Persons named above, written notice of said change.

15.2 Force Majeure. Time periods for performance under this Agreement shall be deemed extended day for day for time lost attributable to any delay resulting from any Event of Force Majeure.

15.3 Assignment and Transfer. This Agreement shall be binding upon, and inure to the benefit of, the successors and assigns of the Parties. Except as otherwise provided in this Agreement, neither Party shall assign this Agreement or its rights or obligations to any firm, corporation, individual, or other entity, without the written consent of the other Party, which consent shall not be unreasonably withheld. Notwithstanding the foregoing, upon thirty (30) days' written notice, either Party may assign this Agreement or its rights or obligations to (a) an Affiliate or (b) in connection with the sale or other transfer of substantially all of Licensee's assets in the FCC market area where the Structures are located.

15.4 Compliance with Laws. Licensee and Licensor agree to comply with all Laws.

15.5 Applicable Law. This Agreement shall be interpreted, construed, and enforced, in accordance with the laws of the state where the Structures are located without regard to its conflict of laws principles, and, where applicable, federal law.

15.6 Waiver of Jury Trial. Each Party waives its right to a trial by jury on disputes arising from this Agreement.

15.7 Change of Law. Either Party may, upon thirty (30) days' written notice, require that the terms of this Agreement which are affected by any New Law be renegotiated to conform to the New Law on a going forward basis for all existing and new Wireless Installations, unless the New Law requires retroactive application, except that, notwithstanding a New Law, the Fee shall remain unchanged for any Wireless Installations in place as of the time the New Law became effective. In the event that the Parties are unable to agree upon such new rates, terms of conditions within ninety (90) days after such notice, then any rates contained in the New Law shall apply as of the effective date of the New Law forward (except as to the Fee for any Wireless Installations in place as of the time the New Law became effective) until the negotiations are completed or a Party obtains a ruling regarding the appropriate conforming terms from a commission or court of competent jurisdiction. Except as provided in the preceding sentence, all terms in the existing Agreement shall remain in effect while the parties are negotiating.

15.8 Exhibits. In the event of any inconsistency between the provisions of this Agreement and any Exhibits attached hereto, the provisions of this Agreement shall supersede the provisions of any such incorporated Exhibits unless such Exhibit specifies otherwise.

15.9 Waiver; Severability. No provision of this Agreement may be waived except in a writing signed by both Parties. The failure of either Party to insist on the strict enforcement of any provision of this Agreement shall not constitute a waiver of any provision. If any portion of this Agreement is found to be unenforceable, the remaining portions shall remain in effect, and the Parties shall begin negotiations for a replacement of the invalid or unenforceable portion.

15.10 Survival. The terms and provisions of this Agreement that by their nature require performance by either Party after the termination or expiration of this Agreement, shall be and remain enforceable notwithstanding such termination or expiration of this Agreement for any reason whatsoever.

15.11 Entire Agreement; Amendments. This Agreement (including the Exhibits hereto) embodies the entire agreement between Licensee and Licensor with respect to the subject matter of this Agreement and supersedes all prior and contemporaneous agreements and understandings, oral or written, with respect thereto. Each Party acknowledges that the other Party has not made any representations other than those contained herein. This Agreement may not be amended or modified orally, but only by an agreement in writing signed by the Party or Parties against whom any waiver, change, amendment, modification, or discharge may be sought to be enforced.

15.12 Execution in Counterparts. This Agreement may be executed in multiple counterparts, including by counterpart facsimiles or scanned email counterpart signature, each of which shall be deemed an original, and all such counterparts once assembled together shall constitute one integrated instrument.

[SIGNATURES APPEAR ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed as of the Effective Date.

CITY OF BRIDGEPORT
a Connecticut municipality

By:_____

Name:_____

Its:_____

Date:_____

NEW CINGULAR WIRELESS PCS, LLC,
a Delaware limited liability company

By: AT&T Mobility Corporation
Its: Manager

By:_____

Name:_____

Its:_____

Date:_____

EXHIBIT 1

DEFINED TERMS

As used herein, the following capitalized terms in the Agreement have the meaning ascribed to them below.

"Abandon" means to permanently relinquish ownership of a Structure and/or Infrastructure in its then existing location.

"Acknowledgment" means a written memorandum signed by the Parties confirming the Commencement Date and the date of expiration of the Site License Initial Term.

"Affiliate" means any entity that controls, is controlled by, or is under common control with a Party.

"Agreement Initial Term" means an initial term of ten (10) years.

"Annual Term" means a term of one (1) year.

"Approved Licensor Work Cost Estimate" means Licensee's written approval of a Licensor Work Cost Estimate.

"Casualty Event" means any casualty, fire, act of God, or other harm affecting a Structure and/or Infrastructure licensed in whole or in part to Licensee pursuant to a Site License Agreement.

"Commencement Date" means the first day of the month following the day Licensee commences installation of the Wireless Installation at a particular location under a Site License.

"Days" means calendar days. If deadline or other date falls on a non-business day (including weekends, holidays recognized by the federal government, and holidays recognized by the state where the Structure is located), that date shall be extended to the next business day.

"Default" means the failure by a Party to perform any material term of condition of this Agreement where such failure continues for a period of more than sixty (60) days after receipt of written notice from the other Party of such failure identified with reasonable specificity as to the material term or condition of this Agreement which the Party is alleged to have failed to perform Notwithstanding the foregoing, no Default will be deemed to exist if a Party has commenced to cure the alleged failure to perform within such sixty (60) day period, and thereafter such efforts are prosecuted to completion with reasonable diligence. Delay in curing an alleged failure to perform will be excused if due to causes beyond the reasonable control of the Party again whom the failure to perform has been alleged.

"Effective Date" means the latest date in the signature blocks in the Agreement.

"Emergency" means a situation in which there is an imminent threat of injury to person or property, or loss of life.

"Event of Force Majeure" means any act of God, strike, civil riot, fire, flood, material or labor shortage, restriction by governmental authority.

"FCC" means the Federal Communications Commission.

"Fee" means the annual payment for Licensee's Permitted Use of the Structure and Infrastructure at the Licensed Site.

"Holdover Term" means a month to month term following the termination of a Site License Agreement.

"Infrastructure" means any and all forms of existing power supply, conduit, or other form of infrastructure fixtures or equipment for the delivery of power or communication services to a Structure or otherwise located in the public right of way or other location controlled or owned by Licensor.

"Interference" means any material and adverse physical obstruction or impairment with the radio signals or operation of Licensee's Wireless Installation utilizing a Structure or Infrastructure authorized to be used by Licensee pursuant to Site License Agreement.

"Laws" means all federal, state and local laws, orders, rules and regulations applicable to Licensee's use of the Wireless Installation on the Structure and/or Infrastructure and Licensor's ownership and use of the Structure, Infrastructure and any other improvements or equipment in the public right of way, as the case may be.

"Licensed Site" means the areas approved for Licensee's Permitted Use as described or depicted in a Site License Agreement.

"Licensee Indemnitees" means Licensee, its employees, affiliates, officers, directors, successors and assigns.

"Licensor Indemnitees" means Licensor, its officers, elected and appointed officials, employees, agents, servants and contractors.

"Licensor Work" means the work required on, in or to Licensor's Structure and/or Infrastructure to accommodate Licensee's Wireless Installation, including relocating, replacing, upgrading and/or reinforcing the existing Structure or Infrastructure.

"Licensor Work Cost Estimate" means Licensor's written estimate of the estimated direct costs, including fully loaded labor costs to perform the Licensor Work in a Site License Application.

"NEC" means the National Electric Code.

"NESC" means the National Electrical Safety Code.

"New Laws" means any legislative, regulatory, judicial, or other action affecting the rights or obligations of the Parties, or establishing rates, terms or conditions for the construction, operation, maintenance, repair or replacement of Wireless Installation on public infrastructure or in the right-of-way, that differ, in any material respect from the rates, terms or conditions of the Agreement.

"Person" or "Persons" means any person or entity;

"Party" means individually Licensor and Licensee.

"Parties" means Licensor and License collectively.

"Relocation Notice" means a written notice delivered to Licensee at least twelve (12) months prior to the date of Licensor's desired relocation deadline.

"Permitted Use" means the transmission and reception of communications signals, and the installation, construction, modification, maintenance, operation, repair, replacement and upgrade of the Wireless Installation necessary for the successful and secure use of the Licensor's Structures and Infrastructure.

"Pre-Approved Wireless Installation" means any Wireless Installation design for Licensee's use of a Structure and/or Infrastructure which has been approved in writing by Licensor.

"Public Improvement Project" means any construction or expansion of roads, streets, sidewalks, curbs, gutters, storm drainage facilities, sewer lines, water utility lines or other capital improvement project within Licensor's jurisdiction undertaken by or on behalf of Licensor. Public Improvement Project does not include work undertaken for the benefit of a non-governmental entity, even if such work is performed by Licensor.

"Relocation Licensed Space" means an alternate Licensed Space on a Structure and/or Infrastructure, as the case may be, where Licensor may relocate its Wireless Installation pursuant to a Relocation Notice.

"RF" means radio frequency.

"Safety Codes" means collectively the NEC, NESC, and any and all other applicable regulatory codes for safe practices when performing work on or near a Structure and/or Infrastructure.

"Site License Agreement" means the Site License Agreement attached as Exhibit 3.

"Site License Application" means an application by Licensee to use a Licensed Site in the form attached as Exhibit 2.

"Site License Initial Term" means an initial term of ten (10) years.

"Site License Renewal Term" means a renewal term of five (5) years upon the same terms and conditions as set forth in the applicable Site License.

"Site License Term" means collectively the Site License Initial Term, any Site License Renewal Terms, any Annual Terms and any Holdover Term.

"Technical Grounds" means, in light of prevailing industry engineering standards, reasons of insufficiency of capacity, safety, reliability and/or generally applicable engineering purposes consistent with applicable Laws.

"Term" means the Agreement Initial Term and any renewal terms exercised pursuant to Section 2.1 of the Agreement.

"Wireless Installation" means antennas, communications equipment, electric and communications cables, and related accessories and improvements, including facilities that operate on FCC-approved frequencies in the bands authorized for commercial wireless communication services pursuant to FCC licenses issued to Licensee, and all associated equipment, located in, under, upon, adjacent to or through a Structure or Infrastructure owned or controlled by Licensor pursuant to a Site License Agreement (in accordance with Section 4.2 hereof) approved in writing by Licensor.

EXHIBIT 2
SITE LICENSE APPLICATION

				Equipment Owner			**Applicant (if different than Equipment Owner)**
Application Date:			Name:	New Cingular Wireless PCS, LLC		Name:	
Site Name/Project #:			Address:			Address:	
			Contact Name:			Contact Name:	
Approved by:			Phone #:			Phone #:	
Date:						Email:	

Approval of this application does not constitute as the permitting approval of the Wireless Installation; a separate application for permitting is required for construction and operation.

WIRELESS INSTALLATION - ATTACHMENT TO EXISTING STRUCTURE

Structure Pole #	Location/GPS Coordinates		Antenna Grade (Highest Point)	Antenna Dimensions (HxWxD)	Equipment Weight	Transmit Frequency	Receive Frequency	Output Power Level
	LAT	LONG						
Notes:								

EXHIBIT 2
SITE LICENSE APPLICATION

WIRELESS INSTALLATION – STRUCTURE REPLACEMENT

Structure Pole #		Location/GPS Coordinates		Antenna Grade (Highest Point)	Antenna Dimensions (HxWxD)	Equipment Weight	Transmit Frequency	Receive Frequency	Output Power Level
		LAT	LONG						
Existing									
New									
Existing									
New									
Existing									
New									
Existing									
New									
Existing									
New									
Existing									
New									
Existing									
New									
Existing									
New									
Notes:									

EXHIBIT 3

FORM OF SITE LICENSE AGREEMENT

This is Site License Agreement, is made this_____ day of_____, 20___, between_____[name of City/Town/Village/County/etc.] ("Licensor") and NEW CINGULAR WIRELESS PCS, LLC, a Delaware limited liability company ("Licensee").

1. License Agreement for Wireless Installations on Public Structures. This Site License Agreement as referenced in that certain License Agreement for Wireless Installations On Public Structures, between Licensor and Licensee dated _____, 20____ ("Agreement"). Licensee has submitted a Site License Application pursuant to the Agreement, and Licensor has reviewed the application and grants approval subject to the terms of this Site License Agreement. All of the terms and conditions of the Agreement are incorporated hereby by reference and made a part hereof without the necessity of repeating or attaching the Agreement. In the event of a contradiction or inconsistency between the terms of the Agreement and this Site License Agreement, the terms of this Site License Agreement shall govern. Capitalized terms used in this Site License Agreement shall have the same meaning ascribed to them in the Agreement unless otherwise indicated herein.

2. Project Description and Locations. Licensee shall have the right to install and attach Wireless Installations on, under, and above the public right of way owned or controlled by Licensor, on, in and adjacent to the specific Structure and Infrastructure as identified and described in Exhibit 1 attached hereto (collectively the "Licensed Site").

3. Term. The Site License Term of this Site License Agreement shall be as set forth in Section 2 of the Agreement.

4. Fee. The Fee shall be in the amount and otherwise payable in accordance with the Agreement as set forth in Section 3 of the Agreement.

5. Special Provisions, If Any (Specific to the Licensed Site).

[SIGNATURES APPEAR ON FOLLOWING PAGE]

LICENSOR: CITY OF BRIDGEPORT

By: _____

Name: _____

Title: _____

Date: _____

LICENSEE: NEW CINGULAR WIRELESS PCS, LLC,
a Delaware Limited Liability Company

By: AT&T Mobility Corporation
Its: Manager

By: _____

Print Name: _____

Title: _____

Date: _____

EXHIBITS

1 Licensed Site, Wireless Installation Equipment List and Plans

EXHIBIT 1 TO SITE LICENSE AGREEMENT

Licensed Site, Wireless Installation Equipment List and Plans

Licensee Wireless Installation Reference: [LICENSEE TO COMPLETE]

FA / USID:

Site Name: CRAN_POLYGON NAME_NODE #

PTN / PACE:

Structure pole number: [LICENSOR TO COMPLETE]

Structure Latitude and Longitude (Approximate): [LICENSEE TO COMPLETE]

Wireless Installation Equipment List: [LICENSEE TO COMPLETE]

Wireless Installation Plans: See the attached plan set dated _____ 20__ prepared by _____ consisting of (___) page(s).

RESOLUTION

Communication No. _____

Subject: Petition From AT&T Connecticut ("AT&T") Requesting Authorization to Access City Rights-of-Way and City-Owned Light Poles and Traffic Signals ("City-Owned Structures") to Install Small Cell Antennas ("Small Cell Installations") Pursuant to a Non-Exclusive Agreement that will Improve and Enhance 5G Wireless Networks and Future 5G Technologies in Accordance with the FCC Small Cell Order Effective on January 14, 2019 ("Small Cell Order")

WHEREAS the Federal Communications Commission ("**FCC**") recently removed certain barriers to the deployment of wireless infrastructure and established shorter timeframes for giving notice to States and local governments of requests to install Small Cell Installations in the public interest of spreading current and future 5G capability across the United States (**see Small Cell Order**);

WHEREAS the State of Connecticut adopted Public Act 19-163 ("**Connecticut Small Cell Act**") for the purpose of streamlining 5G installations on State-owned properties that incorporates federal law and FCC rulings that require access to highways and other State-owned properties for 5G deployment;

WHEREAS the Connecticut Small Cell Act provides that the State Office of Policy and Management, the Public Utilities Regulatory Authority, the Office of Consumer Counsel, the State Broadband Office and the Connecticut Siting Council shall work with municipalities and representatives of the wireless industry to develop streamlined processes for siting Small Cell Installations on municipal property (**"Streamlined Processes**"), which have not yet been adopted;

WHEREAS AT&T has submitted a Petition of New Cingular Wireless PCS, LLC For Access Authorization to City Public Rights of Way & A Non-Exclusive Agreement For City Pole Usage [for] Small Cell Installations" dated August 22, 2019 (the "**Petition**"), which is attached hereto;

WHEREAS the Petition and its associated exhibits explains the benefits of 5G installations and answers frequently-asked questions;

WHEREAS the benefits of an enhanced 5G network include:

- **new capacity for mobile data traffic**
- **new capacity for wireless phone use**
- **faster download speeds**
- **high-speed mobile broadband that supports police and fire departments, ambulance services, schools, hospitals and doctors**
- **ability to use more devices, tablets, smart watches, home assistants**
- **the infrastructure needed to support future 5G technologies, Smart Cities Technology and the Internet of Things technology**

WHEREAS Small Cell Installations are very different from traditional cell towers in the following respects:

- A Small Cell installation is a small box attached to a light pole, traffic pole, roof or side of a public building about 30' above the ground (**see sample photos contained in the Petition**)
- A network of Small Cell Installations reduces the power and radio transmissions needed for mobile phones to make calls and send data
- Small Cells operate at lower power levels than antennas located on cell towers and reduces the chance that antennas will interfere with one another

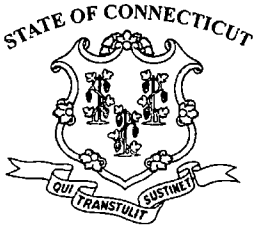
and

WHEREAS the City will receive fixed fees for each Small Cell location on an annual basis in accordance with a fee schedule established by the FCC ("**Annual Fees**"); however, the City will be able to charge its usual street-opening permit fees and will be able to receive more than an Annual Fees if it encounters additional costs that it can demonstrate in hosting a Small Cell Installation on a case-by-case basis.

NOW, THEREFORE, BE IT RESOLVED:

That the above recitals are incorporated into the body of this resolution with full legal effect;

That either the Mayor or the Director of Public Facilities or his/her designee, is hereby authorized, with the advice of the Office of the City Attorney, to enter into, execute, and deliver the Non-Exclusive License in substantially the form attached hereto and to enter into, execute and deliver one or more site license agreements for each Small Cell Installation as permitted by the Non-Exclusive License, and is further authorized to deliver such other documents and do such other things as may be necessary relating to the installation of Small Cell Installations that are in the best interests of the City of Bridgeport and its residents consistent with this resolution, including the implementation of any Streamlined Processes and forms that may be adopted in the future by the State of Connecticut pursuant to Public Act 19-163, as it may be amended from time to time.



House Bill No. 7152

Public Act No. 19-163

AN ACT ACCELERATING THE DEPLOYMENT OF 5G WIRELESS FACILITIES.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. (NEW) (*Effective July 1, 2019*) (a) As used in this section:

(1) "Council" means the Council on 5G Technology established in subsection (b) of this section;

(2) "Department of Energy and Environmental Protection property" means any improved or unimproved real property owned by the Department of Energy and Environmental Protection or subject to an interest in such property owned by said department;

(3) "Department of Transportation public right-of-way property" means any improved or unimproved real property owned by the Department of Transportation that is not a railroad, excess property or associated structures;

(4) "Highway" has the same meaning as provided in section 14-1 of the general statutes;

(5) "Interested person" means a person, as defined in section 3-56a of the general statutes, who owns land in the state that (A) abuts state

real property, and (B) is within a distance determined by the council in the guidelines adopted pursuant to subsection (c) of this section from the proposed personal wireless service facility or small wireless facility that the council is reviewing pursuant to a request made pursuant to subsection (d) of this section;

(6) "Permitted entity" means a communication infrastructure provider, including, but not limited to, a person authorized to provide communication service in the state, who builds or installs personal wireless service facilities and small wireless facilities and is not a wireless carrier;

(7) "Personal wireless service facilities" has the same meaning as provided in 47 USC 332(c)(7), as amended from time to time;

(8) "Small wireless facilities" has the same meaning as provided in 47 CFR 1.6002, as amended from time to time;

(9) "State real properties" has the same meaning as provided in section 4-67g of the general statutes, except it does not include any (A) Department of Energy and Environmental Protection property, (B) Department of Transportation public right-of-way property, (C) improved or unimproved real property owned by the judicial branch, or (D) improved or unimproved real property owned by the legislative branch; and

(10) "Wireless carrier" means a provider of personal wireless services as defined in 47 USC 332(c)(7).

(b) There shall be a Council on 5G Technology. The council shall consist of the following members or their designees: (1) One employee of the office of the Governor, designated by the Governor; (2) the Secretary of the Office of Policy and Management; (3) the Commissioner of Administrative Services; (4) the Commissioner of Transportation; (5) the Commissioner of Energy and Environmental

Protection; (6) the president of The University of Connecticut; and (7) the president of the Connecticut State Colleges and Universities.

(c) The council shall adopt guidelines for (1) its operations; and (2) the determinations it makes pursuant to subdivision (2) of subsection (d) of this section, which shall include, but not be limited to, guidelines concerning the safe placement of personal wireless service facilities and small wireless facilities, the protection of open space land when reviewing for use of state real properties submitted in accordance with subdivision (1) of subsection (d) of this section and extensions of time for a determination by the council. The adoption of such guidelines shall not be subject to chapter 54 of the general statutes.

(d) (1) A wireless carrier or permitted entity may request to use state real properties for the placement, construction, maintenance and operation of personal wireless service facilities and small wireless facilities in accordance with this subsection. A request for the use of state real properties shall be submitted to the council using the common form developed pursuant to subsection (g) of this section.

(2) (A) The council shall accept and review requests from wireless carriers or permitted entities for the use of state real properties for the placement, construction, maintenance and operation of personal wireless service facilities and small wireless facilities made using the common form or forms developed pursuant to subsection (g) of this section.

(B) (i) The council shall accept and review comments from any state agency affected by such request and any interested person. In evaluating such requests, the council shall perform due diligence for the portion of each state real property that is the subject of a request, which shall include, but not be limited to, the consideration and assessment of public health and safety effects, state bonding implications and environmental concerns.

(ii) The Department of Energy and Environmental Protection shall submit comments regarding environmental concerns regarding requests for the use of state real properties for the placement of personal wireless service facilities.

(C) After reviewing any comments submitted from a state agency and any interested person and conducting due diligence, the council shall determine, in accordance with any Federal Communications Commission regulations, rulings or orders, whether a state real property may be used by wireless carriers or permitted entities for the placement, construction, maintenance and operation of personal wireless service facilities or small wireless facilities. In making such determination, the council shall give preference to requests that include the collocation of personal wireless service facilities or small wireless facilities with other wireless carriers or permitted entities. Such determinations shall be made within ninety days of a request by a majority vote of the council, except if the council has determined an extension of time is necessary, pursuant to the guidelines adopted pursuant to subsection (c) of this section.

(D) After the council makes a determination to approve a request pursuant to subparagraph (C) of this subdivision, the council shall submit such approved request as follows: (i) For requests to use state real properties owned by The University of Connecticut, to the president of the University of Connecticut: (ii) for requests to use state real properties owned by the Department of Transportation, to the Commissioner of Transportation; and (iii) for requests to use state real properties not included in clause (i) or (ii) of this subparagraph, to the Commissioner of Administrative Services.

(3) (A) Not later than thirty days after the receipt of the approved request pursuant to subparagraph (D) of subdivision (2) of this subsection, the president of The University of Connecticut shall use the Telecommunications License Agreement, forms and fee structure

developed pursuant to subsection (g) of this section to execute a license agreement with the wireless carrier or permitted entity that submitted the approved request, provided any such agreement shall be approved by the Secretary of the Office of Policy and Management and the Attorney General. The president shall administer any license agreement executed pursuant to this subparagraph.

(B) Not later than thirty days after the receipt of the approved request pursuant to subparagraph (D) of subdivision (2) of this subsection, the Commissioner of Transportation shall use the Telecommunications License Agreement, forms and fee structure developed pursuant to subsection (g) of this section to execute a license agreement with the wireless carrier or permitted entity that submitted the approved request, provided any such agreement shall be approved by the Secretary of the Office of Policy and Management and the Attorney General. Said commissioner shall administer any license agreement executed pursuant to this subparagraph.

(C) Not later than thirty days after the receipt of the approved request pursuant to subparagraph (D) of subdivision (2) of this subsection, the Commissioner of Administrative Services shall use the Telecommunications License Agreement, forms and fee structure developed pursuant to subsection (g) of this section to execute a license agreement with the wireless carrier or permitted entity that submitted the approved request, provided any such agreement shall be approved by the Secretary of the Office of Policy and Management and the Attorney General. Said commissioner shall administer any license agreement executed pursuant to this subparagraph.

(e) (1) A wireless carrier or permitted entity may request to use Department of Energy and Environmental Protection property for the placement, construction, maintenance and operation of small wireless facilities in accordance with this subsection. Such requests shall be made to the Commissioner of Energy and Environmental Protection

using the common form developed pursuant to subsection (g) of this section.

(2) The Department of Energy and Environmental Protection shall develop a policy for the placement, construction, maintenance and operation of small wireless facilities on Department of Energy and Environmental Protection property. The development of such policy shall not be subject to chapter 54 of the general statutes. Any request made pursuant to this subsection shall comply with such policy and shall be reviewed by said department in accordance with such policy within ninety days, unless the department determines that an extension of time is necessary. If the department approves a request, the Commissioner of Energy and Environmental Protection shall use the Telecommunications License Agreement, forms and fee structure developed pursuant to subsection (g) of this section to execute a license agreement with the wireless carrier or permitted entity that submitted the approved request within thirty days of such approval, provided any such agreement shall be approved by the Secretary of the Office of Policy and Management and the Attorney General. Said commissioner shall administer any license agreement executed pursuant to this subparagraph. Nothing in this subdivision shall be deemed to require the Department of Energy and Environmental Protection to make Department of Energy and Environmental Protection property available for the siting of personal wireless service facilities.

(f) (1) A wireless carrier or permitted entity may request to use Department of Transportation public right-of-way property for the placement, construction, maintenance and operation of small wireless facilities in accordance with this subsection.

(2) The Department of Transportation shall make highways and Department of Transportation public rights-of-way available for placement, construction, maintenance and operation of small wireless facilities in accordance with any applicable Federal Communications

Commission regulations, rulings or orders. Any request made pursuant to this subsection shall be administered by said department and shall be consistent with, to the extent applicable, the department's policy, as amended from time to time, regarding the installation of new utility facilities on any state or interstate highway, the American Association of State Highway and Transportation Officials' Policy on the Accommodation of Utilities on Freeway Rights-of-Way and any regulations or policies adopted by the Federal Highway Administration. Nothing in this subdivision shall be deemed to require the department to make structures over the traveled portion of a limited access state highway available for placement, construction, maintenance and operation of small wireless facilities.

(g) On or before November 1, 2019, the Office of Policy and Management, the Department of Energy and Environmental Protection, the Department of Administrative Services and the Department of Transportation shall jointly develop: (1) One or more Telecommunication License Agreements that shall govern (A) the placement of personal wireless service facilities and small wireless facilities on state real properties, buildings, structures or any other property owned by the state, (B) the placement of small wireless facilities on highways and Department of Transportation public right-of-way property; (2) a common form or set of forms for requests made pursuant to subsections (d), (e) and (f) of this section; and (3) a fee structure for requests made pursuant to subsections (d), (e) and (f) of this section. Any Telecommunication License Agreement developed pursuant to this subsection shall be subject to approval by the Attorney General prior to being used pursuant to this section.

(h) At the time it submits its first request and every two years thereafter, any wireless carrier or permitted entity that submits or has submitted a request for the use of state real property pursuant to subsection (d) of this section, if such wireless carrier or permitted

entity anticipates making another request in the next two calendar years, shall submit to the council such wireless carrier's or permitted entity's master plan or equivalent plan for personal wireless service facilities and small wireless facilities. Any master plan or equivalent plan submitted pursuant to this section may be used by the council in the administration of this section and shall be deemed a trade secret and exempt from public disclosure pursuant to section 1-210 of the general statutes, and shall be marked as such by the council.

(i) Nothing in this section shall be construed to prohibit a wireless carrier or permitted entity from requesting the use of property owned by the state that is not subject to this section for the installation of personal wireless service facilities or small wireless facilities. Such request shall be made to the state agency that owns such property. Any agency that receives a request pursuant to this subsection shall grant or reject such request not later than ninety days after receiving such request.

(j) Nothing in this section shall be construed to supersede any existing rules and requirements that require the review and approval of permits for proposed personal wireless service facilities that are subject to the jurisdiction of the Connecticut Siting Council and the Public Utilities Regulatory Authority.

Sec. 2. (NEW) (*Effective July 1, 2019*) (a) The Office of Policy and Management, in consultation with the Public Utilities Regulatory Authority, the Office of Consumer Counsel, the State Broadband Office and the Connecticut Siting Council, shall work with municipalities and representatives of the wireless industry to encourage the establishment of streamlined processes for siting small wireless facilities on municipal property, in accordance with any applicable Federal Communications Commission rules, regulations or orders. For purposes of this section, "small wireless facilities" has the same meaning as provided in 47 CFR 1.6002, as amended from time to time,

and "municipal property" means property owned by a municipality, municipal public rights-of-way and buildings, structures and easements owned by municipalities, and does not include real and personal property of a public service company as defined in section 16-1 of the general statutes.

(b) Not later than January 30, 2020, the Secretary of the Office of Policy and Management, in accordance with section 11-4a of the general statutes, shall make recommendations concerning the establishment of streamlined processes for siting small wireless facilities on municipal property to the joint standing committee of the General Assembly having cognizance of matters relating to energy and technology.

Approved July 9, 2019

CITY OF BRIDGEPORT

----------X

Petition of New Cingular Wireless PCS, LLC

To the City of Bridgeport City Council

For Access Authorization to City Public Rights of Way &

A Non-Exclusive Agreement for City Pole Usage

Small Cell Installations

August 22, 2019

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Introduction

New Cingular Wireless PCS, LLC ("AT&T") respectfully submits this Petition requesting that the City Council adopt a resolution granting AT&T authority to access City public rights-of-way in the City of Bridgeport in accordance with federal, state and local requirements for small cell installations principally associated with City owned traffic and street lights or streetlight poles owned by United Illuminating ("UI").

AT&T's request for consent and authority for AT&T's installation, operation and maintenance of antennas, equipment and related lines and associated utility equipment ("Small Cells") in, over, and under the City's public rights-of-way in connection with the provision of wireless and telecommunications services to the public in Bridgeport is limited to Small Cells within the City's jurisdiction under federal and state laws.

This request does not apply to Small Cells installed in public rights of way that involve UI electric distribution poles, state highways or any facilities in the public right of way under the exclusive jurisdiction of the State Department of Transportation, the Public Utilities Regulatory Authority ("PURA") or the Connecticut Siting Council.

Small Cells - Utility Infrastructure

AT&T is a Federal Communications Commission ("FCC") licensee that provides "personal wireless services" and "telecommunications services" as such terms are defined in the Communications Act (47 U.S.C. §§ 253, 332).

Small Cells predominantly consist of cellular radio access points comprised of an antenna and an equipment cabinet that are mounted to an existing, replacement or new structure within the public rights-of-way, such as a utility pole or City-owned street light.

Attached in Exhibit 1 is a two-page summary entitled "AT&T and Small Cells" which answers several frequently asked questions on why Small Cells are needed for its network, what they are, how AT&T is collaborating with Connecticut municipalities along with resident support for this type of technology and some of the ways AT&T continues to invest in the State.

Also attached in Exhibit 1 is information on the safety of Small Cells and the FCC's recent announcement that its exposure standards are current and up to date as part of a proceeding considering any potential changes to its RF emission standards for all communications frequencies, including those used in wireless services and Small Cells.

AT&T Small Cells in Fairfield County Cities & Towns and Bridgeport

AT&T has and continues to obtain approvals from PURA for Small Cells being deployed on UI and Eversource electric distribution poles throughout lower Fairfield County's towns and cities. These Small Cells will provide enhanced wireless services to local neighborhoods and commercial centers to enable users to access AT&T's state-of-the-art, fully digital system for voice communications, messaging, and data transmission and reception. Attached as Exhibit 2 are copies of plans and a FCC compliance report for an actual AT&T Small Cell utility pole installation in Bridgeport approved by PURA. Several AT&T Small Cells are being deployed on UI utility poles in the City of Bridgeport to serve current and future AT&T network requirements for wireless coverage and capacity similar to those in the photograph also included in Exhibit 2.

Federal, State and City Legal Requirements for Small Cells in Public Rights of Way

The State of Connecticut adopted legislation, which Governor Lamont signed into law on June 25, 2019, to stimulate continued investment in wireless networks and future 5G technologies. Importantly, Public Act No. 19-163 streamlines leasing review of state-owned properties for towers, rooftop facilities and small cells, incorporates federal law and FCC rulings requiring the State DOT to authorize access to highways for small cells, preserves PURA's exclusive small cell siting jurisdiction over utility pole attachments and makes clear that municipalities will need to provide access to municipal owned poles for small cell siting in Connecticut.

As related to this Petition, under federal, state and City laws, the City Council has authority to grant consent for access to City owned public rights of way for Small Cell equipment used by AT&T.[1] AT&T's request to access public rights-of-way in the City for Small Cells is governed by the FCC's recent Small Cell rules and regulations as same are implemented by the City.[2] Additionally, it should be noted that AT&T already has a pole attachment agreement with UI that includes its authority to install Small Cells on UI streetlights or utility poles in City streets, subject to any street permits the City may require.[3]

Specific Request for City Public Right of Way Access Consent and
Approval of an Agreement for AT&T's proposed Small Cells on City Owned Poles

AT&T's request to access public rights-of-way to install, operate and maintain Small Cells in City streets and on City of Bridgeport owned poles is subject to reasonable terms and conditions incorporated into the City Council's authorization and consent resolution including that:

- AT&T's Small Cells on City Owned Poles or UI streetlights shall be subject to any notice and permit application(s) and approvals required pursuant to Title 12 of the City Code and governing utility installations in City streets;

[1] See Chapter 5 of the City Charter; Title 12 of the City Code of Ordinances Related to Streets, Sidewalks and Public Places (Section 12.16.250 and City Council consent to street installations).
[2] Effective on January 14, 2019, *In the Matter of Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Inv.*, FCC 17-84, 2018 WL 4678555 (OHMSV Sept. 26, 2018) ("FCC Small Cell Order").
[3] See Section 12.12.010 and 12.12.030 of the City Code of Ordinances.

- In reviewing permit applications for Small Cells, the City shall apply standard and customary requirements applied to other similarly-situated utilities installing facilities in City public rights-of-way;

- Small Cells installed, operated and maintained on UI streetlights shall be constructed in accordance with the applicable UI pole attachment requirements for any such UI streetlights;

- Small Cells installed, operated and maintained on City owned traffic, streetlight or other City owned structures in City streets shall be constructed in accordance with the applicable City requirements for the structure in question and subject to the form of non-exclusive agreement approved for use by the City's Law Department and imposed as a condition of the City's consent and authorization for use of City owned structures;

- AT&T shall compensate the City annually for each Small Cell on a City owned pole in accordance with the FCC Small Cell Order rate and methodologies set forth therein;

- AT&T shall obtain and maintain insurance as specified in the form of non-exclusive agreement approved for use by the City's Law Department as a condition of the City's consent; and

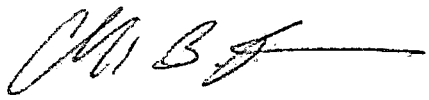
- AT&T shall comply with all applicable federal, state, and such City Code provisions legally applicable to the Small Cells.

These provisions and requirements will address the City's management of its City owned public rights of way and City owned structures in accordance with Section 253(c) of the Communications Act and the 2018 FCC Small Cell Order.

City Council Approval Request

AT&T requests that the City Council adopt a Resolution authorizing its access to City public rights of way and approval of a Non-Exclusive Agreement for AT&T Small Cells on City owned poles in its public rights of way in Bridgeport in order to meet the needs of the public and the ongoing demand for AT&T's wireless network services.

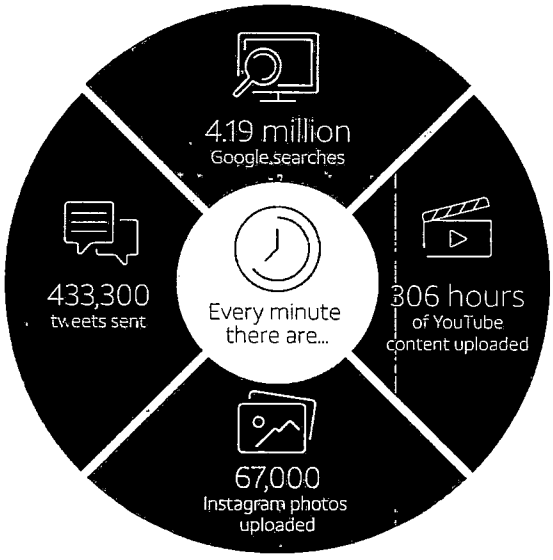
John Emra, President
Kelly Wade Bettuchi, Associate Director
External & Legislative Affairs
AT&T Connecticut
555 Long Wharf Drive
New Haven, CT 06511
203-974-6495



By: _____
Christopher B. Fisher, Esq.
Counsel to New Cingular Wireless PCS, LLC
Cuddy & Feder, LLP
445 Hamilton Avenue
White Plains, NY 10601
914-761-1300

Exhibit 1

AT&T and Small Cells



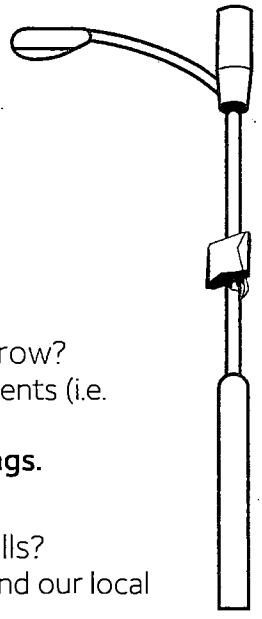
Why do we need to enhance our network?

- Consumer demand for data has grown and will continue to grow as the technology of tomorrow becomes part of our daily lives.

  → Mobile data traffic on AT&T's national wireless network increased more than **470,000%** between 2007 and 2018.

  → Connecticut has seen a **188% increase** in wireless phone subscribers since 2000; and since 2010, the number of wireless-only households more than **doubled**.

- **The existing infrastructure cannot support the surging demand of today and the data-heavy technology of tomorrow.** ***Small Cells can help.***



What are Small Cells?

- Small Cells are small, unobtrusive antennae devices that fit on existing infrastructure (traffic lights, utility poles, etc.) to **boost capacity and speed** in targeted, high-traffic areas.

Why are Small Cells the best solution for the demands of today and tomorrow?

- Small Cells will provide **enhanced service** for our customers and your constituents (i.e. faster download speeds, better coverage). These devices will also help lay the foundation for future technologies, such as: **5G, Smart Cities, Internet of Things.**

Why does AT&T want to collaborate with municipalities to deploy Small Cells?

- AT&T has invested in our Connecticut communications network, our people and our local communities for 141 years. (*See reverse side for more information*).

- We are committed to providing our customers the best service possible. At the same time, we recognize the exciting opportunities that future technologies will offer businesses, municipalities, and individuals. We are committed to a future network that will **maximize this potential**.

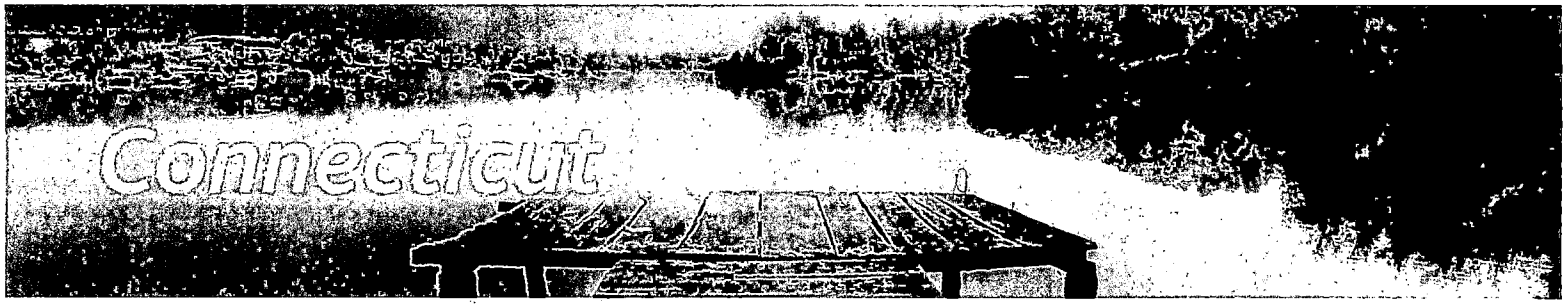
- Our continued partnership can ensure your residents are taking advantage of the most cutting-edge network possible and put your community at the **forefront of innovation**.

Connecticut residents support small cells

A statewide survey of Connecticut AT&T customers taken in October 2018 showed:

- **94%** of respondents support small cells installation in their community.
- **97%** of respondents believe high-speed mobile broadband is important for police and firefighters, schools, hospitals and doctors, local governments and others in their community.
- **92%** of respondents want faster downloads and the ability to use more devices, tablets, smart watches, home assistants, etc.

AT&T



AT&T has invested in our Connecticut communications networks, our people and local communities for 141 years.

building for tomorrow

More than $200 million
invested by AT&T in its best-in-class wired and wireless networks in Connecticut from 2015-2017. [1]

367
wireless upgrades made in Connecticut in 2016-2018 including 19 new cell sites. [1]

99.9 percent
of Connecticut covered by the AT&T Mobile Broadband network as of Nov. 02, 2018. [1]

100 percent
of population in Connecticut covered by the AT&T Mobile Broadband network as of Nov. 02, 2018. [1]

167
Wi-Fi hotspots in Connecticut as of Jan. 29, 2019.

community impact

3,143 students
mentored by our employees in Connecticut through Aspire Mentoring Academy from 2012 to 2017.

More than 13,100 hours
of personal time given by AT&T employees in Connecticut to community outreach activities in 2017 – worth more than $315,000. [2]

More than $2.2 million
contributed by AT&T, the AT&T Foundation and our employees from 2015 - 2017 through giving programs in Connecticut.

environmental impact

42
alternative fuel vehicles operated in Connecticut as of Dec. 31, 2018.

93
energy efficiency projects in Connecticut in 2017 resulted in annualized savings of more than 1.3 million kilowatt hours and the equivalent of removing 141 cars from the road annually.

jobs and economic support

More than 1,200
AT&T employees working in Connecticut as of Dec. 31, 2018.

6,341
AT&T retirees living in Connecticut as of Dec. 31, 2018.

140
retail locations in Connecticut, including our company-owned retail stores, authorized dealerships and national retail stores as of Jan. 31, 2019.

More than $80 million
generated in local and state taxes by AT&T operations in Connecticut in 2017.

Approximately 85
veterans working for AT&T in Connecticut as of Dec. 31, 2018. [3]

Please visit ***http://connecticut.att.com*** *for more information.*

[1] This metric is calculated based on zip codes covered by legislative districts. Because data is calculated for the full zip code, numbers may be overstated for legislative districts that cover only portions of a particular zip.

[2] The financial equivalent is based on the annual industry standards from Independent Sector.

[3] The number of veteran employees is calculated from those who have self-identified as veterans. Since identifying as a veteran is voluntary, there may be more veterans than the number shown.

Small cells in communities

AT&T places the safety of its customers, workers, and communities first, even as we begin deploying next generation technologies to keep you connected. Below are some things to know about the safety of RF signals from small cell facilities.

Network capacity and mobile device performance are improved with small cells.

- Because small cells help optimize the network for its users, it reduces the power and radio transmissions – including RF energy – mobile phones use to make calls and send data.
- This helps mobile devices deliver increased data capacity, faster connectivity speeds and an overall better wireless experience, while helping maintain affordability for consumers.

Small cell facilities are different than traditional cell towers.

- Small cells typically are located 30 feet or more above the ground on light, traffic, or utility poles.
- Small cell facilities operate at power levels lower than antennas on cell towers. These low power operations reduce the chance that they will interfere with each other.

Small cell facilities must comply with the FCC regulations that limit human exposure to RF signals.

- Those regulations were developed by expert scientists and engineers after extensive reviews of scientific literature related to RF biological effects and supported by other federal agencies (e.g., U.S. Environmental Protection Agency, Food and Drug Administration, National Institute for Occupational Safety and Health and Occupational Safety and Health Administration).[1]
- These limits are conservative, with a "prudent safety factor," [2] which has been described as a fifty-fold safety factor below known potential health effects from RF exposure.[3] And, small cell facilities generate RF exposure to the general public that is *hundreds of times below* conservative FCC limits.
- Government agencies continue to monitor the science to determine whether changes in safety limits are needed to protect human health.

AT&T has a rigorous RF safety program.

- All of our wireless facilities, including small cell deployments, are designed and built to comply with the FCC exposure limits.
- AT&T's small cell facilities will comply with the RF exposure limits.

As we coordinate with state and local officials to deploy small cells, AT&T is committed to working with communities to provide the best possible service in the most responsible way.

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1 See, https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety#Q5.
2 Id.
3 Testimony of Christopher C. Davis, Professor of Electrical and Computer Engineering, University of Maryland, before the Michigan House Energy Policy Committee (May 29, 2018), available at http://www.house.mi.gov/SharedVideo/PlayVideoArchive.html?video=ENER-052918-2.mp4 (Prof. Davis Testimony).
4 Prof. Davis Testimony. See also, Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, at 14 (1997) ("For antennas mounted higher than 10 meters, measurement data for cellular facilities have indicated that ground-level power densities are typically hundreds to thousands of times below the new MPE limits.")

AT&T

FCC NEWS from the Federal Communications Commission

Media Contact:
Neil Grace, (202) 418-0509
Neil.Grace@fcc.gov

For Immediate Release

CHAIRMAN PAI PROPOSES TO MAINTAIN CURRENT RADIOFREQUENCY EXPOSURE SAFETY STANDARDS

FCC's RF Exposure Limits for Handheld Devices are Among the Most Stringent in the World

WASHINGTON, August 8, 2019—Federal Communications Commission Chairman Ajit Pai shared with his colleagues today a proposal that would continue to ensure the health and safety of workers and consumers of wireless technology. Following more than six years of public input and review, the proposal would maintain the Commission's existing radiofrequency (RF) exposure limits. The United States' RF exposure limits for handheld devices are among the most stringent in the world.

The proposal would also establish a uniform set of guidelines for ensuring compliance with the limits regardless of the service or technology, replacing the Commission's current inconsistent patchwork of service-specific rules. In addition, Chairman Pai is proposing that the Commission seek comment on establishing rules formalizing its existing methods of determining compliance with the RF exposure standard for high-frequency devices.

"The FCC sets radiofrequency limits in close consultation with the FDA and other health agencies. After a thorough review of the record and consultation with these agencies, we find it appropriate to maintain the existing radiofrequency limits, which are among the most stringent in the world for cell phones," said Julius Knapp, chief of the FCC's Office of Engineering and Technology.

As Jeffrey Shuren, Director of the Food and Drug Administration's Center for Devices and Radiological Health, wrote to the FCC, "[t]he available scientific evidence to date does not support adverse health effects in humans due to exposures at or under the current limits…" and "[n]o changes to the current standards are warranted at this time."

The draft item includes these main components:

- *Maintaining the current standard:* The item would maintain the existing RF exposure limits and thus resolve the Commission's 2013 Notice of Inquiry that sought public input on whether to strengthen or relax its existing RF exposure limits.
- *Establishing uniform rules for determining compliance with RF standards:* The item would establish a uniform set of guidelines, agnostic to the service or technology, using science-based metrics around frequency, distance, and power, to determine how entities assess whether they are in compliance with RF standards.

- *Formalizing the application of the existing standard to certain frequencies:* The item would seek comment on establishing a rule to formalize the Commission's existing methods of determining compliance with the RF exposure standard for devices operating at high frequencies.

For more information on RF exposure limits, visit: https://www.fcc.gov/rfsafety.

###

Media Relations: (202) 418-0500 / ASL: (844) 432-2275 / TTY: (888) 835-5322 / Twitter: @FCC / www.fcc.gov

Exhibit 2

AT&T SITE ID: BRIDGEPORT_58A
20 5TH ST
BRIDGEPORT, CT 06607

REV.
0
0
0
0

VICINITY MAP (NOT TO SCALE)

PROJECT DESCRIPTION

1. INSTALLATION OF ANTENNA AND ASSOCIATED EQUIPMENT ON EXISTING UTILIT
2. THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT SITE AND WIL USED FOR THE TRANSMISSION OF RADIO SIGNALS FOR THE PURPOSE OF I CELLULAR AND WIRELESS INTERNET SERVICE.
3. AT&T MAINTENANCE CREW (TYPICALLY ONE PERSON) WILL MAKE AN AVERAG ONE TRIP PER MONTH AT ONE HOUR PER VISIT.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISC PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

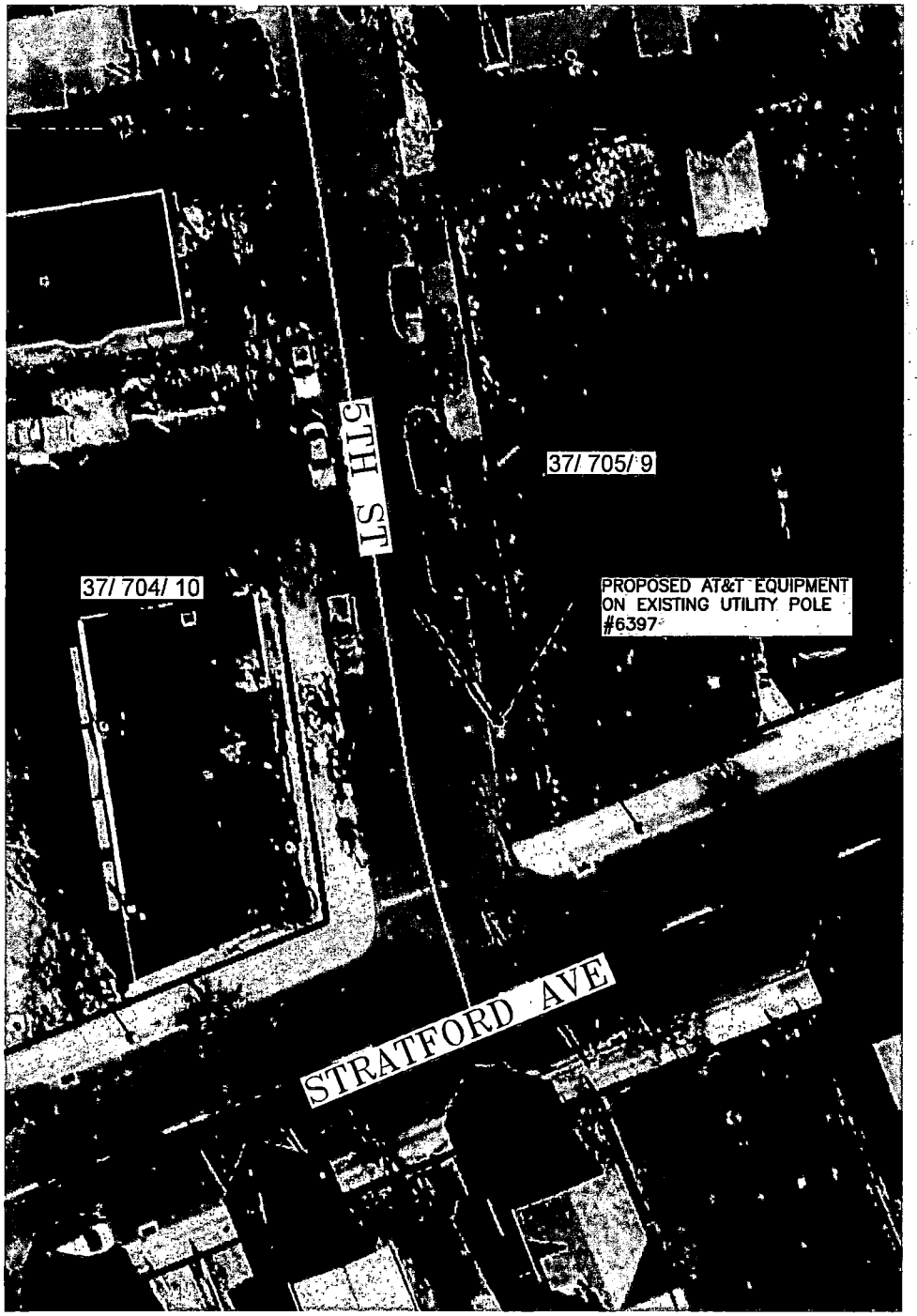
DRIVING DIRECTIONS

FROM ROCKY HILL, CT:

DEPART ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI. TURN LEFT ONTO CAPITOL BLVD. 0.3 MI. TURN LEFT ONTO WEST ST. 0.3 MI. TAKE RAMP LEFT FOR I-91 S. 9.6 MI. AT EXIT 17, TAKE RAMP RIGHT FOR CT-15 SOUTH TOWARD E. MAIN ST / W. CROSS PKWY. 26.4 MI. AT EXIT 54, TAKE RAMP RIGHT FOR MILFORD PKWY TOWARD MILFORD. 2.0 MI. TAKE RAMP RIGHT FOR I-95 SOUTH TOWARD BRIDGEPORT / N.Y. CITY. 7.0 MI. AT EXIT 29, TAKE RAMP RIGHT FOR SEAVIEW AVENUE TOWARD HOSPITAL / STRATFORD AVENUE. 0.3 MI. TURN LEFT ONTO SEAVIEW AVE. 0.3 MI. TURN LEFT ONTO BEARDSLEY ST. 0.2 MI. ARRIVE AT SITE ON THE RIGHT.

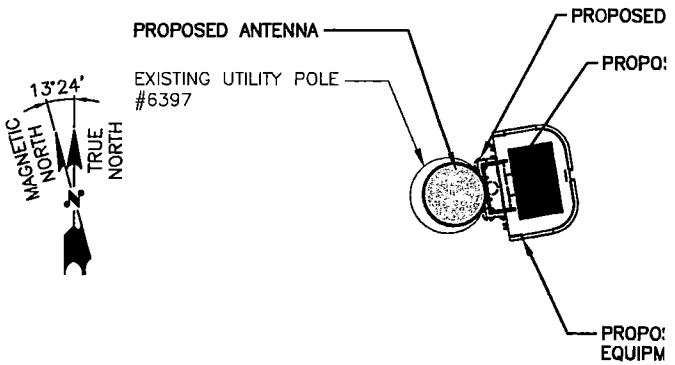
72 HOURS

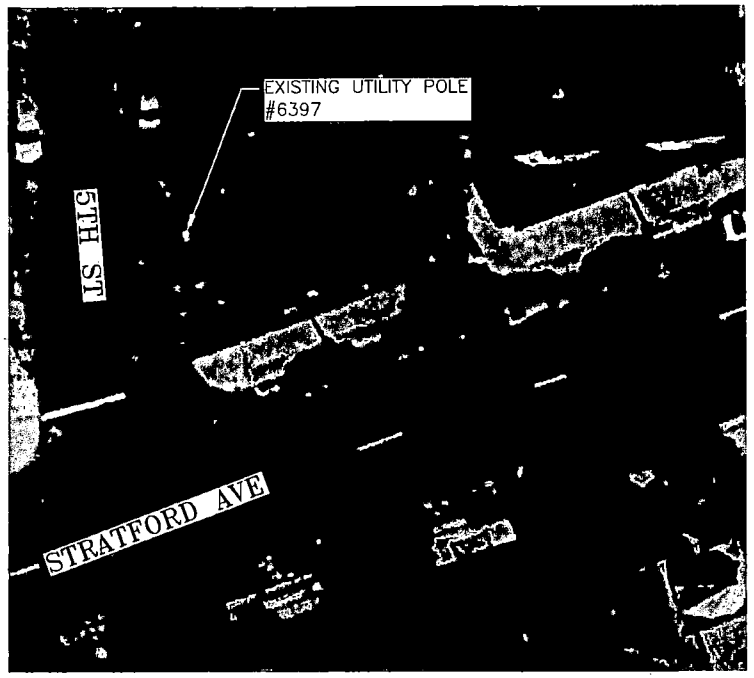
CALL
BEFORE YOU DIG
1-800-922-44



INFORMATION

PARCEL	OWNER	ADD
37/ 705/ 9	BRIDGEPORT CITY OF	45 LYON BRIDGEPOR
37/ 704/ 10	PETTWAY NOLAND ET AL	1081 STR BRIDGEPOR





1
A–1
=20'
=40'

GRAPHIC SCALE
0 10 20 40 60 FEET

TOP OF PROPOSED ANTENNA
ELEV. = 37'–0"± A.G.L

℄ OF PROPOSED ANTENNA
ELEV. = 36'–0"± A.G.L

TOP OF EXISTING POLE
ELEV. = 34'–0"± A.G.L

EXISTING SECONDARY WIRE
ELEV. = 27'–3"± A.G.L

EXISTING LIGHT FIXTURE
ELEV. = 25'–6"± A.G.L

EXISTING COMM. WIRE
ELEV. = 22'–10"± A.G.L

EXISTING COMM. WIRE
ELEV. = 21'–10"± A.G.L

37'–0"±

36'–0"±

PROPOSED ANTENNA (1 A–2)

PROPOSED GALTRONICS POLE TOP MOUNTING BRACKET PART# 62–20–09

48" CLEARANCE MIN.

PROPOSED (1) WEATHERHEAD

PROPOSED (3) #6 AWG WIRE
PROPOSED (1) UV RATED 1–
MIN. SCH. 40 PVC CONDUIT.
CONUIT SHALL BE SECURED
HOLE STRAPS AT BOTH ENDS
EVERY 10' SECTION OF CONI

PROPOSED (1) #2 AWG COPI

PROPOSED FIBER

PROPOSED DEMARC BOX BY
PROVIDER, CONNECTED TO FI
ABOVE BY FIBER PROVIDER

PROPOSED FIBER JUMPERS
(FRONTHAUL & BACKHAUL)

PROPOSED (1) METER MAIN
WITH BYPASS (METER
SOCKET ONLY TO BE
PROVIDED BY UI) (METER
SHALL NOT BE MOUNTED
ON STREET SIDE)

6"

6"

PROPOSED RF EMISSIONS
WARNING SIGN (SEE NOTE 1)

(1) 60A 2–POLE
PAD–LOCKABLE DISCONNECT
SWITCH FUSED AND (3) 20A
2–POLE CIRCUIT BREAKERS
(SEE ELECTRICAL NOTES)
WITH POWER SUPPLY
EXTERNAL INDICATOR LIGHT

PROPOSED EQUIPMENT CABIN

EXISTING UTILITY POLE
#6397

PROPOSED (1) #2
AWG COPPER
GROUND WIRE INSIDE
1/2" UV RATED PVC

8' MIN. (SHOWN)

GROUND LEVEL
ELEV. = 0'–0"± A.G.L

GROUND PER THE REQUIREME
AUTHORITY HAVING JURISDICTI
ELECTRICAL CODE (NEC), SEC

5/8"X8' COPPER CLAD GROU

DIRECTION OF TRAFFIC

GALTRONICS

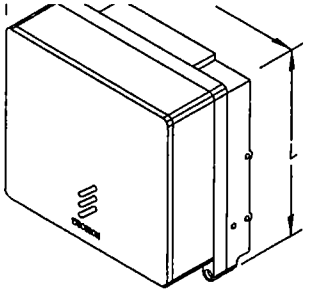
480/6621/
I6621 OR EQUAL.
S:
0.0"ø
9 LBS.

FACIAL
AREA:
= 1.72 SF

JNT PER
JRER'S
TIONS.

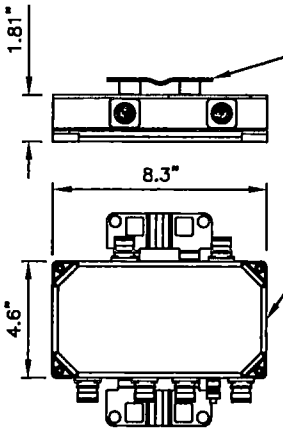
SED ANTENNA

SED
ONICS POLE
IOUNTING
ET PART#
)–09
T: 5 LBS.



MODEL	QTY	L	W	D	WGT.
2203	2	8.0"	8.0"	4.0"	11 LB
2205	1	8.0"	8.0"	4.0"	11 LB

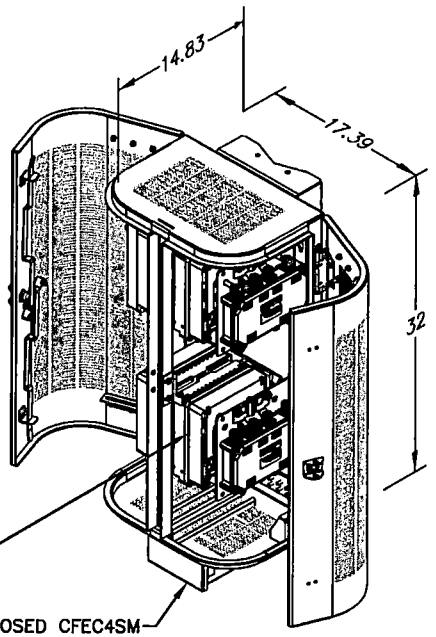
RRH DETAIL
SCALE: N.T.S
2 / A–2



PROPOSED DIPLEXER MOUNTING BRACKET

PROPOSED DIPLEXER COMMSCOPE MODEL #CBC1923T–4310 DIMENSIONS: H4.6"xW8.3"xD1.8" WEIGHT: 5.5 LBS.

DIPLEXER DETAIL (AS REQUIRED)
SCALE: N.T.S
3 / A–2

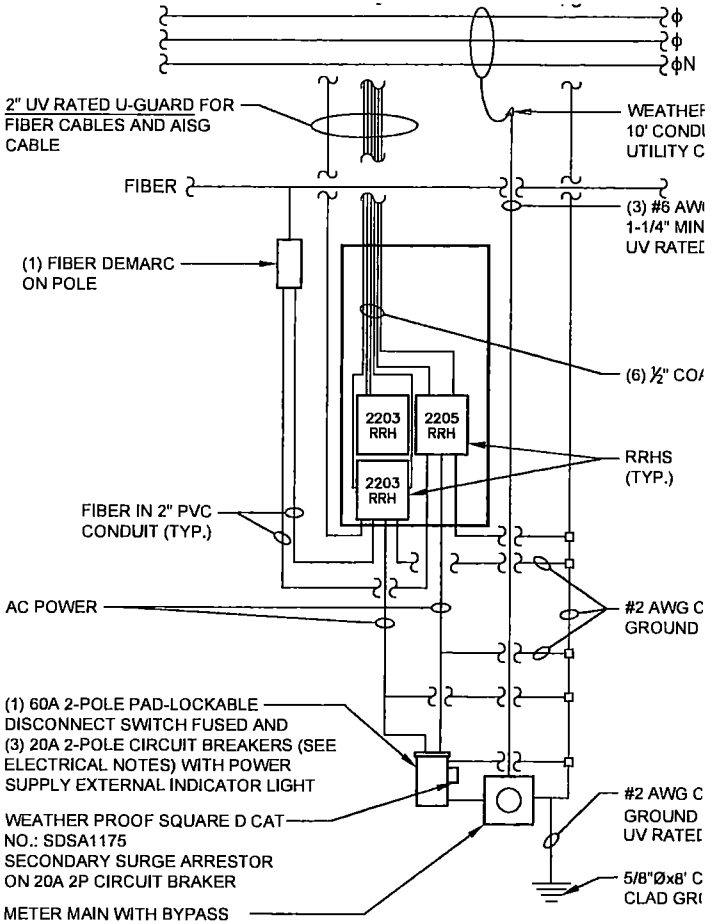


2 / A–2 PROPOSED RRH

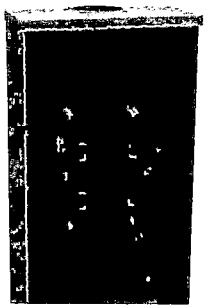
PROPOSED CFEC4SM EQUIPMENT SHROUD (OR SIMILAR) DIMENSIONS: H32"xW18"xD12" WEIGHT: 70 LBS.

CABINET FACIAL SURFACE AREA: 17.39" x 32.0" = 3.86 SF

NO BATTERY BACKUP OR AUXILIARY OUTLETS FOR BACKUP POWER ARE BEING PROVIDED IN THIS DESIGN



GENERAL WIRING DIAGRAM
SCALE: N.T.S
6 / A–2



USE MILBANK
MODEL NO.:
U2272–RL–5T
OR APPROVED

CENTERLINE
COMMUNICATIONS

Radio Frequency Emissions Analysis Report

AT&T

Site Name: **BRIDGEPORT_58A**

20 5th Street
Bridgeport, CT 06607

October 15, 2018

Centerline Communications Project Number: 950012-179

Site Compliance Summary	
Compliance Status:	**Compliant**
Site total MPE% of FCC general population allowable limit:	**0.393 %**

CENTERLINE
COMMUNICATIONS

October 15, 2018

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **BRIDGEPORT_58A**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility to be located on **Utility Pole # 6397** near **20 5th Street, Bridgeport CT 06607** for the purpose of determining whether the emissions from the proposed facility are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 1900 MHz (PCS) and 5 GHz (B46) bands is 1000 $\mu W/cm^2$.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed facility using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing focused omnidirectional antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. This is a very conservative estimate since the gain reduction in actual applications is typically greater than 10 dB in the direction of ground immediately surrounding the facility. Real world emissions values from this facility are expected to be lower than values listed in this report at ground level. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

RRH #	Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
1	LTE	1900 MHz (PCS Band)	2 (2 x 2 MIMO)	5
2	LTE	1900 MHz (PCS Band)	2 (2 x 2 MIMO)	5
3	LTE	5 GHz (Band 46)	2 (2 x 2 MIMO)	0.316

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 1900 MHz (PCS) and 5 GHz (Band 46) frequency bands. This is based on information from the carrier with regard to anticipated antenna selection. Maximum gain values for all antennas are listed in the AT&T Antenna Inventory & Power Levels table (Table 3) below in the Results section. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Galtronics Extent P6480i	36

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Antenna Height (ft)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Galtronics Extent P6480i	1900 MHz (PCS Band)	6.85 dBd	36	4	20	96.83	0.387
Antenna A1	Galtronics Extent P6480i	5 GHz (Band 46)	3.85 dBd	36	2	0.632	1.53	0.006
							Sector A Composite MPE%	**0.393**

Table 3: AT&T Antenna Inventory & Power Levels

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). Since this proposed facility is utilizing an omnidirectional antenna there is only one sector for this site (Sector A).

AT&T _ Frequency Band / Technology Max Power Levels	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 1900 MHz (PCS) LTE	4	24.21	36	3.87	1900 MHz (PCS)	1000	0.387%
AT&T 5 GHz (Band 46) LTE	2	0.77	36	0.06	5 GHz (Band 46)	1000	0.006%
						Sector A Total:	**0.393%**

Table 6: AT&T Maximum Sector MPE Power Values

CENTERLINE
COMMUNICATIONS

Summary

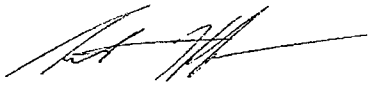
All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	0.393%
AT&T Maximum Site Total:	0.393%
Site Total:	**0.393%**
Site Compliance Status:	**COMPLIANT**

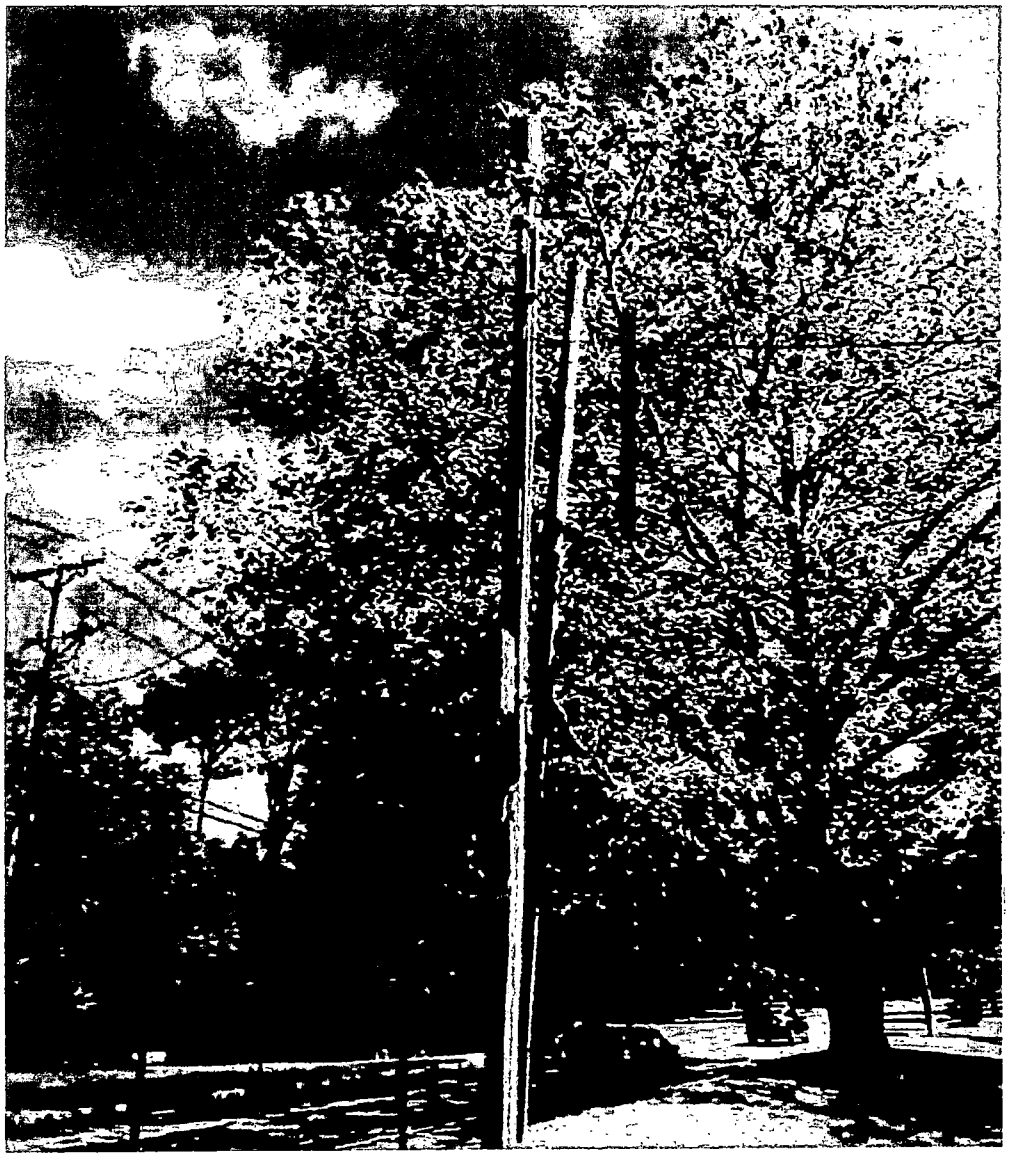
The anticipated composite MPE value for this site assuming all carriers present is **0.393%** of the allowable FCC established general population limit sampled at the ground level.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

Sample Image of Small Cell - Utility Pole Installation



OFFICE OF THE

DEPARTMENT OF PUBLIC FACILITIES

999 BROAD STREET
BRIDGEPORT, CONNECTICUT 06604
TELEPHONE (203) 576-7130

JOHN K. RICCI
Director Public Facilities

JOSEPH P. GANIM
Mayor

COMM. 148-18 Ref'd to Contracts Committee on 09/16/2019.

