

Bridgeport Climate Action Case Study



Image of Living Shoreline in Bridgeport (CIRCA)

Information on Municipal Climate Action

In May 2022, CIRCA launched a research project to investigate how climate actions are being implemented in municipalities across Connecticut. Climate actions are defined as activities planned or proposed to address the causes and impacts of climate change through such means as climate adaptation, mitigation, and increasing [in this case] a municipality’s resiliency. Bridgeport climate actions were identified from their active plans including Plans of Conservation and Development (POCDs), Natural Hazard Mitigation Plans (NHMPs), Metropolitan Transportation Plans, and the Regional Framework for Coastal Resilience (RFCR). CIRCA has worked with Bridgeport before on [Resilient Bridgeport](#), which focuses on creating more climate resiliency in the City. Climate resiliency is accomplished through a combination of environmental and community preparation measures. The goal of this case study was to provide examples of climate strategies that may work for other engaged communities by showcasing policies and enactment strategies that could be adopted and fitted for other towns and cities, as well as the process and resources involved in implementing these kinds of actions. Bridgeport exemplifies resiliency values soundly throughout their plans and was selected for this CIRCA case study due to the quality of their responses from city staff responsible for such projects, and further for the applicatory nature of their climate work to other municipalities.

Bridgeport provided significant detail and insight into their climate actions within their active plans, indicating whether the action was underway, or if the action has not yet been acted upon. More about the methods used for collecting a report on the municipality’s climate actions can be found in the last section of this case study. Additionally, this case study may help identify potential barriers that municipalities may face when tackling climate challenges within their own respective communities.

Notably when developing this case study, it came to light that prioritization and action for working on climate resiliency projects was impacted by community and stakeholder involvement in collaboration with the City staff. The influence of the constituents that cared about Bridgeport’s climate change preparedness made an apparent difference for the number and type of climate actions that the City has underway, and through their efforts emphasized the overall values, both environmentally and culturally, of the City. Though these efforts of citizens and businesses of Bridgeport may not be directly responsible for the initiating and completing of projects, these following climate actions undertaken and possible for the future reflect the wishes of both city staff and constituents of the community for climate resiliency.



Funding for this project is provided by the U.S. Department of Housing and Urban Development through the Community Development Block Grant National Disaster Recovery Program, as administered by the Connecticut Department of Housing.

Community Resiliency Underway - Neighborhood-specific climate action

As the City of Bridgeport is located along the coastline, implementing projects regarding our changing climate conditions is a priority for the municipality, particularly for the wellbeing of the community. Coastal, community-oriented climate actions underway from Bridgeport's 2019 Plan of Conservation and Development (POCD) included ones focused on protecting vulnerable neighborhoods to the effects of sea level rise and worsening storms through individualized plans:

- **Encourage the creation of neighborhood-specific coastal resiliency plans that embrace broad City policy goals while recognizing the unique assets and importance of each waterfront neighborhood.**
- **Prioritize the creation of neighborhood-specific coastal resiliency plans for economically disadvantaged neighborhoods.**

Bridgeport is approaching this focus with three main actions outlined in their POCD, starting with reviewing Bridgeport's 2019 NHMP actions specific to their neighborhoods. Next, Bridgeport is submitting these actions to their Neighborhood Revitalization Zones (NRZs) for their input, furthering the involvement of relevant stakeholders and affirming the priorities of neighborhoods and their leaders, as well as the individual approach to the different settings. A full list of the NRZs are found [here](#). Finally, Bridgeport intends to implement the strategies and plans created for neighborhood-specific coastal resiliency in collaboration with the NRZ at the local and legislative levels (POCD, 2019, p. 71). This process will likely include collaboration with Resilient Bridgeport, MetroCOG, DEEP, along with constituents of these neighborhoods (POCD, 2019, p. 83).

- **Support the Rebuild by Design: Resilient Bridgeport/Natural Disaster Resilience Competition project efforts to create a comprehensive flood protection system throughout the South End neighborhood.**

The action relies on interdepartmental communication and design teams to finalize design proposals and create projects that would protect their communities from hazards they are likely to face. (POCD, 2019, p. 82). Community input and development of NRZ vision is important in creating effective strategies for protecting Bridgeport neighborhoods and realizing future aspirations of these communities. Through the federal recovery awards of Resilient Bridgeport "Flood Risk Reduction Project" and "Rebuild by Design" Bridgeport has done significant work on the South End of the City with efforts to address flood risk and create a drainage system that more effectively prevents significant ponding. For an example of a Neighborhood Revitalization Zone Plan, see the [Upper East Side Neighborhood Revitalization Zone Community Vision](#).

