Key Actions to Promote Flood Resilience for New York State Communities

In the face of increasing storm intensities and changing landscapes, many NYS communities need to become more resilient to flooding—before, during, and after the event—but may not know where to start. Here are ten key actions that communities can take that have cascading effects, both to improve resiliency and to satisfy state and federal programs that promote flood resilience and can provide financial incentives to implementing these actions. Some of these actions will be relatively simple to complete and others may take more time and effort. You may find that you are already doing some of these things and can improve your community's flood resilience with only minor changes to your current practices.

This table presents actions that are suggested under two programs that promote community flood resiliency:

- The NYS **Climate Smart Communities** (CSC) Program is both a community certification system and a grant program. Actions taken can move a community towards flood resiliency and help achieve certification as a Climate Smart Community at the bronze, silver, or gold level.
- The Federal Emergency Management Agency (FEMA) **Community Rating System** (CRS) is a voluntary incentive program to encourage high standards of floodplain management to reduce flood damage and to encourage more comprehensive floodplain management. Communities that participate in the program and reduce the risk in their communities can qualify for reductions in their NFIP insurance premium rates.

This table provides a crosswalk between the Climate Smart Communities certification program and FEMA Community Rating System for these key actions, details how to perform each action to specifically fulfill the requirements for each program, and gives guidance and examples for each action. This guidance is intended to help communities prioritize actions that are recommended across programs and help them participate in beneficial flood resilience programs. The requirements of these programs do change, so check the program's official guidance as you move towards certification or participation and for more comprehensive guidance. And, again, this is a list of key actions and is not an attempt at a comprehensive list of actions to improve flood resiliency or of overlap between CSC and CRS.

Create a municipal floodplain management plan	Participate in an intermunicipal climate and flood group	Create a flood warning and response program	Encourage sustainable flood management on agricultural lands	Incorporate flooding and climate change into comprehensive plans
Strengthen local flood damage and prevention laws and building codes	Create educational program	Create public informational website	Participate in the FEMA Community Rating System	Conserve green space

Key Actions to Promote Flood Resilience for NYS Communities (CRS and CSC)

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Create educational program	Create an educational awareness program for local residents focused on climate change adaptation and resiliency to flooding. This can be an ongoing campaign or a multi-session event. Must document the educational and outreach materials as well as pictures of events.	Can fulfill part of *Public information activities section, outreach projects* if: ▪ Regional flooding is a major/main topic. ▪ Discussion of prevention and mitigation	Can fulfill *inform/ inspire public* (9.1&9.3) section if: ▪ The event is centered around climate change education and engagement OR if ▪ The event topic is oriented towards climate change	**Sustainable Piermont 2018 Education and Engagement Program** The Village of Piermont developed an exemplary framework to address future issues and concerns around climate change through educating people about climate change and its effects and preparing and engaging the community about mitigating those effects. To do this the program: worked in small groups with a mediator to discuss risk and relocation options, partnered with other communities to learn about similar problems and solutions, trained Neighborhood Leaders in emergency preparedness, maintained and promoted a Sustainable Piermont webpage, and used community events to engage one-on-one. http://piermont-ny.gov/sustainable-piermont
Create public informational website around climate change	Develop or modify an existing website to have climate adaptation measures and emergency planning materials for the community. Other information such as emergency contacts and a map of critical infrastructure and evacuation routes would be useful.	Can fulfill *flood protection information* if: ▪ The website includes local information on flooding as well as mitigation and emergency measures.	Can fulfill *Local Climate Action Website (9.4)* if: ▪ The website is dedicated to climate action on a local community level.	**City of Boulder Responds to Floods** website provides: real time updates on natural disasters in the region, procedural information for during a flood, links to additional resources helpful before or after a flood, and maps that can be used by residents to better determine their risk. https://bouldercolorado.gov/flood/respond-to-floods **City of Albany Energy and Sustainability** website is primarily focused on energy and GHG reduction initiatives, it also discusses how climate change might affect residents within the City. Under the Climate Change and Albany section, the website discusses the historic trends of climate change as well as the projections and how adaptation and resiliency measures are necessary to avoid future catastrophic effects. https://www.albanysustainability.org/

Key Actions to Promote Flood Resilience for NYS Communities (CRS and CSC)

