NYACK CLIMATE VULNERABILITY & ADAPTATION PLAN

Adopted January 8, 2025

Funding for this project has been
provided by the New York State Environmental Protection Fund,
NYSDEC Hudson River Estuary Program.

LETTER FROM THE MAYOR

The climate is changing. More rain, extreme heat, violent storms, flooding, and droughts are happening now and increasing across the region, the country and across the world. We need to prepare for long-term impacts and be alert to more surprise emergency scenarios, so our community can be resilient and continue to thrive. Even if efforts succeed to keep the increase in the global average temperature to well below 2°C above pre-industrial levels as the global Paris Agreement calls for, we must adapt to the warming that is already “baked in.”

Climate change will continue to affect not just our health and local infrastructure. Our local landscapes, natural systems, and seasonal climate are critical to the cultural identity, economic prosperity, and quality of life here in Nyack, and we need to protect these community assets too.

This plan addresses current and future risks and aims to foster partnerships and communication among many individuals, organizations, businesses and agencies to ensure we continue to have a safe and vibrant community. There is a lot to do, and some of it will take a shift in mindset and will be costly, but the costs for not preparing and adapting can add up quickly and accrue to us all.

Fortunately, Nyack knows how to take action on climate. We are the first and thus far the only community in Rockland (and one of the few in New York State) to receive the Silver certification in the Climate Smart Communities program, and we are the first in Rockland to develop a climate action plan and adaptation plan. Our community is fortunate in the high level of support and engagement from our residents and businesses, our staff and local government, Orangetown, Clarkstown and Rockland County. Above all, our Nyack community values what makes us unique and knows how to work together. That will be the key to our resilience.

ACKNOWLEDGEMENTS

Project leadership and government officials

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EXECUTIVE SUMMARY

This Climate Adaptation Plan serves as a framework for the Village of Nyack to prepare for and respond to climate change impacts. The plan is part of the broader Nyack 2030 initiative, which aims to reduce greenhouse gas emissions by at least 75% by 2030, better protect natural resources, and adapt to climate change.

Four Climate Hazards Addressed:

- *Extreme Heat and Heat Waves*
- *Extreme Weather Events (Precipitation, flooding, wind, drought)*
- *Sea Level Rise and Storm Surge*
- *Climate Change-Related Illness*

Vision

The plan articulates a vision for a climate-resilient Nyack 2045 that emphasizes the need for community-wide engagement and strategic investment, with a focus on affordability and empowerment through ongoing education.

Organization of the Report

The plan is structured around several key components:

- *Climate Risk Assessment:* Analysis of current and projected climate hazards
- *Vulnerability Assessment*: Identification of at-risk populations, infrastructure, and systems
- *Adaptation Plan:* Recommended actions for government and community to address the risks

A section is devoted to each of the four hazards, as well as compound events involving at least one hazard combined with an extended power outage. Each of these sections presents an overview of the climate change projections, a list of the top concerns for Nyack related to that hazard, and a set of recommendations for adaptation. A chart summarizing the relevant information about Nyack buildings and infrastructure is provided at the end.

Top Concerns Identified

Extreme Heat and Heat Waves

- Protecting vulnerable populations
- Water quality impacts
- Short term droughts and brush fires
- Increased demand for air conditioning
- Electricity demand, supply and affordability
- Building efficiency upgrades and weatherization
- Environmental impacts on natural landscape

Extreme Weather - Wind, Rain, Snow, Ice, Drought

- Threats to public safety
- Property damage – Basement flooding, flash floods, falling trees, frozen pipes, etc.
- Impacts on power, water and wastewater infrastructure

Sea Level Rise and Storm Surge

- Built Environment – potential flood damage to properties along the waterfront
- Waterfront parking lot flooding – damage and evacuation needs
- Boats and moorings – damage from wind and wave action
- Natural Environment – salt water and flooding damage to plantings

Climate Change-Related Illness

- Heat related illnesses
- Respiratory diseases related to air quality – ground level ozone and wildfire smoke
- **V**ector-Borne Diseases – ticks, mosquitoes
- Potential other emerging diseases

Key Next Steps for Adaptation

Emergency Preparedness

- Review and update Nyack Emergency Plan
- Update and Expand Nyack's Response and Preparedness information on the Village website.
- Establish a Climate Resilience Team of key village, town and county stakeholders
- Clarify/publicize early warning system options for the public
- Establish/expand cooling and warming center options.
- Plan for emergency shelters
- Assess/Plan for backup power needs at key community sites
- Host emergency preparedness workshops

Making Private Buildings Resilient

- Develop tools and programming for increasing weatherization and efficiency upgrades and heat pump conversions.
- Support moving shoreline buildings' mechanical systems above flood elevation.
- Encourage backup generator installations.
- Seek funding and technical support for the above building improvements.

Infrastructure Resilience

- Reduce Downtown Flooding
    i. Continue to maintain and improve the storm sewer system.
    ii. Complete mapping of MS4 system.

iii. Obtain a HydroVac truck.

- Improve Nyack Water System Resilience
  i. Investigate funding sources and cost saving measures, including Demand Response.
  ii. Acquire temporary barriers to protect the plant from flooding if riverbank berms are overwhelmed.
  iii. Continue with the collaboration with Nyack Hospital and others to ensure redundancy in hospital water quality/supply.
  iv. Install new flushers and aeration devices.