TRANSITIONING THE CITY TO GREEN INFRASTRUCTURE



The City of Bridgeport embraced the consideration of different types of green infrastructure (GI) about ten years ago as methods of addressing stormwater-related flooding such as by using rain gardens, street planters, pervious pavement, etc., and preventing shoreline erosion by using living shoreline techniques among others. In the survey, Bridgeport respondents identified a green infrastructure climate action from their MetroCOG HMP Annex (2019) that is underway:

- **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**

A few green infrastructure concepts were approved and constructed, including the rain garden at Beardsley Zoo and recently, structures at City Hall and 999 Broad St. Many of these potential projects were described and listed in the [Regional Framework for Coastal Resilience](#) which was published in 2017. More GI are anticipated to be implemented in the future.

Changing Neighborhood Character: Knowlton Park

"This is much more than just a park. It's a symbol for a city that is coming back, going for greatness." -U.S. Senator Richard Blumenthal. (Daily Voice, 2015).

One prominent action that was built upon from previous work done by the city in the past was to **"Replace with other - Pequonnock River Greenway/Knowlton Park Shoreline Enhancement."** Knowlton Park is a reclaimed brownfield that was converted into a park from several industrial plots donated to the City from their former business owners. This 5-acre space includes a basketball court, playground, river walkway, pavilion and tables that double as chess boards (Daily Voice, 2015). In 2015 when the park had its grand opening, Bridgeport Mayor Bill Finch was quoted saying they aimed to "recapture the waterfront property along the Pequonnock River." (Daily Voice, 2015). The creation of the park transformed the character of the neighborhood and improved the quality of life for the residents. From a place once filled with garbage, weeds, and a beaten down fence, what one resident described as "scary," the park is now a pleasant site for residents and visitors to go for a walk or recreate.

The summer of 2022 saw further expansions to the park, which revolved around enhancing the Pequonnock River Greenway and the Knowlton Park Shoreline. The City entered a public-private partnership with "The Knowlton" to create a public art park and event space along the water and installed a kayak launch from the Park. Bridgeport is now preparing to design improvements to Barnum Avenue spanning from the Knowlton Park to the Pequonnock River to create greater waterfront access. This work benefits Bridgeport's community environment by making it both more resilient and socially and culturally inviting.

HAZARD MITIGATION ACROSS BRIDGEPORT

Several other compelling "underway actions" in the works contribute to improving climate resiliency through plans to create additional hazard mitigation across Bridgeport, **"Require hazard mitigation plans for all plants, factories, and industrial uses that are either in a FEMA flood zone or handling toxic material."** (Bridgeport POCD, 2019, p. 56). This action is part of Bridgeport's Goal 5 of its "Bridgeport is an Equitable City" Principle to protect economically-disadvantaged neighborhoods in the city and ensure that they are not disproportionately impacted by climate change, nor other environmental hazards (POCD, 2019, p. 36). It is in the initial stages of development and largely overseen by the Emergency Operations Center. The expected timeframe for progressing on the action is indicated in Bridgeport's POCD as relatively short. Bridgeport has listed three major steps within their POCD for completing this action:

1. Create an ordinance that requires regularly updated hazard mitigation plans for all plants, factories, and industrial uses that are either in a FEMA flood zone or handling toxic materials.
2. Track and enforce the creation of required hazard mitigation plans.
3. Monitor compliance with update requirements.

This action dedicated to planning for area-specific climate vulnerability needs is in the early stage of implementation and being addressed further in another related action that is underway, **"Encourage the creation of neighborhood-specific coastal resiliency plans that embrace broad city policy goals while recognizing the unique assets and importance of each waterfront neighborhood."** (Bridgeport POCD, 2019, p. 87). Bridgeport's neighborhoods face specific challenges based on their locations; given what their proximity is to the Long Island Sound. For example, Bridgeport's South End neighborhood is located on a peninsula characterized as low-lying and bounded by several prominent water bodies, which include Long Island Sound, Black Harbor, Cedar Creek, and Bridgeport Harbor. (Regional Frameworks for Coastal Resilience, 2019, p. 37). This area is highly vulnerable to storm surge and sea level rise (Surging Seas Risk Finder, n.d.). A number of projects have been initiated and received funding to elevate and protect this area as part of the identified climate actions already described.