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Participate in the FEMA Community Rating System	The Community Rating System is a voluntary, incentive-based program of the NFIP that promotes flood risk management. The program promotes reducing loss and damage and, in turn, reducing the rates that policy-holders have to pay.	N/A	Can fulfill a section of *enhance community resilience to climate change (7.10)* under *participate in FEMA CRS;* ▪ Participate in FEMA CRS ▪ Actively enforce flood resilience standards	**National Flood Insurance Program Community Rating System:** A Local Official's Guide to Saving Lives, Preventing Property Damage, and Reducing the Cost of Flood Insurance https://www.fema.gov/media-library/assets/documents/181241 **The City of Batavia** participates in CRS at a Level 7 providing their residents and business owners reduced risk and reduced premiums (15-20%). https://www.batavianewyork.com/home/news/citizens-to-receive-flood-insurance-discounts Further City Flood Information: https://www.batavianewyork.com/home/pages/flood-information
Conserve green space	In order to fulfill this action, municipalities must acquire private land that is vulnerable to flooding and adjacent to a waterbody. This land must be then protected and preserved.	Can fulfill *acquisition and relocation* if: ▪ conserve open space/floodplains and or acquire land or structures in designated floodplains	Can fulfill part of *Conservation of Natural Habitats* (PE7) under *Enhance community resilience to climate change* if: ▪ Important natural habitats located within the community must be conserved Part of *Restoration of Floodplains & Riparian Buffers* if: ▪ Riparian Buffers are conserved	**NYS DEC** provides guidance and examples of municipalities throughout New York conserving land and restoring ecologically important areas. https://www.dec.ny.gov/docs/remediation_hudson_pdf/hrebch5.pdf **NY Department of State** provides guidance for Local Open Space Planning including the need, planning process, types of open space to preserve, and specific conservation tools**.** https://www.dos.ny.gov/lg/publications/Local_Open_Space_Planning_Guide.pdf **Canandaigua Open Space, Conservation, and Scenic Views Master Plan** www.townofcanandaigua.org/page.asp?id=160 **Wawarsing NY Open Space Plan** https://www.townofwawarsing.net/documents/environmental-conservation-commission/open-space-plan-2018.pdf

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Create a municipal floodplain management plan	Create a floodplain/ watershed management plan in which you address local flooding concerns, strategy to restore riparian buffers, and innovative methodology that would recommend climate smart solutions.	Can fulfill *Stormwater Management* under *Flood mapping and regulation*, as well as *Floodplain Management Planning* under *Flood Damage Reduction* if: ▪ The plan proposes floodplain management as well as regulatory recommendations. ▪ The plan includes current, management information on stormwater infrastructure.	Can fulfill part of *Restoration of floodplains and riparian buffers (7.8)*; & *Watershed Assessment (7.7) and Preserve Natural Areas Through Zoning or Other Regulations (6.19)* if: ▪ Floodplains/ buffers are/being restored. ▪ Includes a NRI within plan (or addition) ▪ Incorporates recent watershed assessment study.	**Town of Union, NY** in Broome County has created a flood management plan that can be used as an example. https://www.townofunion.com/index.php/com-munity/locations-directions#41.6547712/-75.9749846/8 **Lexington County** has a larger and more comprehensive plan. http://www.lexco.com/Departments/-PublicWorks/LexingtonCountyFMP.pdf

Key Actions to Promote Flood Resilience for NYS Communities (CRS and CSC)

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Participate in an intermunicipal climate and flood group	Design and organize a group that is organized around the effects of climate change and education around climate change and flooding. This group can provide an opportunity for learning from community's facing similar issues and to potentially pool resources. The group needs to have regularly scheduled meetings or events.	Can fulfill *outreach projects* or *flood protection* if: ▪ The organization is designed to assist community before or during emergency.	Can satisfy the *PE9 Action: Climate Change Education & Engagement* if: ▪ Conduct a climate change educational program that is open to the public and is especially useful to those who live within the municipality.	**The Cayuga Lake Intermunicipal Organization** is a watershed-based organization with members from the state to village level formed to foster collaboration between municipalities to protect the watershed. https://www.cayugawatershed.org/ **The Hudson We Share** is a group of municipalities, non-profits, and state government entities in mutual collaboration to mitigate the threats due to climate change for coastal communities, monitor existing conditions of the watershed, and plan for the restoration and preservation of the watershed. http://thehudsonweshare.org/about-the-plan/who-we-are/ **Stormwater Coalition of Albany County** is comprised of 11 municipalities and the University at Albany with each Coalition member providing mutual support and assistance in implementing MS4 Permit requirements. http://www.stormwateralbanycounty.org/stormwater-coalition/

Key Actions to Promote Flood Resilience for NYS Communities (CRS and CSC)