- Increase Green Infrastructure
  i. Increase tree canopy coverage and improve maintenance/protection of trees.
  ii. Plan proactively for climate change impacts in the natural landscape.
  iii. Reduce impervious surface by removing paving to add more planting.

Public Health Protection

- Coordinate with the partners (Rockland County Department of Health, Montefiore Nyack Hospital and others) to prepare to offer additional protection for those with chronic illnesses who may be at most risk.
- Plan heat illness prevention programming and outreach, especially targeting vulnerable populations
- Expand outreach and education about climate change related disease.

INTRODUCTION

The Need for a Plan

We are living in a world shaped by a warming climate, and the evidence is clear. Heat waves, hurricanes, flooding, and fires that were unexpected where they occurred and, greater in magnitude than in the past, have been shown to be a result of climate change. We need to learn what to expect and prepare for the unexpected. Extreme events that take us by surprise can even happen in quick succession. If combined with power outages, the results can be disastrous.

At the same time, we need to understand and adapt to the more gradual shifts that are affecting everything around us. In the regional landscape, for example, farmers, urban tree managers, and home gardeners have seen evidence of changes in seasonal weather patterns with earlier bud break, flash droughts and signs of stress on indigenous plants and the wildlife that depends on them for food and shelter. We need to adjust the way we do things, make accommodations, decide how to afford the costs, and look for hidden benefits as we go.

The *Nyack Climate Vulnerability Assessment & Adaptation Plan* is based on an assessment of Nyack's vulnerability to climate change hazards. It lays out actions for Nyack's government and community to adapt to climate change as we understand its potential impacts here today and lays the groundwork for a coordinated approach in the years ahead. The plan complements the *Nyack2030 Climate Action Plan* (2024), which addresses local climate mitigation — the steps our government and the Nyack community need to take to reduce greenhouse gas emissions.

Scope

The Plan is based on an assessment of the vulnerability of the assets in our community to four hazards related to climate change. These hazards were chosen based on current climate research for our region, existing plans and local knowledge:

- **Extreme heat and heat waves**
- **Extreme weather events**
- **Sea level rise and storm surge**
- **Climate change-related illness**

Project Process

A steering committee including Village staff and community members helped develop a public survey and organize workshops for key stakeholders and the public to assess how, why, to what degree the people, infrastructure, ecosystems, economy, and services in our community are now or may become susceptible to these hazards, and they provided recommendations for addressing the vulnerabilities. The committee and other stakeholders were asked to contribute to the assessment as it developed and comment on drafts of the plan. The rough draft was available to the Village Board and stakeholders in July 2025. The final draft, including the vulnerability assessment, adaptation plan and vision statement

was presented to the Village Board at a public meeting on October 23, 2025, and available to the public on the Village of Nyack website from then until November 30, 2025. The Village announced the draft and invitation to comment on the Village website homepage and the Village newsletter and website homepage.

Background Research

National and Regional Climate Assessments

The expected changes in climate in this report are based on a review of national, regional state, and local assessments. All these key sources agree that persistent temperature rise, heavier precipitation especially in winter/spring, sea level/river rise will occur. The Fifth National Climate Assessment Northeast Chapter describes the impacts and mitigation and adaptation measures being taken across the region to respond to increased incidences of climate hazards in the Northeast U.S. The New York State Climate Impacts Assessment (CLIMAID) presents projected changes between now and the end of this century for temperature, heat waves, rainfall, heavy storms, sea level rise, and other conditions for New York State. NOAA National Centers for Environmental Information State Climate Summaries 2022 also presents key information projections.

Cornell CALS and ClimAID provide more detail with localized estimates covering Rockland County. The chart below provides a summary of projected climate changes for Nyack based on ClimAID regional downscaled data, as used in NYSERDA and Cornell CALS projections. O&R did a later study in 2023 with updated Coupled Model Intercomparison Project 6 (CMIP6) data.

SUMMARY CHART OF PROJECTED CLIMATE CHANGE FOR NYACK					
Indicator	**Climate Variable**	**Baseline (1981-2010)**	**2030s**	**2050s**	**2080s**
TEMPERATURE	Annual Average Temperature	50.8°F	+2.8°F to +4°F	+4.1°F to +6.1°F	+5.7°F to +10°F
	Winter Average Temperature	30.4°F	+2.7°F to +4.5°F	+4.1°F to +6.5°F	+6°F to +9.9°F
	Summer Average Temperature	70.8°F	+2.6°F to +4.2°F	+4.1°F to +6.3°F	+6°F to +10.5°F
	Number of Heat Waves (3 or More Consecutive Days with Max Temp ≥ 90°F)	2	+2 to +4	+4 to +7	+4 to +8
	Average Length of Heat Waves	4 days	+1 day	+1 day to +2 days	+1 day to +4 days
PRECIPITATION	Annual Average Precipitation	45.8 in	+1% to +8%	+4% to +11%	+7% to +17%
	Winter Precipitation	9.9 in	+2% to +13%	+5% to +20%	+11% to +30%
	Spring Precipitation	11.8 in	+1% to +10%	+4% to +15%	+7% to +18%
	Summer Precipitation	12.2 in	-3% to +10%	-2% to 11%	-1% to +16%
	Fall Precipitation	12.0 in	-4% to +8%	-4% to +9%	-2% to +14%
	Extreme Precipitation Events (Days > 2 in of Precipitation)	3	+1	+1 to +2	+1 to +3

Source: Climate projections for the South Hudson River Valley accessed from the New York State Climate Impacts Assessment Appendix: Climate Change Projections Tables. Projections (shown for the 2030s, 2050s, and 2080s) represent mean changes relative to the 1981-2010 base period.