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FUTURE OPPORTUNITIES FOR BRIDGEPORT

The following are a few compelling actions across Bridgeport’s plans that have not yet been acted upon. There are several major reasons that may delay or inhibit progress on climate actions in the short term. For example, prioritization of certain actions over others is often a pragmatic step municipalities must take – given financial, personnel availability, and time resources that can be allocated to the project; whether all necessary stakeholders are involved, or unexpected delays prevent a given municipality to begin or complete a project. Data collected through CIRCA’s climate action survey helps to understand what kinds of actions generally are difficult to undertake, as well as specifically why a municipality or constituency may be facing barriers to progressing on particular climate actions, and how outside organizations can assist with implementation.



View from under Bridge in Bridgeport, CT (free image: Canva).

LIMITING DEVELOPMENT IN HIGH RISK FLOODPLAINS

“Bridgeport has seen the face of climate change and it is wet.” – Jan Ellen Spiegel, CTPost, 2019.

One of the greatest challenges Bridgeport will likely face in the upcoming years and decades is **“Restrict[ing] development in high risk floodplains,”** as identified by the City’s POCD. Though mounting sea level rise threatens existing coastal homes and businesses particularly within floodplains, across the nation FEMA-designated 100-year floodplains are typically popular for development. FEMA notes that “Continued development in flood-prone areas and changing climate conditions increase the challenges” facing municipalities in charge of protecting the wellbeing and prosperity of their communities. It can be a massive effort to bring on the businesses and members of the community that may see reduced property values as a result of limitations on development in the areas adjacent to where they currently inhabit. Meanwhile, flooding is increasing in frequency and severity, jeopardizing current and existing properties, and most importantly, the safety and wellbeing of the people who live and work within high risk floodplains.

According to Risk Factor, the City of Bridgeport has a “moderate risk of flooding over the next 30 years, which means flooding is likely to impact day-to-day life within the community.” Currently, 3,662 properties are determined to be at risk. In the next 30 years, 4,179 properties are anticipated to be at risk. As a project that is unlikely to have immediate widespread support, it will be up to motivated, long-term minded individuals within the community and municipal leadership to further engage community concern and develop mechanisms that limit or effectively address issues of balancing development and environmental risks that will grow over time within a coastal environment subject to the effects of climate change.

ECOSYSTEM ENHANCEMENT SERVICES

There were several shoreline enhancement projects that may be acted upon in the future. For example, **“Enhance - Bass Pro Shop Store Shoreline Enhancement”** (Regional Framework for Coastal Resilience, 2017, p. 191). This project involves bank protection through enhancement activity such as beach nourishment and revegetation on the nearby shoreline. Located on Cooks Point, the area is currently already undergoing environmental remediation, including along some of the armored coastal bank adjacent to the Bass Pro Shop.

An environmental land use restriction is being applied to this area, including to a “long, relatively uniform established riprap bank at the water’s edge,” that is noted as needing to be maintained and enhanced (RFCR, 2017, p.164). The riprap bank in Bridgeport is an example of utilizing green infrastructure on the coastline. Largely, this will be done by enhancing the revetment with vegetation, with a small part of the area being enhanced as wetland to mitigate activities adjacent to the site (RFCR, 2017, p. 164). In general, this area will be undergoing redevelopment and restoration through prioritizing the enhancement of natural habitats and restoration of the city’s waterfront and water bodies (Bridgeport, POCD 2019, p.52).

More information on this form of restoration can be found at [Riprap Bank Protection](#).



LIVING SHORELINES

Ecosystems are critical to protect and enhance the services of, especially for the benefits of thriving coastline ecosystems on surrounding human communities. Living shorelines enhance both environmental and human wellbeing. Many actions of the Regional Framework for Coastal Resilience of 2017 focused on Living Shoreline enhancement, such as **“Create - West Branch Johnson Creek Living Shoreline.”** (RFCR, 2017).

Image of West Branch Johnson Creek Living Shoreline (CIRCA, MetroCOG-Designing Resilience, n.d.)

A living shoreline is a “protected and stabilized shoreline that is made of natural materials such as plants, sand, or rock.” (NOAA Fisheries, n.d.). These areas prevent the erosion of the shoreline, absorb storm surge shock, act as habitat for juvenile fish and other marine organisms, and filter pollution out of the water. They are recognized to be typically superior to hardened structures for preventing erosion and damage from the sea and storms.

Located in Bridgeport’s East End, Johnson’s Creek Living shoreline is described as situated in a troubled area at a low elevation such that it is at risk of flooding and has further been hurt by disinvestment and historic environmental degradation (CIRCA, MetroCOG-Designing Resilience). Living shorelines in Bridgeport are expected to improve waterfront access for the neighborhood in addition to wetland habitat and flooding mitigation. Additional benefits of the living shoreline include:

- “Reducing the grade of bank slopes to allow vegetative stabilization and support potential wetland migration. If sea level rises one foot within the design life of the wetland’s edge, the vegetation could move up the bank into the bioswale areas.
- “The removal of debris and invasive species and habitat creation for marsh species.
- “Improved public access to the waterfront and views of the waterfront, including a boardwalk for passive recreation.” (Sloan, 2018, p. 5).