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Create a flood warning and response program (For community members and officials)	Create a website that provides residents with extreme weather events preparedness tools. Additionally, provide local information around the local weather and emergency contact information for local residents.	Can satisfy the *flood warning and response* section if: ▪ The program is geared towards helping threatened communities before, during, and after a flood.	Can Fulfill *PE9 Action: Local Climate Action Website* if: ▪ The website has information in regard to procedures around emergency evacuation. ▪ Information about mitigation and prevention measures and how to prepare for future extreme weather events.	**Chester County, PA Municipal Training Program** provides its municipal staff with training and exercises in preparation for flooding and other emergency related events https://www.chesco.org/2460/Training-Exercises **Community Emergency Response Team (CERT)** program educates local volunteers about disaster preparedness for the hazards that may impact their area and trains them in basic disaster response skills. https://www.ready.gov/cert **Harris County, TX Data-Driven Digital Flood Warning System** is a live data source developed using sensors installed throughout the county that monitor rain and flood levels and send live alerts to residents on areas to avoid or evacuate. https://www.harriscountyfws.org/ **Red Hook, NY Mesh Network** was developed through collaboration with local residents and youth and provides a low budget, community-wide public WIFI to bridge the digital divide and create a secure communication system during a natural disaster. https://redhookwifi.org/coverage/

Key Actions to Promote Flood Resilience for NYS Communities (CRS and CSC)

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Encourage sustainable flood management on agricultural lands	Promote working relationships with farmers to reduce flooding contributions from agricultural lands incentivizing farmers to reduce runoff.	Can Satisfy elements in Floodplain and Stormwater Management if: ▪ A formal planning and assessment process are conducted around floodplain planning. ▪ Stormwater management is conducted to mitigate flooding and runoff.	Can Satisfy Restoration of Floodplain and Riparian Buffers (PE7) if: ▪ Strategy is developed to identify areas that need flood management, specifically around agriculture ▪ Riparian buffers are conserved directly by the municipality.	**Turning Soils in Sponges: How Farmers Can Fight Floods and Droughts** outlines not only the benefits of healthy soils practices, but also some regional strategies to help overcome the barriers to adoption of these practices. https://www.ucsusa.org/resources/turning-soils-sponges **The NYS Soil Health Roadmap** promoted soil health through key practices of: cover crops, crop rotation, and changing tillage practices. The Roadmap clearly outlines the benefits of soil health not only on, but also off and downstream of farms. https://blogs.cornell.edu/soilhealthinitiative/roadmap/#.Xlg1UjFKhPY
Incorporate flooding and climate change into Comprehensive Plan	Create a municipal plan such as a comprehensive plan that ties in climate change and flood resiliency strategies into the community development goals and initiatives.	Can Satisfy Action 510; Develop a Floodplain Management Plan through comp. plan if: ▪ Plan actively discusses strategy to manage existing problematic floodplains.	Can satisfy Update to strategies and plan (10.3) and Climate Resilience Vision (7.2) if: ▪ Climate change and its issues are incorporated into the plan.	**The City of Ithaca Comprehensive Plan** has, over time, incorporated aspects of climate change, influencing the City's decisions on land use development, transit, and zoning. https://www.cityofithaca.org/165/City-Comprehensive-Plan **Broome County Comprehensive Plan:** The County of Broome implemented climate change and resiliency in their long-term comprehensive plan developed in 2013. http://www.gobroomecounty.com/comprehensiveplan **Climate Smart Resiliency Planning Tool** under the CSC program provides specific guidance for incorporating climate change elements into Comprehensive Plans. http://www.dec.ny.gov/docs/administration_pdf/csrptool.pdf

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Strengthen local Flood Damage and Prevention Laws and building codes	Create/ adopt zoning and land use law framework that promotes smart stormwater management, prevents new construction in potentially flood prone areas, and promotes the protection of green space to create a flood resilient community.	Can satisfy *Higher Regulatory Standards* by: ▪ Strengthen laws that pertain to new development preventing construction in flood prone areas ▪ Increase building code standards to prevent future natural disaster related damage	Can partially fulfill *Complete Streets Policy (PE6), Preserve Natural Areas Through Zoning or Other Regulations (6.19)*, and *Conserve Wetlands and Forests (7.17)* by: creating laws that are aimed to conserve and restore natural areas and protect communities from flooding	**Tioga County** guidance and examples on how to prevent flooding and strengthen resilience against flooding: https://www.tiogacountyny.com/media/4153/stc-muni-landusestrategiesforflooding-booklet.pdf **New Jersey Flood Damage Prevention Ordinance** is also another example of how a municipality could improve its regulations to prevent flood damage within its community: https://www.nj.gov/dep/floodcontrol/about.htm
Create educational program	Create an educational awareness program for local residents focused on climate change adaptation and resiliency to flooding. This can be an ongoing campaign or a multi-session event. Must document the educational and outreach materials as well as pictures of events.	Can fulfill part of *Public information activities section, outreach projects* if: ▪ Regional flooding is a major/main topic. ▪ Discussion of prevention and mitigation	Can fulfill *inform/ inspire public* (9.1&9.3) section if: ▪ The event is centered around climate change education and engagement OR if ▪ The event topic is oriented towards climate change	**Sustainable Piermont 2018 Education and Engagement Program** The Village of Piermont developed an exemplary framework to address future issues and concerns around climate change through educating people about climate change and its effects and preparing and engaging the community about mitigating those effects. To do this the program: worked in small groups with a mediator to discuss risk and relocation options, partnered with other communities to learn about similar problems and solutions, trained Neighborhood Leaders in emergency preparedness, maintained and promoted a Sustainable Piermont webpage, and used community events to engage one-on-one. http://piermont-ny.gov/sustainable-piermont

