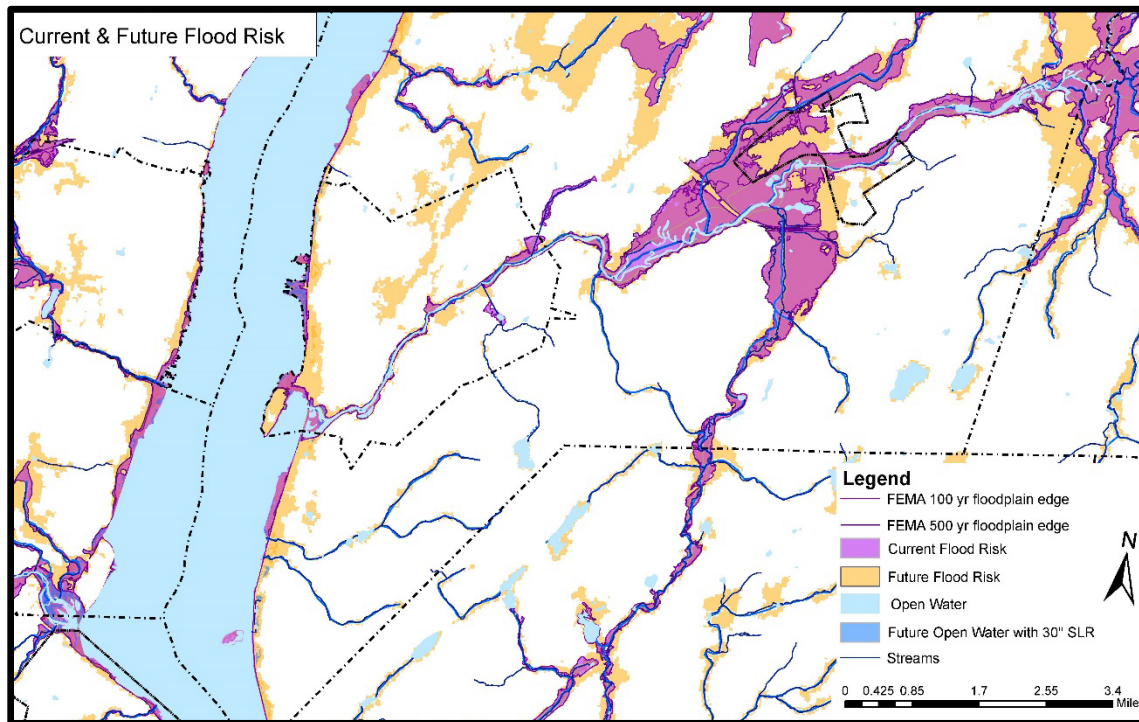


Town of Fishkill & City of Beacon



Community Resilience Building Workshop Summary of Findings January 2019



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OVERVIEW

Municipalities, regional planning organizations, states and federal agencies will need to increase their resiliency and adapt to the likelihood of extreme weather events and mounting natural hazards if they are to avoid continued social, environmental and infrastructure damage and loss. For communities in the Hudson Valley, this need is strikingly evident. Recent devastating events such as Tropical Storm Irene and Superstorm Sandy have reinforced this urgency and compelled leading communities such as the Town of Fishkill and the City of Beacon in Dutchess County to proactively plan and mitigate potential risks. Ultimately, this type of leadership will reduce the exposure and vulnerability of citizens, infrastructure and ecosystems, as well as serve as a model for communities across the Hudson Valley, New York, and the nation.

In the summer of 2018, The Nature Conservancy and the Hudson River Watershed Alliance approached municipal officials in the Town of Fishkill (Fishkill) and the City of Beacon to discuss and identify resilience needs relative to infrastructure, habitat restoration and community resilience. As a result, a strategy was developed to introduce an integrated process to these communities that incorporates recommendations from an existing planning and code review (NYS Climate Smart Community Resilience Tool) with a process that identifies community assets and areas of risk and proposes initial adaptation strategies. The Community Resilience Building (CRB) Workshop, a unique “anywhere at any scale”

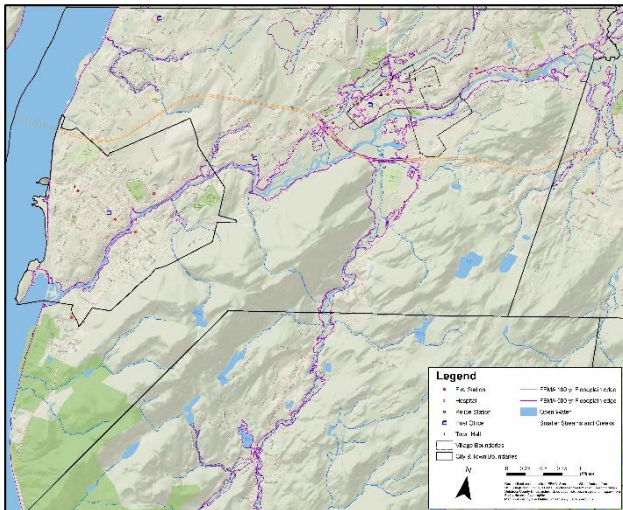


Figure 1. Current and future flood risk for the study areas of Town of Fishkill and City of Beacon.

community-driven process (www.CommunityResilienceBuilding.com), provided an appropriate platform to engage elected officials, municipal staff and other key stakeholders from the participating communities. The purpose of the facilitated, joint-community workshop was ultimately to guide implementation of priority adaptation actions for Fishkill and Beacon (Figure 1). The workshop’s central objectives were to:

- Define extreme weather and articulate local natural and climate-related hazards
 - Identify existing and future vulnerabilities and strengths
 - Develop prioritized actions for the municipalities and broader stakeholder networks
- Identify opportunities for the community to advance actions to reduce risk and increase resilience

This report provides an overview of the top hazards, the current community strengths and concerns, and the suggested actions to improve resilience to natural and climate-related hazards in Fishkill and Beacon, today and in the future. The summary of findings will benefit



from further comments, corrections and updates from workshop attendees and additional stakeholders alike. The collective community leadership on hazards and community resilience will benefit from the continuous and expanding participation of all those concerned.

PROJECTED FUTURE CONDITIONS

Current climate and environmental conditions (i.e. magnitude and intensity of storms and drought, sea levels, etc.) are projected to change in ways that will profoundly influence current interactions with natural resources. Various platforms are available to better understand and evaluate how different climate change scenarios are likely to impact Hudson Valley Communities, including:

- The Nature Conservancy's [Natural Resource Navigator](#)
- Scenic Hudson's [Sea Level Rise Mapper](#)
- Columbia University's [Hudson River Flood Decision Support Tool](#)
- New York State [Climate Change Science Clearinghouse](#)

As these and other tools clearly indicate, there are many possible scenarios that could manifest themselves over the course of this century. The numerous factors, both global and local, that influence these outcomes make the extent of these scenarios difficult to predict. Thus, it is important to plan for a range of scenarios as evidenced by [NY's Community Risk and Resiliency Act](#). General trends and rough estimates can be employed for adaptation planning purposes. For example, the riverfront communities of the mid-Hudson region, generally, should be preparing for a *minimum* of 3-6 foot rise in mean sea level by 2100. The entire Hudson Valley region should consider the potential ramifications of:

- Hotter summers
- Increased frequency and length of heat waves and droughts
- Shorter, milder winters
- More winter precipitation
 - If rain = more flooding
 - If snow = 10" of snow or more per storm
- Increased severity and frequency of big storms
- More flooding due to slightly increased precipitation and increased development and impervious surfaces

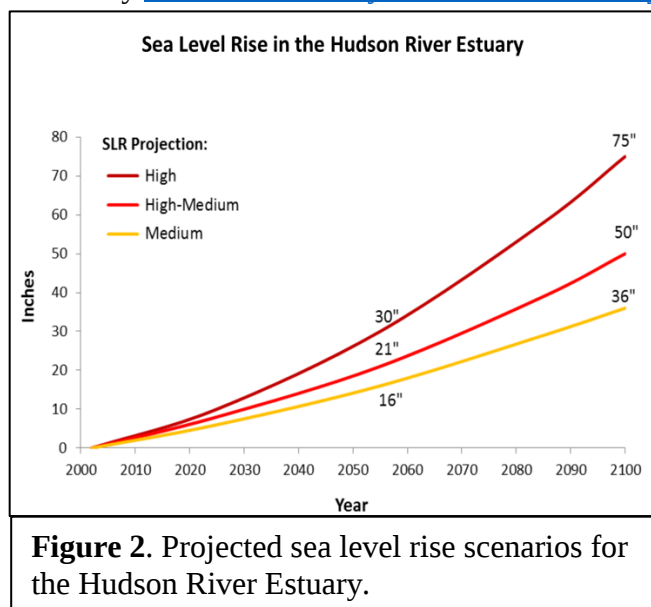


Figure 2. Projected sea level rise scenarios for the Hudson River Estuary.