Climate Change-Related Health Resources

Incidences of diseases and other health conditions that can be expected to increase due to climate change have been documented for our region. The Center for Disease Control's website Climate and Health provides details on specific ways climate change affects health. This aspect of Nyack's plan focuses mainly on heat and respiratory illnesses, vector-borne diseases (those carried by vectors, such as ticks and mosquitoes). The New York State Department of Health website provides information for the public about these conditions, as well as ongoing research.

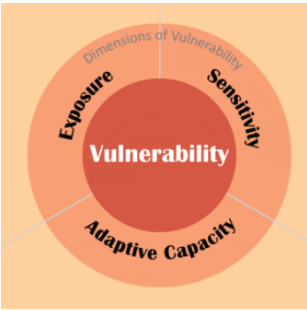
Other useful sources for the information presented in the Plan related to health impacts include
Fifth National Climate Assessment Human Health Chapter
USGCRP Climate and Health Assessment
"Preparing for the Regional Health Impacts of Climate Change in the United States."

Self-Evaluation with the Climate Smart Resiliency Planning Tool

The Village conducted a self-evaluation of local plans, policies, and projects using the Climate Smart Resiliency Planning (CSRP) procedure, which helps municipal staff and officials recognize the opportunities to enhance community resilience, identify vulnerabilities. The assessment showed that the Village has a solid set of resources for understanding and addressing the community's vulnerability to multiple hazards, along with recommended strategies and tools for mitigating these risks in several plans: The Rockland County Multi-Hazard Mitigation Plan (2024), which now includes climate change projections, as well as in the Nyack Comprehensive Master Plan (2015) the Local Waterfront Revitalization Plan (2019), and the Nyack Green Infrastructure Roundtable Report (2013). Over the past fifteen years, the Village has been working to address some of these risks through changes in policies and planning. A summary of the findings can be found here.

The CSRP assessment also identified important gaps in the Village's preparedness for disasters in both the short and long term, and it helped determine steps for improving plans–notably the local Emergency Operations Plan–as well as community outreach strategies and facilities for improving resilience. As a result, a top priority in implementing the adaptation plan will be to update the emergency operations plan, and develop an outreach and education strategy that addresses emergencies and resilience.

Stakeholders, Public Engagement and Methods



A wide variety of key stakeholders participated in a workshop session in February 2025. The stakeholders attending included representatives from community-based organizations serving the elderly (Creative Aging, Nyack); youth, (Rockland Conservation and Service Corps); youth and lower income households (Nyack Center); emergency services (Montefiore Nyack hospital); Nyack Library; waterfront residents; business (Chamber of Commerce, Visit Nyack); and Village staff. Those who were invited and not able to attend were asked to participate in calls and meetings later in the process. The list of participants can be found here, and the full stakeholder list here.

Workshop participants considered community assets, pairing each with a set of climate hazards to determine the exposure, sensitivity, and adaptive capacity of that asset. Specifically, they were asked to discuss potential impacts on Nyack buildings and infrastructure, water supply and wastewater infrastructure, parks, yards and natural areas, health and emergency services, communication systems, educational and cultural spaces, transportation systems, and local economy and jobs. This approach is meant to reveal the degree of vulnerability of each asset and help in prioritizing actions.

In the course of the meeting and in subsequent sessions, we used this framework to organize our discussions. After further research and further discussions, the assessment information was used in a second stakeholder meeting with other participants in May 2025. The input chart was kept open for comments from stakeholders after the meeting. For reference, charts from both sessions can be found at this link and on the Climate Risk and Resilience page on the Nyack 2030 website. Discussions naturally included existing adaptation strategies and the preliminaries of a vision for future resilience even as the focus remained on understanding vulnerability.

Public Survey

The public had the opportunity to respond to a questionnaire about their experiences and concerns related to the climate hazards in February and March 2025. The Village sent a postcard, in English and Spanish, announcing an online survey and public workshop to all households in the 10960-zip code. Flyers were distributed throughout the Village in businesses, Nyack Center, Head Start and other locations. The survey was available in English and Spanish. There were 197 responses to the English version and none to the Spanish version. Survey respondents overwhelmingly expressed a high level of concern about many of the projected impacts of the hazards on local health, safety and the environment. The survey results can be found on the Climate Risk and Resilience page on the Nyack 2030 website. The lack of response to the Spanish survey highlighted the need for more dedicated and targeted efforts to reach this population in the outreach efforts outlined in the adaptation plan.

Public Workshop

The presentation at a public workshop attended by 34 people in March 2025 provided an overview of the projections for the four hazards, the results of the survey, and a brief overview of Orange and Rockland's Climate Change Resiliency Plan. The following discussion session focused on the potential impacts of compound events, when incidents of extreme weather are combined with each other and/or extended power outages, and led to a plan for a follow up meeting for staff with representatives from O&R and the Rockland County Office of Fire & Emergency Services for further discussion.