More about this action can be found with the [Johnson Creek Living Shoreline Report](#).

ABOUT CIRCA'S CLIMATE ACTION CASE STUDY

For this CIRCA research project, municipal planners and their fellow staff were asked to answer a survey regarding the status of thirty-three identified climate actions. For each action, City of Bridgeport planners and the staff this was distributed to indicated whether the action was completed, underway, or had no action. Following this was a column to explain or provide details regarding the action's status, and next to this was a column for following-up with a person who would be able to provide more information if CIRCA wanted to inquire further. The object of this study was to understand what climate actions the City was having success accomplishing, why these actions were identified as objectives or priorities or more effective than others, as well as the barriers faced in accomplishing their goals.

Bridgeport Survey Responses

| Plan // Number of Actions... | Underway | No Action | Not indicated |
|------------------------------|----------|-----------|---------------|
| MetroCOG HMP 2019 (4) | 2 | 2 | -- |
| POCD 2017 (15) | 9 | 5 | 2 |
| RFCR 2017 (14) | 2 | 12 | -- |

For Bridgeport, the POCD has the most identified climate actions that are underway. The RFCR 2017 lists nearly as many actions but does not have as much underway currently. The RFCR is a collection of potential projects and initiatives that is basically owned by the COGs that participated (MetroCOG and SCRCOG) as well as The Nature Conservancy (TNC). Since it serves as a shopping list, its purpose is to provide ideas to NGOs and other entities to apply for grants to advance living shorelines and GI. A great example is Save the Sound, which won \$500,000 from NFWF to advance the design for a living shoreline in Guilford that was in the RFCR. In contrast, a POCD provides a basis for a municipality to take its own actions. The two could work together. For example, the POCD could say "The City should continue to select projects to advance from the RFCR, such as the Johnson Creek living shoreline."



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Resources

Municipalities of the MetroCOG Region (2019) *Natural Hazard Mitigation Plan Update*.

<https://media.circa.uconn.edu/docs/NHMPs/MetroCOG%20MJ%2C%20Bridgeport%2C%20Easton%2C%20Fairfield%2C%20Monroe%2C%20Stratford%2C%20Trumbull%20NHMP%202019.pdf>.

MetroCOG, SCRCOG, and The Nature Conservancy (2017) *Southern Connecticut Regional Framework for Coastal Resilience*. https://media.circa.uconn.edu/docs/Framework/SC_RFCR_Final_Report_6-2017.pdf.

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State of Connecticut (n.d) *Resilient Bridgeport*. <https://resilientbridgeport.com/about/>.

Connecticut Department of Energy and Environmental Protection (2022) *Bridgeport Harbor Station: Title V Proceedings*. <https://portal.ct.gov/DEEP/Air/Permits/Bridgeport-Harbor-Station---Title-V-Proceedings>.

Meghan A. Sloan (2018) *Johnson's Creek Living Shoreline, Bridgeport: Final Report to the Connecticut Institute of Resilience & Climate Adaptation (CIRCA)*. <https://circa.uconn.edu/wp-content/uploads/sites/1618/2019/01/MetroCOG-CIRCA-Johnsons-Creek-Final-Report.pdf>.

Connecticut Institute of Resilience and Climate Adaptation (CIRCA) (n.d.) *MetroCOG - Designing Resilience: Living Shorelines for Bridgeport*. <https://circa.uconn.edu/metrocog/>.

Jan Ellen Spiegel (2019) *Bridgeport building barriers after swamped by stormwaters*. ctpost. <https://www.ctpost.com/local/article/Bridgeport-building-barriers-after-swamped-by-14455055.php>.

Additional Resources

[Reducing Risk in the Floodplain \(FEMA\)](#)

[Risk Factor: Does Bridgeport have risk?](#)

[Surging Seas Risk Finder](#)

[FEMA Base Flood Elevation \(BFE\)](#)

[NOAA Understanding Living Shorelines](#)

[CTPost: Drone photos show Bridgeport neighborhoods from above](#)

[Building Homes in Flood Zones: Why Does This Bad Idea Keep Happening?](#)

[Bridgeport's Waterfront Master Plan](#)

[South End Neighborhood Revitalization Zone Strategic Plan - 2014](#)

Contact

To learn more about CIRCA visit circa.uconn.edu and the Resilient Connecticut project for more climate resilience planning tools: resilientconnecticut.uconn.edu

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