Details on the ranges of projected future conditions are available through the [New York State Water Resources Institute](#) and through the previously referenced tools referenced (Figure 1 and Table 1).



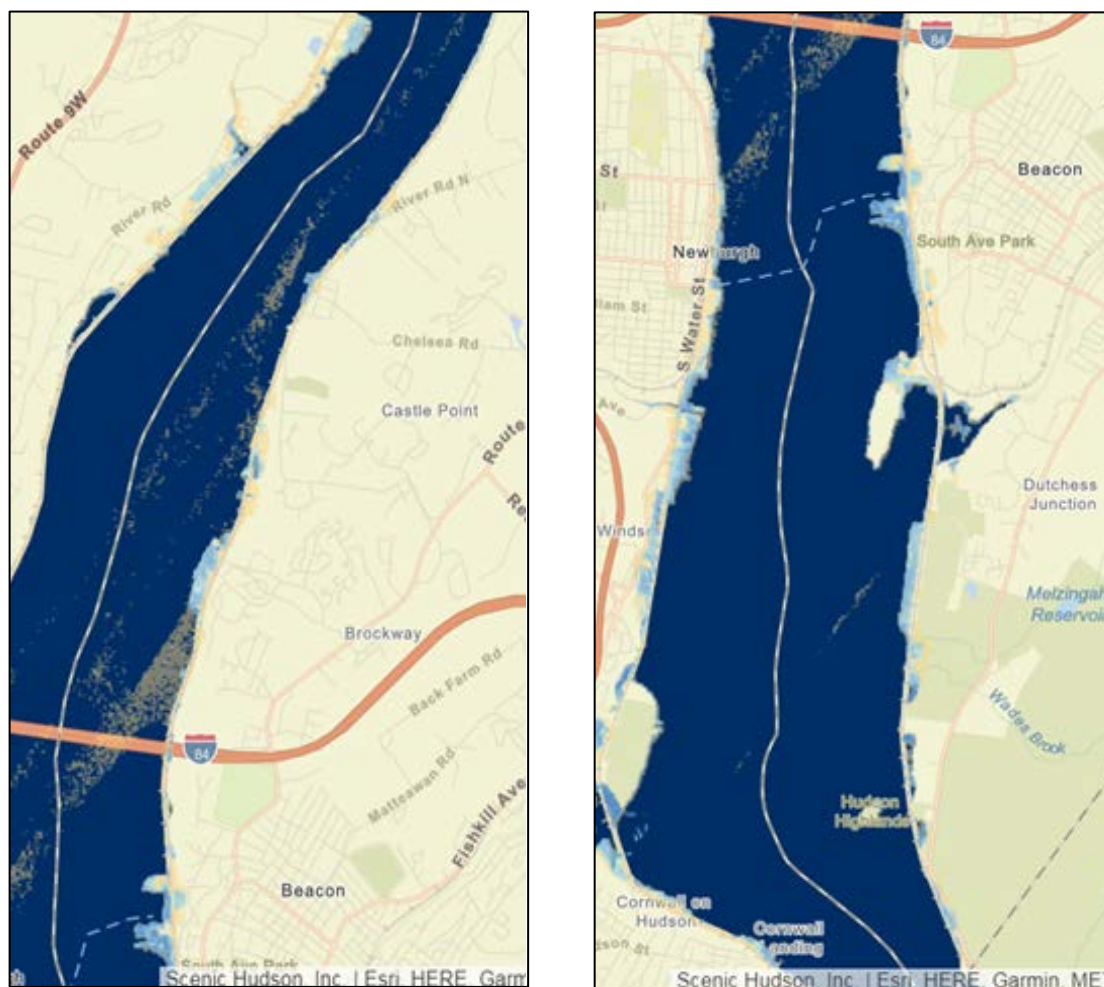


Figure 3. Projected inundation areas near I-84 and north (left) and south of I-84 (right) (various shades of blue indicating depth) and current 100-year floodplains (orange highlighted areas) with 6 feet (72 inches) of sea level rise. The images were produced using Scenic Hudson's Sea Level Rise Mapper.



Table 1. Community assets (Infrastructure, Environment and Social) at risk with various sea level rise scenarios and current 100-year storm across the entire City of Beacon and Town of Fishkill. The output was produced using Columbia University’s Center for International Earth Science Information Network Hudson River Flood Decision Support Tool 2.0.

Impact Scenarios for Town of Cortland and City of Peekskill						
Type of Impact	18" of SLR with current 100 YR Storm		30" of SLR with current 100 YR Storm		48" of SLR with current 100 YR Storm	
	Beacon	Fishkill	Beacon	Fishkill	Beacon	Fishkill
<i>Infrastructure</i>						
Total Damaged Buildings	14	N/A	18	N/A	20	N/A
Roads	1	1	1	2	1	2
Bridges	1	N/A	2	N/A	2	N/A
Railroads	1	2	2	3	2	3
Railroad Passenger Stations	1	1	1	1	1	1
Dams	1	N/A	1	N/A	1	N/A
<i>Environment</i>						
Inundated Land Area	129	167	144	179	152	182
Inundated Impervious Surface Area	22	6	28	7	31	7
Inundated Wetlands	19	43	19	44	19	45
<i>Social</i>						
Social Vulnerability Index of Impacted Census Blocks (Index Score is unitless)	7	6	7	6	7	6
Social Vulnerability Index of Entire Municipality	7	4	7	4	7	4

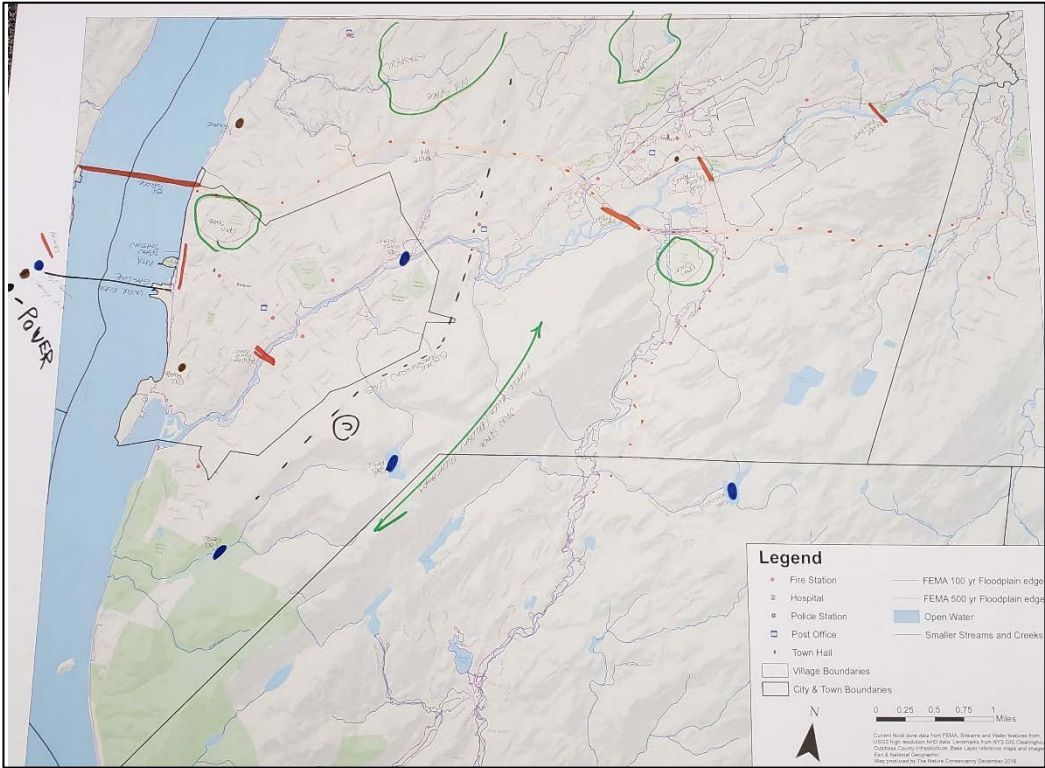


Figure 4. Maps showing the location of identified assets were developed by each sub-group during the workshop.