Further Research– From Vulnerability to Adaptation Strategies

A meeting for key Village of Nyack staff on emergency planning led by representatives from Orange and Rockland and Rockland County Fire and Emergency Services provided more insights on gaps and vulnerabilities, particularly in power outages. Notes from that meeting can be found here.

The Steering Committee, Village Board and key stakeholders had an opportunity to review the first report draft, including a draft vision statement, in July and provided comments. Through the summer and early October., key stakeholders helped to fill the gaps and develop the adaptation strategies in follow-up meetings, calls and email exchanges, including the following: Ann Morgan of Creating Aging Nyack about the needs of local seniors; Tom Lynch, Supervisor of the Nyack Water Plant about water quantity and quality, Jim Dean, Superintendent and Stephen Munno, Senior Administrative Assistant at

the Town of Orangetown of Highways about emergency operations and road salt, Steve Roland and Commodore Clifford Selover of the Nyack Boat Club and Laura Greenberg, Condominium Board Member at the Clermont Apartments about challenges and plans for waterfront properties, and the Rockland County Task Force on Water Resources and others.

The Steering Committee and Nyack Climate Smart Committee reviewed the final draft plan in September, and it was sent to the full stakeholder list, prior to the public presentation of the plan to the Nyack Village board at its meeting on October 23, 2025. The plan was posted online for public review from November 1-30, 2025. Announcements in the Village's weekly email newsletter and official and private social media pages invited the public to comment on the Vision Statement, and final draft plan. Examples of this outreach can be found here.

Ongoing Commitment

Nyack Sustainability Coordinator and Climate Smart Committee

The Sustainability Coordinator works with the Village Administrator and the Nyack Climate Smart Committee to organize efforts to address climate change and environmental challenges through strategic planning and local initiatives. The Sustainability Coordinator will be responsible for assisting in implementation, and involving the Climate Smart Committee, particularly with education and outreach.

Village of Nyack Emergency Response Team

The Village's emergency response team consists of the Mayor, Deputy Mayor, Village Administrator, Assistant to the Village Administrator, Department of Public Works Supervisor, Building Inspector, Village Attorney, Village Clerk, Fire Inspector, Chief Water Operator, Nyack Fire Chiefs, Goosetown Communications, and Orange and Rockland Utilities. The Team commits to addressing the needs identified in this assessment by improving the Nyack Emergency Operations Plan and checking for updates annually.

Local Resilience Team

The following participants in creating this plan have made a commitment to an annual check-in to assess progress and make adjustments to the goals outlined in the plan.

Village of Nyack
- Village Administrator
- Sustainability Coordinator
- Chief Building Inspector

Town of Orangetown: Office of Emergency Management Committee

Rockland County
- Department of Health
- Task Force on Water Resource Management
- Office of Fire & Emergency Services

Orange and Rockland Utilities

Updates and Reporting

The vulnerability assessment and adaptation plan are to be updated at least every 10 years (2035) or when a new understanding of hazards occurs (like a major storm) or when updated state climate projections become available. The adaptation plan checklists are to be reviewed annually and summaries to be made publicly available.

THE VISION

The goals and strategies set out in this Adaptation Plan are based on an ambitious but practical vision for the next two decades. The plan sets out a path for learning, communicating, and collaborating to understand how climate change is affecting us, and implementing solutions to address challenges to the natural and man-made assets we value in our community.

Nyack will be a resilient community dedicated to

- maintaining a proactive approach to climate adaptation
- strengthening existing plans for emergency preparedness and deployment
- keeping current on best practices and innovative approaches to address climate hazards
- improving outreach and connections to address the diverse needs of residents and businesses
- coordinating partners at the local, town and county levels to address known and emerging challenges
- and harnessing the expertise and funding needed to keep Nyack vibrant, safe and strong.

Envisioning a Resilient 2045

Participants in creating the plan envisioned scenarios in 2045 to help clarify goals and test assumptions. While we surely will see changes in the next twenty years that we can't even imagine now, we also know that looking back twenty years there is much that remains the same, despite efforts to make progress addressing climate change. We aimed to be honest about the challenges while maintaining an optimistic outlook.

In 2045, in Nyack, the summers are much hotter, but most residents now have energy efficient air conditioning and fans, shading and other passive strategies to help keep buildings cool. Assistance for low-income households in acquiring air conditioning and affording energy bills is available. A significant number of homes are weatherized, so the costs of increased use of air conditioning are manageable. Financial incentives from federal and state sources and technical support were critical in making this happen.

While short term droughts have become more frequent, residents have become more conscientious about water conservation strategies, including landscaping with more drought tolerant plants and

limiting irrigation. Across the local landscape in 2045 healthy, large canopy trees, awnings, and canopies of various kinds now provide cooling shade over areas that were once open expanses of asphalt and concrete, from the west side of the village through downtown and the waterfront. Yards and campuses have been transformed as trees and native plantings have replaced large lawn areas and invasive species. An ever-growing group of tree and garden advocates across the community have coordinated for years to advance education, among young and old, about planting wisely for biodiversity and adaptation, and the results are visible across the greater Nyacks.