ATTEST
CITY CLERK

RECEIVED
CITY CLERKS OFFICE
19 SEP 10 PM 1:22

September 10, 2019

Ms. Frances Ortiz
Assistant City Clerk
City of Bridgeport
45 Lyon Terrace
Bridgeport, CT 06604

Re: Resolution Professional Services Agreement for the Perry Memorial Arch Study & Assessment PKX128193 at Seaside Park

Dear Ms. Ortiz:

Kindly find the attached resolution for approval from City Council for assistance to enter into a Professional Services Agreement with Wiss, Janney, Elstner Associates, Inc. 2 Trap Falls Road, Suite 502, Shelton, CT 06484 to complete the Study and Assessment of the Perry Memorial Arch Monument located at Seaside Park.

I am requesting this matter be placed on the City Council agenda for Tuesday, September 16, 2019 for referral to the City Council Contracts Committee.

Thank you for your time and consideration. As always, I am available for questions.

Respectfully,

John Ricci, Director
Public Facilities Administration
999 Broad St, 2nd Fl
Bridgeport, CT 06604
John.Ricci@bridgeportct.gov
203-576-7130

Stephen T. Hladun, Special Projects Coordinator
Parks Administration
999 Broad St, 2nd Fl
Bridgeport, CT 06604
Steve.Hladun@bridgeportct.gov
203-576-7797

Resolution

Regarding Engineering Services for the Perry Memorial Arch Study & Assessment

WHEREAS, The Perry Memorial Arch serves as the main point of entry to Seaside Park, was constructed in 1918 as a memorial to William Hunt Perry, was designed by Henry S. Bacon of New York, and is listed as a contributing monument to Seaside Park, which was added to the National Register in 1982,

WHEREAS, the City has conducted a Request for Qualifications (RFQ) and Request for Proposal process by which it has publicly solicited professional services for the Study & Assessment of the Perry Memorial Arch; and,

WHEREAS, Wiss, Janney, Elstner Associates, Inc. ("WJE"), has been chosen through the City's Request for Qualifications and Request for Proposals procedure and has been awarded as the designated firm to oversee this project; and,

WHEREAS, the overall project is to conduct structural assessments, analysis and study with adherence and compliance to historic preservation standards to protect the monument; and

WHEREAS, the City of Bridgeport Public Facilities and Parks and Recreation Department maintains over 47 parks and 1300 acres including all monuments, statues and facilities located within, and specifically has gathered initial reports regarding the condition of the Perry Memorial Arch that indicate there is a need for assessment and structural analysis;

WHEREAS, the City Council had previously approved capital funding in its 2018-2022 Capital Plan for Perry Memorial Arch Study in July of 2018 and allocated funding for the Study and Assessment of the Perry Memorial Arch at Seaside Park; and

WHEREAS, WJE has provided the best qualifications that include engineers, architects and materials scientists as well as the best overall value in their proposal, and shall complete various specific tasks requested including but not limited to, the survey of existing conditions with recommendations and cost estimate, testing analysis and structural study, construction bid contract documents, permitting, scope of work plans and drawings, construction administration, and post-construction review and closeout, documentation of means and methods, initial assessment and inventory, and engineering services; and

WHEREAS, the City will enter into a mutually-acceptable agreements in substantially the form attached hereto and shall take such other actions as they deem necessary or desirable to implement the Project.

NOW, THEREFORE, BE IT RESOLVED that the Mayor or the Chief Administrative Officer is authorized, upon the approval as to form by the Office of the City Attorney, to

negotiate and execute a final agreement, enter into such other agreements as may be required consistent with this resolution, and take such other necessary or desirable actions and do such further things in furtherance of the Project as they may deem to be in the best interests of the City consistent with this resolution.

PROFESSIONAL SERVICES AGREEMENT

THIS AGREEMENT between the parties dated the ___ day of August, 2019 (the "**Agreement**") is hereby entered into between **Wiss, Janney, Elstner Associates, Inc.**, with offices at 2 Trap Falls Road, Suite 502, Shelton, CT 06484 (the "**Consultant**") and **the City of Bridgeport**, acting through its Department of Parks and Recreation, with offices at 999 Broad Street, Bridgeport, Connecticut 06604 (the "**City**") on the following terms and conditions:

WHEREAS the City published a RFQ/P For Perry Memorial Arch Study & Assessment (Solicitation PKX128193 in or about March 2019, including all addenda (collectively, the "**Solicitation**") seeking the services of an historical architecture and engineering consulting firm with experience in assessment, analysis, design and compliance of preservation development for historic structures and monuments, engineering, architecture, and construction administration, a copy of which is attached hereto as **Exhibit A** and incorporated by reference as if fully set forth herein;

WHEREAS the Consultant submitted its qualifications and proposal dated March 27, 2019 (the "**Proposal**"), a copy of which is attached hereto as **Exhibit B** and incorporated by reference as if fully set forth herein;

WHEREAS the Consultant further submitted its letter setting forth the scope of services ("**Scope**") and schedule for performance of such Scope ("**Schedule**") dated August 19, 2019, a copy of which is attached hereto as **Exhibit C** and incorporated by reference as if fully set forth herein; and

WHEREAS the Consultant agrees to commence its services and perform the same in accordance with this agreement and as specifically directed by the City in a manner consistent therewith.

NOW, THEREFORE, for good and valuable consideration, the parties mutually agree as follows:

The above recitals are incorporated into the body of this agreement with full legal effect.

1. General Undertaking. The parties are entering into this Agreement for the purposing of engaging the Consultant to provide the services described in Exhibit C, as the same may be amended by mutual agreement of the parties (the "**Services**"). Such Services will focus primarily on the Perry Memorial Arch.

2. Term of Engagement. This Agreement shall commence within five (5) business days of the date last below written or on such other date that is set forth in a notice to proceed to the Consultant and shall continue in full force and effect for a period of up to two (2) years until the Services are completed according to this Agreement, or until the earlier termination of this Agreement as provided herein, whichever occurs first ("**Term**"). The City shall have the right to extend the Term for an additional one-year period (the "**Extended Term**"). Termination shall have no effect on the City's obligation to pay for Services rendered through such earlier termination for work that has been completed in accordance with the terms of this Agreement and which has been accepted in due course by the City.

3. Record of Activities. [Intentionally Omitted]

4. Price; Payment.

(a) The Consultant has submitted a lump sum price for the Services in the amount of Two Hundred Twenty Thousand Five Hundred ($220,500.00) Dollars as set forth for the performance of each of five (5) tasks set forth on the bid form submitted in connection with its Proposal.

(b) The Consultant will submit its invoices with all backup documentation, activities conducted, reimbursable expenses with receipts, and the like, to the City on a monthly basis for the prior month's Services rendered as to each specific task and any reimbursable expenses incurred, which invoices the City shall pay within 45 days of receipt of a complete invoice.

5. Acceptability of Information and Reports Supplied by the Consultant. Any and all information and reports, whether supplied orally or in writing by the Consultant, shall be based upon consistent and reliable data-gathering methods and may be relied upon by the City.

6. Proprietary Rights. It is not anticipated that the Consultant will develop or deliver to the City anything other than Services and certain written reports or recommendations. Nevertheless, the City shall own all right, title and interest in such the Consultant's work under this Agreement to the extent such work provides analyses, findings, or recommendations uniquely related to the Services to be rendered. The Consultant expressly acknowledges and agrees that its work constitutes "work made for hire" under Federal copyright laws (17 U.S.C. Sec. 101) and is owned exclusively by the City and, alternatively, the Consultant hereby irrevocably assigns to the City all right, title and interest in and irrevocably waives all other rights (including moral rights) it might have in its work under this Agreement. The Consultant shall, at any time upon request, execute any documentation required by the City to vest exclusive ownership of such work in the City (or its designee). The Consultant retains full ownership of any underlying techniques, methods, processes, skills or know-how used in

developing its Services under this Agreement and is free to use such knowledge in future projects.

7. Confidential Information.

(a) Acknowledgment of Confidentiality. Each party hereby acknowledges that it may be exposed to confidential and proprietary information belonging to the other party or relating to its affairs, including materials expressly designated or marked as confidential ("**Confidential Information**"). Confidential Information does not include (i) information already known or independently developed by the recipient; (ii) information in the public domain through no wrongful act of the party, (iii) information received by a party from a third party who was free to disclose it or (iv) information required to be disclosed under the Connecticut Freedom of Information Act.

(b) Covenant Not to Disclose. Each party hereby agrees that during the Term and at all times thereafter it shall not use, commercialize or disclose the other party's Confidential Information to any person or entity, except to its own employees who have a "need to know," to such other recipients as the other party may approve in writing in advance of disclosure, or as otherwise required by court order, statute or regulation. Each party shall use at least the same degree of care in safeguarding the other party's Confidential Information as it uses in safeguarding its own Confidential Information, but in no event shall a party use less than reasonable care and due diligence. Neither party shall alter or remove from any software, documentation or other Confidential Information of the other party (or any third party) any proprietary, copyright, trademark or trade secret legend.

8. Non-circumvention. [INTENTIONALLY OMITTED]

9. Injunctive Relief. The parties acknowledge that violation by one party of the provisions of this Agreement relating to violation of the other party's Proprietary Rights or Confidential Information rights would cause irreparable harm to the other party not adequately compensable by monetary damages. In addition to other relief, it is agreed that preliminary and permanent injunctive relief may be sought without the necessity of the moving party posting bond to prevent any actual or threatened violation of such provisions.

10. Representations and Warranties.

The Consultant represents and warrants, as of the date hereof and throughout the Term of this Agreement, as follows:

(a) The Consultant represents that it has the requisite experience to undertake and complete the Services pursuant to the requirements of this

Agreement and has in its employ or will hire qualified and trained personnel to perform the Services required.

(b) The Consultant represents that it can commence the Services promptly within five (5) days of the receipt of a notice to proceed and will complete the Services in a timely manner on a schedule to be approved by the City.

(c) The Consultant represents that it is financially stable and has adequate resources and personnel to commence and complete the Services required in a timely fashion.

(d) The Consultant's performance of the Services described herein, and its representation of the City, will not result in a conflict of interest, will not violate any laws or contractual obligations with third parties, and is an enforceable obligation of the Consultant.

(e) The Consultant will not subcontract any of the work to third parties without prior written notice to the City and receipt of the City's prior written consent.

(f) The Consultant represents that neither it, nor any of its officers, directors, owners, employees or permitted subcontractors, have committed a criminal violation of or are under indictment of a federal or state law arising directly or indirectly from its business operations or reflects on its business integrity or honesty that resulted or may result in the imposition of a monetary fine, injunction, criminal conviction or other penal sanction, and further represents that the Consultant, its officers, directors, owners, employees, agents and subcontractors shall comply with the requirements of all laws, rules and regulations applicable to the conduct of its business or the performance of the Services under this Agreement.

(g) The Consultant represents that it will perform the Services in a good and workmanlike manner consistent with the standard of care for like professionals working under similar circumstances and will diligently pursue the completion of same in accordance with the terms of this Agreement.

(h) The Consultant represents that it possesses all licenses and permits that may be required to perform the Services required by this Agreement.

(i) The Consultant represents and warrants that the performance of the Services will not infringe upon or misappropriate any United States copyright, trademark, patent, or the trade secrets or other proprietary material of any third persons. Upon being notified of such a claim, the Consultant shall (i) defend through litigation or obtain through negotiation the right of the City to continue using the Services of the Consultant; (ii) rework the Services to be rendered so

as to make them non-infringing while preserving the original functionality, or (iii) replace the Services with the functional equivalent. If the City determines that none of the foregoing alternatives provide an adequate remedy, the City may terminate all or any part of this Agreement and, in addition to other relief, recover the amounts previously paid to the Consultant hereunder.

11. Liabilities.

(a) [Intentionally Omitted]

(b) Liabilities. THE CITY SHALL NOT BE LIABLE TO THE CONSULTANT FOR ANY CLAIM ARISING OUT OF THIS AGREEMENT IN AN AMOUNT EXCEEDING THE TOTAL CONTRACT PRICE FOR THE DELIVERABLE AT ISSUE. EXCEPT FOR VIOLATIONS BY THE CONSULTANT OF SECTION 6 ("PROPRIETARY RIGHTS") OR SECTION 7 ("CONFIDENTIAL INFORMATION"), NEITHER PARTY SHALL BE LIABLE HEREUNDER FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOST SAVINGS OR PROFIT) SUSTAINED BY THE OTHER PARTY OR ANY OTHER INDIVIDUAL OR ENTITY FOR ANY MATTER ARISING OUT OF OR PERTAINING TO THE SUBJECT MATTER OF THIS AGREEMENT. THE PARTIES HEREBY EXPRESSLY ACKNOWLEDGE THAT THE FOREGOING LIMITATION HAS BEEN NEGOTIATED BY THE PARTIES AND REFLECTS A FAIR ALLOCATION OF RISK.

12. Notices. Notices sent to either party shall be effective on the date delivered in person by hand or by overnight mail service or on the date received when sent by certified mail, return receipt requested, to the other party or such other address as a party may give notice of in a similar fashion. The addresses of the parties are as follows:

If to the City:

Director,
Department of Parks and Recreation
City of Bridgeport
Margaret E. Morton Government Center
999 Broad Street, Second Floor
Bridgeport, Connecticut 06604

with a copy to:

City Attorney,
Office of the City Attorney
999 Broad Street, Second Floor
Bridgeport, Connecticut 06604

If to the Consultant:

At the address specified above.

with a copy to:

13. Termination For Default; Termination For Convenience.

(a) This Agreement shall terminate upon expiration of the Term or upon the earlier termination by one of the parties in accordance with the terms hereof. In addition to other relief, either party may terminate this Agreement if the other party breaches any material provision hereof and fails after receipt of written notice of default to advise the other party in writing within five (5) business days of its intentions with respect to such default and in any event corrects or cures such default within ten (10) business days of the receipt of notice of default. If such default cannot be cured or corrected within such 10-day period and the defaulting party details in writing to the other the reasons why such default cannot be so corrected or cured, the other party shall give an additional thirty (30) day period to correct or cure such default and the defaulting party shall with best efforts and due diligence promptly commence and consistently pursue corrective or curative action reasonably acceptable to the aggrieved party to completion. Either party shall be in default hereof if it becomes insolvent, makes an assignment for the benefit of its creditors, or if a receiver is appointed or a petition in bankruptcy is filed with respect to the party and is not dismissed within thirty (30) days. Termination shall have no effect on the parties' respective rights or obligations under Section 7 ("Confidential Information"), Section 9 ("Injunctive Relief") or Section 10 ("Warranties").

(b) The Consultant may not terminate for convenience. The City may terminate for convenience upon giving written notice of termination.

14. Resolution of Disputes and Choice of Law.

The parties agree that all disputes between them arising under this agreement or involving its interpretation, if they cannot be first resolved by mutual agreement, shall be resolved in a court of competent jurisdiction over the parties located in Fairfield County, Connecticut.

15. Independent Consultant Status. The Consultant and its approved subcontractors are independent contractors in relation to the City with respect to all matters arising under this Agreement. Nothing herein shall be deemed to establish a partnership, joint venture, association or employment relationship

between the parties. The Consultant shall remain responsible, and shall indemnify and hold harmless the City, from and against all liability for the withholding and payment of all Federal, state and local personal income, wage, earnings, occupation, social security, worker's compensation, unemployment, sickness and disability insurance taxes, payroll levies or employee benefit requirements (under ERISA, state law or otherwise) now existing or hereafter enacted and attributable to the Consultant, its subcontractors and their respective employees. THE CONSULTANT REPRESENTS THAT IT RETAINS WIDE DISCRETION IN THE TIME, MANNER AND DETAILS OF PERFORMANCE, IS NOT UNDER THE CITY'S DIRECT SUPERVISION OR CONTROL, HAS THE SKILLS AND TOOLS TO PERFORM THE WORK, HOLDS ITSELF OUT GENERALLY AS AN INDEPENDENT CONSULTANT AND HAS OTHER SUBSTANTIAL SOURCES OF INCOME.

16. Security, No Conflicts. Each party agrees to inform the other of any information made available to the other party that is classified or restricted data, agrees to comply with the security requirements imposed by any state or local government, or by the United States Government, and shall return all such material upon request. Each party warrants that its participation in this Agreement does not conflict with any contractual or other obligation of the party or create any conflict of interest prohibited by the U.S. Government or any other government and shall promptly notify the other party if any such conflict arises during the Term.

17. Indemnification; Insurance.

(a) Indemnification. The Consultant agrees to defend, indemnify and hold harmless the City, its elected officials, officers, department heads, employees and agents from and against any and all claims, liabilities, obligations, causes of action for damages to the extent caused by the negligence or misconduct of the Consultant, including direct damage to the City's property, and costs of every kind and description arising from work or activities under this agreement and alleging bodily injury, personal injury, property damage regardless of cause, except that the Consultant shall not be responsible or obligated for claims arising out of the sole proximate cause of the City, its elected officials, officers, department heads, employees or agents or the acts of any contractor.

B. Insurance requirements: (1) The following insurance coverage is required of the Consultant and it is understood that the Consultant will require other coverage from every contractor and subcontractor in any tier according to the work being performed and shall ensure that the City is named as additional insured **by policy endorsement** with notice of cancellation **by policy endorsement** in the same manner as required for insurance coverages required of the Consultant. The Consultant shall procure, present to the City, and maintain in effect for the Term without interruption the insurance coverages

identified below with insurers licensed to conduct business in the State of Connecticut and having a minimum Best's A + 15 financial rating or rating otherwise acceptable to the City.

Commercial General Liability (occurrence form) insuring against claims or suits brought by members of the public alleging bodily injury or personal injury or property damage and claimed to have arisen out of operations conducted under this agreement. Coverage shall be broad enough to include premises and operations, contingent liability, contractual liability, completed operations (24 months), broad form property damage, care, custody and control, with limitations of a minimum $1,000,000 per occurrence/$5,000,000 aggregate, which may be met by a combination of primary and excess coverage, and $300,000 property damage.

Business Automobile insuring against claims or suits brought by members of the public alleging bodily injury or personal injury or property damage and claimed to have arisen out of the use of owned, hired or non-owned vehicles in connection with business. Coverage will be broad enough to include contractual liability, with limitations of $2,000,000 combined primary and excess coverage for each occurrence/aggregate with a combined single limit for bodily injury, personal injury and property damage.

Workers' Compensation insuring in accordance with statutory requirements in order to meet obligations towards employees in the event of injury or death sustained in the course of employment. Liability for employee suits shall not be less than $500,000 per claim.

(b) General requirements. All policies shall include the following provisions:

Cancellation notice—The City shall be entitled to receive from the insurance carriers **by policy endorsement** not less than 30 days' written notice of cancellation to be given to the City at: Purchasing Agent, City of Bridgeport, City Hall Annex, 999 Broad Street, Bridgeport, Connecticut 06604.

Certificates of Insurance—All policies will be evidenced by an original certificate of insurance delivered to the City and authorized and executed by the insurer or a properly-authorized agent or representative reflecting all coverage required, such certificate required to be delivered to the City prior to any work or other activity commencing under this agreement.

Additional insured—The Consultant and its permitted subcontractors will arrange with their respective insurance agents or brokers to name the City, its elected officials, officers, department heads, employees and agents on all policies of primary and excess insurance coverages as additional insured parties **by policy endorsement** and as loss payee with respect to any damage to property of the City, as its interest may appear. The undersigned shall submit to the City upon commencement of this agreement and periodically thereafter, but in no event less than once during each year of this agreement, evidence of the existence of such insurance coverages in the form of original Certificates of Insurance issued by reputable insurance companies licensed to do business in the State of Connecticut and having minimum Best's A + 15 financial ratings acceptable to the City. Such certificates shall designate the City in the following form and manner:

"The City of Bridgeport, its elected officials, officers, department heads, employees, agents, servants, successors and assigns
ATIMA
Attention: Purchasing Agent
999 Broad Street
Bridgeport, Connecticut 06604"

18. Non-discrimination. The Consultant agrees not to discriminate, nor permit discrimination, against any person in its employment practices, in any of its contractual arrangements, in all services and accommodations it offers the public, and in any of its other business operations on the grounds of race, color, national origin, religion, sex, disability or veteran status, marital status, mental retardation or physical disability, unless it can be shown that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut, and further agrees to provide the Commissioner of Human Rights and Opportunities with information which may be requested from time to time by the Commission concerning the employment practices and procedures of both parties as they relate to the provisions of Section 4-114a of the Connecticut General Statutes and any amendments thereto. This agreement is subject to the provisions of the Governor's Executive Order No. 3 promulgated June 16, 1971, and, as such, this Agreement may be canceled, terminated, or suspended by the State Labor Commission for violation of, or noncompliance with, Executive Order No. 3, or any State or Federal law concerning nondiscrimination, notwithstanding that the Labor Commissioner is not a party to this agreement. The parties to this agreement, as part of the consideration hereof, agree that Executive Order No. 3 is incorporated herein and made a part hereof. The parties agree to abide by Executive Order No. 3 and agree that the State Labor Commissioner shall have continuing jurisdiction in respect to performance in regard to nondiscrimination, until the agreement is completed or terminated prior to completion. The parties agree as part of the consideration hereof that this agreement is subject to the

Guidelines and Rules issued by the State Labor Commissioner to implement Executive Order No. 3 and that they will not discriminate in employment practices or policies, will file reports as required, and will fully cooperate with the State of Connecticut and the State Labor Commissioner.

19. Communications. All communications shall be made orally or in writing to Steve Hladun or his/her respective designee. Any written report requested from the Consultant shall be sent in draft form for review prior to finalization.

20. Miscellaneous.

(a) Entire Agreement. This document and the identified exhibits, schedules and attachments made a part hereof or incorporated herein, constitute the entire and exclusive agreement between the parties with respect to the subject matter hereof and supersede all other communications, whether written or oral.

(b) Modifications. This Agreement may be modified or amended only by a writing signed by the party against whom enforcement is sought.

(c) Prohibition Against Assignment. Except as specifically permitted herein, neither this Agreement nor any rights or obligations hereunder may be transferred, assigned or subcontracted by the Consultant without the City's prior written consent and any attempt to the contrary shall be void.

(d) Excusable Delay. The parties hereto, respectively, shall not be in default of this Agreement if either is unable to fulfill, or is delayed in fulfilling, any of its respective obligations hereunder, or is prevented or delayed from fulfilling its obligations, in spite of its employment of best efforts and due diligence, as a result of extreme weather conditions, natural disasters, catastrophic events, casualties to persons or properties, war, governmental preemption in a national emergency, enactment of law, rule or regulation or change in existing laws, rules or regulations which prevent any party's ability to perform its respective obligations under this agreement, or actions by other persons beyond the exclusive control of the party claiming hindrance or delay. If a party believes that a hindrance or delay has occurred, it shall give prompt written notice to the other party of the nature of such hindrance or delay, its effect upon such party's performance under this agreement, the action needed to avoid the continuation of such hindrance or delay, and the adverse effects that such hindrance or delay then has or may have in the future on such party's performance. Notwithstanding notification of a claim of hindrance or delay by one party, such request shall not affect, impair or excuse the other party hereto from the performance of its obligations hereunder unless its performance is impossible, impractical or unduly burdensome or expensive, or cannot effectively be accomplished without the cooperation of the party claiming delay or hindrance.

The occurrence of such a hindrance or delay may constitute a change in the scope or timing of service, and may result in the need to adjust the contract price or contract time in accordance with the terms of this Agreement.

(e) Partial Invalidity. Any provision hereof found by a tribunal of competent jurisdiction to be illegal or unenforceable shall be deleted and the balance of the Agreement shall be automatically conformed to the minimum requirements of law and all other provisions shall remain in full force and effect.

(f) Partial Waiver. The waiver of any provision hereof in one instance shall not preclude enforcement thereof on future occasions.

(g) Headings. Headings are for reference purposes only and have no substantive effect.

(h) Survival. All representations, warranties and indemnifications contained herein shall survive the performance of this Agreement or its earlier termination.

(i) Precedence of Documents. In the event there is any conflict between this agreement or its interpretation and any exhibit, schedule or attachment, this Agreement shall control and take precedence.

(j) Property Access. The parties understand that it is the City's obligation to obtain legal access to City property where the Consultant's Services are to be performed. The Consultant shall not be held liable for any unlawful entry onto any property where such entry has been ordered, requested or directed by the City in writing.

IN WITNESS WHEREOF, for adequate consideration and intending to be legally bound, the parties hereto have caused this agreement to be executed by their duly-authorized representatives.

CITY OF BRIDGEPORT

_____ By:_____
Name:
Title:

_____

CONSULTANT

_____ By:_____
Name:
Title:
_____ duly-authorized

Exhibit A

Solicitation PKX128193

RFQ/P FOR PERRY MEMORIAL ARCH STUDY & ASSESSMENT

Bid Designation: Public

City Of Bridgeport

City of Bridgeport

Bid PKX128193
RFQ/P FOR PERRY MEMORIAL ARCH STUDY & ASSESSMENT

Bid Number	PKX128193
Bid Title	RFQ/P FOR PERRY MEMORIAL ARCH STUDY & ASSESSMENT
Bid Start Date	Feb 13, 2019 11:48:20 AM EST
Bid End Date	Mar 27, 2019 2:00:00 PM EDT
Question & Answer End Date	Feb 26, 2019 12:00:00 PM EST
Bid Contact	Kathryn Cullen Buyer Department of Public Purchases 203-576-7158 kathryn.cullen@bridgeportct.gov
Pre-Bid Conference	**Feb 20, 2019 11:00:00 AM EST** **Attendance is mandatory** **Location: PERRY MEMORIAL ARCH SITE** **350 WALDEMERE AVE** **BRIDGEPORT**

Description

MANDATORY WALKTHROUGH:
FEBRUARY 20TH @ 11:00 AM
YOU CANNOT SUBMIT IF YOU DO NOT ATTEND
ALL SUBMISSIONS NEED TO BE MADE BY:
2:00 PM ON MARCH 27, 2019
999 BROAD ST
2ND FLOOR PURCHASING
ALL QUESTIONS ARE TO BE ASKED AND WILL BE ANSWERED ON BID SYNC.

CITY OF BRIDGEPORT
Department of Parks and Recreation
REQUEST FOR QUALIFICATIONS AND PROPOSALS – Invitation to Bid
PKB- FOR PERRY MEMORIAL ARCH STUDY & ASSESSMENT

Kathryn Cullen, Buyer

PKX128193 - RFQ for Perry Memorial Arch Study & Assessment for THE CITY OF BRIDGEPORT

(4) Four Separate, sealed submissions and (1) Digital Copy of **Professional Qualifications and Sealed Price Proposals for Perry Memorial Arch Study & Assessment** will be received at the Office of Public Purchases for the City of Bridgeport, 2nd Fl, Margaret E. Morton Government Center, Bridgeport, CT 06604 until 2:00 P.M., on Wednesday, March 27, 2019. Submissions received at any other location(s) or after started time will not be accepted and deemed unresponsive.

A mandatory pre-bid Walk-Thru shall be held at the Perry Memorial Arch site on Wednesday, February 20, 2019 at 11:00AM at 350 Waldemere Avenue (Park Avenue and Waldemere Ave intersection) Bridgeport, CT 06604. In the case of inclement weather, the site visit may be postponed to a later date. All interested are required to monitor www.bidsync.com for any updates and/or addendums.

For general information please contact Steve Hladun for any technical questions @ steve.hladun@bridgeportct.gov. All inquiries regarding this bid must be presented in writing and may be posted directly on the BidSync website question sections. The cut-off date for questions is **12:00 pm on Tuesday, February 26, 2019.** All answers will be published in the form of addenda on http://www.bidsync.com

Intent:
The City of Bridgeport is seeking:

- Two (2) or more (each being described as the consultant) Historical Architecture and engineering consultant firms with significant experience in the oversight and management of the technical aspects of assessment, analysis, design and compliance of preservation development for historic structures and monuments, engineering, architecture and construction administration.

- The City will retain the consultants for a 2-year engagement with a 1-year extension to assist the City in the overall management of specific study and assessment, stabilization and preservation project design, and related work including structural stability, roof replacement design; to perform various work as applicable to the Perry Arch that may include but are not limited to investigations, third party inspection and analysis, probes and testing,

engineering, compliance and construction work for the Perry Arch; to monitor contractors; to interact with governmental agencies at the direction of the City; to prepare and submit necessary local, state and federal permits and related documents as may be applicable; the preparation of construction document drawings, manuals, scope and specifications and to perform oversight and certification as necessary; construction inspection

No work shall be performed under the contract award until a Purchase Order has been issued by the Purchasing Department.

Bidder must comply with the following:

- Certificates of Insurance will be required from the awarded contractor prior to the commencement of any work and shall be furnished to the Department of Public Purchases, Margaret E. Morton Government Center, Second Floor, 999 Broad Street, Bridgeport, Connecticut 06604 and must be shown as issued to the City of Bridgeport as additional insured with thirty (30) days notice for cancellation or non-renewal of policy. A copy of the endorsement insurance will also be required for this project.

- Contractor must be licensed in the State of Connecticut and all employees must be properly certified and qualified to perform the work. Out of state bidder must provide the City of Bridgeport with a Certificate of Authority to Do Business in the State of Connecticut within five days of a Notice of Intent to Award. This can be obtained from the Connecticut Secretary of State.

- The consultant will be responsible for the safety of the work site while performing assessment and investigations.

- The consultant shall be responsible for preparing any and all permits as required and related to the construction bid document tasks. Coordination of various agencies with in the City of Bridgeport that may be applicable is required.

- The awarded contractor must accurately complete and submit No Conflicts/Disclosure form when it receives a Notice of Intent to Award. Failure to submit the No Conflicts/Disclosure Form within three (3) days of receipt of the Notice of Intent to Award may result in the loss of the award.

- Bidder must accurately complete and submit non-collusion affidavit with all bids or bids will be considered non-responsive.

- All bidders shall check www.bidsync.com regularly to see if any addendums are issued.

- For further information on the City's MBE Ordinance please call or contact Mr. Fred Gee, Director, Small & Minority Business Resource Center at (203) 576-8473 Fred.Gee@Bridgeportct.gov

- This contract award will require that the successful vendor have a valid SAM, DUNS, CT and Federal Tax ID numbers prior to commencing work.

- Include any and all documents required per the project invitation for this bid.

The City of Bridgeport reserves the right to

- Reject any and all bids in whole or in part or to accept any bid, in its sole discretion if doing so is deemed to be in the best interest of the City of Bridgeport.

- Reserves the right to reject any or all bids or to decline to make an award.

- To make awards not based solely on low bid when time is a critical factor.

- Verify that the bidder was not delinquent on any, City real and personal property taxes, at the time of the bid opening.

- Award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the City of Bridgeport in terms of cost, price, and other factors specified elsewhere in this solicitation, considering the bidder's price, resources, equipment, availability and other factors specified elsewhere in this solicitation.

The Contractor is prohibited from assigning, transferring, conveying, subletting, or otherwise disposing of the ultimate contract award or its rights, title or interest therein or its power to execute such agreement to any other person, company or corporation without the prior consent and approval in writing by the City.

Do not include in your quotation any taxes for which the City is not liable. The City will issue tax-exempt certificates covering the work upon request.

PROJECT

The City may award to one or multiple consultant firms' project work that may consist of but is not limited to the following project as determined and directed by the City:

1. Perry Memorial Arch

SELECTION CRITERIA

Consultant firms will be evaluated and selected based on design and technical competence, the capacity and capability to perform the work within a specific timeframe, past record of performance, and knowledge of Federal, State, and Municipal procedures, appropriately weighted in descending order of importance.

Consultant Selection Criteria	Criteria Points
Professional Qualifications, Specialized Design and Technical Competence involving Study & Assessment of Historical Structures and Monuments	25
Capacity of the Firm and Recommended Approach	25
Knowledge of the Locality and Federal, State and Municipal Procedures	20
Bid price for Scope of Work (Sealed)	30
TOTAL	100

Selection Criteria: The selection criteria to be considered with their respective weighting are as follows:

1. **Professional qualifications, Specialized Experience and Technical Competence (25%):** The consultant firm should demonstrate experience in the following areas: (a) providing architecture and engineering services for urban areas and historical monuments including oversight of contractors; (b) developing strategies to achieve economical solutions for construction work; (c) Obtaining compliance with applicable Local, State and Federal regulations; (d) Developing and implementing a community relations strategy if applicable and working with other governmental agencies on either public/private partnerships or grant funding resources: (e) developing and coordinating construction plans that include detailed long-term stabilization and preservation of historic structures while also considering the public usage of the area and maintenance of some level of public access; (f) producing contract documents including plans, specifications and site safety plans, permit applications, action plans, compliance documents, and the like; (g) providing cost estimates for projects, and (i) providing technical oversight during construction.

2. **Capacity of the Firm and Recommended Approach (25%):** The evaluation will consider the firm's experience and available capacity of key disciplines required to perform the anticipated types of work. Provide list of current contracts with start and end dates. Provide past relevant work within the past five years. Provide a recommended approach to the Perry Memorial Arch

Study and Assessment based on the exhibits provided and firm's current understanding of the structure with highlights showing how the workflow shall be conducted.

3. **Knowledge of the Locality (20%):** The firm should have significant project experience within the boundaries of the City of Bridgeport and similar park settings, including considerable and demonstrated experience with all Local, State and Federal regulatory agencies likely to have jurisdiction over the City's site assessment and park development activities.

4. **Bid price for Scope of Work (Sealed) (30%):** The firm should provide a detailed lump sum Not-To-Exceed value for the scope of work shown in the request for a price proposal. The enclosed bid form shall be used for writing bid price for the scope of work.

The applicant's responsibility shall be evaluated based on the candidate's previous experience, qualifications, references, and the ability to competently complete the work in a timely manner. All projects that require design elements will require a Historical Architect who meets the Secretary of the Interior's Professional Qualification Standards. All projects that involve structural stabilization or the moving or elevation of a structure according to FEMA regulations will require an Engineer who meets the Secretary of the Interior's Professional Qualification Standards (if applicable).

Minority and Women-Owned Business Enterprises Joint Venture (5 points): The evaluation criteria will consider the firm's Minority and Women-Owned Business Enterprise (MWBE) status (see Section 3.12.130 of the City's Code of Ordinance), as well as its subcontractors identified as a joint venture in the submitted price proposal. Only certified MWBE consultants identified as a joint venture will receive evaluation credits under this criterion. Please provide up to date certification for all sub-consultants identified as participating in a joint venture in the submittal.

SELECTION COMMITTEE

Selection Committee may consist of at least 3 but not limited to the following representative individuals:

1. City of Bridgeport Board of Park Commissioners Representative and/or their designee
2. City of Bridgeport Department of Public Facilities, Parks and Recreation Department Representative and/or their designee
3. City of Bridgeport Public Facilities, Construction Management Services Representative and/or their designee

Selected consultant firms may be invited to attend a formal interview. The City's Selection Committee may be convened to review submissions and conduct interviews as it may deem necessary.

PROFESSIONAL SERVICES AGREEMENT

The City of Bridgeport intends to enter into a Professional Services Agreement. A draft copy of the City of Bridgeport Professional Services Agreement is attached. Firms shall be advised not to respond to this Request for Qualifications unless fully in accord with the requirements contained therein. The City reserves the right to enter into agreements with two or more firms at its sole discretion.

- The selected firm(s) will be prohibited from bidding on project construction work itself, which work will be awarded to others.
- The City reserves the right to void any contract with a selected firm if a key personnel of the firm change during the performance of services and the consultant fails to promptly provide suitable replacements acceptable to the City, in the City's sole discretion. The City reserves the right to void any contract with the selected firm if it determines, at its sole discretion that a conflict of interest exists. Respondents must not discriminate, nor permit discrimination, against any person on the grounds of race, national origin, religion, sex, handicapped, sexual orientation or veteran status in their employment practices or in any of their other business operations.

DESCRIPTION OF THE PERRY MEMORIAL ARCH

Excerpt from National Register of Historic Places Inventory Application, 1982.

> The Perry Memorial Arch (Photograph 18), erected in 1918, stands as a gateway for the Park Avenue entrance to Seaside Park. The arch was built in memory of William Hunt Perry (1820-1899), a leading Bridgeport manufacturer, benefactor, and commissioner of Seaside Park. The arch was designed by Henry S. Bacon, a New York architect, and built by the Sperry and Treat Company of New London, Connecticut. The granite monument's design is based on the ancient Roman triumphal arch scheme, but is highly unusual in its double-arch composition. The north side of the central pier features a Neo-Classical, bronze relief portrait of Perry.

Excerpt from http://learninglab.si.edu/resources/view/157526

Save Outdoor Sculpture, Connecticut survey, 1993. A knee-length bas relief of William Hunter Perry dressed in trousers, a low-cut weskit, and an open jacket. He holds a coat over his proper left arm and holds a hat in his proper right hand. Behind his proper left shoulder is the figure of Harriet Adelaide Perry, holding a fruit basket in her proper left hand over her proper left shoulder. Beneath the figures, a flat-topped swag separates

them from the lettering. The plaque is affixed to the central pier of the Perry Memorial Arch and is surrounded by two Ionic pillars topped by a pediment

DRAFT SCOPE OF WORK

Recommendations to stabilize and protect the structure include the following:

1. **SURVEY CONDITIONS ASSESSMENT & RECOMMENDATIONS INCLUDING COST ESTIMATE:** Contractor must coordinate and provide their own access to all areas of the Arch including the roof and interior shafts as required to complete the detailed assessment. Interim measures of protection and safety should be identified by the Engineer as applicable should there be a need to expedite repairs/protection measures as deemed necessary by the City of Bridgeport. All investigative work to determine the integrity of the structure and the roof shall be required. Deliverable should show a clear and comprehensive assessment of the condition of the monument as well as any recommended interim measures of protection (such as scaffolding and netting) and methods and means to obtain pricing for those as may be applicable.

2. **TESTING – ANALYSIS –STUCTURAL STUDY-:** Structural Engineering Analysis is required to determine the full restoration and historic preservation specifications in Deliverable/Task 1, 2. Testing and analysis should streamline cost effective measures to evaluate the integrity of the entire composition of the structure, so it can be first stabilized and furthermore preserved and protected. This includes preparing the Perry Memorial Arch for strengthening its resiliency to storms, sealing and/or full replacement of the roof membrane, testing it for leaks, as well as determining the integrity, means of stabilization as well as protecting and restoring the structure.

3. **CONSTRUCTION BID CONTRACT DOCUMENTS, PERMITTING, SCOPE OF WORK, PLANS & DRAWINGS:** The selected consultant firm will be required to certify that the project is in compliance with State regulations, design, bidding, contracting and construction monitoring requirements. The Engineer is required to provide the City with the following signed certification documents:

    i. Construction Bid Package, Drawings, and Specifications. Construction Estimate.
    ii. Scope of Work and Project Manual
    ii. Construction Monitoring & Close-out Compliance Certification.

    This includes preparing and estimated construction schedule including the phases of construction with milestones, the bid form, contract drawings, details, project manuals, cost estimates, addenda to bidders and responses to Requests for Information. The City Construction Management Services Division and/or their designee is to provide standard front end documents and may request additional assistance from the Engineering Firm. Incorporate any recommendations provided through engagement of commissions, City

Departments or other agencies as directed by the City into the construction documents.

4. **CONSTRUCTION ADMINISTRATION**- Engineering Services for construction administration are to be provided as follows: Assistance with bid scope review, project oversight, RFI reviews and responses, review change orders, work completion punch-list, site inspection, review of shop drawings and submittals, oversight and review of contractor's materials testing, quality control and analysis, attend and participate in all regularly scheduled meetings or conference calls with the City Team and contractor. Construction Administration also includes inspection services and testing and monitoring services to certify that the project is in compliance with the construction documents. Contractor's required AIA documents shall be reviewed based on an approved schedule of values and certified for processing. Attend all regularly scheduled construction meetings. Visit the site weekly and monitor the progress of the work for the complete duration of project. Provide inspection services and field verification. Provide Technical Memorandums of important milestones achieved and items which require follow up. Review and approval all shop drawings and submittals.

5. **POST CONSTRUCTION REVIEW & CLOSEOUT, DOCUMENTATION OF MEANS & METHODS AND RESTORATION PERFORMED**
   Provide services to review project completion including but not limited to issues regarding construction, maintenance, safety, security, program success and/or non-programmed uses and user satisfaction. The Firm may be required to provide additional information as needed for City requirements. Closeout Documents, punch-list of incomplete items, photographs and report of conditions. Submit final documentation of bid construction documents to City, the Engineering Department, Building Department, Public Facilities, and the Parks and Recreation Department.

CITY SUPPLIED EXHIBITS:
PERRY MEMORIAL ARCH HISTORICAL DOCUMENTS
Please find the attached exhibits.

- *William Hunt Perry Memorial Arch at Seaside Park Entrance, Condition Assessment,* Bridgeport, CT, 30 July, 2010, Cuoco Structural Engineers, LLC. is attached as an exhibit of this RFP.
- *PMA Building Specification 1917*
- *PMA 1917 Drawing 1 and 2*
- *PMA 1917 Drawing 3*
- *Recent Photographs pdf taken by the Parks and Recreation Dept.*

FEES and RATES
For Tasks 1 thru 5 fees will be negotiated on a Lump Sum basis based on required staffing hourly rates on a Not-To-Exceed basis. All staffing fees and rates must be

provided as part of the engineering firm's response transmittal to this request for qualifications enclosed with their bid form in a sealed envelope.

Personnel in responsible charge of the projects will be required to possess and maintain valid certification and licensure and Connecticut Professional Engineer's License.

Four (4) copies of the submittal and one digital copy are required. Price Proposals should be contained individually in a sealed envelope in each envelope and be provided on the enclosed bid form. All proposals must be brought or mailed to:

ATTN: PKX128193 - PERRY MEMORIAL ARCH STUDY & ASSESSMENT
Department of Public Purchases,
2nd floor, Margaret E. Morton Government Center,
999 Broad Street,
Bridgeport, CT 06604

By no later than **2:00pm** on **March 27, 2019** and then at said office publicly opened.

Responses received after this date and time will not be considered.

CITY CONTACT
For further information please contact Steve Hladun, Special Projects Coordinator, Parks and Recreation Department by email at steve.hladun@bridgeportct.gov.

S P E C I F I C A T I O N S

FOR THE

PERRY MEMORIAL ARCH TO BE ERECTED AT SEASIDE PARK IN BRIDGEPORT, CONN., BY MORRIS B. BEARDSLEY AND GEORGE W. WHEELER TRUSTEES UNDER THE WILL OF HARRIET A. PERRY.

HENRY BACON, ARCHITECT,
101 Park Avenue, New York, N. Y.

December 10, 1916.

SPECIFICATIONS

FOR THE

PERRY MEMORIAL ARCH TO BE ERECTED AT SEASIDE PARK IN BRIDGEPORT, CONN., BY MORRIS B. BEARDSLEY AND GEORGE W. WHEELER TRUSTEES UNDER THE WILL OF HARRIET A. PERRY.

The drawings upon which proposals shall be based are marked "REVISED NOV.25,1915."

The work shall be done under the form of contract adopted and recommended by the American Institute of Architects, which will require the completion of the work on or before the .....day of .....191..

The work shall be done under the supervision of and to the entire satisfaction of Henry Bacon, the Architect of the Memorial.

All proposals shall be submitted in the following form, enclosed in a sealed envelope addressed to Morris B. Beardsley and George W. Wheeler, Trustees under the will of Harriet A. Perry, and delivered to Henry Bacon, 101 Park Avenue, New York, N.Y. on or before the ..first....day of May....The said proposals will be opened by the Trustees at their convenience and they reserve the right to reject any and all bids received for the work.

Morris B. Beardsley & George W. Wheeler,
Trustees under the will of Harriet A. Perry

Dear Sirs:

In accordance with your invitation to submit proposals for the Perry Memorial Arch to be erected at Seaside Park, Bridgeport, Conn., I or we propose to furnish all labor and materials required to completely finish the work in accordance with the drawings and specifications and to the entire satisfaction of the Architect as follows:

1. For the foundations complete .....

2. For the superstructure
   using Stony Creek Granite .....
   " Pink Milford " .....
   " Fox Island " .....
   " Leete Island " .....
   " ..... " .....
   " ..... " .....
   " ..... " .....
   " ..... " .....
   " ..... " .....

3. If standard gauge wrought iron galvd. pipe with cast iron galvd. fittings is used in place of the cast iron pipe specified, add to any of the above figures for the superstructure the sum of $.....

4. If 1 - 2 - 4 stone concrete is used for the backing of the granite in place of the brickwork specified, deduct from any of the above figures for the superstructure the sum of $.....

Respectfully submitted,

FOUNDATIONS.

General Requirements.

1 - The foundations for the Memorial shall be of concrete of dimensions shown on the drawings. A test pit has been excavated on the site; bidders are required to examine same, and make their own estimates of the facilities and difficulties attending the execution of the work.

Ground water will be encountered at the level shown in the test pit and the base of the foundations will extend below that level. The entire responsibility of constructing the foundations will rest with the contractor who shall do such pumping as may be required and shall sheet pile the pits if the nature of the material requires same.

Excavations.

2 - The contractor is required to take the site as it stands and perform the required excavations. All surplus excavated material shall be carted from the premises and dumped where required by the Authorities in charge.

Cement.

3 - The cement shall be American Portland cement fulfilling the standard requirements for portland cement adopted by the American Society for Testing Materials.

Sand.

4 - All sand shall be coarse, clean, sharp sand containing not more than three (3) percent of loam or other foreign substances.

Broken Stone.

5 - The coarse aggregate for concrete shall consist of clean trap rock, limestone, or granite broken so as to pass through a one inch ring in any direction, clean properly graded gravel may be used in place of the broken stone.

Mixing.

6 - The materials shall be mixed by a batch mixer with clean water for sufficient time to insure a thorough and uniform mixture of such consistency as directed by the Architect. The concrete shall be mixed in the proportion of 1 part cement, 2 parts sand and 4 parts broken stone or gravel.

Placing.

7 - The concrete shall be handled as rapidly as possible and shall be deposited in place immediately after mixing and shall be conveyed in such manner that there will be no distinct separation of the ingredients. It shall be puddled in such manner as to form a dense compact mass.

8 - All the forms and false work required for the concrete shall be furnished, set in place and removed by the Contractor.

Forms.

The forms shall be constructed of sound timber and shall be patterned exactly to fit the outlines of the work. The forms shall be substantially built, braced and secured in place and shall be capable of supporting the wet concrete without deflection, vibration or movement of any nature during the construction of the work, and shall be tight enough to prevent leakage of the liquid cement.

All forms shall be removed in such manner as to prevent injury to the concrete and no form work shall be removed until such times as the concrete has hardned sufficiently to safely support its loads.

CUT STONE WORK

KIND AND QUANITY OF STONE.

Kind. 9 - Proposals shall be submitted for Stony Creek, Fox Island, Pink Milford and Leets Island granite. Proposals for any other granites may be submitted and will be considered.

Quality. 10 - The stones shall be selected from the best the quarries produce, shall be absolutely sound, thoroughly seasoned, free from sap, and shall not contain any staining material; they must be free from seams, cracks, or other defects impairing their strength or durability, and shall be free from knotty spots, spalls, chips stains, discolorations or other defects marring their appearance, and shall be of uniform color throughout.

CUTTING OF STONES.

Drawings and Models. 11 - All stones shall be cut in strict accordance with the Architect's full size detail drawings and the full size plaster models.

Beds and Builds. 12 - All the stones shall be quarried and cut so as to lie in the work on their natural quarry beds. The beds and builds shall be rough pointed and the face edges dressed back not less than two inches from the face with sharp, true arrises, free from spalls, nicks, or chips. All beds shall be cut level. Stones hollow or slack in the beds or builds will not be accepted.

Jointing. 13 - The bed and build joints in the granite work shall be of uniform width not exceeding 3/16 inch in thickness.

All stones shall be fitted together at the joints so that the several pieces will form continuous unbroken lines, free from projections or depressions.

Surfaces and Arrises. 14 - All plain surfaces shall be cut to true planes out of wind and free from waves, depressions or projections. All arrises shall be cut sharp (unless otherwise detailed) with true well defined lines free from chips, spalls or nicks.

Washes. 15 - All projecting stones and stones with exposed top surfaces shall be cut with a wash on the top surface. Where other work is built upon such stones they shall be cut with raised seats and lugs to form level beds for the work built upon them.

Finishes. 16 - All exposed surfaces of the stones shall have a uniform finish, ten cut, eight cut, and pointed as indicated on the drawings and equal to the samples of finish in the Architect's office.

MODELS AND CARVING.

Models. 17 - Full size plaster models of all the carved work shall be furnished by the Contractor. The models shall be made by a New York City modeler with references of executed work satisfactory to the Architect. The models shall be submitted to the Architect and changed and altered as required to meet the approval of the Architect.

Carving. 18 - All carving and lettering shall be done in strict accordance with the full size plaster models and full size details by carvers with references of executed work satisfactory to the Architect.

DELIVERY OF STONE WORK.

Crating. 19 - All the stones shall be carefully boxed and crated and delivered at the site in perfect condition.

STONE SETTING.

Mortar. 20 - The mortar used for the setting shall be composed of Atlas White Non-Staining Portland Cement, equal in strength to Portland Cement, sharp rewashed sand free from loam or other foreign substances and lime putty. No more lime putty shall be used than that required to retard the setting of the mortar sufficiently for the proper bedding of the stone, and the mortar shall have the strength and set up with the hardness of 1 to 3 Portland cement mortar.

The mortar used for pointing shall be composed of Atlas non-staining white cement and sharp washed sand mixed with a waterproofing ingredient satisfactory to the Architect, in such proportions as will insure its permanency and colored if so directed by the Architect.

Waterproofing.

21 - The back of all stones to within two inches of the face shall be coated with Anti-hydrene waterproof paint.

Anchors.

22 - The roof coping stones and the large stones on the roof shall be clamped together with H shaped cast bronze clamps let into the stones, and the holes filled with cement mortar and troweled flush with the stone, and the coping stones shall be anchored to the concrete slab with 3/8" x 1-1/2" galvd. iron anchors let into the stone and the hole filled with portland cement mortar.

The face stones of the arches shall be tied together with wrought iron rods and clamps as shown on the drawings.

Protection.

23 - The Contractor shall carefully protect with clean boarding all jambs, corners, angles and other parts of the work subject to damage and shall be held solely responsible for all damage to his work from whatever cause.

Cleaning and Pointing.

24 - Slight inequalities in the work shall be trimmed to the true intended surfaces and refinished equal to the original approved finish. Patching of damaged stones will in no case be permitted, and if set in place must be removed and replaced by a perfect stone. At completion the whole of the work shall be carefully cleaned down, all face joints raked out, filled solidly with morter and pointed as directed by the Architect. The whole of the work shall be left clean and free from blemishes of any nature.

BRONZE WORK.

Tablet.

25 - The bronze tablet shall be furnished and set by the Sculptor.

Door.

26 - Provide and set a cast bronze door and frame in one of the piers where shown. The door shall be made in accordance with the full size detail drawings and provided with a Yale & Towne cylinder lock, and the bronze shall be finished in accordance with the sample approved by the Architect.

CONCRETE AND BRICKWORK.

Brickwork.

27 - The stone work shall be backed with hard burned common brick laid up in the same mortar as the stone work. The covering over the arch stones and the interior walls from the spring line of the arches to the top shall be laid up of common hard burned brick in 1 to 3 cement mortar and bonded every fifth course with a course of headers. All brick joints shall be struck.

Concrete.

28 - The slabs at the spring line of the arches and the slabs at the top shall be built of stone concrete composed of 1 part portland cement, 2 parts sand and 4 parts of clean broken stone or screened gravel, and reinforced with square deformed bars of size shown on the drawings.

The backing may be of 1 - 2 - 4 stone concrete in accordance with the previous specifications for concrete, paragraphs 5 to 8 inclusive.

Waterproof Cement.

29 - The brick over the arch stones shall be plastered with a coat of 1 to 2 cement mortar made waterproof with "Medusa" or other effective waterproofing compound.

Cinder Fill.

30 - The spaces between the concrete walls supporting the coping stones shall be filled with cinder concrete composed of 1 part portland cement, two parts sand and seven parts clean coarse steam cinders.

Caulking.

31 - The joints in the top stones of the structure shall be caulked with Minwax rope caulking before pointing.

Copper Work.

Gutters and Roofing.

32 - The main cornice shall be lined with 16 oz. copper with cross joints locked and soldered, and the outer edge let into the stone reglet, caulked with lead plugs and elastic cement. Provide 20 ounce copper tubes to the outlets erected to the gutter lining.

The top stones as indicated on the drawing shall be covered with 16 ounce copper with seams locked and soldered and secured with copper clips and flat head expansion bolts. The edges of the copper shall be secured in the reglets with lead plugs and caulked with elastic cement. Provide 20 ounce copper tubes to the outlets erected to the copper

and connected to the drainage pipes.

Plumbing.

Drains.

53 - Connect to the copper tubes and erect a system of cast iron drains for the surface water. The pipe shall be extra heavy cast iron with joints made watertight with oakum and molten lead, arranged as shown on the drawings and extended to and connected to the nearest sewer. The pipe shall be properly supported on wrought iron brackets and hangers.

54 - The Contractor shall obtain and pay for all necessary permits, furnish all the water required and shall on completion remove all rubbish, debris and waste material of every nature made under his contract, repair all damage to the roads and walks, and leave the premises in as good condition as he found them.

SECTION 00412: RFQ/REQUEST FOR PRICE PROPOSAL FORM

GENERAL

PROPOSAL INSTRUCTIONS: Submit **FOUR SIGNED COPIES OF THIS POST RFQ REQUEST FOR PRICE PROPOSAL FORM** and associated documents provided in the Document in strict compliance with the REQUEST FOR PRICE PROPOSAL. Fill in all blanks; if not providing a price proposal on a specific package, enter "No Price Proposal". The City of Bridgeport reserves the right to reject incomplete bid forms.

PRICE PROPOSAL FROM:

NAME: _____

STREET: _____

CITY/STATE: _____

In signing this PRICE PROPOSAL, I agree that I have received all of the Bid Documents entitled dated in the Request for Proposal and any information provided therein after and dated as follows:

Addendum No.: _____ Dated: _____

Addendum No.: _____ Dated: _____

Addendum No.: _____ Dated: _____

Addendum No.: _____ Dated: _____

I have included the provisions of the above Documents and Addenda in my bid proposal. I have received and reviewed the RFQ/RFP Documents entitled "PERRY MEMORIAL ARCH STUDY & ASSESSEMENT", Bridgeport, CT, including the contract document with attached City of Bridgeport (City) Standard Terms and Conditions. I have also examined the project site.

	FIRM NAME:	
TASK	**Description**	**Total Bid Price**
1	SURVEY CONDITIONS ASSESSMENT **& RECOMMENDATIONS INCLUDING COST ESTIMATE**	
2	TESTING – ANALYSIS –STRUCTURAL STUDY	
3	**CONSTRUCTION BID CONTRACT DOCUMENTS, PERMITTING, SCOPE OF WORK, PLANS & DRAWINGS**	
4	**CONSTRUCTION ADMINISTRATION**	
5	**POST CONSTRUCTION REVIEW & CLOSEOUT, DOCUMENTATION OF MEANS & METHODS AND RESTORATION PERFORMED**	
	CUMULATIVE TOTAL LUMP SUM:	

TASK 1, 2 , 3, 4, 5 BID:
I will furnish all services necessary to perform the work required for the Base Price Proposal for Tasks 1, 2, 3, 4, 5 in accordance with the documents and will take full payment as the Not-To-Exceed price of:

_____Dollars ($_____)
(BIDDER: Fill in the amount in words and numbers. In cases of conflicts between words and numbers, words shall control.)

Please note here if you are applying for the award of (5) Additional points for Minority and Women-Owned Business Enterprises Joint Venture:

☐ **YES** **MBE/WBE NAME:**_____

MBE/WBE ADDRESS:_____

☐ **NO JOINT VENTURE**

In submitting this price proposal, I agree as follows:

1. To hold open my bid for 180 days after bid opening.

2. To enter into and execute a contract, if awarded on the basis of this bid, according to the Agreement provided as part of this Request for Proposal.

3. To accomplish the work in accordance with the contract documents.

4. To begin work within five (5) calendar days of receipt of Notice to Proceed.

5. To substantially complete the Work within the Contract Time.

By submission of this price proposal, each proposer and each person signing on behalf of any Proposer certifies, and in case of a joint bid, each party thereto certifies, as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

1. The price in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Proposer or with any competitor.

2. Unless otherwise required by law the prices which have been quoted in this bid have not been knowingly disclosed by the Proposer and will not knowingly be disclosed by the Proposer prior to opening, directly or indirectly, to any other Proposer or to any competitor; and

3. No attempt has been made or will be made by the Proposer to induce any other person, partnership, or corporation to submit or not submit a bid for the purpose of restricting competition.

AFFIDAVIT WHERE BIDDER IS AN INDIVIDUAL:

STATE OF CONNECTICUT, COUNTY OF _____ ss:

_____ being duly sworn says:
I am the person described in and who executed the foregoing bid, and the several matters therein stated are in all respects true and correct.

_____
(Signature of Person Who Signed the Bid)

Subscribed and sworn to before me this

_____ day of _____, 20___.

_____ My Commission Expires:
Notary Public

CONTINUED ON NEXT PAGE

AFFIDAVIT WHERE BIDDER IS A PARTNERSHIP:

STATE OF CONNECTICUT, COUNTY OF _____ ss:

_____ being duly sworn says:

I am a member of _____ the firm described in and which executed the foregoing bid. I subscribed the name of the firm thereto and on behalf of the firm, and the several matters therein stated are in all respects true and correct.

_____
(Signature of Partner Who Signed the Bid)

Subscribed and sworn to before me this

_____ day of _____, 20__.

_____
Notary Public

My Commission Expires:

CONTINUED ON NEXT PAGE

AFFIDAVIT WHERE CONTRACTOR IS A CORPORATION:

STATE OF CONNECTICUT, COUNTY OF _____ ss:

_____ being duly sworn says:

I am the _____ of the above named corporation whose name is subscribed to and which executed the foregoing bid. I reside at _____
I have knowledge of several matters therein stated, and they are in all respects true and correct.

_____
(Signature of Corporate Officer Who Signed the Bid)

Subscribed and sworn to before me this

_____ day of _____, 20__.

_____ My Commission Expires:
Notary Public

END OF SECTION

CUOCO
STRUCTURAL
ENGINEERS, LLC
60 Katona Drive, Suite 12, Fairfield, CT 06824
Phone: 203-362-1902, Fax: 203-362-1966, www.csellc.com

30 July 2010

Mr. Arthur C. Harris, Director
Office of Construction Management Services
Bridgeport City Hall Annex
999 Broad Street
Bridgeport, CT 06604

Re: **William Hunt Perry Memorial Arch at Seaside Park Entrance**
Park Avenue
Bridgeport, CT

Dear Mr. Harris:

As requested, we performed a condition assessment of the William Hunt Perry Memorial Arch at the Park Avenue Entrance to Seaside Park. That Memorial Arch was erected in 1918 by Mrs. Perry's to commemorate her late husbands life.

The arch is approximately 83 feet long by 14 feet wide and is nearly 50 feet tall. The structure consists of three towers and two arches. The two outer towers are approximately 12 feet wide by 14 feet deep while the center tower is approximately 15 feet wide by 14 feet long. The clear dimension between the towers is approximately 22 feet. The height to the center point of each arch is approximately 38 feet above the pavement. An overall picture of the William Hunt Perry Memorial Arch is located to the right. The arches are centered over the entrance and exit to the park.

Photo 1 – Elevation of Arches

The Arch towers are constructed with 12-inch thick brick walls and stone veneer. The arches are formed with brick and topped with a thin layer of concrete. As you can see in the photo above, there are two flat sections and a center pediment which is constructed out of stone. Within each of the flat roof areas, there is a roof hatch and a drain. Each layer of the center pediment is progressively smaller. Within each of the stone steps, there is an internal gutter system which leads to the main roof drain on the flat roofs.

The arches have fallen into a state of disrepair. The upper cap stones were sealed with roofing tar and caulk. The roofing tar and caulk has failed exposing the joint to water infiltration. The gap between the stones in some areas is upwards of a one-inch wide. On the inboard side, flat roof, there is no cover to the roof top hatch allowing water and birds free access into the tower. The roofing on each of the flat roofs has deteriorated. Large patches of grass were observed growing from the roof as well as from the internal gutters at the pediments. Much of the mortar has deteriorated between the pediment stone base and the entablature leaving large gaps that also water and moisture to enter the arches. Please refer to photos 2 thru 7 for additional information.

Photo 2 - Inbound Hatch Opening

Photo 3: Grass at Roof Drain

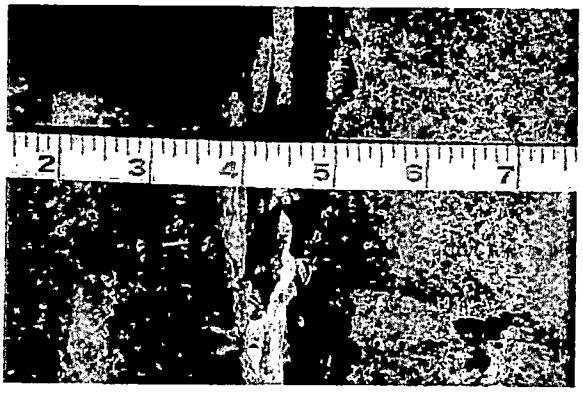


Photo 4 – Crack roofing at pediment stones

Photo 5: Grass at internal gutter

Photo 6: Deteriorated Copper Gutter w/ Grass

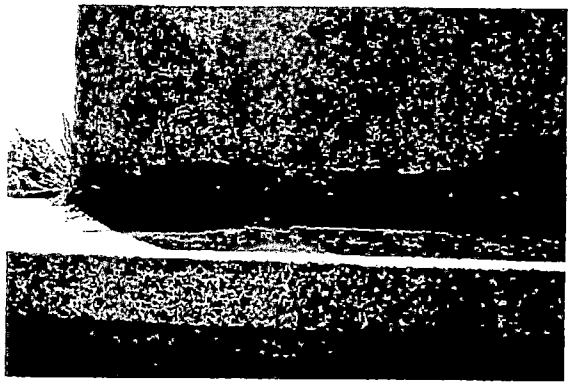


Photo 7: Missing mortar between Stones

The stone veneer needs to be completely repointed. Large areas of the arches are either missing mortar completely or have loose mortar. The keystone of the outbound side of the arch has lost most of the mortar. The loss of mortar is affecting the structural integrity of the arch. Step cracks are forming in the stone veneer which indicates the arch has or is beginning to "fall." Refer to photos 8 and 9, below.

Photo 8: Missing Mortar at Keystone

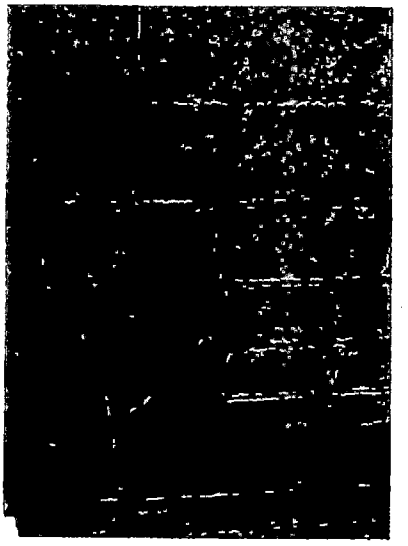


Photo 9: Step Crack at Arch Base

The stones on the arch ceiling are suspended from the curved floor structure. At the time of my visit, water was dripping from the ceiling panel joints even though it had not rained for several days. Large areas of calcium deposits and stalactites from the limestone panels were observed. Due to the amount of water the towers and arch structures are absorbing; the anchorage of the ceiling panels to the curved structure is seriously questionable. Please refer to photo 10.

Photo 10: Calcium Deposits on Ceiling Panel

The exterior stone veneer is significantly cracked due to the constant flow of water through the structure. Large vertical, stepped or diagonal cracks through the stones are present on nearly all facades. The constant flow of water through the structure and between the brick and stone veneer coupled with freeze-thaw cycles has caused the cracking and loss of mortar.

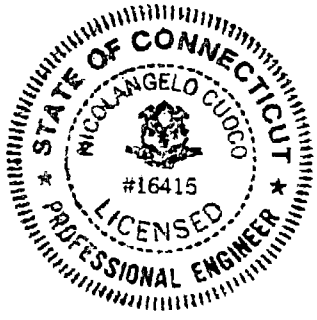
The interior brick structure was not completely reviewed due to safety and structural integrity issues. Once inside the outbound side tower, it is possible to access the center and entrance tower via internal ladders and walk-ways. However, since the structural adequacy of the internal ladders and walkways is unknown, proper access and fall protection is required. I was able to review a very small section of the outbound brick structure. Several vertical cracks and broken bricks were observed. The flat roof structural slab was also severely cracked and leaking.

In conclusion, the condition of the arch structure is poor. There are several questionable areas that warrant additional investigation, such as the ceiling panel attachment to the ceiling structure, the structural integrity of the curved structure and the interior brick structure.

It is my recommendation, based on my limited assessment that the entire structure is in desperate need of repair. Due to the amount of water visibly absorbed by the structure, the entire stone structure from the arch spring points up should be dismantled and properly reset. The arch ceiling panels should be removed, the curved structure reviewed, and repaired as necessary and the panel be reinstalled. The limestone arch entablature should also be dismantled and reset.