CLIMATE SMART RESILIENCE TOOL

In order to better prepare for the Community Resilience Building workshop, both the City of Beacon and the Town of Fishkill worked with Cornell Cooperative Extension Dutchess County to complete the [Climate Smart Resiliency Planning Tool \(CSRPT\)](#). The CSRPT, an action of the [NYS Climate Smart Communities \(CSC\) Certification](#) program, reviews a municipality's existing plans and ordinances to identify where climate adaptation recommendations could be made to help the community work toward becoming more resilient. The municipality receives a copy of the finished tool, as well as a recommendations document to use as a roadmap to move forward with resiliency projects.

The tool itself is broken down into six sections to analyze the municipality's documents on several different resiliency sub-topics. The first section is a list of all the relevant plans and ordinances that were taken into account throughout the tool. Section 2 examines how well the municipality addresses climate vulnerabilities and assesses climate risk. Section 3 looks at how the municipality includes the public in resiliency discussions and informs them how to be more climate resilient. Section 4 assesses the degree to which the plans are integrated with one another. Section 5 examines the municipality's preparedness level for climate events and recovery procedures. Finally, Section 6 looks at how well the municipality attempts to mitigate climate hazards.

Some recommendations that the City of Beacon and the Town of Fishkill have in common include:

- Consider becoming a certified Climate Smart Community. The Town of Fishkill would have to adopt the CSC pledge to become a certified Climate Smart Community as a first step. The City of Beacon has already adopted the pledge and needs to submit evidence of actions.
- In the 2021 update of the Hazard Mitigation plan, the municipalities can expand to include more climate adaptation strategies in the list of mitigation strategies.
- Consider developing an evacuation plan or incorporate evacuation elements into existing emergency plans to provide residents with information on expected inundation areas and evacuation procedures and routes prior to the threat of a storm.
- Share information, or links to information, on storm preparedness and flood mitigation in an easy-to-identify location on the municipality's website.

Some recommendations for the City of Beacon from this process include:

- Consider adopting a Stormwater Management Plan that identifies runoff and drainage problems, strategies to reduce stormwater runoff from paved surfaces, and identifies constraints for reaching permitted impervious coverage levels, among other things.
- Consider adopting an Open Space Plan.
- Consider hiring more staff to be able to fulfill priority recommendations.



Some recommendations for the Town of Fishkill from this process include:

- Collaborate with the municipalities in the Fishkill Creek Watershed to have the Fishkill Creek, and others such as the Sprout Creek, added to the NYS List of Coastal Waterbodies and Designated Inland Waterways (<https://www.dos.ny.gov/opd/programs/lwrp.html>). This will allow the Town to apply for NYS Department of State funding to update the Fishkill Creek Watershed Management Plan to include implementation projects addressing flood mitigation and climate adaptation. This will also allow the community to apply for grant funds to create a Local Waterfront Revitalization Plan.
- Updating the Town's Flood Damage Prevention ordinance to go 'above and beyond' the minimum measures required by FEMA and the state.

The completed CSRPT and recommendations report are available through CCE Dutchess County and the Town of Fishkill or City of Beacon. In addition to these planning and policy recommendations, workshop participants identified additional place-based recommendations intended to reinforce existing strengths or begin to address known vulnerabilities. A summary of those recommendations follows.

SUMMARY OF FINDINGS

Top Hazards

During the core team meetings that took place prior to the workshop and at the start of the Community Resilience Building workshop, workshop participants confirmed the top natural climate hazards as the following:

1. ***Sea level rise and storm surge:*** Projected rises in future mean sea levels, combined with severe coastal storms such as Superstorm Sandy, capable of producing storm surge and coastal flooding.
2. ***Inland flooding:*** Inland flooding caused by intense precipitation, storms and subsequent runoff from rain or snow, especially in the region's inland streams and other waterways.
3. ***Drought and wildfires:*** Higher peak temperatures in summer with sporadic precipitation events which



Figure 5. Participants from each working group shared findings and recommendations of their group.



may stress municipal and private resources, especially public water supplies and private wells. In addition, the threat of wildfires was brought up repeatedly at the Community Resilience Building workshop as an additional hazard, related to drought and dry conditions.

The above hazards have a growing impact on residents, businesses and municipalities in the Village of Fishkill, Town of Fishkill and City of Beacon, all located in Dutchess County. Participants in the Community Resilience Building Workshop were asked to identify environmental, infrastructural and social assets in their communities; determine whether those assets are strengths, vulnerabilities or both; and identify and prioritize actions. The following sections summarize the results of this workshop, based on the participation of attendees from all three municipalities.

Key Assets and Areas of Concern

Numerous environmental, infrastructural and social assets were identified throughout the workshop, which have been grouped in several categories or areas of concern.

There were four major areas of concern related to **environmental assets**:

- **Fishkill Creek Watershed and Wetlands**, which includes Fishkill Creek, its stream corridor, the Forge Brook floodplain and adjacent wetlands;
- **Public and Private Parklands and Open Spaces**, which include Dennings Point, Riverfront Park and Long Dock in Beacon, Douglas Phillips Park, Geering Park and Jean Van Pelt Park in Fishkill, in addition to state-owned Stonykill Preserve, town-owned Camp Foster and privately-owned Southern Dutchess Country Club.
- **Natural features** such as the Hudson River, the Hudson Highlands Fishkill Ridge and Jensen's Pond, in addition to existing soil types (sand/glacial till and clay) which have implications for flooding impacts.
- Other **environmental features** such as a solar farm in Beacon and wildfires (which is included above as a hazard associated with drought but was also discussed throughout the workshop as an environmental feature to address).

There were six major areas of concern related to **infrastructural assets**:

- **Roads, dams and culverts** including Route 9 and 9D; Olde Town Road, Wheaton Ave and Jackson Ave in Fishkill; the I-84 corridor and bridge; and several Fishkill Creek Dams, including the Texaco property dam (class C dam).
- **Vulnerable infrastructure and neighborhoods** including the Rombout Middle School, Beacon Hills, the school bus garage and floating pool in Beacon, the Dutchess Stadium in Fishkill, and two state prisons.



- **Utilities and power**, including the Groverville Hydroelectric Dam, the various substations and cell towers, and the fact that only one gas station in Fishkill is equipped with a backup generator.
- **Railroad infrastructure**, which includes the MTA rail station and lower parking lot, and the rail lines.
- **Wastewater infrastructure**, including the sewage treatment plans in the City of Beacon, Town of Fishkill and Village of Fishkill.
- The **municipal drinking water supply**, which includes several reservoirs, a filtration plant in the City of Beacon, municipal wells and the DEP Aqueducts.

There were four major areas of concern related to **social assets**:

- **Regulations and planning**, including the Town of Fishkill's wetlands and steep slope ordinances, MS4 status in the Town of Fishkill, and a Tree City USA designation in Beacon.
- **Emergency services and communication**, including various cooling shelters and emergency shelters, municipal and county emergency management committees, the ambulance corps and volunteer fire departments, municipal and county emergency communication such as 911 and reverse 911, and a regional food pantry.
- **Vulnerable populations and neighborhoods**, including Groverville Mills and Tompkins Terrace in Beacon, Breakneck Ridge in Fishkill, the golf course in Fishkill (which floods), several area nursing homes, and truckers and private commuters who are passing through the traffic corridor in these municipalities and using local roads, on a day-to-day basis and also in emergencies.
- **Other key stakeholders** discussed throughout the workshop include Central Hudson, Metro North, the Housing Authority, Beacon Sloop Club and neighborhood social media sites, with whom the municipalities wanted to ensure greater communication and coordination in the future related to the identified risks.