By 2045, Memorial Park and the new waterfront hub at Nyack Marina have proved resilient through major storm events, thanks to forward-looking design and planning. Likewise, with a combination of building retrofits and emergency planning, the residents in the multifamily buildings along the waterfront have adapted well to living with flooding along the river in extreme storms. While major heavy rain still causes occasional sewer overflows at the sewage pump stations at the marina and at the end of Gedney Street, the Village has made significant progress in reducing the number of illegal connections to the sanitary sewer even as flooding and precipitation have increased. Nyack Water Treatment Plant has continued to serve its customers well while successfully addressing threats of flooding, reduced water supply, and increasing levels of contamination in the water supply. The Village has undertaken drainage improvements that reduce flooding downtown.

By now in 2045, the village has weathered several extreme storms in summer heat waves and winter cold, with prolonged power outages. Communication channels have worked well, and all emergency services partners have been able to rise to the task. Homebound residents and other vulnerable populations have signed up for emergency alerts, know where and how to get transportation or other help. Thanks to coordinated planning for the community to be well-prepared, the installation of additional backup power, the availability of shelters, and the continued capability and dedication of local volunteer fire and ambulance services, Nyack has come through safe and strong.

CLIMATE HAZARDS

The recommended actions for the four climate hazards addressed in the plan are organized into checklists that describe the action, assign ratings for cost and difficulty, indicate the project lead and partners, and provide links to relevant resources. In addition, since resilience is the outcome of addressing multiple needs, and many actions will have multiple benefits, these potential co-benefits are indicated by symbols for each main section in the list.

Co-benefits–high potential to:	
Improve public health	
Save money	
Enhance natural resource security	
Deliver benefits to frontline communities	
Lower greenhouse gas emissions	

1-EXTREME HEAT AND HEAT WAVES

REGIONAL CLIMATE PROJECTIONS

The Northeast is getting warmer. Heatwaves are happening more frequently, lasting longer, and becoming more intense. Our local area is among those projected to experience the largest increase in the number of extremely hot days per year.[1]

According to the NYS Climate Impacts Assessment, days over 90 degrees are projected to increase to between 41 to 64 days per year by 2050 over the historical average of 18 days.[2] This will likely transform the experience of summer here in Nyack.

In addition, the assessment reports a projected increase for all of New York State in the number of even warmer days, those over 95°F. The Dobbs Ferry station, which is closest to Nyack, "is projected to experience the most 95°F days: 13–29 days per year by the 2050s and 18–57 by the 2080s."[3] Further, "[m]ulti-day heat waves are expected to occur more frequently across New York State in the decades ahead… By the 2080s, all stations are projected to have at least three heat waves each year. Central Park and Dobbs Ferry, which had the most heat waves per year over the 1981–2010 baseline period at an average of 2 per year, are anticipated to experience 5–9 heat waves per year by the 2050s and 6–10 by the 2080s."[4]

TOP CONCERNS – EXTREME HEAT AND HEAT WAVES

Heat-related illnesses

- Heat exhaustion, heatstroke, cardiovascular stress, especially amount vulnerable populations -- the elderly, pregnant women, young children, those with preexisting medical conditions and outdoor workers and emergency responders
- Respiratory system impacts – exacerbates conditions like asthma, bronchitis, and other lung diseases due to increased concentrations of air pollutants

Electricity Demand and Cost

- More demand for air conditioning straining the power grid, leading to blackouts or brownouts.
- Lack of access to adequate air-conditioning

Built Environment

- Energy efficiency – challenges to increasing efficiency in buildings
- Materials degradation – Road buckling, rail tracks warping
- Operations – Need for upgrades with changes in water chemistry

Water Quality and Quantity

- Salinity
- Trihalomethanes Formation

- Harmful byproducts of water treatment
- Algal Blooms
- Water shortages

Natural Environment

- Complex stress on the environment with increasing heat and increased precipitation and short-term drought on plants, soils and wildlife.
- Northward migration of some species and disruption of seasonal/life cycle patterns
- Multiple impacts on water quality, with increased health risks and increased water treatment costs to maintain a quality potable supply

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NYACK VULNERABILITY SUMMARY - Extreme Heat and Heat Waves

Nyack faces multiple climate-related hazards that primarily stem from increasing temperatures and more frequent extreme heat events. Rising heat and humidity are expected to result in more intense and prolonged heat waves, which create significant health risks for vulnerable populations, including pregnant women, the elderly, children, outdoor workers, and residents in low-income households who may lack access to adequate cooling.

Many homes in the community are drafty, poorly insulated, or lack weatherization, which makes it harder for them to remain cool during heat events. Roughly equal numbers of survey respondents reported that their homes were drafty versus well insulated. Only 13% said their homes were weather sealed. At the same time, the high costs of air conditioning, limited financial assistance, and difficulty accessing incentive programs further increase the vulnerability of residents, particularly renters whose landlords may have little incentive to make upgrades. Many low-income households have difficulty utilizing the available programs. Schools and community settings, including athletic facilities, are also at risk, with student health threatened during periods of extreme heat.

Rising demand for electricity during hot weather places significant stress on the power grid, triggering the use of expensive and polluting peaker plants, and raising the likelihood of brownouts or power surges that can damage equipment. Buildings and infrastructure are also under pressure, as higher temperatures accelerate the deterioration of asphalt, concrete, and roofing, leading to increased repair and maintenance costs that must be factored into long-term capital planning. Water systems face additional climate-related vulnerabilities. Warmer water temperatures increase the formation of trihalomethanes (THMs) and other harmful disinfection byproducts, accelerate bacterial growth, and promote biofilm formation that can recontaminate treated water. More frequent harmful algal blooms (HABs) are expected as higher temperatures combine with heavier runoff, longer warm seasons, and drought-related low flows, further threatening source water quality and increasing treatment costs.