Respectfully Submitted,

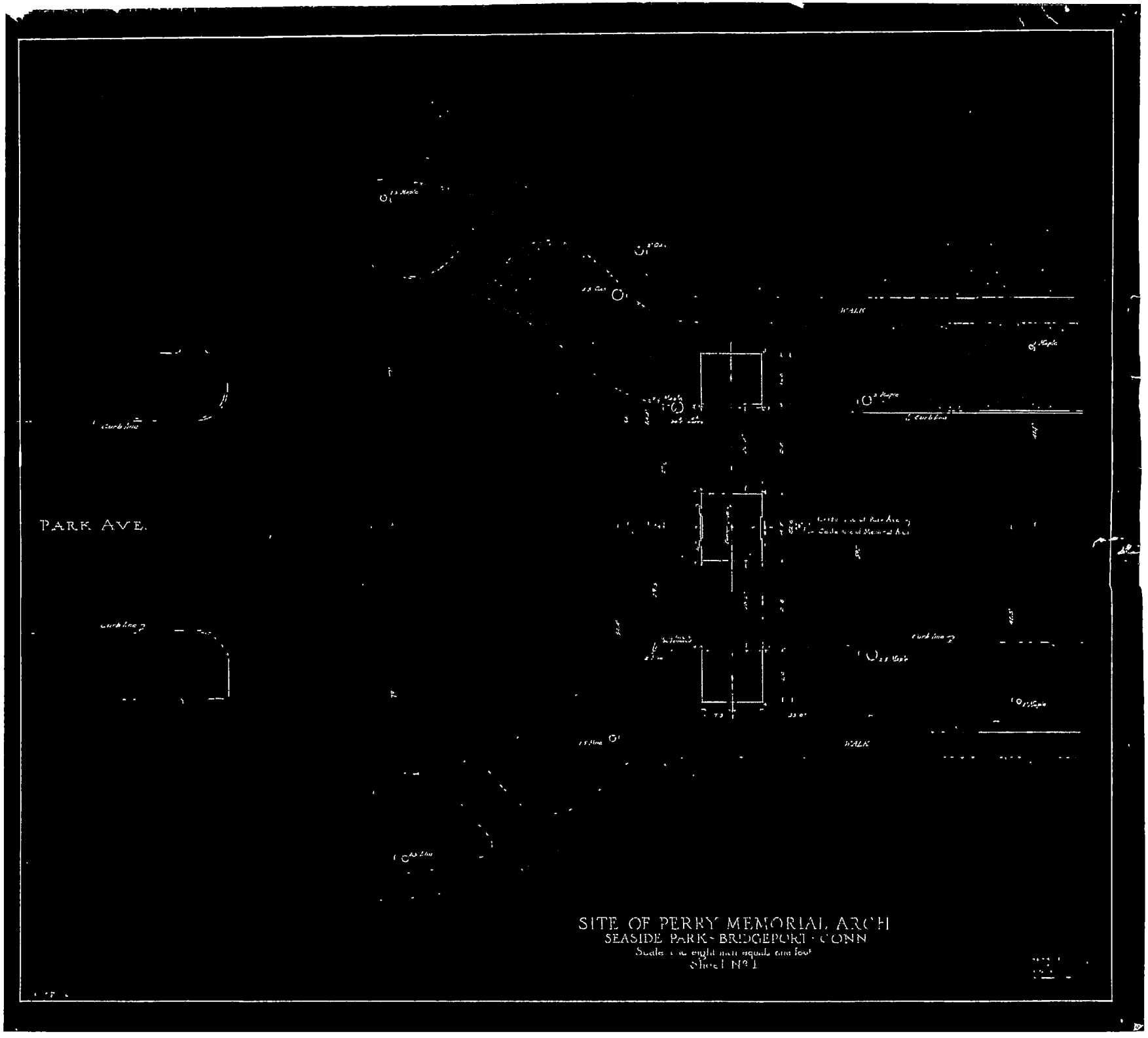
Cuoco Structural Engineers, LLC

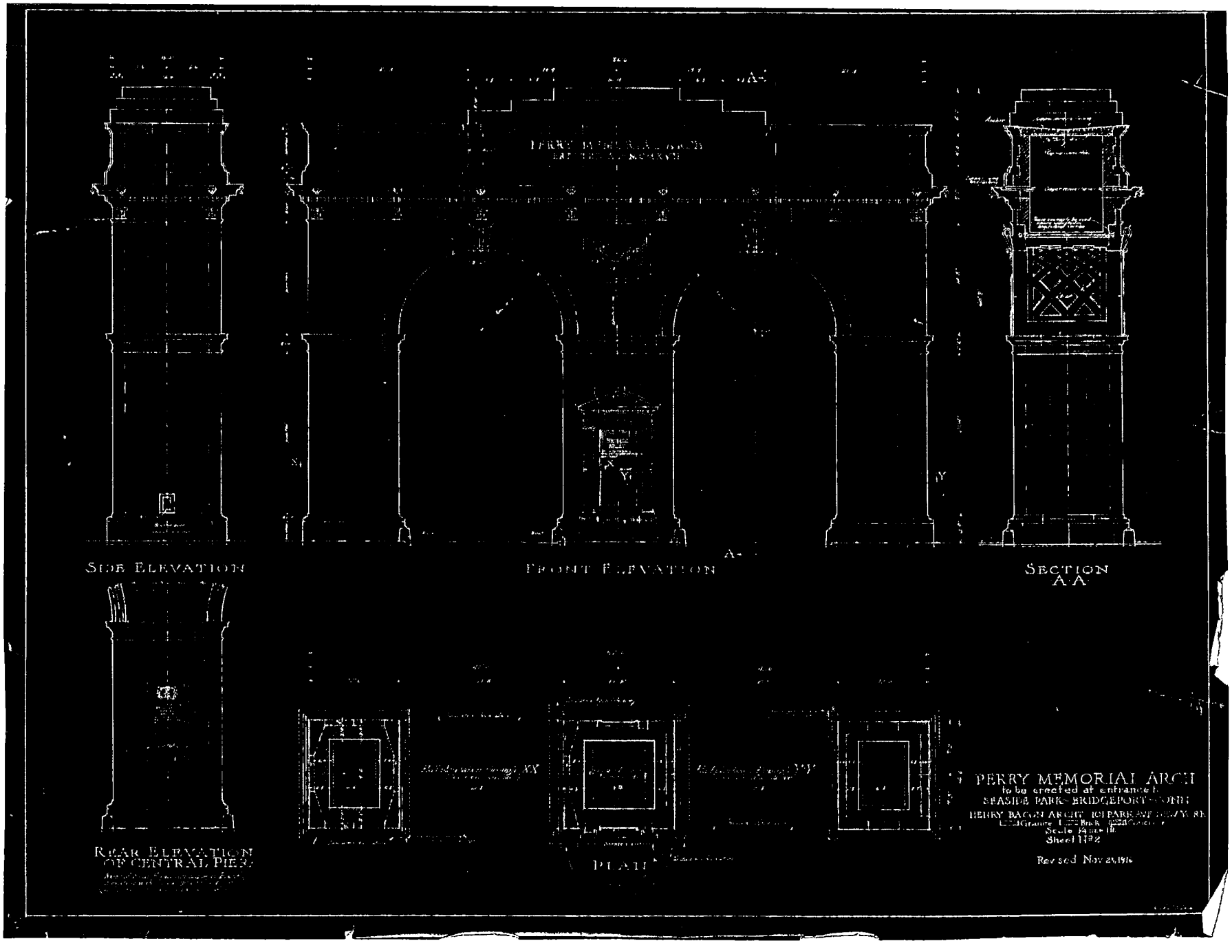


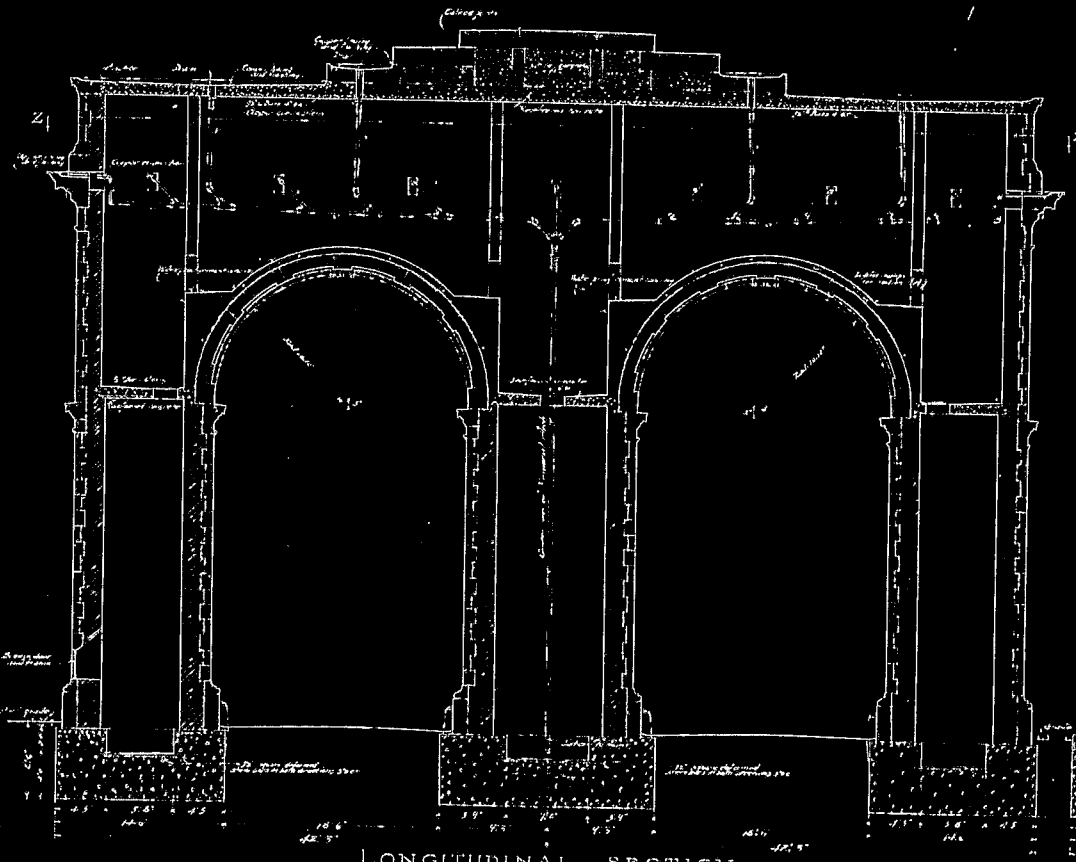
Nic Cuoco, PE, SE, SECB
Principal

Copy: File

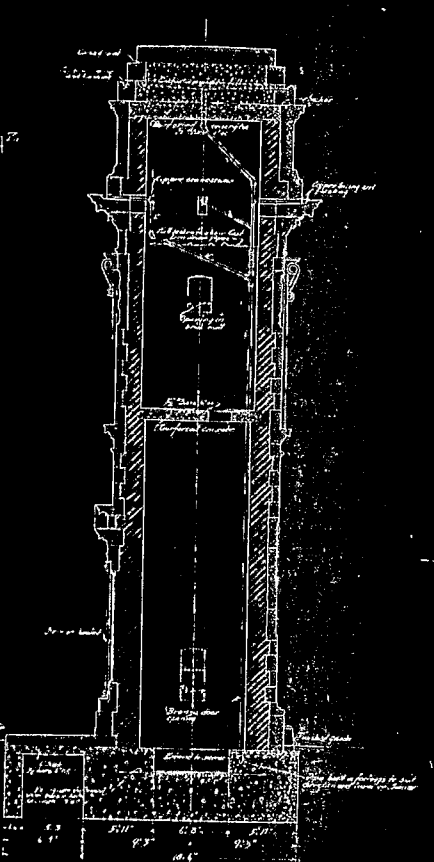
P:\Active\2010 Projects\10-192 Seaside Park Arches Park Ave Bridgeport - COBpt\Arthur Harris CoBPT - Park Ave Arches Condition Assesmenmt.doc


PARK AVE.
WALK
WALK
SITE OF PERRY MEMORIAL ARCH
SEASIDE PARK - BRIDGEPORT - CONN
Scale one eighth inch equals one foot
Sheet No 1

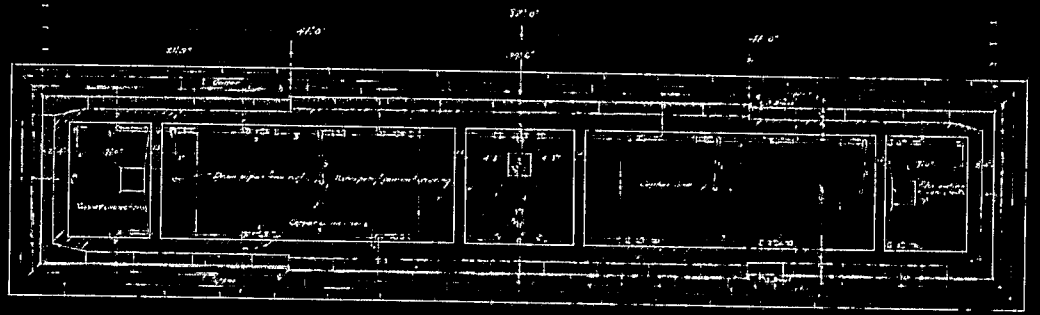

SIDE ELEVATION
FRONT ELEVATION
SECTION
A A
REAR ELEVATION
OF CENTRAL PIER
PLAN
PERRY MEMORIAL ARCH
to be erected at entrance
SEASIDE PARK - BRIDGEPORT
HENRY BACON ARCHT. 101 PARK AVE
Scale
Sheet 1 of 2
Revised Nov 25, 1916



LONGITUDINAL SECTION
THRO CENTER



TRANSVERSE SECTION
THRO CENTER



PLAN ABOVE CORNICE
TAKEN AT Z-Z

PERRY MEMORIAL ARCH

to be erected at entrance to
SEASIDE PARK ~ BRIDGEPORT ~ CONN.

HENRY BACON ARCHT. 101 PARK AVE. NEW YORK

Granite | Brick | Concrete | Cinder concrete fill

Scale: ¼ in. = 1ft.
Sheet No 3

Revised Nov. 25, 1916.

WJE | ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

Wiss, Janney, Elstner Associates, Inc.
2 Trap Falls Road, Suite 502
Shelton, Connecticut 06484
203.944.9424 tel | 203.944.6997 fax
www.wje.com

Via Hand Delivery

EXHIBIT B

March 27, 2019

Mr. Steve Hladun
Special Projects Coordinator
Department of Public Purchases
Margaret E. Morton Government Center - 2nd Floor
999 Broad St.
Bridgeport, Connecticut 06604

Re: Perry Memorial Arch (PKX 128193)
Condition Assessment and Repair Design
WJE No. 2019.1111.0

Dear Mr. Hladun:

Wiss, Janney, Elstner Associates, Inc. (WJE) is pleased to provide the City of Bridgeport Department of Parks and Recreation the following proposal to perform a condition assessment and provide repair design and construction administration services for the repair/restoration of the Perry Memorial Arch located Bridgeport, Connecticut. Our proposal has been prepared based upon your Request for Qualifications, the pre-bid walkthrough conducted on February 20, 2019, subsequent bid addenda, and our experience with similar projects. This proposal includes a brief summary of our project understanding, our qualifications and project team, proposed scope of work, and compensation for our services.

Project Understanding

The Perry Memorial Arch serves as the main point of entry to Seaside Park and is inspired by ancient Roman architecture with a unique double-arch form. The arch was constructed in 1918 as a memorial to William Hunt Perry and was designed by Henry S. Bacon of New York, and built by the Sperry and Treat Company of New London, Connecticut. The arch is listed as a contributing monument to Seaside Park which was added to the National Register in 1982. Over the course of its life the arch has undergone assessments and repair/restoration projects, with the most recent assessment being conducted by Cuoco Structural Engineers and summarized in a report dated July 30, 2010. This report suggests potential structural issues with the arch and recommended an extensive repair project. Since this 2010 assessment and report, no additional significant repair efforts have been made and the City is now seeking a new assessment and repair design to restore the arch and preserve its historical significance. This assessment and repair design is intended to be sensitive to the historic nature of the arch and its purpose as a memorial, while also ensuring its structural integrity and prolonging its durability/lifespan.

Relevant Project Experience

WJE has extensive experience in the assessment and repair design of historic masonry structures, and has worked with various municipalities and state agencies within Connecticut. A list and description of relevant similar projects are included as Appendix A to this proposal.

WJE Qualifications

Our Firm

WJE is a nationally-recognized firm of architects, engineers, and materials scientists dedicated to providing practical, innovative, and technically sound solutions to problems in both new and existing structures. Since our founding in 1956, we have successfully evaluated and developed repair, rehabilitation and restoration designs for buildings and structures involving virtually every conceivable construction material, structural system, and architectural component. WJE combines state-of-the-art laboratory and testing facilities, nationwide offices, and knowledge sharing systems to provide solutions for the built world. With a current staff of more than 680 professionals and technical experts located in 26 offices/annexes nationwide, WJE completes approximately 7,000 projects annually for building owners, property managers, developers, insurance companies, universities, law firms, and government agencies. WJE has the resources to respond to virtually any problem, and offers a wide range of technical services and expertise in virtually all aspects of design and construction technology. Attached as Appendix B are profiles outlining our local office and companywide capabilities that are relevant to this project.

Experience gained from the investigation of thousands of distressed structures, together with extensive in-house laboratory testing capabilities, permits WJE to offer superior professional services in the evaluation of existing structures. WJE provides field and laboratory investigation, testing and instrumentation, materials conservation studies, structural analysis, repair and preservation design, and construction phase services. WJE project team members regularly work on complex projects under demanding time schedules and budget constraints, and have a history successful performance on a wide range of projects. The depth of expertise of the WJE professional staff provides a resource base that can be drawn upon as needed to meet specific project requirements and schedules. Quality control is assured through a consistent technical review and checking process applied to each project.

Our in-house Materials Science and Engineering Division provides consulting services based on field and laboratory studies of construction materials using chemical analysis and petrographic examination. The materials staff includes recognized experts on construction materials such as stone, brick, terra cotta, architectural and structural concrete, tile, metals, wood, glass, coatings, membranes, mortars and sealants, setting beds, and adhesives. In-house materials testing includes a wide range of capabilities through a laboratory complex at the WJE Northbrook, Illinois headquarters. These services assure readily available in-house support for our historic preservation and materials conservation projects.

WJE project personnel are nationally-recognized leaders in the field of historic preservation, with special expertise on historic building materials, properties, and technical preservation solutions. Past project experience includes many studies, investigations, and construction projects for local landmarks as well as National Register and National Historic Landmark properties. WJE preservation architects and engineers have extensive experience working within federal preservation guidelines and standards and regularly utilize the Secretary of the Interior's Standards as a basis for preservation and repair design. WJE preservation personnel are also experienced in working with preservation review entities, including the NYC Landmarks Preservation Commission, the National Park Service, State Historic Preservation Agencies and Advisory Councils, municipal government agencies, and non-profit review entities. Our clients for historic preservation projects have included the National Park Service, U.S. Department of State, Department of the Navy, General Services Administration, National Trust for Historic Preservation, and many universities, institutions, and other public and private clients.

Our Methodology and Approach

WJE projects typically involve multiple disciplines, including several disciplines provided in-house by WJE. For other services, WJE works closely with our project team sub-consultants. From the project team members whose resumes are included in this submittal, and other staff professionals as required for specific projects, a project team will be established to carry out the work of each assignment. WJE has coordinated the work of a wide range of disciplines ranging from civil, mechanical, and electrical engineers, through architectural designers, lighting designers, and industrial hygienists.

WJE intends to self-perform the condition assessment and repair design for this work, including aspects related to structural engineering, roofing/waterproofing, and historic preservation/restoration. WJE will engage a sub-consultant to provide the required cost estimates and a contractor to provide assistance with access and creating/repairing investigation openings. Coordination with sub-consultants and subcontractors will be performed by the WJE project manager. At this time, it is not clear if an Industrial Hygenist (IH) will be a required part of the project team. If an IH is required to test and identify potentially hazardous materials and provide remediation specifications, we anticipate this consultant will be directly engaged by the City of Bridgeport. Costs associated with an IH have been excluded from this proposal.

Our Team

Joseph Bukovec of WJE's New Haven office will serve as the Project Manager and point of contact for the City of Bridgeport. Mr. Bukovec is a Professional Engineer and specializes in the assessment and restoration of historic masonry structures. He will be joined by Ms. Tiffani Simple, a Registered Architect and historic preservation specialist of the New York City office, and Mr. Jaret Lynch, a Professional Engineer and manager of the New Haven office as the primary individuals responsible for the condition assessment and repair design. Resumes of the above personnel and firm literature are included in Appendix A. In addition to the professionals included above, the resources and knowledge of the entire company are available as needed and will be utilized as necessary throughout the duration of the project.

Scope of Professional Services

Task 1 - Condition Assessment and Preliminary Recommendations

WJE will perform a visual assessment of the arch structure and its components, including; stone veneer, underlying masonry structure where visible from the interior, roofing/waterproofing components, and architectural masonry elements. The structure will be observed with binoculars and telephoto equipment as well as representative close-up, hands-on observations via an aerial lift. The visual assessment will identify and quantify readily visible localized failures such as cracking, spalling, or other deterioration, which will be documented with annotated drawings and photographs. In addition to the conditions identified in the visual assessment, the close-up survey would also provide information on hidden delaminations which are not readily visible on the surface. The intent of this assessment is to identify items requiring repair, restoration, or stabilization.

Following our assessment we will provide a brief narrative with our recommended scope of repairs, including the indication of items that we recommend be expedited or temporarily stabilized prior to the

more thorough restoration project. Included with this scope of recommended repairs, we will provide an opinion of cost to implement the recommended repairs.

To perform this task, WJE will require the assistance of a subcontractor and aerial lift to provide access at the exterior and interior of the arch structure. Costs associated with the subcontractor have been included with this proposal.

Task 2 - Testing and Analysis

Based on our findings with our initial assessment (Task 1), WJE will perform additional testing and analysis in the form of investigative probe openings, material sampling and laboratory testing, and structural calculations to further assess the condition of the structure and its existing materials. This testing and analysis is intended to further understand the existing structure and materials, and to help inform our construction documents in the implementation of an appropriate and historically sensitive repair strategy.

Probe Investigation

WJE will select several probe locations to be opened by a contractor for investigation. The location of these openings will be selected during our initial visual survey, and will likely include openings to expose various concealed structural elements or architectural details and the removal of materials or assemblies for laboratory testing. At this time we assume that approximately four (4) probes will be opened during our investigation.

Material Sampling and Laboratory Testing

Material specimens extracted from the building during our probe investigation will be sent to WJE's Janney Technical Center for laboratory testing. The microscopic, chemical, and physical testing of the masonry will be used to identify material and assembly properties which is beneficial for the restoration work. Some of the laboratory procedures typically used to evaluate these materials include:

- Petrographic microscopy to assess material characteristics of the masonry and mortar to determine the nature and severity of deterioration. This information will assist in determining durability, potential remaining life span and appropriate cleaning and repair techniques.
- Additional laboratory analysis of the masonry and mortar may be conducted based on the findings of the investigation and initial laboratory analysis. Additional analysis may include physical testing such as water absorption, and/or mechanical testing, including the use of X-ray diffraction (XRD), and scanning electron microscopy (SEM).

Structural Calculations

Using the information gathered during our condition survey and probe investigation, we will conduct a structural analysis of select structural elements to determine the estimated capacity of the existing structure at the observed locations. Our analysis will focus on critical elements, and will take into account the level of deterioration that was observed during our survey. The analysis will inform an assessment of the overall condition and stability of the existing structural systems, as well as potential repairs or retrofits that may be necessary to stabilize and strengthen the arch.

During this task, we will require the assistance of a subcontractor to provide access, create/repair investigation openings, and assist with material sampling. Costs associated with this subcontractor have been included with this proposal; however, costs associated with an IH to identify and address potentially

hazardous materials have been excluded. It is anticipated that the City of Bridgeport will engage an independent IH to assist with this work.

Task 3 - Construction Documents

Upon completion of Tasks 1 and 2, WJE will prepare Construction Documents to implement our recommended scope of repairs. These documents will include plan drawings, elevations, necessary repair details, relevant technical specifications, and a bid form. We will also incorporate front end specifications/documents into the project manual as they are provided to us by the City Construction Management Services Division. These documents will be sufficient for soliciting bids from qualified contractors and obtaining necessary permits for construction. Our drawings will be signed and sealed by either an Architect or Professional Engineer licensed in the State of Connecticut for permitting however, costs associated with permits are excluded from this proposal.

Additionally, we will follow-up the issuance of our Construction Documents with a third party cost estimate and construction schedule based on our drawings. This cost estimate will be prepared by an independent cost consultant and is intended for informational and budgeting purposes for the City of Bridgeport. Please be aware that the construction schedule will be anticipated by our experience with similar work, however the ultimate schedule will be established by others and is subject to conditions beyond our control.

Task 4 - Construction Administration

Upon issuance of the bid documents, WJE will provide consulting services throughout the bid and construction phases of the project. These services are anticipated to include the following:

Bid Period Services

- Attendance at one pre-bid walk-through with prospective bidders and the City of Bridgeport
- Response to contractor's questions and preparation of necessary addenda to the bid documents
- Review of the contractor bids
- Attendance at up to two scope review meetings

Construction Period Services

- Review of contractor submittals, shop drawings, and mock-ups, including up to one re-submission of rejected submittals
- Review of contractor Requests for Information (RFIs)
- Review of contractor payment applications
- Approximately 2 site visits per week for the duration of the construction period. For the purposes of this proposal we have assumed a 6-month construction period. Following the selection of a contractor, WJE may request an adjustment to our contract value based on the expected construction duration and the required level of our involvement during the construction phase.
- Attendance at weekly project team meetings
- Weekly site visit reports for the duration of the construction period.
- Punchlist preparation and final project closeout

Task 5 - Closeout

Upon completion of the construction, WJE will prepare as-built documents and provide a closeout manual including relevant photos, descriptions of work performed, and methods used through the repair/restoration process.

Compensation

WJE proposes to complete the *Scope of Services* described above for a lump sum fee as indicated on the attached Bid Form (sealed under separate cover). All services will be performed in accordance with the attached *Terms and Conditions for Professional Services,* or a mutually agreeable contract between WJE and the City of Bridgeport. Additional services that may be requested by the City of Bridgeport can be completed upon written direction from our Client on a time-and-expense basis in accordance with the hourly rates in affect at the time work is completed.

Thank you for this opportunity to offer our services and expertise on your behalf. Should questions arise during your review of our proposed scope of work, we would welcome the opportunity to discuss these with you.

If you agree to the above terms, please return a signed copy of this proposal via email (jbukovec@wje.com) as authorization to proceed. If you require any modifications to this document, we would be pleased to consider those changes and revise our scope of services accordingly.

Sincerely,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.

Joseph Bukovec, PE
Senior Associate and Project Manager

Tiffani Simple, RA
Senior Associate

Agreed and Approved:

Name:_____ (please print)

Signature:_____

Title:_____

As Agent or Principal For: _____

Date: _____

Wiss, Janney, Elstner Associates, Inc. or **WJE Engineers & Architects, P.C. (WJE)** has been requested to perform certain professional and other services. The parties agree that these services shall be performed under the following Terms and Conditions, and that Client's acceptance of WJE's proposal or its direction for WJE to commence any services constitutes acceptance of these Terms.

1. Independent Contractor. WJE is an independent contractor, and all persons employed to furnish services hereunder are employees of WJE or its subcontractors/subconsultants and not of the Client. WJE and Client agree to be solely responsible for compliance with all federal, state, and local laws, rules and regulations, and ordinances that apply to their own respective employees.

2. Performance. The standard of care for all professional services performed or furnished by WJE will be the skill and care ordinarily used by members of WJE's professions performing similar services and practicing under similar circumstances at the same time and in the same locality. WJE makes no guarantees or warranties, express or implied, with regard to the performance of its services. WJE shall not have control over or be in charge of and shall not be responsible for construction means, methods, techniques, sequences or procedures or for construction safety precautions and programs since these are the responsibilities of others. WJE agrees to perform its services in as timely a manner as is consistent with the professional standard of care and to comply with applicable laws, regulations, codes and standards that relate to WJE's services and that are in effect as of the date when the services are provided. Client agrees that no claim may be brought against any WJE employee individually for any claim involving performance of services.

3. Client Duties. In order for WJE to perform the services requested, the Client shall, at no expense to WJE, (1) provide all necessary information regarding Client's requirements as necessary for the orderly progress of the work; (2) designate a person to act as Client's representative for the services who shall have the authority to transmit instructions, receive instructions and information, and interpret and define Client's policies and requests for WJE's services; and (3) provide access to and make all provisions for WJE to enter, without cost, limitation, or burden to WJE, the specific property as required to perform the work, including the use of scaffolds or similar mechanical equipment. WJE is entitled to rely upon the information and services provided by the Client.

4. Safety. Field work will be performed only under conditions deemed safe by WJE personnel. Charges may be made for safety or security measures required by hazardous job conditions that WJE may encounter. Client understands that WJE is only responsible for the safety of its own employees and those of its subconsultants and is not responsible for the safety of other persons or property.

5. Compensation and Expenses. Client agrees to pay for WJE's requested services in accordance with WJE's standard hourly rate schedule or negotiated fee. Charges generally will be billed in monthly intervals with applicable taxes included. Travel, subsistence, and expenses incurred; communications; reproduction; and shipping charges will be billed at cost plus 5 percent and invoiced as an expense service fee. Use of vehicles will be billed at $0.60 per mile. Expended materials for field and laboratory work, rental equipment, and any fees advanced on Client's behalf will be billed at cost plus 10 percent and invoiced as an expense service fee. WJE equipment used in field or laboratory work is billed at WJE's equipment usage rate schedule in effect at the time the work is performed, subject to adjustment for minimum or extended usage. Portal-to-portal equipment usage rates are comparable to prevailing commercial rental rates (if available). Billing rates may be increased annually. Any subcontracted service will be billed at cost plus 10 percent providing the subcontract firm has in place adequate insurance coverage determined by WJE; otherwise, the cost will be marked up 20 percent and invoiced as an expense service fee. Client agrees to pay WJE's then-current time charges, attorneys' fees, and other expenses resulting from required attendance at depositions, administrative proceedings, or responding to subpoenas or court orders relating to the Project, but not for such expenses attributed to WJE's negligent performance of its services.

Payment for WJE's services is expected in full in US dollars upon receipt of the invoice. Invoices more than 30 days past due are subject to a 2% interest charge per month (but no more than the maximum extent allowed by law) compounded annually and any related attorneys' fees and collection expenses. WJE reserves the right to suspend its services if the Client fails to make payment when due. In such an event, WJE shall have no liability to the Client for delay or damage caused the Client because of such suspension.

6. Termination. Both the Client and WJE have the right to terminate WJE's services for convenience upon seven calendar days' written notice to the other party. In the event the Client terminates without cause, WJE shall be entitled to compensation for its services and expenses up to the time of such notification, including fees for any transition services, and shall have no liability for delay or damage to Client because of such termination.

7. Reports, Drawings, and Work Product. WJE retains ownership of reports, drawings, specifications, test data, techniques, photographs, letters, notes, and other work product, including those in electronic form, it has created. These documents or parts thereof may not be reproduced or used by the Client for any purpose other than the purpose for which they were prepared, including, but not limited to, use on other projects or future modifications to this Project, without the prior written consent of WJE. Upon request, WJE will provide Client with a copy of documentation for information and reference purposes and bill for such reproduction in accordance with Paragraph 5 above. Any unauthorized use of WJE's work product shall be at the Client's sole risk and Client shall indemnify WJE for any liability or legal exposure to WJE. To the extent WJE terminates its services due to non-payment of fees by Client, Client shall not be entitled to use the documents described herein for any purpose whatsoever.

8. Environmental Hazards. Client acknowledges that WJE's services do not include the detection, investigation, evaluation, or abatement of environmental conditions that WJE may encounter, such as mold, lead, asbestos, PCBs, hazardous substances, or toxic materials that may be present in buildings and structures involved in this Project. The Client agrees to defend, indemnify, and hold WJE harmless from any claims relating to the actual or alleged

existence or discharge of such materials through no fault of WJE's employees. WJE reserves the right to suspend its services, without liability for consequential or any other damages, if it has reason to believe that its employees may be exposed to hazardous materials and will notify the Client in such event.

9. Dispute Resolution. Prior to the initiation of any legal proceedings (except for WJE initiated claims for nonpayment for services), WJE and the Client agree to submit all claims, disputes, or controversies arising out of or in relation to the services provided by WJE to mediation. Such mediation shall be conducted under the auspices of the American Arbitration Association or such other mediation service or mediator upon which the parties agree. Client consents to suit for nonpayment in the state courts of Illinois.

10. Successors and Assigns. These Terms shall be binding upon Client and WJE and their respective successors, assigns and legal representatives. Neither party may assign, subcontract, or otherwise delegate its responsibilities without the prior consent of the other party, which consent shall not be unreasonably withheld. Additionally, in no instance shall this paragraph be interpreted to create any rights in any third party.

11. Insurance. WJE maintains commercial general liability, automobile, workers' compensation, and employers' liability and professional liability coverages under policies written by national insurance carriers rated by the A.M. Best Company, evidence of which will be provided upon request. Special endorsements are not allowed. No waiver of subrogation is allowed on WJE's professional liability policy. Upon written request, WJE agrees to name the Client as an additional insured to the commercial general liability and automobile coverages. Any request to add other parties as additional insureds must be made in writing and is subject to certain limitations. All policies are subject to annual renewal. Excess coverage is available for exposures over primary policy limits except for professional liability.

12. Indemnity. To the fullest extent permitted by law, Client and WJE each agree to indemnify and hold the other harmless, and their respective agents, officers and employees, from and against liability for all direct claims, losses, damages, and expenses, including reasonable attorneys' fees, to the extent such claims, losses, damages, or expenses are for bodily injury, sickness, disease, death, or property damage and to the extent they are caused by the negligent acts, errors, or omissions of the indemnifying party, and/or the indemnifying party's agents, officers, employees, independent contractors, or subcontractors of any tier. In the event such claims, losses, damages, or expenses are caused by the joint or concurrent negligence of Client and WJE, or their respective agents, officers, employees, independent contractors, or subcontractors of any tier, they shall be borne by each party in proportion to that negligence.

13. Agreed Remedy. To the fullest extent permitted by law, the total liability, in the aggregate, of WJE and WJE's officers, directors, employees, agents, and consultants to Client and anyone claiming by, through, or under Client, for any and all injuries, claims, losses, expenses, or damages, including, without limitation, attorneys' fees, arising out of or in any way related to WJE's services, the Project, or these Terms, from any cause or causes whatsoever, including but not limited to, negligence, strict liability, indemnity or breach of contract shall not exceed an amount equal to the proceeds obligated to be paid under WJE's applicable insurance policy for such claims. If, for any reason, the applicable insurance policy does not provide coverage for any particular claim described herein, then the liability amount shall not exceed WJE's fees for the services performed hereunder.

In no event shall WJE be liable in contract, tort, strict liability, warranty or otherwise, for any special, incidental or consequential damages, such as, but not limited to, delay, disruption, loss of product, loss of anticipated profits or revenue, loss of use of equipment or system, non-operation or increased expense of operation of other equipment or systems, cost of capital, or cost of purchase or replacement equipment systems or power.

14. Third-Party Beneficiaries. Nothing contained in these Terms shall create a contractual relationship with, or a cause of action in favor of, a third party against either the Client or WJE. WJE's services hereunder are being performed solely for the benefit of the Client, and no other entity shall have any claim against WJE because of these Terms or WJE's performance or non-performance of services hereunder.

15. Laboratory or Material Testing Services. Material samples not consumed in WJE's work will be discarded 60 days after completion of the project unless the Client requests other disposition in writing. WJE cannot be responsible for material after 60 days and Client shall inform WJE in writing how to dispose of the samples. WJE will exercise reasonable care in safeguarding materials, records, or equipment, but disclaims any liability for loss or damage. Rates for sample storage will vary by sample size but in no event will sample charges be less than $270 per year accruing upon the 61st day of storage and annually thereafter. Failure to pay for underlying services or storage constitutes permission to dispose of all samples held by WJE.

Any testing done on materials or products shall not prevent WJE from any services involving Client's materials or products in the built world. WJE shall have no liability to third parties for any products or materials developed from WJE's services. WJE's reports, trademarks or other property shall not be used to indicate endorsement of any material or product.

16. Entire Agreement. These Terms together with any written proposal shall constitute the entire understanding of the parties concerning the Project and supersede all prior negotiations and written agreements between them, and any amendment or modification to either WJE's proposal or these Terms may be made only by a written instrument expressly stated to be an amendment and signed by WJE.

17. Severability. If any provisions of these Terms, or portions thereof, are determined to be unenforceable, the remainder shall not be affected thereby and each remaining provision or portion thereof shall continue to be valid and effective and shall be enforceable to the fullest extent permitted by law.

Appendix A

WJE

PERSONNEL QUALIFICATIONS

Joseph Bukovec | Senior Associate

EDUCATION

- Rensselaer Polytechnic Institute
  - Bachelor of Science, Civil Engineering, 2005

PRACTICE AREAS

- Facade Assessment
- Historic Preservation
- Testing and Instrumentation
- Leakage Investigation
- Roofing and Waterproofing
- Construction Administration
- Repair and Rehabilitation Design
- Structural Evaluation

REGISTRATIONS

- Professional Engineer in CT
- LEED Accredited Professional (Building Design and Construction)
- Registered Roof Observer
- Society of Professional Rope Access Technicians - Level I Rope Access Technician

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers
- U.S. Green Building Council

CONTACT

jbukovec@wje.com
510.428.2907
www.wje.com

EXPERIENCE

Joseph Bukovec has participated in facade assessments, historic preservation, and structural assessments for a variety of building types. Many of his projects have included site investigations, analysis, repair design, production of construction documents, and construction observation services. Mr. Bukovec has also performed water leakage investigations, air and water infiltration testing, and roof uplift testing.

Prior to joining WJE in 2008, Mr. Bukovec worked for Whiting-Turner Contracting Company as an engineer and was involved with the management of large-scale construction projects. Mr. Bukovec's responsibilities included constructability reviews, value engineering analysis, construction observation, quality control, and contract administration.

REPRESENTATIVE PROJECTS

Facade Assessment

- *205 Church Street - New Haven, CT*: Condition assessment and restoration of masonry facade
- Yale University, Laboratory for Epidemiology and Public Health - New Haven, CT: Condition assessment, repair, and cleaning of limestone facade
- Yale University, Yale Health Center - New Haven, CT: Construction observation and troubleshooting of building envelope components

Testing and Instrumentation

- Quinnipiac University, Crescent Residence Hall - Hamden, CT: High-voltage integrity testing of new single-ply roof assembly
- ESPN Building C - Bristol, CT: FM Global 1-52 uplift testing of new roof assembly
- Yale University, Yale Health Center - New Haven, CT: Air and water infiltration testing of building envelope components

Roofing and Waterproofing

- Yale University, West Campus, A42 Building, - West Haven, CT: Design and construction observation of low-slope roof replacement
- Archbold Building, Choate Rosemary Hall - Wallingford, CT: Design and construction observation of slate roof replacement

Structural Evaluation

- Major Retail Chain - Various Locations: Field inspection, analysis, and repair observation of steel bar joists
- St. John the Baptist - Hoboken, NJ: Structural assessment, analysis, and repair design of timber-framed roof trusses

WJE

PERSONNEL QUALIFICATIONS

Tiffani Simple | Senior Associate

EDUCATION

- Rensselaer Polytechnic Institute
  - Bachelor of Architecture, 2008
- University of Pennsylvania
  - Master of Science, Historic Preservation, 2010

PRACTICE AREAS

- Historic Preservation
- Building Envelope Assessment
- Architectural Conservation
- HABS and HAER Documentation
- Materials Evaluation and Research
- Repair and Rehabilitation Design

REGISTRATIONS

- Architect in NY

PROFESSIONAL AFFILIATIONS

- Association of Preservation Technology (APT)
- National Trust for Historic Preservation (NTHP)

CONTACT

tsimple@wje.com
212.760.2540
www.wje.com

EXPERIENCE

Tiffani Simple specializes in architectural investigations and historic preservation. She has been involved in a variety of projects from full condition surveys to the design and implementation of repairs. Ms. Simple has worked with a variety of building materials, including masonry, brick masonry, terra cotta, concrete, wood, stucco, and architectural plaster finishes.

Before joining WJE, Ms. Simple worked as a preservation architect and project manager in New York City. She was responsible for all aspects of project development from initial site evaluations through construction document preparation, bidding and negotiation, and construction administration.

REPRESENTATIVE PROJECTS

Historic Preservation

- Grand Central Terminal - New York, NY: Condition survey, restoration design development and construction, and administration of Guastavino tile vaults *.
- Hudson View Gardens - New York, NY: Condition survey and restoration design development of the exterior of thirteen historic Tudor-style buildings *
- New York Public Library - New York, NY: Condition survey of interior plaster ceiling and landmarks preservation submission for fountain restoration

Building Envelope Assessment

- 270 West 38th Street - New York, NY: Condition survey, restoration design development, and construction administration of brick masonry and terra cotta structure *

Architectural Conservation

- Park Avenue Armory - New York, NY: Condition survey, restoration design development, and construction administration of architectural finishes and plaster ceiling conservation *

Materials Evaluation and Research

- Durham Castle - Durham, England: Condition survey, research and materials evaluation of the castle's sandstone masonry, and restoration recommendations for World Heritage Site structure *

Repair and Rehabilitation Design

- Coindre Hall Boathouse - Huntington, NY: Condition survey and design development of rehabilitation for a historic boathouse listed on the National Register of Historic Places
- First Battery Armory - New York, NY: Condition survey, restoration design development, and construction administration of a rehabilitated armory listed on the National Register of Historic Places *

** Indicates with previous firm(s)*

WJE

PERSONNEL QUALIFICATIONS

Jaret M. Lynch | Associate Principal and Unit Manager

EDUCATION

- Rensselaer Polytechnic Institute
  - Bachelor of Science, Civil Engineering, 2000
- University of Illinois at Urbana-Champaign
  - Master of Science, Structural Engineering, 2002

PRACTICE AREAS

- Difficult Access Inspection
- Facade Assessment
- Failure Investigation
- Historic Preservation
- Repair and Rehabilitation Design
- Structural Analysis/Computer Modeling
- Structural Evaluation
- Testing and Instrumentation

REGISTRATIONS

- Professional Engineer in CT and NY

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers (ASCE)
- Structural Engineers Association of New York (SEAoNY)

CONTACT

jlynch@wje.com
203.944.9424
www.wje.com

EXPERIENCE

Since joining WJE as a structural engineer in 2002, Jaret Lynch's project experience has included facade condition assessments of historic buildings and churches, structural analysis and repair design, and testing of masonry, curtain walls, and windows. He has also performed facade condition assessments using industrial rope access techniques.

During his graduate studies, Mr. Lynch served as a research assistant, contributing to the Mid-America Earthquake Center project ST-6 funded by the National Science Foundation. This research included the testing of full-scale unreinforced masonry piers under seismic loading. Mr. Lynch also led his schools' American Institute of Steel Construction/ American Society of Civil Engineers steel bridge teams to the national competition level.

REPRESENTATIVE PROJECTS

Difficult Access Inspection

- Yale University, Hall of Graduate Studies - New Haven, CT: Condition assessment of brick masonry
- Yale University, Harkness Tower - New Haven, CT: Condition assessment of stone masonry
- Veterans Administration Hospitals: Condition assessments of various hospital buildings

Facade Assessment

- 205 Church Street - New Haven, CT: Condition assessment and restoration of masonry facade
- Yale University, Laboratory for Epidemiology and Public Health - New Haven, CT: Condition assessment, repair, and cleaning of limestone facade

Failure Investigation

- 100 Summit Lake Drive - Valhalla, NY: Investigation of glass atrium damaged by tornado
- Columbia University, Lenfest Hall - New York, NY: Investigation of cladding failure
- R.C. Lee High School - New Haven, CT: Investigation of shear cracking of concrete girders

Historic Preservation

- New York Life Building - NY: Condition assessment and repair of limestone cladding
- Yale University, Sterling Memorial Library - New Haven, CT: Condition assessment of leaded glass windows and masonry facade

Structural Analysis/Computer Modeling

- Argonaut Building - New York, NY: Glass storefront engineering
- 444 Madison Avenue - New York, NY: Structural analysis for cooling tower replacement and lobby renovations

Structural Evaluation

- Major Restaurant Chain: Inspection, analysis, and repair of roof trusses
- Major Retail Chain: Inspection, analysis, and monitoring of roof framing

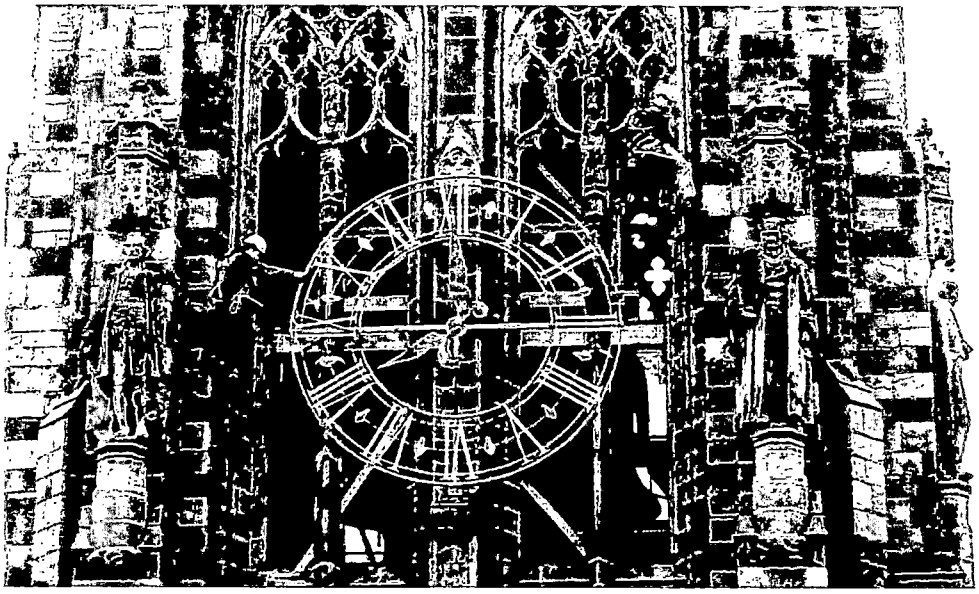
Testing and Instrumentation

- Capital Preparatory Magnet School - Hartford, CT: Full-scale load testing of concrete floor joists
- Citicorp Building - New York, NY: Load testing of suspended scaffold anchorages
- Health Services Center: Air and water infiltration testing of building envelope

WJE

WJE NEW HAVEN

Solutions for the Built World



Founded more than half a century ago, Wiss, Janney, Elstner Associates, Inc. (WJE), is an interdisciplinary engineering, architecture, and materials science firm specializing in delivering practical, innovative, and technically sound solutions across all areas of new and existing construction. WJE combines state-of-the-art laboratory and testing facilities, nationwide offices, and knowledge sharing systems to provide solutions for the built world.

OUR SERVICES

- Engineering
- Forensics
- Structural evaluation
- Facade assessment
- Roofing and waterproofing
- Failure and disaster response
- Historic preservation
- Repair and rehabilitation
- Peer review and commissioning
- Bridge engineering
- Earthquake engineering
- Materials evaluation and research
- Testing and instrumentation
- Fire protection engineering

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OUR APPROACH

As materials, technologies, and structures change, our fundamental philosophy remains the same: developing better solutions based on an accurate diagnosis of each structure's unique problem.

OUR PEOPLE

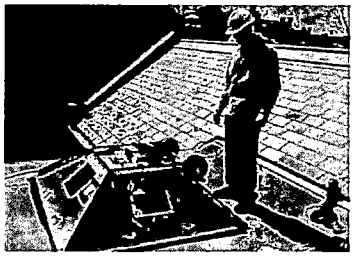
WJE's New Haven office, teamed with more than 700 employees nationwide, has the resources to respond to virtually any problem, with expertise in all aspects of construction technology. The firm's engineers, architects, and materials scientists are supported by technicians who are experts in testing and instrumentation. WJE's understanding of structural behavior and the performance of materials is enhanced by experience gained from more than 125,000 projects worldwide.

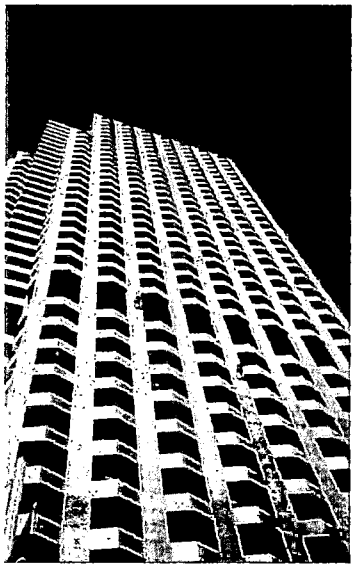
OUR RESOURCES

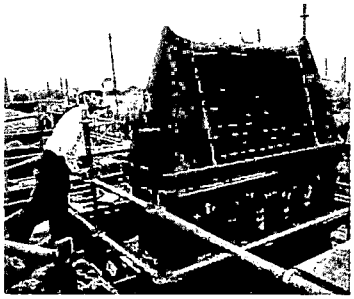
Our Janney Technical Center laboratory and testing facility is one of the nation's largest privately owned construction-based testing laboratories; it enables WJE to provide reliable answers to questions about construction systems, components, and materials. No firm is more qualified to break new ground in finding practical, innovative, and technically sound solutions.

WJE

WJE NEW HAVEN





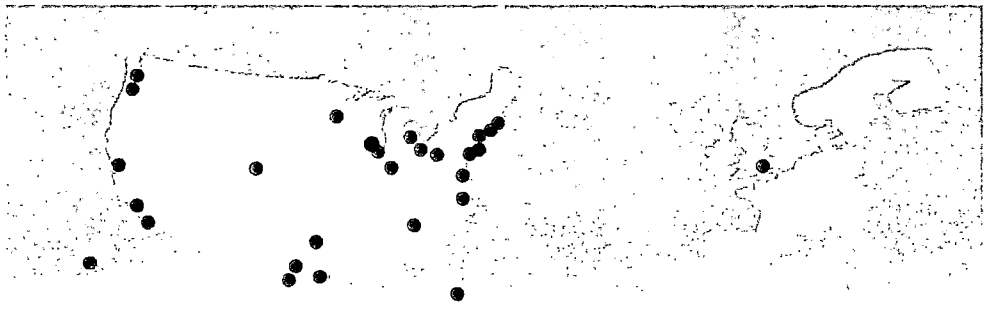


NEW HAVEN REPRESENTATIVE PROJECTS

- **Choate Rosemary Hall – Carl Icahn Center for Science**
  Wallingford, CT
  Water Leakage Investigation and Repair Design
- **Yale University – Harkness Tower**
  Condition Assessment and Restoration
  New Haven, CT
- **Yale Center for British Arts**
  New Haven, CT
  Building Envelope Assessment and Storefront Restoration
- **University of Connecticut – Starr Hall Tower, Hosmer Hall, and Chase Hall**
  Hartford, CT
  Facade, Window, and Roof Restoration
- **Quinnipiac University Health Professions Center**
  North Haven, CT
  Roof Integrity Testing
- **Wesleyan University – Freeman Athletic Center**
  Middletown, CT
  Pulley System Condition Assessment
- **Xerox Corporate Headquarters**
  Stamford, CT
  Roof Assessment and Repair Design
- **University of New Haven – Dodds Hall**
  West Haven, CT
  Facade Assessment, Design, and Restoration
- **Greentree – The Whitney Estate**
  Manhasset, NY
  Various Assessment, Design, Restoration, and Litigation Consulting Service
- **Congregation Beth Israel**
  West Hartford, CT
  Building Envelope Assessment and Repair Design
- **Yale University – Peabody Museum of Natural History**
  New Haven, CT
  Consulting Services and Laboratory Testing
- **Hartford Insurance Group North Plaza Building**
  Hartford, CT
  Building Envelope Assessment and Repair Design

WJE NEW HAVEN

2 Trap Falls Road
Suite 502
Shelton, CT 06484
203.944.9424



AMERICAS

Atlanta
Austin
Boston
Chicago
Cleveland
Dallas
Denver
Detroit
Honolulu
Houston
Indianapolis
Los Angeles
Minneapolis
New Haven
New York
Northbrook (Global HQ)
Philadelphia
Pittsburgh
Portland
Princeton
Raleigh
San Antonio
San Diego
San Francisco
Seattle
South Florida

EUROPE

London

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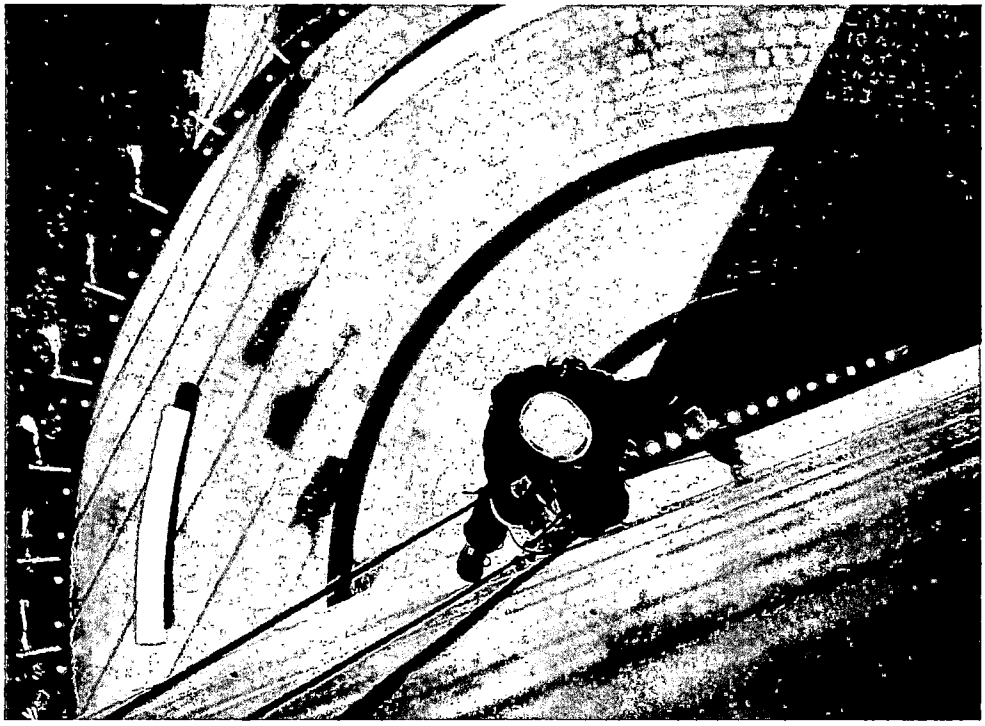
SERVICE PROFILE

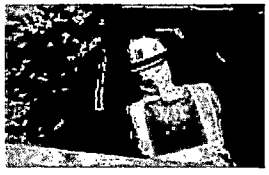
Condition Evaluation

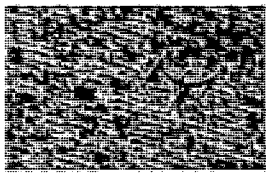


- Visual survey and condition assessment
- Documentation of existing conditions and scope of damage
- Laboratory and field testing of materials
- Assessment and evaluation of in-service performance
- Service life assessments
- Repair recommendations
- Cost estimating and capital reserve studies
- Prepurchase/presale assessments

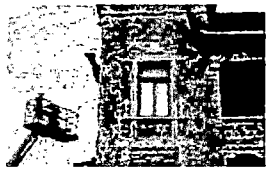
Better solutions come from a better understanding of the problems. When presented with a new challenge, the first objective is to establish a baseline. WJE draws upon decades of experience to accurately decipher the conditions present and determine how they may contribute to present or future problems. WJE applies the lessons learned from over 125,000 projects to provide clients with a full picture of their structure's or component's condition. From visual assessments to complex service life modeling studies, WJE provides clients the answers they need.

From on-site surveys to field and laboratory testing, WJE takes a hands-on approach to condition evaluation. Our professionals utilize traditional access methods, such as lifts and swing stages, as well as rope access techniques and drone technology to visually assess structures of all sizes and configurations. With the use of data-collection tools—such as WJE Plannotate®, a tablet-based proprietary software application—WJE efficiently collects and annotates inspection data and shares those findings in real-time with other team members, who work to organize and analyze the information.





When additional information is needed, materials samples or building elements can be tested in the field or in WJE's in-house laboratories. Using state-of-the-art testing equipment and laboratories, WJE professionals can determine everything from a material's elemental composition and construction type to a component's load capacity or cause of failure.



Based on a thorough understanding of a structure's condition, WJE develops technically sound and tailored recommendations.

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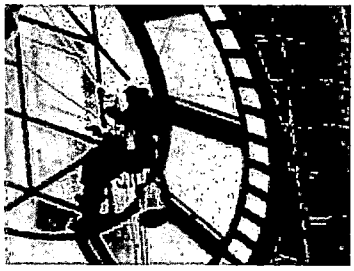
SERVICE PROFILE

Condition Evaluation



REPRESENTATIVE PROJECTS

- Amoco Building (now Aon Center) - Chicago, IL: Distressed marble panel investigation
- Bridge of the Americas - Panama City, Panama: Condition evaluation of major truss bridge using rope access techniques
- Gateway Arch - St. Louis, MO: Corrosion investigation of the stainless steel skin and interior
- Mathematics Tower and Science and Engineering Library - Columbus, OH: Investigation of masonry distress and evaluation of water management systems
- Miami-Dade County Courthouse - Miami, FL: Condition evaluation of historic terra cotta facade
- NBC Tower - Chicago, IL: Condition survey and visual inspection of roofing
- New York Public Library - New York, NY: Comprehensive evaluation of exterior for restoration
- The Pennsylvania State University, Old Main - University Park, PA: 3-D photogrammetry inspections of building facade using drones
- Port of Houston - Houston, TX: Development of manual for condition evaluation of port assets and execution of inspections of piers, wharfs, and other harbor-side structures
- Ritz-Carlton - San Francisco, CA: Facade and roofing condition evaluation
- Washington Monument - Washington, D.C.: Condition evaluation of earthquake damage using rope access techniques

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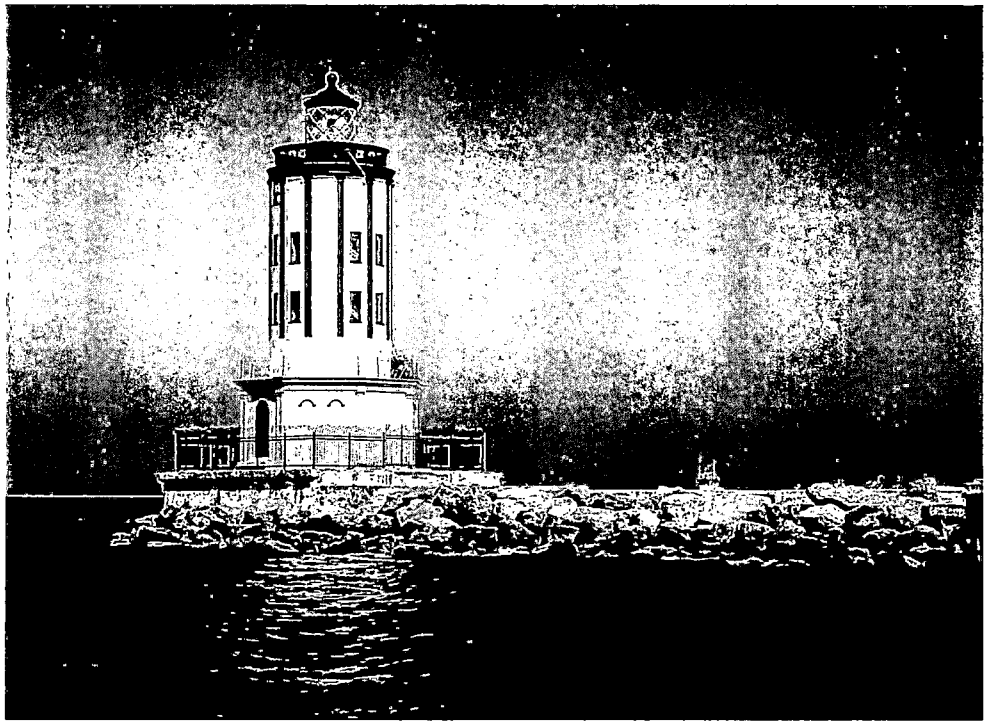
SERVICE PROFILE

Repair and Rehabilitation

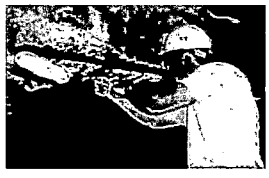


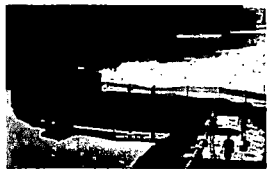
- Repair and rehabilitation design
- Preparation of construction documents and specifications
- Review and analysis of bids
- Construction contract administration services
- Construction management
- Design-build for repair and rehabilitation
- Special inspections and testing services
- Engineering criticality assessment and fitness-for-service
- Nonlinear finite element analysis

From historic cathedrals to modern skyscrapers, structures of all types require maintenance and periodic repair and rehabilitation. Clients rely on WJE's multidisciplinary approach for trusted repair and rehabilitation services. WJE engineers, architects, and materials scientists leverage the knowledge gained from completing more than 125,000 assignments to provide clients with solutions to their most challenging architectural, structural, and materials problems.

WJE professionals are skilled at preparing clear and effective repair and rehabilitation designs based on a sound understanding of the client's budgetary and schedule restraints as well as the project's technical challenges. WJE professionals deliver practical repair and rehabilitation services that maximize the structure's useful life while minimizing overall costs.

WJE experts can tap into the firm's collective experience and specialized laboratory services in the Janney Technical Center and WJE's regional laboratories in Austin, Texas, and Cleveland, Ohio, to deliver innovative repair solutions.





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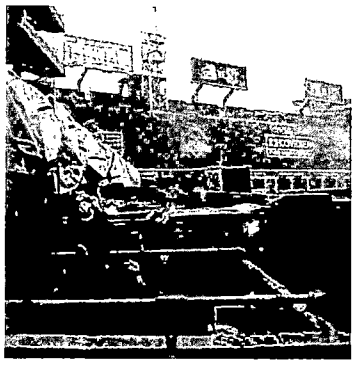
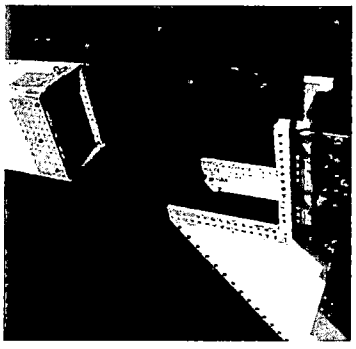
WJE

SERVICE PROFILE

Repair and Rehabilitation





REPRESENTATIVE PROJECTS

- Aloha Stadium - Honolulu, HI: Condition assessment and planning study
- American Museum of Natural History - New York, NY: Rehabilitation design
- Castlewood Canyon Bridge - Franktown, CO: Structural repair
- Fenway Park - Boston, MA: Seating bowl repairs
- Hard Rock Hotel (Carbide and Carbon Building) - Chicago, IL: Restoration design
- Hotel Palomar (Architects Building) - Philadelphia, PA: Exterior envelope repairs
- John F. Kennedy Center for the Performing Arts - Washington, D.C.: Investigation and preservation/rehabilitation design
- Lyndon Baines Johnson Library and Museum - Austin, TX: Plaza repair design
- MD Anderson Cancer Center - Houston, TX: Recladding design
- Miami-Dade County Courthouse - Miami, FL: Repair design
- Perry's Victory & International Peace Memorial - Put-in-Bay, OH: Investigation and restoration design
- State Bar of California Building - San Francisco, CA: Strengthening design
- Trinity Towers Apartments - San Francisco, CA: Repair design
- Virginia Governor's Mansion - Richmond, VA: Restoration plans

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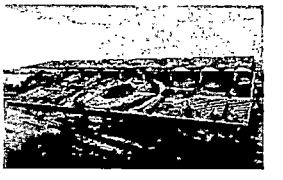
SERVICE PROFILE

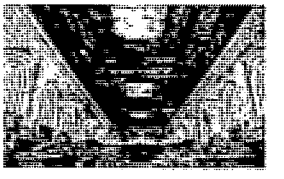
Historic Preservation

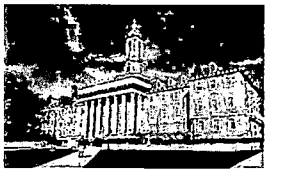
- Historic, technical, and materials research
- Condition surveys
- Difficult access assessment
- Materials conservation analysis
- Restoration master plans
- Historic structure reports
- HABS and HAER documentation
- National Register nomination
- Contract documents for preservation
- Construction observation

Working within established preservation guidelines and standards, WJE architectural, structural, and conservation professionals balance the need to provide practical, long-term solutions with the ability to sensitively conserve a structure's historic fabric. From planning and investigation through implementation, no firm is better qualified to respond to the technical and aesthetic needs of significant historic structures.

Historic buildings and structures are a tangible link to our past. From private owners to large institutions and government agencies, clients worldwide trust WJE to preserve their historic properties for generations to enjoy. WJE preservation professionals have extensive expertise in the repair and conservation of a wide range of historic construction materials and building systems. Using sophisticated testing and materials analysis techniques, WJE professionals apply the science of preservation to develop appropriate and innovative solutions to restore historically significant properties.



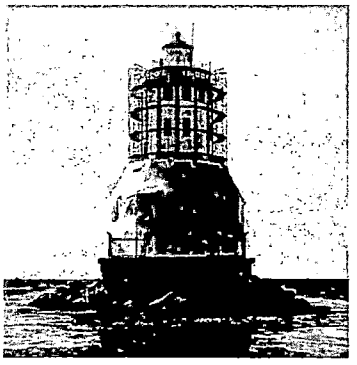


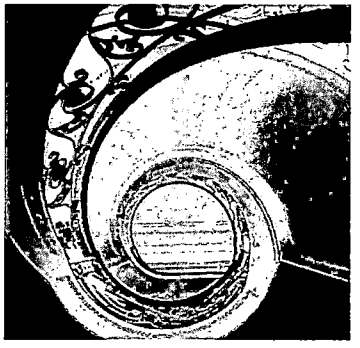


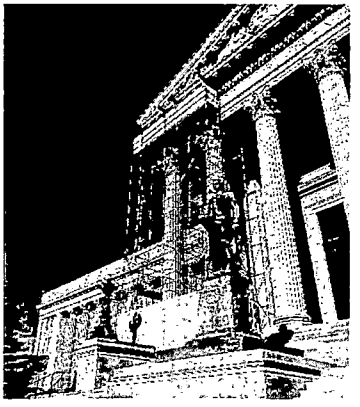
WJE

SERVICE PROFILE

Historic Preservation

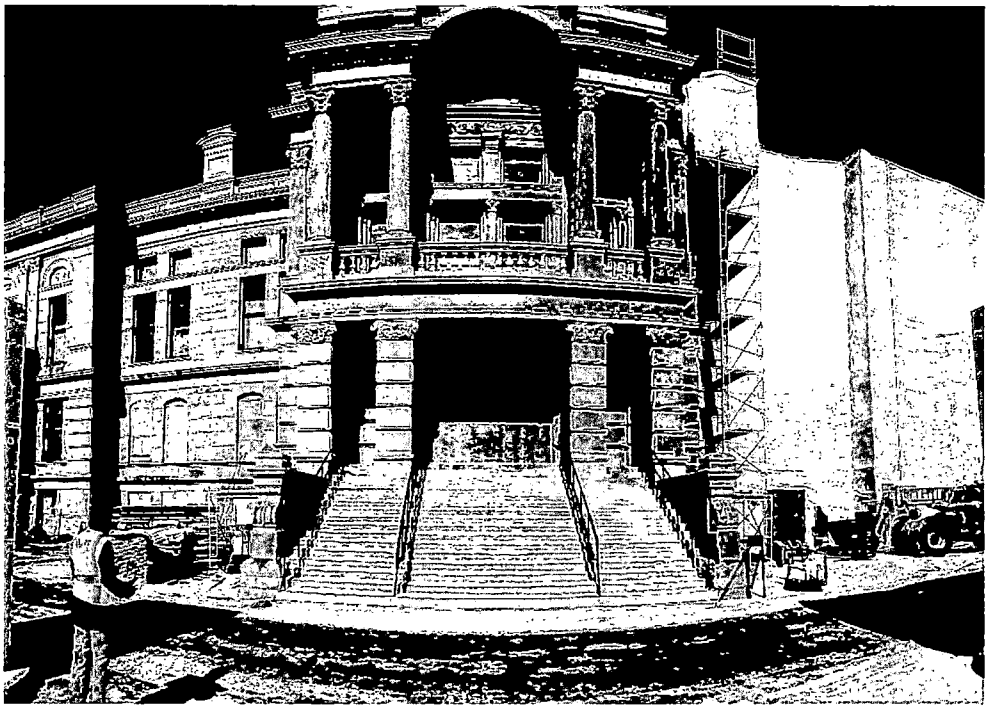






REPRESENTATIVE PROJECTS

- Alcatraz Guardhouse and Sally Port and Alcatraz Barracks (Visitor Center) - Alcatraz Island, San Francisco, CA: Stabilization and seismic strengthening
- Ford Motor Company Building - Indianapolis, IN: Exterior facade restoration consulting
- Gateway Arch - St. Louis, MO: Corrosion and materials conservation study and historic structure report
- Hispanic Society of America - New York, NY: Roof replacement
- Marin County Civic Center - San Rafael, CA: Roofing system replacement
- Martin Luther King Jr. Memorial Library - Washington, D.C.: Building enclosure consulting services in support of renovation and expansion
- Miami Marine Stadium - Virginia Key, FL: Structural restoration
- Missouri State Capitol - Jefferson City, MO: Exterior stone assessment, repair design, and construction administration services
- Pennsylvania State University, Old Main - University Park, PA: Exterior condition assessment and rehabilitation
- SMUD Headquarters Building - Sacramento, CA: Historic preservation consulting for full envelope restoration
- Wyoming State Capitol Building - Cheyenne, WY: Exterior stone assessment, repair design, and construction phase services



WJE | ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

Appendix B

WJE

PROJECT PROFILE

Hearthstone Castle at Tarrywile Park

Structural Condition Assessment | Danbury, CT

CLIENT

Carow Architects Plus

BACKGROUND

Hearthstone Castle at Tarrywile Park was constructed in the latter half of the 1890s by E. Starr Sanford, a partner in a prominent New York photography firm of the time. The structure is a medieval-style castle, built on top of a hillside in what is now part of Tarrywile Park. The castle has been owned by four different parties, the most recent of which is the City of Danbury.

Water leakage through the roof was reportedly an ongoing problem for the previous owners. Attempts to repair the roof were largely inadequate causing significant damage at the third floor and roof framing. Although interior shoring was installed by the City, much of the interior structure of the castle has collapsed within the past decade. The exterior masonry walls and chimneys are still standing, and they now bear the weight of the collapsed building materials. The eastern portion of the castle and its veranda is supported by a lengthy stone retaining wall.

SOLUTION

Before and during the assessment, WJE reviewed existing documentation regarding the castle. WJE completed a condition assessment of the masonry walls, piers, and associated structure and performed a detailed assessment of the castle and retaining wall. Observations were taken from outside the castle and by looking through window openings in the exterior walls. Ladders were used to reach the upper levels of the exterior walls; high-powered binoculars were used to survey higher elevations and areas that were deemed unsafe to enter.

WJE presented the City of Danbury with a detailed report of their findings. These findings will be used by the City of Danbury to determine if the structure is salvageable.

WJE

PROJECT PROFILE

New York Public Library

Investigation and Exterior Restoration | New York, NY

CLIENT
New York Public Library

BACKGROUND
The NYPL was designed by New York architects John Mervin Carrère and Thomas Hastings, winners of a design competition in 1897. The library, which opened in 1911, was built using 530,000 cubic feet of Vermont marble, making it one of the largest marble buildings in the United States. In addition to its significance as one of the world's leading research institutions with over four millions volumes, the library is considered a masterpiece of the Beaux-Arts architectural style and was designated as a National Historic Landmark in 1965 and a New York City Landmark in 1967.

A century of exposure to acid rain, diesel exhaust, and pigeon guano had left the exterior of the New York Public Library (NYPL) in need of extensive restoration. The building's carved marble architectural elements and fine art sculptures were deteriorated, the Tiffany bronze windows and grilles were oxidized, the roofs were damaged, and the brilliant white Vermont marble facade had lost its sparkle. WJE was selected to design and oversee cleaning and repairs of the library in anticipation of the building's 100th anniversary celebrations.

SOLUTION
WJE's engineers, architects, and material scientists began with an exhaustive survey of the building's marble facade, sculptures, windows, doors, roofs, and plazas. In all, they documented over 7,000 instances of stone deterioration, including damage to some of the building's prominent architectural features such as the Corinthian columns, lion head keystones, and scroll modillions. Prior to the repair phase, WJE conducted field trials and laboratory tests of treatments and cleaning techniques, channeling this research into the development of a range of repair options for the client's consideration. WJE then prepared contract documents and provided ongoing field support throughout the restoration.

The project team was honored to receive multiple awards in recognition of the restoration, including the Lucy G. Moses Preservation Award from the New York Landmarks Conservancy, the Excellence in Historic Preservation Award from the Preservation League of New York State, and an AIA New York State Design Award.

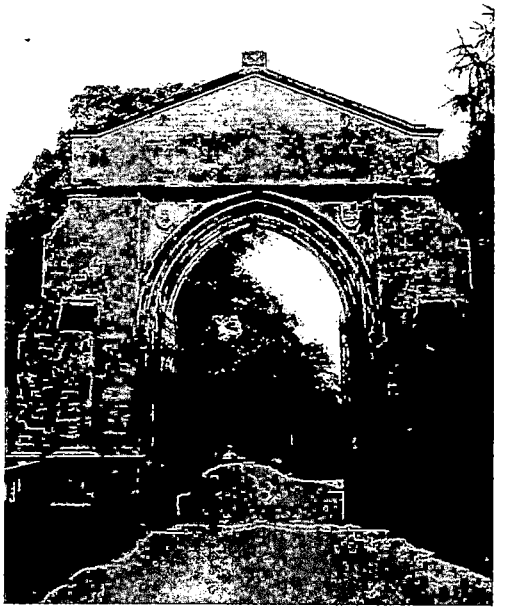
WJE | ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

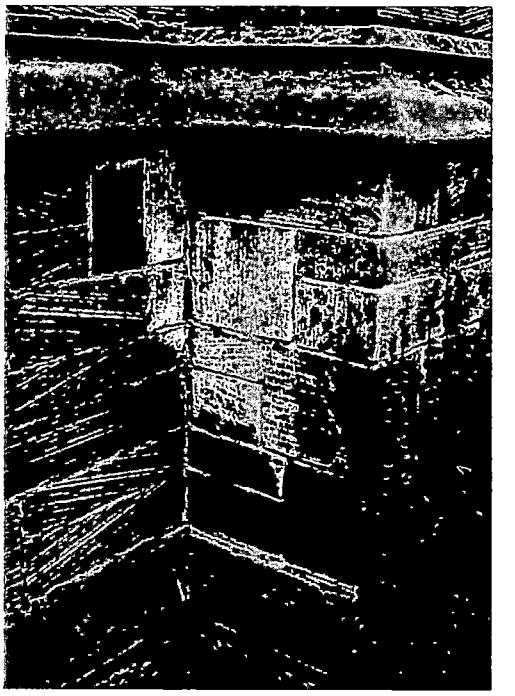
WJE

PROJECT PROFILE

Lake Forest Cemetery Archway

Condition Assessment | Lake Forest, IL





CLIENT

City of Lake Forest

BACKGROUND

The Lake Forest Cemetery arch is a thirty-foot-tall freestanding Gothic-style limestone structure that spans the entrance road to the cemetery. A smaller separate passage to the side allows pedestrian access. The arch includes wrought iron gates across the roadway and at the pedestrian passage.

The City of Lake Forest retained WJE to perform a condition assessment of the arch to determine the cause of extensive deterioration.

SOLUTION

A visual inspection of the arch from grade revealed numerous cracked and open mortar joints; heavy efflorescence near grade level; spalled stone, with particularly severe damage at grade adjacent to the asphalt road surface; displaced stone units, including the stone to which the wrought iron gate is attached; and biological growth. Based upon the concentration of distress near grade level, WJE was able to identify inadequate drainage and rising damp as the primary causes of the deterioration.

Accordingly, WJE issued repair recommendations to replace the road paving adjacent to the arch and install perimeter drainage. WJE also recommended that the heavily corroded wrought iron gates be removed, sandblasted off site, refinished with a three-coat paint system, and reinstalled. Finally, numerous shallow spalls adjacent to mortar joints were determined to be the result of an inappropriate prior repointing involving mortar that was too hard and too thin, resulting in stress concentrations at the outer surface of the stone. Therefore, WJE also recommended repointing all mortar joints and recarving the spalled stone surfaces to match the original texture.