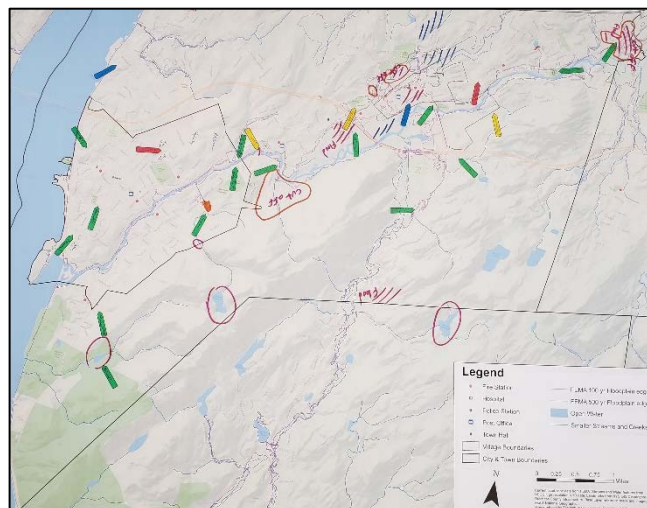


Figure 6. Participants mapped community assets performing critical functions.

Current Vulnerabilities



Most of the environmental assets identified by workshop participants serve as both a vulnerability and a strength related to the three main hazards, for their ability to provide open space, natural resources, flood water storage and other ecosystem services juxtaposed with their vulnerability to flooding and damage from flood waters and storm surge and potential susceptibility to drought and wildfires. This was especially true for all of the parklands identified in the workshop, with the exception of Stonykill Preserve and the Southern Dutchess Country Club, both of which were identified as strengths only. Jensen's Pond, a privately-owned man-made pond in a neighborhood that experiences flooding and is dammed, was also discussed as a vulnerability and a strength, and the actions discussed centered on the possibility of dredging it to mitigate future flooding risk. The Hudson River shoreline was identified as a vulnerability and a strength, with greater attention needed on ever-evolving flood standards, as was the entire Fishkill Creek watershed. In particular, the Mountain View Road flooding associated with Fishkill Creek was identified as a vulnerability, and steps need to be taken to encourage greater planning and better drainage in this area.

The most vulnerable infrastructural assets relate to the roads, dams and culverts throughout these three municipalities, as well as the traffic flow in the entire traffic corridor and the many stakeholders who use it. The most problematic areas were Route 9D, Jackson Ave and Olde Town Road in Fishkill. Dams were also seen collectively as a vulnerability for the municipalities, with the exception of the Texaco property dam. In addition, when problems arise on I-84, all area roads and traffic are affected. During times of emergency, the municipalities also have few effective ways to communicate with the many truckers who are using the I-84 corridor. A future workshop on these traffic issues and traffic congestion, especially during emergencies, was seen as a high priority, as discussed in the next section. Much of the infrastructure related to power, utilities, railroads, wastewater and drinking



Figure 7. Participants in the CRB workshop were divided into two sub-groups with representatives from both participating communities. With the assistance of a facilitator, each sub-group is tasked identifying and characterizing community assets and then recommending actions that will strengthen the asset in light of expected future conditions.



water were viewed as both vulnerabilities and strengths, for the services they provide when everything is working well but the vulnerability they have in their ability to function well during emergencies and withstand future flooding. The Fishkill Fire Department and DPW as well as some Central Hudson substations and the two state prisons were seen as vulnerable to flood damage, and these vulnerabilities should be addressed.

The primary social vulnerabilities related to vulnerable populations and neighborhoods. There were several areas of Fishkill, in particular, that are affected by inland flooding, including Mountain View Road, Old Post Mall Road, Breakneck Ridge and Beacon Hills. The Texaco property dam, which was identified as a strength, was mentioned as a possible tool to better manage flooding in nearby Beacon Hills. Groveville Mills and Tompkins Terrace in the City of Beacon were also mentioned as vulnerabilities. Other than those specific locations, nursing homes throughout the municipalities were viewed as vulnerabilities, and Metro North was seen as both a vulnerability and a strength. The regional food pantry and the Town of Fishkill Fire Department, located in a flood zone, were seen as both vulnerabilities and strengths.

Current Strengths

As stated earlier, many environmental assets serve as both vulnerabilities and strengths, but the greatest strengths among the environmental assets are the various wetlands and open spaces that provide flood storage capabilities, including the Green Fly Swamp and wetlands located on Arcadian Road and Merritt Road in Fishkill as well as the Southern Dutchess Country Club, Stonykill Preserve and Hudson Highlands Fishkill Ridge. Although the solar farm in Beacon had no associated high or medium priority actions, it was also viewed as an environmental strength.

There were several infrastructural assets identified as strengths in these municipalities, including Dutchess Stadium, the I-84 bridge and corridor and the Texaco property dam. The infrastructure associated with utilities, power, rail lines, wastewater and drinking water were either strengths or both vulnerabilities and strengths. Standing as a strength only was the Groveville Hydroelectric Dam, the Town of Fishkill sewage treatment plant and the City of Beacon water filtration plant. Digging deeper into the reasons why these assets, especially related to wastewater and drinking water, are also vulnerable and how to better address this will be a useful next step for these communities.

There were more assets identified as strengths in the social category than any other, especially related to current regulations and planning such as the Town of Fishkill's wetlands and steep slope ordinances and Beacon's Tree City USA status; existing emergency services and communication tools including cooling and other emergency shelters, 911 and other emergency systems, the volunteer fire departments and ambulance corps; and key corporate and other stakeholders. Most of these assets should continue to be maintained and upgraded with time.



Top Recommendations to Improve Resilience

Highest environmental priorities

One of the most striking aspects of the risk matrix related to environmental assets is that all of the actions associated with the Fishkill Creek watershed and wetlands were considered high priority. They include:

- Related to the watershed as a whole, the workshop participants identified actions such as updating the watershed management plan, recruiting watershed committee members and organizing a watershed group much like the one that focuses on Wappinger Creek, and seeking an Inland Waterbody Designation for the creek. All of these actions were high priorities.
- Regarding inland flooding in the Mountain View Road area, the high priority action was maintaining creek drainage.
- The three wetlands identified as the Green Fly Swamp wetlands, the Merritt Road wetlands and the Arcadian Road wetlands were deemed important areas to maintain through zoning and greater awareness. Wildfire prevention was an important action for these areas during times of drought.
- Maintaining the stream corridor for Dutchess Junction amphibians was also seen as a high priority.
- Other environmental actions that were considered high priorities include:
 - Evaluate flooding impacts at Douglas Phillips Park in Fishkill.
 - Build awareness of the value of open spaces, such as the Southern Dutchess Country Club, in storing floodwaters.
 - Maintain communication with state authorities on Hudson Highlands Fishkill Ridge.
 - Related to the Hudson River shoreline, update the flood ordinance to go above and beyond state standards and enter into FEMA's community rating system.

Highest infrastructural priorities

Actions related to infrastructural assets were evenly distributed among the areas of concern, with the exception of vulnerable infrastructure and populations, an area where there were no high priority actions. The highest priorities in all areas of concern include the following:

- Address ponding/overwash, culverts and flooding/debris passage in the various roads in the municipalities, including Route 9, 52, 9D, Olde Town Rd, and Walcott Ave.
- Related to inland flooding on Olde Town Road, consider options to raise the road and look at adjacent wetlands as a way to slow flood waters,
- Initiate communication with the owners of the Texaco property dam in Fishkill.



- The entire traffic corridor in these municipalities was seen as problematic. Although the workshop participants were at a loss to come up with specific actions, attention to the traffic in this corridor in times of emergency is a priority action. An entire future workshop could be focused on evaluating, understanding and coming up with solutions to the problems associated with traffic on local and state roads.
- The Forge Brook substation was discussed at length, and actions that were considered priorities were to evaluate the situation and initiate greater dialogue with stakeholders.
- Initiate a discussion with MTA officials regarding the short and long-term management plans for regional MTA infrastructure.
- Related to wastewater and stormwater, a high priority was to separate systems in the City of Beacon and to apply for DEC funding for Phase III in the Village of Fishkill.
- There were many high priority actions related to the drinking water supply. There is a need to conduct a dual sourcing study for times of drought, evaluate management options and conduct inspections and maintenance related to the municipal reservoirs and dams, repair Pocket Dam, and evaluate relocating municipal wells outside of the floodplain. With regard to the City of Beacon filtration plant, the high priority actions were to continue maintenance, review the study, find partners and explore shared services options. Regarding the Village of Fishkill water supply, the identified action was to work on aquifer recharge and protection.