Natural systems and the built environment interact to exacerbate heat impacts. A reduced tree canopy and unshaded parking lots and buildings intensify heat, with temperatures in exposed areas sometimes reaching 20 degrees hotter than shaded surroundings. While trees provide significant cooling benefits and energy savings, they require sustained planning, careful species selection, and maintenance to ensure long-term resilience.

Together, these vulnerabilities underscore the need for Nyack to prepare comprehensively for increasing climate stresses on health, energy, infrastructure, water, and ecosystems.

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1. Rosenzweig, Cynthia, et al. *New York State Climate Impacts Assessment: 2023 Report*. Albany, NY: New York State Energy Research and Development Authority (NYSERDA), 2023. https://nysclimateimpacts.org/.

2. Ibid.

3. Ibid.

4. Kinney, Patrick L., et al. "Projections of Climate-Related Impacts on Human Health in the Northeastern United States." *Annals of the New York Academy of Sciences* 1502, no. 1 (2021): 72–92. https://doi.org/10.1111/nyas.15240.

Heat		
Communications	**Cost**	**Difficulty**
		
☐ **Update and Expand the Emergency Preparedness page on the Village website** to include comprehensive information on heat exposure and emergencies, and regularly remind residents and business owners to check resources and procedures.	Low	Low
☐ **Promote awareness of heat and air quality advisories and alerts** that are issued via email or text message, and reinforce alerts via official and social communications tools.	Low	Low
☐ **Identify and target messaging and direct outreach to vulnerable populations** including those with special needs and populations with language or other barriers to ensure they are receiving alerts, information and resources.	Low	Low
Lead: Village Administrator and Sustainability Coordinator **Partners:** County and Town governing bodies. Rockland County Fire and Emergency Services, Mid-Hudson Regional Energy Hub, Meals on Wheels, United Way of Rockland Orange and Rockland Utilities. Meals on Wheels, Creative Aging Nyack, neighbors. Faith Community, **Resources:** NYS DOH, Village website/social media Enviroflash NY Alert Extreme Heat Advice - NYS Dept. of Health Hastings-on-Hudson Emergency Webpage		
Air Conditioning		
		
☐ **Identify homes** with inadequate air conditioning through further outreach.	Low	Med
☐ **Provide support** in accessing programs for funding and technical assistance, especially for low-income households. Address funding and landlord-tenant barriers.	Low	High
☐ **Promote efficiency** in AC, heat pump conversions (cooling/heating + electrification), weatherization and energy efficiency upgrades. Coordinate with O&R's communications about usage and ways to save.	Low	Med

Lead: Village Administrator and Sustainability Coordinator **Partners** Meals on Wheels, Energy Advisor (Frankie Lede) and Mid-Hudson Energy Hub, Rockland County Fire and Emergency Services, Orange and Rockland, Meals on Wheels, Creative Aging Nyack, neighbors, Faith Community, Nyack Climate Smart Committee **Resources:** NYS Cooling Assistance Benefit NYSERDA Energy Efficiency Programs Why Many Low-Income Households Can't Afford This Free Home Improvement Program		
Cooling Centers & Heat Emergency Planning	**Cost**	**Difficulty**
		
☐ **Identify locations, in multifamily housing and elsewhere for backup generation** to keep AC on in emergencies.	Low	Med
☐ **Assess and plan local cooling centers**; seek CSC funding; include transportation and pet provisions.	Med	Med
☐ **Develop a local Heat Emergency Plan** through the CSC grants program or other programs.	Med	Med
Lead: Village Administrator and Sustainability Coordinator **Partners** NYS Dept. of Health, Rockland County Department of Health Rockland Co. Dept. of Fire and Emergency, Nyack Climate Smart Committee **Resources** Climate Smart Communities Actions- Cooling Centers sand Heat Emergency Plan NYS Extreme Heat Action Plan (includes goals for assessing cooling center availability and services		
Demand Response	**Cost**	**Difficulty**
 		
☐ **Promote participation in demand response programs** to reduce grid stress and peaker plant use.	Low	Low
Lead: Village Administrator and Sustainability Coordinator **Partners** Meltek, O&R (Smart Usage Rewards), Nyack Climate Smart Committee		
Passive Cooling	**Cost**	**Difficulty**
		
☐ **Promote passive cooling strategies** including the wise use of trees, window coverings, window fans, evaporative cooling, cross ventilation, and other passive cooling strategies through ongoing outreach and policy.	**Low**	**Med**

Lead: Village Administrator and Sustainability Coordinator **Partners** Nyack Tree Committee, Nyack Climate Smart Committee		
Water Quality & Conservation	**Cost**	**Difficulty**
		