WJE

EXPERIENCE LIST

National Register of Historic Places Projects

2600 WATERGATE EAST
Washington, D.C.
- Collapse investigation

30TH STREET STATION
Philadelphia, PA
- Roof evaluation and bronze door restoration
- North recessed parapet evaluation and facade restoration

ANDERSONVILLE NATIONAL HISTORIC SITE
Andersonville, GA
- Historic Resource Study

ARDEN MODJESKA HISTORIC PARK
Silverado, CA
- Guest cottage structural stabilization

ARKANSAS STATE CAPITOL
Little Rock, AR
- Exterior facade assessment and consulting

ARLINGTON NATIONAL CEMETERY
Arlington, VA
- Investigation of limestone, marble, and mortar deterioration and construction document development for columbarium
- Consulting services for fountain investigation and repair

AUDITORIUM BUILDING
Chicago, IL
- Exposed metal structures inspection

BOSTON ATHENAEUM
Boston, MA
- Facade ordinance inspection, exterior envelope survey, balustrade repairs, interior monitoring, and leakage investigation

CHARLES R. JONAS FEDERAL BUILDING
Charlotte, NC
- Preservation renovation of core and shell and cultural resource assessment
- Condition assessment and design review services

CHARLES PINCKNEY NATIONAL HISTORIC SITE
Sullivans Island, SC
- Historic Structures Report

CADILLAC PLACE
Detroit, MI
- Inspection for modified partition hazards
- Structural and waterproofing construction period services
- Flagpole assessment and analysis

CHIEF VANN HOUSE
Chatsworth, GA
- Conditions assessment report

COSMOS CLUB
Washington, D.C.
- Visual condition assessment of five structures

EDGAR COUNTY COURTHOUSE
Paris, IL
- Condition assessment of building envelope

FALLINGWATER
Mill Run, PA
- Leakage investigation

FARNSWORTH HOUSE
Plano, IL
- Construction administration and preservation services

FINNEY CHAPEL (OBERLIN COLLEGE AND CONSERVATORY)
Oberlin, OH
- Condition assessment

FORT PICKENS (GULF ISLANDS NATIONAL SEASHORE)
Pensacola Beach, FL
- Historic Structures Reports

FORT PULASKI
Savannah, GA
- Historic Structures Report for visitor center

FORT SAM HOUSTON – AABEL HALL
Fort Sam Houston, TX
- Terrace leakage investigation

FORT SMITH NATIONAL HISTORIC SITE
Fort Smith, AR
- Historic Structure Report for Frisco Station

GAINES HALL
Atlanta, GA
- Architectural and engineering administration construction services

WJE

EXPERIENCE LIST

National Register of Historic Places Projects

GATEWAY ARCH NATIONAL PARK
St. Louis, MO
- Close-up inspection and testing of arch skin
- Corrosion investigation
- Jefferson National Expansion Memorial construction period services
- Jefferson National Expansion Memorial design services floor replacement of north and south grounds overlook staircases

GUILFORD COURTHOUSE NATIONAL MILITARY PARK
Greensboro, NC
- Historic Structures Reports for Hoskins House and Coble Barn

GULF ISLANDS NATIONAL SEASHORE
Pensacola Beach, FL
- Historic Structures Report for Batteries Cullum and Sevier military installations

HARBOR SQUARE
Washington, D.C.
- Historic Structures Report for Batteries Cullum and Sevier military installations

HARRY S TRUMAN NATIONAL HISTORIC SITE
Independence, MO
- Historic Structures Report for Batteries Cullum and Sevier military installations

HORSESHOE BEND NATIONAL MILITARY PARK
Daviston, AL
- Historic Resource Study

HOTEL MONACO
Chicago, IL
- Consulting services during historic facade restoration and repair

ILLINOIS EXECUTIVE MANSION
Springfield, IL
- Preservation and restoration services

JOHN W. MCCORMACK FEDERAL BUILDING
Boston, MA
- Building masonry repair

LIBERTY AVENUE BRIDGE
Pittsburgh, PA
- Fire damage investigation

LINCOLN TOMB (OAKRIDGE CEMETERY)
Springfield, IL
- Evaluation of gilding

MACY'S STATE STREET
Chicago, IL
- Investigation of beam deterioration in pedestrian tunnel
- Investigation of plaster issues and vibration monitoring of Tiffany ceiling
- Assessment and repair of flagpole anchorages
- Window repairs, facade inspection, and roofing leakage investigation

MARTIN LUTHER KING, JR. NATIONAL HISTORIC SITE
Atlanta, GA
- Historic Structure Reports, Cultural Landscape Report, and Cultural Landscape Inventory

MILWAUKEE FEDERAL BUILDING AND COURTHOUSE
Milwaukee, WI
- Exterior envelope restoration consulting

MISSOURI STATE CAPITOL
Jefferson City, MO
- Exterior stone renovation and rehabilitation design and construction services

NEBRASKA STATE CAPITOL
Lincoln, NE
- Paint failure analysis

NEW YORK LIFE BUILDING
New York, NY
- Elevator retrofit, terra cotta leaf analysis, and biannual tunnel inspection

NICODEMUS NATIONAL HISTORIC SITE – A.M.E. CHURCH
Nicodemus, KS
- Rehabilitation design services for foundation and building exterior

OCMULGEE NATIONAL MONUMENT
Macon, GA
- Roof assessment for visitor center

OLD DALLAS HIGH SCHOOL
Dallas, TX
- Investigation of historical structural elements

OLD SOUTH CHURCH
Boston, MA
- Limited facade inspection

WJE

EXPERIENCE LIST

National Register of Historic Places Projects

PERRY'S VICTORY AND INTERNATIONAL PEACE MEMORIAL
Put-in-Bay, OH
- Condition assessment of seawall
- Repointing of memorial column
- Cultural Landscape Report and environmental assessment
- Upper plaza failure restoration analysis

PLAINS HIGH SCHOOL (JIMMY CARTER NATIONAL HISTORIC SITE)
Plains, GA
- Cultural Landscape Report

PLAZA HOTEL
El Paso, TX
- Facade assessment and peer review services

PULLMAN NATIONAL MONUMENT
Chicago, IL
- Architectural and construction administration services

RECONSTRUCTION ERA NATIONAL MONUMENT
Beaufort, SC
- Historic Structures Report for Darrah Hall and the Old Firehouse

RHODE ISLAND OLD STATE HOUSE
Providence, RI
- Enclosure consulting and facade restoration

SAENGER THEATER
Biloxi, MS
- Enclosure consulting and facade restoration

SAN JACINTO BATTLEGROUNBD
La Porte, TX
- Geological and dioxin investigation
- Structural assessment of reflection pool

SEARS CROSSTOWN
Memphis, TN
- Review of canopy sign loading and banner design and detailing

SAINT ELIZABETHS HOSPITAL (DEPARTMENT OF HOMELAND SECURITY)
Washington, D.C.
- Design and construction administration services for buildings and security fence
- Limited shoring and waterproofing designs
- HABS documentation

PENNSYLVANIAN ROTUNDA
Pittsburgh, PA
- Terra cotta evaluation

TUSKEGEE AIRMEN NATIONAL HISTORIC SITE
Tuskegee, AL
- Historic Resource Study and Historic Structures Reports

UNITY TEMPLE
Oak Park, IL
- Truss failure assessment at new

UNITED STATES NAVAL ACADEMY
Annapolis, MD
- Building envelope assessment of Halsey Field House

WALNUT PARK PLAZA
Philadelphia, PA
- Facade ordinance inspection, facade repair design, and cast stone studies

WASHINGTON NATIONAL CATHEDRAL
Washington, D.C.
- Stone damage and stability assessment
- Construction period services
- Emergency engineering services during wind event and scaffold collapse

WRIGLEY FIELD
Chicago, IL
- Caretaker's house shoring
- Evaluation of marquee framing
- Preservation peer review services

WASHINGTON STATE CAPITOL
Olympia, WA
- West campus exterior cladding assessment and repair

WATERGATE HOTEL
Washington, D.C.
- Window replacement consulting services

WILSON COUNTY COURTHOUSE
Floresville, TX
- Structural engineering services

WYOMING STATE CAPITOL
Cheyenne, WY
- Cornice netting anchorage design

WJE

EXPERIENCE LIST

Masonry Projects

100TH STREET BUS DEPOT
New York, NY
- Masonry collapse investigation

1855 FOLSOM
San Francisco, CA
- Brick veneer, concrete, and masonry investigation, seismic evaluation

ANHEUSER-BUSCH NEWARK BREWERY
Newark, NJ
- Masonry investigation

BATTELL CHAPEL
New Haven, CT
- High elevation exterior masonry and slate roofing repairs

BLACKSTONE HOTEL
Chicago, IL
- Masonry facade restoration

BON SECOURS HOSPITAL
Grosse Pointe, MI
- Masonry repairs

BRC AT BAYVIEW
Baltimore, MD
- Brick masonry collapse investigation and emergency response services

B.W. PICKETT EQUINE CENTER
Fort Collins, CO
- Investigation of masonry wall cracking

CENTENNIAL COMPLEX
Laramie, WY
- Masonry walls and roofing investigation

CITY OF LONE TREE
Lone Tree, CO
- Investigation of brick deterioration on masonry fence
- Review of depositions and discussions with attorneys

DEAL LAKE TOWER
Asbury Park, NJ
- Brick masonry facade and balcony condition assessment

ERNEST COCKRELL JR. HALL
Austin, TX
- Masonry investigation

FANEUIL HALL MARKETPLACE
Boston, MA
- Moisture intrusion and repair recommendations
- Roof and masonry leakage investigation

FBI ACADEMY BUILDINGS
Quantico, VA
- Exterior masonry investigation

FIRST PLYMOUTH CONGREGATIONAL CHURCH
Lincoln, NE
- Evaluation of cracking in exterior masonry walls at organ towers

FORT CUSTER
Augusta, MI
- Investigate masonry problems
- Litigation

GLAXO-SMITH-KLINE COLLEGE CAMPUS
Collegeville, PA
- Masonry assessment

GOLFVIEW DEVELOPMENTAL CENTER
Des Plaines, IL
- Evaluation of CMU masonry cracking

HARMON COVE TOWERS
Secaucus, NJ
- Investigation of water leakage problems at high rise brick masonry building

HAROLD WASHINGTON PUBLIC LIBRARY
Chicago, IL
- Brick masonry and stone repairs

HILLCREST TOWERS SENIOR CENTER
Fayetteville, AR
- Masonry investigation

HOLY NAME CATHEDRAL
Chicago, IL
- Masonry modifications

HOTEL CHISCA
Memphis, TN
- Condition survey and repair design for historic masonry building

HUNTINGTON HOTEL
San Francisco, CA
- Masonry repairs

HUNTSVILLE PRISON
Huntsville, AL
- Masonry wall evaluation

WJE

EXPERIENCE LIST

Masonry Projects

JESSE BROWN VA MEDICAL CENTER BUILDING
Chicago, IL
- Investigate masonry and concrete cracking

KING COUNTY COURTHOUSE
Seattle, WA
- Masonry cladding rehabilitation documents

LAKE POINT TOWER
Chicago, IL
- Masonry repairs to the base building

MANHATTANVILLE BUS DEPOT
New York, NY
- Investigation of masonry facade

MEDICAL CENTER OF THE ROCKIES
Loveland, CO
- Masonry investigation at curtain wall perimeter

MINNESOTA POWER - BOSWELL ENERGY CENTER
Cohasset, MN
- Laboratory studies of masonry cores

NORFOLK STATE UNIVERSITY
Norfolk, VA
- Investigation of displaced brick masonry

OHIO STATE UNIVERSITY MATH TOWER
Columbus, OH
- Consulting for repair design of distressed masonry facades

OLD SOUTH CHURCH
Boston, MA
- Masonry facade restoration and construction period services

ORTHOPEDIC ASSOCIATES
Flower Mound, TX
- Investigation of efflorescence on brick masonry facade and litigation support

Q CENTER BUILDING
St. Charles, IL
- Drawings for sealant and masonry repairs for Building 01, Building B and Fox River Ballroom

ROBERT A. YOUNG FEDERAL BUILDING
St. Louis, MO
- Envelope design phase

RUPERT, FRANKLIN & LINCOLN ELEMENTARY SCHOOLS
Pottstown, PA
- Investigation of exterior masonry, flashing, and roofing

SALVATION ARMY RAILTON
St. Louis, MO
- Masonry facade stabilization

SPELMAN COLLEGE, SISTERS CHAPEL
Atlanta, GA
- Masonry and plaster evaluation

SWEDISH HEALTH - CHERRY HILL EAST TOWER
Seattle, WA
- Facade and masonry repair design services

TEXAS TECH UNIVERSITY
Lubbock, TX
- Architectural building masonry distress and leakage

TRIAD CENTER
Salt Lake City, UT
- Masonry distress and plaza leakage investigation and repair

UNIVERSITY OF CONNECTICUT
Storrs, CT
- South campus masonry repairs for Wilson, Rosebrooks, Snow Halls

UNIVERSITY OF MICHIGAN EAST HALL, BUILDING # 166
Ann Arbor, MI
- Investigation and repair of masonry cornice

VIDA NUEVA PRESBYTERIAN CHURCH
Chicago, IL
- Investigation of masonry wall and bow string truss

WASHINGTON SQUARE BUILDING
Washington, D.C.
- Evaluation of exterior masonry walls

WASHINGTON UNIVERSITY IN ST. LOUIS - KNIGHT CENTER
St. Louis, MO
- Exterior masonry investigation

WESTERN CONNECTICUT STATE UNIVERSITY
Danbury, CT
- Higgins Hall roofing and masonry facade assessment

YALE UNIVERSITY, DURFEE HALL
New Haven, CT
- Masonry investigation, repair, and rehabilitation services

WJE

EXPERIENCE LIST

National Park Service Projects

PENSACOLA LIGHTHOUSE
Pensacola, FL
- Condition assessment

ANDERSONVILLE NATIONAL HISTORIC SITE
Andersonville, FL
- Cultural Landscape Inventory

PERRY'S VICTORY AND INTERNATIONAL PEACE MEMORIAL
Put-in-Bay, OH
- Investigation, repair design, and construction documents

CAPE HATTERAS LIGHTHOUSE
Outer Banks, NC
- Historic Structures Report and structural assessment
- Preservation and instrumentation consulting for structural move

GATEWAY ARCH
St. Louis, MO
- Corrosion and materials conservation consulting for preservation
- Historic Structure Report

NICODEMUS NATIONAL HISTORIC SITE
- Historic Structures Report and preservation architecture and engineering services for stabilization of First Baptist Church

GOOD FELLOW YOUTH CAMP
Indiana Dunes National Lakeshore
- Historic Structures Report/Cultural Landscape Report and consulting services for environmental assessment

NOLAND HOUSE, HARRY S TRUMAN NATIONAL HISTORIC SITE
Independence, MO
- Historic Structure Report and stabilization design, construction documents, and construction phase services

RASPBERRY ISLAND LIGHTHOUSE, APOSTLE ISLANDS NATIONAL LAKESHORE
Bayfield, WI
- Historic Structure Report and restoration construction documents

UNION BUILDING
Keweenaw National Historical Park, MI
- Investigation and rehabilitation consulting

CAPE LOOKOUT LIGHTHOUSE, CAPE LOOKOUT NATIONAL SEASHORE
NC
- Cultural Landscape Report

RATTE-HOFFMAN HOUSE
Ste Genevieve, MO
- Condition assessment

GEORGE ROGERS CLARK MEMORIAL
Vincennes, IN
- Waterproofing consultation

LA FLESCHE PICOTTE HOSPITAL
Walthall, NE
- Condition assessment

PATEE HOUSE MUSEUM
St Joseph, MO
- Condition assessment

ISAAC MILES BARN, HERBERT HOOVER NATIONAL HISTORIC SITE
West Branch, IA
- Condition assessment and structural analysis

WEAVER HOUSE
Bloomfield, IA
- Condition assessment

SAN FRANCISCO MARITIME NATIONAL HISTORICAL PARK,
San Francisco, CA
- Rehabilitation of Amphitheater Buildings

ALAN BIBLE VISITOR CENTER
Lake Mead, NV
- LEED Silver Renovation of Visitor Center

JACK LONDON STATE HISTORIC PARK
Glen Ellen, CA
- Cultural Landscape Report and limited structural survey

GOLDEN GATE NATIONAL RECREATION AREA
San Francisco, CA
- Upgrade of infrastructure and emergency radio system

REQUA AREA DECONSTRUCTION AND SITE RESTORATION, REDWOOD NATIONAL AND STATE PARKS
CA
- Environmentally responsible demolition and restoration of natural landscape

EVERGLADES NATIONAL PARK
FL
- Cultural Landscape Inventory

NINETY SIX NATIONAL HISTORIC SITE
Ninety Six, SC
- Cultural Landscape Report

KENNESAW MOUNTAIN NATIONAL BATTLEFIELD
Marietta, GA
- Cultural Landscape Inventory

WJE

EXPERIENCE LIST

National Park Service Projects

CARLSBAD CAVERNS NATIONAL PARK
Carlsbad, NM
- Corrosion investigation of elevator framing

GOLDEN GATE NATIONAL RECREATION AREA
Marin, CA
- Seismic rehabilitation of eighteen building foundations at Fort Cronkhite

LOGAN CREEK BRIDGE
Glacier National Park, MT
- Structural investigation and repair recommendations

MESA VERDE NATIONAL PARK BUILDINGS 67 AND 68,
Mesa Verde National Park, CO
- Structural rehabilitation

VICKSBURG NATIONAL MILITARY PARK
Vicksburg, MS
- Cultural Landscape Report

PORTSMOUTH VILLAGE, CAPE LOOKOUT NATIONAL SEASHORE
NC
- Cultural Landscape Report

VOLCANO HOUSE, VOLCANOES NATIONAL PARK
HI
- Investigation, structural analysis, and design development for seismic upgrade

MOLOKAI LIGHTHOUSE, KALAUPAPA PENINSULA
Molokai, HI
- Structural assessment

WAWONA HOTEL
Yosemite National Park, CA
- Seismic and structural condition assessment and upgrade design

ALCATRAZ GUARD HOUSE AND CELL HOUSE
Alcatraz Island, CA
- Investigation, seismic upgrade, and repair

MANZANAR MESS HALL
Independence, CA
- Rehabilitation

VARIOUS BUILDINGS
Grand Teton National Park, WY
- Structural and seismic evaluation

STONES RIVER NATIONAL BATTLEFIELD
Murfreesboro, TN
- Cultural Landscape Report

VARIOUS BUILDINGS, KLONDIKE NATIONAL HISTORIC PARK
Skagway, AK
- Structural and seismic evaluation

PARK MUSEUM
Yosemite National Park, CA
- Seismic evaluation

PARADISE INN AND ANNEX
Mt. Rainier National Park, WA
- Peer Review of structural/seismic rehabilitation

BATTERY SPENCER, GOLDEN GATE NATIONAL RECREATION AREA
San Francisco, CA
- Investigation and repair recommendations

PIGTAIL BRIDGE, WIND CAVES NATIONAL PARK
SD
- Review of repair options for historic bridge

ALCATRAZ OFFICERS CLUB
Alcatraz Island, CA
- Stabilization design of ruins

RIDGE BATTERY POWERHOUSE
Fort Baker, Marin County, CA
- Structural engineering services

DINOSAUR NATIONAL MONUMENT
Dinosaur, CO
- Structural evaluation

PARK HEADQUARTERS, COW CREEK ADOBE
Death Valley National Park, CA
- Seismic upgrade

YOSEMITE RANGERS' CLUB
Yosemite National Park, CA
- Seismic upgrade

FORT MASON BUILDING 201, GOLDEN GATE NATIONAL PARK
San Francisco, CA
- Assessment and rehabilitation recommendations

FORT MASON TUNNEL, GOLDEN GATE NATIONAL PARK
San Francisco, CA
- Seismic evaluation

ASH MOUNTAIN WATER TANKS
Sequoia-Kings Canyon National Park, CA
- Geotechnical investigation

WJE

EXPERIENCE LIST

National Park Service Projects

ADMINISTRATIVE AND MAINTENANCE FACILITIES, ST. JOSEPH HALL
Salem, MA
- Seismic rehabilitation

DRAKESBAD GUEST RANCH
Lassen National Park, CA
- Seismic and structural evaluation services

UNION BUILDING
Keweenaw National Historical Park, Calumet, MI
- Roof restoration

PENNSYLVANIA STATE MEMORIAL
Gettysburg, PA
- Historic Structure Report

JEFFERSON DAVIS MONUMENT
Fairview, KY
- Investigation and concrete restoration

THOMAS EDISON NATIONAL HISTORIC SITE
Edison, NJ
- Historic concrete consulting

FRANKLIN DELANO ROOSEVELT MEMORIAL
Washington, D.C.
- Technical consulting on stone and waterproofing; design review and construction phase consulting

HOT SPRINGS BATHHOUSES
Little Rock, AR
- Condition assessment and repair recommendations

SECTION 00412: RFQ/REQUEST FOR PRICE PROPOSAL FORM

GENERAL

PROPOSAL INSTRUCTIONS: Submit **FOUR SIGNED COPIES OF THIS POST RFQ REQUEST FOR PRICE PROPOSAL FORM** and associated documents provided in the Document in strict compliance with the REQUEST FOR PRICE PROPOSAL. Fill in all blanks; if not providing a price proposal on a specific package, enter "No Price Proposal". The City of Bridgeport reserves the right to reject incomplete bid forms.

PRICE PROPOSAL FROM:

NAME: Wiss, Janney, Elstner Associates, Inc.

STREET: 2 Trap Falls Rd.; Suite 502

CITY/STATE: Shelton, CT 06484

In signing this PRICE PROPOSAL, I agree that I have received all of the Bid Documents entitled dated in the Request for Proposal and any information provided therein after and dated as follows:

Addendum No.: 1 Dated: March 1, 2019

Addendum No.: 2 Dated: March 8, 2019

Addendum No.: _____ Dated: _____

Addendum No.: _____ Dated: _____

I have included the provisions of the above Documents and Addenda in my bid proposal. I have received and reviewed the RFQ/RFP Documents entitled "PERRY MEMORIAL ARCH STUDY & ASSESSEMENT", Bridgeport, CT, including the contract document with attached City of Bridgeport (City) Standard Terms and Conditions. I have also examined the project site.

	FIRM NAME: Wiss, Janney, Elstner Associates, Inc.	
TASK	**Description**	**Total Bid Price**
1	SURVEY CONDITIONS ASSESSMENT & RECOMMENDATIONS INCLUDING COST ESTIMATE	$22,500
2	TESTING – ANALYSIS –STRUCTURAL STUDY	$19,750
3	CONSTRUCTION BID CONTRACT DOCUMENTS, PERMITTING, SCOPE OF WORK, PLANS & DRAWINGS	$51,000
4	CONSTRUCTION ADMINISTRATION	$120,000
5	POST CONSTRUCTION REVIEW & CLOSEOUT, DOCUMENTATION OF MEANS & METHODS AND RESTORATION PERFORMED	$7,250
	CUMULATIVE TOTAL LUMP SUM:	$220,500

TASK 1, 2 , 3, 4, 5 BID:
I will furnish all services necessary to perform the work required for the Base Price Proposal for Tasks 1, 2, 3, 4, 5 in accordance with the documents and will take full payment as the Not-To-Exceed price of:
Two hundred twenty thousand five hundred Dollars ($220,500)
(BIDDER: Fill in the amount in words and numbers. In cases of conflicts between words and numbers, words shall control.)

Please note here if you are applying for the award of (5) Additional points for Minority and Women-Owned Business Enterprises Joint Venture:

☐ **YES** **MBE/WBE NAME:**_____

MBE/WBE ADDRESS:_____

☒ **NO JOINT VENTURE**

In submitting this price proposal, I agree as follows:

1. To hold open my bid for 180 days after bid opening.

2. To enter into and execute a contract, if awarded on the basis of this bid, according to the Agreement provided as part of this Request for Proposal.

3. To accomplish the work in accordance with the contract documents.

4. To begin work within five (5) calendar days of receipt of Notice to Proceed.

5. To substantially complete the Work within the Contract Time.

By submission of this price proposal, each proposer and each person signing on behalf of any Proposer certifies, and in case of a joint bid, each party thereto certifies, as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

1. The price in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Proposer or with any competitor.

2. Unless otherwise required by law the prices which have been quoted in this bid have not been knowingly disclosed by the Proposer and will not knowingly be disclosed by the Proposer prior to opening, directly or indirectly, to any other Proposer or to any competitor; and

3. No attempt has been made or will be made by the Proposer to induce any other person, partnership, or corporation to submit or not submit a bid for the purpose of restricting competition.

AFFIDAVIT WHERE BIDDER IS AN INDIVIDUAL:

STATE OF CONNECTICUT, COUNTY OF _____ ss:

_____ being duly sworn says:
I am the person described in and who executed the foregoing bid, and the several matters therein stated are in all respects true and correct.

_____
(Signature of Person Who Signed the Bid)

Subscribed and sworn to before me this

_____ day of _____, 20___.

_____ My Commission Expires:
Notary Public

CONTINUED ON NEXT PAGE

AFFIDAVIT WHERE BIDDER IS A PARTNERSHIP:

STATE OF CONNECTICUT, COUNTY OF _____ ss:

_____ being duly sworn says:

I am a member of _____ the firm described in and which executed the foregoing bid. I subscribed the name of the firm thereto and on behalf of the firm, and the several matters therein stated are in all respects true and correct.

_____

(Signature of Partner Who Signed the Bid)

Subscribed and sworn to before me this

_____ day of _____, 20___.

_____

Notary Public

My Commission Expires:

CONTINUED ON NEXT PAGE

AFFIDAVIT WHERE CONTRACTOR IS A CORPORATION:

STATE OF CONNECTICUT, COUNTY OF New Haven ss:

Joseph Bulgarelli being duly sworn says:

I am the Senior Associate of the above named corporation whose name is subscribed to and which executed the foregoing bid. I reside at 24 Ridgewood Ave; North Haven, CT I have knowledge of several matters therein stated, and they are in all respects true and correct.

(Signature of Corporate Officer Who Signed the Bid)

Subscribed and sworn to before me this

27th day of March, 2019.

Notary Public

Cheryl A Bunosso
Notary Public, State of Connecticut
My Commission Expires May 31, 2022

My Commission Expires:

END OF SECTION

WJE | ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

Wiss, Janney, Elstner Associates, Inc.
2 Trap Falls Road, Suite 502
Shelton, Connecticut 06484
203.944.9424 tel | 203.944.6997 fax
www.wje.com

Via E-mail

EXHIBIT C

July 31, 2019 (Revised August 19, 2019)

Mr. Steve Hladun
Special Projects Coordinator
City of Bridgeport
999 Broad Street, 2nd Floor
Bridgeport, Connecticut 06604

Re: Perry Memorial Arch - Project Schedule
WJE No. 2019.1111.0

Dear Mr. Hladun:

Per our prior email and phone correspondence, below is our proposed schedule for the Perry Memorial Arch condition assessment and restoration project. As requested, this schedule is based upon Wiss, Janney, Elstner Associates, Inc. (WJE) receiving an executed contracted on, or before, November 1, 2019. Changes and modifications to the scope of services and schedule described below will be mutually agreed upon by, and to the reasonable satisfaction of, WJE and the City of Bridgeport. Professional services provided by WJE as part of this project will be consistent with the usual Standard of Care for professional engineers on projects of this type.

- 11/1/2019 - 12/16/2019
  - WJE will perform a visual assessment of the arch structure and its components, including; stone veneer, underlying masonry structure where visible from the interior, roofing/waterproofing components, and architectural masonry elements. The structure will be observed with binoculars and telephoto equipment as well as representative close-up, hands-on observations via an aerial lift. The visual assessment will identify and quantify readily visible localized failures such as cracking, spalling, or other deterioration, which will be documented with annotated drawings and photographs. In addition to the conditions identified in the visual assessment, the close-up survey would also provide information on hidden delaminations which are not readily visible on the surface. The intent of this assessment is to identify items requiring repair, restoration, or stabilization.
  - ***Deliverable:*** Recommendations for emergency repairs and/or temporary stabilization (if necessary)
- 12/16/2019
  - ***Deliverable:*** WJE issues preliminary recommendations report and initial opinion of cost
  - Completion of WJE Proposal Task 1
- 12/17/2019 - 01/15/2020
  - Based on our findings with our initial assessment (Task 1), WJE will perform additional testing and analysis in the form of investigative probe openings, material sampling and laboratory testing, and structural calculations to further assess the condition of the structure and its existing materials. This testing and analysis is intended to further understand the existing structure and materials, and

to help inform our construction documents in the implementation of an appropriate and historically sensitive repair strategy.

- ***Probe investigation:*** WJE will select several probe locations to be opened by a contractor for investigation. The location of these openings will be selected during our initial visual survey, and will likely include openings to expose various concealed structural elements or architectural details and the removal of materials or assemblies for laboratory testing. At this time we assume that approximately four (4) probes will be opened during our investigation.
- ***Material sampling/Laboratory Testing:*** Material specimens extracted from the building during our probe investigation will be sent to WJE's Janney Technical Center for laboratory testing. The microscopic, chemical, and physical testing of the masonry will be used to identify material and assembly properties which is beneficial for the restoration work.
- ***Meeting:*** Review preliminary recommendations and initial opinion of cost with City of Bridgeport to develop restoration plan and direction for construction documents.
- Completion of WJE Proposal Task 2

- 1/15/2020 - 3/17/2020
  - ***Structural Analysis:*** Using the information gathered during our condition survey and probe investigation, we will conduct a structural analysis of select structural elements to determine the estimated capacity of the existing structure at the observed locations. Our analysis will focus on critical elements, and will take into account the level of deterioration that was observed during our survey. The analysis will inform an assessment of the overall condition and stability of the existing structural systems, as well as potential repairs or retrofits that may be necessary to stabilize and strengthen the arch.
  - ***Construction Documents:*** Upon completion of Tasks 1 and 2, WJE will prepare Construction Documents to implement our recommended scope of repairs. These documents will include plan drawings, elevations, necessary repair details, relevant technical specifications, and a bid form. We will also incorporate front end specifications/documents into the project manual as they are provided to us by the City Construction Management Services Division. These documents will be sufficient for soliciting bids from qualified contractors and obtaining necessary permits for construction.
  - ***Meeting:*** Review progress set of drawings (approximately 75% completion) with City of Bridgeport to confirm scope of work and restoration recommendations
  - ***Deliverable:*** Completed set of Construction Documents
- 3/17/2020-4/1/2020
  - Prepare and review third party cost estimate
  - ***Deliverable:*** Construction cost estimate
  - Completion of WJE Proposal Task 3
- Dates TBD
  - Bid Period Services
- Dates TBD
  - Issue permit set of drawings/specifications
  - Construction administration services
  - Completion of WJE Proposal Task 4
- Dates TBD
  - Prepare as-builts and closeout documents
  - ***Deliverable:*** As-built drawing set
  - Completion of WJE Proposal Task 5

Thank you for the opportunity to work on this project and please do not hesitate to contact me should you have any questions or concerns.

Sincerely,

WISS, JANNEY, ELSTNER ASSOCIATES, INC.

Joseph Bukovec
Senior Associate

COMM. 149-18 Ref'd to Contracts Committee on 09/16/2019.

CITY OF BRIDGEPORT
OFFICE OF THE CITY ATTORNEY
999 Broad Street
Bridgeport, CT 06604-4328

CITY ATTORNEY
R. Christopher Meyer

DEPUTY CITY ATTORNEY
John P. Bohannon, Jr.

ASSOCIATE CITY ATTORNEYS
Michael C. Jankovsky
Richard G. Kascak, Jr.
Bruce L. Levin
John R. Mitola
Lawrence A. Ouellette, Jr.
Tyisha S. Toms
Lisa R. Trachtenburg

ASSISTANT CITY ATTORNEYS
Dina Scalo
Eroll V. Skyers
Tamara J. Titre

OF COUNSEL
Mark T. Anastasi
Russell D. Liskov
Ronald J. Pacacha

Telephone (203) 576-7647
Facsimile (203)576-8252

August 28, 2019

The Honorable City Council
Of the City of Bridgeport
City Hall
45 Lyon Terrace
Bridgeport, CT 06604

RECEIVED
CITY CLERK'S OFFICE
19 AUG 28 PM 4:07

Re: Proposed Bridgeport Micro-Grid, LLC / Clarification and Estoppel Agreement

Dear Council Members:

Enclosed are copies of the following documents:

1. August 16, 2019 correspondence from Atty. David Dobin of Cohen and Wolf, PC requesting the City to enter into a proposed Clarification and Estoppel Agreement with Bridgeport Micro-Grid, LLC ("BMG"); and

2. The proposed Clarification and Estoppel Agreement

As you are aware the City and BMG are party to a certain Bridgeport City Hall Microgrid Project Energy Services Agreement dated October 29, 2015, as amended (the "ESA").

The proposed Clarification and Estoppel Agreement is being submitted on behalf of the Public Facilities Department <u>FOR REFERRAL TO THE COMMITTEE ON CONTRACTS</u> at the Tuesday, September 3, 2019 City Council meeting. Thank you.

Very truly yours,

Mark T. Anastasi, Esq.

Cc: Mayor Joseph P. Ganim
Daniel Shamas, Chief of Staff
Lydia Martinez, City Clerk
Francis Ortiz, Asst. City Clerk
John Ricci, Dir. Public Facilities
Nick Masciangelo, Dir. Const. Mgmt. Ser.
R. Christopher Meyer, City Attorney
David Dobin, Esq., Cohen and Wolf PC


United States • CT • Fairfield Co. • Stratford
521 ft
412 ft
77 ft
387 ft
144 ft
359 ft
133 ft
325 ft
299 ft
196 ft
50 feet
20 m
© 2018 HERE

COHEN and WOLF P.C.
ATTORNEYS AT LAW

DAVID DOBIN

Please Reply To Bridgeport
Writer's Direct Dial: (203) 337-4120
E-Mail: ddobin@cohenandwolf.com

August 16, 2019

*** ***VIA EMAIL AND HAND DELIVERY***

Mark T. Anastasi, City Attorney
Office of the City Attorney
999 Broad Street, 2nd Floor
Bridgeport, CT 06604
Mark.Anastasi@Bridgeportct.gov

RE: Bridgeport Micro-Grid, LLC
Clarification and Estoppel Agreement

Dear Attorney Anastasi:

This law firm represents Bridgeport Micro-Grid, LLC ("BMG"). BMG and the City of Bridgeport ("City") are parties to a certain Bridgeport City Hall Microgrid Project Energy Services Agreement dated October 29, 2015, as amended (the "ESA").

BMG is currently in the process of negotiating a sale of all or substantially all of its ownership intrerests to AEP OnSite Partners, LLC ("AEP"). Pursuant to Section 16.1 of the ESA, the City's prior written consent is not required in order to complete this transfer. In order to facilitate the transaction, however, AEP is requesting that the City execute a Clarification and Estoppel Agreement, a copy of which has been provided to you and is enclosed.

At our meeting on August 12, you indicated that the Clarification and Estoppel Agreement would be submitted to City Council on September 3, with the goals of having the Committee on Contracts review the agreement at its meeting on September 10 and then obtaining final approval at the City Council's meeting on September 16.

This would be greatly appreciated as we are hoping to close the transaction with AEP immediately after City Council approval of the Clarification and Estoppel Agreement.

Therefore, on behalf of BMG, I am respectfully requesting that the City execute the Clarification and Estoppel Agreement or provide the City's response with any requested changes.

Sincerely,

David Dobin, Esq.

CC: Matthew C. Susman, Esq.

CLARIFICATION AND ESTOPPEL AGREEMENT

This CLARIFICATION AND ESTOPPEL AGREEMENT, dated as of July 1, 2019 (this "Agreement") and effective as of the Closing Date (as defined below), is made by and between Bridgeport Microgrid, LLC, a Connecticut limited liability company ("Provider"), the City of Bridgeport, a Connecticut municipality ("City"), and, for the purpose of Section 2 only, is for the benefit of AEP OnSite Partners, LLC, a Delaware limited liability company ("OnSite").

RECITALS

A. Provider and City entered into that certain Energy Services Agreement, dated as of October 29, 2015 (the "Energy Services Agreement"), as amended by (i) that certain First Amendment to Bridgeport City Hall Microgrid Project Energy Services Agreement, dated as of November 12, 2015 (the "First Amendment"), (ii) that certain Second Amendment to Bridgeport City Hall Microgrid Project Energy Services Agreement, dated as of July 8, 2016 (the "Second Amendment"), and (iii) that certain Letter Addendum to Energy Services Agreement, dated as of April 11, 2018 (the "Third Amendment", together with the Energy Services Agreement, First Amendment, and Second Amendment, the "ESA") for the purpose of engaging Provider to design, install, operate and maintain the MicroGrid System (as defined in the ESA).

B. Pursuant to a Membership Interest Purchase Agreement (the "Purchase Agreement"), OnSite will acquire 100% of the membership interests of Provider upon the occurrence of a closing under the Purchase Agreement (the "Closing" and the date of such Closing, the "Closing Date").

C. City is providing the certifications under Section 2 as a material inducement to OnSite entering into and Closing under the Purchase Agreement.

AGREEMENT

1. Clarifications to ESA. City and Provider agree that the ESA is hereby clarified as follows:

   a. Section 1.1 shall include the addition of the following definitions:

      "*Minimum Power Guarantee Test*" has the meaning set forth in Section 9.2(g).

   b. Section 2.1 is augmented to add an updated Exhibit A- Bridgeport Microgrid Equipment Table attached hereto as Exhibit B.

   c. Section 3.11 is clarified by adding the following phrase at the end of the subsection: "(As provided in this Section and for the avoidance of doubt, City acknowledges and agrees that City is responsible for any "Ongoing Costs" as noted in Section 5.4 of that certain Interconnection Agreement, dated as of December 22, 2017, by and between The United Illuminating Company, City and Provider. In the event Provider is billed for any Ongoing Costs, Provider shall pay such Ongoing Costs and City agrees to reimburse Provider within thirty (30) days of receipt of an invoice for such Ongoing Costs paid by Provider.)"

d. Section 4.2 is clarified by adding the phrase "(other than mounting pads or other support structures and ordinary wear and tear) as already provided in Section 14.1 (d)" to the end of the following sentence "restore the MicroGrid Premises to its original condition"

e. Section 7.1 is clarified by adding the phrase "and, for the avoidance of doubt, during any Force Majeure Event and/or during any curtailment event as described in Section 5.2(c)," following the phrase "Except for scheduled MicroGrid System outages,"

f. Section 9.1 is clarified by adding the following as a new subsection (h):

"In the event such report is not otherwise publicly available, at the Provider's request City agrees to provide within 120 days following the end of each fiscal year, a copy of City's audited annual report for such fiscal year. Statements shall be for the most recent accounting period and prepared in accordance with generally accepted accounting principles.

g. Section 9.2(g) is clarified by adding the following phrase at the end of Section 9.2(g):

"Within sixty (60) business days at the end of each calendar year, the Parties shall meet to review the actual MicroGrid System production in the preceding calendar year against the Minimum Power Guarantee (the "Minimum Power Guarantee Test").

If Provider fails the Minimum Power Guarantee Test for any given year (actual production in the preceding year is below the Minimum Power Guarantee), City shall furnish to the Provider copies of the bills from the Utility that reflect the additional electricity purchased during the applicable shortfall period(s). The bills from the Utility will be used by the Provider to estimate the City's total average electricity cost on a $ per kWh basis that will be used to calculate the liquidated damages due to City pursuant to the second sentence of this subsection."

h. Article 11 is clarified by adding the following as a new Section 11.3:

"Service Contract. The Parties intend that this Agreement be treated as a "service contract" within the meaning of Section 7701(e) of the Internal Revenue Code."

i. Effective as of the Closing Date, Section 17.1 is revised to replace the notice information for the Provider in all instances in its entirety with the following:

If to Provider:
Bridgeport Microgrid, LLC
c/o AEP OnSite Partners, LLC
303 Marconi Boulevard, Suite 400
Columbus, OH 43215

Attention: Joel H. Jansen

Copy to:
American Electric Power Service Corporation
1 Riverside Plaza, 29th Floor
Columbus, OH 43215
Attention: Brian C. Begg, Esq.

l. Section 20.1 (b) is clarified by adding the following sentence at the end of Section 20.1 (b):

> "The claims-made policy form shall provide coverage for the duration of the Term and shall continue until the Connecticut statute of limitations period applicable to potential claims arising hereunder has expired. "

m. Section 20.02 is clarified by deleting the final sentence in this Section 20.2 and replacing with the following: "The Provider will endeavor to have these deductibles, retentions, or other forms of cost sharing not exceed $10,000."

n. Section 20.3 is clarified by replacing the phrase "Evidence of the above insurance policies shall be provided on a continuous basis and on a standard ACORD form 25-S, providing less than thirty (30) days' notice of cancellation or material alteration" with the following: "Evidence of the above insurance policies shall be provided on a continuous basis and on a manuscript form, providing less than thirty (30) days' notice of cancellation or material alteration"

o. Section 22.13 is clarified by replacing "Notwithstanding any provisions in this Agreement to the contrary" with "As the Parties have previously agreed, prior to the Microgrid being placed in service,"

p. Exhibit F is augmented to add ", and Provider's expected return on investment" to the sentence stating "As such City will pay to Provider a termination fee which includes the Operation and Maintenance Contract Termination Fees, Debt Obligations of Provider and loss of Equity."

2. Estoppel. To induce OnSite to enter into the Purchase Agreement, City hereby certifies and agrees as of the Closing Date as follows:

a. ESA. The ESA (i) attached hereto as Exhibit A is a true, correct and complete copy thereof, (ii) was duly authorized, executed and delivered by City, (iii) is in full force and effect and is a valid and binding obligation of City, enforceable in accordance with its terms, (iv) except as provided in this Agreement, has not been amended or modified, and (v) constitutes the entire ESA.

b. No Claims. City has no claims against Provider under the ESA.

c. No Default. Neither City, nor to City's knowledge, Provider (i) is in breach of or default under the ESA, or (ii) anticipates to be in breach or default under the ESA.

d. Reliance. City acknowledges that OnSite is relying on the estoppel provisions of this Section 2.

e. Power and Authority. City has the requisite power and authority to execute and deliver this Agreement, and this Agreement has been duly and validly executed and delivered by City.

f. Performance. City knows of no reason why it cannot perform its obligations under the ESA.

3. Governing Law. This Agreement and the legal relations between the parties hereunder shall be governed by and construed in accordance with the laws of the State of Connecticut, without regard to principles of conflicts of laws that would direct the application of the laws of another jurisdiction.

4. Validity. The invalidity or unenforceability of any provision of this Agreement will not affect the validity or enforceability of any other provisions of this Agreement, each of which will remain in full force and effect. If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced by any law or public policy, all other terms and provisions of this Agreement will nevertheless remain in full force and effect for so long as the economic or legal substance of the transactions contemplated by this Agreement is not affected in any manner materially adverse to a party hereto.

[Signature Page Follows]

IN WITNESS WHEREOF, the undersigned have duly executed or caused this Agreement to be duly executed on the date first written above.

Bridgeport Microgrid, LLC, a Connecticut limited liability company

By: _____
Name: _____
Title: _____

City of Bridgeport, Connecticut, a Connecticut municipality

By: _____
Name: _____
Title: _____

Acknowledged by:

AEP OnSite Partners, LLC, a Delaware limited liability company

By: _____ BCB
Name: JOEL H. JANSEN
Title: COO

EXHIBIT A

ESA

BRIDGEPORT CITY HALL MICROGRID PROJECT

ENERGY SERVICES AGREEMENT

PREAMBLE:

This Energy Services Agreement is entered into as of 10/29, 2015 (the "Contract Date") between the City of Bridgeport, having an address of 45 Lyon Street, Bridgeport, Connecticut 06604 ("City"), and Bridgeport MicroGrid, LLC, having an address of c/o OR&L Construction, 2 Summit Place, Branford, Connecticut 06067 ("Provider", and together with the City, each, a "Party" and together the "Parties").

WITNESSETH:

WHEREAS, City desires to install and operate a MicroGrid System described in Exhibit B for generating and delivering electric power and thermal energy to buildings described in Exhibit A (the "Sites" and separately the "Electric Sites" and the "Thermal Sites" as designated in Exhibit A) for the purpose of providing electrical resiliency to the City through the generation and provisioning of electric power to the City Hall, Police Station and Senior Center and thermal energy to the City Hall, Police Station and the Former Eisenhower Center;

WHEREAS, the City selected Provider to assist the City in developing the MicroGrid System;

WHEREAS, the City has entered into an agreement with the State of Connecticut Department of Energy and Environmental Protection ("DEEP") for a grant to assist with funding the MicroGrid System;

WHEREAS, Provider shall design and install the MicroGrid System, operate and maintain a portion of the MicroGrid System and own a portion of the MicroGrid System as more fully set forth herein;

WHEREAS, the City will operate and maintain a portion of the MicroGrid System and own a portion of the MicroGrid System as more fully set forth herein;

WHEREAS, as part of the MicroGrid System, Provider shall own the three Natural Gas Generators, the Absorption Chiller and heat exchangers (as defined below and described in Exhibit B) and operate the Natural Gas Generators, Absorption Chiller and heat exchangers on behalf of the City to provide electric power and thermal energy to the Sites, as more fully set forth herein; and

WHEREAS, as part of the MicroGrid System, the City will own and operate a Standby Diesel Generator as defined below and described in Exhibit B for the purpose of generating and delivering standby electric power to the Sites.

NOW THEREFORE, in consideration of the mutual promises set forth below, and other good and valuable consideration, the Parties hereby agree as follows:

1. DEFINITIONS AND INTERPRETATION.

1.1 Definitions. In addition to other terms specifically defined elsewhere in this Agreement, where capitalized, the following words and phrases shall be defined as follows:

"*Absorption Chiller*" means the 200 ton Absorption Chiller described in Exhibit B.

"*Affiliate*" means, with respect to any Person, any other Person directly or indirectly controlling, controlled by or under common control with such first Person. For the purposes of this definition, "control" and its derivatives mean, with respect to any Person, the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities or otherwise. "Control" may be deemed to exist notwithstanding that a Person owns or holds, directly or indirectly, less than 50% of the beneficial equity interest in another Person.

"*Agreement*" means this Energy Services Agreement, including the Exhibits attached hereto and incorporated herein by reference.

"*Applicable Law*" means, with respect to any Person, any constitutional provision, law, statute, rule, regulation, ordinance, treaty, order, decree, judgment, decision, certificate, holding, injunction, registration, license, franchise, permit, authorization, guideline, Governmental Approval, consent or requirement of any Governmental Authority having jurisdiction over such Person or its property, enforceable at law or in equity, including the interpretation and administration thereof by such Governmental Authority.

"*Approvals*" has the meaning set forth in Section 9.2.

"*Arbitrator*" has the meaning set forth in Section 15.2.

"*Assignment*" has the meaning set forth in Section 16.

"*Business Day*" means any day other than Saturday, Sunday or any other day on which banking institutions in Connecticut are required or authorized by Applicable Law to be closed for business.

"*Capacity Fee*" has the meaning set forth in Section 8.1.

"*Capacity Payment*" has the meaning set forth in Section 8.1.

"City" has the meaning set forth in the preamble hereof.

"City Default" has the meaning set forth in Section 14.2.

"City Hall" means the City of Bridgeport City Hall located at 45 Lyon Street, Bridgeport, Connecticut 06604

"City Indemnified Parties" has the meaning set forth in Section 19.1.

"Completion Notice" has the meaning set forth in Section 3.15.

"Confidential Information" has the meaning set forth in Section 18.

"Construction Work" means the construction and installation of the MicroGrid System and the start-up, testing and acceptance (but not the operation and maintenance) thereof, performed by or for Provider on the MicroGrid Premises.

"Contract Date" has the meaning set forth in the preamble hereof.

"Contract Price" has the meaning set forth in Section 8.3.

"DEEP" means the Connecticut Department of Energy and Environmental Protection.

"DEEP Grant" means the grant from DEEP described in Section 1.3

"DEEP Grant Agreement" means the agreement between DEEP and the City attached hereto as Exhibit C.

"Default Rate" means a rate per annum equal to the lesser of (a) ten percent (10%) and (b) the maximum rate allowed by Applicable Law.

"Dispute" has the meaning set forth in Section 15.1.

"Early Termination Date" has the meaning set forth in Section 4.1.

"Electric Sites" has the meaning set forth in Exhibit A.

"Expiration Date" has the meaning set forth in Section 4.1.

"Force Majeure Event" has the meaning set forth in Section 11.01.

"Former Eisenhower Center" means the building located at 263 Golden Hill Street, Bridgeport, Connecticut.

"Fuel Fee" has the meaning set forth in Section 8.1.

"Governmental Approval" means any approval, consent, franchise, permit, certificate, resolution, concession, license, or authorization issued by or on behalf of any applicable Governmental Authority.

"Governmental Authority" means any federal, state, regional, county, town, city, or municipal government, whether domestic or foreign, or any department, agency, bureau, or other administrative, regulatory or judicial body of any such government.

"Indemnified Party" has the meaning set forth in Section 18.03(a).

"Indemnifying Party" has the meaning set forth in Section 18.03(a).

"Indemnified Persons" means the City Indemnified Parties or the Provider Indemnified Parties, as the context requires.

"*Lender*" has the meaning set forth in Section 16.3.

"*Liens*" has the meaning set forth in Section 9.1.

"*Losses*" means all losses, liabilities, claims, demands, suits, causes of action, judgments, awards, damages, cleanup and remedial obligations, interest, fines, fees, penalties, costs and expenses (including all attorneys' fees and other costs and expenses incurred in defending any such claims or other matters or in asserting or enforcing any indemnity obligation).

"*MicroGrid Premises*" means the location of MicroGrid System as described in Exhibit A including the cabling area interconnecting the MicroGrid System to the Sites.

"*MicroGrid System*" means the MicroGrid System described in Exhibit B and consists of the Natural Gas Generators, heat exchangers, Standby Diesel Generator, conduit, conductors (wires), transformers, inverters, switch gear, heat exchangers, pipe, interconnection infrastructure and other equipment that allows the Natural Gas Generators and heat exchangers to service the Sites and to send and receive electrical power to and from the Utility.

"Minimum Power Guarantee" has the meaning set forth in Section 9.2(g).

"Monitoring Equipment" has the meaning set forth in Section 3.16.

"*Monthly Invoice Date*" means the first Business Day of each of calendar month.

"*Monthly Period*" means each calendar month during the Term.

"*Natural Gas Generators*" means the three natural gas generators described in Exhibit B.

"*Notice of Claim*" has the meaning set forth in Section 19.3.

"*Operations and Maintenance Agreement*" has the meaning set forth in Section 3.11.

"*Operations Date*" has the meaning set forth in Section 3.15.

"*Operations Demarcation Point*" means the point(s) in the MicroGrid System where the responsibility for maintenance and repair of the MicroGrid System transfers from the Provider to the City. The Operations Demarcation Point will be designated pursuant to Section 5.10.

"*Ownership Demarcation Point*" means the point(s) in the MicroGrid System where the ownership of the MicroGrid System transfers from the Provider to the City. The Ownership Demarcation Point will be designated pursuant to Section 2.1.

"*Party*" or "*Parties*" has the meaning set forth in the preamble hereof.

"*Person*" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture, firm, or other entity, or a Governmental Authority.

"*Police Station*" means the City of Bridgeport Police Station located at 300 Congress Street, Bridgeport, Connecticut

"*Power*" means the supply of electrical energy output from the Natural Gas Generators.

"*Power Payment*" has the meaning set forth in Section 8.1.

"*Provider*" has the meaning set forth in the preamble hereof.

"*Provider Default*" has the meaning set forth in Section 14.1.

"*Provider Indemnified Parties*" has the meaning set forth in Section 19.2.

"*Renewable Energy Benefits*" has the meaning set forth in Section 6.3.

"*Representative*" has the meaning set forth in Section 18.1.

"Senior Center" means the New Eisenhower Senior Center located at 307 Golden Hill Street, Bridgeport, Connecticut

"Service Charge" has the meaning set forth in Section 8.1.

"Standby Diesel Generator" means the diesel generator described in Exhibit B.

"Sites" means the City Hall, Police Station and Senior Center.

"*System Acceptance Testing*" has the meaning set forth in Section 3.15.

"*System Installation Period*" means the period from (and including) the date that Provider (or its subcontractors) commences physical installation of the MicroGrid System on the Sites to (but excluding) the Operations Date.

"*System Operations*" means the operation, maintenance and repair of portions of the MicroGrid System performed by or for Provider during the Term, as more particularly described in Section 5.1.

"*System Test Requirements*" has the meaning set forth in Section 3.15.

"*Term*" has the meaning set forth in Section 4.1.

"Thermal Credit" has the meaning set forth in Section 8.2

"Thermal Sites" has the meaning set forth in Exhibit A.

"Thermal Volume" has the meaning set forth in Section 8.2

"Utility" means the local electric distribution company that provides electric transmission and distribution services to City at the Electric Sites, in this case the Utility is United Illuminating.

1.2 Interpretation. The captions or headings in this Agreement are strictly for convenience and shall not be considered in interpreting this Agreement. Words in this Agreement that import the singular connotation shall be interpreted as plural, and words that import the plural connotation shall be interpreted as singular, as the identity of the parties or objects referred to may require. The words "include", "includes", and "including" mean include, includes, and including "without limitation". The words "hereof", "herein", and "hereunder" and words of similar import refer to this Agreement as a whole and not to any particular provision of this Agreement. Except as the context otherwise indicates, all references to "Exhibits", "Articles" and "Sections" refer to Exhibits, Articles and Sections of this Agreement.

1.3 State of Connecticut Grant Agreement. The parties acknowledge that the City is receiving a grant from DEEP for portions of the MicroGrid System and such grant requires that certain terms and conditions be incorporated into this Agreement which are set forth in the DEEP Grant Agreement. The parties agree that the terms and conditions of the DEEP Grant Agreement are hereby incorporated herein and to the extent such terms conflict with the terms herein, the terms of the DEEP Grant Agreement shall control. The DEEP Grant Agreement is attached hereto as Exhibit C.

2. MICROGRID OVERVIEW

2.1 Ownership. The City shall own all of the components of the MicroGrid System except for the Natural Gas Generators, the Absorption Chiller and heat exchangers. Provider shall own the Natural Gas Generators, the Absorption Chiller and heat exchangers. The Ownership Demarcation Point will be designated on the Site Plan attached to Exhibit A.

2.2 Design, Construction, Installation and Testing. Provider, at its cost and expense, shall be responsible for the design, construction, installation and System Acceptance Testing of the MicroGrid System as more fully set forth herein.

2.3 Operation and Maintenance. The Provider, at its expense, shall operate and maintain the MicroGrid System from the Natural Gas Generators to the Operations Demarcation Point which includes the Absorption Chiller and the heat exchangers.

2.4 Procurement of Equipment. The Provider and the City shall coordinate the procurement of all equipment to be installed into the MicroGrid System. Provider shall not procure any equipment without the prior consent of the City. Further, Provider and the City shall determine for each equipment item or group of equipment items whether the Provider or the City shall be responsible for the costs of the equipment. The City shall only be responsible to pay for the costs of equipment allowed to be funded under the DEEP Grant. Provider shall be responsible for the costs of all equipment not funded under the DEEP Grant.

2.5 Procurement of Fuel. The City shall procure natural gas for the Natural Gas Generators in the manner set forth herein.

2.6 Payments. Provider shall be paid a monthly Capacity Payment as set forth herein. The Capacity Payment is intended for Provider to recover its costs of the design, construction, installation and Acceptance Testing of the MicroGrid System and for Provider to recover its cost of procuring the equipment for the MicroGrid System not paid for by the DEEP Grant. Provider shall also be paid a Maintenance Fee for operating and maintaining the MicroGrid System on Provider's side of the Operations Demarcation Point.

For costs that are paid for by the DEEP Grant, Provider shall pay such costs and then City shall reimburse Provider upon City's receipt of funds from DEEP under the DEEP Grant.

2.7 The Parties acknowledge that other costs may be incurred for the installation of the MicroGrid System such as permitting fees. The Provider shall be responsible for such other costs except as such costs may be paid from the DEEP Grant.

3. DESIGN, CONSTRUCTION, INSTALLATION AND TESTING OF SYSTEM.

3.1 Prior to execution of this Agreement, City has given Provider access to the MicroGrid Premises and the Sites to verify field conditions, and City has made appropriate staff available to answer questions and provide information required by Provider to support the detailed design process. Based on the information provided by City to Provider and Provider's inspection and verification of field conditions at the Sites, Provider has made an independent determination that the MicroGrid Premises and Sites are appropriate and adequate for the installation and operation of the MicroGrid System. City makes no representation or warranty that the information provided to Provider is sufficient for Provider to determine whether the MicroGrid Premises or Sites are adequate to install and operate the MicroGrid System. With respect to the information provided to Provider, City limits any and all representations and warranties to the fact that the information provided to Provider is the most up-to-date and accurate information in City's possession to the best of City's knowledge and belief.

3.2 Prior to commencing the System Installation Period, Provider shall provide to City:

(a) an analysis from a Professional Engineer stating that the design of the MicroGrid System will not adversely affect the MicroGrid Premises, the Sites or any existing buildings on the Sites;

(b) an analysis from a Professional Engineer stating that the land and soils existing at the MicroGrid Premises are adequate to support the MicroGrid System; and

(c) verification that Provider has completed all Call Before You Dig requirements of any Governmental Authority.

3.3 Prior to commencing the System Installation Period, Provider will provide City with a proposed estimated installation schedule and an estimated Operations Date. City shall have the opportunity to review and approve the proposed installation schedule and the Operations Date, provided however, that such approval shall only be withheld by City upon a reasonable showing that the City will be materially harmed by such installation schedule and Operations Date. City shall have three (3) business days to review and comment on the installation schedule

and Operations Date or the proposed installation schedule and Operations Date will be considered approved. Provider will notify City of any material changes to the proposed estimated installation schedule and any revisions to the estimated Operations Date during the System Installation Period. City's approval of any proposed installation schedule and Operations Date by Provider under this Section 3.3 shall not be deemed a waiver by City of any installation or Operations Date deadlines set forth elsewhere in this Agreement.

3.4 Prior to execution of this Agreement, Provider and City have agreed to the minimum size (in kw) of the MicroGrid System being installed, the type and manufacturer of the Natural Gas Generators being installed, the type, manufacturer and capacity of the inverters (if required) being installed, the type and manufacturer of the Absorption Chiller and heat exchangers being installed, the specifications relating to System Acceptance Testing and the location of the MicroGrid System. The agreed upon MicroGrid System specifications shall be attached and incorporated into Exhibit B, as appropriate, and System Acceptance Test Requirements shall set forth in Exhibit D. The Provider shall include within Exhibit A a schematic drawing showing an aerial depiction of the MicroGrid System locations on the MicroGrid Premises, the Ownership Demarcation Point and the Operations Demarcation Point. Further, within Exhibit A, the Provider shall provide a drawing demonstrating the proposed method of electric interconnection of the MicroGrid System to the City Hall, Police Station and Senior Center, the thermal interconnection of the output from the Absorption Chiller to the City Hall and Police Station and the thermal interconnection of the output from the heat exchangers to the City Hall, Police Station and the Former Eisenhower Center. Provider shall not make any material change to the location of the MicroGrid System or the MicroGrid System requirements set forth in Exhibit A or Exhibit B, unless approved by City, whose approval shall not be unreasonably withheld. If Provider proposes a change to the MicroGrid System location or MicroGrid System requirements, City shall respond to reject or approve within three (3) days. Failure by City to respond within three (3) days will be deemed a City approval. The Parties acknowledge that any change to the MicroGrid System requirements or the MicroGrid Premises location for the MicroGrid System may require approval of the Utility.

3.5 Prior to commencing the System Installation Period, if Provider determines in its sole discretion that a pre-installation condition set forth in this Section cannot be satisfied, or that the MicroGrid System cannot be installed on the MicroGrid Premises because the land is inadequate, unavailable or inhospitable to support the MicroGrid System, the Sites electrical systems are inadequate to accept Power from the MicroGrid System, or architectural, environmental, archeological and other requirements are discovered that would add to the cost of the MicroGrid System, Provider will notify City that the MicroGrid System cannot be constructed as proposed, and this Agreement will terminate with neither Party having further obligations under this Agreement; provided however, that the Parties may agree to amend this Agreement to accommodate a revised, feasible

MicroGrid System in which case the Parties shall agree to a revised MicroGrid System design and execute an amendment to this Agreement.

3.6 Construction Work. City hereby grants to Provider access to and the right to use portions of the MicroGrid Premises upon which to locate the MicroGrid System solely for purposes of installing and maintaining the MicroGrid System and owning the Natural Gas Generators, the Absorption Chiller and heat exchangers. Provider will cause the MicroGrid System to be designed, engineered and installed substantially in accordance with the terms of this Agreement. Upon completion of the MicroGrid System installation, Provider shall provide City with an as-built engineered drawing of the MicroGrid System. The as-built drawing shall include the Ownership Demarcation Point and the Operations Demarcation Point.

3.7 During the System Installation Period, Provider shall use all reasonable commercial efforts to minimize any inconvenience and interference to City. Provider shall perform all installation work between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday in a manner that minimizes inconvenience to and interference with City and City's employees, invitees, agents and contractors and City's use of the Sites, to the extent commercially practical. Should Provider require installation work to be performed at some other time, Provider shall seek the approval of City, such approval not to be unreasonably withheld. Provider shall use all reasonable commercial efforts to minimize any interruptions or outages in utility services (including electricity) during the installation of the MicroGrid System and shall provide reasonable prior notice to City when Provider expects an interruption or outage in utility services. City shall have the right to monitor Provider's installation of the MicroGrid System, and City's engineers or consultants shall have the right to consult with Provider regarding Provider's installation methods and procedures.

3.8 Provider shall furnish directly, or through subcontractors or suppliers, all professional expertise, management, labor, materials, supplies, fixtures, technology, equipment, skills, tools and machinery, testing and supervision, for the installation of the MicroGrid System on the MicroGrid Premises.

(a) Provider may hire subcontractors by subcontracting the performance of any part or all of the services Provider is obligated to provide hereunder. All subcontractors so engaged by Provider shall be required by contract to have all permits, licenses, insurance and registrations required to perform the services subcontracted to them. Provider shall be responsible to City to ensure that all such subcontractors follow City access protocols, including sign-in, security and safety orientation. Provider shall be responsible to City for actual, direct damages caused by subcontractor's negligence. A subcontractor's action, inaction or breach of contract with Provider shall not be a valid excuse or defense to Provider's breach of this Agreement,

unless such subcontractor action, inaction or breach was caused by or constitutes a Force Majeure event.

(b) Provider shall provide City with (a) the identification of all subcontractors to be engaged by Provider, and (b) evidence that such subcontractors have obtained and will maintain insurance as required herein.

(c) City shall have the right to require the removal from the Sites of any subcontractor or the agents, employees or subcontractors of such subcontractor, who, in City's sole judgment, exhibit unsafe work practices, unacceptable quality of workmanship, or behavior inappropriate for the workplace.

(d) Provider and its subcontractors will take all reasonable and customary steps to ensure the safety of workers and visitors in accordance with all applicable laws. If City has a published safety program, then Provider shall cause the work to be carried out in accordance with such safety program, a copy of which shall be appended hereto as an additional exhibit prior to commencing the System Installation Period.

3.9 Provider shall have full responsibility for all aspects of the design and construction of the MicroGrid System in accordance with this Agreement.

3.10 The Provider and the City shall coordinate the procurement of all equipment to be installed into the MicroGrid System. Provider shall not procure any equipment without the prior consent of the City. The City shall only be responsible to pay for the costs of equipment allowed to be funded under the DEEP Grant. Provider shall be responsible for the costs of all equipment not funded under the DEEP Grant.

3.11 Provider shall be responsible for the interconnection of the MicroGrid System to the electrical system of each Electric Site. Provider, on behalf of the City, shall be responsible for the physical interconnection of the MicroGrid System to the Utility. Provider shall be responsible for the delivery of thermal energy from the Absorption Chiller and heat exchangers to the Thermal Sites and installing all necessary equipment at each Thermal Site to exchange thermal energy with the MicroGrid System. The interconnection switch gear and thermal infrastructure (including valves, meters, pipes, controls and other equipment) shall be maintained by Provider under a separate maintenance agreement entered into between the Provider and City as set forth in Exhibit E (the "Operation and Maintenance Agreement"). The protection relays and controls will not be included in the Operation and Maintenance Agreement. As part of the design of the MicroGrid System, Provider and City shall mutually agree to an Operations Demarcation Point(s). Provider shall at all times be responsible for the operation, maintenance and repairs of the equipment on its side of the Operations Demarcation Point(s) pursuant to the Operation and Maintenance Agreement.

City shall at times be responsible for the operation and maintenance of the equipment on its side of the Operations Demarcation Point(s).

3.12 During the System Installation Period and thereafter, Provider agrees and shall cause its Contractors to agree, as follows:

(a) To take reasonable measures to reduce or mitigate noise, dust, the spread of debris and installation materials;

(b) To remove all debris, extra materials, scaffolding, tools, machinery and other installation materials from the MicroGrid Premises and other work areas at the conclusion of the System Installation Period; and

(c) To use and dispose of any "hazardous materials" as defined in any applicable federal or state environmental laws brought to the MicroGrid Premises in connection with the services being performed hereunder in accordance with all applicable laws.

3.13 Permits and Other Approvals. Prior to commencing the MicroGrid System Installation Period, Provider, either in its own name or in the name of the City, shall apply for, pay for (except as agreed to by the City and paid for by the DEEP Grant), and obtain all necessary construction and other permits from all applicable Governmental Authorities including land use permits, environmental permits, regulatory approvals, building permits, and demolition and waste disposal permits. City shall cooperate with Provider in its undertaking to obtain necessary approvals from the Utility to provide electrical service to the MicroGrid System on behalf of the City. If the Utility fails to provide such electrical service, Provider may, at Provider's option, terminate this Agreement by written notice given to City. City shall use commercially reasonable efforts, at no material cost or expense to City (except as agreed to by the City and paid for by the DEEP Grant), to cooperate with Provider in its undertaking to obtain the necessary local Governmental Approvals. If any applicable Governmental Authority does not provide the necessary Governmental Approvals, Provider may, at the Provider's option, immediately terminate this Agreement upon written notice that such application for permit has not been accepted or such permit has been denied by written notice given to City. The failure of Provider to obtain any required Governmental Approval shall not constitute a Provider Default. Prior to filing an application with a Governmental Authority for a Governmental Approval, City shall be provided an opportunity to review and approve the filing, provided, however, that such approval shall only be withheld by the City upon a reasonable showing that the City will be materially harmed by such filing including that the current or planned use of the Sites by City will be materially affected. City shall respond to reject or approve within three (3) days. Failure to by City to respond within three (3) days will be deemed a City approval.

3.14 Provider shall provide City with all documentation under Provider's control that the Utility requires by its Tariff to demonstrate that the MicroGrid System complies with the requirements of the Utility's interconnection standards.

3.15 System Acceptance Testing.

(a) Provider shall utilize an independent third party technical expert to test that the MicroGrid System is properly installed and operating after completion of the Construction Work ("System Acceptance Testing"). Provider shall notify City not less than five (5) days prior to the anticipated date of System Acceptance Testing. The independent third party technical expert shall not be an equipment supplier or a subcontractor used by Provider during the design, installation, or construction of the MicroGrid System.

(b) If the results of such System Acceptance Testing indicate that the MicroGrid System is capable of generating electric energy and thermal energy (both hot and cold) (the "System Test Requirements") using the MicroGrid System's meters and instruments that have been installed to the electrical system at each of the Electric Sites and to the thermal systems of each of the Thermal Sites, then Provider shall send a written notice to that effect to City (a "Completion Notice") accompanied by a copy of the results of the System Acceptance Testing. The "Operations Date" shall be the Date of City's receipt of the Completion Notice. Provider shall use reasonable efforts to issue a Completion Notice on or before July 1, 2016.

(c) If Provider fails to deliver to City a Completion Notice on or before July 1, 2016, unless such delay is caused by Force Majeure or by City, City may, at its sole and absolute discretion, terminate this Agreement without having further obligations under this Agreement. Upon termination under this subsection, provider shall remove all material, equipment, personnel, and subcontractors from the MicroGrid Premises and restore the MicroGrid Premises to a condition commensurate with the condition of the MicroGrid Premises prior to the Contract Date. City may waive the Completion Notice deadline set forth herein only in a writing which is signed by City and which specifically references that City is waiving the Completion Notice deadline set forth in this subsection.

(d) During the System Installation Period, Provider may test the MicroGrid System, and, so long as Provider has properly installed all necessary electric connections to the electrical systems of the Electric Sites and all necessary thermal energy equipment at the Thermal Sites, City shall accept delivery of any Power or thermal energy resulting from such testing during the System Installation Period. There shall be no charge to City for Power or thermal energy delivered from the MicroGrid System during the System Installation Period.

3.16 Internet Connection. If requested by Provider, City hereby grants to Provider the right to connect the MicroGrid System monitoring equipment ("Monitoring

Equipment") to the necessary intranet and/or internet networks of City so that it is possible for Provider to remotely monitor the production by the MicroGrid System. City will provide Provider with a working Ethernet connection to an intranet and/or internet network, in the area of electrical equipment.

4. TERM AND TERMINATION.

4.1 Term. The Term shall commence on the Contract Date and shall continue for a period of twenty (20) years after the Operations Date (the "Term"), unless and until terminated earlier pursuant to the provisions of this Agreement. The date this Agreement terminates by reason of the expiration of the Term is hereinafter referred to as the "Expiration Date." Any other date on which this Agreement terminates in accordance with the terms hereof is hereinafter referred to as the "Early Termination Date." City, at its absolute and sole discretion, may extend the Term of this Agreement for an additional five (5) years subject to an agreement on the Power Payment as set forth in Section 8.1.

4.2 Agreement Expiration Procedure. Prior to ninety (90) days before any scheduled expiration or termination of this Agreement, Provider and City shall commence discussions regarding procedures, schedules and costs required of Provider to transfer title of the Natural Gas Generators, the Absorption Chiller and heat exchangers to City. City shall have the right, at its option, to either: (a) have Provider, at Provider's cost and expense, remove and dispose of the Natural Gas Generators, the Absorption Chiller and heat exchangers and restore the MicroGrid Premises to its original condition or (b) notify Provider that City is exercising an option to purchase ownership of the Natural Gas Generators, the Absorption Chiller and heat exchangers from the Provider at a fair market value, such fair market value to be determined by an independent appraisal expert who is mutually agreeable to both Parties. In addition, Provider agrees to cooperate with the City in the transfer of ownership of the Natural Gas Generators, the Absorption Chiller and heat exchangers, including the execution of any documents evidencing the transfer of ownership of the Natural Gas Generators, the Absorption Chiller and heat exchangers from Provider to City.

4.3 Except as otherwise provided herein allowing City to terminate this Agreement without penalty, City shall be allowed to terminate this Agreement before the Expiration Date by the making the payment specified in Exhibit F.

5. OPERATION OF THE SYSTEM.

5.1 Provider as Operator. On the Provider's side of the Operations Demarcation Point, the MicroGrid System will be operated and maintained by or for Provider at its sole cost and expense including the monitoring and maintenance of metering equipment used to determine the quantity of electricity produced by the MicroGrid System and the valves, meters, piping, controls and other equipment used to determine the quantity of thermal energy produced by the MicroGrid

System. Provider agrees that its operation and maintenance costs are included in the Power Payments. The Provider may retain a third party as its agent with sufficient operations experience and technical expertise in the maintenance of the MicroGrid System to conduct System Operations. "System Operations" means all actions, including monitoring and maintaining the MicroGrid System, necessary for Provider to fulfill its obligations under this Agreement City shall have no obligation for maintenance, repair, or replacement of the MicroGrid System on the Provider's side of the Operations Demarcation Point.

5.2 Malfunctions, Emergencies and Unscheduled Outages.

(a) City and Provider each shall use reasonable efforts to notify the other as soon as practically possible within twenty-four (24) hours following their discovery, of any material malfunction in the operation of the MicroGrid System. Provider and City shall each appoint personnel and establish procedures such that each Party may use reasonable efforts to provide notice of such conditions requiring Provider's repair or alteration at all times, twenty-four (24) hours per day, including weekends and holidays. Except as set forth in Section 5.2(c), Host shall not be required to make any Power Payments to Provider while a material malfunction in the operation of the MicroGrid System exists.