Highest social priorities

Actions related to social assets were evenly distributed among the areas of concern. The following represent the highest priorities identified by workshop participants:

- Conduct MS4 training for highway staff.
- Related to the municipal emergency preparedness committee for which the Town of Fishkill serves as a host, the priority actions were to find a date that works for Beacon so they can participate and develop alternative forms of communication for the committee.
- Regarding the county 911 system, the actions were to upgrade to a new radio system and complete a new cell tower in Orange County.
- Beacon should maintain its Swift 911 system as an effective communications tool, capable of bilingual texts and Reverse 911.
- Regarding the municipal volunteer fire departments, Beacon should continue to recruit new members and Fishkill should consider floodproofing and/or relocating its facility.
- The Lutheran Church in Fishkill, which serves as an emergency shelter, should be maintained.
- The food pantry, serving all of the municipalities located in Fishkill, should consider mitigating flooding impact and addressing associated flooding issues.



- As mentioned in previous sections, there was a need for a future workshop and study related to the entire traffic corridor, especially related to the issue of communicating with truckers in times of emergencies and finding parking for them in the municipalities, in addition to communications with commuters when problems arise on the I-84 corridor.
- Wildfire prevention and better communication was cited as a priority action related to Breakneck Ridge, especially in times of drought when fire danger is higher.
- Central Hudson was deemed an important stakeholder, with whom initiating a stronger dialogue was deemed important. One of the workshop participants was a representative of Central Hudson, which may prove useful for encouraging stronger future communications.
- Greater communication and coordination with some key stakeholders should be established, including with MTA, Central Hudson and Scenic Hudson.

Medium environmental priorities

- Beacon should evaluate flooding impacts, current and future, at Riverfront Park.
- Fishkill should incorporate flood smart design and wildfire prevention measures at Jean Van Pelt Park.
- Beacon should work with state authorities to mitigate flooding impacts and other impacts from storm surge/sea level rise at Dennings Point.
- Beacon should evaluate options with Scenic Hudson for Long Dock Park.
- Regarding runoff at Jensen's Pond, Beacon should work with landowners to improve infrastructure and discharge issues.
- The three municipalities should consider working on wildfire prevention and planning, perhaps in a future meeting or workshop.

Medium infrastructural priorities

- Beacon and its school district should evaluate and implement floodproofing measures at Rombout Middle School.
- Fishkill should evaluate the Forge Brook substation and road overwash at Wheaton Ave. and Jackson Ave.
- Address issues and make repairs at Pocket Dam.
- The Fishkill DPW should consider evaluate the relocation of its new yard based on possible flooding scenarios.

Medium social priorities

- Fishkill should consider adopting a tree program like the one (Tree City USA) in Beacon.



- Both Fishkill and Beacon should maintain and expand their cooling shelters at the Fishkill Town Recreation Facility and various locations in Beacon.

Other actions were identified related to the municipal assets but were deemed low priority and therefore not included in this report.

WORKSHOP PARTICIPANTS

Jeff Bridges, Lieutenant for the State Police

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Bob LaColla, Town of Fishkill Supervisor**

Brandon Knapp, Buildings and Grounds Supervisor in the Town of Fishkill

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** Identifies local representatives who participated in the workshop planning team



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A special acknowledgement of Bob LaColla, Supervisor for the Town of Fishkill, and Marie Campanaro, Secretary to the Supervisor for the Town of Fishkill; and Anthony Ruggeirio, Manager for the City of Beacon for serving on the Core Team that helped to organize and execute the workshop.

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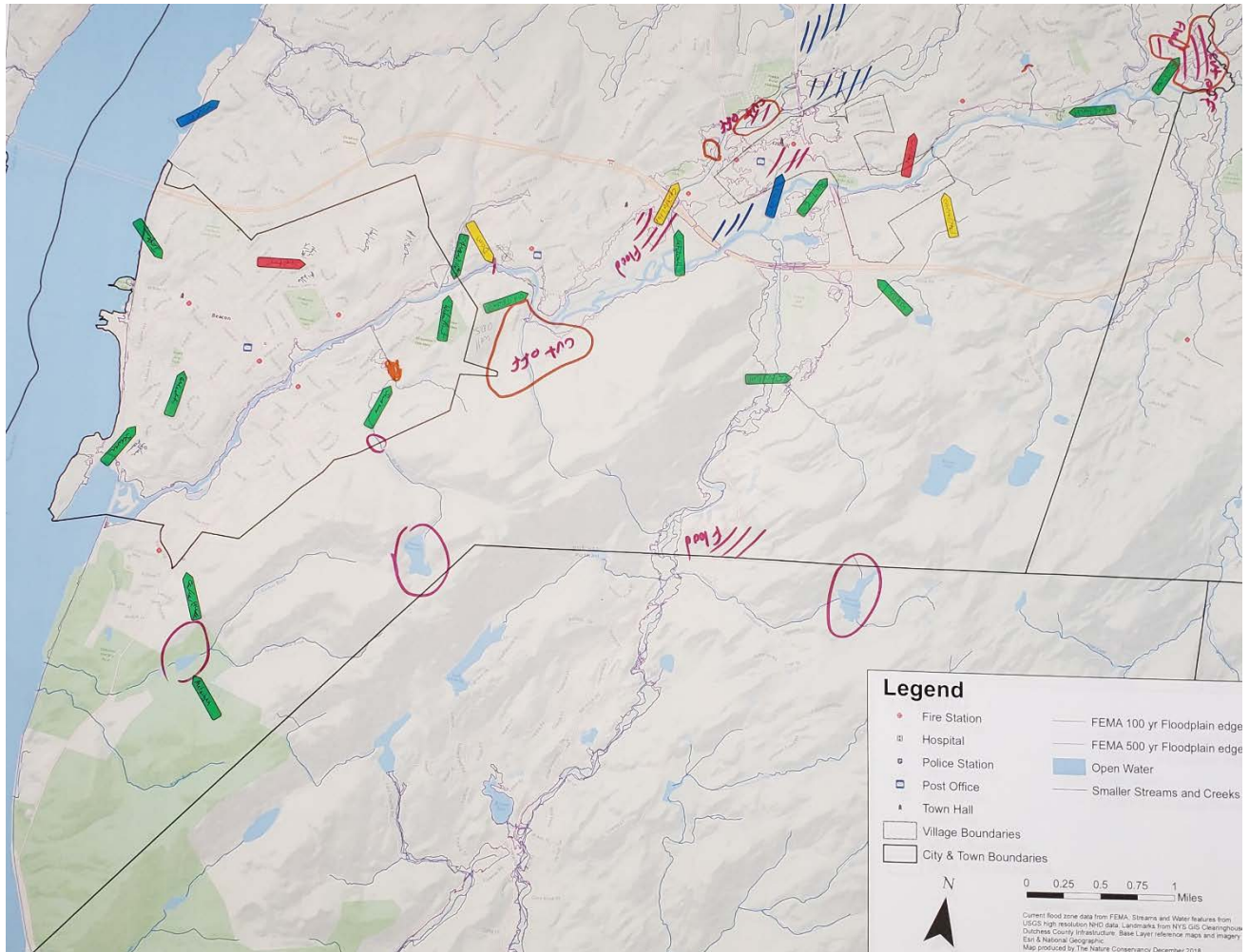
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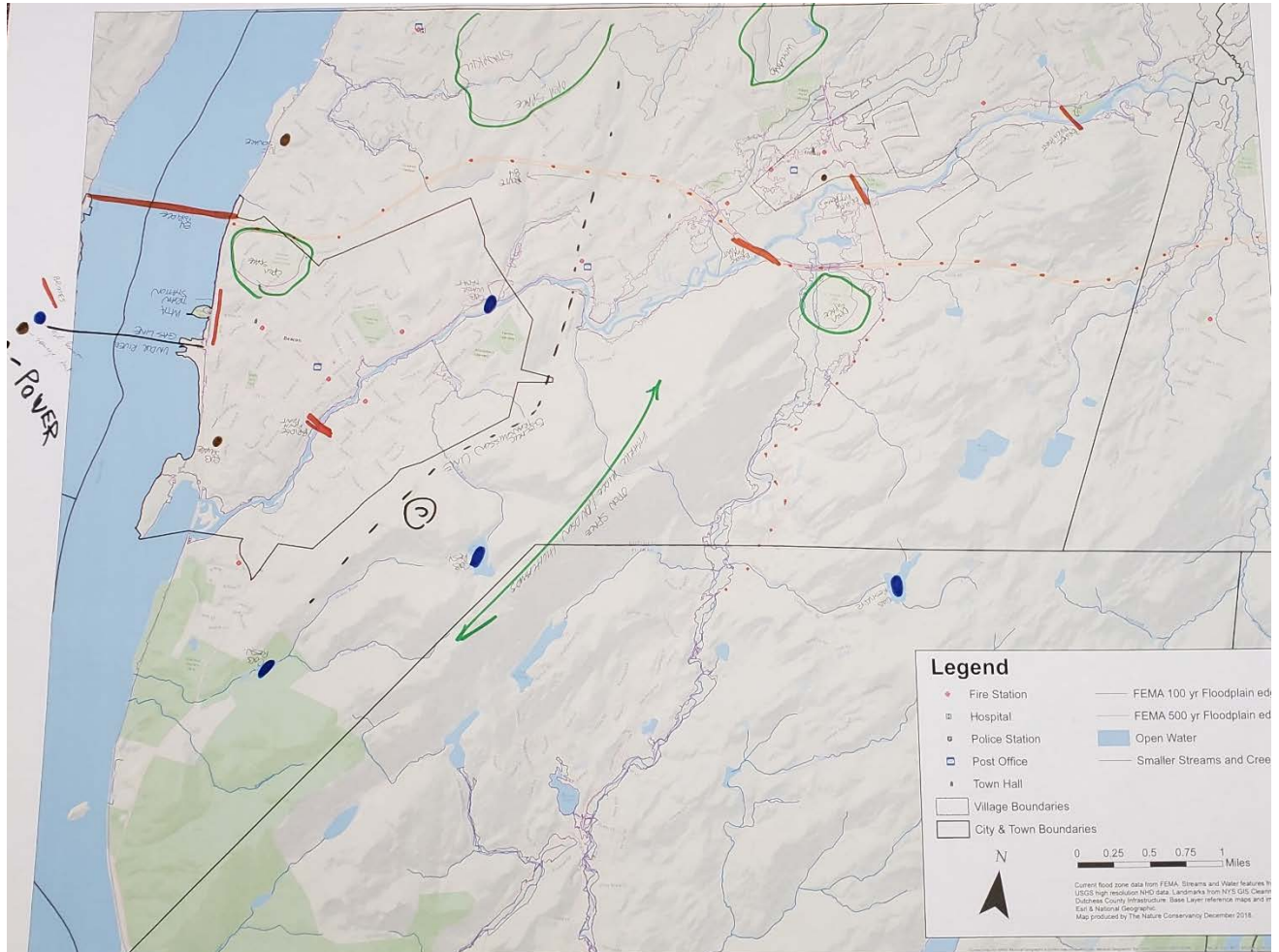
Peck, A., C. Klocker, D. Salisbury and M. Cunningham. 2018. Town of Fishkill and City of Beacon Community Resilience Building Workshop: Summary of Findings. The Nature Conservancy, Cornell Cooperative Extension of Dutchess County and the Hudson River Watershed Alliance.