☐ **Continue to monitor and address heat-related water impacts**, including increase in the formation of trihalomethanes (THMs).	Med	Med
☐ **Add mixers and aerators** at the Dickinson Reservoir (underway). Research/add automated hydrants and flushers (underway).	High	Med
☐ **Address pollution,** including Harmful Algal Blooms and discharges of copper sulfate. Determine whether the new PFOS filtration system to be installed at the water plant will adequately address this.	?	?
☐ **Collaborate on public presentations** and share resources on the impacts of climate change on water systems and access, in addition to water conservation education.	Low	Low
☐ **Support Town, County and State efforts to address salinity**	Low	Low
Lead: Nyack Water Department **Partners** Town of Orangetown, Rockland County Task Force on Water Resources Management, and Department of Health., **Resources** Rockland County Flood Mitigation and Resilience Reports Riverkeeper Presentation on their Report On Climate Impacts of Drinking Water video and or report Rockland County Water Conservation Initiatives and Plan		
Urban Forestry & Shade	**Cost**	**Difficulty**
		
☐ **Expand the tree canopy** through continued support for the Nyack Tree Project (through staffing and budget).	Med	Low
☐ **Commit to support for maintenance in the Village budget** and as an extension of the Nyack Tree Project. Plan for a professional tree maintenance project for large trees 2026-2027. (Round 17 of NYS DEC Urban & Community Forest Grants expected in 2026– Apply for updated inventory, software, management plan and maintenance grants.)	Med	Low
☐ **Require clear, strong tree protection during construction** in Village code and policies.	Low	Low
☐ **Plan proactively for tree losses/replanting with resilient species.**		
☐ **Educate property owners and managers** about proper tree selection, placement and maintenance.	Low	Low

Lead: Village of Nyack. Nyack Tree Committee **Partners** NYS Urban Forestry Council and DEC Region 3 Releaf **Resources** MV Tree Technical Manual Mt. Cuba Resilient Canopy Project NYS Urban Forestry Council NYC Tree Protection Requirements NYS DEC Urban & Community Forestry Grant Program		

2-EXTREME WEATHER EVENTS

REGIONAL CLIMATE PROJECTIONS Extreme Weather Events–Flooding, Wind, Snow, Ice, Drought

Heavy rainstorms are projected to happen more often and become more intense as the climate continues to warm. High winds and flooding from hurricanes and tropical storms are also expected to increase, along with stronger wind gusts and more intense hurricanes. Snow and ice events will become less frequent, but when they do occur, they may be more intense. Although more research is needed, some projections suggest cold snaps and polar vortex events could also become more common.[1]

In New York State, heavy precipitation events have already increased since the 1950s. So-called "once-in-100-year" storms have occurred nearly twice as often as expected in recent decades. The federally designated "100-year" or 1% floodplain refers to areas with a statistical 1% chance of flooding in any given year based on historical data—people to think that once it happens, it will not happen again over the next 99 years, giving a false sense of security.[1]

Total precipitation is expected to rise by about 6% to 17% statewide by the end of the century. This precipitation is likely to fall in more intense bursts, with longer dry spells in between—a phenomenon sometimes referred to as climate whiplash. Meanwhile, long, multi-year droughts are not expected to increase, but short-term droughts lasting weeks or months may become more frequent, especially during summer. Reduced snow covers can also contribute to soil drying earlier in the season.[1]

NYACK'S VULNERABILITY SUMMARY – Extreme Weather Events

Flooding is a top concern for the Village. Nyack Brook has repeatedly overflowed during major storms, damaging the downtown, most recently during Hurricane Ida (2021). Severe flooding also occurs along the waterfront and properties along North Highland Avenue in and around Montefiore Nyack Hospital, and nearby areas such as Route 59 in West Nyack, posing safety risks for drivers and residents. Basements in Nyack buildings frequently flood. While sump pumps help, illegal hookups to sanitary sewers increase sewage overflows and treatment costs, and improper use can create electrical hazards. Insurance coverage gaps leave many homeowners and renters financially exposed, since standard homeowners' insurance does not cover floods.

Increased precipitation and flooding increase the potential for sewage overflows at the two pump stations in Nyack operated by the Orangetown Sewer Department. The Department's proposed actions to remove infiltration and inflow focus on illicit connections, specifically roof leaders and sump pumps. (Refer to Town of Orangetown Elimination of I & I Procedure. Program Range 2018-2022.)

[1] Rosenzweig, Cynthia, et al. *New York State Climate Impacts Assessment: 2023 Report.* Albany, NY: New York State Energy Research and Development Authority (NYSERDA), 2023. https://nysclimateimpacts.org/

The Nyack Water Plant, along the Hackensack River in West Nyack, is also vulnerable to flooding. It should be noted that since the construction of a new car dealership adjacent to the water plant, and improvements to Rockland County's stormwater maintenance in the vicinity, flooding has been observed to have decreased, but flooding remains a concern.

The risk of contamination of the potable water supply rises as increased precipitation and runoff introduce pollutants (including road salt) into the Hackensack River, Nyack's drinking water source. increased runoff from heavier precipitation, extended warm seasons, and reduced flows during droughts, further increasing disinfection byproduct risks. Shifts in wet–dry cycles and flooding may mobilize contaminants as soils lose their capacity to retain them.

The water plant has a diesel generator to run the plant. A planned filtration system addition to the plant will include a new unit that has the capacity to run the plant for three days.

Stormwater and impervious surfaces exacerbate localized flooding; existing green infrastructure recommendations may need updating. Nyack and Rockland County rely exclusively on local water sources. Extended dry periods raise concerns about water sufficiency, with the County authorized to impose drought restrictions.

Severe storms can damage trees throughout the village, leading to power outages, safety hazards, and property damage. While Nyack has maintained a proactive tree program, including inventories and grant-supported work, older large trees and privately owned trees remain vulnerable.