(b) Provider and City each shall each use reasonable efforts to notify the other Party upon the discovery of an emergency condition associated with the MicroGrid System. If an emergency condition exists on the Provider's side of the Operations Demarcation Point, Provider shall promptly dispatch the appropriate personnel immediately to perform the necessary repairs or corrective action in an expeditious and safe manner. For routine and emergency repairs on the Provider's side of the Operations Demarcation Point, Provider shall contact each person listed in Exhibit G.

(c) If, during the Term, renovation, repairs, or damage to the MicroGrid Premises occurs, for reasons other than:

(i) a Force Majeure,
(ii) renovations or alterations undertaken by Provider, or
(iii) the negligence of Provider or its employees or contractors or a breach by Provider of its obligations hereunder

and the same significantly reduces (a "curtailment") or eliminates the production or use of electricity from the MicroGrid System or results in an unscheduled outage of the MicroGrid System for more than three (3) consecutive days, then City shall not be in default under this Agreement if:

(i) City makes a good-faith effort to give as much notice as possible to Provider prior to MicroGrid System shutdown or

curtailment but no less than 30 days notice which shall include the anticipated duration of the shutdown and City's anticipated load during the duration of the shutdown;

(ii) City pays all costs and expenses incurred to de-install and re-install the MicroGrid System, if required for safety considerations or by City, during the temporary shutdown or curtailment period;

(iii) City pays Provider an amount equal to the applicable Capacity Fee that would have been paid during the period of the temporary shutdown or curtailment (calculated based on the historical production of electricity by the MicroGrid System); and

(iv) City acknowledges that the payments required pursuant to (c) above constitutes liquidated damages, and not penalties, payable in lieu of Provider's actual damages resulting from the temporary shut down or curtailment of the MicroGrid System. City further acknowledges that Provider's actual damages may be impractical and difficult to accurately ascertain, and in accordance with City's rights and obligations under this Agreement, the amounts payable pursuant to (c) above constitute fair and reasonable damages.

5.3 Metering.

(a) Maintenance and Testing. Provider shall install, maintain and/or replace, at Provider's expense, a utility grade kilowatt-hour (kWh) meter(s) that will accurately measure and report in real time the electrical energy usage from the MicroGrid individually at each of the City Hall, the Police Station and the Senior Center. Provider shall install, maintain and/or replace at Provider's expense, an industry standard thermal energy meter(s) that will accurately measure (in mmBTUs) the hot water usage from the MicroGrid individually at each of the City Hall, the Police Station and the Former Eisenhower Center. Provider shall install, maintain and/or replace at Provider's expense, an industry standard thermal energy meter(s) that will accurately measure (in ton-hours) the cold water usage from the MicroGrid individually at each of the City Hall and the Police Station. Provider shall install, maintain and/or replace at Provider's expense, any meter(s) required by the Utility for purposes of net-metering the Power. Upon City's written request, Provider shall furnish a copy of all technical specifications and accuracy calibrations for the meter(s). The meter(s) will be connected to an internet or intranet connection so that the Provider may remotely monitor the kWh output and thermal energy output of the MicroGrid System from time to time.

Provider shall test the meter(s) in compliance with the manufacturer's recommendations.

(b) Adjustments; Right to Audit. If testing of the metering equipment installed pursuant to Section 5.3(a) indicates that such equipment is in error by more than two percent (2%), then Provider shall promptly repair or replace such meter. Once per calendar year (or more frequently, if persistent errors are discovered), Provider shall test the meter(s) at its sole and absolute cost and report the finding to City. City shall have the right to audit all such meter data upon reasonable notice, and any such audit shall be at City's sole cost. City shall have a right of access to the meter(s) at reasonable times and with reasonable prior notice for the purposes of verifying readings and calibrations. If, however, any meter test is not accurate to within two percent (2%), then Provider shall promptly pay all costs for the meter test (if paid for by City). If any testing of the meter indicates that the meter is in error by more than two percent (2%), then Provider shall promptly repair or replace the meter. Provider shall make a corresponding adjustment to the records of the amount of electrical energy provided by the MicroGrid System delivered based on such test results for (i) the actual period of time when such error caused inaccurate meter recordings, if that period can be determined to the mutual satisfaction of the Parties, or (ii) if such period cannot be so determined, then a period equal to one-half of the period from the later of the date of the last previous test confirming accurate metering or the date the meter was placed into service, but not to exceed one (1) year.

5.4 The City shall be solely responsible to procure all fuel, including natural gas, for the MicroGrid System in consultation with, the Provider.

a. The Parties recognize that Provider has a relationship with Good Energy. The City may use Good Energy as an agent for procurement of the natural gas for the MicroGrid System.

6. LICENSE & ACCESS RIGHTS

6.1 License: City, for and in consideration of the covenants and agreements on the part of Provider contained in this Agreement, does hereby grant unto Provider subject to all applicable terms and conditions specified in this Agreement, a non-exclusive license: (a) to install, operate, maintain, improve, replace and remove the MicroGrid System upon the MicroGrid Premises, and such other activities that are ancillary and related to such purpose or necessary for Provider's performance of its obligations under this Agreement; and (b) to access, use and occupy portions of the MicroGrid Premises from time to time as are reasonably necessary or appropriate for Provider to provide City with electricity and thermal energy generated by the MicroGrid System under the terms of this Agreement and to

install, operate, maintain, improve, replace and remove the MicroGrid System. Access Rights granted pursuant to this license include, without limitation:

(a) The right to adequate space on the MicroGrid Premises during the System Installation Period for Provider's installation and testing of the MicroGrid System, including reasonable staging and lay down areas.

(b) The right to reasonable vehicular and pedestrian access to MicroGrid Premises, including ingress and egress of multiple commercial motor vehicles and machinery. In exercising such access Provider shall reasonably attempt to minimize any disruption to activities occurring on the MicroGrid Premises.

(c) The right to locate transmission lines and communication cables across the MicroGrid Premises.

(d) The right to storage space on the MicroGrid Premises or convenient to the MicroGrid Premises for materials, machinery and tools used during construction, installation, and maintenance of the MicroGrid System. Provider shall be responsible for providing shelter and security for stored items during construction and installation.

6.2 Because the MicroGrid System will be located on the MicroGrid Premises, the Parties acknowledge that City will have access to the MicroGrid Premises for maintenance of City's property for safety, security, and emergency purposes. City shall take all reasonable actions to ensure that the operation of the MicroGrid System is not disrupted when City accesses the MicroGrid Premises.

6.3 Provider shall take good care of the MicroGrid Premises and the portion of the MicroGrid System for which it is responsible hereunder, conduct all required maintenance and make all repairs thereto, interior and exterior, structural and non-structural ordinary and extraordinary, foreseen and unforeseen, and shall maintain and keep the MicroGrid Premises and the portion of the MicroGrid System for which it is responsible hereunder in first class order, repair and condition.

7. DELIVERY OF POWER.

7.1 Purchase Requirement. Except for scheduled MicroGrid System outages, Provider shall at all times produce and deliver no less than the Minimum Power Guarantee to the MicroGrid System as set forth in Paragraph 9.2(g). The City shall accept only the amount of Power and thermal energy necessary to satisfy the load of the City's Sites to which the MicroGrid System is interconnected. Neither Party may claim that by this Agreement, Provider is an electric utility subject to regulation as an electric utility or subject to regulated electricity rates. Provider is not, and shall not claim, to be providing electric utility services to City.

7.2 Title to MicroGrid System. Throughout the duration of this Agreement, subject to Sections 16 hereof, Provider shall be the legal and beneficial owner of the Natural Gas Generators, the Absorption Chiller and heat exchangers and the City shall be the legal and beneficial owner of the remainder of the MicroGrid System at all times and the Natural Gas Generators, the Absorption Chiller and heat exchangers shall remain the personal property of Provider and shall not attach to or be deemed a part of, or fixture to, the MicroGrid Premises. The Natural Gas Generators, the Absorption Chiller and heat exchangers shall at all times retain the legal status of personal property as defined under Article 9 of the United States Uniform Commercial Code. City covenants that it will use reasonable commercial efforts to place all parties having an interest in or lien upon the real property comprising the MicroGrid Premises on notice of the ownership of the Natural Gas Generators, the Absorption Chiller and heat exchangers and the legal status or classification of the Natural Gas Generators, the Absorption Chiller and heat exchangers as personal property.

7.3 All Renewable Energy Benefits, to the extent such Renewable Energy Benefit exist and are applicable, shall be owned by the City or assigned to the City by the Provider, to the extent such assignment is necessary for the City to obtain ownership of the Renewable Energy Benefits. Any revenue generated from the sale of Renewable Energy Benefits by the City shall be owned and retained by the City. For purposes of this Agreement, "Renewable Energy Benefits" shall include, without limitation, carbon trading credits, renewable energy credits or certificates, emissions reduction credits, investment credits, any and all cash payments in lieu of tax credits, production tax credits, emissions allowances, green tags, white tags and tradable renewable credits.

8. PRICE AND PAYMENT.

8.1 Power Payments. Provider shall charge City, and City shall pay to Provider, a monthly payment (the "Power Payment") for the total number of kilowatt-hours (kWh) of power (the "Power") produced by the Natural Gas Generators and consumed by the City at the Sites during each calendar month of the Term. The Power Payment shall be calculated as follows:

(1) City shall pay Provider a Capacity Fee in the amount of $33,935.17 per month, plus

(2) City shall pay an annual Service Charge for Operation and Maintenance in the amount of $265,000. Provider shall enter into the Operation and Maintenance Agreements with Ener-G Rudox and Controlled Air which Operation and Maintenance Agreements are attached hereto as Exhibit E.

8.2 Thermal. The Contract Price includes any and all charges for thermal energy (hot water, steam or chilled water) being provided to the Thermal Sites.

8.3 Contract Price. The sum of all Power Payments paid (and remaining to be paid) during the Term shall be the "Contract Price" under this Agreement. There will be no other obligations on City for payment for Power or thermal energy other than the charges included herein.

8.4 Payment. Provider shall invoice City on the fifteenth (15^{th}) day of each Monthly Period (or the subsequent Business Day of such Monthly Period if the fifteenth is not a Business Day) (each, a "Monthly Invoice Date"), commencing on the first Monthly Invoice Date to occur after the Operations Date, for the Power Payment in respect of the prior Monthly Period. The first invoice shall be issued following the first full Monthly Period after the Operations Date and include all production that occurred prior to the initial Monthly Invoice Date. The last invoice shall be pro-rated, as necessary, to include production only through the Expiration Date of this Agreement. A sample invoice is attached hereto as Exhibit I.

8.5 Time of Payment. City shall pay all undisputed amounts due hereunder within thirty (30) days after receiving an invoice.

8.6 Payment Instructions. City shall make all payments under this Agreement with immediately available funds to the account designated by Provider. All undisputed payments that are not paid when due shall bear interest accruing from the date thirty (30) days after the City received an invoice until paid in full at a rate equal to the Default Rate. All payments made hereunder shall be non-refundable, be made free and clear of any tax, levy, assessment, duties or other charges and not subject to reduction, withholding, set-off, or adjustment of any kind.

8.7 Disputed Payments. The Parties shall attempt to resolve any Dispute regarding payments under this Agreement amicably. If the Parties cannot resolve the Dispute within thirty (30) days, either Party may submit the Dispute to arbitration in accordance with Article 15; provided that, during the time a Dispute is pending, the disputing Party shall not be deemed in default under this Agreement and the Parties shall not suspend the performance of their respective obligations hereunder, including payment of undisputed amounts owed hereunder. No Party may withhold, deduct or set-off against amounts or credits any undisputed amounts owed by such Party to the other Party during the time that a Dispute is pending.

8.8 Incremental Customers. It is anticipated that Provider and City will work to defray the per unit fixed costs of capital recovery, operation and maintenance of the MicroGrid System by actively seeking additional Bridgeport and Non-Bridgeport customers for the MicroGrid System output through virtual net metering or other mechanisms.

(a) Electricity: In the event both parties, or either party, are/is successful in attracting incremental customers for electricity, the Annual Capacity Fee cited in this Agreement shall be recalculated to an amount reflecting the original Annual Capacity Fee ($407,222) divided by the new total KWH volume of Facility electric production for all customers times 2,550,000.

(b) Thermal: In the event both parties, or either party are/is successful in attracting incremental customers for thermal energy, the annual Capacity Fee cited in this Agreement shall be reduced by an amount of the revenues received by Provider for said incremental thermal energy revenue.

8.9 Adjustments to Power Payment

(a) Capacity Fee: The Capacity Fee will not be adjusted except as provided for in this Agreement in the event of additional sale of electricity or thermal energy to Non-Bridgeport Customers or New Bridgeport Customers not contemplated in this original Agreement.

(b) Service Charge: The Service Charge shall be adjusted annually based upon the annual change from the prior year in the CPI-W for "All Items" for the NY-Northern NJ, Long Island, NY_NJ_CT_PA regional index but in no case will this adjustment exceed a 3% increase per year. The service fee includes taxes, insurances, operations and maintenance, etc. In the event of a shutdown the Service Charge will be adjusted to a minimum level of maintenance reflective of industry standards.

9. GENERAL COVENANTS.

9.1 City's Covenants. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, City represents and covenants to the following:

(a) Health and Safety. City shall at all times use reasonable efforts to maintain the MicroGrid Premises consistent with all Applicable Laws pertaining to the health and safety of persons and property.

(b) Access. City shall use reasonable efforts to limit access to the MicroGrid System to authorized personnel of Provider and City.

(c) Security. City shall throughout the Term of this Agreement maintain security procedures for the MicroGrid Premises as are currently in place as of the date of this Agreement.

(d) Notice of Damage. City shall use reasonable efforts to promptly notify Provider of any matters it is aware of pertaining to any damage to or loss of the use of the MicroGrid System.

(e) Liens. City shall not directly or indirectly cause, create, incur, assume or suffer to exist any mortgage, lien (including mechanics', labor or materialman's liens), security interest, encumbrance or claim of any nature ("Liens") on or with respect to the MicroGrid System or any interest therein. If City breaches its obligations under this Section, it shall immediately notify Provider in writing, shall promptly cause such Lien to be discharged and released of record without cost to Provider, and shall indemnify Provider against all costs and expenses (including reasonable attorneys' fees and court costs at trial and on appeal) incurred in discharging and releasing such Lien.

(f) Access to MicroGrid Premises, Grant of License. Commencing on the Contract Date and continuing throughout the Term of this Agreement, City also hereby grants to Provider, together with its employees, representatives, agents and contractors, for a period co-terminus with this Agreement, a non-exclusive license and right-of-way to access all portions of the MicroGrid Premises reasonably necessary for fulfilling its obligations hereunder contemplated by this Agreement (subject to City's reasonable rules, regulations, restrictions and limitations on time periods), including, without limitation, for the delivery, installation, operation, maintenance, repair and removal of the MicroGrid System.

Provider shall utilize the rights granted hereunder in a manner that does not interfere in any material manner with City or Site owner and the use of the Sites by City, City's guests, Site owner and invitees, tenants, licensees or other visitors. City and its authorized representatives shall at all times have access to and the right to observe the Construction Work or Natural Gas Generator, the Absorption Chiller and heat exchangers removal but shall not interfere or handle any equipment during System Installation Period or the Natural Gas Generators, the Absorption Chiller and heat exchangers without written authorization from Provider; provided, however, in the event of a material malfunction or emergency as specified in Section 5.2, City shall be permitted to take those actions necessary to prevent injury as specified in Section 14.1(c).

(g) Temporary storage space during installation or removal. City shall use commercially reasonable efforts to provide sufficient space for the temporary storage and staging of tools, materials and equipment and for the parking of construction crew vehicles reasonably necessary during the Construction Work, System Operations or Natural Gas Generators and heat exchangers removal, and access for rigging and material handling. City shall provide Provider a reasonable area for construction laydown.

Such temporary storage shall be subject to City's reasonable rules, regulations, restrictions, relocation rights and time period limitations.

9.2 Provider's Covenants. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Provider represents and covenants to the following:

(a) Consents and Approvals. Provider shall identify all permits, licenses, authorizations and approvals necessary for the installation and operation of the MicroGrid System, including, but not limited to, any Utility requirements (collectively "Approvals"). All required Approvals for the installation and operation of the MicroGrid System shall, to the extent allowable by Applicable Laws, be secured by Provider in its own name or in the name of the City. City shall use reasonable commercial efforts, at no material cost or expense to City, to cooperate with Provider in obtaining all required Approvals for the installation and operation of the MicroGrid System. If, due to the nature of the MicroGrid Premises or the MicroGrid System or any equipment being installed in connection therewith, only City may apply for an Approval, Provider shall prepare the necessary application and file such application on City's behalf and City shall take all steps to cooperate by promptly executing all documents required for any such application so long as City reasonably approves the content of any such application and associated documents. Provider shall be responsible for paying all permitting, licensing and other fees for any approval regardless of whether any Approval must be obtained in Provider's name or City's name (except as agreed to by the City and paid for by the DEEP Grant).

(b) Safety Regulations. Provider shall take all necessary and reasonable safety precautions with respect to providing the Construction Work and System Operations that shall comply with all Applicable Law and this Agreement pertaining to the health and safety of persons and real and personal property. Provider shall immediately report to City any death, lost time injury, or property damage to City's property that occurs on the MicroGrid Premises.

(c) Security. Provider shall throughout the Term of this Agreement maintain security procedures for the MicroGrid System which shall, at a minimum, include the erection of adequate fencing and other security measures reasonable necessary to prevent unauthorized access to the portion of the MicroGrid System which Provider is responsible for operation and maintenance.

(d) Liens. Except as expressly provided in Section 16.3, Provider shall not directly or indirectly cause, create, incur, assume or suffer to exist any

Liens on or with respect to the MicroGrid Premises or any interest therein. Provider also shall pay promptly any taxes, charges or fees of whatever type of any relevant Governmental Authority, relating to any work performed hereunder by Provider or its agents and subcontractors on the Sites. If Provider breaches its obligations under this Section, it shall (i) immediately notify City in writing, (ii) promptly cause such Lien to be discharged and released of record without cost to City, and (iii) defend and indemnify City against all costs and expenses (including reasonable attorneys' fees and court costs at trial and on appeal) incurred in discharging and releasing such Lien.

(e) No Infringement. The MicroGrid System and Provider's services hereunder shall not infringe any third party's intellectual property or other proprietary rights.

(f) Organizational Existence. Provider is duly organized and validly existing and in good standing in the jurisdiction of its organization

(g) System Availability. Provider warrants that the MicroGrid System shall produce at least 5,362,530 Kwh per year of electricity per year ("Minimum Power Guarantee"). If Provider fails to comply with this covenant, Provider shall be responsible for the cost of electricity provided by the Utility and/or other electricity suppliers to the City due to the Provider's inability to comply with this covenant, including the costs associated with increases in the utility demand charge. In addition to the foregoing Utility costs incurred by the City, if Provider fails to comply with this covenant and the Utility is unable to provide electricity to the MicroGrid System to supplement the lack of capacity from the Facility, Provider shall be liable to the City in the amount of $3,500 per day, pro-rated for any part of a day. The foregoing represents liquidated damages due to the difficult nature of calculating actual damages and shall not be claimed by Provider to be a penalty. Notwithstanding the foregoing, Provider shall not be responsible for electricity supplied to City by the Utility and/or other electric suppliers as required by Utility interconnection requirements or tariffs or electric supplier contracts.

10. WARRANTIES.

10.1 Agreement Validity. In addition to any other representations and warranties contained in this Agreement, each Party represents and warrants to the other as of the Contract Date that:

(a) it has the full right and authority to enter into, execute, deliver, and perform its obligations under this Agreement;

(b) it has taken all requisite corporate, administrative or other action to approve the execution, delivery, and performance of this Agreement;

(c) this Agreement constitutes its legal, valid and binding obligation enforceable against such Party in accordance with its terms, except as may be limited by applicable bankruptcy, insolvency, reorganization, moratorium, and other similar laws now or hereafter in effect relating to creditors' rights generally;

(d) there is no litigation, action, proceeding or investigation pending or, to the best of its knowledge, threatened before any court or other Governmental Authority by, against, affecting or involving any of its business or assets that would affect its ability to carry out the transactions contemplated herein; and

(e) its execution and performance of this Agreement and the transactions contemplated hereby do not constitute a breach of any term or provision of, or a default under, (i) any contract or agreement to which it or any of its Affiliates is a Party or by which it or any of its Affiliates or its or their property is bound, (ii) its organizational documents, or (iii) any Applicable Laws.

10.2 PUHCA. Provider represents and warrants on the Contract Date that it is not a "public-utility company," "electric utility company," or a "holding company," "subsidiary company" or "affiliate" or "associate company" thereof, as such terms are defined in the United States Public Utility Holding Company Act of 1935, as amended.

10.3 Requisite Standards. The MicroGrid System shall be installed with due care by qualified employees, representatives, agents or contractors of Provider and shall conform to applicable industry standards and practices and Applicable Law and the specifications in Exhibit B. If Provider fails to meet any of the foregoing standards, Provider shall remedy at its own cost, any errors and omissions that are caused by Provider's failure, or those of its representatives, agents or contractors, to comply with the above standard so that the MicroGrid System is capable of providing Power at a reasonably continuous rate.

11. TAXES AND GOVERNMENTAL FEES.

11.1 City Obligations. All Power Payments and other charges by Provider set forth in this Agreement are inclusive of sales and use taxes.

11.2 Provider Obligations. Subject to Section 11.1 above, Provider shall be responsible for all income, gross receipts, ad valorem, personal property or real property or other similar taxes and any and all franchise fees or similar fees assessed against it due to its ownership of the MicroGrid System or the existence

of the MicroGrid System on the MicroGrid Premises. If City is assessed any taxes or fees related to the existence of the MicroGrid System on the MicroGrid Premises, City shall immediately notify Provider and City and Provider shall cooperate in contesting such assessment. Provider shall not be obligated for any taxes payable by or assessed against City based on or related to City's overall income or revenues.

12. FORCE MAJEURE EVENTS.

12.1 Definition. "Force Majeure Event" means any act or event that prevents the affected Party from performing its obligations in accordance with this Agreement, if such act or event is beyond the reasonable control, and not the result of the fault or negligence, of the affected Party and such Party had been unable to overcome such act or event with the exercise of reasonable due diligence (including the expenditure of reasonable sums of money). The Parties recognize that the MicroGrid System is intended to operate during extreme emergency situations associated with extreme natural phenomena that would most likely cause the Utility grid to be unavailable to the City and to the surrounding community. As such, a "Force Majeure Event" shall not include the following acts or events: (a) natural phenomena, such as storms, hurricanes, floods, lightning and earthquakes; (b) explosions or fires arising from lightning or (c) other natural causes unrelated to the acts or omissions of the Party seeking to be excused from performance.

12.2 Excused Performance. Except as otherwise specifically provided in this Agreement, neither Party shall be considered in breach or default of this Agreement or liable for any failure to comply with terms of this Agreement (other than the failure to pay amounts due hereunder) to the extent that such delay or failure is attributable to the occurrence of a Force Majeure Event; provided that the Party claiming relief under this Article 12 shall use reasonable efforts to immediately notify the other Party in writing of the existence of the Force Majeure Event and exercise all reasonable efforts necessary to minimize delay caused by such Force Majeure Event. If Provider claims a Force Majeure Event has occurred and requests relief from its obligations under this Agreement, the obligation of City to make a Power Payment to Provider on any Monthly Payment Date shall be suspended until Provider resumes performance of its obligations under this Agreement. Upon cessation of the Force Majeure Event, the Party claiming the Force Majeure Event shall notify the other Party in writing of the cessation or termination of said Force Majeure Event, resume performance of its obligations hereunder as soon as practicable thereafter, at which time all suspended Power Payments from the City to the Provider if City has claimed a Force Majeure shall become immediately due and payable. The City shall not be excused under any circumstances from making payments due and paying any unpaid amounts in respect of Power delivered to City prior to the Force Majeure Event performance interruption.

13. TERMINATION RIGHTS UPON EMINENT DOMAIN EVENT.

If at any time during the Term all or any material portion of the MicroGrid Premises shall be taken by eminent domain, either party shall have the right to terminate this Agreement upon receiving written notice of such eminent domain taking, and each Party shall be entitled to separately pursue an award for its respective property interest appropriated as well as any damages suffered thereby, and each Party hereby waives any right to any award that may be prosecuted by the other Party, except that Provider shall be entitled to a pro rata share thereof if City's award includes compensation for the MicroGrid System.

14. DEFAULT.

14.1 Provider Defaults and City Remedies.

(a) Provider Defaults. The following events shall constitute events of defaults with respect to Provider (each, a "Provider Default"):

i. Provider shall (A) apply for or consent to the appointment of, or the taking of possession by, a receiver, custodian, trustee or liquidator of itself or of all or a substantial part of its property; (B) admit in writing its inability, or be generally unable, to pay its debts as such debts become due; (C) make a general assignment for the benefit of its creditors, except those as permitted under Article 16 herein; (D) commence a voluntary case under any bankruptcy law; (E) file a petition seeking to take advantage of any other law relating to bankruptcy, insolvency, reorganization, winding up, or composition or readjustment of debts; (F) fail to controvert in a timely and appropriate manner, or acquiesce in writing to, any petition filed against Provider in an involuntary case under any bankruptcy law; or (G) take any corporate or other action for the purpose of effecting any of the foregoing;

ii. a proceeding or case shall be commenced without the application or consent of Provider in any court of competent jurisdiction seeking (A) its liquidation, reorganization, dissolution or winding-up or the composition or readjustment of debts or, (B) the appointment of a trustee, receiver, custodian, or liquidator of Provider under any bankruptcy law, and such proceeding or case shall continue undefended, or any order, judgment or decree approving or ordering any of the foregoing shall be entered and continue unstayed and in effect for a period of sixty (60) days; and

iii. Provider breaches any material term of this Agreement and (A) if such breach can be cured within thirty (30) days after City's notice of such breach and Provider fails to so cure, or (B) Provider fails to commence and pursue said cure within such thirty (30) day period

if a longer cure period is needed; provided that the Provider provides the City with notice of the expected time it will take to cure the breach and such timeframe is not greater than ninety (90) days

(b) City's Remedies.

i. If a Provider Default described in Section 14.1(a)(i) or 14.1(a)(ii) has occurred, City may terminate this Agreement upon fifteen (15) days' prior written notice to Provider;

ii. If a Provider Default described in Section 14.1(a)(iii) has occurred and is continuing, City may terminate this Agreement immediately upon the expiration of the respective grace periods set forth in such provision;

iii. If a Provider Default described in Section 14.1(a) has occurred and is continuing, City may exercise any other remedy it may have at law or equity or under this Agreement; and

iv. City hereby expressly agrees that each of its remedies under Section 14.1(b) of this Agreement is subject to Lender's cure rights, to the extent applicable, under Section 16.3(b).

(c) Actions to Prevent Injury. If any Provider Default creates an imminent risk of damage or injury to any Person or the City's property, then, in addition to any other right or remedy that City may have, City may (but shall not be obligated to) take such action as City deems appropriate to prevent such damage or injury; including disconnecting and removing all or a portion of the MicroGrid System.

(d) Removal of System Upon Termination of Agreement Due to Provider's Default. In the event of any such termination by City due to Provider's default, City shall have the right, at its option, to either: (a) remove and dispose of the Natural Gas Generators and heat exchangers and restore the MicroGrid Premises to its original condition (other than mounting pads or other support structures and ordinary wear and tear) at Provider's cost or (b) notify Provider that City is exercising an option to purchase ownership of the Natural Gas Generators, the Absorption Chiller and heat exchangers from the Provider at a fair market value, such fair market value to be determined by an independent appraisal expert who is mutually agreeable to both Parties. If City exercises the option to purchase ownership at a fair market value, City and Provider will have no further liability under this Agreement. In addition, Provider agrees to cooperate with the City in the transfer of ownership of the Natural Gas Generators, the Absorption Chiller and heat exchangers, including the execution of any documents

evidencing the transfer of ownership of the Natural Gas Generators, the Absorption Chiller and heat exchangers from Provider to City.

14.2 City Defaults and Provider's Remedies.

(a) City Default. The following events shall constitute events of defaults with respect to City (each, a "City Default"):

i. City shall (A) apply for or consent to the appointment of, or the taking of possession by, a receiver, custodian, trustee or liquidator of itself or of all or a substantial part of its property; (B) admit in writing its inability, or be generally unable, to pay its debts as such debts become due; (C) make a general assignment for the benefit of its creditors; (D) file a petition seeking to take advantage of any other law relating to bankruptcy, insolvency, reorganization, winding up, or composition or readjustment of debts; (E) fail to controvert in a timely and appropriate manner, or acquiesce in writing to, any petition filed against City in an involuntary case under any bankruptcy law; or (F) take any governmental or other action for the purpose of effecting any of the foregoing;

ii. a proceeding or case shall be commenced without the application or consent of City in any court of competent jurisdiction seeking (A) its liquidation, reorganization, dissolution or winding-up or the composition or readjustment of debts or (B) the appointment of a trustee, receiver, custodian or liquidator of City under any bankruptcy law, and such proceeding or case shall continue undefended, or any order, judgment or decree approving or ordering any of the foregoing shall be entered and continue unstayed and in effect for a period of sixty (60) or more days;

iii. City breaches any material term of this Agreement if (A) such breach can be cured within thirty (30) days after Provider's notice of such breach and City fails to so cure, or (B) City fails to commence and pursue said cure within such thirty (30) day period if a longer cure period is needed; provided that the City provides the Provider with notice of the expected time it will take to cure the breach and such timeframe is not greater than ninety (90) days; and

iv. City fails to pay Provider any undisputed amount due Provider under this Agreement within thirty (30) days from receipt of notice from Provider of such past due amount.

(b) Provider's Remedies.

i. If a City Default described in Section 14.2(a)(i) or 14.2(a)(ii) has occurred, Provider may terminate this Agreement upon fifteen (15) days' prior written notice to City.

ii. If a City Default described in Section 14.2(a)(iii) or 14.2(a)(iv) has occurred and is continuing, Provider may terminate this Agreement immediately upon the expiration of the respective grace periods set forth in such provisions and accelerate all payments expected to receive under this Agreement;

iii. If a City Default described in Section 14.2(a) has occurred and continues beyond the expiration of grace periods thereunder, in addition to any other remedy hereunder, (A) Provider may remove the Natural Gas Generators, the Absorption Chiller and heat exchangers from the Sites in compliance with the conditions of Section 4.2 herein and (B) Provider may exercise any other remedy it may have at law or equity under this Agreement.

(c) Actions to Prevent Injury. If any City Default creates an imminent risk of damage or injury to any Person or any Person's property, then in any such case, in addition to any other right or remedy that Provider may have, Provider may (but shall not be obligated to) take such action as Provider deems appropriate which may include disconnecting and removing the Natural Gas Generators and heat exchangers, in compliance with the conditions of Section 4.2 herein, or suspending the supply of Power to City.

15. DISPUTE RESOLUTION.

15. 1 Good-faith Negotiations. The Parties shall negotiate in good faith and attempt to resolve any dispute, controversy or claim arising out of or relating to the Agreement or the breach, interpretation, termination or validity thereof (a "Dispute") within thirty (30) days after the date that a Party gives written notice of such Dispute to the other Party. In the event that the Parties are unable to reach a compromise agreement within such thirty (30) day period (or such longer period as the Parties may agree) then either Party may refer the matter to arbitration in accordance with Section 15.2 except that if the Dispute involves an invoice and after ten (10) days of mutual discussion either Party believes in good faith that further discussion will fail to resolve the Dispute to its satisfaction, such Party may immediately refer the matter to arbitration in accordance with Section 15.2.

15.2 Binding Arbitration. Any Dispute that is not settled to the mutual satisfaction of the Parties pursuant to Section 15.1 shall be settled by binding arbitration conducted in a mutually agreed upon site, and in accordance with the Commercial Arbitration Rules of the American Arbitration Association (the "Arbitrator") in effect on the date that a Party gives notice of its demand for arbitration under this

Section 15.2. The submitting Party shall submit such Dispute to arbitration by providing a written demand for arbitration to the other Party, and the Parties shall select a single neutral Arbitrator with contract experience in the power industry and an understanding of power systems similar to the MicroGrid System. If the Parties cannot agree on a single neutral Arbitrator within fifteen (15) Business Days after the written demand for arbitration is provided, then the Arbitrator shall be selected by the American Arbitration Association. Each Party may then commence with and engage in discovery in connection with the arbitration as provided by Connecticut law and shall be entitled to submit expert testimony and other evidence in such arbitration proceeding. The decision of the Arbitrator shall be set forth in a written opinion of the Arbitrator and shall be binding upon Provider and City. Any award by such Arbitrator may then be enforced by Provider or City in a court of competent jurisdiction. Any award of the Arbitrator shall include interest from the date of any damages incurred for breach or other violation of this Agreement and from the date of the award until paid in full at the Default Rate. Provider and City shall each bear the cost of preparing and presenting its own case; provided, however, that the Parties agree that the prevailing party in such arbitration shall be awarded its reasonable attorney's fees, expert fees, expenses and costs incurred in connection with the Dispute. The cost of the arbitration, however, including the fees and expenses of the Arbitrator, shall initially be shared equally by Provider and City, subject to reimbursement of such arbitration costs and attorney's fees and costs to the prevailing Party. The Arbitrator shall be instructed to establish procedures such that a decision can be rendered within sixty (60) calendar days of the appointment of the Arbitrator, unless otherwise mutually instructed by the Parties.

15.3 Exceptions to Arbitration Obligation. The obligation to arbitrate shall not be binding upon any Party with respect to (a) requests for preliminary injunctions, temporary restraining orders, specific performance, or other procedures in a court of competent jurisdiction to obtain interim relief when deemed necessary by such court to preserve the status quo or prevent irreparable injury pending resolution by arbitration of the actual Dispute or (b) actions to collect payments not subject to a bona fide Dispute or (c) claims permitted hereunder against third parties.

16. ASSIGNMENT.

16.1 Provider Assignment. Except for the provisions in Section 16.3, Provider shall not sell, transfer or assign (collectively, an "Assignment") this Agreement or any interest therein, without the prior written consent of City; provided, however, that, without the prior consent of City, Provider may (i) make an Assignment to an Affiliate of Provider (provided that such Assignment shall not release Provider from its obligations hereunder), (ii) make an Assignment through merger, consolidation or sale of all or substantially all of Provider's stock or assets (provided that such Assignment shall not release Provider from its obligations hereunder), or (iii) sell, transfer, assign or pledge its interest in the Natural Gas Generators and heat exchangers or any monies due under this Agreement

(provided that City will not pay to a third party any monies owed hereunder without the advance written direction of Provider) (provided that such Assignment shall not release Provider from its obligations hereunder). A direct assignee from Provider of this Agreement shall assume in writing, in form and content reasonably satisfactory to City, the due performance of all Provider's obligations under this Agreement, including any accrued obligations at the time of the Assignment. A copy of the Assignment agreement, fully executed and acknowledged by the assignee, together with a certified copy of a properly executed corporate resolution (if the assignee be a corporation) authorizing such Assignment agreement shall be sent to City not less than ten (10) days before the Contract Date of such Assignment.

16.2 City Assignment. City shall not assign its interests in this Agreement, nor any part thereof, without Provider's prior written consent, which consent shall not be unreasonably withheld, conditioned or delayed.

16.3 Financing Accommodations. City acknowledges that Provider may be financing the acquisition and installation of the MicroGrid System and the Natural Gas Generators, the Absorption Chiller and heat exchangers (the "Lender") and that Provider's obligations will be secured by, among other collateral, a pledge or collateral assignment of this Agreement or monies due from City under this Agreement. In order to facilitate any financing, City agrees as follows:

(a) Consent to Collateral Assignment. City consents to the collateral assignment by Provider to Lender of this Agreement and the grant of a security interest by Provider to Lender in the Natural Gas Generators, the Absorption Chiller and heat exchangers, provided that such assignment and grant of security interest shall not relieve the Provider of its obligations hereunder.

(b) Lender's Default Rights. Notwithstanding any contrary term of this Agreement:

i. Lender, as collateral assignee, shall be entitled to exercise, in the place and stead of Provider, any and all rights and remedies of Provider under this Agreement in accordance with the terms of this Agreement. Lender shall also be entitled to exercise all rights and remedies of secured parties generally with respect to this Agreement and the Natural Gas Generators and the Absorption Chiller.

ii. Lender shall have the right, but not the obligation, to pay all sums due under this Agreement and to perform any other act, duty or obligation required of Provider thereunder or cause to be cured any default of Provider thereunder in the time and manner provided by the terms of this Agreement. Nothing herein requires Lender to

cure any default of Provider under this Agreement or (unless Lender has succeeded to Provider's interests under this Agreement) to perform any act, duty or obligation of Provider under this Agreement, but City hereby gives it the option to do so, subject to the provisions of this Agreement.

iii. Upon the exercise of remedies under its security interest in this Agreement and the Natural Gas Generators and the Absorption Chiller, including any sale thereof by Lender, whether by judicial proceeding or under any power of sale contained therein, or any conveyance from Provider to Lender (or any Qualified Assignee of Lender as defined below) in lieu thereof, Lender shall give notice to City of the transferee or assignee of this Agreement. Any such exercise of remedies shall not constitute a default under this Agreement.

iv. Upon any rejection or other termination of this Agreement pursuant to any process undertaken with respect to Provider under the United States Bankruptcy Code, at the request of Lender made within ninety (90) days of such termination or rejection, City shall enter into a new agreement with Lender or its Qualified Assignee having substantially the same terms and conditions as this Agreement so long as Lender or its Qualified Assignee cures any defaults existing under this Agreement as of the date of such termination or rejection and remedies any matters that ensue prior to the date of such new agreement.

v. For purposes of this section, a "Qualified Assignee" must be a business organization with at least five (5) years' experience in the operation and management of power systems sufficiently similar to the MicroGrid System.

(c) [Reserved]

(d) Right to Cure.

i. City will not exercise any right to terminate or suspend this Agreement unless it shall have given Lender prior written notice of Provider's default under this Agreement and Lender shall not have caused to be cured the condition giving rise to such default within the periods provided for in this Agreement; provided that if such Provider default reasonably cannot be cured by Lender within such period(s) and Lender commences and continuously pursues cure of such default within such period(s), such period(s) for cure will be extended for a reasonable period of time under the circumstances, such period(s) not to exceed additional thirty (30) days. The

Parties' respective obligations will otherwise remain in effect during any cure period(s).

ii. If Lender or its Assignee (including any purchaser or transferee), pursuant to an exercise of remedies by Lender shall acquire control of Provider's assets and shall, within the time periods described in Section 16.3(d)(i) above, cure all defaults under this Agreement existing as of the date of such change in control in the manner required by this Agreement and which are capable of cure by a third person or entity, then such person or entity shall no longer be in default under this Agreement, and this Agreement shall continue in full force and effect.

17. NOTICES.

17.1 Notice Addresses. All notices and communications concerning this Agreement shall be in writing and addressed to the other Party as follows:
If to Provider:

If to City:

or at such other address as may be designated in writing to the other Party, provided designation in writing of said other address is received by other Party within ten (10) business days of said other address taking effect.

17.2 Notice. Unless otherwise provided herein, any notice provided for in this Agreement shall be hand delivered, sent by registered or certified U.S. Mail, postage prepaid, or by commercial overnight delivery service, or transmitted by email (provided an identical notice is also sent simultaneously by mail, overnight courier, or personal delivery as otherwise provided in this Section 17), and shall be deemed delivered to or received by the addressee or its office when received at the address for notice specified above when hand delivered, upon confirmation of sending when sent by email (if sent during normal business hours or the next Business Day if sent at any other time), on the Business Day after being sent when sent by overnight delivery service (Saturdays, Sundays and legal holidays excluded), or five (5) Business Days after deposit in the mail when sent by U.S. mail.

17.3 Notices of Default. Provided City has been notified of the presence of a Lender, City will deliver to Lender, concurrently with delivery thereof to Provider, a copy of each notice of default given by City under this Agreement, inclusive of a reasonable description of Provider default. No such notice will be effective absent delivery to Lender. City will not mutually agree with Provider to terminate this Agreement without the written consent of Lender.

17.4 Address for Invoices. All invoices under this Agreement shall be sent to the address provided by City in Section 17.1 herein, by regular first class mail postage prepaid.

18. CONFIDENTIALITY.

18.1 Confidentiality Obligation. Except as otherwise stated herein, if either Party provides confidential information, including business plans, strategies, financial information, proprietary, patented, licensed, copyrighted or trademarked information, and/or technical information regarding the design, operation and maintenance of the MicroGrid System ("Confidential Information") to the other or, if in the course of performing under this Agreement or negotiating this Agreement a Party learns Confidential Information regarding the facilities or plans of the other, the receiving Party shall (a) protect the Confidential Information from disclosure to third parties with the same degree of care accorded its own confidential and proprietary information to the extent allowed by law, and (b) refrain from using such Confidential Information, except in the negotiation and performance of this Agreement and except as required by law. Notwithstanding the above, a Party may provide such Confidential Information to its, officers, directors, members, managers, employees, agents, contractors and consultants (collectively, "Representatives"), and Affiliates, Lenders, and potential assignees of this Agreement (provided and on condition that such potential assignees be bound by a written agreement restricting use and disclosure of Confidential Information), in each case whose access is reasonably necessary to the negotiation and performance of this Agreement. Each such recipient of Confidential Information shall be informed by the Party disclosing Confidential Information of its confidential nature and shall be directed to treat such information confidentially and shall agree to abide by these provisions. The terms of this Agreement (but not its execution or existence) shall be considered Confidential Information for purposes of this Article, except as set forth in Section 18.2. All Confidential Information shall remain the property of the disclosing Party and shall be returned to the disclosing Party or destroyed after the receiving Party's need for it has expired or upon the request of the disclosing Party.

Notwithstanding the foregoing, City will afford due regard to a written request from the Provider for the protection of the Provider's proprietary and/or confidential information and the City will endeavor to keep said information confidential to the extent permitted by law, However, all materials associated with this agreement are subject to the terms of the Connecticut Freedom of Information Act ("FOIA") and all corresponding rules, regulations and interpretations. In making such a written request, Provider shall delineate with specificity which materials provided by the Provider to the City, and in City's possession, are deemed proprietary or confidential in nature and not, therefore, subject to release to third parties. Particular sentences, paragraphs, pages or sections of any document or record that the Provider believes are exempt from disclosure under

the FOIA must be specifically identified as such. Additionally, Provider shall provide City with a detailed explanation of its rationale sufficient to justify each claimed exemption consistent with the FOIA. The rationale and explanation shall be stated in terms of the prospective harm to the competitive position of Provider that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. Additionally, Provider shall specifically and clearly mark all claimed documentation as "CONFIDENTIAL." However, nothing in this provision shall impose upon City any obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief, to prevent disclosure of any information deemed confidential and/or proprietary by Provider that is sought pursuant to a FOIA request. Provider shall have the burden of establishing the availability of any FOIA exemption in any proceeding where it is an issue. Nothing in this provision shall be deemed to impose upon the City any liability for the disclosure of any documents or information in its possession which the City believes are required to be disclosed pursuant to the FOIA or other requirements of law.

18.2 Permitted Disclosures. Notwithstanding any other provision herein, neither Party shall be required to hold confidential any information that:

(a) becomes publicly available other than through the receiving Party;

(b) is required to be disclosed by a Governmental Authority, under Applicable Law or pursuant to a validly issued subpoena, but a receiving Party subject to any such requirement shall promptly notify the disclosing Party of such requirement;

(c) is requested by the Internal Revenue Service or other taxing authority;

(d) is independently developed by the receiving Party;

(e) becomes available to the receiving Party without restriction from a third party under no obligation of confidentiality; or

(f) is required to be disclosed by the City pursuant to the Freedom of Information Act.

18.3 Publicity. The Parties shall coordinate and cooperate with each other when making public announcements related to the execution and existence of this Agreement and the presence of the MicroGrid System on the MicroGrid Premises, and each Party shall have the right to promptly review, comment upon, and approve any publicity materials, press releases, or other public statements by the other Party that refer to, or that describe any aspect of, this Agreement; provided that no such publicity releases or other public statements (except for filings or other statements or releases as may be required by Applicable Law) shall be made by either Party without the prior written consent of the other Party.

18.4 Enforcement of Confidentiality Obligation. Each Party agrees that the disclosing Party would be irreparably injured by a breach of this Article by the receiving Party or its Representatives or other Person to whom the receiving Party discloses Confidential Information of the disclosing Party and that the disclosing Party may be entitled to equitable relief, including injunctive relief and specific performance, in the event of any breach of the provisions of this Article. To the fullest extent permitted by Applicable Law, such remedies shall not be deemed to be the exclusive remedies for a breach of this Article, but shall be in addition to all other remedies available at law or in equity.

19. INDEMNITY.

19.1 Provider Indemnity. Provider agrees that it shall indemnify and hold harmless City, its permitted successors and assigns and their respective directors, officers, members, shareholders and employees (collectively, the "City Indemnified Parties") from and against any and all Losses incurred by the City Indemnified Parties to the extent arising from or out of the following: (a) any claim for or arising out of any injury to or death of any Person or loss or damage to property of any Person to the extent arising out of Provider's acts or omissions or (b) any infringement of patents or the improper use of other proprietary rights by Provider or its employees or representatives that may occur in connection with the performance of this Agreement. Provider shall not, however, be required to reimburse or indemnify any City Indemnified Party for any Loss to the extent such Loss is due to the negligence or willful misconduct of any City Indemnified Party.

Provider shall indemnify and hold harmless City for any claims, fines, damages, and costs (including attorney's and consultant's fees) arising out of hazardous material liability to the extent Provider is responsible for such hazardous materials. This clause shall survive the termination of this Agreement and expiration of the Term.

19.2 City Indemnity. City agrees that it shall indemnify and hold harmless Provider, Lender, their permitted successors and assigns and their respective directors, officers, members, shareholders and employees (collectively, the "Provider Indemnified Parties") from and against any and all Losses incurred by the Provider Indemnified Parties to the extent arising from or out of any claim for or arising out of any injury to or death of any Person or loss or damage to property of any Person to the extent arising out of City's acts or omissions. City shall not, however, be required to reimburse or indemnify any Provider Indemnified Party for any Loss to the extent such Loss is due to the negligence or willful misconduct of any Provider Indemnified Party.

19.3 Indemnification Procedure.

(a) Whenever any claim arises for indemnification under this Agreement, the Person who has the right to be indemnified (the "Indemnified Party") shall notify the Person who has the indemnification obligation (the "Indemnifying Party") in writing as soon as practicable (but in any event prior to the time by which the interest of the Indemnifying Party will be materially prejudiced as a result of its failure to have received such notice) after the Indemnified Party has knowledge of the facts constituting the basis for such claim (the "Notice of Claim"). Such Notice of Claim shall specify all facts known to the Indemnified Party giving rise to such indemnification right and the amount or an assessment of the amount of the liability arising therefrom.

(b) If the facts giving rise to any such indemnification shall involve any actual or threatened claim or demand by any third party (including an inquiry or audit by any Governmental Authority with respect to any period in whole or in part prior to the date of this Agreement) against the Indemnified Party or any possible claim or demand by the Indemnified Party against any such third party, the Indemnifying Party shall (without prejudice to the right of the Indemnified Party to participate at its expense through counsel of its own choosing) defend such claim in the name of the Indemnified Party at the Indemnifying Party's expense and through counsel of its own choosing. The Parties shall cooperate in the defense or prosecution thereof and shall furnish such records, information and testimony and attend such conferences and discovery as reasonably requested in connection therewith.

(c) Notwithstanding the Indemnifying Party's obligation to assume and conduct the defense of a claim for indemnification with counsel of its choice, the Indemnifying Party will not consent to the entry of any judgment or enter into any settlement with respect to a claim for indemnification without the prior written consent of the Indemnified Party (not to be unreasonably withheld) unless the judgment or proposed settlement involves the payment of money damages and does not impose an injunction or other equitable relief upon the Indemnified Party or any acknowledgment of the validity of any claim. Until the Indemnifying Party assumes the defense of a claim of indemnification arising out of a third-party claim, the Indemnified Party may defend against the third-party claim in any manner it may deem reasonably appropriate; provided that in no event shall the Indemnified Party consent to the entry of any judgment or enter into any settlement with respect to the third-party claim without the prior written consent of the Indemnifying Party (not to be unreasonably withheld).

(d) At the time that the Indemnifying Party makes any indemnity payment under this Agreement, the indemnification payment shall be adjusted such that the indemnification payment, will result in the Indemnified Party

receiving an amount equal to such indemnity payment, after taking into account (i) all national, state, and local income taxes that are actually payable by the Indemnified Party with respect to the receipt of such indemnity payment, and (ii) all national, state, and local income tax deductions allowable to the Indemnified Party for any items of loss and deduction for which the Indemnified Party is being indemnified.

20. INSURANCE.

20.1 At all times relevant to this Agreement, Provider shall maintain with a company or companies licensed or qualified to do business in the State of Connecticut, at least the following insurance coverage:

(a) Workers' compensation insurance in compliance with appropriate federal and State of Connecticut laws, and employers liability insurance with limit of not less than $1,000,000 per accident or disease for each employee;

(b) Commercial general liability insurance, occurrence form, including, but not limited to, contractual coverage for all of the provisions or this Agreement, with limits of not less than $2,000,000 per occurrence and in the aggregate, $1,000,000 products and completed operations aggregate, and $1,000,000 personal injury and advertising injury per offense;

(c) Property coverage will be maintained providing replacement cost value for the portion of the MicroGrid System owned or maintained by Provider with limits not less than the replacement value of the MicroGrid System owned or maintained by Provider. This coverage shall include appropriate riders for specialty equipment as necessary.

20.2 At all times relevant to this Agreement, City shall maintain with a company or companies licensed or qualified to do business in the State of Connecticut, at least the following insurance coverage:

(a) Insurance coverages normally maintained by City in its normal course of business relating to workers compensation and general liability insurance.

(b) Property coverage providing replacement cost value for the portion of the MicroGrid System owned or maintained by City with limits not less than the replacement value of the MicroGrid System owned or maintained by City. This coverage shall include appropriate riders for specialty equipment as necessary.

20.02 In addition, Provider must provide City with a bona fide list of all deductibles, retentions, or any other cost sharing agreements affecting this coverage. These deductibles, retentions, or other forms of cost sharing shall not exceed $10,000.

20.3 Provider shall cause certified copies of all required insurance policies to be endorsed by the insurance providers for the above coverages. Evidence of the above insurance policies shall be provided on a continuous basis and on a standard ACORD form 25-S, providing not less than thirty (30) days notice of cancellation or material alteration. The insurance certificate(s) shall reflect the following changes to standard language: in the cancellation clause delete "endeavor to" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives". All policies shall grant City, its successors, subsidiaries, directors, officers, agents and employees a waiver of subrogation. The commercial general liability policy shall name City, its successors, subsidiaries, directors, officers, agents and employees as an additional insured.

21. MISCELLANEOUS.

21.1 Integration; Exhibits. This Agreement, together with the Exhibits attached hereto, constitutes the entire agreement and understanding between Provider and City with respect to the subject matter hereof and supersedes all prior agreements relating to the subject matter hereof, which are of no further force or effect. The Exhibits and Schedules attached hereto are integral parts hereof and are made a part of this Agreement by reference. In the event of a conflict between the provisions of this Agreement and those of any Exhibit, the provisions of this Agreement shall prevail, and such Exhibit shall be corrected accordingly.

21.2 Amendments. This Agreement may only be amended, modified or supplemented by an instrument in writing executed by duly authorized representatives of Provider and City.

21.3 Cumulative Remedies. Except as set forth to the contrary herein, any right or remedy of Provider or City shall be cumulative and without prejudice to any other right or remedy, whether contained herein or not.

21.4 Limited Effect of Waiver. The failure of Provider or City to enforce any of the provisions of this Agreement, or the waiver thereof, shall not be construed as a general waiver or relinquishment on its part of any such provision, in any other instance or of any other provision in any instance.

21.5 Survival. The obligations under Section 9.2 (Provider Covenant), Sections 9.1 (City Covenants), Article 11 (Taxes and Governmental Fees), Article 15 (Dispute Resolution), Article 17 (Notices), Article 18 (Confidentiality), Article 19 (Indemnity), Article 21 (Miscellaneous), or pursuant to other provisions of this Agreement that, by their sense and context, are intended to survive termination of this Agreement shall survive the expiration or termination of this Agreement for any reason.

21.6 Governing Law. This Agreement shall be governed by and construed in accordance with the law of the State of Connecticut without reference to any choice of law principles.

21.7 Severability. If any term, covenant or condition in this Agreement shall, to any extent, be invalid or unenforceable in any respect under Applicable Law, the remainder of this Agreement shall not be affected thereby, and each term, covenant or condition of this Agreement shall be valid and enforceable to the fullest extent permitted by Applicable Law and, if appropriate, such invalid or unenforceable provision shall be modified or replaced to give effect to the underlying intent of the Parties and to the intended economic benefits of the Parties.

21.8 Relation of the Parties. The relationship between Provider and City shall not be that of partners, agents, or joint ventures for one another, and nothing contained in this Agreement shall be deemed to constitute a partnership or agency agreement between them for any purposes, including federal income tax purposes. Provider and City, in performing any of their obligations hereunder, shall be independent contractors or independent parties and shall discharge their contractual obligations at their own risk.

21.9 Successors and Assigns. This Agreement and the rights and obligations under this Agreement shall be binding upon and shall inure to the benefit of Provider and City and their respective permitted successors and assigns.

21.10 Counterparts. This Agreement may be executed in one or more counterparts, all of which taken together shall constitute one and the same instrument.

21.11 Email Delivery. This Agreement may be duly executed and delivered by a Party by execution and email delivery of the signature page of a counterpart to the other Party, and, if delivery is made by email, the executing Party shall promptly deliver, via overnight delivery, a complete original counterpart that it has executed to the other Party, but this Agreement shall be binding on and enforceable against the executing Party whether or not it delivers such original counterpart.

21.12 Attorneys' Fees. If any legal action, arbitration, or other proceeding is brought for the enforcement of this Agreement or because of an alleged dispute, default, misrepresentation, or breach in connection with any of the provisions of this Agreement, except as expressly excluded in this Agreement, the successful or prevailing Party shall be entitled to recover reasonable attorneys' fees and expenses, expert witness fees, and other costs incurred in that action or proceeding in addition to any other relief to which it may be entitled.

21.13 Third-Party Beneficiary. City agrees that Lender is a third-party beneficiary to this Agreement with full right to enforce the provisions hereof and thereof.

22. State of Connecticut Provisions

22.1 The Agreement is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the Agreement as if they had been fully set forth in it. At the Provider's request, City shall provide a copy of these orders to Provider. The Contract may also be subject to Executive Order No, 7C of Governor M. Jodi Roll, promulgated July 13, 2006, concerning contracting reforms and Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services, in accordance with their respective terms and conditions.

22.2. The State of Connecticut and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Provider's plants and places of business which, in any way, are related to, or involved in, the performance of this Agreement.

22.3 The Provider shall maintain, accurate and complete records and the Provider shall make available such records at all reasonable hours for audit and inspection by the State and its agents.

22.4 The State shall make all requests for any audit or inspection in writing and shall provide Provider with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.

22.5 All audits and inspections shall be at the State's expense.

22.6 Provider shall keep and preserve or cause to be kept and preserved all of its records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period, If any Claim or audit is started before the expiration of this period, Provider shall retain or cause to be retained all records until all Claims or audit findings have been resolved.

22.7 Provider shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Provider shall cooperate with an exit conference,

22.8 Provider shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any other Party.

22.9 Americans With Disabilities Act. Provide shall be and remain in compliance with the Americans with Disabilities Act of 1990 ("Act"), to the extent applicable, during the term of the Agreement. City may cancel the Contract if Provider fails to comply with the Act.

22.10 Affirmative Action and Sexual Harassment Policy. Provider agrees to comply with the DEEP's Affirmative Action and Sexual Harassment Policies available on DEEP's web Sites. Hard copies of the policy statements are available upon request at DEEP.

22.11. Campaign Contributions. For all State contracts as defined in P.A. 07-1 having a value in a calendar year of $50,000 or more or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to this Agreement expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, See Notice to Executive Branch State Contractors of Campaign Contribution and Solicitation Limitations.

22.12 Sovereign Immunity. The Parties acknowledge and agree that nothing in the Agreement shall be construed as a modification, compromise or waiver by the State of any rights or defenses of any immunities provided by Federal law or the laws of the State of Connecticut to the State or any of its officers and employees, which they may have had, now have or will have with respect to all matters arising out of the Agreement. To the extent that this section conflicts with any other section of this Agreement, this section shall govern,

22.13. Notwithstanding any provisions in this Agreement to the contrary, City may terminate the Agreement without penalty or costs whenever DEEP or the State of Connecticut makes a written determination that such Termination is in the best interests of the State.

22.14 Protection of State and Purchaser Confidential Information. Provider, at its own expense, has a duty to and shall protect from a Confidential Information Breach any and all Confidential Information which they come to possess or control, wherever and however stored or maintained, in a

commercially reasonable manner in accordance with current industry standards.

(a) Provider shall develop, implement and maintain a comprehensive data - security program for the protection of Confidential information. The safeguards contained in such program shall be consistent with and comply with the safeguards for protection of Confidential Information, and information of a similar character, as set forth in all applicable federal and state law and written policy of the Department or State concerning the confidentiality of Confidential Information. Such data-security program shall include, but not be limited to, the following:

1) A security policy for employees related to the storage, access arid transportation of data containing Confidential Information;

2) Reasonable restrictions on access to records containing Confidential Information, including access to any locked storage where such records are kept;

3) A process for reviewing policies and security measures at least annually;

4) Creating secure access controls to Confidential Information, including but not limited to passwords; and

5) Encrypting of Confidential Information that is stored on laptops, portable devices or being transmitted electronically.

6) Provider shall notify Purchaser, DEEP and the Connecticut Office of the Attorney General as soon as practical, but no later than twenty-four (24) hours, after they become aware of or suspect that any Confidential Information which Provider has come to possess or control has been subject to a Confidential Information Breach. If a Confidential Information Breach has occurred, Provider shall, within three (3) business days after the notification, present a credit monitoring and protection plan to the Commissioner of Administrative Services, the Department and the Connecticut Office of the Attorney General, for review and approval. Such credit monitoring or protection plan shall be made available by Provider at its own cost and expense to all individuals affected by the Confidential information Breach. Such credit monitoring or protection plan shall

include, but is not limited to reimbursement for the cost of placing and lifting one (1) security freeze per credit file pursuant to Connecticut General Statutes § 36a-701a. Such credit monitoring or protection plans shall be approved by the State in accordance with this Section and shall cover a length of time commensurate with the circumstances of the Confidential Information Breach. Provider's costs and expenses for the credit monitoring and protection plan shall not be recoverable from City, DEEP, any State of Connecticut entity or any affected individuals.

7) Provider shall incorporate the requirements of this Section in all subcontracts requiring each Subcontractor to safeguard Confidential Information in the same manner as provided for in this Section.

(b) Nothing in this Section shall supersede in any manner Provider's obligations pursuant to HIPAA or the provisions of this Agreement concerning the obligations of Provider as a Business Associate of the DEEP.

[SIGNATURE PAGE ATTACHED]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the day and the year first written above.

PROVIDER:

By: BRIDGEPORT MICRO-GRID, LLC
Name: [redacted]
Title: MEMBER

CITY:

By: _____
Name: Bill Finch
Title: Mayor

Exhibit A

DESCRIPTION OF MICROGRID PREMISES

The Natural Gas Generators shall be located at the Bridgeport City Hall and at the City of Bridgeport Police Station.

The Absorption Chiller shall be located at the Bridgeport City Hall.

The heat exchangers shall be located at the Bridgeport City Hall and at the City of Bridgeport Police Station.

The Thermal Sites shall be the Bridgeport City Hall, the City of Bridgeport Police Station and the Former Eisenhower Center.

The Electric Sites shall be the Bridgeport City Hall, the City of Bridgeport Police Station and the Senior Center.

The Bridgeport City Hall has an address of 45 Lyon Terrace, Bridgeport, Connecticut.

The City of Bridgeport Police Station has an address of 300 Congress Street, Bridgeport, Connecticut.

The Senior Center has an address of 307 Golden Hill Street, Bridgeport, Connecticut.

The Former Eisenhower Center has an address of 263 Golden Hill Street, Bridgeport, Connecticut.

The precise locations of the MicroGrid System shall be determined by the City and Provider in good faith consultations.

The Provider shall attach a Site Plan to this Exhibit A showing the precise location of the MicroGrid System **prior to or after the signing of this Agreement**.

The Site Plan shall show the Ownership Demarcation Point and the Operations Demarcation Point.

The Site Plan shall provide a drawing demonstrating the proposed method of electric interconnection and thermal energy interconnection of the MicroGrid System to the Sites.

The attached Sites Plan shows the Property That Comprises the "MicroGrid Premises"

(to be provided as a separate document)

EXHIBIT A - DESCRIPTION OF MICROGRID PREMISES continued

See Site Map attached

See Installation Equipment List

NO

LEGEND

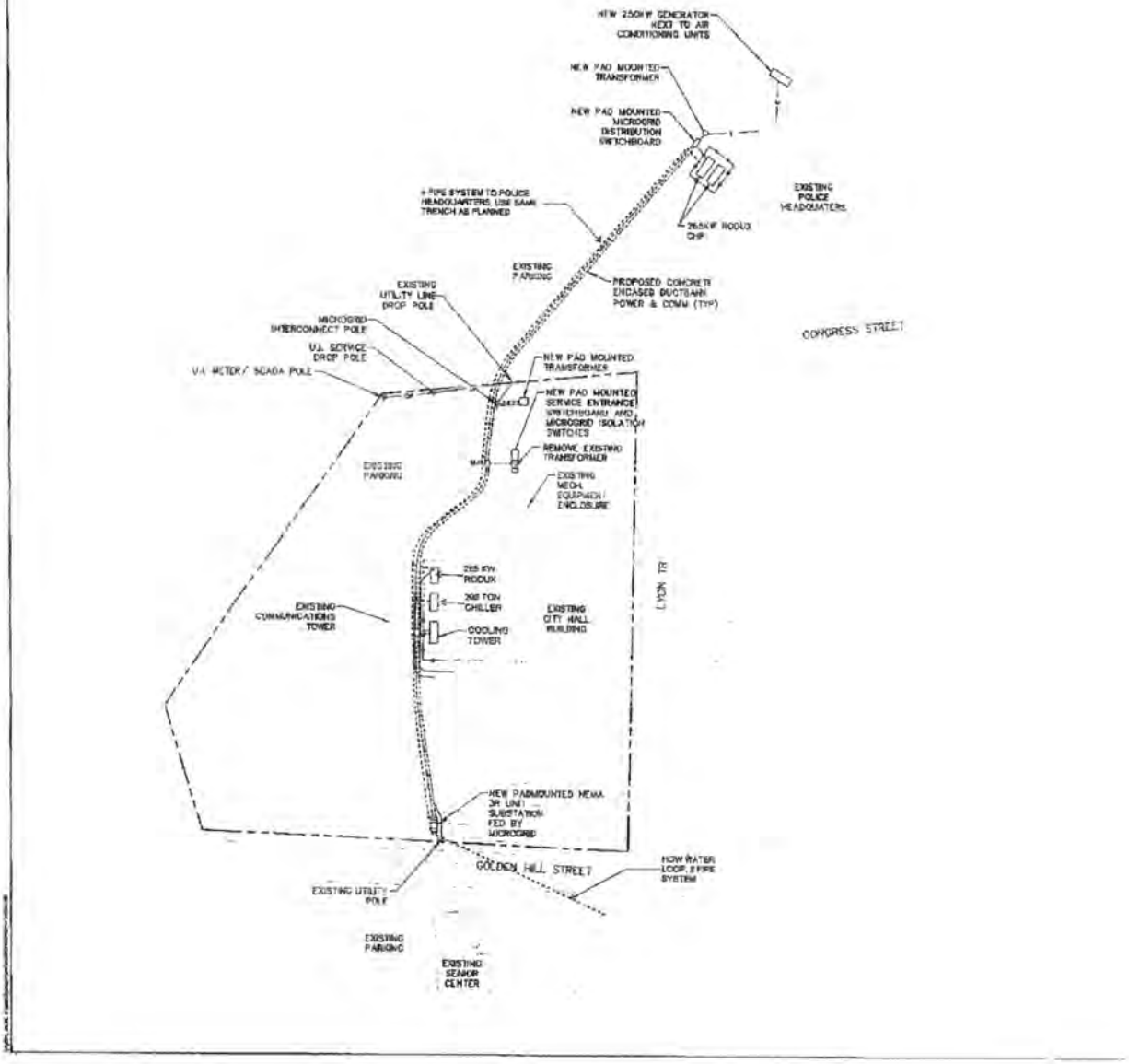

NEW 250KW GENERATOR NEXT TO AIR CONDITIONING UNITS
NEW PAD MOUNTED TRANSFORMER
NEW PAD MOUNTED MICROGRID DISTRIBUTION SWITCHBOARD
EXISTING POLICE HEADQUARTERS
265KW RODUX CHP
4" PIPE SYSTEM TO POLICE HEADQUARTERS, USE SAME TRENCH AS PLANNED
EXISTING PARKING
PROPOSED CONCRETE ENCASED DUCTBANK POWER & COMM (TYP)
CONGRESS STREET
EXISTING UTILITY LINE DROP POLE
MICROGRID INTERCONNECT POLE
U.I. SERVICE DROP POLE
U.I. METER / SCADA POLE
NEW PAD MOUNTED TRANSFORMER
NEW PAD MOUNTED SERVICE ENTRANCE SWITCHGEAR AND MICROGRID ISOLATION SWITCHES
REMOVE EXISTING TRANSFORMER
EXISTING MECH. EQUIPMENT ENCLOSURE
EXISTING PARKING
265 KW RODUX
200 TON CHILLER
COOLING TOWER
EXISTING COMMUNICATIONS TOWER
EXISTING CITY HALL BUILDING
LYON ST
NEW PADMOUNTED NEMA 3R UNIT SUBSTATION FED BY MICROGRID
GOLDEN HILL STREET
NEW WATER LOOP, FIRE SYSTEM
EXISTING UTILITY POLE
EXISTING PARKING
EXISTING SENIOR CENTER

EXHIBIT A
Bridgeport Microgrid Equipment

Equipment - Items	Ownership		Maintenance	
	BMG	City	BMG	City
(3) Rudox 265 generators	X		X	
(3) Generator exterior enclosures	X		X	
(3) Generator cooling radiators	X		X	
Generator load panels	X		X	
Gas piping and regulators	X		X	
Underground power wiring and conduits		X		X
Underground control wiring and conduits		X		X
Above ground power wiring - switchgear - transformers		X		X
Underground CHP chilled water - Heating piping	X		X	
Above ground CHP chilled water - Heating piping	X		X	
Micro Grid monitoring controls	X		X	
Energy meters for monitoring		X		X
(1) Absorber chiller	X		X	
(1) Absorber chiller enclosure	X		X	
(1) Cooling tower	X		X	
Cooling tower piping - pumps	X		X	
Standby Generator		X		X
Controls for CHP HVAC tie in	X		X	
Control valves for CHP HVAC tie in	X		X	
Heat Exchangers for CHP	X		X	
CHP pumps	X		X	
CHP glycol makeup units	X		X	

Exhibit B

DESCRIPTION OF MICROGRID SYSTEM AND STANDBY SYSTEM

MicroGrid System Description:

- The MicroGrid System shall consist of three (3) 265 Kw reciprocating engines fueled by natural gas ("Natural Gas Generators") for a total MicroGrid System capacity of 795 Kw.
- The Natural Gas Generators will be composed of a Generator Set package from Ener-G/Rudox, Model E265UL and include engines manufactured by Mann in Germany, model number E 2842 E 312.
- Provider guarantees that heat rate associated with the natural gas generators will be consistent with heat rates quoted by ENER-G / Rudox in their product specifications at various loads (HHV Fuel Input in BTU's per minute), referenced and included in this Agreement as Exhibit H.
- The MicroGrid System will include transfer switches, switch gear, transformers and all related distribution infrastructure. The MicroGrid System will also include heat exchangers for use with thermal energy generated by the MicroGrid System.
- The MicroGrid System will come equipped with a sound attenuating enclosure rated for outdoor use.
- The MicroGrid System will meet all local safety and emissions requirements required for constant operation, including an SCR/Oxidation Catalyst Package if necessary.
- The MicroGrid System will be designed for total production of 5.7 MWh per year. Any excess load will be provided by the local EDC or by the Standby Generator. The MicroGrid System will be designed to provide a minimum production capacity of 140 Kw and a maximum production capacity of 789 Kw (net of plant parasitic load).
- The MicroGrid System will be designed to provide a minimum of 661,500 BTU/hour and a maximum of 4.212 mmBTU/hour of hot water to the City Hall, Police Station and the Former Eisenhower Center (the "Thermal Sites").
- The MicroGrid System will include a 200 ton Absorption Chiller that will provide cold water to the City Hall and to the Police Station.
- The thermal connection between the Police Station and City Hall shall include a four pipe system (2 pipes for hot water and 2 pipes for cold water). The thermal connection between the City Hall and the Former Eisenhower Center shall include a two pipe system for hot water only.
- The MicroGrid System shall be interconnected to provide electricity to the City Hall, Police Department and the Senior Center (the "Electric Sites").
- The MicroGrid System is also includes a Standby Generator. The Standby Generator shall consist of one (1) 250 Kw reciprocating engine fueled by diesel fuel ("Standby Generator").
- The Standby Generator will be composed of a diesel engine manufactured by Cummins, model number FQDAA60Hz, or equivalent.
- The Standby Generator will include transfer switches, switch gear, transformers and all related distribution infrastructure. The Standby Generator will also include a fuel tank sufficient to support the intended continued use of the Standby Generator for at least 4 consecutive days.

- The Standby Generator will meet all local safety and emissions requirements required for standby operation.
- The Standby Generator will be designed for total production of 250 Kw load. The Standby Generator will be designed to provide production when either load in excess of the Natural Gas Generators is necessary and the grid is unavailable to provide the excess load or when all or part of the Natural Gas Generators are unavailable to produce electricity.

Attached are the detailed MicroGrid System Specifications

EXHIBIT C – DEEP GRANT AGREEMENT

See DEEP Grant Agreement and Extension attached

PERSONAL SERVICE AGREEMENT / GRANT / CONTRACT
Rev. 6/12/13 (NEEP Electronic Format)

Microgrid Design & Installation Grant for Critical Facilities
City of Bridgeport-City Hall/Bridgeport

STATE OF CONNECTICUT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

CHECK ONE:
☒ GRANT
☐ PERSONAL SERVICE AGREEMENT

1. THE STATE BUSINESS UNIT AND THE CONTRACTOR AS LISTED BELOW HEREBY ENTER INTO AN AGREEMENT SUBJECT TO THE TERMS AND CONDITIONS STATED HEREIN AND/OR ATTACHED HERETO AND SUBJECT TO THE PROVISIONS OF SECTION 4-98 OF THE CONNECTICUT GENERAL STATUTES AS APPLICABLE.
2. ACCEPTANCE OF THIS CONTRACT IMPLIES CONFORMANCE WITH TERMS AND CONDITIONS SET FORTH BY THE OFFICE OF POLICY AND MANAGEMENT PERSONAL SERVICE AGREEMENT STANDARDS AND PROCEDURES.