APPENDIX I.
CRB Workshop Base Map and Asset Identification Maps







APPENDIX 2: Available State and Federal Resources



FINANCING WATERFRONT RESILIENCE



**Hudson River
Estuary Program**

State and federal resources for communities

2018 Summary of financial assistance programs

State and federal agencies offer financial assistance to municipalities and non-profit organizations for activities building resilience to waterfront flooding, sea level rise and other climate risks. This document provides an overview of these assistance programs and how to apply. Eligible activities include municipal planning, improving the resiliency of structures, emergency management planning, waterfront revitalization, public outreach, and floodplain protection. A summary table of all resources, organized by agency, areas of assistance and deadlines, can be found at the end of this document.



View of flooded road in Stony Point following Hurricane Sandy in 2012 (L. Konopko)

- **NYS Department of Environmental Conservation (DEC):** Hudson River Estuary Grants, Climate Smart Communities Grants, Water Quality Improvements Program, Trees for Tribes
 - **Environmental Facilities Corporation (EFC):** Wastewater Infrastructure Engineering Planning, Clean Water Revolving Loan Fund, Green Innovation Grant Program
 - **Federal Emergency Management Agency (FEMA):** Hazard Mitigation Assistance, Public Assistance, Community Rating System
 - **Department of State (DOS):** Local Waterfront Revitalization Program
-
- **Other Financial Assistance Programs**
 - **New York State Energy Research and Development Authority (NYSERDA):** Clean Energy Communities Program
 - **NYS Office of Parks, Recreation and Historic Preservation (OPRHP):** Parks, Preservation and Heritage
 - **US Housing and Urban Development (HUD)** Community Block Grant Program
 - **Empire State Development (ESD)** Grant program for infrastructure investment
 - **Hudson River Greenway** Communities and Compact Grant Programs
 - **Open Space Funding Options**

[NYS Consolidated Funding Application](#)

New York State's Consolidated Funding Application (CFA) allows communities to design comprehensive projects and with one application, apply to multiple state funding sources. Communities may not apply to federal programs such as FEMA through the CFA. You can download the [2018 CFA Available Resources \(PDF\)](#) online.

LOCAL EXAMPLE: CONSOLIDATED FUNDING APPLICATION



Kingston received a \$1.2 million grant for a public-private intermunicipal partnership to design and build a one mile promenade along the Hudson River. The promenade will feature green infrastructure and offer public access and recreation and keep open space along the waterfront. The funds were awarded from the Department of State's Local Waterfront Revitalization Program through a CFA application.

Overview of Financial Assistance Programs

Below is a summary of financial assistance programs identified by their funding categories related to flood resilience.



Municipal planning



Collaboration and public outreach



Resilient structures



Waterfront economy



Emergency management



Floodplain protection

☒ CFA = grants included in the NYS Consolidated Funding Application

New York State Department of Environmental Conservation (NYS DEC)

The NYS DEC is a state agency focused on the conservation, enhancement, and enjoyment of environmental resources.



Hudson River Estuary Program Grants

The [2018 Request for Applications \(RFA\) for Hudson River Estuary grants](#) cover *Local Stewardship Planning* (\$350,000) and *River Access Improvements for People of All Abilities* (\$950,000). These Requests for Applications (RFAs) implement priorities of the [Hudson River Estuary 2015-2020 Action Agenda](#). All prospective applicants must register in advance in the [New York State Grants Gateway](#) where they can also search and download the full RFA by searching for 'Hudson River Estuary.' Funding for the grants is provided by the New York State Environmental Protection Fund (EPF). For more information on these opportunities, contact HREPGGrants@dec.ny.gov and sign up for our [Climate Resilience Newsletter](#).

Local Stewardship Planning

Up to \$350,000 is available to help communities and local organizations advance six categories of local projects and programs through planning, feasibility studies, and/or design. A 15% match is required.

- Climate adaptation along the Hudson river
- Water supply and waste-water infrastructure resiliency
- Green infrastructure to reduce combined and separated sewer overflows
- Watershed planning and management
- Conservation of natural resources and open space planning
- Natural scenery stewardship planning

Contact: Susan Pepe, NYS DEC, HREPGGrants@dec.ny.gov

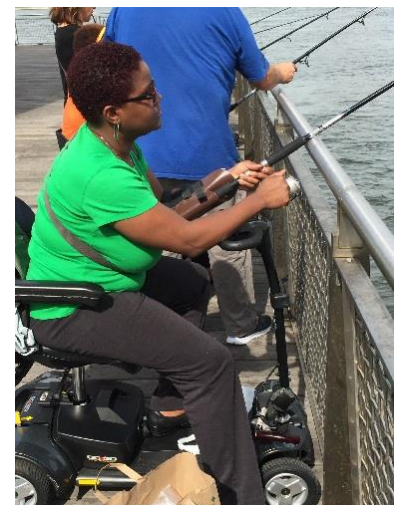
Deadline: 3:00 pm, Wednesday, July 11, 2018

River Access Improvements for People of All Abilities

Up to \$950,000 to local organizations and communities to improve accessibility and flood resilience at existing river access sites for boating, fishing, swimming, wildlife-dependent recreation, or educational interpretation. Projects may include construction of physical improvements, purchase of adaptive equipment, or development of accessibility improvement plans. Incorporating principles of universal design is strongly encouraged.