Key Actions to Promote Flood Resilience for NYS Communities (CRS and CSC)

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Create public informational website around climate change	Develop or modify an existing website to have climate adaptation measures and emergency planning materials for the community. Other information such as emergency contacts and a map of critical infrastructure and evacuation routes would be useful.	Can fulfill *flood protection information* if: ▪ The website includes local information on flooding as well as mitigation and emergency measures.	Can fulfill *Local Climate Action Website (9.4)* if: ▪ The website is dedicated to climate action on a local community level.	**City of Boulder Responds to Floods** website provides: real time updates on natural disasters in the region, procedural information for during a flood, links to additional resources helpful before or after a flood, and maps that can be used by residents to better determine their risk. https://bouldercolorado.gov/flood/respond-to-floods **City of Albany Energy and Sustainability** website is primarily focused on energy and GHG reduction initiatives, it also discusses how climate change might affect residents within the City. Under the Climate Change and Albany section, the website discusses the historic trends of climate change as well as the projections and how adaptation and resiliency measures are necessary to avoid future catastrophic effects. https://www.albanysustainability.org/
Participate in the FEMA Community Rating System	The Community Rating System is a voluntary, incentive-based program of the NFIP that promotes flood risk management. The program promotes reducing loss and damage and, in turn, reducing the rates that policy-holders have to pay.	N/A	Can fulfill a section of *enhance community resilience to climate change (7.10)* under *participate in FEMA CRS;* ▪ Participate in FEMA CRS ▪ Actively enforce flood resilience standards	**National Flood Insurance Program Community Rating System:** A Local Official's Guide to Saving Lives, Preventing Property Damage, and Reducing the Cost of Flood Insurance https://www.fema.gov/media-library/assets/documents/181241 **The City of Batavia** participates in CRS at a Level 7 providing their residents and business owners reduced risk and reduced premiums (15-20%). https://www.batavianewyork.com/home/news/citizens-to-receive-flood-insurance-discounts Further City Flood Information: https://www.batavianewyork.com/home/pages/flood-information

Key Actions to Promote Flood Resilience for NYS Communities (CRS and CSC)

Key Actions to Promote Flood Resilience for New York State Communities

Action	Description and Guidance	FEMA Community Rating System	New York Climate Smart Communities Program	Examples and Resources
Conserve green space	In order to fulfill this action, municipalities must acquire private land that is vulnerable to flooding and adjacent to a waterbody. This land must be then protected and preserved.	Can fulfill *acquisition and relocation* if: ▪ conserve open space/floodplains and or acquire land or structures in designated floodplains	Can fulfill part of *Conservation of Natural Habitats* (PE7) under *Enhance community resilience to climate change* if: ▪ Important natural habitats located within the community must be conserved Part of *Restoration of Floodplains & Riparian Buffers* if: ▪ Riparian Buffers are conserved	**NYS DEC** provides guidance and examples of municipalities throughout New York conserving land and restoring ecologically important areas. https://www.dec.ny.gov/docs/remediation_hudson_pdf/hrebch5.pdf **NY Department of State** provides guidance for Local Open Space Planning including the need, planning process, types of open space to preserve, and specific conservation tools**.** https://www.dos.ny.gov/lg/publications/Local_Open_Space_Planning_Guide.pdf **Canandaigua Open Space, Conservation, and Scenic Views Master Plan** www.townofcanandaigua.org/page.asp?id=160 **Wawarsing NY Open Space Plan** https://www.townofwawarsing.net/documents/environmental-conservation-commission/open-space-plan-2018.pdf

This document was created through a collaboration between the NYS Water Resources Institute, Cornell Cooperative Extension of Tompkins County, and the Syracuse University Environmental Finance Center.

Environmental Finance Center
Syracuse University

New York State Water Resources Institute
Cornell University

Cornell University Cooperative Extension Tompkins County

Key Actions to Promote Flood Resilience for NYS Communities (CRS and CSC)