(1) ☒ ORIGINAL ☐ AMENDMENT

(2) IDENTIFICATION #s.
P.S. 2015-15126
P.O. 45468

CONTRACTOR
(3) CONTRACTOR NAME: **City of Bridgeport**
(4) ARE YOU PRESENTLY A STATE EMPLOYEE? ☐ YES ☒ NO
CONTRACTOR ADDRESS: **45 Lyon Terrace, Bridgeport, CT 06604**
CONTRACTOR FEIN/SSN: **066001865**

STATE AGENCY
(5) AGENCY NAME AND ADDRESS: **Dept. of Energy and Environmental Protection, BETP, 10 Franklin Square, New Britain, CT 06051**
(6) Dept No. DEP44720

CONTRACT PERIOD
(7) DATE (FROM): Execution
THROUGH (TO): **June 1, 2015**
(8) INDICATE ☐ MASTER AGREEMENT ☐ CONTRACT AWARD NO. _____ ☒ NEITHER

COMPLETE DESCRIPTION OF SERVICE

(9) CONTRACTOR AGREES TO: (Include special provisions - Attach additional blank sheets if necessary.)

1. Performance: Do, conduct, perform or cause to be performed in a satisfactory and proper manner as determined by the Commissioner of Energy and Environmental Protection, all work described in Appendix A, which is attached hereto and made a part hereof.
Appendix A consists of six pages numbered A-1 through A-7 inclusive.

Standard Terms and Conditions are contained in Pages 2 through 7 and are attached hereto and made a part hereof.

COST AND SCHEDULE OF PAYMENTS

(10) PAYMENT TO BE MADE UNDER THE FOLLOWING SCHEDULE UPON RECEIPT OF PROPERLY EXECUTED AND APPROVED INVOICES.

Cost and Schedule of Payments is attached hereto as Appendix B, and made a part hereof. (Appendix B consists of one page numbered B-1).

Total Payments Not to Exceed the Maximum Amount of **$2,975,000.**

(11) OBLIGATED AMOUNT
$2,975,000

(12) Amount	(13) Dept	(14) Fund	(15) SID	(16) Program	(17) Project	(18) Activity	(19) Bud Ref	(20) Agency CF 1	(21) Agency CF 2	(22) Account
$2,975,000	DEP44720	12052	43531	13008	DEPA00031200103	155005	2015			55050

An individual entering into a Personal Service Agreement with the State of Connecticut is contracting under a "work-for-hire" arrangement. As such, the individual is an independent contractor, and does not satisfy the characteristics of an employee under the common law rules for determining the employer/employee relationship of Internal Revenue Code Section 3121 (d) (2). Individuals performing services as independent contractors are not employees of the State of Connecticut and are responsible themselves for payment of all State and local income taxes, federal income taxes and Federal Insurance Contribution Act (FICA) taxes.

ACCEPTANCES AND APPROVALS

(23) **STATUTORY AUTHORITY** — CGS Sec. 4-8 as amended; Public Act 12-148, Sec. 7; CGS Sec. 7-148(c) as amended

(24) CONTRACTOR (OWNER OR AUTHORIZED SIGNATURE) — TITLE: Mayor — DATE: 12/19/14

(25) AGENCY (AUTHORIZED OFFICIAL) — TITLE: Commissioner — DATE: 12/31/14

(26) ATTORNEY GENERAL (APPROVED AS TO FORM) — Joseph Rubin — ASSOC. ATTY. GENERAL — DATE: 1/26/15

DISTRIBUTION: CONTRACTOR AGENCY

FUNDS AVAILABLE: _____ DATE: 1/16/15

1. Executive Orders. The Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the Contract as if they had been fully set forth in it. At the Contractor's request, the Client Agency shall provide a copy of these orders to the Contractor. The Contract may also be subject to Executive Order No. 7C of Governor M. Jodi Rell, promulgated July 13, 2006, concerning contracting reforms and Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services, in accordance with their respective terms and conditions.

2. Indemnification.

(a) The Contractor shall indemnify, defend and hold harmless the State and its officers, representatives, agents, servants, employees, successors and assigns from and against any and all (1) Claims arising, directly or indirectly, in connection with the Contract, including the acts of commission or omission (collectively, the "Acts") of the Contractor or Contractor Parties; and (2) liabilities, damages, losses, costs and expenses, including but not limited to, attorneys' and other professionals' fees, arising, directly or indirectly, in connection with Claims, Acts or the Contract. The Contractor shall use counsel reasonably acceptable to the State in carrying out its obligations under this section. The Contractor's obligations under this section to indemnify, defend and hold harmless against Claims includes Claims concerning confidentiality of any part of or all of the Contractor's bid, proposal or any Records, any intellectual property rights, other proprietary rights of any person or entity, copyrighted or uncopyrighted compositions, secret processes, patented or unpatented inventions, articles or appliances furnished or used in the Performance of the Contract.

(b) The Contractor shall not be responsible for indemnifying or holding the State harmless from any liability arising due to the negligence of the State or any other person or entity acting under the direct control or supervision of the State.

(c) The Contractor shall reimburse the State for any and all damages to the real or personal property of the State caused by the Acts of the Contractor or any Contractor Parties. The State shall give the Contractor reasonable notice of any such Claims.

(d) The Contractor's duties under this section shall remain fully in effect and binding in accordance with the terms and conditions of the Contract, without being lessened or compromised in any way, even where the Contractor is alleged or is found to have merely contributed in part to the Acts giving rise to the Claims and/or where the State is alleged or is found to have contributed to the Acts giving rise to the Claims.

(e) The Contractor shall carry and maintain at all times during the term of the Contract, and during the time that any provisions survive the term of the Contract, sufficient general liability insurance to satisfy its obligations under this Contract. The Contractor shall name the State as an additional insured on the policy and shall provide a copy of the policy to the Agency prior to the effective date of the Contract. The Contractor shall not begin Performance until the delivery of the policy to the Agency. The Agency shall be entitled to recover under the insurance policy even if a body of competent jurisdiction determines that the Agency or the State is contributorily negligent.

(f) The rights provided in this section for the benefit of the State shall encompass the recovery of attorneys' and other professionals' fees expended in pursuing a Claim against a third party

(g) This section shall survive the Termination of the Contract and shall not be limited by reason of any insurance coverage.

3. State Liability. The State of Connecticut shall assume no liability for payment for services under the terms of this agreement until the contractor is notified that this agreement has been accepted by the contracting agency and, if applicable, approved by the Office of Policy and Management (OPM) or the Department of Administrative Services (DAS) and by the Attorney General of the State of Connecticut.

4. Definitions:

a. State. The State of Connecticut, including the Department of Energy and Environmental Protection and any office, department, board, council, commission, institution or other agency of the State.

b. Commissioner. The Commissioner of Energy and Environmental Protection or the Commissioner's designated agent.

c. Parties. The Department of Energy and Environmental Protection (DEEP or Agency) and the Contractor.

d. Contractor Parties. Contractor Parties shall be defined as a Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity. To the extent that any Contractor Party is to participate or Perform in any way, directly or indirectly in connection with the Contract, any reference in the Contract to the "Contractor" shall also be deemed to include "Contractor Parties", as if such reference had originally specifically included "Contractor Parties" since it is the Parties' intent for the terms "Contractor Parties" to be vested with the same respective rights and obligations as the terms "Contractor."

e. Contract. This agreement, as of its Effective Date, between the Contractor and the State for any or all goods or services as more particularly described in Appendix A.

f. Execution. This contract shall be fully executed when it has been signed by authorized representatives of the parties, and if it is for an amount exceeding three thousand dollars ($3,000.00), by the authorized representative of the state Attorney General's office.

g. Exhibits. All attachments, appendices or exhibits referred to in and attached to this Contract are incorporated in this Contract by such reference and shall be deemed to be a part of it as if they had been fully set forth in it.

h. Records. For the purposes of this Contract, records are defined as all working papers and such other information and materials as may have been accumulated by the Contractor in performing the Contract, including but not limited to, documents, data, plans, books, computations, drawings, specifications, notes, reports, records, estimates, summaries and correspondence, kept or stored in any form.

i. Confidential Information. shall mean any name, number or other information that may be used, alone or in conjunction with any other information, to identify a specific individual including, but not limited to, such individual's name, date of birth, mother's maiden name, motor vehicle operator's license number, Social Security number, employee identification number, employer or taxpayer identification number, alien registration number, government passport number, health insurance identification number, demand deposit account number, savings account number, credit card number, debit card number or unique biometric data such as fingerprint, voice print, retina or iris image, or other unique physical representation. Without limiting the foregoing, Confidential Information shall also include any information that the Department classifies as "confidential" or "restricted." Confidential Information shall not include information that may be lawfully obtained from publicly available sources or from federal, state, or local government records which are lawfully made available to the general public.

j. Confidential Information Breach. shall mean, generally, an instance where an unauthorized person or entity accesses Confidential Information in any manner, including but not limited to the following occurrences: (1) any Confidential Information that is not encrypted or protected is misplaced, lost, stolen or in any way compromised; (2) one or more third parties have had access to or taken control or possession of any Confidential Information that is not encrypted or protected without prior written authorization from the State; (3) the unauthorized acquisition of encrypted or protected Confidential Information together with the confidential process or key that is capable of compromising the integrity of the Confidential Information; or (4) if there is a substantial risk of identity theft or fraud to the client, the Contractor, the Department or State.

k. Critical Facilities. Shall mean any hospital, police station, fire station, water treatment plant, sewage treatment plant, public shelter or correctional facility, any commercial area of a municipality, a municipal center, as identified by the chief elected official of any municipality, or any other facility or area identified by the Department of Energy and Environmental Protection as critical. (As defined in Public Act 12 148, §7). DEEP has identified the following additional facilities as critical: military bases, communications towers, fueling stations, food distribution centers, and mass transit. In addition, DEEP considers as critical facilities those facilities that have some or all of the following characteristics: provide support for national security; act as a command center; act as an emergency shelter; provide access to food, fuel, money, or medication.

5. Distribution of Materials. The Contractor shall obtain written approval from the Commissioner prior to the distribution or publication of any materials prepared under the terms of this Contract. Such approval shall not be unreasonably withheld.

6. Change in Principal Project Staff. Any changes in the principal project staff must be requested in writing and approved in writing by the Commissioner at the Commissioner's sole discretion. In the event of any unapproved change in principal project staff, the Commissioner may, in the Commissioner's sole discretion, terminate this Contract.

7. Further Assurances. The Parties shall provide such information, execute and deliver any instruments and documents and take such other actions as may be necessary or reasonably requested by the other Party which are not inconsistent with the provisions of this Contract and which do not involve the vesting of rights or assumption of obligations other than those provided for in the Contract, in order to give full effect to the Contract and to carry out the intent of the Contract.

8. Recording and Documentation of Receipts and Expenditures. Accounting procedures must provide for accurate and timely recording of receipt of funds by source, expenditures made from such funds, and of unexpended balances. Controls must be established which are adequate to ensure that expenditures under this Contract are for allowable purposes and that documentation is readily available to verify that such charges are accurate.

9. Assignability. The Contractor shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation), without the prior written consent of the Commissioner thereto; provided, however, that claims for money due or to become due the Contractor from the Commissioner under this Contract may be assigned to a bank, trust company, or other financial institution without such approval. Notice of any such assignment or transfer shall be furnished promptly to the Commissioner.

10. Third Party Participation. The Contractor may make sub-awards, using either its own competitive selection process or the values established in the state's competitive selection process as outline in DAS General Letter 71, whichever is more restrictive, to conduct any of the tasks in the Scope of Work contained in Appendix A. The Contractor shall advise the Commissioner of the proposed sub-awardee and the amount allocated, at least two (2) weeks prior to the making of such awards. The Commissioner reserves the right to disapprove such awards if they appear to be inconsistent with the program activities to be conducted under this grant. As required by Sec. 46a-68j-23 of the Connecticut Regulations of State Agencies the Contractor must make a good faith effort, based upon the availability of minority business enterprises in the labor market area, to award a reasonable proportion of all subcontracts to such enterprises. When minority business enterprises are selected, the Contractor shall provide DEEP with a copy of the Affidavit for Certification of Subcontractors as Minority Business Enterprises (MBE) along with a copy of the purchase order or contract engaging the Subcontractor. The Contractor shall be the sole point of contact concerning the management of the Contract, including performance and payment issues. The Contractor is solely and completely responsible for adherence by any subcontractor to all the applicable provisions of the Contract.

11. Set Aside. State funded projects are subject to the requirements of CGS Sec. 4a-60g "Set-Aside program for small contractors, minority business enterprises, individuals with disabilities and nonprofit corporations" unless exempted from these requirements by the Department of Administrative Services Supplier Diversity Program. For contracts using non-exempted funding sources and subcontracting any portion of work, contractors are required to subcontract 25% of the total contract value to small businesses certified by the Department of Administrative Services and are further required to subcontract 25% of that 25% to minority and women small contractors certified as minority business enterprises by the Department of Administrative Services.

12. Procurement of Materials and Supplies. The Contractor may use its own procurement procedures which reflect applicable State and local law, rules and regulations provided that procurement of tangible personal property having a useful life of more than one year and an acquisition cost of one thousand dollars ($1,000.00) or more per unit be approved by the Commissioner before acquisition.

13. State Audit (for grants only). The Contractor receiving federal funds must comply with the federal Single Audit Act of 1984, P.L. 98-502 and the Amendments of 1996, P.L. 104-156. The Contractor receiving state funds must comply with the Connecticut General Statutes §§ 7-396a and the State Single Audit Act, §§ 4-230 through 4-236 inclusive, and regulations promulgated thereunder. The Contractor agrees that all fiscal records pertaining to the project shall be maintained for a period of not less than three (3) years. For purposes of this paragraph, the word "Contractor" shall be read to mean "nonstate entity," as that term is defined in Conn. Gen. Stat. § 4-230. The Contractor shall provide for an annual financial audit acceptable to the Department for any expenditure of state-awarded funds made by the Contractor. Such audit shall include management letters and audit recommendations. Such records will be made available to the state and/or federal auditors upon request

14. Audit and Inspection of Plants, Places of Business and Records.

(a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract.

(b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.

(c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.

(d) All audits and inspections shall be at the State's expense.

(e) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.

(f) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.

(g) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

15. Americans With Disabilities Act. The Contractor shall be and remain in compliance with the Americans with Disabilities Act of 1990 ("Act"), to the extent applicable, during the term of the Contract. The DEEP may cancel the Contract if the Contractor fails to comply with the Act.

16. Affirmative Action and Sexual Harassment Policy. The Contractor agrees to comply with the Department's Affirmative Action and Sexual Harassment Policies available on DEEP's web site. Hard copies of the policy statements are available upon request at DEEP.

17. Campaign Contributions. For all State contracts as defined in P.A. 07-1 having a value in a calendar year of $50,000 or more or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to this Agreement expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice. See attached *Notice to Executive Branch State Contractors of Campaign Contribution and Solicitation Limitations.*

18. Sovereign Immunity. The Parties acknowledge and agree that nothing in the Solicitation or the Contract shall be construed as a modification, compromise or waiver by the State of any rights or defenses of any immunities provided by Federal law or the laws of the State of Connecticut to the State or any of its officers and employees, which they may have had, now have or will have with respect to all matters arising out of the Contract. To the extent that this section conflicts with any other section of this Contract, this section shall govern.

19. Termination.

(a) Notwithstanding any provisions in this Contract, the Agency, through a duly authorized employee, may Terminate the Contract whenever the Agency makes a written determination that such Termination is in the best interests of the State. The Agency shall notify the Contractor in writing of Termination pursuant to this section, which notice shall specify the effective date of Termination and the extent to which the Contractor must complete its Performance under the Contract prior to such date.

(b) Notwithstanding any provisions in this Contract, the Agency, through a duly authorized employee, may, after making a written determination that the Contractor has breached the Contract, Terminate the Contract in accordance with the provisions in the Breach section of this Contract.

(c) The Agency shall send the notice of Termination via certified mail, return receipt requested, to the Contractor at the most current address which the Contractor has furnished to the Agency for purposes of correspondence, or by hand delivery. Upon receiving the notice from the Agency, the Contractor shall immediately discontinue all services affected in accordance with the notice, undertake all commercially reasonable efforts to mitigate any losses or damages, and deliver to the Agency all Records. The Records are deemed to be the property of the Agency and the Contractor shall deliver them to the Agency no later than thirty (30) days after the Termination of the Contract or fifteen (15) days after the Contractor receives a written request from the Agency for the Records. The Contractor shall deliver those Records that exist in electronic, magnetic or other intangible form in a non-proprietary format, such as, but not limited to, ASCII or .TXT.

(d) Upon receipt of a written notice of Termination from the Agency, the Contractor shall cease operations as the Agency directs in the notice, and take all actions that are necessary or appropriate, or that the Agency may reasonably direct, for the protection, and preservation of the Goods and any other property. Except for any work which the Agency directs the Contractor to Perform in the notice prior to the effective date of Termination, and except as otherwise provided in the notice, the Contractor shall terminate or conclude all existing subcontracts and purchase orders and shall not enter into any further subcontracts, purchase orders or commitments.

(e) The Agency shall, within forty-five (45) days of the effective date of Termination, reimburse the Contractor for its Performance rendered and accepted by the Agency in accordance with Exhibit A, in addition to all actual and reasonable costs incurred after Termination in completing those portions of the Performance which the notice required the Contractor to complete. However, the Contractor is not entitled to receive and the Agency is not obligated to tender to the Contractor any payments for anticipated or lost profits. Upon request by the Agency, the Contractor shall assign to the Agency, or any replacement contractor which the Agency designates, all subcontracts, purchase orders and other commitments, deliver to the Agency all Records and other information pertaining to its Performance, and remove from State premises, whether leased or owned, all of Contractor's property, equipment, waste material and rubbish related to its Performance, all as the Agency may request.

(f) For breach or violation of any of the provisions in the section concerning Representations and Warranties, the Agency may Terminate the Contract in accordance with its terms and revoke any consents to assignments given as if the assignments had never been requested or consented to, without liability to the Contractor or Contractor Parties or any third party.

(g) Upon Termination of the Contract, all rights and obligations shall be null and void, so that no Party shall have any further rights or obligations to any other Party, except with respect to the sections which survive Termination. All representations, warranties, agreements and rights of the parties under the Contract shall survive such Termination to the extent not otherwise limited in the Contract and without each one of them having to be specifically mentioned in the Contract.

(h) Termination of the Contract pursuant to this section shall not be deemed to be a breach of contract by the Agency.

20. Breach. If either Party breaches the Contract in any respect, the non-breaching Party shall provide written notice of the breach to the breaching Party and afford the breaching Party an opportunity to cure within ten (10) days from the date that the breaching Party receives the notice. In the case of a Contractor breach, any other time period which the Agency sets forth in the notice shall trump the ten (10) days. The right to cure period shall be extended if the non-breaching Party is satisfied that the breaching Party is making a good faith effort to cure but the nature of the breach is such that it cannot be cured within the right to cure period. The notice may include an effective Contract Termination date if the breach is not cured by the stated date and, unless otherwise modified by the non-breaching Party in writing prior to the Termination date; no further action shall be required of any Party to effect the Termination as of the stated date. If the notice does not set forth an effective Contract Termination date; then the non-breaching Party may Terminate the Contract by giving the breaching Party no less than twenty four (24) hours' prior written notice. If the Agency believes that the Contractor has not performed according to the Contract, the Agency may withhold payment in whole or in part pending resolution of the Performance issue, provided that the Agency notifies the Contractor in writing prior to the date that the payment would have been due.

21. Severability. If any term or provision of the Contract or its application to any person, entity or circumstance shall, to any extent, be held to be invalid or unenforceable, the remainder of the Contract or the application of such term or provision shall not be affected as to persons, entities or circumstances other than those as to whom or to which it is held to be invalid or unenforceable. Each remaining term and provision of the Contract shall be valid and enforced to the fullest extent possible by law.

22. Contractor Guarantee. The Contractor shall: perform the Contract in accordance with the specifications and terms and conditions of the Scope of Work, furnish adequate protection from damage for all work and to repair any damage of any kind, for which he or his workmen are responsible, to the premises or equipment, to his own work or to the work of other contractors; pay for all permits, licenses, and fees, and to give all notices and comply with all laws, ordinances, rules and regulations of the city and the State.

23. Forum and Choice of Law. The Parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

24. Force Majeure. The Parties shall not be excused from their obligation to perform in accordance with the Contract except in the case of Force Majeure events and as otherwise provided for in the Contract. A Force Majeure event materially affects the cost of the Goods or Services or the time schedule for performance and is outside the control nor caused by the Parties. In the case of any such exception, the nonperforming Party shall give immediate written notice to the other, explaining the cause and probable duration of any such nonperformance.

25. Summary of State Ethics Laws. Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.

26. Disclosure of Records. This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related

to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.

27. Confidential Information of the Contractor. The Agency will afford due regard to a written request from the Contractor for the protection of the Contractor's proprietary and/or confidential information and the Agency will endeavor to keep said information confidential to the extent permitted by law. However, all materials associated with a bid and/or this Contract are subject to the terms of the Connecticut Freedom of Information Act ("FOIA") and all corresponding rules, regulations and interpretations. In making such a written request, the Contractor shall delineate with specificity which materials provided by the Contractor to the Agency, and in Agency's possession, are deemed proprietary or confidential in nature and not, therefore, subject to release to third parties. Particular sentences, paragraphs, pages or sections of any document or Record that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Additionally, the Contractor shall provide the Agency with a detailed explanation of its rationale sufficient to justify each claimed exemption consistent with the FOIA. The rationale and explanation shall be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. Additionally, the Contractor shall specifically and clearly mark all claimed documentation as "CONFIDENTIAL." However, nothing in this provision shall impose upon the Agency or the State any obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief, to prevent disclosure of any information deemed confidential and/or proprietary by the Contractor that is sought pursuant to a FOIA request. The Contractor shall have the burden of establishing the availability of any FOIA exemption in any proceeding where it is an issue. Nothing in this provision shall be deemed to impose upon the Agency or the State any liability for the disclosure of any documents or information in its possession which the Agency believes are required to be disclosed pursuant to the FOIA or other requirements of law.

28. Protection of State Confidential Information.
    a. Contractor and Contractor Parties, at their own expense, have a duty to and shall protect from a Confidential Information Breach any and all Confidential Information which they come to possess or control, wherever and however stored or maintained, in a commercially reasonable manner in accordance with current industry standards.
    b. Each Contractor or Contractor Party shall develop, implement and maintain a comprehensive data - security program for the protection of Confidential Information. The safeguards contained in such program shall be consistent with and comply with the safeguards for protection of Confidential Information, and information of a similar character, as set forth in all applicable federal and state law and written policy of the Department or State concerning the confidentiality of Confidential Information. Such data-security program shall include, but not be limited to, the following:
        1) A security policy for employees related to the storage, access and transportation of data containing Confidential Information;
        2) Reasonable restrictions on access to records containing Confidential Information, including access to any locked storage where such records are kept;
        3) A process for reviewing policies and security measures at least annually;
        4) Creating secure access controls to Confidential Information, including but not limited to passwords; and
        5) Encrypting of Confidential Information that is stored on laptops, portable devices or being transmitted electronically.
    c. The Contractor and Contractor Parties shall notify the Department and the Connecticut Office of the Attorney General as soon as practical, but no later than twenty-four (24) hours, after they become aware of or suspect that any Confidential Information which Contractor or Contractor Parties have come to possess or control has been subject to a Confidential Information Breach. If a Confidential Information Breach has occurred, the Contractor shall, within three (3) business days after the notification, present a credit monitoring and protection plan to the Commissioner of Administrative Services, the Department and the Connecticut Office of the Attorney General, for review and approval. Such credit monitoring or protection plan shall be made available by the Contractor at its own cost and expense to all individuals affected by the Confidential Information Breach. Such credit monitoring or protection plan shall include, but is not limited to reimbursement for the cost of placing and lifting one (1) security freeze per credit file pursuant to Connecticut General Statutes § 36a-701a. Such credit monitoring or protection plans shall be approved by the State in accordance with this Section and shall cover a length of time commensurate with the circumstances of the Confidential Information Breach. The Contractors' costs and expenses for the credit monitoring and protection plan shall not be recoverable from the Department, any State of Connecticut entity or any affected individuals.
    d. The Contractor shall incorporate the requirements of this Section in all subcontracts requiring each Contractor Party to safeguard Confidential Information in the same manner as provided for in this Section.
    e. Nothing in this Section shall supersede in any manner Contractor's or Contractor Party's obligations pursuant to HIPAA or the provisions of this Contract concerning the obligations of the Contractor as a Business Associate of the Department.

29. Entirety of Contract. The Contract is the entire agreement between the Parties with respect to its subject matter, and supersedes all prior agreements, proposals, offers, counteroffers and understandings of the Parties, whether written or oral. The Contract has been entered into after full investigation, neither Party relying upon any statement or representation by the other unless such statement or representation is specifically embodied in the Contract.

30. Interpretation. The Contract contains numerous references to statutes and regulations. For purposes of interpretation, conflict resolution and otherwise, the content of those statutes and regulations shall govern over the content of the reference in the Contract to those statutes and regulations.

31. Tangible Personal Property.

(a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:

(1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;

(2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;

(3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;

(4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and

(5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.

(b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.

(c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.

APPENDIX A
SCOPE OF WORK

Purpose: To design and develop a microgrid to support the identified critical facilities during times of electricity grid outages.

Description: The Contractor agrees to conduct a project entitled: **Microgrid Design & Installation Grant for Critical Facilities - City of Bridgeport-City Hall/Bridgeport.**

1. **Agreements with Electric Distribution Company (EDC):** The Contractor shall provide DEEP with executed copies of the Interconnection Agreement and Operating Agreement that authorizes connection with the EDC system. The interconnection shall meet all applicable requirements of "Guidelines for Generator Interconnection" as issued by the EDC, and in particular "Appendix "B" to that document which details technical requirements and standards applicable to this project.

2. **Construction Tasks:** Project shall include:

   a. Engineering, procuring, constructing and operating an electrical system capable of independent operation (island mode) and grid connected operation to serve Bridgeport City Hall, Police Headquarters, and Golden Hill Senior Center.

   b. Providing a new underground natural gas service from the utility to serve the three (3) new generators.

   c. Providing three (3) new outdoor 265kW/350kVA, 480 volt, 3 phase, 3 wire, natural gas continuous/prime generators with water jacket heater, batteries, battery charger, generator mounted control panels, and output transformers.

   d. Providing a new outdoor, oil-filled 2000kVA, 13.8kV-480/277 step down transformer. The oil-filled generator will be equipped with an isolating switch and bayonette fuses within the primary compartment. The oil-filled transformer will interconnect the utility service, and associated utility primary-metering equipment with the 3000A, 480V micro-grid switchboard.

   e. Providing a new outdoor (NEMA 3R) 480 volt, 3 phase, 3 wire, 3000 amp Main Distribution Switchgear to be installed adjacent to the 2000 KVA oil-filled transformer and City Hall. The switchgear shall be equipped with a 3000A main circuit breaker with ground fault and associated utility company relays for automatic control requirements. In addition there will be:

      - o One 1600A electrical operated distribution circuit breaker for power to COB City Hall,

      - o One 600A distribution circuit breaker for interconnection requirements to one 265KW generator,

      - o One 2000A distribution circuit breaker for interconnection requirements to two 265KW generators as well as power to the Senior Center and Police Station,

f. Providing a new outdoor (NEMA 3R) 2000A, 480V, 3 phase, 3 wire Isolation Switch with viewable window to be located adjacent to the 3000A, 480V Main Distribution Switchgear. The isolation switch will provide utility-required isolation for the interconnection of two 265KW generators.

g. Providing a new outdoor (NEMA 3R) 600A, 480V, 3 phase, 3 wire Isolation Switch with viewable window to be located adjacent to the 3000A, 480V Main Distribution Switchgear. The isolation switch will provide utility-required isolation for the interconnection of one 265KW generators.

h. Providing a new outdoor (NEMA 3R) 600A, 480V, 3 phase, 3 wire Paralleling and Synchronizing Switchgear with one 600A electrically operated generator circuit breaker, and associated metering and SCADA System interface.

i. Providing a new outdoor (NEMA 3R) 2000A, 480V, 3 phase, 3 wire Paralleling and Synchronizing Switchgear with one 2000A Main Circuit Breaker, one 400A electrically operated generator circuit breaker, two 600A electrically operated generator circuit breaker, and associated metering and SCADA System interface.

j. Providing a new outdoor (NEMA 3R) 2000A, 480V, 3 phase, 3 wire Distribution Switchgear with two 2000A distribution circuit breakers and one 500A electrically operated circuit breaker for power requirements to the Police Station.

k. Providing a new outdoor (NEMA 3R) 400A, 480V, 3 phase, 3 wire Distribution Switchgear with one 250A electrically operated circuit breaker for power requirements to the Golden Hill Senior Center.

l. Providing a new outdoor (NEMA 3R) 1000kVA, 480V – 208/120V volt, 3 phase, 4 wire padmounted transformer located at the City Hall main building. The existing underground electric service from the utility service transformer to the existing main switchboard shall be disconnected. A new underground feeder shall be provided from the secondary compartment of the new padmounted transformer to re-feed the existing indoor main distribution equipment which shall be modified as required.

m. Providing a new outdoor (NEMA 3R) 300VA, 480V – 208/120V, 3 phase, 4 wire, padmounted transformer located at the Police Department building. The existing underground electric service from the utility service transformer to the existing main switchboard shall be disconnected. A new underground feeder shall be provided from the secondary compartment of the new padmounted transformer to re-feed the existing indoor main distribution equipment which shall be modified as required.

n. Providing a new outdoor (NEMA 3R) 150kVA, 480V – 208/120V, 3 phase, 4 wire, padmounted transformer located at the Golden Hills Senior Center building. The existing underground electric service from the utility service transformer to the existing main switchboard shall be disconnected. A new underground feeder shall be provided from the secondary compartment of the new padmounted transformer to re-feed the existing indoor main distribution equipment which shall be modified as required.

o. Constructing a new underground dedicated conduit duct bank shall contain required copper and fiber control and SCADA wiring for the monitoring and control associated

with the metering and electrically operated circuit breakers for the MSS at each building. Providing an additional spare empty underground conduit of the same size with a pull cable.

p. Testing and commissioning of microgrid.

3. Engineering Documents

Contractor shall:

- Provide a control sequence for operation of the grid tie circuit breaker to separate and return to grid paralleled operation. Indicate what permissive and lockouts control this operation, and prevent unintentional operation when the system is islanded.
- Provide a description as well as engineering drawings showing the method by which frequency and voltage are controlled within ANSI standards during island operation.
- Provide a description and engineering drawings showing how load is shared between generators during island mode operation.
- Provide a description and engineering drawings showing automatic synchronizing capability and out of synchronism protection for each generator as it is connected to the microgrid.
- Provide engineering drawings showing out of synchronism protection at each point within the system that may be isolated and closed with a live line on both sides of the isolation point.
- Provide a complete sequence of operations describing how multiple generators are brought on line with a dead bus. Indicate how bus voltage and frequency are initially established, how additional generators are synchronized and brought on line, and how loads are sequenced."

4. Schedule for Completion:

All engineering documents must be received within 60 days of the contract execution date and must be subsequently approved by DEEP. All engineering and construction work shall be complete by June 1, 2015.

Wherever possible, work will be completed prior to the targeted completion date.

5. Design: The microgrid will provide a central, independent and local generating facility to supply and distribute power in island and parallel mode to City Hall located at 45 Lyon Terrace, police headquarters located at 300 Congress Street and at the Golden Hill Senior Center which is to be built at 307 Golden Hill Street. The microgrid in general will serve the approximately 144,000 citizens of Bridgeport.

6. Permits: The Contractor is responsible for identifying and obtaining all necessary local state and federal permits and approvals. No work shall commence until all such permits and approvals have been obtained by the Contractor.

7. Coordination: Contractor shall coordinate fully with both the EDC and DEEP Microgrid Grants Coordinator (veronica.szczerkowski@ct.gov) to ensure the project progresses in a

timely fashion. Any issues encountered shall be brought to the immediate attention of the DEEP Microgrid Grants Coordinator.

8. **Submission of Materials:** For the purposes of this Contract, all correspondence, summaries, reports, products and extension requests shall be submitted to:

   Department of Energy and Environmental Protection
   Bureau of Energy and Technology Policy
   Microgrid Grants Coordinator
   10 Franklin Square
   New Britain, CT 06051

   All **invoices** must include the PO #, PSA #, Project Title, DEEP Bureau/Division name, amount, dates and description of services covered by the invoice.

9. **Activation / Approval to Operate Letter:** The Contractor shall provide DEEP with a copy of the Interconnection Agreement, Attachment VIII "Approval to Energize the Generation Facility" which is required of all generator interconnections prior to receiving permission to generate power when connected to the grid. In addition, the Contractor shall supply an Approval to Operate Letter from the EDC indicating that the entire microgrid has been fully commissioned and tested in both island and grid connected modes and operates in a manner satisfactory to the EDC. Final payment shall not be made until the documents have been signed by the EDC and received by DEEP.

10. **Budget**: The Contractor shall adhere to the total approved Program Funds amount listed in the attached budget included as Appendix C. Program funds cannot be used for internal and indirect costs.

11. **Invoicing / Reporting:** Grant payments will be released on a reimbursement basis to be paid no more frequently than quarterly. Each invoice shall be submitted with a quarterly Project Summary. Payment is contingent upon DEEP's review and approval of the submitted information, and the Commissioner reserves the right to withhold payment if substantial progress toward project completion is not demonstrated in the Project Summary. All engineering documents must be reviewed and approved by DEEP prior to any grant payments. Seventy percent (70%) of the grant amount shall be withheld pending final completion of the project. All Invoices, Project Summaries and Reports are to be submitted to the DEEP Microgrid Grants Coordinator:

    a. An **Invoice** for payment shall be submitted to the DEEP Microgrid Grants Coordinator accompanied by **supporting documents** sufficient to demonstrate eligible project expenses, such as copies of subcontractor invoices, indicating all services and purchases were for eligible project expenses.

    b. **Project Summaries** of project status shall be submitted to the DEEP Microgrid Grants Coordinator once every three months during the time in which this Contract is in effect and must accompany each invoice. Such summaries must be submitted regardless of whether or not the Contractor is submitting an invoice for payment. Each summary shall include a brief description (1 or more pages) indicating the work completed, the status of the interconnection process, any disputes encountered, any anticipated changes to project completion date, and other relevant information.

c. A **Final Report** shall be prepared and submitted no later than 30 days following the expiration date of this Contract, including documentation, satisfactory to the Commissioner, demonstrating that the microgrid is operational and all the elements of Appendix A have been met including, but not limited to, a summary of all critical facilities supported by the microgrid, the date the microgrid became operational, a summary of situations encountered which have affected the timeline for completion, any changes to the overall design summary as described in the revised response to DEEP Request for Proposals dated July 10, 2014.

12. **Ongoing Operations and Maintenance:** Once the microgrid is operational, the Contractor shall be responsible for ensuring that the microgrid is operated and maintained in a manner to ensure its proper function and operation on an ongoing basis. All costs associated with operations and maintenance shall be the sole responsibility of the Contractor.

13. **Annual Reporting**: The Contractor must provide an annual operating report to DEEP's Bureau of Energy and Technology Policy, Public Utility Regulatory Authority, the Office of Consumer Counsel, and the applicable EDC no later than January 1st, annually, for a period of five years after receiving a microgrid grant or loan. The report must include the following information:

- the results of all periodic testing conducted in the preceding year;
- dates and times of separation and return to grid;
- number of hours per year in parallel mode;
- number of hours per year in island mode;
- maximum and minimum and average kW in island mode;
- dates, times, duration and cause of unplanned outages while operating in island mode;
- dates, times, duration and cause of unplanned outages while operating in parallel mode;
- quantity of fuel used;
- maintenance schedule (planned outages);
- quantity of stored fuel to be used for microgrid operation if applicable.

The Contractor must also provide an annual report to DEEP identifying any outstanding liabilities or debt obligations of the microgrid operator that would potentially compromise the continued operation of the microgrid.

14. **Acknowledgement of Funding:** Any publication or sign produced or distributed or any publicity conducted in association with this Contract must provide credit to the Department of Energy and Environmental Protection as follows: "Funding provided by a grant from the State of Connecticut administered by the Connecticut Department of Energy and Environmental Protection (DEEP)."

15. **Publication of Materials:** The Contractor must obtain written approval from DEEP's Microgrid Grants Coordinator prior to distribution or publication of any printed material prepared under the terms of this Contract.

Unless specifically authorized in writing by the State, on a case by case basis, Contractor shall have no right to use, and shall not use, the name of the State of Connecticut, its officials, agencies, or employees or the seal of the State of Connecticut or its agencies: (1) in any advertising, publicity, promotion; or (2) to express or to imply any endorsement of

Contractor's products or services; or (3) to use the name of the State of Connecticut, its officials agencies, or employees or the seal of the State of Connecticut or its agencies in any other manner (whether or not similar to uses prohibited by (1) and (2) above), except only to manufacture and deliver in accordance with this Agreement such items as are hereby contracted for by the State. In no event may the Contractor use the State Seal in any way without the express written consent of the Secretary of State.

16. **ADA Publication Statement:**
For all public notices printed in newspapers, the following ADA and Title VI Publication Statement should be used:

> The Connecticut Department of Energy and Environmental Protection is an Affirmative Action and Equal Opportunity Employer that is committed to complying with the Americans with Disabilities Act. To request an accommodation contact us at (860) 418-5910 or mailto:deep.accommodations@ct.gov

If there is not a meeting or event associated with the material(s) being published, the following ADA and Title VI Publication Statement should be used:

> The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act. Please contact us at (860) 418-5910 or deep.accommodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint.

If the material(s) being published have a meeting or event associated with them, the following ADA and Title VI Publication Statement should be used:

> The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act. Please contact us at (860) 418-5910 or deep.accommodations@ct.gov if you: have a disability and need a communication aid or service; have limited proficiency in English and may need information in another language; or if you wish to file an ADA or Title VI discrimination complaint. Any person needing a hearing accommodation may call the State of Connecticut relay number - 711. Requests for accommodations must be made at least two weeks prior to any agency hearing, program or event.

For videos that will be published on the DEEP website, the following ADA and Title VI statement and the following line should be included on the DVD cover and the title page of the video:

> The Connecticut Department of Energy and Environmental Protection is an Affirmative Action and Equal Opportunity Employer that is committed to complying with the requirements of the Americans with Disabilities Act. To request an accommodation contact us at (860) 418-5910 or deep.accommodations@ct.gov.
>
> This video with closed captioning is available at www.ct.gov/deep.

17. **Extensions/Amendments:** Formal written amendment of the Contract is required for extensions to the final date of the Contract period and changes to terms and conditions

specifically stated in the original Contract and any prior amendments, including but not limited to:

a. revisions to the maximum Contract payment,
b. the total unit cost of service,
c. the Contract's objectives, services, or plan,
d. due dates for reports,
e. completion of objectives or services, and
f. any other Contract revisions determined material by DEEP.

If it is anticipated that the project cannot be completed as scheduled, a no-cost extension must be requested in writing no later than 60 days prior to the expiration date of the Contract. Said extension request shall include a description of what work has been completed to date, shall document the reason for the extension request, and shall include a revised work schedule and project completion date. If deemed acceptable, approval will be received in the form of a Contract amendment.

APPENDIX B
SCHEDULE OF PAYMENTS

The maximum amount payable under this Contract is two million nine hundred seventy-five thousand dollars (**$2,975,000**).

The payments by the Commissioner shall allow for use of funds to meet allowable financial obligations incurred in conjunction with this Project, prior to expiration of this Contract, and shall be scheduled as follows provided that the total sum of all payments shall not exceed the maximum Contract amount noted above.

1. Reimbursement of eligible project expenses shall be released no more frequently than quarterly, following DEEP's receipt and approval of invoices, supporting documentation and associated project summaries.

2. All engineering documents must be reviewed and approved by DEEP prior to any grant payments.

3. Seventy percent (70%) of award amount shall be withheld until demonstration of project completion. Final payment request must be submitted to DEEP along with the following:

    a. A detailed invoice with any required supportive documentation,

    b. A copy of Attachment VIII "Approval to Energize the Generation Facility" which is required of all generator interconnections prior to receiving permission to generate power when connected to the grid,

    c. A copy of the Approval to Operate Letter, and

    d. A Final Report and associated documentation demonstrating that all the elements of Appendix A have been met.

Payment is contingent upon DEEP's review and approval of the submitted information. Total sum of all payments shall not exceed total eligible project expenses.

Should total eligible project expenses be less than the amount of payments made, any remaining funds must be refunded to the Connecticut Department of Energy and Environmental Protection through a check made payable to "CT DEEP" within 90 days of the Contract expiration date.

APPENDIX C
Capital Budget Summary

Name of Contractor: City of Bridgeport
Name of Project: City of Bridgeport-City Hall/Bridgeport
PSA#:

Eligible Expenses:	Program Funds
Engineering	$ 325,000.00
Permitting and fees	$ 103,025.00
Customer owned equipment	$ 2,239,653.00
Utility owned equipment and interconnection	$ 10,000.00
Testing and commissioning activities	$ 61,150.00
Other - itemize	
Construction management	$ 236,172.00
Total Program Funds Approved:	$ 2,975,000.00

Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(g)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract* or *state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly** *solicit* contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor* or *principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil penalties—Up to $2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and the possible consequences of their violations may also be subject to civil penalties of up to $2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties—Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than $5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may resulting the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to "Lobbyist/Contractor Limitations."

DEFINITIONS

"State contractor" means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. "State contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Prospective state contractor" means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. "Prospective state contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a state contractor or prospective state contractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

"State contract" means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. "State contract" does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

"State contract solicitation" means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

"Managerial or discretionary responsibilities with respect to a state contract" means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

"Dependent child" means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such individual.

"Solicit" means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

"Subcontractor" means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor's state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. "Subcontractor" does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a subcontractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

EXHIBIT D – SYSTEM TEST REQUIREMENTS

See attached pdf Rudox Run Efficiency Performance Test and Rudox Test Procedure

Project : Bridgeport, Micro-grid

Subject : ER265UL : CHP Performance test

Date : 8/18/14

Signed Ener-G Rudox : _____

Signed : City Of Bridgeport _____

This demonstrates the performance of the plant against a test procedure as prepared by Ener-G Rudox, which will prove the efficiency meets the Unit's "Partial Load Data" Sheet dated 05/03/14 – 05/04/14.

This test is to be carried out over a 4 hour period, with manual readings being taken every 1 hour of the key parameters as defined below:-

- [3]Fuel Input = --------- (Btu/min)
- Calorific value of Fuel = ------- (Btu/SCFM)
- Electrical Output = -------- (kW) @ 480V, 60Hz
- Power factor = 1.0 (resistive load bank)
- [2]Heat Output = ------ (Btu/min)
- Nox Rating = -------- (lb/Mwe)
- Electrical efficiency = -------- (calculated)

[3]Tolerance of thermal output is ± 8%
[4]Tolerance of fuel input is ± 5% using natural gas with a minimum methane number of 70

Test date : 05/03/14 & 05/04/14

Produced by : Steve Johnson

Test location : Manchester, UK

Revised : 07/31/14 to HHV fuel

C265UL Natural Gas CHP Unit

ENER-G RUDOX

Energy Balance and Part Load Data @ 0.95PF	Units	100%	75%	50%	25%	10%
Electrical Output (+/-3%)	kW	263	197	132	66	26.5
Electrical Efficiency (HHV) (+/-5%)	%	32.10%	30.40%	27.10%	20.80%	10.10%
Heat Output (+/-10%)	BTU/min	23407	19160	15025	11026	7926
Thermal Efficiency (HHV) (+/-8%)	%	49.80%	53.10%	55.80%	59.40%	61.50%
Fuel Input (HHV) (+/-5%)	BTU/min	47012	37283	27881	18940	12488
Total Efficiency (HHV) (+/-8%)	%	81.50%	87.20%	86.70%	83.10%	74.10%
Heat Output from Jacket Water (+/-8%)	BTU/min	14670	12534	10480	8481	6820
Heat Output from Exhaust Gas (Cooled to 248°F) (+/-8%)	BTU/min	8737	6626	4545	2546	1026
Aftercooler Heat Output (+/-8%)	BTU/min	N/A	N/A	N/A	N/A	N/A
Radiated Heat Output (+/-8%)	BTU/min	2270	1872	1474	1142	924
Combustion Air Flow (+/-5%)	SCFM	459	362	270	201	138
Fuel Volume Flow (LHV = 924 BTU/SCFM) (+/-5%)	SCFM	51	40	30	20	11
Exhaust Mass Flow (Wet) (+/-5%)	lb/h	2184	1721	1283	855	443
Exhaust Volume Flow (Cooled to 248°F) (+/-5%)	ACFM	649	512	381	254	133

EXHIBIT E – OPERATION AND MAINTENANCE AGREEMENTS

See Exhibit E file attachments:

ENER-G Rudox Maintenance Contract

Bridgeport MicroGrid CAI Contract

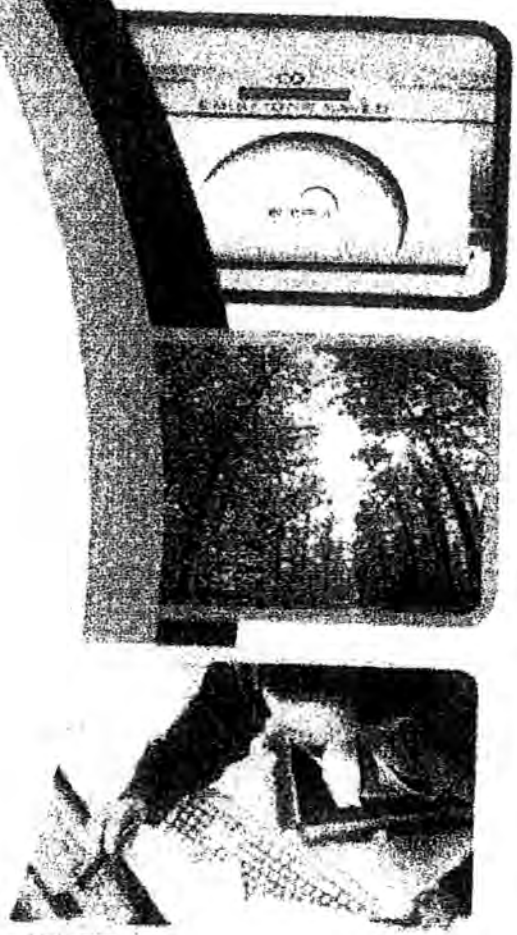
CAI Contract Cooling Tower

Bridgeport MicroGrid Absorption Chiller O&M Agreement

Proposal:

For the Provision of Cogeneration Service and Maintenance

CT Micro-Grid
City of Bridgeport, CT



Prepared for:
Controlled Air Inc.

Prepared by:
ENER-G Rudox Inc.

Date:
October 8th , 2014

ENER-G Rudox Inc.
765 State Route 17
Carlstadt, NJ 07072

T: +1 917-281-0020
F: +1 201-438-3403
C: +1 718-551-7170
W: www.energ-rudox.com
E: Vishnu.barran@energ-group.com

Table of contents

SECTION 1 - EXECUTIVE SUMMARY

In response to the Request for Proposal (RFP) from Controlled Air Inc. to perform all-inclusive service and maintenance for Three (3) ER265UL Cogeneration units located in Bridgeport, CT, ENER-G Rudox is pleased to submit our proposal.

OPERATION AND MAINTENANCE SERVICES

ENER-G Rudox has developed this O&M proposal around the following scope of work and services.

Cogen units

ENER-G Rudox will perform full scheduled preventative and emergency maintenance services, as well as remote monitoring for:

- Three (3) ER265UL Cogeneration units

PRICING AND CONTRACT

Our ***Premier Plus*** service pricing will cover all labor, materials, and consumable items necessary to perform the preventative maintenance of the Cogen units, as well as labor, material and consumables for associated emergency services by either ENER-G Rudox employees or its subcontractors. It is assumed that Bridgeport Microgrid LLC will provide ENER-G Rudox the ability to perform remote monitoring of the equipment via modem or Internet connection in accordance with Manufacturers specifications. It is anticipated that ENER-G Rudox will access this data twice daily in order to detect any potential system problems and to establish historical operating performance data required to maintain maintenance logs.

ENER-G Rudox's quotation for the scheduled service and maintenance (including emergency repairs) of the above equipment for a 20-year contract period would be:

[redacted]
escalation of 3%.

Fixed rates are based on the premise that the three units will produce a minimum [redacted]

of 5,362,530 KWH per year running the required hours to meet that production volume.

ENER-G

TERMS AND EXCEPTIONS

[redacted] Not Applicable as This is a Full requirements maintenance contract

[redacted]

Plant Operations

In keeping with our normal operating practices, ENER-G Rudox will not have a continuous site presence to operate the Cogeneration Plant in Bridgeport, CT. This is determined to be un-necessary as the remote monitoring and standard maintenance will be sufficient to run the Cogen systems appropriately.

With respect to the cogeneration system, the primary function of a building engineering staff is to operate the facility and units and to ensure timely notification of any issues that arise as a normal course of running the cogeneration system. In addition, the onsite staff will perform daily walk through and keep logs of all equipment being maintained in this proposal. The actual daily log sheet for each piece of equipment will be developed under this proposal and the staff will be instructed on what is required within the first 30 days of the service contract being signed.

SECTION 2 – ENER-G RUDOX COMPANY OVERVIEW

ENER-G Rudox has undergone some significant changes over the last year to better position itself to provide full service solutions for the Trigeneration and Cogeneration market in the Northeast and across the United States – here is a quick overview of the recent merger that took place in the beginning of 2013.

Rudox Engine and Equipment Company has been a leader in the power generation business since 1949 with over 60 years of experience with design, engineering, manufacturing, and servicing of generator sets and CHP units across the country, with a primary focus on the Northeast. Rudox is also often associated as a distributor with companies like Mitsubishi, and is very well position to provide superior service support for the tri-state area. Rudox's headquarters are in Carlstadt, NJ, approximately 5 minutes from Giants Stadium, which is key to providing 24/7/365 emergency services and support for the tri-state.

ENER-G Group, a European market leader in cogeneration, is headquartered in the UK and has operations in 17 countries. ENER-G has over 25 years of knowledge specific to the cogeneration and trigeneration space, and is continuing to expand their presence with other clean tech solutions and technologies. ENER-G provides businesses across the globe with a wide range of energy services and sustainable technologies to help them generate, buy and manage their energy.

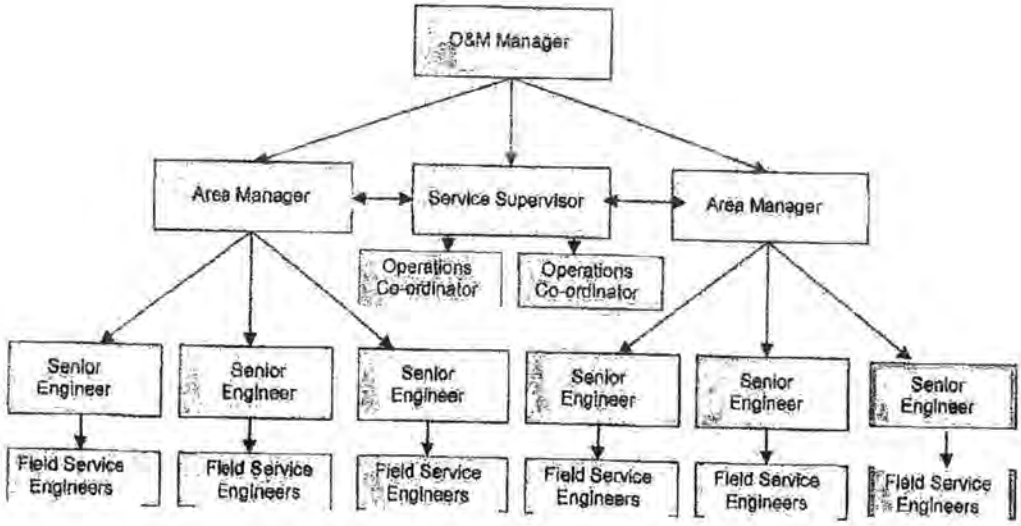
As of 2013, ENER-G Rudox Inc. is now the combined entity of both Rudox Engine & Equipment Company and ENER-G Group, with 85+ years of market leadership in cogeneration and 1700+ cogeneration systems running worldwide. ENER-G Rudox will continue to design, operate and finance energy efficient and renewable solutions on a business-to-business basis globally, with a unique turnkey and vertically integrated approach that few (if any) companies are able to offer. The company has realized significant growth in the US Cogeneration and Trigeneration market, and is well positioned to meet customers' needs across all industries.

SECTION 3 – ENER-G RUDOX CHP MAINTENANCE OVERVIEW

ENER-G operates over 2500 CHP units across Europe and North America under a variety of operation and maintenance arrangements. We have the infrastructure in place to provide a first class front line service to your CHP system equipment, and this is meant to serve as an overview of our standard service offering.

Our Service Department, with its global base in Manchester, England and our US headquarters in Carlstadt, NJ, remotely monitors all the CHP units 24/7, 365 days per year.

Our Service Structure



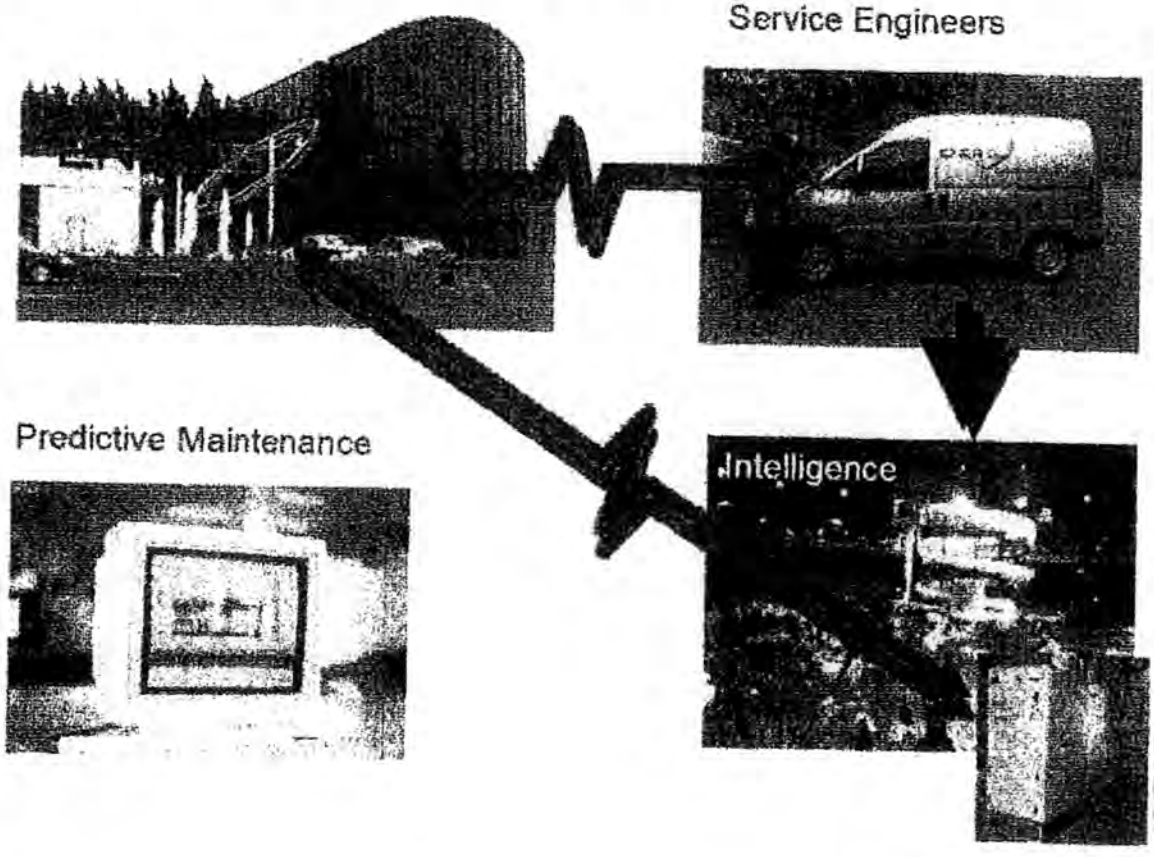
Our ***Premier Plus*** maintenance support includes:

- *Fully comprehensive maintenance service encompassing all aspects of CHP operation*
- *No maintenance actions required by the user;*
- *All routine servicing including parts, labor and consumables*
- *"Routine servicing" includes all planned servicing including top end and major overhauls*
- *Includes all repairs required within the acoustic enclosure of the CHP*
- *Service parts and labor provided, overhauls are carried out and the number of callouts are unlimited;*
- *Next working day* service, with aim to respond to faults within 24 hours of SOS or site call-out.*
- *Remote monitoring with 24 hour computer control*

- *Standard monthly reports are automatically provided and special, detailed reports are available on request;*
- *70 parameters analyzed every second*
- *Communication with central computer*
- *Automatic SOS alert and Remote SOS alert*
- *Automatic re-closure facility*
- *Provision of remote fault diagnostics - Part identification*
- *Help Desk*
- *Enhanced remote programming*
- *Up time availability of ENER-G Rudox maintained CHP units at a minimum of 90%*

**Subject to contract*
Specific details of the maintenance activities are shown at the end of this document

Remote Monitoring
For those clients who have experience in gas engine and CHP management and maintenance, we can provide monitoring services including: Provision and Maintenance of Remote Diagnostics, Help Desk, Automatic Restart, Monthly Performance Report, and Enhanced Remote Programming.



Each service engineer is fully equipped with a service van, service stock, mobile communications and a personal computer. The computer is used to interrogate the CHP unit's on-board computer during servicing and also to communicate with the Central Maintenance Computer.

Each ENER-G Rudox standard CHP unit is connected to the Central Maintenance Computer by a modem. As a minimum, the units are contacted on a daily basis to retrieve their stored operating data. The data collated is also used to provide users with monthly written reports showing the total number of hours run, percentage availability achieved and details of any faults their occurrence and hours lost.

In the event of an unforeseen breakdown the on-board computer sends an SOS alert to the Command Center, enabling early corrective action to be taken. On receipt of an SOS signal the Command Center computer interrogates the unit to identify the fault and informs our Controllers.

Quite often the problem is the result of some site-based problem rather than a problem with the unit (e.g. reduced gas pressure, site electrical fault, etc.). In these cases the problem can be resolved and the unit restarted. If the problem is serious and the unit requires attention, a field engineer can be dispatched, armed with detailed prior knowledge of the fault, and hence arrive equipped. This saves an immeasurable amount of time in diagnosing faults on site and hence minimizes downtime and maintenance costs.

Service Charter

The service charter is an expression of our commitment to our customers to strive to continually improve our service and communication with you. Our service charter sets out the standards you can expect from us, explains how you can obtain information and how to let us know if you have any concerns. The hallmark of our service charter is our promise to provide consistently professional, high-quality and value for money service.

This means that at all times:

- We behave with the utmost professionalism.
- We ask for the views of our customers, and take account of those views in our work.
- We take account of, and respond, to our customer's needs promptly and effectively.
- You will be treated with courtesy and consideration and our staff will be as helpful as possible.
- We will exercise the utmost integrity in providing our services.
- We will be honest and open, and accept responsibility for our actions.
- We monitor our performance against our customer service standards, and aim to continually improve the service we offer.

ENER-G

SCHEDULE 1 – CONTRACT PARTICULARS

1. Parties

Purchaser		Supplier	
Company Name:	Bridgeport Microgrid LLC	Company Name:	ENER-G Rudox Inc.
Registered Address:	TBC	Registered Address:	765 State Route 17 Carlstadt, NJ 07072
Contact Name:		Contact Name:	Erik Barnhart
Contact No:		Contact No:	201-438-0111 x 119
Contract / PO:		Contract / ref #:	

2. Client and Location

Client:	City of Bridgeport, CT
Location:	
Address:	
Equipment reference number:	

3. Commercial Terms

Conditions:	This Contract, comprising this Schedule 1 (Contract Particulars), Schedule 2 (Services), Schedule 3 (Conditions of Contract) and Schedule 4 (Charges) and Schedule 5 (Guaranteed Availability) all other Conditions annexed herein, describes the terms on which the Supplier has agreed to provide the Maintenance Services as described in Schedule 2 for the Charges detailed below and in Schedule 4. This Contract constitutes the entire agreement and understanding of the parties and supersedes any agreement or understanding between the parties with respect to the arrangements contemplated by or referred to in this Contract. This Contract may be amended only by a written agreement that is executed by the parties.
Commencement Date:	
Expiry Date:	20 Years from Commencement Date
Warranty Period:	12 months as detailed in Schedule 3
Daily Operating Hours:	Fixed based on total plant (3 units) [redacted] produces a minimum of 5,362,500 kWH annually
Charges:	Fixed annual amount of **$172,500** escalating year on year at a rate of 3%
[redacted]	
Payment Terms:	[redacted] $14,375 paid monthly in advance
	[redacted]

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4. Execution

I/We have read this Agreement and on acceptance by ***ENER-G Rudox Inc.*** I/We agree to be bound by its terms and conditions as stated here and overleaf. I/We understand that this Contract shall not be effective unless and until both parties have executed and delivered this Contract to the other party.

Purchaser		Supplier	
Company Name:	Bridgeport Microgrid LLC	Company Name:	ENER-G Rudox Inc.
Signature of Authorised Rep:		Signature of Authorised Rep:	
Name:		Name:	
Position:		Position:	
Date:		Date:	

ENER-G

SCHEDULE 2 – SERVICES

The Maintenance Services to be provided

1. Subject to the terms of this Contract (as defined in Schedule 3), the Maintenance Service consists of the Suppliers representative attending the Location at appropriate intervals to perform emergency breakdown service and the routine service tasks referred to below.

   The routine service tasks are:

   1.1. Changing the CHP Unit's oil;

   1.2. Changing oil filters;

   1.3 Removal and disposal of oil & filters;

   1.4. Inspection and changing of spark plugs as required;

   1.5. Cleaning and changing of air filters as required;

   1.6 Setting valve clearances as recommended by the third party manufacturer of the prime mover forming part of the CHP Unit, typically every other routine service visit;

   1.7. Such other routine service tasks as the Supplier may stipulate from time to time.

   And for the avoidance of doubt major overhaul parts and labor will be supplied, performed by Supplier;

2. The Intervals for carrying out of routine servicing shall be as reasonably determined by the Supplier in accordance with the Purchaser's requirements and communications having regard to the usage and other features particular to the CHP Unit

3. The charges for the routine service include all labor and parts for the routine services; mileage, labor costs during travel, and any parking / unloading costs are at an additional rate.

4. In particular, the Maintenance Service does not include:

   4.1 Any work external to the Acoustic Enclosure;

   4.2 Any work to the extent required as a result directly or indirectly of any failure by the Purchaser to comply with the terms of this agreement.

   4.3 Any modification to the CHP Unit required as a result of any legislation (whether primary or secondary) or other legal requirement;

   4.4 Any work required as a direct result of the connection of the CHP Unit to any other equipment;

   4.5 Any work in respect of any defect or malfunction arising from any drawing, design or specification supplied by the Purchaser;

   4.6 Any work in respect of any defect or malfunction attributable to any event(s) or cause(s) (other than the negligence or default of the Supplier) external to the CHP Unit, including without limitation normal insurable risks of the Purchaser such as fire, flood or property collapse

5. If, on investigation by the Supplier, any defect in or malfunction of the CHP Unit is determined by the Supplier not be its responsibility under the Contract, or

its repair or rectification is otherwise not part of the Maintenance Service, then, without prejudice to the other rights of the Supplier, the Purchaser shall pay (in advance if so requested by the Supplier) all charges (in accordance with the Supplier's standard schedule of rates, applicable at the time) and costs incurred by, the Supplier in determining the cause of such defect or malfunction and, if applicable, repairing or rectifying the same.

The Administrative Services to be provided

1. Supplier shall furnish upon request monthly performance history by e-mail and 24/7 remote viewing access to the units control systems via computer or IPhone/Android device. Supplier will provide one annual performance review with Purchaser on site or any convenient location in the Northeast USA.

ENER-G

TERMS AND CONDITIONS

1. Definitions and Interpretations

In relation to the conditions (the **'Conditions'**) set out below the following words shall have the following meanings:

"Acoustic Enclosure" means the physical enclosure which contains and defines the external boundaries of the CHP Unit;

"Applicable Law" means and includes any statute, license, law, rule, regulation, code, ordinance, judgment, arbitral award, permit requirement, decree, writ, legal requirement or order of any national, federal, provincial, state or local court or other Governmental Authority, and the official, written judicial interpretations thereof, applicable to the Maintenance Services, the Project, the Location or any obligation of either party to this Contract.

"Charges" means the charges for the provision of the Maintenance Services as described in Clause 6 and Schedule 1;

"CHP Unit" means a combined heat and power unit and described on the front of this Contract, comprising largely of a prime mover, synchronous generator, heat recovery system and control and protection system encased in an Acoustic Enclosure;

"Commencement Date" means the date described in Schedule 1 as the date the Maintenance Services commenced.

"Contract" means the contract between the Purchaser and the Supplier for the provision of Maintenance Services comprising of these Conditions together with Schedule 1 (Contract Particulars), Schedule 2 (Services);

"Effective Date" means the first date on which this Contract is fully executed and delivered by both parties.

"Equipment" means the CHP Unit and any other equipment as may be listed in Schedule 2 to be maintained and repaired in accordance with the Conditions herein;

"Expiry Date" means the date described in Schedule 1 as the date of expiry of this Contract.

"Force Majeure" means an act, event or circumstance that prevents a party from performing its obligations under this Contract, which event or circumstance was not anticipated as of the Effective Date, which is not within the reasonable control of, or the result of the negligence of, the affected party, and which, by the exercise of due diligence, the affected party is unable to overcome or avoid or cause to be avoided.

"Location" means the site at which the Equipment is located, as identified in Schedule 1.

"Maintenance Services" means the services to be performed by the Supplier in accordance with Schedule 2 and these Conditions.

"Purchaser" means the person, firm or company whom is responsible for delivery of the Maintenance Services as detailed within Schedule 1

"Supplier" means ENER-G Rudox Inc. or such other holding, subsidiary or associated company which is detailed within Schedule 1;

2. Services to be Provided

2.1 During the term of the Contract and subject to these Conditions, the Supplier shall provide the Purchaser with the Maintenance Services as detailed in Schedule 2. In the event of a conflict between the provisions of Schedule 2 and these Conditions, the former shall prevail.

2.2 In providing the Maintenance Services the Supplier shall:

(a) Exercise due skill and care and diligence;

(b) Be responsible for the purchase and supply of all labor, materials, consumables, spare and replacement parts, tools, equipment (including access equipment) necessary to perform the Maintenance Services in accordance with the Contract;

(c) Ensure that it employs sufficient numbers of personnel to perform the Maintenance Services and that all such personnel are (i) suitably experienced and qualified within the applicable industry to repair and maintain the Equipment in accordance with the Conditions herein, (b) well-trained in and knowledgeable of the contents of, the procedures and requirements set forth in the applicable Equipment operation and maintenance manual(s) (if applicable) and any other relevant requirements; (c) properly informed and aware of their rights and obligations under all applicable local, state and federal labor laws and regulations; (d) in possession of valid, proper immigration and naturalization documents allowing them to work at the Location; and (e) properly trained and licensed, as may be reasonably necessary to perform the Maintenance Services and any other obligations of Supplier hereunder, and;

(d) When visiting the Location at all times ensure that its employees and subcontractors carry appropriate identification, adhere to all applicable site rules or Location requirements, and leave the premises clean, tidy and safe.

(e) Require its employees and subcontractors to comply with the Occupational Safety and Health Act, and the applicable rules promulgated there under by the U.S. Department of Labor and all applicable Laws affecting job safety.

2.3 Supplier will be fully responsible for the payment of all wages, salaries, benefits and other compensation to its employees. Supplier shall be responsible for withholding from all such amounts and making payments to the appropriate governmental authority for any and all statutory withholdings and other amounts in connection with any and all taxes.

ENER-G

3. Standards and Specification

3.1 The Supplier will perform, and will cause its subcontractors to perform, all of Supplier's duties and obligations hereunder in a good and workmanlike manner, free of defects, using new materials and in compliance with prudent industry practices, government approvals, warranties, and the applicable local electric utility's requirements, including insurance requirements, any site rules applicable to the Location, the operation and maintenance manual(s) applicable to the Equipment (if any), , Applicable Law, and otherwise with this Contract.

3.2 The Supplier shall comply with all Applicable Laws (including obtaining and maintaining business permits, licenses and certificates and delivering all requests, notices and filings under applicable law) that may be required to carry out the Maintenance Services and all other duties and obligations hereunder.

3.3 The Supplier shall indemnify the Purchaser against all claims, costs, expenses, loss or damage whatsoever which the Purchaser may suffer, howsoever arising from or out of the Supplier's breach of the obligations pursuant to Clauses 3.1 and 3.2.

4. Spare and Replacement Parts

4.1 The Supplier shall use reasonable endeavors to keep a stock and supply of spare parts and replacement components (if applicable) required to maintain the Equipment and undertake all its obligations herein in accordance with the provisions of the Contract.

4.2 It shall be the responsibility of the Supplier to notify the Purchaser if the Equipment or any part thereof which may become obsolete within a period of 30 days of becoming aware or ought to reasonably become aware of the same.

5. Access to the Location.

5.1 Purchaser shall ensure that Supplier and its authorized agents, employees and/or subcontractors shall have reasonable access to the Location in order to provide scheduled or unscheduled Maintenance Services, emergency services, and to perform other services required under this Contract, in all cases, to the extent that such activities and/or services are within the scope of this Contract and are provided in accordance with the terms of this Contract. If a cost is incurred for parking or unloading, this cost will be passed along to Purchaser in accordance with Schedule 4.

5.2 The Supplier shall, and shall ensure that its agents, employees and subcontractors comply with all reasonable requirements of Purchaser when at the Location, including with respect to passes, badges and conduct on the site, and shall indemnify Purchaser for any losses arising out of or in connection with a failure by Supplier to comply with its obligations hereunder.

6. Charges

6.1 In consideration of the Maintenance Services, the Purchaser shall pay to the Supplier the Charges calculated in accordance with Schedule 1.

6.2 All Charges will be invoiced annually in advance, unless otherwise stated in Schedule 1, with effect from the Commencement Date or each anniversary thereof.

6.3 All invoices must quote the applicable purchase order number and other details in sufficient particularity to identify the Maintenance Services that are the subject of such invoice and be sent to the Purchaser's address as detailed in Schedule 1.

6.4 All Charges due under the Contract shall (unless the subject of a dispute) be paid by the Purchaser within thirty (30) days from the date of the valid invoice.

6.5 All payments shall be made in United States dollars by wire transfer to the account specified in Supplier's invoice, unless otherwise agreed by the parties

6.6 Where the Supplier submits an incorrect invoice, the time for payment will be calculated from the date of submission of the correct invoice or credit note, without additional charge or loss of any discount.

6.7 The rates for excess work or other than fixed amounts may be increased on the anniversary of the Contract at the Suppliers discretion without the prior written consent of the Purchaser.

6.8 If a party, in good faith, disputes the amount of any invoice or any part thereof, it shall pay the full amount of the invoice when due. Any invoice dispute or invoice adjustment shall be in writing and shall state the basis for the dispute or adjustment. Upon resolution of the dispute, any overpayments shall be returned upon request or deducted by the party receiving such overpayment from subsequent payments, with interest accrued at the Interest Rate from and including the date of such overpayment, to but excluding the date repaid or deducted by the party receiving such overpayment. Any dispute with respect to an invoice is waived unless the other party is notified in accordance with this Clause 6.8 within six (6) months after the invoice is rendered or any specific adjustment to the invoice is made.