Contact: Susan Pepe, NYS DEC, HREPGGrants@dec.ny.gov

Deadline: August 22, 2018



Climate Smart Communities (CSC) Grants

Climate Smart Community (CSC) grants (\$8.8 million) will support municipal projects that implement certain CSC actions and help them become certified in the program. A 50% match required.



**Climate Smart
Communities**

Implementation projects (\$10,000 and \$2 million)

- Flood risk reduction
- Emergency preparedness and response improvements for future extreme climate conditions
- Reduction of vehicle miles travelled
- Reduction of food waste, landfill methane leakage or hydrofluorocarbons emissions

Certification projects (\$10,000 to \$100,000)

- Adaptation, land use, transportation and organic waste management actions

Contact: Myra Fedyniak, NYS DEC, (518) 402-8448, cscgrants@dec.ny.gov

Deadline: 4:00 pm, Friday, July 27, 2018, ☒CFA

Water Quality Improvement Project

The Water Quality Improvement Project (WQIP) program (\$79 million) is a competitive, reimbursement grant program that directs funds from the New York State Environmental Protection Fund to projects that reduce polluted runoff, improve water quality and restore habitat in New York's waterbodies. Grant recipients may receive up to 75% of the project costs for high priority wastewater treatment improvement, non-agricultural nonpoint source abatement and control, land acquisition for source water protection, aquatic habitat restoration, and municipal separate storm sewer system projects. Grant recipients may receive up to 50% for salt storage projects and up to 40% for general wastewater infrastructure improvement projects.

Contact: Leila Mitchell, NYS DEC, (518) 402-8179 | user.water@dec.ny.gov

Deadline: 4:00 pm, Friday, July 27, 2018, ☒CFA

Trees for Tribs

Do you own or manage land along a stream? You can apply for free native plants to help reduce erosion and improve habitat along your stream! The [Hudson Estuary Trees for Tribs](#) Program offers free native trees and shrubs for planting along the tributary streams in the [Hudson River Estuary watershed](#). Our staff can help you with a planting plan and work with your volunteers.

Contact: Beth Roessler, NYS DEC, (845) 256-2253, HudsonEstuaryTFT@dec.ny.gov

Deadline: Apply by Thursday, March 1, 2018 for Spring plantings, Wednesday, August 1, 2018 for Fall plantings



Environmental Facility Corporation (EFC)

The EFC is a state agency that assists public and private entities to comply with federal and state environmental quality standards through technical assistance, low cost financing, and green innovation grants.



Wastewater Infrastructure Engineering Planning Grant

The EFC, in cooperation with NYS DEC, offers WIEPG grants (\$3 million) for engineering and consulting services to produce engineering reports to construct or improve municipal wastewater systems. A maximum of \$100,000 in funding is available for communities with median household income of \$85,000 or less in Mid-Hudson and NYC regions and \$65,000 or less in the Capital District region. The municipality must provide a 20% match. The final engineering report can be implemented using EFC or other financing sources. Download the [2018 WIEPG Program \(PDF\)](#).

Contact: Cheryle Webber, NYS DEC, (518) 402-6924, EPG@efc.ny.gov or Leila Mitchell, NYS DEC, (518) 402-8179

Deadline: 4:00 pm, Friday, July 27, 2018, ☒CFA

Clean Water State Revolving Fund

The EFC provides various forms of project finance for water-quality protection projects through the Clean Water State Revolving Fund (CWSRF). A variety of publicly-owned water quality improvement projects are eligible for financing, including point source projects such as wastewater treatment facilities, and nonpoint source projects such as stormwater management projects and landfill closures, as well as certain habitat restoration and protection projects in national estuary program areas. Short and long-term loans are available at no interest and low interest rates.

Contact: Dwight Brown, EFC, (518) 402-7396, CWSRFinfo@efc.ny.gov

Deadline: Open enrollment

Green Innovation Grant Program

The Green Innovation Grant Program (GIGP, \$15 million) funds projects across New York State that utilize unique stormwater infrastructure design and create cutting-edge green technologies. A 10% to 60% match is required. GIGP funds highly-visible projects that are directly attributable to the improvement or protection of water quality and integral to the success of the following eight specific green infrastructure practices:

- Permeable pavement
- Bioretention
- Green roofs and green walls
- Stormwater street trees / urban forestry
- Establishment or restoration of floodplains, riparian buffers, streams or wetlands
- Stream daylighting
- Downspout disconnection
- Stormwater harvesting and reuse

Contact: Brian Hahn, EFC, (518) 402-6924, GIGP@efc.ny.gov

Deadline: 4:00 pm, Friday, July 27, 2018, ☒CFA

LOCAL EXAMPLE: WASTEWATER INFRASTRUCTURE ENGINEERING PLANNING



The City of Kingston received a \$25,000 grant to examine long-term adaptive planning for their wastewater treatment plant. They will implement the plan using low interest loans from the CWSRF.

Federal Emergency Management Agency (FEMA)

FEMA is a national agency that administers programs providing flood insurance, hazard mitigation assistance, and public assistance grants.



Hazard Mitigation Assistance

FEMA currently provide three types of hazard mitigation assistance (HMA):

1. [Hazard Mitigation Grant Program \(HMGP\)](#) assists in implementing long-term hazard mitigation measures. HMGP funds are triggered by a declared disaster and funneled to individual municipalities through the [NYS Division of Homeland Security and Emergency Services \(DHSES\)](#). Funds available: over \$3 million to develop and update Hazard Mitigation plans and implementing Hazard Mitigation projects. Download the [2018 Announcement \(PDF\)](#).
 - DR-4322: Severe Winter Storm and Snowstorm “Stella”
 - DR-4348: Flooding

Contact: DHSES Mitigation Section at (518) 292-2304, NYSOEMHazmit@dhSES.ny.gov
Deadline: Letters of Intent (LOI) due 12:00PM EST on Friday, June 1, 2018.

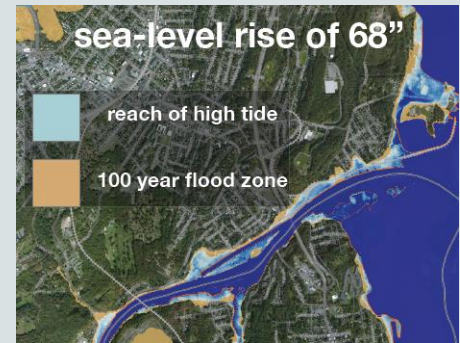
2. [Pre-Disaster Mitigation \(PDM\)](#) provides funds on an annual basis for hazard mitigation planning and projects.
3. [Flood Mitigation Assistance \(FMA\)](#) provides funds on an annual basis for projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP).

Public Assistance Grant Program

Through the Public Assistance (PA) Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly- owned facilities, and the facilities of certain private non-profit (PNP) organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

Contact: FEMA grants are administered by NYS Division of Homeland Security and Emergency Services (DHSES). Visit their website for current grant opportunities: <http://www.dhSES.ny.gov/grants/>

LOCAL EXAMPLE: HAZARD MITIGATION GRANT



Kingston applied for a \$5 million grant from Hurricanes Irene and Sandy Relief Funds to implement Task Force recommendations for riparian buffers, buyouts, the adaptation and fortification of infrastructure, and the purchase emergency generators for pumping stations. The City is awaiting notification of the application's status.

Community Rating System

FEMA also administers the National Flood Insurance Program (NFIP) and the related Community Rating System (CRS), which allows municipalities to reduce flood insurance rates for all policyholders by instating community-scale projects and policies regarding flood resilience.

Contact: 317-848-2898, nfipcrs@iso.com

Department of State (DOS)

The DOS is a planning agency that focuses on economic revitalization and resilient, livable communities.