6.9 Any notice of intention to withhold payments shall be given no less than 10 days before the final date of payment, such notice shall specify the amount to be withheld and the ground for withholding payment, if there is more than one ground, each ground and the amount attributable.

6.10 The Charges shall be inclusive of any and all taxes imposed under applicable law on Supplier, any subcontractors of Supplier, or the Maintenance Services, including, for the avoidance of doubt, any applicable sales and use taxes.

7. Warranty and Guarantees

7.1 The Supplier warrants that all labor and services provided under this Contract shall at all times comply with all relevant standards and specifications as detailed in Clause 3 above.

7.2 All labor, spare and replacement parts shall be as specified and of the best material and workmanship, suitable for the purposes for which they are required and the Supplier warrants that they will be free from defects for a period of 12 months from completion of performance of the applicable portion of the Maintenance Services. Such works shall be carried out at the Supplier's own cost where the same is due to any failure of the Supplier to comply with this Contract.

ENER-G

8. Term and Termination

8.1 Subject to the provisions of this Clause 8, this Contract shall continue in force until the Expiry Date.

8.2 Either party shall be entitled forthwith to terminate the Contract with written notice to the other if:

(a) The other party commits any material breach of any of these Conditions or any other provisions of this Contract, and in the case of such breach being capable of remedy, fails to remedy the same within 30 days after receipt of written notice;

(b) The other party (i) files a petition or otherwise commences, authorizes or acquiesces in the commencement of a proceeding or cause of action under any bankruptcy, insolvency, reorganization or similar law, or has any such petition filed or commenced against it, which is not dismissed within sixty (60) days; (ii) the other party makes a general arrangement with its creditors or becomes subject to an administration order; (iii) otherwise becomes bankrupt or insolvent (however evidenced); (iv) has a liquidator, administrator, receiver, trustee, conservator or similar official appointed with respect to it or any substantial portion of its property or assets; (v) the other party goes into liquidation (except for the purposes of genuine amalgamation or reconstruction) and in such manner that the company resulting from the same agrees to be bound by or to assume the obligations imposed on that other party under this Contract; or (vi) is generally unable to pay its debts as they fall due.

(c) In the opinion of the Supplier it is no longer economically viable to repair or replace the CHP Unit(s); or

(d) Purchaser elects to terminate at its sole discretion paying the then per hour service fee times 12 (twelve).

8.3 For the purposes of Clause 8.1 a breach shall be considered capable of remedy if the party in breach can comply with the provisions in question in all respects other than as to time of performance.

8.4 The rights to terminate this Contract given in this Clause 8 shall not prejudice any other right or remedy of either party in respect of the breach concerned (if any) or any other breach. Each party may enforce any of its remedies under this Contract successively or concurrently at its option. No delay or failure on the part of a party to exercise any right or remedy to which it may become entitled shall constitute an abandonment of any such right and the party shall be entitled to exercise such right or remedy at any time otherwise entitled. All of the remedies and other provisions of this Clause 8 shall be without prejudice and in addition to any right of setoff, recoupment, combination of accounts, lien or other right to which any party is at any time otherwise entitled (whether by operation of law or in equity, under contract or otherwise).

9. Indemnification and Liability

9.1 The Supplier shall assume liability for, and will indemnify, defend and hold harmless Purchaser from and against all claims of every kind and nature, including reasonable attorneys' fees and expenses that may be imposed on, incurred by or asserted against Purchaser and its directors, officers, members, shareholders, agents and employees (the "**Purchaser Indemnified Persons**"), including but not limited to any loss, damage or liability attributable to any death or personal injury of any person whatsoever and any damage or loss whatsoever to any property, which arises out of or in connection with (i) the negligence, recklessness or wilful misconduct by Supplier, its personnel, its agents or its subcontractors (collectively, "**Supplier Personnel**") or the performance or provision of the Maintenance Services and its obligations hereunder, (ii) the breach by Supplier of any of its representations, warranties, covenants or other agreements contained in this Contract, and (iii) any violation of Applicable Law or governmental approvals by Supplier's Personnel.

9.2 Notwithstanding anything in this Contract to the contrary, the Supplier's liability for any loss or damage however arising shall be limited to (i) if, covered by insurance, the amount of any payments paid pursuant to such insurance policy with respect to such loss or damage, and (ii) otherwise, the total value of charges paid by the Purchaser to the Supplier during the twelve (12) months of this Contract.

9.3 EXCEPT AS PROVIDED IN THIS CLAUSE 9 AND NOTWITHSTANDING ANY OTHER PROVISIONS OF THIS CONTRACT, NEITHER PARTY NOR ANY OF ITS INDEMNIFIED PERSONS SHALL BE LIABLE TO THE OTHER PARTY OR ANY OF ITS INDEMNIFIED PERSONS FOR ANY DAMAGES, WHETHER DIRECT, SPECIAL, PUNITIVE, EXEMPLARY, INDIRECT, OR CONSEQUENTIAL, OR LOSSES OR DAMAGES FOR LOST REVENUE OR LOST PROFITS, WHETHER FORESEEABLE OR NOT, ARISING OUT OF, OR IN CONNECTION WITH THIS AGREEMENT, EXCEPT AS EXPRESSLY SET FORTH HEREIN.

10. Insurance

10.1 The Supplier shall insure and keep himself insured against his liabilities under Clause 9.2 with a reputable insurance company or underwriters.

10.2 The Supplier shall upon request from the Purchaser make available to the Purchaser copies of certificate(s) of insurance, together with a brokers declaration from its insurers in respect of all relevant policies of insurance.

10.3 Failure by the Supplier to provide evidence of current insurances as required under this Clause 10 shall be considered a material breach of the Contract under Clause 8.2(a).

11 Notices

11.1 Any notices under this Contract shall be given in writing and signed by the authorized representative on behalf of the party giving such notice as detailed in Schedule 1.

11.2 Such notice may be served by hand, recorded delivery or registered post or by fax (followed by hand, recorded delivery or registered post) at the addresses detailed in Schedule 1 or any other address as notify in writing and marked for the attention of the 'Directors'.

11.3 Notices given by post shall be effective upon the earlier of (i) actual receipt, and (ii) four (4) business days after mailing. Notices delivered by hand shall be effective upon delivery. Notices delivered by fax shall be effective upon acknowledgement of receipt or 2 Business Days after the day of sending, whichever the sooner.

12. Disputes

12.1 If a dispute or difference arises between the Purchaser and the Supplier in respect of any fact, matter or thing arising out of or in connection with the Contract, either party may give a notice in writing to the other party specifying:

(a) The dispute or difference;

(b) A reasonable summary of the position of the party giving the notice.

The parties shall meet and undertake genuine and bone fide negotiations with a view to resolving the dispute or difference prior to the commencement of formal proceedings under Clause 12.2.

12.2 Any disputes or differences arising under the Contract shall be submitted to the exclusive jurisdiction of the state and federal courts located in New York.

13. Liens.

13.1 Supplier shall not, directly or indirectly, or by or through its subcontractors or any of its or its subcontractors' employees, assume, create or suffer to exist or be created any lien on the Equipment, the site, the Location, or any other property of Purchaser or any portion thereof. If Supplier fails to discharge any lien in violation of the above paragraph, Purchaser may, but will not be obligated to: (i) obtain a bond, letter of credit or other security for such lien and, upon posting such security, shall be entitled to recover promptly from Supplier the reasonable costs and expenses incurred by Purchaser in connection therewith; or (ii) offset the amount of any such lien from any amounts otherwise due to Supplier under this Contract.

14 Subcontracting

14.1 The Supplier shall not subcontract the Maintenance Services, or any part thereof without the prior written consent of the Purchaser, provided that should such consent be given, it shall not relieve the Supplier from any of its obligations duties or liabilities under the Contract.

15. Assignment

15.1 The Supplier may assign all or any part of this Contract and may delegate the performance of all or any of its obligations under this Contract without the Purchaser's consent.

15.2 The Purchaser shall not assign all or any part or benefit of this Contract without obtaining prior written consent from the Supplier, such consent shall not be unreasonably withheld, delayed or conditioned.

16. Force Majeure

16.1 Neither party shall be in breach of the Contract if it fails to perform its obligations under the Contract or delays in performance as a result of Force Majeure, to the extent such performance is prevented by such Force Majeure.

16.2 In the event of failure, the party seeking to rely on this Clause 16 must (i) notify the other party in writing within a period of 14 days of becoming aware or ought to reasonably become aware of the same, and (ii) use all commercially reasonable efforts to remedy the cause(s) and effect(s) of such Force Majeure with all reasonable dispatch; provided, however, that the affected party shall not be obligated to undertake unreasonable or uneconomic costs or burdens, including the settlement of strikes or labor disturbances on terms other than are acceptable to it in its sole discretion, in order to overcome the effects of the Force Majeure and reinstate full performance of its obligations under this Contract. Until the Force Majeure is remedied, the non-affected party shall not be required to perform or resume performance of its obligations to the affected party corresponding to the obligations of the affected party excused by Force Majeure.

16.3 If the failure or delay referred to in Clause 16.1 continues for a period of 90 days or more and as a result the Equipment is rendered substantially inoperable for such period, the Purchaser shall be entitled to forthwith terminate the Contract. Such termination shall be without prejudice to any other rights or remedies of the Purchaser.

17. Severability

17.1 If any provision of this Contract is held by any court or other competent authority to be void or unenforceable in whole or in party this Contract shall continue to be valid as to the remaining provisions and the remainder of the affected provision provided that the invalidity or unenforceability of the said provision shall not prevent performance of this Contract.

18. Third Party Rights

18.1 This Contract confers no rights whatsoever upon any person other than Purchaser and Supplier and shall not create, or be interpreted as creating, any standard of care, duty or liability to any person not a party hereto.

19. No Waiver.

19.1 No waiver by either Party of any one or more defaults by the other Party in the performance of any of the provisions of this Agreement shall operate or be construed as a waiver of any other default or defaults whether of a like kind or different nature.

20. Confidentiality.

20.1 Each party recognizes that all information pertaining to the Equipment which is not publicly available, including trade secrets, technical information, customer lists, and copyrighted and proprietary information designated as such is considered "**Confidential Information.**" Neither party shall disclose any Confidential Information to any third party without the prior written consent of the other party.

21. Governing Law; Jury Trial Waiver

22.1 This Contract will be governed and construed in accordance with the laws of New York, without reference to choice of law doctrine. EACH PARTY WAIVES ITS RESPECTIVE RIGHTS TO ANY JURY

ENER-G

TRIAL WITH RESPECT TO ANY LITIGATION ARISING UNDER OR IN CONNECTION WITH THIS CONTRACT.

ENER-G

SCHEDULE 4 – CHARGES

1. Subject to the terms of this Contract (as defined in Schedule 3), the Purchaser shall be charged as follows for the provision of the Maintenance Services as described in Schedule 2;

   1.1 The charging mechanism is based upon a fixed charge from a total plant annual run hour rate accrued from varied engine utilization as well as excess running of any/all engines as highlighted in Schedule 1;

   1.2 The fixed charges will be payable annually in advance. Excess charges will be paid annually in arrears and each will remain payable for so long as the Contract is in force;

   1.3 All charges are due within 30 days from the date of invoice;

   1.4 Work schedules and contract rates will be reviewed annually to ensure requested / required activities match the schedule appropriately.

2 [redacted]

Controlled Air INC.

Heating, Air Conditioning & Temperature Controls

Full Maintenance Service Contract
Heat Recovery From Generators

Submitted To:

Equipment Site:

Bridgeport Microgrid LLC

Date: 10/7/2014

The Right Environment through Engineering and Support

We provide environmentally sound, energy-efficient HVAC designs that save money and promote conservation of energy to help the environment. We are sponsoring members of the Connecticut Green Building Council and can help make your building LEED Certified From cogeneration to photovoltaic panels, we can help you achieve your sustainability goals

Johnson Controls

AUTHORIZED BUILDING CONTROLS SPECIALIST

U.S. GREEN BUILDING COUNCIL LEED USGBC

Controlled Air INC.

Heating, Air Conditioning & Temperature Controls

Full Maintenance Service Contract

This Full Maintenance agreement is an all inclusive service contract designed to provide preventive service, repairs, scheduled upgrades, and maintenance to the below itemized equipment for a 20 year period. The program will be initiated, scheduled, and monitored by Controlled Air, Inc. This agreement is designed to maximize the life of your equipment, minimize repairs, and minimize operating costs by keeping the equipment at peak operating efficiency.

Controlled Air Inc. will provide the following maintenance services on the attached equipment listing:

* An inspection and preventive maintenance service that will keep the equipment in good operating order. Inspections implemented will be based on the manufacturer's recommendations.

* All the necessary labor and material needed to perform the inspection service. Inspection procedures will follow Controlled Air's custom inspection procedures.

* Emergency response as needed 24 hours per day, 7 days per week.

* Any labor needed for emergency repairs.

* Any material needed for repairs.

You agree to:

* Operate the specified equipment per our instructions.

* Promptly notify us of any unusual operating conditions.

* Permit our service technicians to use your common building maintenance tools such as ladders.

* Permit only our Service Technicians to work on the specified equipment.

General Conditions:

Service Time Period: 8:00 AM to 5:00 PM Monday through Friday excluding holidays.

System Design and Performance: We will not be responsible for system design or its performance in maintaining design conditions.

Damage: We will not be responsible for any damage caused by obsolescence or acts of God or for any special, incidental, or consequential damages resulting from or occasioned by the failure of the specified equipment.

Controlled Air INC.
Heating, Air Conditioning & Temperature Controls

Full Maintenance Service Contract

Exclusions: Electrical service beyond the specified equipment disconnect switch. Damage to equipment caused by vandalism, electrical power brownouts, unexpected freezing, and damage due to weather and natural disasters. Work made necessary by the enforcement of government codes or building and union regulations. Repairs necessary to restore the specified equipment to satisfactory condition occasioned by someone other than our Service Engineers working on the specified equipment.

Contract Terms:

Contract Pricing:	$17,725.00 First year	Plus Connecticut Sales tax.
Payment terms:	Monthly Billing	
Contract will commence on:	Upon Signature	

Duration: This service contract will be in place for 20 years.

Yearly pricing: Contract will increase 3% per year.

Termination: Either party may terminate this contract by notifying the other in writing at least 30 days before the yearly anniversary date.

Payment: Payment will be due to Controlled Air Inc. within 30 days from invoice date. Any payment past due shall bear monthly interest at the maximum interest rate permissible under the statute of the State of Connecticut. You will also be responsible for any attorney's fees if the account is turned over to an attorney and also shall be liable for Sheriff fees, court costs and any other expenses of collection.

Effective only upon acceptance: This agreement is not binding on the parties until:
A) The equipment has been checked by our Service Technician.
B) Signed as accepted by Controlled Air Inc.

Maintenance For Heat Recovery From Generators (Generator, and electrical distribution maintenance by others)

EQUIPMENT LISTING

QTY	Equipment Type	Equipment Location
2	Plate exchangers	City Hall Police Headquarters
2	Glycol makeup system to include glycol	City Hall Police Headquarters
3	Exchanger Circulation Pumps	City Hall Police Headquarters
2	Johnson Controls Metasys system to include software – Monitor and computer	City Hall Police Headquarters
	Piping – Automatic control valves	City Hall Police Headquarters
3	Gas regulators	City Hall Police Headquarters

Additional Services Provided:

- It is estimated the FX60 (Control system front end) will be at the end of its lifespan at some point during the 20 year service contract. Controlled Air, Inc.will provide an upgrade to a comparable device at the time the FX60 goes end of life and is no longer supported.
- Any Johnson Controls software will be updated as needed to keep the equipment up to date.
- Glycol will be replaced approximately ever 7 years as it deteriorates as is no longer effective.
- Plate exchangers will be dismantled , new gaskets and cleaned every 7 years.

CONTRACT ACCEPTANCE: We both acknowledge that this proposal contains our entire agreement

Your acceptance:

Company:

By: _____

Title: _____

Date: _____

Our Acceptance:

By: _____

Title:

Date:

Controlled Air INC.

Heating, Air Conditioning & Temperature Controls

Full Maintenance Service Contract
Bridgeport Microgrid Cooling Tower

Submitted To:

Equipment Site:

Bridgeport Microgrid LLC

Date: 10/23/15

The Right Environment through Engineering and Support

We provide environmentally sound, energy-efficient HVAC designs that save money and promote conservation of energy to help the environment. We are sponsoring members of the Connecticut Green Building Council and can help make your building LEED Certified From cogeneration to photovoltaic panels, we can help you achieve your sustainability goals.

Johnson Controls

AUTHORIZED BUILDING CONTROLS SPECIALIST

U.S. GREEN BUILDING COUNCIL LEED USGBC

Controlled Air INC.

Heating, Air Conditioning & Temperature Controls

Full Maintenance Service Contract

Our Full Maintenance agreement is designed to provide you with an ongoing maintenance program, which includes any labor or material needed for repairs. The program will be initiated, scheduled, and monitored by our company. This agreement is designed to maximize the life of your equipment, minimize repairs, and minimize operating costs by keeping the equipment at peak operating efficiency.

Controlled Air Inc. will provide the following maintenance services on the attached equipment listing:

* An inspection and preventive maintenance service that will keep the equipment in good operating order. Inspections implemented will be based on the season. See our maintenance schedule for a detailed listing.

* All the necessary labor and material needed to perform the inspection service. Inspection procedures will follow Controlled Air's custom inspection procedures. See our inspection checklist for details.

* Emergency response as needed 24 hours per day, 7 days per week.

* Any labor needed for emergency repairs.

* Any material needed for repairs.

You agree to:

* Operate the specified equipment per our instructions.

* Promptly notify us of any unusual operating conditions.

* Permit our service technicians to use your common building maintenance tools such as ladders.

* Permit only our Service Technicians to work on the specified equipment.

General Conditions:

Service Time Period: 8:00 AM to 5:00 PM Monday through Friday excluding holidays.

System Design and Performance: We will not be responsible for system design or its performance in maintaining design conditions.

Damage: We will not be responsible for any damage caused by obsolescence or acts of God or for any special, incidental, or consequential damages resulting from or occasioned by the failure of the specified equipment.

Controlled Air INC.
Heating, Air Conditioning & Temperature Controls

Full Maintenance Service Contract

Exclusions: Electrical service beyond the specified equipment disconnect switch. Damage to equipment caused by vandalism, electrical power brownouts, unexpected freezing, and damage due to weather and natural disasters. Work made necessary by the enforcement of government codes or building and union regulations. Repairs necessary to restore the specified equipment to satisfactory condition occasioned by someone other than our Service Engineers working on the specified equipment. Any labor and material required bringing up to date obsolete components or equipment.

Contract Terms:

Contract Pricing: **$11,268.00** First Year Plus Connecticut Sales tax.
Payment terms: Monthly Billing

Contract will commence on: Upon Signature

Duration: This service contract will be in place for 20 years

Yearly Pricing: Contract will increase 3% per year

Termination: Either party may terminate this contract by notifying the other in writing at least 30 days before the anniversary date. Early termination will result in a $10,000.00 termination fee.

Payment: Payment will be due to Controlled Air Inc. within 30 days from invoice date. Any payment past due shall bear monthly interest at the maximum interest rate permissible under the statute of the State of Connecticut. You will also be responsible for any attorney's fees if the account is turned over to an attorney and also shall be liable for Sheriff fees, court costs and any other expenses of collection.

Effective only upon acceptance: This agreement is not binding on the parties until:
A) The equipment has been checked by our Service Technician.
B) Signed as accepted by Controlled Air Inc.

Controlled Air INC.
Heating, Air Conditioning & Temperature Controls

Full Maintenance Service Contract

EQUIPMENT LISTING

QTY	Manufacturer	Equipment Location
1	Delta TM Cooling tower	City Hall
2	15 HP Condensor Pumps	City Hall
2	Cooling Tower Fan VFDs	City Hall
2	15 HP Evaporator Pumps	City Hall

Additional Services Provided:

- It is estimated the tower fill will be at the end of its life expectancy approximately ten years into the contract. Controlled Air will furnish and install new fill when needed.
- The makeup water fill tower valves will be replaced as needed.
- Pump motors and seals will be replaced as needed.
- Fan motors will be replaced as needed.
- Annual water treatment included
- Spring and fall start and shutdown.

Controlled Air INC.

Heating, Air Conditioning & Temperature Controls

Full Maintenance Service Contract

CONTRACT ACCEPTANCE: We both acknowledge that this proposal contains our entire agreement.

Your acceptance:

Company:

By: _____

Title: _____

Date: _____

Our Acceptance:

By: _____

Title:

Date:

EQUIPMENT SITE: **Bridgeport Microgrid Cooling Tower - Pumps**

Please sign and date above.
Return this signature page only.

CONTROLLED AIR, INC. COPY

Planned Service

CUSTOMER Controlled Air, Inc.
LOCAL JOHNSON CONTROLS OFFICE 27 INWOOD RD ROCKY HILL , CT 06067-3412
AGREEMENT START DATE: TBD
PROPOSAL DATE: 10/23/2015
ESTIMATE NO: 1-A7B7KJD

Partnering with you to deliver value-driven solutions

A Planned Service Agreement with Johnson Controls provides you with a customized service strategy designed around the needs of your facility. Our approach features a combination of scheduled, predictive and preventative maintenance services that focus on your goals.

As your building technology services partner, Johnson Controls delivers an unmatched service experience delivered by factory-trained, highly skilled technicians who optimize operations of the buildings we work with, creating productive and safe environments for the people within.

By integrating our service expertise with innovative processes and technologies, our value-driven planned service solutions deliver sustainable results, minimize equipment downtime and maximize occupant comfort.

YORK BY JOHNSON CONTROLS

METASYS BY JOHNSON CONTROLS

Johnson Controls

Executive Summary

PLANNED SERVICE PROPOSAL FOR CITY OF BRIDGEPORT

Dear Robert

We value and appreciate your interest in Johnson Controls as a service provider for your building systems and are pleased to provide a value-driven maintenance solution for your facility. The enclosed proposal outlines the Planned Service Agreement we have developed on your facility.

Details are included in the Planned Service Agreement summary (Schedule A), but highlights are as follows:

- In this proposal we are offering a service agreement for 20 Years - starting TBD and ending TBD (approximately 2035)
- The agreement price for first year is $10,782.00; see Schedule A, Supplemental Price and Payment Terms, for pricing in subsequent years.
- The equipment options and number of visits being provided for each piece of equipment are described in Schedule A, Equipment list.

As a manufacturer of both mechanical and controls systems, Johnson Controls has the expertise and resources to provide proper maintenance and repair services for your facility.

Again, thank you for your interest in Johnson Controls and we look forward to becoming your building technology services partner.

Please contact me if you have any questions.

Sincerely,

Stephen Body
Fld Sales ML4
(860) 571- 3345

Benefits of Planned Service

A Planned Service Agreement with Johnson Controls will allow you to optimize your building's facility performance, providing dependability, sustainability and energy efficiency. You'll get a value-driven solution that fits your specific goals, delivered with the attention of a local service company backed by the resources of a global organization.

With this Planned Service Agreement, Johnson Controls can help you achieve the following five objectives:

1. **Identify Energy Savings Opportunities**
   Since HVAC equipment accounts for a major portion of a building's energy usage, keeping your system performing at optimum levels may lead to a significant reduction in energy costs.

2. **Reduce Future Repair Costs**
   Routine maintenance may maximize the life of your equipment and may reduce equipment breakdowns.

3. **Extend Asset Life**
   Through proactive, factory-recommended maintenance, the life of your HVAC assets may be extended, maximizing the return on your investment.

4. **Ensure Productive Environments**
   Whether creating a comfortable place where employees can be productive or controlling a space to meet specialized needs, maintenance can help you achieve an optimal environment for the work that is being accomplished

5. **Promote Environmental Health and Safety**
   When proper indoor conditions and plant requirements are maintained, business outcomes may be improved by minimizing sick leave, reducing accidents, minimizing greenhouse gas emissions and managing refrigerant requirements.

All of the services we perform on your equipment are aligned with "The 5 Values of Planned Maintenance" and our technicians understand how the work they perform can help you accomplish your business objectives.

Johnson Controls

Personalized Account Management

A Planned Service Agreement also provides you with the support of an entire team that knows your site and can closely work with you on budget planning and asset management. Your local Johnson Controls account management team can help guide planned replacement, energy retrofits and other building improvement projects. You'll have peace of mind that an entire team of skilled professionals will be looking out for what is best for your facility and budget.

A Culture of Safety

Johnson Controls technicians take safety seriously and personally, and integrate it into everything they do. All of our technicians participate in regular and thorough safety training. Because of their personal commitment, we are a leader in the HVAC service industry for workplace safety performance. This means that you do not have to worry about us when we are on your site.

Commitment to Customer Satisfaction

Throughout the term of your Planned Service Agreement, we will periodically survey you and use your feedback to continue to make improvements to our service processes and products. Our goal is to deliver the most consistent and complete service experience possible. To meet this goal, we've developed and implemented standards and procedures to ensure you receive the ultimate service experience – every time.

Energy & Sustainability

A more sustainable world one building at a time – Johnson Controls is a company that started more than 125 years ago with a product that reduced energy use in buildings. We've been saving energy for customers ever since. Today, Johnson Controls is a global leader in creating smart environments where people live, work and play, helping to create a more comfortable, safe and sustainable world.

The Value of Integrity

Johnson Controls has a long, proud history of integrity. We do what we say we will do and stand behind our commitments. Our good reputation builds trust and loyalty. In recognition for our commitment to ethics across our global operations, we are honored to be named one of the World's Most Ethical Companies by Ethisphere Institute, a leading think tank dedicated to business ethics and corporate social responsibility. In addition, *Corporate Responsibility Magazine* recognizes Johnson Controls as one of the top companies in its annual "100 Best Corporate Citizens" list.

Service Plan Methodology

Johnson Controls

As part of the delivery of this Planned Service Agreement, Johnson Controls will dedicate a local customer service agent responsible for having a clear understanding of the agreement scope, and your facility procedures and protocols.

A high-level overview around our service delivery process is outlined below including scheduling, emergency service, on-site paperwork, communication and performing repairs outside of the agreement scope.

Scheduling

Preventative maintenance service will be scheduled using our automated service management system. In advance of the scheduled service visit, our technician is sent a notice of service to a smartphone. Once the technician acknowledges the request, your customer service agent will call or e-mail your on-site contact to let you know the start date and type of service scheduled.

The technician checks in, wears personal protective equipment, performs the task(s) as assigned, checks out with you and asks for a screen capture signature on the smartphone device. A work order is then e-mailed, faxed or printed for your records.

Emergency Services

Emergency service can be provided 7 days a week, 24 hours a day, 365 days a year. During normal business hours, emergency service will be coordinated by the customer service agent. After hours, weekends and holidays, the emergency service number transfers to the Johnson Controls after-hours call center and on-call technicians are dispatched as needed.

Johnson Controls is committed to dispatching a technician within hours of receiving your call through the service line. A work order is e-mailed, faxed or printed for your records. Depending on the terms of your agreement, you may incur charges for after hour services.

Communication

A detailed communication plan will be provided to you so you know how often we will provide information to you regarding your Planned Service Agreement. The communication plan will also provide you with your main contacts at Johnson Controls.

Approval Process for Non-Covered Items

Johnson Controls will adhere to your procurement process. No work will be performed outside of the agreement scope without prior approval. Johnson Controls will work with you closely to ensure your procurement process is followed before any non-covered item work is started.

Summary of Services and Options

Comprehensive and Operational Inspections

During comprehensive and operational inspections, Johnson Controls will perform routine checks of the equipment for common issues caused by normal wear and tear on the equipment. Additional tests can be run to confirm the equipment's performance.

Routine maintenance, such as lubrication, cleaning and tightening connections, can be performed depending on the type of equipment being serviced. Routine maintenance is one of the keys to the five values of maintenance – it can help identify energy saving opportunities, reduce future repair costs, extend asset life, ensure productive environments, and promote health and safety.

Summary

Thank you for considering Johnson Controls as your building technology services partner. The following agreement document includes all the details surrounding your Planned Service Agreement.

With planned service from Johnson Controls, you'll get a value-driven solution that can help optimize your building controls and equipment performance, providing dependability, sustainability and energy efficiency. You'll get a solution that fits your specific goals, delivered with the attention of a local service company backed by the resources of a global organization.

We'll be your building technology services partner

Johnson Controls

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Planned Service Agreement

Customer Name: Controlled Air, Inc.
Address: BRIDGEPORT CT 06604-4023
Proposal Date: 10/23/2015
Estimate #: 1-A7B7KJD

Scope of Service

Johnson Controls, Inc. ("JCI") and the Customer (collectively the "Parties") agree Preventative Maintenance Services, as defined in Schedule A ("Services"), will be provided by JCI at the Customer's facility. This Planned Service Agreement, the Equipment List, Supplemental Price and Payment Terms, Terms and Conditions, and Schedules attached hereto and incorporated by this reference as if set forth fully herein (collectively the "Agreement"), cover the rights and obligations of both the Customer and JCI.

Extended Service Options for Premium Coverage

If Premium Coverage is selected, on-site repair services to the equipment will be provided as specified in this Agreement for the equipment listed in the attached Equipment List.

Equipment List

Only the equipment listed in the Equipment List will be covered as part of this Agreement. Any changes to the Equipment List must be agreed upon in writing by both Parties.

Term / Automatic Renewal

This Agreement takes effect on TBD and will continue until TBD ("Original Term"). The Agreement will automatically renew on a year-to-year basis after the Original Term ends unless the Customer or JCI gives the other written notice it does not want to renew. The notice must be delivered at least forty-five (45) days prior to the end of the Original Term or of any renewal period. The Original Term and any renewal periods are sometimes collectively referred to in this Agreement as the "Term". Renewal price adjustments are discussed in the Terms and Conditions.

Refrigerant Charges

Refrigerant is not included under this Agreement and will be billed separately to the Customer by JCI.

Johnson Controls

Price and Payment Terms

The total Contract Price for JCI's Services during the 1st year of the Original Term is 10,782.00. This amount will be paid to JCI in Quarterly installments. Pricing for each subsequent year of a multiyear original term is set forth in the Supplemental Price and Payment Terms. All payments will be due and payable within 30 days of the invoice date and such timely payment by Customer shall be a condition precedent to JCI's obligation to perform its Services. A penalty of one and a half percent (1.5%) of the amount due per month shall accrue for payments received after the payment due date. Renewal price adjustments are set forth in the Terms and Conditions.

Invoices will be sent to the following location:

This proposal is valid for thirty days from the proposal date.

JOHNSON CONTROLS Inc.	
By: Stephen Body	**By:**
Signature :	**Signature:**
Title: Fld Sales ML4 **Date:**	**Title:** **Date:**
Signature:	**Customer PO#:**
Title: **Date:**	

JCI Branch: JOHNSON CNTRL SPRINGFIELD MA HRTFRD CT CB - 0N61

Address: 27 INWOOD RD

ROCKY HILL CT 06067-3412

Branch Phone:

Johnson Controls

Schedule A

Equipment List (Selected Equipment to be serviced)

Site			Address				
CITY OF BRIDGEPORT			BRIDGEPORT CT 06604-4023				
Qty	**Equipment**	**Services Provided**	**# Per Year**	**Coverage Type**	**Extended Coverage**	**Year To Be Activated**	**Year To Be Deactivated**
1	Chiller, Water Cooled, Absorption (Single Stage), <399 Tons			Premium 24x7			
		Operational	5				
		Comprehensive	1				
		Absorber/Condenser Tube Brushing (removal and replacement of one head only)	1				
		Seasonal Start-up	1				
		Seasonal Shut-down	1				

Supplemental Price & Payment Terms (Applies to Multi-Year Contracts Only)

Year # 2: $10,997.00

Year # 3: $11,217.00

Year # 4: $11,441.00

Year # 5: $11,669.00

Year # 6: $14,450.00

Year # 7: $14,884.00

Year # 8: $15,330.00

Year # 9: $15,790.00

Year # 10: $16,264.00

Year # 11: $16,752.00

Year # 12: $18,200.00

Year # 13: $18,746.00

Year # 14: $19,308.00

Year # 15: $19,887.00

Year # 16: $20,484.00

Year # 17: $21,508.00

Year # 18: $22,583.00

Year # 19: $23,712.00

Year # 20: $24,898.00

Special Additions & Exceptions

TERMS AND CONDITIONS

DEFINITIONS

CONNECTED SERVICES are the services and related equipment that allow JCI to access, monitor, and trend data remotely, and which may be available for certain types of Covered Equipment.

CONTRACT PRICE means the price that Customer shall pay to JCI for the Services.

COVERED EQUIPMENT means the equipment for which Services are to be provided under this Agreement. Covered Equipment is set forth in Schedule A - Equipment List.

EQUIPMENT FAILURE means the failure, under normal and expected working conditions, of moving parts or electric or electronic components of the Covered Equipment that are necessary for its operation.

SCHEDULED SERVICE VISITS are the on-site labor visits required to perform JCI recommended inspections and preventive maintenance on Covered Equipment.

SCHEDULED SERVICE MATERIALS are the materials required to perform Scheduled Service Visits on Covered Equipment, unless excluded from the Agreement.

PREMISES means those Customer premises where the Covered Equipment is located.

REPAIR LABOR is the labor necessary to restore Covered Equipment to working condition following an Equipment Failure, but does not include services relating to total equipment replacement due to obsolescence or unavailability of parts.

CENTRAL STATION MONITORING means remote monitoring of Covered Equipment and/or systems including building automation, HVAC equipment, and fire alarm, intrusion, and/or other life safety systems for alarm and event notifications.

REMOTE OPERATING SERVICES means remote interrogation, modification and/or operation of building automation, HVAC equipment, and/or other Covered Equipment.

REPAIR MATERIALS are the parts and materials necessary to restore Covered Equipment to working condition following an Equipment Failure, but excludes total equipment replacement due to obsolescence or unavailability of parts, unless excluded from the Agreement. At JCI's option, Repair Materials may be new, used, or reconditioned.

SERVICES are the work, materials, labor, service visits, and repairs to be provided by JCI pursuant to this Agreement.

JCI'S SERVICES FOR COVERED EQUIPMENT

1. **BASIC COVERAGE** means Scheduled Service Visits, plus Scheduled Service Materials (unless excluded from this Agreement). No parts, equipment, Repair Labor or Repair Materials are provided for under BASIC COVERAGE.

2. **PREMIUM COVERAGE**means BASIC COVERAGE plus Repair Labor, plus Repair Materials (unless excluded from the Agreement).

3. **EXTENDED SERVICE** means Services performed outside JCI's normal business hours and is available only if Customer has PREMIUM COVERAGE. Extended Service is available either 24/5 or 24/7, at Customer's election. The price for Extended Service, if chosen by Customer, is part of the total Contract Price.

4. **CONNECTED SERVICES.** If Customer is receiving Connected Services on any Covered Equipment as more fully described in Schedule A, Customer may be required to allow JCI to install hardware and/or software to enable communication with Customer's Covered Equipment ("Gateway Device"). In order for JCI to deliver Connected Services on the Covered Equipment, Customer shall provide a secure Internet connection to allow remote access to the Gateway Device in order to remotely access, transmit, store, and trend data for the purposes of providing Services. JCI will not use Connected Services to remotely operate or make changes to Customer's Equipment. The Gateway Device shall remain JCI's property, and JCI may upon reasonable notice remove it at any time. JCI makes no any warranty or guarantee relating to the Connected Services.

5. **CENTRAL STATION MONITORING OR REMOTE OPERATING SERVICES.** If Central Station Monitoring Services or Remote Operating Services are provided, Customer agrees to furnish JCI with a list of the names, titles, addresses, and phone numbers of all persons authorized to enter the Premises during periods when such premises are closed for business. If JCI's Services include "Central Station Monitoring Services with Open and Close," Customer also agrees to furnish JCI with Customer's daily and holiday opening and closing schedules.

6. **CUSTOMER SERVICE INFORMATION PORTAL.** Customer may be able to utilize JCI's Customer Service Information Portal during the term of the Agreement, pursuant to the then applicable Terms of Use Agreement

A. INITIAL EQUIPMENT INSPECTION NECESSARY FOR PREMIUM COVERAGE

If Customer has ordered PREMIUM COVERAGE, JCI will inspect the Covered Equipment within forty-five (45) days of the date of this Agreement, or as seasonal or operational conditions permit. JCI will then advise Customer if JCI finds any Covered Equipment not in working order or in need of repair. With Customer's approval, JCI will perform the work necessary to put the Covered Equipment in proper working condition, subject to the terms of this Agreement. Customer will pay for such work at JCI's standard rates for parts and labor in effect at the time that the work is performed. If Customer does not want JCI to perform the work identified as necessary by JCI, any equipment thereby affected will be removed from the list of Covered Equipment, and the Contract Price will be adjusted accordingly. Should Customer not make JCI's recommended repairs or proceed with the modified PREMIUM COVERAGE, JCI reserves the right to invoice Customer for the cost of the initial equipment inspection.

B. OUT OF SCOPESERVICES

If, during any Service Visit, JCI detects a defect in any of Customer's equipment that is not Covered Equipment under this Agreement (an "Out of Scope Defect"), JCI may (but shall have no obligation to) notify Customer of such Out of Scope Defect. If Customer elects for JCI to repair such Out of Scope Defect, or if JCI otherwise performs any Services or provides any materials, parts, or equipment outside the scope of the Services (collectively, "Out of Scope Services"), Customer shall direct JCI to perform such Out of Scope Services in writing, and Customer shall pay for such Out of Scope Services at JCI's standard fees or hourly rates. If, after receiving notice of an Out of Scope Defect, Customer elects not to engage JCI to repair such Out of Scope Defect, Customer shall defend and indemnify JCI from and against any and all losses, damages, claims, costs and expenses arising directly or indirectly out of such Out of Scope Defect. Any Out of Scope Services performed by JCI at the direction of Customer pursuant to this Section shall be subject to the terms of this Agreement.

C. ADDITIONAL TERMS RELATING TO CENTRAL STATION MONITORING OF INTRUSION, FIRE, AND OTHER LIFE SAFETY SYSTEMS

1. **Alarm Dispatches.** JCI, upon receipt of an alarm or other signal from the Premises, shall make reasonable efforts to transmit the signal to the appropriate police, fire department, or other emergency response agency having jurisdiction (unless there is reason to believe that an emergency condition does not exist), and JCI shall make a reasonable effort to notify Customer or its designated representative by telephone, unless instructed to do otherwise by Customer in writing. JCI, upon receipt of an industrial process signal from the Premises, shall take reasonable steps to notify Customer's representative pursuant to Customer's written instructions. Customer acknowledges that if the signals transmitted from the Premises will be monitored in a monitoring facility not operated by JCI, the personnel in such monitoring facilities are not the agents of JCI, nor does JCI assume any responsibility for the manner in which such signals are monitored or the response to such signal.

2. **Communications Media.** Customer acknowledges that monitoring of Covered Equipment requires transmission of signals over standard telephone lines and/or the Internet and that these modes of transmission may be interrupted, circumvented, or compromised, in which case no signal can be transmitted from the Premises to the monitoring facility. Customer understands that to allow the monitoring facility to be aware of such a condition, additional or alternative protection can be installed, such as line security devices, at Customer's cost and expense and for transmission via telephone line only. Customer acknowledges it is aware that line security devices are available and, unless expressly identified in Schedule A - Equipment List, has declined to purchase such devices. Customer further acknowledges that such additional protection is not available for Internet transmission under this Agreement.

3. **False or Unnecessary Alarms and Service Calls.** At JCI's option, an additional fee may be charged for any false alarm or unnecessary Service Visit caused or necessitated by Customer. In addition, Customer shall be fully responsible and liable for any fines, penalties, or charges assessed as the result of any false alarm and shall reimburse JCI for any costs incurred by JCI in connection therewith.

D. EXCLUSIONS

1. JCI's Services and warranty obligations expressly exclude:

   (a) the repair or replacement of ductwork, casings, cabinets, structural supports, tower fill/slats/basin, hydronic and pneumatic piping, and vessels, gaskets, and piping not normally replaced or maintained on a scheduled basis, and removal of oil from pneumatic piping;

   (b) disposal of hazardous wastes (except as otherwise expressly provided herein);

   (c) supplies, accessories, or any items normally consumed during the use of Covered Equipment, such as ribbons, bulbs and paper;

   (d) the furnishing of materials and supplies for painting or refinishing equipment;

   (e) the repair or replacement of wire in conduit, buried cable/transmission lines, or the like, if not normally replaced or maintained on a scheduled basis; and

   (f) replacement of obsolete parts.

2. JCI's Services and warranty obligations do not include repairs or service required as the result of:

   (a) abuse, misuse, alterations, adjustments, attachments, combinations, modifications, or repairs to Covered Equipment not performed, provided, or approved in writing by JCI;

   (b) issues caused by or related to equipment not covered by this Agreement or attachments made to Covered Equipment;

   (c) acts or omissions of the Customer, including but not limited to operator error, Customer's failure to conduct preventive maintenance, issues resulting from Customer's previous denial of JCI access to the Covered Equipment, and Customer's failure to keep the site clean and free of dust, sand, or other particles or debris, unless such conditions are previously expressly acknowledged by JCI in writing;

   (d) use of the Covered Equipment in a manner or environment, or for any purpose, for which it was not designed by the manufacturer;

(e) issues resulting from site-related and environmental conditions, including but not limited to power failures and fluctuations in electrical current (or "power surges");

(f) the effects of erosion, corrosion, acid cleaning, or damage from unexpected or especially severe freezing weather;

(g) any other issues or failures not specifically covered by this Agreement; or

(h) any other issues caused by occurrences beyond JCI's reasonable control and without JCI's fault or negligence.

E. PAYMENT OBLIGATION

Customer shall pay all invoices when due in accordance with the payment terms provided for in the Agreement, and such payment is a condition precedent to JCI's obligation to perform Services under the Agreement. In issuing any purchase order related to this Agreement, and notwithstanding any language to the contrary therein, Customer acknowledges and agrees that any and all JCI invoices for an amount greater than $25,000 shall be paid only via wire transfer, check, or money order. If this Agreement is renewed, JCI will provide Customer with notice of any adjustments in the Contract Price applicable to any renewal period no later than forty-five (45) days prior to the commencement of that renewal period. Unless Customer terminates the Agreement at least thirty (30) days prior to the start of such renewal period, the adjusted price shall be the price for the renewal period.

F. STANDARD OF CARE AND WARRANTIES

JCI warrants its Services will be provided in a good and workmanlike manner. JCI will promptly re-perform any non-conforming Services for no charge, as long as Customer provides written notice to JCI within one (1) calendar year from the date the Services were performed. If JCI installs or furnishes goods or equipment under this Agreement, and such goods or equipment are covered by an end-user warranty from their manufacturer, JCI will transfer the benefits of such warranty to Customer. Customer must promptly notify JCI in writing of any defect or non-conformance of the Services, parts, or equipment. Upon receipt of such written notice from Customer, JCI will repair or replace (at JCI's option) the defective equipment or re-perform the defective Services. These warranties do not extend to any Services or equipment that have been misused, altered, or repaired by Customer or third parties without the supervision of and prior written approval of JCI, or if JCI serial numbers or warranty decals have been removed or altered. All replaced parts or equipment shall become JCI's property. This warranty is not assignable. Warranty service will be provided during normal business hours, excluding holidays. The remedies set forth herein shall be Customer's sole and exclusive remedy with regards to any warranty claim under this Agreement. Any lawsuit based upon the warranty must be brought no later than one (1) year after the expiration of the applicable warranty period. This limitation is in lieu of any other applicable statute of limitations. **CUSTOMER FURTHER ACKNOWLEDGES AND AGREES THAT THESE WARRANTIES ARE JCI'S SOLE WARRANTIES AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.** Except with respect to goods or equipment manufactured by JCI and furnished to Customer hereunder, for which JCI shall provide its express written manufacturer's warranty, JCI shall not be considered a merchant or vendor of goods or equipment.

G. CUSTOMER OBLIGATIONS AND COMMITMENTS TO JCI

Customer warrants it has given JCI all information concerning the condition of the Covered Equipment.

The Customer agrees and warrants that, during the Term of this Agreement, Customer will:

(1) operate the Covered Equipment according to the manufacturer's and/or JCI's recommendations;

(2) keep accurate and current work logs and information about the Covered Equipment as recommended by the manufacturer and/or JCI;

(3) provide an adequate environment for Covered Equipment as recommended by the manufacturer and/or JCI, including, but not limited to adequate space, electrical power, water supply, air conditioning, and humidity control;

(4) notify JCI immediately of any Covered Equipment malfunction, breakdown, or other condition affecting the operation of the Covered Equipment;

(5) provide JCI with safe access to its Premises and Covered Equipment at all reasonable and necessary times for the performance of the Services;

(6) allow JCI to start and stop, periodically turn off, or otherwise change or temporarily suspend equipment operations so that JCI can perform the Services required under this Agreement;

(7) as applicable, provide proper condenser and boiler water treatment for the proper functioning of Covered Equipment;

(8) carefully and properly set and test the intrusion alarm system each night or at such other time as Customer shall close the Premises;

(9) obtain all necessary licenses and permits required for and pay all taxes associated with the Services;

(10) notify JCI immediately of any claimed inadequacy in, or failure of, the Covered Equipment or other condition affecting the operation of the Covered Equipment;

(11) furnish any necessary 110 volt A/C power and electrical outlets at its expense;

(12) properly maintain, repair, service, and assure the proper operation of any other property, system, equipment, or device of Customer or others to which the Covered Equipment may be attached or connected, in accordance with manufacturer recommendations, insurance carrier requirements, or the requirements of any fire rating bureau, agency, or other authorities having jurisdiction thereof;

(13) not tamper with, alter, adjust, disturb, injure, remove, or otherwise interfere with any Covered Equipment (including any related software) and not permit the same to be done; and

(14) refrain from causing false alarms, and reimburse JCI for any fine, penalty, or fee paid by or assessed against JCI by any governmental or municipal agency as a result thereof.

Customer acknowledges that its failure to meet these obligations will relieve JCI of any responsibility for any Covered Equipment breakdown, or any necessary repair or replacement of any Covered Equipment. If Customer breaches any of these obligations, JCI shall have the right, upon written notice to Customer, to suspend its Services until Customer cures such breach. In addition, Customer shall be responsible for paying or reimbursing JCI for any costs associated with corrective work required as a result of Customer's breach of these obligations.

H. INDEMNITY

JCI and Customer shall each indemnify the other party and its officers, agents, directors, and employees, from any and all damages, losses, costs and expenses (including reasonable attorneys' fees) arising out of third party claims, demands, or suits for bodily injury (including death) or damage to tangible property to the extent arising out of the negligence or intentional misconduct of the indemnifying party or its employees or agents. Customer expressly agrees that JCI shall be responsible for injury, damage, or loss only to the extent caused directly by JCI's negligence or intentional misconduct. The obligations of JCI and Customer under this section are further subject to sections I and J below.

I. LIMITATION OF LIABILITY

NEITHER JCI NOR CUSTOMER WILL BE RESPONSIBLE TO THE OTHER FOR ANY SPECIAL, INDIRECT, PUNITIVE, OR CONSEQUENTIAL DAMAGES (INCLUDING BUT NOT LIMITED TO LOST PROFITS OR LOSS OF BUSINESS). JCI'S TOTAL LIABILITY TO CUSTOMER FOR DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER SHALL BE LIMITED TO $250,000. IN NO EVENT SHALL JCI'S INDEMNIFICATION OBLIGATION EXCEED THE AMOUNTS PAID TO JCI UNDER THIS AGREEMENT OR THE AMOUNT OF INSURANCE REQUIRED BY THIS AGREEMENT, WHICHEVER IS GREATER. CUSTOMER UNDERSTANDS THAT JCI IS NOT AN INSURER REGARDING THE WORK OR THE SERVICES. JCI SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE OR LOSS THAT MAY RESULT FROM FIRE SAFETY OR SECURITY EQUIPMENT THAT FAILS TO PERFORM PROPERLY OR FAILS TO PREVENT A CASUALTY OR LOSS.

J. FORCE MAJEURE

JCI WILL NOT BE RESPONSIBLE FOR DAMAGE, LOSS, INJURY OR DELAY CAUSED BY CONDITIONS THAT ARE BEYOND THE REASONABLE CONTROL, AND WITHOUT THE INTENTIONAL MISCONDUCT OR NEGLIGENCE, OF JCI. SUCH CONDITIONS INCLUDE, BUT ARE NOT LIMITED TO: (A) ACTS OF GOD; (B) ACTS OF GOVERNMENT AGENCIES; (C) STRIKES; (D) LABOR DISPUTES; (E) FIRE; (F) EXPLOSIONS OR CASUALTIES; (G) THEFTS; (H) VANDALISM; (I) RIOTS OR WAR; (J) TERRORISM; AND (J) UNAVAILABILITY OF PARTS, MATERIALS, OR SUPPLIES.

K. RESOLUTION OF DISPUTES

If a dispute arises under this Agreement, the parties shall promptly attempt in good faith to resolve such dispute by negotiation. In the event the dispute is unable to be resolved, either party shall have the right to initiate arbitration by filing with the American Arbitration Association provided no other legal action has been previously filed. Upon filing of the arbitration, the AAA shall have the exclusive jurisdiction over the Dispute. Thus, either party may decide to file an action in a court of competent jurisdiction and if that court filing is the first legal proceeding filed, that court shall have jurisdiction over the Dispute to the exclusion of any arbitration. Arbitration shall be conducted in accordance with the then current arbitration rules of the American Arbitration Association or other arbitration service mutually agreed to by the parties. Arbitration must be completed within sixty (60) days after the Dispute is submitted to arbitration unless the parties mutually agree otherwise. The award rendered by the arbitrator shall be final, and judgment issued by the Arbitrator may be entered in accordance with applicable law in any court having competent jurisdiction. The party prevailing in the arbitration or court proceeding shall be entitled to an award of its reasonable costs, including reasonable attorneys' fees, incurred as a result of the Dispute. CUSTOMER MUST BRING ANY CLAIM AGAINST JCI WITHIN ONE (1) YEAR AFTER THE CLAIM AROSE. IF CUSTOMER DOES NOT, CUSTOMER WILL HAVE IRREVOCABLY WAIVED ITS RIGHT TO SUE JCI AND/OR INSTITUTE OTHER PROCEEDINGS, AND JCI SHALL HAVE NO LIABILITY TO CUSTOMER FOR SUCH CLAIM. TIME IS OF THE ESSENCE RELATIVE TO CUSTOMER PURSUING ANY SUCH CLAIM. THE PROVISIONS OF THIS AGREEMENT WHICH APPLY TO ANY CLAIM SHALL REMAIN IN EFFECT EVEN AFTER THE AGREEMENT IS TERMINATED. **JCI AND CUSTOMER EACH WAIVE THEIR RIGHT TO A JURY TRIAL.**

L. TERMINATION

1. Central Station Monitoring, Remote Operating Services, and Central Station Monitoring with Open or Close Services may be immediately canceled by either party if JCI's central station, connecting wires, or monitoring systems are destroyed by fire or other catastrophe, or where the Premises are so substantially damaged that it is impractical to continue Services.

2. If either party fails to perform any of its obligations under this Agreement, the other party shall provide written notice thereof to the party alleged to be in default. Should the party alleged to be in default fail to respond in writing or take action to cure the alleged default within ten (10) days of receiving such written notice, the notifying party may terminate this Agreement by providing written notice of such termination.

3. Upon termination of this Agreement for any reason, Customer shall pay to JCI all undisputed amounts owed through the date of termination within thirty (30) days of such termination. Customer shall also provide JCI with reasonable access to the Premises to remove the Gateway Device and any other JCI property and to un-program any intrusion, fire, or life safety system, as applicable. Customer shall be liable for all fees, costs, and expenses that JCI may incur in connection with the enforcement of this Agreement, including without limitation, reasonable attorney fees, collection agency fees, and court costs.

4. If the Agreement is for a multi-year term, either party may terminate the Agreement after the first full year of Services by giving the other party no less than forty-five (45) days written notice; provided, however, that if Customer has ordered PREMIUM COVERAGE, Customer may terminate the Agreement only upon JCI's written consent

M. ASBESTOS, MOLD AND HAZARDOUS MATERIALS

"Hazardous Materials" means any material or substance that, whether by its nature or use, is now or hereafter defined or regulated as a hazardous waste, hazardous substance, pollutant, or contaminant under any local, state, or federal law, regulation, or ordinance relating to or addressing public and employee health and safety and protection of the environment, or which is toxic, explosive, corrosive, flammable, radioactive, carcinogenic or otherwise hazardous or which is or contains petroleum, gasoline, diesel, fuel, another petroleum hydrocarbon product or polychlorinated biphenyls. "Hazardous Materials" specifically includes mold, lead-based paints, and asbestos-containing materials ("ACM").

Neither Customer nor JCI desires to or is licensed to undertake direct obligations relating to the identification, abatement, cleanup, control, removal or disposal of ACM. It is JCI's policy to seek certification for facilities constructed prior to 1982 that no ACM is present, and Customer shall provide such certification for buildings it owns, or aid JCI in receiving such certification from facility owners in the case of buildings that it does not own, if JCI will undertake Services in the facility that could disturb ACM.

JCI will be responsible for removing or disposing of any Hazardous Materials that it uses in providing the Services ("JCI Hazardous Materials") and for the remediation of any areas affected by the release of JCI Hazardous Materials. For other Hazardous Materials that may be present at its facilities ("Non-JCI Hazardous Materials"), Customer shall supply JCI with any information in its possession relating to the presence of Hazardous Materials if their presence may affect JCI's performance of the Services. If either Customer or JCI becomes aware of or suspects the presence of Non-JCI Hazardous Materials that may interfere with JCI's Services, it shall immediately stop the Services in the affected area and notify the other party. As between Customer and JCI, Customer shall be responsible at its sole expense for removing and disposing of Non-JCI Hazardous Materials from its facilities and for the remediation of any areas impacted by the release of the Non-JCI Hazardous Materials and must provide a certificate of abatement before JCI will be obligated to perform or continue its Services, unless JCI had actual knowledge that Non-JCI Hazardous Materials were present and acted in disregard of that knowledge, in which case (i) JCI shall be responsible at its sole expense for the remediation of any areas impacted by its release of such Hazardous Materials, and (ii) Customer shall remain responsible at its sole expense for the removal of Hazardous Materials that have not been released and for releases not resulting from JCI's performance of the Services. Customer shall defend and indemnify JCI against any losses, costs, damages, expenses, and claims arising out of its failure to comply with this Section M.

N. CUSTOMER DATA

Customer data is owned by and shall belong to Customer. JCI will access and use Customer data to provide Services to Customer. JCI will not disclose to any third party any individual Customer data acquired through performance of the Services without Customer's consent. Customer agrees that JCI and its subsidiaries, affiliates and approved third party contractors and developers may collect and use Customer data for any reason, as long as any external use of the data is on a de-identified basis that does not personally identify Customer or any individual. Customer hereby grants JCI a perpetual, worldwide, irrevocable, royalty free license to use, modify, manipulate, sublicense, and create derivative works from such data. JCI shall retain all rights to any intellectual property, data, materials and products created as a result of its performance of Services.

O. JCI'S INTELLECTUAL PROPERTY

JCI shall retain all right, title and interest in any (a) work provided to Customer, including without limitation, all software source and object code, documentation, technical information or data, specifications and designs and any changes, improvements or modifications thereto ("Deliverables"), and (b) Know-How (defined below) employed by JCI in the creation of the Deliverables or performance of the Services, whether known to JCI prior to, or developed or discovered or acquired in connection with, the performance of its obligations under this agreement. Ownership of all Deliverables and Know-How shall vest solely in JCI and no Deliverables shall be deemed "works made for hire." Without limiting the generality of the foregoing, ownership of all source files used in the course of performing the Services shall remain the exclusive property of JCI. For purposes of this Agreement, "Know-How" means any know-how, processes, techniques, concepts, methodologies, tools, analytical approaches, database models and designs, discoveries, and ideas furnished, produced by, developed, or used by JCI in the creation or provision of the Deliverables or in the performance of the Services, and any changes, improvements, or modifications thereto or derivatives thereof.

P. MISCELLANEOUS PROVISIONS

1. All notices required to be given hereunder shall be in writing and shall be considered properly given if: (a) delivered in person, (b) sent via the United States Postal Service, postage prepaid, registered or certified with return receipt requested, (c) sent by overnight delivery service (e.g., FedEx, UPS), or (d) sent by facsimile, email or other electronic means and confirmed by facsimile, return email or telephone.

Johnson Controls

2. This Agreement may not be assigned by Customer without JCI's prior written consent. JCI shall have the right to assign this Agreement to any other person, firm, or corporation without Customer's consent. JCI shall also have the right, in its sole discretion, to subcontract any portion of the Services. This Agreement inures to the benefit of and is applicable to any assignees or subcontractors of JCI, and is binding upon Customer with respect to said assignees or subcontractors with the same force and effect as it binds Customer to JCI.
3. This Agreement shall be subject to and governed by the laws of the State where the Services are performed.
4. If any provision of this Agreement is found to be invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions contained herein shall not in any way be affected or impaired thereby.
5. This Agreement is the entire contract between JCI and Customer and supersedes any prior oral understandings, written agreements, proposals, or other communications between the parties.
6. Customer acknowledges and agrees that any purchase order issued by Customer in connection with this Agreement is intended only to establish payment authority for Customer's internal accounting purposes and shall not be considered to be a counteroffer, amendment, modification, or other revision to the terms of this Agreement. No term or condition included or referenced in Customer's purchase order will have any force or effect and these terms and conditions shall control. Customer's acceptance of any Services shall constitute an acceptance of these terms and conditions. Any proposal for additional or different terms, whether in Customer's purchase order or any other document, unless expressly accepted in writing by JCI, is hereby objected to and rejected.
7. If there are any changes to Customer's facilities or operations, or to applicable regulations, laws, codes, taxes, or utility charges, that materially affect JCI's performance of the Services or its pricing thereof, JCI shall have the right to an equitable and appropriate adjustment to the scope, pricing, and other affected terms of this Agreement.

[END OF DOCUMENT]

EXHIBIT F TERMINATION PAYMENT SCHEDULE

Termination of this agreement at any date prior to the cited "Termination Date" which is to occur twenty (20) years after the Operations Date, will constitute an event of "Early Termination" and that date will be deemed the "Early Termination Date".

Provider and City recognize that Provider has fixed contractual obligations with various parties to provide services and financing for the engineering, construction and ongoing operation and maintenance of the project and that these contractual obligations may not terminate on the same date as the "Early Termination Date". As such City will pay to Provider a termination fee which includes the Operation and Maintenance Contract Termination Fees, Debt Obligations of Provider and loss of Equity. Further, Provider shall be required to use reasonable efforts to mitigate any amounts due hereunder. The Parties also agree that the Fair Market Value of the Microgrid assets owned by Provider as of the Early Termination Date shall be deducted from the amount due from City to Provider relating to the Debt Obligation. If the Fair Market Value of the Microgrid assets exceeds the amount due under the Debt Obligation, such excess asset value shall be deducted from the Early Termination Fee associated with Equity.

For the Debt Obligation, if the agreement is terminated early and there is remaining debt, including any unpaid principal, interest penalties and/or fees, due from the Provider to its creditor, all amounts due from Provider to the creditor will be paid by the City. At the time of the signing of this agreement, Provider is negotiating financing with First Niagara Bank. The proposal from the bank does not require a prepayment penalty on a Floating Rate Facility. However, if the Provider qualifies under new federal regulations governing interest rate swap contracts and elects to swap the term loan, the Interest Rate Swap would be subject to the bilateral termination provisions, as specified in the underlying ISDA Master Agreement. For example, if the then current market rate for the remaining of the Swap Transaction is higher that the contract rate, then the Borrower would receive a settlement payment based on the present value of the differential for the remaining term and the outstanding notional principal. Likewise, if rates for the remaining term are lower than the contract rate on the Swap Transaction the Borrower would make a payment to the Lender based on the same methodology. These payments will be taken into consideration in determining the amount the City must pay to the Provider's creditor.

If the Provider does not qualify under the new federal regulations governing interest rate swap contracts, Provider will be required to purchase an interest rate cap to mitigate interest rate risk and meet proposed financial covenants.

Proposed Early Termination Fee Mechanism:

1. Assume Initial Equity Investment of $1,200,000 is analagous to a loan that has an interest rate of 6% and that it is amortized over the term of the agreement.
2. The Early Termination Fee is composed of five components: a) The remaining balance of the analagous loan representing the equity investment, plus; b) An Administration Fee that represents the cost of winding down the project which is escalated at 2% each year to compensate for assumed inflation on the costs of winding down the project, plus;, c) The cancellation fee for the O&M contract with Rudox which equates to 12 months worth of fees that have been escalated at 3% annually plus; d) the cancellation fee on the ongoing plant operations and O&M contract for heat recovery and ancillary equipment from Controlled Air in the amount of $5,000, escalated a 3% annually, plus: e) The cancellation fee on the ongoing Cooling Tower contract from Controlled Air in the amount of $10,000, escalated annually at 3%.
3. The service contract from Johnson Controls through Controlled Air on the Absorption Chiller has no cancellation fee.

PV of Equity Investment	$1,200,000
Assume Rate for Amortization of Equity	6%
Term of Assumed Amortization Schedule in years	20
Annual Payment to Amortize Equity	($104,621.47)

Escalation on Admin	2%
Escalation on Rudox	3.0%
Escalation on CA	3.0%
Escalation on JC Absorb.	3.5%
Escalation on CA Tower	3.0%

	Initial OR&L Insur & Asset Mgt	Initial Rudox O&M Genset Contract	Initial CA Heat Recov. / Ops Contract	Amendment to ESA Initial CA Cooling Tower Contract	Amendment to ESA Initial JC Absorb. Chiller Contract	Initial O&M Charges
	$74,775 per Year	$172,500 per Year	$17,725 per year	$11,268 per year	$10,782 per year	$237,050 per year

Amortization Schedule on Equity Compensation for Early Termination:

End of Year	Starting Balance	Representative Interest Payment	Representative Principal Payment	Ending Balance
0	$1,200,000	$0	$0	$1,200,000
1	$1,200,000	$72,000	$32,621	$1,167,379
2	$1,167,379	$70,043	$34,579	$1,132,800
3	$1,132,800	$67,968	$36,653	$1,096,146
4	$1,096,146	$65,769	$38,853	$1,057,294
5	$1,057,294	$63,438	$41,184	$1,016,110
6	$1,016,110	$60,967	$43,655	$972,455
7	$972,455	$58,347	$46,274	$926,181
8	$926,181	$55,571	$49,051	$877,130
9	$877,130	$52,628	$51,994	$825,136
10	$825,136	$49,508	$55,113	$770,023
11	$770,023	$46,201	$58,420	$711,603
12	$711,603	$42,696	$61,925	$649,678
13	$649,678	$38,981	$65,641	$584,037
14	$584,037	$35,042	$69,579	$514,458
15	$514,458	$30,867	$73,754	$440,704
16	$440,704	$26,442	$78,179	$362,524
17	$362,524	$21,751	$82,870	$279,654
18	$279,654	$16,779	$87,842	$191,812
19	$191,812	$11,509	$98,113	$98,699
20	$98,699	$5,922	$98,699	$0

Non-Debt Related Components of Early Termination:

	(1) Equity Compensation Component	(2) Administrative Cancellation Fee	(3) Cancellation Fee From Rudox	(4) Cancellation Fee Fee From Base Controlled Air	(5) Cancellation Fee From CA on Tower.	(6) Cancellation Fee on Absorber Contract with JC	(1)+(2)+(3)+(4)+(5)+(6) (7) Total Early Termination Fee
0	$1,200,000	$150,000	$172,500	$5,000	$10,000	$0	$1,537,500
1	$1,200,000	$153,000	$178,538	$5,150	$10,300	$0	$1,514,366
2	$1,167,379	$156,060	$184,786	$5,305	$10,609	$0	$1,489,560
3	$1,132,800	$159,181	$191,254	$5,464	$10,927	$0	$1,462,972
4	$1,096,146	$162,365	$197,948	$5,628	$11,255	$0	$1,434,489
5	$1,057,294	$165,612	$204,876	$5,796	$11,593	$0	$1,403,987
6	$1,016,110	$168,924	$212,047	$5,970	$11,941	$0	$1,371,337
7	$972,455	$172,303	$219,468	$6,149	$12,299	$0	$1,336,400
8	$926,181	$175,749	$227,150	$6,334	$12,668	$0	$1,299,080
9	$877,130	$179,264	$235,100	$6,524	$13,048	$0	$1,259,072
10	$825,136	$182,849	$243,328	$6,720	$13,439	$0	$1,216,359
11	$770,023	$186,506	$251,845	$6,921	$13,842	$0	$1,170,717
12	$711,603	$190,236	$260,659	$7,129	$14,258	$0	$1,121,960
13	$649,678	$194,041	$269,782	$7,343	$14,685	$0	$1,069,888
14	$584,037	$197,922	$279,225	$7,563	$15,126	$0	$1,014,293
15	$514,458	$201,880	$288,998	$7,790	$15,580	$0	$954,951
16	$440,704	$205,918	$299,113	$8,024	$16,047	$0	$891,625
17	$362,524	$210,036	$309,582	$8,264	$16,528	$0	$824,065
18	$279,654	$214,237	$320,417	$8,512	$17,024	$0	$752,003
19	$191,812	$218,522	$331,631	$8,768	$17,535	$0	$675,155
20	$98,699	$0	$0	$0	$0	$0	$0

EXHIBIT G - EMERGENCY CONTACT INFORMATION

ENER-G Rudox

201-438-0111 and follow prompts for emergency service.

Or 201-926-9536

Controlled Air, Inc.

21 Thompson Rd, Branford, CT 06405

Vin Chiocchio

203-481-3531 and follow prompts for emergency service.

vchiocchio@controlledair.com

OR&L Construction

203-643-1005

2 Summit Place, Branford, Ct 06437

F. Todd Renz

ftrenz@orlconstruction.com

203-314-6516 cell phone

EXHIBIT H
Calculation of Fuel Usage and Charges

Both Provider and City recognize that the economic success of the project is closely tied to the amount of fuel the Ener-G Rudox generator set Provider has elected to use in its design for the Micro Grid.

For purposes of this Agreement, Heat Rate will be defined as:

a.) **Actual BTU's of Natural Gas used by the Ener-G Rudox generator set on an HHV basis in a given period**
KWH of Electric Production during that same given period

The City has based its investment decision in large part on the basis of the representative HHV heat rates Provider has cited from it generator set provider, Ener-G Rudox (included in this agreement as part of Exhibit D) as being indicative of how the generator set will perform.

Both City and Provider agree that the method for determining Fuel Usage in order to monitor performance will be as defined in formula a) above.

Both City and Provider agree that the method for determining Fuel Cost per KWH of production will be as follows:

b) Heat Rate (HHV basis) * (Cost per MMBTU of Natural Gas in the given period / 1,000,000)

On Schedule D, the HHV BTU per Minute is shown. For example at 100% capacity, to get the actual heat rate you would divide 263 by 60 minutes to get the KW factor for a minute (which would be 4.38333) and divide that into the BTU consumption per minute they are showing under the 100% column of 47,012 to get the "Heat Rate" or BTU consumption on an HHV basis for each KWH of electric produced (which ends up being 10,725.17). The Actual calculation is:

At 100% capacity: 47,012 / (263/60) = 10,725.17 BTU/KWH

At 75% capacity it would be 263KW * .75 or 197.25 KW which has a cited Fuel Input (HHV) in the table of 37,283 BTU/minute. The Heat Rate calculation is calculated thusly:

197.25/60=3.2875 to get the KW factor for a minute

Divide that 3.2875 factor into the 37,283 BTU/minute from the table, to get at
Heat Rate = 11,340.84 BTU/KWH

EXHIBIT I SAMPLE INVOICE

BRIDGEPORT MICRO GRID, LLC

2 Summit Place
Branford, CT 06437
203 - 643-1005

DATE: xx/15/xxxx
INVOICE # 00000-00
PO / Contract #

Bill To:

City Of Bridgeport
45 Lyon Street
Bridgeport, CT 06604

TERMS: Due upon receipt

Attention: Accounts Payable

DESCRIPTION	AMOUNT
Monthly Capacity Fee	$33,935.17
Service Charge for Operation & Maintenance - Controlled Air	$1,477.08
Charge for Operation & Maintanance - Controlled Air (Cooling Tower)	$939.00
BMG LLC Charge for Insurance and Asset Management	$6,231.25
Charge for Operations and Maintenance - Rudox	$14,375.00
Absorption Chiller Service Charge for Operation & Maintenance-Johnson Controls	$898.50
TOTAL	**$ 57,856.00**

Remit to: Account designated on Invoice

BRIDGEPORT CITY HALL MICROGRID PROJECT

ENERGY SERVICES AGREEMENT

FIRST AMENDMENT

This First Amendment to Bridgeport City Hall Microgrid Project Energy Services Agreement (this "Amendment") is entered into as of the last date of execution below by and between the City of Bridgeport ("City") and Bridgeport Microgrid, LLC ("Provider").

RECITALS

A. Whereas, City and Provider are entering into the Bridgeport City Hall Microgrid Project Energy Services Agreement (the "Agreement") regarding the installation and operation of a MicroGrid System, which is more particularly described in the Agreement;

B. Whereas, City and Provider have agreed to certain amendments to the Agreement relating to the Absorption Chiller and the Service Charge adjustments, which is more particularly described in this Amendment.

NOW THEREFORE, in consideration of the premises and other good and valuable consideration, the receipt and adequacy of which are acknowledged, the parties agree as follows:

1. **There is added to the Agreement a Section 8.1 (3) as follows:**

(3) "City shall pay an annual Absorption Chiller Service Charge for Operation and Maintenance of the absorption chiller equipment in the amount of $22,900. Year one and year two service charges will be paid by the Provider. The City will commence payments at the start of year 3 at the escalated amount of $24,531. Provider shall enter into the Operation and Maintenance Agreement with Controlled Air which Operation and Maintenance Agreement is attached hereto as Exhibit E."

2. **Section 8.9(b) of the Agreement is deleted in its entirety and the following is substituted therefor:**

(b) "Service Charge: The Service Charge shall be adjusted annually at a 3% fixed increase per year. The service fee includes taxes, insurances, operations and maintenance, etc. In the event of a shutdown, the Service Charge will be adjusted to a minimum level of maintenance reflective of industry standards."

3. **There is added to the Agreement a Section 8.9(c) as follows:**

(c) "Absorption Chiller Service Charge: The Service Charge shall be adjusted annually at a 3.5% fixed increase per year. The service fee includes taxes, insurances, operations and maintenance, etc. In the event of a shutdown, the Service Charge will be adjusted to a minimum level of maintenance reflective of industry standards."

4. **Except as otherwise indicated, capitalized terms in this Amendment not otherwise defined shall have the same meanings as in the Lease.**

5. **Except as specifically amended hereby, the Lease remains in full force and effect in accordance with the terms thereof.**

IN WITNESS WHEREOF, the parties have caused this Amendment to be executed by their respective duly authorized representatives.

PROVIDER:

By: BRIDGEPORT MICRO GRID, LLC

Name:

Title: Member

CITY:

By:

Name Bill Finch

Title: Mayor

Date: 11/12/15

BRIDGEPORT CITY HALL MICROGRID PROJECT

ENERGY SERVICES AGREEMENT

SECOND AMENDMENT

This Second Amendment to Bridgeport City Hall Microgrid Project Energy Services Agreement (this "Second Amendment") is entered into as of this 8th day of July, 2016 by and between the City of Bridgeport ("City") and Bridgeport Micro-Grid LLC ("Provider").

RECITALS

A. Whereas, City and Provider entered into the Bridgeport City Hall Microgrid Project Energy Services Agreement dated October 29, 2015 (the "Agreement") regarding the installation and operation of a Microgrid System, which is more particularly described in the Agreement;

B. Whereas, the Agreement was modified pursuant to the terms of a First Amendment dated November 12, 2015;

C. Whereas, City and Provider have agreed to certain additional amendments to the Agreement, which are more particularly described in this Second Amendment.

NOW THEREFORE, in consideration of $1.00 and other good and valuable consideration, the receipt and adequacy of which are acknowledged, the parties agree as follows:

1. The following sentences are hereby added to Section 1.3 of the Agreement, entitled "State of Connecticut Grant Agreement" as if originally set forth therein: "City agrees that it shall, in good faith and with diligence, promptly pay or transmit all DEEP grant funds received by it in connection with the Microgrid System to Provider or as Provider may direct. Provider hereby directs, and City hereby agrees, that, all DEEP grant funds shall be deposited in the following account of Provider maintained at First Niagara Bank, N.A.: Account number 591000182426, and no DEEP grant funds shall be deposited in any other account without the prior written consent of First Niagara Bank, N.A."

2. The references to July 1, 2016 in the last sentence of Section 3.15(b) of the Agreement and the first sentence of Section 3.15(c) of the Agreement are hereby deleted and the date of July 1, 2017 is substituted therefor. Any other reference in the Agreement to the date by which Provider is to deliver to City a Completion Notice shall be deemed to refer to the date of July 1, 2017.

3. The second paragraph of Exhibit F to the Agreement, entitled "Termination Payment Schedule" is hereby modified by deleting therefrom the final two sentences thereof, which provide: "The Parties also agree that the Fair Market Value of the Microgrid assets owned by Provider as the Early Termination Date shall be deducted from the amount due from City to Provider relating to the Debt Obligation. If the Fair Market Value of the Microgrid assets

exceeds the amount due under the Debt Obligation, such excess asset value shall be deducted from the Early Termination Fee associated with Equity." In substitution therefor, the following sentence is hereby added to the second paragraph of Exhibit F as if originally set forth therein: "Upon City's payment in full of the termination fee required hereunder, including without limitation all Debt Obligations owed by Provider to each of its Lenders, Provider shall: (i) cause each such Lender to terminate its security interest in the Microgrid assets owned by Provider as of the Early Termination Date, and (ii) transfer all right, title and interest in such Microgrid assets to City."

4. The third paragraph of Exhibit F to the Agreement, entitled "Termination Payment Schedule" is hereby modified by deleting therefrom the first sentence thereof, which provides: "For the Debt Obligation, if the agreement is terminated early and there is remaining debt, including any unpaid principal, interest penalties and/or fees, due from the Provider to its creditor, all amounts due from Provider to the creditor will be paid by the City." In substitution therefor, the following sentences are hereby added to the third paragraph of Exhibit F as if originally set forth therein: "'Debt Obligation' means, with respect to a Lender, any unpaid principal, interest, penalties, and/or fees, due from the Provider to such Lender. If there is an Early Termination and, on the Early Termination Date, there are outstanding Debt Obligations due from the Provider to a Lender, all such Debt Obligations will be paid to such Lender by the City on the Early Termination Date."

Except as so modified, Exhibit F to the Agreement shall remain unmodified and in full force and effect.

5. The first paragraph of Section 16.3 of the Agreement is hereby deleted and replaced with the following:

"Financing Accommodations. City acknowledges that Provider is financing the acquisition and installation of the Microgrid System and the Natural Gas Generators, the Absorption Chiller and heat exchangers (First Niagara Bank, N.A., the Connecticut Green Bank, their successors, assigns or participants, and other lenders who may provide financing to Provider in connection with such acquisition and installation, are collectively referred to herein as the "Lender") and that Provider's obligations will be secured by, among other collateral, a pledge or collateral assignment of this Agreement or monies due from City under this Agreement. In order to facilitate any financing, City agrees as follows:"

6. Except as otherwise indicated, capitalized terms in this Second Amendment not otherwise defined shall have the same meanings as those in the Agreement.

7. Except as specifically amended hereby, the Agreement remains in full force and effect in accordance with the terms thereof.

IN WITNESS WHEREOF, the parties have caused this Second Amendment to be executed by their respective duly authorized representatives.

PROVIDER:

Bridgeport Micro-Grid LLC

By: _____

Name: Franklin Todd Renz

Title: Manager

CITY:

City of Bridgeport

By: _____

Name: Joseph P. Ganim

Title: Mayor

BRIDGEPORT MICRO-GRID, LLC

April __, 2018

The Honorable Joseph P. Ganim, Mayor
City of Bridgeport
City Hall Annex
999 Broad Street
Bridgeport, Connecticut 06604

Re: Energy Services Agreement by and between the City of Bridgeport (the "City") and Bridgeport Microgrid, LLC ("BMG"), as amended (the "ESA")

Dear Mayor Ganim:

This letter addendum to the ESA ("Addendum") is being sent to you in connection with BMG's completion of its obligations under the ESA and to confirm the parties' mutual understanding and interpretation of the ESA's provisions regarding how the Microgrid System is designed to work, the amount of electricity to be produced by the Microgrid System[1] and the City's obligation to make payments for the electricity produced by the Microgrid System. In the event of any conflict between this Addendum and the ESA, this Addendum shall prevail.

First, enclosed herein is an as-built engineered drawing of the MicroGrid System, including the Ownership Demarcation Point and the Operations Demarcation Point.

Second, enclosed is a copy of a simplified schematic drawing of the design of the Microgrid System, which is consistent with the explanation provided to the City at the operations meeting on February 12, 2018.

Third, all parties acknowledge and agree that the Operations Date, as that term is used in the ESA, shall be February 1, 2018.

Fourth, all parties acknowledge that it is anticipated that the City will receive financial benefits from the exporting of electricity from the Microgrid System to the Utility's electric power system as a result of the City's receipt of credits resulting from its participation in the Virtual Net Metering program. As has been previously discussed by representatives of the City and BMG, the parties further acknowledge that if the total annual amount of electricity produced by the Microgrid System, including electricity exported to the Utility's electric power system, exceeds the Minimum Power Guarantee of 5,362,530 kWh per year, the City shall pay an

[1] The capitalized terms not defined in this Addendum shall have the meanings ascribed to them in the ESA.

amount equal to $.0759 for each additional kWh produced. Thus, for example, if the total annual amount of electricity produced by the Microgrid System, including electricity exported to the grid in connection with the Virtual Net Metering program, equals 6,000,000 kWh, the amount due from the City to BMG for the additional 637,470 kWh shall be $48,408.46, or $.0759 per kWh. BMG shall invoice the City for any such amount within 60 days after the end of each twelve-month period commencing on the Operations Date during the Term.

Please countersign this Addendum in the space provided below acknowledging that this Addendum accurately summarizes the understanding of the City and BMG.

Very truly yours,

Frankin Todd Renz
Bridgeport Micro-Grid, LLC

Accepted and Agreed to for the City of Bridgeport

By: _____ Joseph P. Ganim, Mayor
City of Bridgeport

_____ Date

amount equal to $.0759 for each additional kWh produced. Thus, for example, if the total annual amount of electricity produced by the Microgrid System, including electricity exported to the grid in connection with the Virtual Net Metering program, equals 6,000,000 kWh, the amount due from the City to BMG for the additional 637,470 kWh shall be $48,408.46, or $.0759 per kWh. BMG shall invoice the City for any such amount within 60 days after the end of each twelve-month period commencing on the Operations Date during the Term.

Please countersign this Addendum in the space provided below acknowledging that this Addendum accurately summarizes the understanding of the City and BMG.

Very truly yours,

Frankin Todd Renz
Bridgeport Micro-Grid, LLC

Accepted and Agreed to for the City of Bridgeport

By: _____ 4/11/18
Joseph P. Ganim, Mayor Date
City of Bridgeport

EXHIBIT B

[Attached]

EXHIBIT A OF ENERGY SERVICES AGREEMENT

Bridgeport Microgrid Equipment

Item No.	EQUIPMENT	Ownership		Maintenance	
		BMG	City	BMG	City
1	(3) Rudox 265 Generators	X		X	
2	(3) Generator exterior enclosures	X		X	
3	(3) Generator Cooling Towers	X		X	
4	Generator load panels	X		X	
5	Gas piping and regulators	X		X	
6	Underground power wiring and conduits		X		X
7	Underground control wiring and conduits		X		X
8	Above ground power wiring-switchgear-transformers		X		X
9	Underground CHP chilled water -Heat piping	X		X	
10	Above ground CHP chilled water-Heat piping	X		X	
11	Microgrid monitoring controls	X		X	
12	Energy meters for monitoring		X		X
13	(1) Absorption Chiller	X		X	
14	(1) Absorption Chiller Enclosure	X		X	
15	(1) Cooling tower	X		X	
16	Cooling tower piping-pumps	X		X	
17	Standby Generator		X		X
18	Controls for CHP HVAC tie in	X		X	
19	Control valves for CHP HVAC tie on	X		X	
20	Heat Exchangers for CHP	X		X	
21	CHP pumps	X		X	
22	CHP glycol makeup units	X		X	
23	RFL Device -Power System and Commununitation Equipment		X		X
24	Telephone wires		X		X
25	Internet Access		X		X

OFFICE OF THE CITY CLERK
RESOLUTION FORM

RECEIVED
CITY CLERK'S OFFICE
19 SEP 11 PM 4:08
ATTEST _____
CITY CLERK

SECTION I	CITY COUNCIL SUBMISSION INFORMATION
Log ID/Item Number:	145-18
Submitted by Councilmember(s):	Aidee Nieves Choose an item.
Co-Sponsors(s):	Maria I. Valle Choose an item. Choose an item. Choose an item.
District:	137TH
Subject:	Installation of Speed Humps on Waterview Avenue adjacent to the Barnum School
Referred to:	BOARD OF POLICE COMMISSIONERS
City Council Date:	September 16, 2019

SECTION II RESOLUTION *(PLEASE TYPE BELOW)*

WHEREAS, the Bridgeport City Council desires to ensure the continuing safety and well-being of its citizens, inhabitants, and all others who travel upon the many thoroughfares throughout this city; and

WHEREAS, nationally two-thirds of drivers exceed the legal speed limit when passing through school zones and an estimated 100 children are killed yearly as they go to and from school with yet another 25,000 children being injured from school zone incidents where the primary factor was drivers speeding; and

WHEREAS, Waterview Avenue is a residential street in a heavily populated urban neighborhood that immediately abuts the Barnum School and is used daily by both heavy and light commercial vehicles along with other traffic as a rapid cut through to travel between I-95, Barnum Avenue, and Boston Avenue; and

WHEREAS, parents of students attending the Barnum School complain that the traffic speed and volume along Waterview Avenue, from Martin Luther King Drive to Goodwin Street, particularly the stretch adjacent to the Barnum School where there is an extended curb cut for the picking up and discharging of students, is creating a growing risk of a serious accident occurring there and appropriate traffic calming measures like speed humps are needed to help alter driver behavior and improve safety conditions; and

WHEREAS, according to the **National Center for Safe Routes to School** speed humps are a gradual rise and fall in the pavement surface placed across a street to control maximum vehicle speed that when installed with 300 to 600 foot spacing and properly signed can reduce motor vehicle speed to 15-mph and traffic volume by about 10 to 20 percent when there is an alternate travel path available on adjacent streets; and

NOW, THEREFORE, BE IT RESOLVED by the Bridgeport City Council that the Board of Police Commissioners authorize the installation of speed humps of sufficient number, height, and distance apart to reduce motor vehicle speed to 15-mph with appropriate street markings and signage along Waterview Avenue from Martin Luther King Drive to Goodwin Street and adjacent to the extended curb cut area for the picking up and discharging of Barnum School children to alter driver behavior and improve safety conditions.

OFFICE OF THE CITY CLERK
RESOLUTION FORM

In addition, the City Council respectfully requests that the Board of Police Commissioners acting in its capacity as the City's Traffic Authority examine the feasibility of installing speed humps on all roadways within 500 feet of each school within the City of Bridgeport. **(as amended from the floor on 9/16/2019)

-Attachments-

SECTION III SUBSEQUENT REFERRALS/REPLIES AND DATE SENT/RECEIVED

DEPARTMENT	Referral date sent	Response Received	Date reply received
Choose an item.		☐ Yes ☐ No	
Choose an item.		☐ Yes ☐ No	
Choose an item.		☐ Yes ☐ No	
Choose an item.		☐ Yes ☐ No	
Choose an item.		☐ Yes ☐ No	
Choose an item.		☐ Yes ☐ No	
Choose an item.		☐ Yes ☐ No	
Choose an item.		☐ Yes ☐ No	
Choose an item.		☐ Yes ☐ No	

SECTION IV PUBLIC HEARING INFORMATION

Public Hearing Required	Details	Date
☐ Yes ☐ No	Public Hearing Ordered on:	
	CT Post Publication Date(s):	
	Public Hearing Held on:	

SECTION V AMENDMENTS/EXHIBITS

Choose an item.	☐Yes ☐ No	Date:

SECTION VI COMMITTEE ACTION/APPROVAL INFORMATION

Choose an item.	☐Yes ☐ No	Date:
Choose an item.	☐Yes ☐ No	Date:
Choose an item.	☐Yes ☐ No	Date:

SECTION VII WITHDRAWN/SINE DIE INFORMATION

Choose an item.	☐Yes ☐ No	Date:

SECTION VIII DATE OF APPROVAL/DENIAL FROM CITY COUNCIL

City Council Approval Date:

SECTION IX COMMENTS (*if any*)

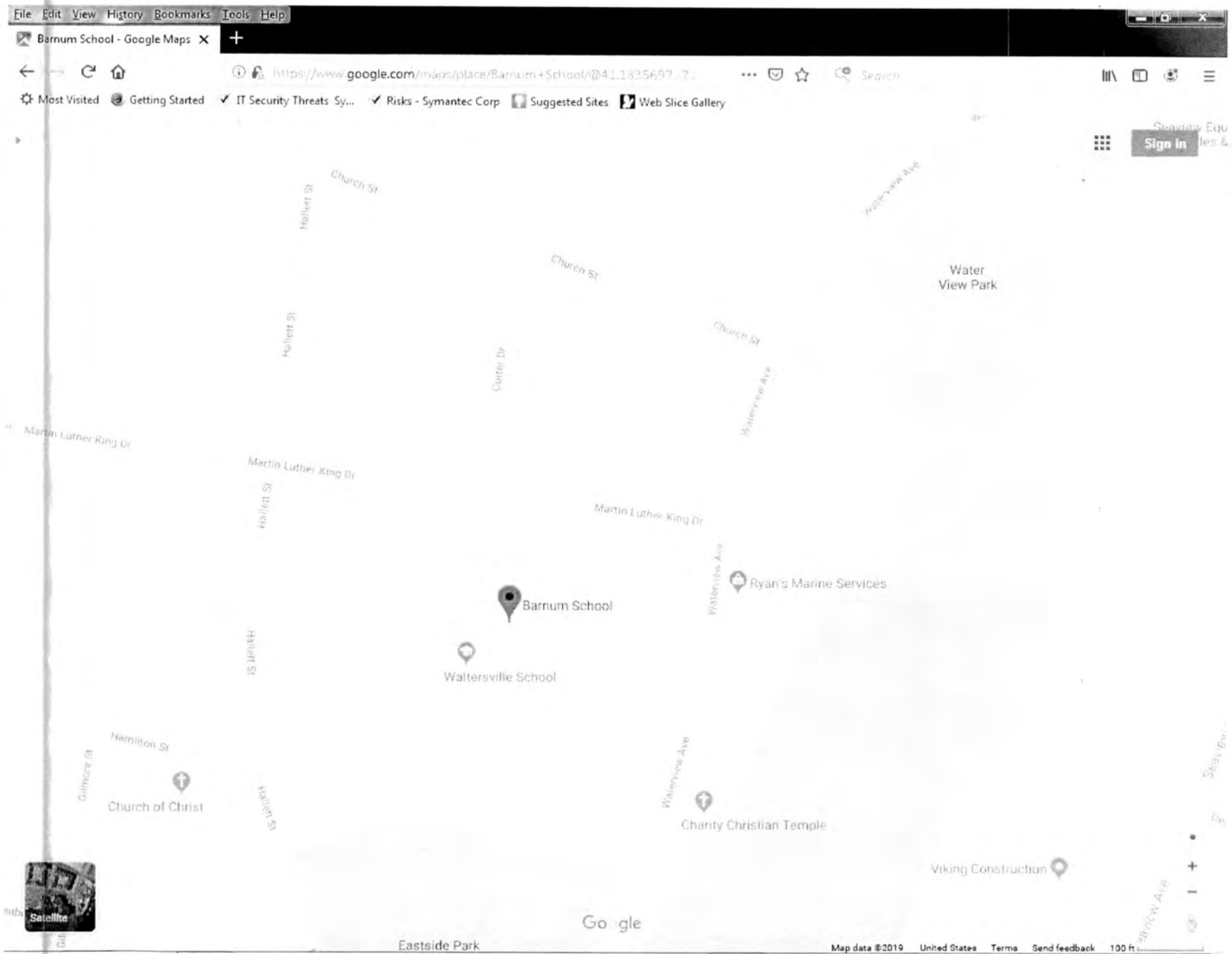
Item was amended from the floor on September 16, 2019 to add additional language to the resolution (see attached amendment).

I MOVE TO AMEND ITEM #145-18

By ADDING the following:

"In addition, the City Council respectfully requests that the Board of Police Commissioners acting in its capacity as the City's Traffic Authority examine the feasibility of installing speed humps on all roadways within 500 feet of each school within the City of Bridgeport."

SPEED
HUMP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Church St
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Water View Park
Waterview Ave
Cutler Dr
Martin Luther King Dr
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Ryan's Marine Services
Waltersville School
Hamilton St
Church of Christ
Charity Christian Temple
Viking Construction
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Eastside Park
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Cutter Dr
Waterview Ave
Martin Luther King Dr
Hallett St
Barnum School
Waltersville School
Ryan's Marine Services
Hamilton St
Gilmore St
Church of Christ
Charity Christian Temple
Viking Construction
Steuben St
Eastside Park
Goodwin St
Seaview Ave
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Imagery ©2019 Maxar Technologies, New York GIS, USDA Farm Service Agency, Map data ©2019
United States
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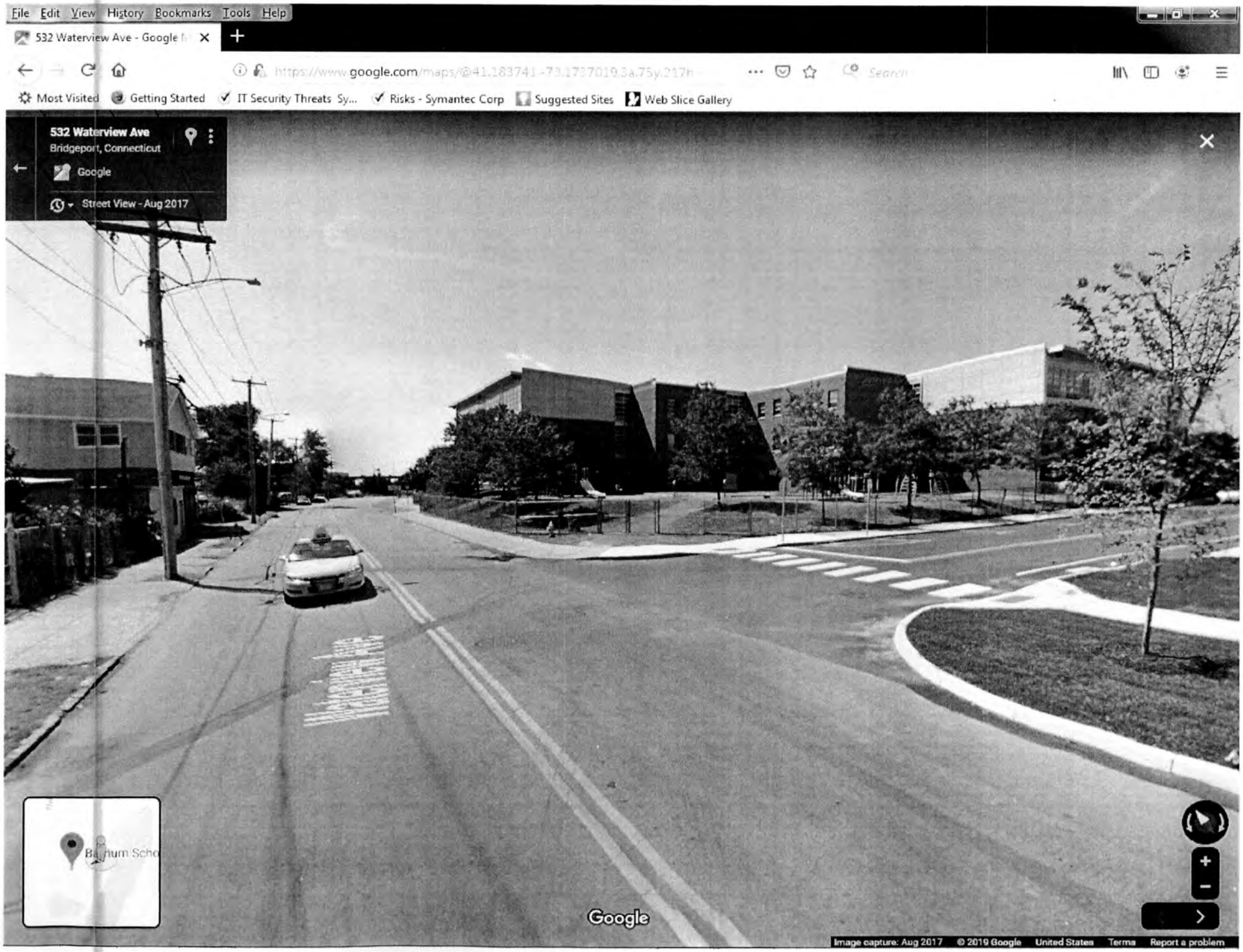
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Bridgeport, Connecticut
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Street View - Aug 2017
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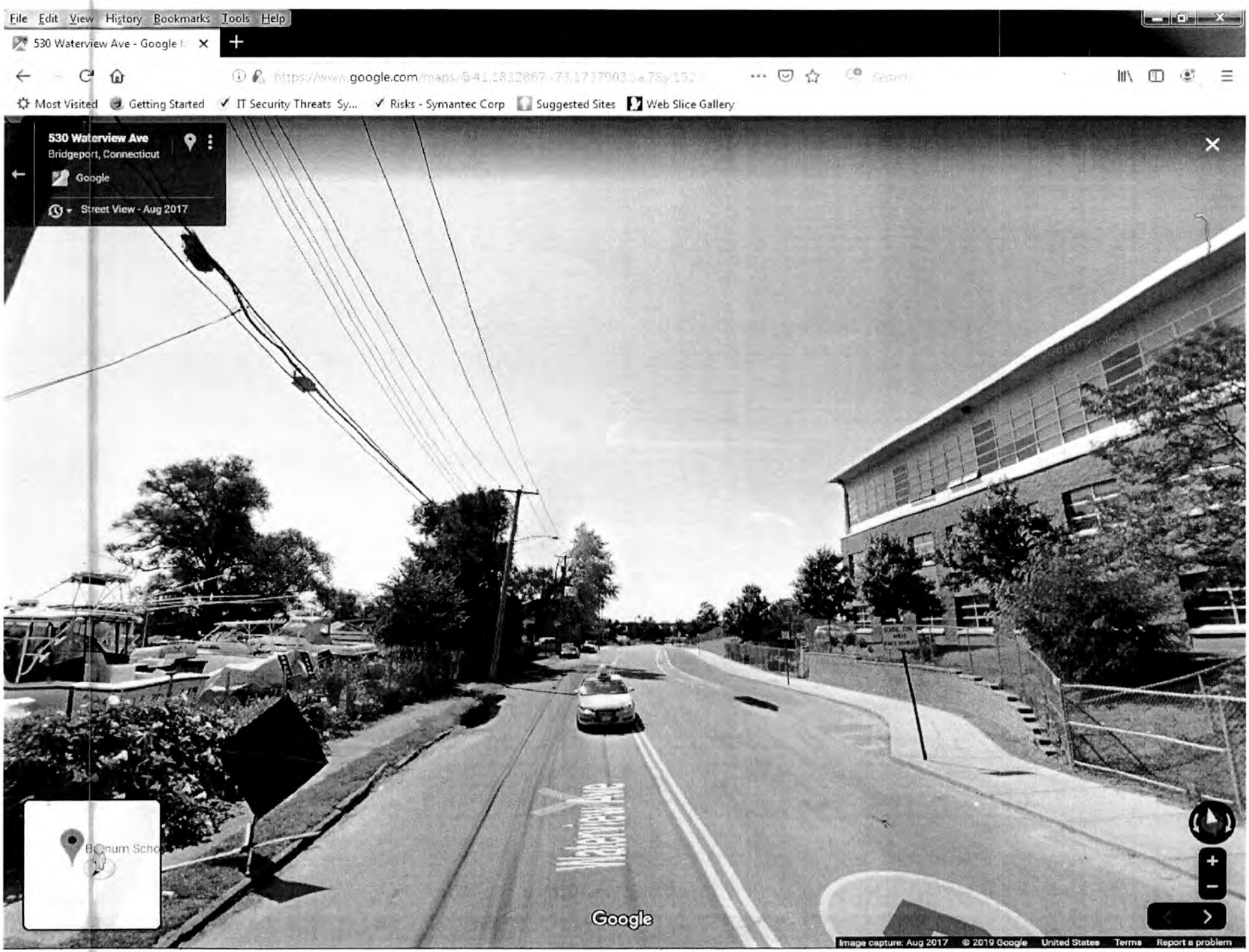
Image capture: Aug 2017
© 2019 Google
United States
Terms
Report a problem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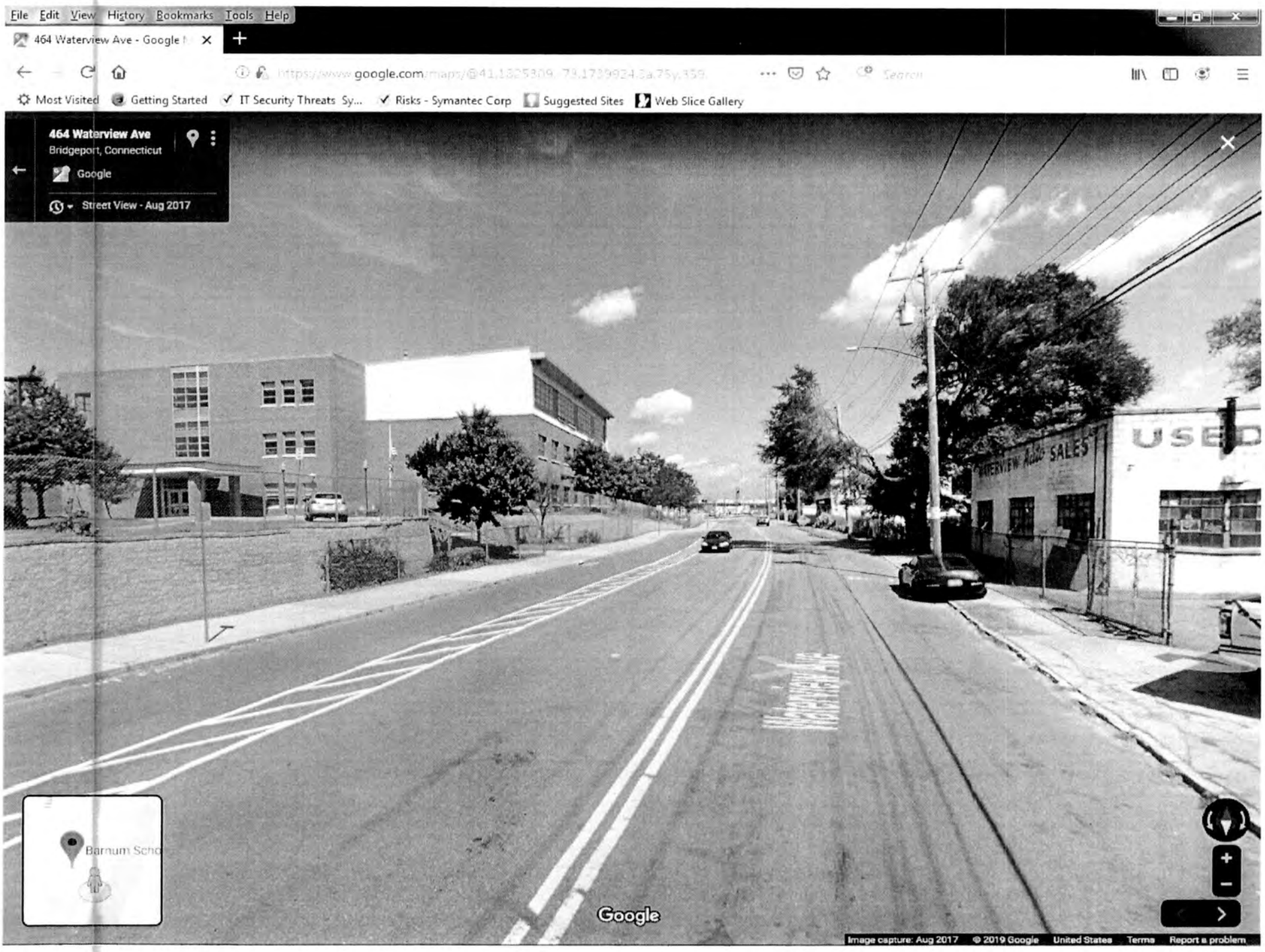
United States
Terms
Report a problem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Terms
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Risks - Symantec Corp
Suggested Sites
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Bridgeport, Connecticut
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Street View - Jul 2018
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United States
Terms
Report a problem

MEETING DATE: September 16, 2019 NO. 145-18

COMMITTEE: REFERRED TO COMM.: Board of Police Commissioners

SUBJECT: Installatim of Speed Humps on Water View Avenue adjacent to the Barnum School

MOTION BY: M. Lyons 2ND BY: E. Newton

APPROVED_____ DENIED _____ TABLED _____ REF. TO COMM. ✓ BOP

REMARKS: motion to amend Item 145-18 to add language (see attached) M. Lyons 2nd E. Martinez

	YES	NO
Christina B. Smith	✓	
Pete Spain		
Jack O. Banta		
Denese Taylor-Moye		
Marcus A. Brown		
Kyle Piché Langan		absent
Michael DeFilippo		absent
Jeanette Herron		
Michelle A. Lyons		
AmyMarie Vizzo-Paniccia		
Mary A. McBride-Lee		absent
Rosalina Roman-Christy		
Maria Zambrano Viggiano		absent
Alfredo Castillo		
Aidee Nieves		
Maria I. Valle		
Karen Jackson		absent
Nessah J. Smith		
Eneida L. Martinez		
Ernest E. Newton, II		

Item# *101-18 Consent Calendar

Grant Submission: re United States Department of Justice – Office of Juvenile Justice and Delinquency Prevention FY2019 Second Chance Act addressing the needs of Incarcerated Parents and their Minor Children. (#19214)

Report of Committee on Public Safety and Transportation

City Council Meeting Date: September 16, 2019

Attest: Lydia N. Martinez
Lydia N. Martinez, City Clerk

Approved by: _____
Joseph P. Ganim, Mayor

Date Signed: _____

Please Note: Mayor did not sign Report.

City of Bridgeport, Connecticut
Office of the City Clerk

To the City Council of the City of Bridgeport:

The Committee on **Public Safety and Transportation** begs leave to report; and recommends for adoption the following resolution:

Item No. *101-18 Consent Calendar

A Resolution by the Bridgeport City Council
Regarding the
United States Department of Justice –
Office of Juvenile Justice and Delinquency Prevention
FY 2019 Second Chance Act Addressing the Needs of Incarcerated Parents
and Their Minor Children (#19214)

WHEREAS, the **United States Department of Justice** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through the **United States Department of Justice – Office of Juvenile Justice and Delinquency Prevention FY 2019 Second Chance Act Addressing the Needs of Incarcerated Parents and Their Minor Children**; and

WHEREAS, funds under this grant will be used to support incarcerated parents and their minor children; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport submits an application to the **United States Department of Justice-Office of Juvenile Justice and Delinquency Prevention FY 2019 Second Chance Act Addressing the Needs of Incarcerated Parents and Their Minor Children** to provide the incarcerated parent, the custodial parent and their minor children to address the many challenges families experience during incarceration and the re-entry process.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with the **United States Department of Justice-Office of Juvenile Justice and Delinquency** for the purpose of its **FY 2019 Second Chance Act Addressing the Needs of Incarcerated Parents and Their Minor Children**.

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the Director of Central Grants, to execute and file such application with the **United States Department of Justice-Office of Juvenile Justice and Delinquency Prevention** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

City of Bridgeport, Connecticut
Office of the City Clerk

Report of Committee on **Public Safety and Transportation**
Item No. *101-18 Consent Calendar

RESPECTFULLY SUBMITTED,
THE COMMITTEE ON
PUBLIC SAFETY AND TRANSPORTATION

Michelle A. Lyons, D-134th , **Co-Chair**

Jack O. Banta, D-131st , **Co-Chair**

Ernest E. Newton, II, D-139th

Karen Jackson, D-138th

Kyle Piché Langan, D-132nd

Eneida L. Martinez, D-139th

Maria I. Valle, D-137th

***City Council Date**: September 16, 2019*

Item# *102-18 Consent Calendar

Grant Submission: re Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Port Security Grant Program. (#20388, #20390,#20391, #20392 and #20393)

Report of Committee on Public Safety and Transportation

City Council Meeting Date: September 16, 2019

Attest: Lydia N. Martinez

Lydia N. Martinez, City Clerk

Approved by: _____

Joseph P. Ganim, Mayor

Date Signed: _____

Please Note: Mayor did not sign Report.

City of Bridgeport, Connecticut
Office of the City Clerk

To the City Council of the City of Bridgeport:

The Committee on **Public Safety and Transportation** begs leave to report; and recommends for adoption the following resolution:

Item No. *102-18 Consent Calendar

A Resolution by the Bridgeport City Council
Regarding the
Department of Homeland Security (DHS)
Federal Emergency Management Agency (FEMA)
Port Security Grant Program
(#20388, #20390, #20391, #20392, and #20393)

WHEREAS, the **Department of Homeland Security Federal Emergency Management Agency** is authorized to extend financial assistance to municipalities in the form of grants; and

WHEREAS, this funding has been made possible through the **Department of Homeland Security Federal Emergency Management Agency Port Security Grant Program**; and

WHEREAS, funds under this grant will be used to support the support the security of the Port of Bridgeport; and

WHEREAS, it is desirable and in the public interest that the City of Bridgeport submits an application to **FEMA** to build and sustain core capabilities across prevention, protection, mitigation, response, and recovery mission areas, with specific focus on addressing the security needs of the Port of Bridgeport.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL:

1. That it is cognizant of the City's grant application to and contract with **Department of Homeland Security Federal Emergency Management Agency** for the purpose of its **Port Security Grant Program**; and

2. That it hereby authorizes, directs and empowers the Mayor or his designee, the **Central Grants Director**, to execute and file such application with **Department of Homeland Security Federal Emergency Management Agency** and to provide such additional information and to execute such other contracts, amendments, and documents as may be necessary to administer this program.

City of Bridgeport, Connecticut
Office of the City Clerk

Report of Committee on **Public Safety and Transportation**
Item No. *102-18 Consent Calendar

RESPECTFULLY SUBMITTED,
THE COMMITTEE ON
PUBLIC SAFETY AND TRANSPORTATION

Michelle A. Lyons, D-134th , **Co-Chair**

Jack O. Banta, D-131st , **Co-Chair**

Ernest E. Newton, II, D-139th

Karen Jackson, D-138th

Kyle Piché Langan, D-132nd

Eneida L. Martinez, D-139th

Maria I. Valle, D-137th

City Council Date: *September 16, 2019*

Item# *105-18 (Ref. #177-17) Consent Calendar

Resolution regarding a modification of Curb-to-Curb Street widths on North Washington Avenue and Crown Street relevant to the Pequonnock River Trail Extension Project.

Report of Committee on

Public Safety and Transportation

City Council Meeting Date: September 16, 2019

Attest: Lydia N. Martinez
Lydia N. Martinez, City Clerk

Approved by: _____
Joseph P. Ganim, Mayor

Date Signed: _____

Please Note: Mayor did not sign Report.

City of Bridgeport, Connecticut
Office of the City Clerk

To the City Council of the City of Bridgeport:

The Committee on **Public Safety and Transportation** begs leave to report; and recommends for adoption the following resolution:

Item No. *105-18 (Ref. #177-17) Consent Calendar

WHEREAS, the Office of Planning and Economic Development seeks City Council to modify the curb-to-curb street width of two city blocks; and

WHEREAS, the curb-to-curb width of North Washington Avenue will be narrowed up to five (5) feet on the eastern side of the street to accommodate for an expanded sidewalk for pedestrian and bicyclist use; and

WHEREAS, the curb-to-curb width of Crown Street will be expanded one (1) foot on the northern side of the street to accommodate a separate buffered on-road bicycle lane; and

WHEREAS, the Pequonnock River Trail is a 16-mile bicycle route extending from the Monroe-Newtown border, through Monroe and Trumbull, and currently ending at Beardsley Park in Bridgeport; and

WHEREAS, the City of Bridgeport Office of Planning and Economic Development secured $1.4 Million of federal Congestion Mitigation & Air Quality (CMAQ) funding managed by the Connecticut Department of Transportation, and provided a $400,000 local match; and

WHEREAS, the total $1.8 Million is being utilized to design and construct the remaining 3 miles to connect the Pequonnock River Trail between Beardsley Park and Seaside Park, identified as State Project 15-374; and

WHEREAS, OPED, in consultation with CTDOT, hired NV5 to design the remaining segment of the Pequonnock River Trail through Bridgeport, and

WHEREAS, the project design focuses on the creation of dedicated bicycle lanes where most feasible, and clear signage for bicycles along the entire length of the Trail; and

WHEREAS, the City Council approved a resolution on December 17, 2018 which allowed the project to move into final design; and

WHEREAS, the project is currently in the final design stage; and

WHEREAS, Bridgeport Municipal Code Sections 12.08.010 and 12.08.020 require City Council approval for modification of curb-to-curb street width on City streets;

City of Bridgeport, Connecticut
Office of the City Clerk

Report of Committee on **Public Safety and Transportation**
Item No. *105-18 (Ref. #177-17) Consent Calendar

NOW THEREFORE BE IT RESOLVED, that the City Council does approve modification of curb-to-curb street widths on North Washington Avenue and Crown Street relevant to the Pequonnock River Trail Extension project.

RESPECTFULLY SUBMITTED,
THE COMMITTEE ON
PUBLIC SAFETY AND TRANSPORTATION

Michelle A. Lyons, D-134th , **Co-Chair**

Jack O. Banta, D-131st , **Co-Chair**

Ernest E. Newton, II, D-139th

Karen Jackson, D-138th

Kyle Piché Langan, D-132nd

Eneida L. Martinez, D-139th

Maria I. Valle, D-137th

City Council Date: *September 16, 2019*

Item #123-18

Amendments to the Municipal Code of Ordinances, amend Chapter 12.16 – Street and Sidewalk Use Regulations.

Report of Committee on Ordinance

City Council Meeting Date: September 16, 2019

Attest: Lydia N. Martinez

Lydia N. Martinez, City Clerk

Approved by: _____

Joseph P. Ganim, Mayor

Date Signed: 10/2/19

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ATTEST
CITY CLERK

City of Bridgeport, Connecticut
Office of the City Clerk

To the City Council of the City of Bridgeport.

The Committee on **Ordinances** begs leave to report; and recommends for adoption the following resolution:

Item No. 123-18

Resolution Amending Chapter 12.16 of the Municipal Code

WHEREAS, in furtherance of Plan Bridgeport *Goal 1.1*, which requires that the City work to "improve usage of transit and alternative modes of transportation," the City's Office of Planning and Economic Development ("OPED") proposes to implement a fifteen month pilot program (the "Pilot Program") to allow for the safe and orderly operation of shared mobility devices (e.g., bicycles, electric bicycles, electric scooters) within the city;

WHEREAS, a Shared Mobility Device ("Device(s)") is a traditional bicycle, electric/pedal-assist bicycle or electric scooter that is part of a Shared Mobility System, which is a system that provides bicycles, electric/pedal-assist bicycle or electric scooters for a short-term rental for point-to-point trips and such devices may be locked and unlocked without the requirement of a rack or other docking station; and

WHEREAS, such shared mobility devices are found throughout the country and the world, and provide an economic and alternative mode of transportation for many, particularly within cities;

WHEREAS, a private pilot program between "BIRD," a California-based scooter-share company, and the University of Bridgeport, was conducted within the city during the 2018-2019 school year and was deemed successful;

WHEREAS, working interdepartmentally and studying best practices nationwide, OPED has developed a comprehensive policy and regulatory document outlining the terms and conditions and the application process pursuant to which the Pilot Program will be administered;

WHEREAS, the Pilot Program will run from September 4th of 2019 to November 30th of 2020, during which time OPED and other departments within the City will be able to gather data regarding the usage of the shared bicycles and scooters, the extent of consumer demand, the incidence of accidents or injury, the performance of participating companies, the equitable distribution of bikes and scooters throughout the city's neighborhoods, the broader community and business feedback, all so as to ultimately make informed recommendations as to whether the pilot operation of such devices ought to be continued, and if so, pursuant to what parameters;

WHEREAS, for all the reasons cited above, it is in the City's best interest to establish the Pilot Program;

WHEREAS, Device Providers may apply to participate in the Pilot Program by submitting an application, thereby agreeing to the terms and conditions thereof, and paying a one-time nonrefundable registration fee in the amount of One Thousand Five Hundred Dollars ($1,500.00) to OPED, which shall be applied to a dedicated fund to provide future bicycle infrastructure improvements;

WHEREAS, implementation of the Pilot Program will require amendments to the City's Code of Ordinances Chapter 12.16 – STREET AND SIDEWALK USE REGULATIONS.

NOW THEREFORE BE IT ORDAINED: By the City Council of the City of Bridgeport that, effective upon publication, the Municipal Code of Ordinances, Chapter 12.16 – STREET AND SIDEWALK USE REGULATIONS is hereby amended as follows:

Chapter 12.16 - STREET AND SIDEWALK USE REGULATIONS

Sections:

12.16.010 - Street and highway grading requirements.

A. All grades of highways shall be made and mapped in reference to some fixed point or base in the city.

B. No street shall be laid out by the city unless at the same time a grade of such proposed street shall be duly established by the common council.

C. No street shall be accepted by the city until the same has been brought to a grade duly approved by the common council, which grading shall be certified to by the city engineer.

(Prior code § 27-11)

12.16.020 - Use by animals.

No person shall cause or permit any animal or vehicle to stand upon or across any sidewalk so as to hinder or impede travel thereon nor upon any crosswalk; nor leave unattended any animal used for riding or driving, whether attached to any vehicle or not, unless such animal shall be securely fastened; nor fasten any animal to any tree or leave it so that it injures any street; nor ride or drive any animal on any street at a greater rate of speed than seven miles an hour.

(Prior code § 27-12)

12.16.030 - Playing in streets.

Except as provided in 12.16.250 hereof, n~~N~~o person shall ride any vehicle propelled by the feet, or any cart or wheelbarrow upon or along any sidewalk. No person shall coast, slide, fly kites or play ball or any other game in any street.

(Prior code § 27-13)

12.16.040 - Obstructing travel on public ways.

No person shall loiter or idle upon any highway, sidewalk or bridge, or upon any fence or structure adjacent thereto, so as to hinder travel thereon.

(Prior code § 27-14)

12.16.050 - Fences.

A. No hedge, shrubbery or full board fence shall be permitted at a height of more than four feet on any corner lot within a distance of twenty-five (25) feet from the corner point of the fence line on the street sides of such lot.

B. Every owner of any lot of land which abuts upon any street shall, when ordered to do so by the common council, cause to be erected and maintained on the line of such lot adjoining the street a suitable and sufficient fence of rails, boards or other materials; and the director of public facilities is authorized to erect such a fence at the expense of the parties interested, when the owner shall neglect to provide the same within the time limited in such order.

(Ord. dated 12/21/92 § 75(f); prior code § 27-15)

12.16.060 - Maintenance of stands on streets and sidewalks.

Except as provided in 12.16.250 hereof, n~~N~~o person shall place or maintain and no person shall permit or suffer the placing or maintenance on or along any street or sidewalk of any cart, wagon, vehicle, box, stand, container, sign or any other article or thing for the purpose of selling, offering for sale, displaying or advertising any article of food, or any goods, wares or merchandise, or advertising any business or amusement or place of such business or amusement.

(Prior code § 27-16)

12.16.070 - Selling from sidewalks.

No person occupying or using any premises adjoining any sidewalk shall use, and no person occupying or using any such premises shall permit or suffer anyone to use, any part of any sidewalk for the purpose of selling or offering for sale, or inducing the sale of any article of food, or any goods, wares or merchandise displayed or maintained on the premises occupied or used by such person.

(Prior code § 27-17)

12.16.080 - Selling to persons on sidewalks.

No person occupying or using any premises adjoining any sidewalk shall sell or offer to sell, from such premises or any part thereof to any person on the sidewalk adjoining such premises, any article of food, or any goods, wares or merchandise or any other thing maintained, displayed or advertised for sale on such premises; nor shall any person occupying or using such premises suffer or permit any other person to do so.

(Prior code § 27-18)

12.16.090 - Use of street or sidewalk in making delivery of goods.

No person in making delivery to any place of any article of food, or of any goods, wares or merchandise or of any other thing, shall deposit and permit any such article to remain upon any street or sidewalk; and no person receiving any such delivery shall permit or suffer any such article to remain upon any street or sidewalk.

(Prior code § 27-19)

12.16.100 - Sidewalk stands—Exceptions to chapter.

Nothing in this chapter shall apply to or forbid the maintenance of any sidewalk stand for the sale of newspapers under any license therefor now or hereafter issued by the chief of police pursuant to the provisions of Sections 12.08.010, 12.08.020 and 12.16.170; nor to any stand in any city-owned park maintained by or the maintenance of which is licensed by the city; nor to any receptacle for the deposit of refuse or rubbish maintained for the use of the public by or with the permission of the city; nor to refuse or garbage deposited for collection by the director of public facilities, provided such refuse or garbage is deposited in such manner and form, in such receptacles and at such places as are approved by the director of public facilities; nor to lawful picketing in any bona fide labor dispute.

(Ord. dated 12/21/92 § 75(a), (f); prior code § 27-20)

12.16.110 - Awnings.

No awning, which is designed to be attached to any permanently erected frame extending over any part of the sidewalk or to any pole or post set in the sidewalk or street, shall be placed over or across any public sidewalk unless a permit for the erection and maintenance of such awning shall be procured from the common council. No part of any awning, when extended over any sidewalk, shall be less than seven feet above the level of the sidewalk.

(Prior code § 27-21)

12.16.120 - Parades.

All street parades and processions bearing banners, or other conspicuous devices, or accompanied with music or any disturbing sounds, except the national guard, the police and fire departments and funeral processions engaged in the burial of the dead, are prohibited, unless permission therefor shall be first obtained from the chief of police. The chief of police may furnish a police escort for any such parade or procession if deemed by him necessary or proper.

(Ord. dated 12/21/92 § 75(a); prior code § 27-22)

12.16.130 - Restrictions on moving buildings through the streets.

A. Every application for a license to remove a building under the provisions of Chapter 5, Section 7(g) of the Charter and Related Laws compilation found on file shall state the name of the owner of the building to be moved, the name of the person who is to move the same, the precise location from and to which the building is to be moved, the distance from the proposed front line of such building to the line of the street, the street or streets through which it is to be conveyed, the dimensions of the building and the nature of the materials of which it is constructed. The director of public facilities, in his discretion, may approve or deny the application for a license.

B. Every application under this section shall be carefully filed and preserved.

C. No person receiving permission to remove a building, as provided for in this section, shall be deemed to have permission to remove the same through or upon any street not designated in his application or permit. No such license shall be granted until the applicant has filed a bond, with good and sufficient surety in the sum of twenty-five thousand dollars ($25,000.00), payable to the city for its benefit and for the benefit of any person who may be specially injured thereby, which bond shall be approved by the city attorney.

D. Every such license shall have limited therein a certain date before which time such moving is to be completed.

E. If such building remains upon any street after such date, the director of public facilities in his discretion shall either complete the moving of the same, or, if in his judgment such building as a whole cannot reasonably be moved to its destination, he shall have the power to separate the building into parts, so that he can reasonably remove it from the street. The licensee shall be liable under such bond for any expense, cost, loss and damage sustained by the city. The city shall not be liable to the owner of such building for any damage that may be done by the director of public facilities in removing the building from the street.

(Ord. dated 6/7/04: Ord. dated 12/21/92 § 75(f); Ord. dated 4/3/89; prior code § 27-23)

12.16.140 - Removal of sod, turf, etc.

No person shall cut or dig up any sod or turf in any street or public square with the intent to remove or carry away the same, or remove or carry away any earth, gravel or street dirt from any street without permission of the director of public facilities.

(Ord. dated 12/21/92 § 75(f); prior code § 27-24)

12.16.150 - Removal of obstructions, snow and ice from sidewalks.

A. Except as provided in 12.16.250 hereof, e~~E~~very person owning any land upon or adjacent to which there is a sidewalk, paved, concreted or worked, shall keep such sidewalk at all times in a safe and convenient condition for the use of the public, and shall forthwith repair all defects and remove all obstructions in any way endangering the public travel upon the same.

B. Except as provided in 12.16.250 hereof, e~~E~~very owner or occupant of any land or building, or the owner or lessee of any unoccupied land or building adjoining any sidewalk, shall, before sunset, remove any wood, coal, box, barrel, can or any other thing by which such sidewalk shall be in whole or in part obstructed or rendered unsafe or inconvenient to public travel.

C. Every owner or occupant of any land or building, or the owner or lessee of any unoccupied land or building, shall keep and maintain any sidewalk adjoining such land and building free from snow, ice or sleet, by which such sidewalk shall be obstructed or rendered unsafe. Whenever such sidewalk shall be permitted to remain covered with snow, ice or sleet for more than six hours after the same shall have been deposited or formed thereon, the director of public facilities may remove such snow, ice or sleet from sidewalk and report the expenses of such removal to the city attorney, who shall immediately collect the same by any proper action against the owner or occupant of the land or building, or the owner or lessee of any unoccupied land or building, adjoining such sidewalk. This section shall not be so construed as to conflict with Section 19-310 of the General Statutes.

(Ord. dated 4/7/03; Ord. dated 12/21/92 § 75(f); prior code § 27-25)

12.16.160 - Liability for ice and snow on public sidewalks.

A. The provisions of Connecticut General Statutes Section 7-163a are adopted, and are set forth in subsections B and C of this section.

B. Notwithstanding the provisions of Section 13a-149 of the General Statutes or any other general statute or special act, the city shall not be liable to any person injured in person or property caused by the presence of ice or snow on a public sidewalk unless the city is the owner or person in possession and control of land abutting such sidewalk, other than land used as a highway or street, provided the city shall be liable for its affirmative acts with respect to such sidewalk.

C. The owner or person in possession and control of land abutting a public sidewalk shall have the same duty of care with respect to the presence of ice or snow on such sidewalk toward the portion of the sidewalk abutting his property as the municipality had prior to the effective date of the ordinance codified in this section adopted pursuant to the provisions of Connecticut General Statutes Section 7-163a and shall be liable to persons injured in person or property where a breach of duty is the proximate cause of injury.

1. No action to recover damages for injury to the person or to property caused by the presence of ice or snow on a public sidewalk against a person who owns or is in possession and control of land abutting a public sidewalk shall be brought but within two years from the date when the injury is first sustained.

(Ord. dated 1/22/91: prior code § 27-25a)

12.16.170 - Duty to clean gutters.

In case the gutter opposite any dwelling house, store or other building, or opposite any lot of ground, shall at any time become obstructed with snow, ice, dirt or anything whatsoever, the owner, occupant or person having charge thereof shall cause such gutter to be cleaned out so that the water may run freely along the same.

(Prior code § 27-26)

12.16.180 - Marking of private streets.

Whenever any street shall be laid out over and across private land by the owner thereof, and until the same shall be accepted by the common council, the person making such layout and the owner of such private street shall maintain at either entrance to such street, and at the intersection of such street with any other street, a suitable sign or notice approved by the director of public facilities and containing thereon the words "private street."

(Ord. dated 12/21/92 § 75(f); prior code § 27-29)

12.16.190 - Prohibitions as to advertising matter.

No person who by virtue of a license granted under this chapter shall occupy a portion of any street with building materials, or by virtue of such license shall erect a fence of any description in any portion of a city street, shall place or cause or suffer to be placed thereon any poster, bill, placard or other printed, written or painted material by way of notice, announcement or advertisement of any event, thing, business or other matter except such as may be required by law. The violation of this section, in addition to any other penalty provided by law, shall be a sufficient reason for the revocation of such license by the director of public facilities without notice.

(Ord. dated 12/21/92 § 75(f); prior code § 27-50)

12.16.200 - Maintenance and repair of motor vehicles on public streets and highways and/or on city-owned or leased property.

A. No person shall make any repairs on any motor vehicle on the public streets or highways of the city except for changing of bulbs and lenses, changing of windshield wipers, installation of air filters, minor repair of electrical wires, changing or replacing of a battery, minor repair and/or maintenance of the interior of a vehicle, the changing of a flat tire, or other repairs of a similar minor nature, provided such minor repairs are performed in an expeditious manner and do not, in any manner, interfere or obstruct access of vehicles on such streets or highways.

B. No person shall make any repairs on any motor vehicle on any city-owned or leased premises within the city unless having first received permission from the police department.

C. Any emergency repairs performed by a licensed mechanic, service station or auto repair shop shall be permitted and not be considered a violation of this section, if performed expeditiously.

D. Any person violating the provisions of this section shall be subject to having the motor vehicle he is making repairs on immediately towed from its location by order of the police department at his expense.

E. Any person violating the provisions of this section shall be fined not more than one hundred dollars ($100.00) for the first offense. Any persons violating the provisions of this section shall be fined not less than one hundred dollars ($100.00) nor more than two hundred dollars ($200.00) for a second offense. Any person violating the provisions of this section for a third and any subsequent times, shall be liable for a fine of not less than two hundred dollars ($200.00) nor more than five hundred dollars ($500.00) and/or up to thirty (30) days in jail.

(Prior code § 27-31)

12.16.210 - Permit to occupy portion of street—Issuance authorized.

A. Every person intending to erect or repair any building upon any land abutting on any street must receive from the director of public facilities a permit to occupy a portion of such street with building materials or to fence off a portion of the sidewalk in the protection of the public; provided, however, that no such permit shall be granted authorizing or permitting any person to occupy or close more than one-half of the width of the sidewalk upon such land abuts.

B. Every person intending to use any portion of any street or sidewalk for an entertainment event or block party must receive from the director of public facilities a permit to occupy such street and/or sidewalk for a limited time. No permit shall be granted denying access to any pedestrian sidewalk but the street may be closed to vehicular travel. If such a permit is granted, the police chief and emergency operations officer must be given written notice of said permit a minimum of seven business days prior to said event.

(Ord. dated 12/21/92 § 75(f); prior code § 27-93) (Ord. dated 12/15/08)

12.16.220 - Permit to occupy portion of street—Fee.

A fee of fifty dollars ($50.00) shall be paid to the director of public facilities for the use of the city for each month or part thereof that any street or sidewalk shall be occupied or closed pursuant to the permit authorized by Section 12.16.210.

(Ord. dated 12/21/92 § 75(f); prior code § 27-94) (Ord. dated 11/3/08; Ord. dated 5/16/16)

12.16.230 - Permit to occupy portion of street—Duty of permittee to provide safe passage around obstruction.

Any person duly permitted to occupy any part of any street pursuant to a permit issued as authorized by Section 12.16.210, while erecting or repairing any building, opening any sewer or making any excavation in any street for any purpose, shall provide safe and convenient passage around or over the same for public travel, and shall be responsible to the city for any damage occasioned by any neglect to do so.

(Prior code § 27-95)

12.16.240 - Permit to occupy portion of street—Display.

Any person occupying any portion of any street under a permit issued under Section 12.16.210 shall, when requested by the director of public facilities or any police officer, exhibit his permit for such occupation.

(Ord. dated 12/21/92 § 75(f); prior code § 27-96)

12.16.245 – Permit to Use City Streets and Sidewalks for the Shared Mobility Pilot Program.

A. Permit Required. No person shall operate a Shared Mobility System, as defined by City Ordinance Chapter 10.32.010, for use in the City without first having obtaining approval from the Office of Planning and Economic Development.

B. Filing of application – Fee. Each applicant for approval to operate a Shared Mobility System, as defined by City Ordinance Chapter 10.32.010, shall file an application with the Director of the Office of Planning and Economic Development and pay a one-time, non-refundable fee in the amount of One Thousand Five Hundred Dollars ($1,500.00) to the City of Bridgeport. Such applicant fee revenue collected by the Office of Planning and Economic Development shall be deposited and accounted for in a City special revenue account used for the sole purpose of improving the City's bicycle infrastructure.

C. Impoundment of Shared Mobility Devices. The Office of Planning and Economic Development shall create one or more shared mobility device pounds to which shared mobility devices may be removed at the direction of any police officer or parking enforcement officer for the city for caused specified below. The pounds to be created under this chapter shall be city-owned storage garages or such other appropriate city-owned places as shall be designated by the Office of Planning and Economic Development.

1. Devices subject to impoundment:

(i) Those devices not removed by a Provider within the allotted time of a removal notice, specifically

a. In the event of extreme weather, emergencies, special events or for maintenance activities ("Event"), the owner of the device shall remove all devices from the Event area within ten (10) hours of a notice by the Official;

b. When the number of devices deployed within a specific area is deemed excessive, the Provider must reduce its fleet in said area within four (4) hours of receiving notice between 7:00 a.m. and 8:00 p.m., seven days per week. Any notice received outside of these hours will count as being received at 7:00 a.m. the next day;

c. Devices deemed inoperable, unsafe, or otherwise failing to meet the standards identified in the application, which the Provider does not remove from the active fleet within two (2) hours of receiving notice between 7:00 a.m. and 8:00 p.m., seven days per week. Any notice outside of these hours will count as being received at 7:00 a.m. the next day;

(ii) Those devices parked in violation of the application parking requirements or in one location for more than three consecutive days;

(iii) Those devices used in violation of any applicable local, state or federal law, rule, or regulation;

2. Impounding fee. Before the owner or representative of the owner of any device taken into custody in accordance with Section 1 hereof shall be allowed to secure the release of such device, the owner or its representative shall pay to the Office of Planning and Economic Development fifty dollars ($50.00) per device. Such revenue collected by the Office of Planning and Economic Development shall be deposited and accounted for in a City special revenue account used for the sole purpose of improving the City's bicycle infrastructure.

12.16.250 - Miscellaneous acts prohibited.

The erecting or placing of any building, gate, fence, post, box, cask, wood, brick, stone, non-motor vehicle unattached to any animal, or any other thing upon any sidewalk or street; the placing, hanging or maintaining of any flag, banner, article of merchandise or other thing except awnings and signs over or across any sidewalk or street; the opening or making of any vault or cellar in, upon or under any street; and the kindling of any fire or bonfire in any public street are prohibited without consent of the common council; provided, however, that nothing in this section shall be construed so as to prevent or hinder any person, while in the process of building or repairing any building, from placing in any street materials for such purposes under such conditions and restrictions as may be prescribed in each particular case in a permit issued therefore under this section.

A. Exemptions.

1. Nothing in Section 12.16.250, above, shall prohibit the implementation committee of any neighborhood revitalization zone whose implementation plan has been approved by the city council from seeking permission from the director of public facilities to provide trash can receptacles for placement within the public right-of-way, provided the design of the trash can has been pre-approved by the director or his or her designee; the placement of said cans is done by the staff of the public facilities department following the issuance of a written approval for said placement by said director, or his or her designee, in accordance with Section 7-148(b)(H) and City Ordinance 8.68 Littering; and conditioned upon the property owner whose property fronts where the trash can shall be located, being notified in writing ten days prior to the placement of the trash can that the acceptance of the trash can at the location requires that the trash can be emptied by the property owner through private methods.

The property owners shall also be given a copy of the Municipal Ordinance 8.60 Unlawful Depositing so that they are aware that if the trash can is not maintained in a manner that does not violate that ordinance, the trash can shall be removed by order of the director of public facilities and civil penalties shall be imposed in accordance with Ordinance 8.60. In addition, nothing in this chapter shall prevent the city health director under the statutory authority granted to all municipal health directors in 19a-206, from issuing orders, requesting the imposition of equitable, civil and/or criminal penalties by requesting such action from the State Housing Court at Bridgeport, if it is found that the failure to maintain the trash can also violated the Public Health Code.

2. Nothing in Section 12.16.250, above, shall prohibit the placement of bus station shelters within the public right-of-way by the transit authority authorized to provide bus service to the citizens of Bridgeport who are entitled to such access pursuant to Section 7-148(6)(C)(ii) and Section 7-148(7)(H)(xii) of the General Statutes of Connecticut, provided that the design and placement of said shelters has been submitted to and reviewed by the public safety and transportation committee of the city council and approved by the full council. The request for such approval shall be submitted to the city clerk for referral to the city council by the director of public facilities, provided the plans for the placement and design of said shelters has been pre-filed with said director a minimum of thirty (30) days before the requested date for submission to the city council; and plans and designs for said shelters have been reviewed by an engineer assigned to the office of the city engineer, with a written recommendation or approval or disapproval provided by said engineer to said director. Following city council approval, the placement of the bus shelters shall not proceed without the issuance of an excavation permit by the public facilities department in accordance with Section 1-148(6)(C)(iii) and (iv) of the General Statutes of Connecticut and City Ordinance Chapter 12.12 Excavations.

3. Nothing in Section 12.16.250, above, shall prohibit the use or placement of a Shared Mobility Device, as defined by City Ordinance Chapter 10.32.010, within and/or on the public right-of-way during the Shared Mobility Device Pilot Program from September 4, 2019 to November 30, 2020. Share Mobility Device users may ride Devices on city streets, off-street bicycle lanes, multi-use paths, and sidewalks; users must dismount upon encountering pedestrians. Devices, while they may be parked on the sidewalk, shall be parked in the following manner: (a) in a balanced, upright position; (b) to allow unimpeded pedestrian travel space on a sidewalk to a width of at least five (5) feet; (c) to allow unimpeded access to entrances to public or private property; (d) to allow unimpeded access to all accessibility ramps and fire hydrants; (e) to allow unimpeded access to all bicycles and scooter parking areas, including any stationary fixture designed for the secure attachment of bicycles and scooters or any painted area designated for bicycle and scooter parking; (f) to allow adequate area for unimpeded vehicular travel and parking on public streets; and (g) in an area or location which the City may designate.

City of Bridgeport, Connecticut
Office of the City Clerk

Report of Committee on **Ordinances**
Item No. 123-18

RESPECTFULLY SUBMITTED,
THE COMMITTEE ON
ORDINANCES

Eneida L. Martinez, **Co-Chair**

Marcus A. Brown, **Co-Chair**

Michelle A. Lyons

Ernest E. Newton, II

Rosalina Roman-Christy

Pete Spain

Maria I. Valle

City Council Date: ***September 16, 2019***

Item #124-18

Amendments to the Municipal Code of Ordinances, Chapter 10.32 – The Operation or Use of Dirt Bikes, All-Terrain Vehicles, Snowmobiles, Motor-Driven Cycles, or Mini-Cycles, amend Section 10.32.010 – Definitions.

Report of Committee on Ordinance

City Council Meeting Date: September 16, 2019

Attest: Lydia N. Martinez

Lydia N. Martinez, City Clerk

Approved by: _____

Joseph P. Ganim, Mayor

Date Signed: 10/2/19

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City of Bridgeport, Connecticut
Office of the City Clerk

To the City Council of the City of Bridgeport:

The Committee on **Ordinances** begs leave to report; and recommends for adoption the following resolution:

Item No. 124-18

Resolution Amending Chapter 10.32 of the Municipal Code

WHEREAS, in furtherance of Plan Bridgeport *Goal 1.1*, which requires that the City work to "improve usage of transit and alternative modes of transportation," the City's Office of Planning and Economic Development ("OPED") proposes to implement a fifteen month pilot program (the "Pilot Program") to allow for the safe and orderly operation of shared mobility devices (e.g., bicycles, electric bicycles, electric scooters) within the city;

WHEREAS, a Shared Mobility Device ("Device(s)") is a traditional bicycle, electric/pedal-assist bicycle or electric scooter that is part of a Shared Mobility System, which is a system that provides bicycles, electric/pedal-assist bicycle or electric scooters for a short-term rental for point-to-point trips and such devices may be locked and unlocked without the requirement of a rack or other docking station; and

WHEREAS, such shared mobility devices are found throughout the country and the world, and provide an economic and alternative mode of transportation for many, particularly within cities;

WHEREAS, a private pilot program between "BIRD," a California-based scooter-share company, and the University of Bridgeport, was conducted within the city during the 2018-2019 school year and was deemed successful;

WHEREAS, working interdepartmentally and studying best practices nationwide, OPED has developed a comprehensive policy and regulatory document outlining the terms and conditions and the application process pursuant to which the Pilot Program will be administered;

WHEREAS, the Pilot Program will run from September 4th of 2019 to November 30th of 2020, during which time OPED and other departments within the City will be able to gather data regarding the usage of the shared bicycles and scooters, the extent of consumer demand, the incidence of accidents or injury, the performance of participating companies, the equitable distribution of bikes and scooters throughout the city's neighborhoods, the broader community and business feedback, all so as to ultimately make informed recommendations as to whether the pilot operation of such devices ought to be continued, and if so, pursuant to what parameters;

WHEREAS, for all the reasons cited above, it is in the City's best interest to establish the Pilot Program;

WHEREAS, Device Providers may apply to participate in the Pilot Program by submitting an application, thereby agreeing to the terms and conditions thereof, and paying a one-time nonrefundable registration fee to OPED, which shall be applied to a dedicated fund to provide future bicycle infrastructure improvements;

WHEREAS, implementation of the Pilot Program will require amendments to the City's Code of Ordinances Chapter 10.32 – THE OPERATION OR USE OF DIRT BIKES, ALL-TERRAIN VEHICLES, SNOWMOBILES, MOTOR-DRIVEN CYCLES, OR MINI-CYCLES.

NOW THEREFORE BE IT ORDAINED: By the City Council of the City of Bridgeport that, effective upon publication, the Municipal Code of Ordinances, Chapter 10.32 – THE OPERATION OR USE OF DIRT BIKES, ALL-TERRAIN VEHICLES, SNOWMOBILES, MOTOR-DRIVEN CYCLES, OR MINI-CYCLES is hereby amended as follows:

Chapter 10.32 - THE OPERATION OR USE OF DIRT BIKES, ALL-TERRAIN VEHICLES, SNOWMOBILES, MOTOR-DRIVEN CYCLES, OR MINI-CYCLES

10.32.010 - Definitions.

The following words, terms and phrases, when used in this ordinance, shall have the meanings attributed to them in this section:

1. "Dirt bike" means a two-wheeled motorized recreational vehicle designed to travel over unimproved terrain and not designed for travel on a highway, as defined in Section 14-1 of the Connecticut General Statutes. "Dirt bike" does not include an all-terrain vehicle, as defined in Section 14-379 of the General Statutes, or a motor-driven cycle, as defined in Section 14-1 of the General Statutes.

2. "Snowmobile" means any self-propelled vehicle designed for travel on snow or ice, except vehicles propelled by sail.

3. "All-terrain vehicle" means a self-propelled vehicle designed to travel over unimproved terrain that has been determined by the commissioner of motor vehicles to be unsuitable for operation on the public highways and is not eligible for registration under Chapter 246 of the Connecticut General Statutes.

4. "Operate" means (1) to control the course of or otherwise use a dirt bike, snowmobile, all-terrain vehicle, motor-driven cycle, mini-cycle, or similar vehicle; or (2) being in possession of a dirt bike, snowmobile, all-terrain vehicle, motor-driven vehicle, mini-cycle or similar vehicle on any street or sidewalk in the city of Bridgeport or on any public property, including but not limited to school property, playgrounds and parks, within the city of Bridgeport, or on any private property, within the city of Bridgeport, without first obtaining the written permission of the property owner if the property is not owned by the operator, passenger, and/or owner of the motorized recreational vehicle, if such dirt bike, snowmobile, all-terrain vehicle, motor-driven vehicle, mini-cycle or similar vehicle is capable of being set in motion by the motive power of the vehicle.

5. "Motor-driven cycle" means any motorcycle, motor scooter, or bicycle with an attached motor, with a seat height of not less than twenty-six (26) inches, and a motor having a capacity of less than fifty (50) cubic centimeters piston displacement.

6. "Mini cycle" means pocketbikes, miniature (hereafter "mini") bikes, mini cycles, mini sport bikes, mini motorcycles, chopper scooters, and any other similar wheeled vehicle designed to transport one or more persons that is powered by any type of motor.

7. "Shared Mobility Device" means a traditional bicycle, electric/pedal-assist bicycle, or electric scooter that is part of a dockless shared mobility rental system ("Shared Mobility System") operating with a valid City-approved application from September 4, 2019 to November 30, 2020 and, for purpose of this Chapter, a Shared Mobility Device is not a motorized recreational vehicle.

~~7~~8. The terms "dirt bike," "snowmobile," "all-terrain vehicle," "motor-driven cycle," and "mini-cycle" shall not be deemed to include any of the following:

a. Any registered "motorcycle" as defined in the C.G.S. § 14-1(46); any registered "motor vehicle" as defined in C.G.S. § 14-1(47);

b. Any moped that meets Federal Department of Transportation guidelines for use on streets and is approved by the state of Connecticut Department of Motor Vehicles for use on streets, provided, however, the moped is operated pursuant to all applicable state laws, rules, and regulations and all other city of Bridgeport ordinances;

c. Any wheelchair or similar mobility assisting device utilized by a person with a physical disability or whose ambulatory mobility has been impaired due to age or physical ailment;

d. Any self-propelled snow plow, snow blower or lawn mower when used for the purpose for which it was designed and operated at a speed not to exceed four miles per hour;

e. Any vehicle owned or leased by the city of Bridgeport;

f. Any vehicle that is used solely for amusement, or as a novelty display item, and is operated during a parade or any other special event that is properly permitted and approved by the city of Bridgeport shall be excluded from this article; ~~and~~

g. Any electric personal assistive mobility device (hereinafter "EPAMD") that is self-balancing, has two non-tandem wheeled devices, is designed to transport only one person, and has an electric propulsion system that limits the maximum speed of the device to twelve and one-half (12½) miles per hour or less.~~;~~ and

h. Any Shared Mobility Device.

For the purposes of Sections 10.32.020 and 10.32.030 of this ordinance, the terms "dirt bike," "snowmobile," "all-terrain vehicle," "motor-driven cycle," and "mini cycle" as defined in this section, shall be collectively referred to as "motorized recreational vehicle(s)~~;~~." a Shared Mobility Device is not a "motorized recreational vehicle."

(Ord. dated 5/18/15)

City of Bridgeport, Connecticut
Office of the City Clerk

Report of Committee on **Ordinances**
Item No. 124-18

RESPECTFULLY SUBMITTED,
THE COMMITTEE ON
ORDINANCES

Eneida L. Martinez, **Co-Chair**

Marcus A. Brown, **Co-Chair**

Michelle A. Lyons

Ernest E. Newton, II

Rosalina Roman-Christy

Pete Spain

Maria I. Valle

City Council Date: ***September 16, 2019***