Local Waterfront Revitalization Program

The Local Waterfront Revitalization Program (LWRP) provides technical assistance, and matching grants (\$15 million) on a reimbursement basis to villages, towns, cities, and counties located along New York's coasts or designated inland waterways, to prepare or implement strategies for community and waterfront revitalization. Funds require a 25% match (15% for environmental justice communities) in the following grant categories:

- Preparing or implementing a Local Waterfront Revitalization Program (LWRP)
- Updating an LWRP to mitigate future physical climate risks
- redeveloping hamlets, downtowns and urban Waterfronts
- Planning or constructing land and water-based trails
- Preparing or implementing a lake-wide or watershed management plan
- Implementing a community resilience strategy

Download the [2018-19 Request for Application \(RFA\) \(PDF\)](#).

Contact: Jamie Ethier, NYS DOS, (518) 473-3656,
Jaime.Ethier@dos.ny.gov

Deadline: 4:00 pm, July 27, 2018, ☒CFA

LOCAL EXAMPLE: COMMUNITY RATING SYSTEM



The Village of Scarsdale is Class 8 certified in the Community Rating System (CRS), which means the village residents receive a 10% discount on flood insurance. The Village of Hyde Park is currently seeking CRS certification.

LOCAL EXAMPLE: LOCAL WATERFRONT REVITALIZATION PROGRAM



The Village of Piermont received a \$35,000 grant to update its Local Waterfront Revitalization Plan, first written in 1992, to include strategies from the Task Force's final Resilience Roadmap Report.

Additional Financial Assistance Resources

New York State Energy Research and Development Authority (NYSERDA)

NYSERDA is a state authority dedicated to promoting energy efficiency and renewable energy sources.



Clean Energy Communities Program

Municipalities that complete four of 10 priority actions will be considered Clean Energy Communities, and eligible for grants up to \$250,000 with *no match requirements*. Locally based outreach and implementation coordinators will provide free, on-demand technical assistance, including step-by-step guidance, case studies, and template contracts to help municipalities implement the Climate Smart Communities and Clean Energy Communities programs.

Contact: cec@nyserda.ny.gov

Deadline: Open application until Monday, September 30, 2019, or once funds run out.

NYS Office of Parks, Recreation & Historic Preservation (OPRHP)

THE NYS OPRHP is a state agency dedicated to preserving and enhancing parks, historic assets and heritage areas.



Grant Program for Parks, Preservation and Heritage

The OPRHP is providing grants (\$19.5 million) for acquisition, planning, development, and improvement of parks, historic properties and heritage areas. Project awards up to \$500,000 with grant funds up to 50% of the total eligible project cost; up to 75% if the project is located in a high-poverty district.

Contact: Erin Drost, NYS OPRHP, (845) 889-3866

Deadline: 4:00 pm, Friday, July 27, 2018, ☒CFA

US Department of Housing and Urban Development (HUD)

HUD is a federal agency aimed to support sustainable, inclusive and affordable communities.



Community Development Block Grant Program (CDBG)

HUD is offering competitive grants (\$22.5 million) for community development projects. Resilient drinking water, clean water and/or stormwater infrastructure projects fall under Category 1: Public Infrastructure (\$750,000 max, \$900,000 for joint applicants, no match required). Construction and renovation projects fall under Category 2: Public Facilities (\$300,000 max). Risk assessment and engineering projects fall under Category 4: Community Planning (\$50,000 per project, 5% match). Visit the [2018 CDBG CFA page](#) for more information.

Contact: 518-474-2057, HCR_CFA@nyshcr.org

Deadline: 4:00 pm, Friday, July 27, 2018, ☒CFA

LOCAL EXAMPLE: PARK DEVELOPMENT



The Village of Freeport received a \$250,000 Parks grant to replace over 1,000 feet of bulkhead at Waterfront Park to reduce soil erosion and improve public safety and recreational access.

Empire State Development (ESD)

ESD is the New York state agency focused on economic development.



Empire State Development Grant Funds

The ESD is offering grant funds (\$150 million) for infrastructure investment that can foster new economic development in Category 2. Grant funds cover up to 25% of project soft costs.

Contact: Meghan Taylor, REDC, 845-567-4882, nys-midhudson@esd.ny.gov

Deadline: 4:00 pm, Friday, July 27, 2018, ☒CFA

NYS Hudson River Valley Greenway

The Greenway is state agency focused on using regional collaboration to conserve and enhance the natural, scenic and historic resources of the unique Hudson River Valley.



Greenway Communities Grant Program

Financial assistance for planning (\$5,000 to \$10,000 per project, more if multiple municipalities are involved) is available to designated “Greenway Communities” within the Greenway Area. Projects funded under this program include those that relate to community planning, economic development, natural resource protection, cultural resource protection, scenic resource protection, and open space protection. Greenway Compact communities are eligible for greater funds to develop, approve, and implement a regional compact strategy consistent with the Greenway criteria and the Greenway act. A [fillable copy of the application](#) is available.

Contact: 518-473-3835, hrvq@hudsongreenway.ny.gov

Deadline: 4:00 pm, Friday, August 10, 2018 and 4:00 pm, Friday, October 12, 2018

LOCAL EXAMPLE: GREENWAY COMMUNITIES GRANT



The Village of Ossining received a \$15,000 grant to create a Waterfront Recreational Resource Plan to identify ways to promote water-related uses on their 3 miles of Hudson River waterfront, and to outline strategies to increase public access, catalog existing recreational assets, and engage stakeholders to determine demand for possible upgrades.

Open Space Funding Options



Preserving land as open space in floodplains and in coastal areas can foster flood resilience. There are several options for municipalities looking to preserve open space in their community:

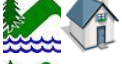
LOCAL EXAMPLE: REAL ESTATE TRANSFER TAX



The Town of Warwick passed a 0.75% Real Estate Transfer Tax and the Town of Red Hook a 2% tax to create a conservation fund to help provide financial support for their Open Space Plans.

- The municipality can advocate to have their land included in the NYS Open Space Plan that is updated every 5 years. This helps the community to show that the land has value outside of traditional development and is a good way to prepare for purchase of the land for open space. The State receives annual funding to purchase lands specifically mentioned in the plan. Municipalities can also seek grant funds to write or update their own Open Space Plan and include floodplain protection as one of the important values that open space provides.
- The municipality can work with a private land trust, like the Walkill Valley Land Trust or the Open Space Institute to purchase the land using easements if it has scenic, ecological and/or agricultural value. Then, the community may be able to work with the land trust to make the property more valuable as floodplain protection.
- The municipality can purchase the land for open space by taking on debt (bonds) or instigating a tax levy. One example of a relevant tax levy is called a Real Estate Transfer Tax, which has been allowed by local law since NYS passed the Hudson Valley Community Preservation Act of 2007. This tax is applied to mortgages on local real estate and is used to create a conservation fund for the community, which can be used to preserve open space.

Summary table of all funding assistance programs

Agency	Assistance Program	Priority Funding Categories	Grant amounts, required match	Deadline, CFA
DEC	✓ Estuary Grants		\$10,500-\$50,000, 15%	7/11/18
	✓ CSC Grants		\$10,000-\$2M, 50% match	7/27/18 ☑CFA
	✓ WQIP		25-60% match	7/27/18 ☑CFA
	✓ T4T		N/A	3/1/18, 8/1/18
EFC	✓ WIEP		≤\$100,000, 20% match	7/27/18 ☑CFA
	✓ CWRLF		N/A	Open
	✓ GIGP		10-60% match	7/27/18 ☑CFA
FEMA	✓ HMGP, PDM, FMA		Over \$3M, 25% match	6/1/18
	✓ PA, CRS		N/A	Open
DOS	✓ LWRP		15-25% match	7/27/18 ☑CFA
OTHER	✓ NYSERDA		≤\$250,000, no match	Open until 9/30/19
	✓ OPRHP		≤\$500,000, 25-50% match	7/27/18 ☑CFA
	✓ HUD		\$50,000 - \$900,000, 0-5%	7/27/18 ☑CFA
	✓ ESD		80% match for soft costs	7/27/18 ☑CFA
	✓ Greenway		\$5,000 - \$10,000+	8/10/18, 10/12/18
	✓ Open Space		N/A	N/A

CONTACT INFORMATION

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