TOP CONCERNS - EXTREME WEATHER

Threats to Safety

- Flooding
- Downed trees and power outages

Property Damage

- Private property – basement flooding and backup power, flood insurance, burst water lines
- Public buildings and infrastructure
- Damage to Trees

Impacts on Water and Wastewater Infrastructure

- Nyack Water Plant flooding
- Sewage overflows at two pump stations in Nyack
- Increased pathogen levels from contamination in runoff with extreme precipitation

RECOMMENDATIONS -- EXTREME WEATHER EVENTS		
Communications and Education	**Cost**	**Difficulty**
 		
☐ **Update and Expand the Emergency Preparedness page on the Village website** to include comprehensive information on storm preparedness and flooding and regularly remind residents and business owners to check resources and procedures. See Village of Hastings on Hudson for model emergency webpages.	Low	Low
☐ **Reinforce alerts via official, social media, and local news outlets.**	Low	Low
☐ **Promote awareness of flood risk.**	Low	Low
☐ **Develop educational materials and programming, and implement outreach** to help the community prepare for health risks after floods. **Lead:** Sustainability Coordinator **Partners:** Rockland County Department of Health	Low	Med
☐ **Promote awareness of flood preparedness, including flood insurance.** Including flood insurance. (Flood insurance is recommended for many homeowners living outside the Special Flood Hazard Area.)	Low	Med
Lead: Village Administrator and Sustainability Coordinator **Partners** Hudson Valley Flood Resilience Network, NY Sea Grant Hudson River Estuary Resilience Specialist, FEMA, Rockland County Task Force on Water Resources Management, Montefiore Nyack Hospital **Resources** Turn around/Don't Drown Flood Safety Tips ***A Start Guide: For Addressing Flooding and Erosion in Hudson Waterfront Communities*** for officials, staff and volunteers. A copy of the guide is available at Nyack Library and Nyack Building Department, or contact: Jessica Kuonen, Hudson River Estuary Resilience Specialist, NY Sea Grant, jak546@conrnell.edu. Reduce Flood Risk Website (ASFPM) Protect Your Property from Flooding [Brochure] (FEMA) Flood Risk Communication Workshop Presentation		
Water Conservation		
  		

Plan for and Promote Water Conservation **Lead:** Rockland County Water Task Force **Partners**, Nyack Water Department, Village Administrator, Sustainability Coordinator Resources RC – Task Force Conservation Initiatives		
Upland Flooding	**Cost**	**Difficulty**
		
Downtown ☐ **Address flooding from Nyack Brook with continued drainage improvements.** ☐ **Obtain a HydroVac truck**. ☐ **Reduce impervious surface** by installing in planting areas where possible in public land and working with private property owners. **Lead**: Village Administrator and Sustainability Coordinator	High	High
North Highland Avenue ☐ Ensure that land use planning involving properties contributing water to 9W and downstream maximize/maintain green and gray infrastructure to maintain or reduce the levels of flooding. (Nyack Hospital proposes installing a hydraulic storm barrier along the west entrance.) Work with NYS DOT, Oak Hill Cemetery, Nyack Hospital, and other properties. **Lead**: Village Administrator and Sustainability Coordinator	Med	Med-High
Basement Flooding ☐ Promote safe sump pump use to reduce risk of electrocution during an emergency: incorporate information about safe operation and proper discharge of the water, and safe use of backup generators.	Low	Low
☐ **Illegal sewer discharge connections** Consider regulations, including point of sale requirements, and enforcement to address sewer hookups.	Med	Low
☐ **Promote proper drainage design** for homeowners. Conduct workshops or provide resources about strategies to reduce flooding using green infrastructure, drainage systems (redirecting downspouts, French drains, etc. **Lead**: Village Administrator and Sustainability Coordinator **Partners:** Rockland County Stormwater Consortium, Cornell Cooperative Extension of Rockland, plumbers, electricians, landscapers.	Low	Med
Sewer Pump Stations Overflows ☐ Coordinate planning for addressing illicit connections to sanitary sewer with Orangetown Sewer Department. **Lead:** Nyack Building Department, Village Administrator and Sustainability Coordinator **Partner:** Orangetown Sewer Department	Low	Med

Flooding and Water Quality	Cost	Difficulty
		
☐ **Reinforce riverbank and collapsed raw water intake** (ongoing).	Med	Med
☐ **Consider acquiring flood barriers** to deploy as needed at water plant (or other locations)	Low	Med
☐ **Investigate funding opportunities** including NYS Resilient Watersheds program; consider collaboration with other partners.	Low	Low
☐ **Work to ensure Nyack Hospital's access to potable water in** case of emergencies through continued collaboration with Veolia and Rockland County.	-	-
☐ **Reduce road salt contamination of the Hackensack River** by supporting the Rockland County Task Force on Water Resources Management and State efforts to establish regulations and best management practices to control the use of road salt.	Low	Low
☐ **Seek remediation/restitution for contamination of the riverbed** from upstream uses.	High	
☐ **Investigate potential cost-saving alternatives,** including for filter washing	NA	NA
☐ **Participate in electricity Demand Response**	Low	Low
☐ **Investigate funding opportunities.**	Low	Low
Lead: Nyack Water Department **Partners** Rockland County Task Force on Water Resources Management, Rockland County Department of Health.		
Drought	**Cost**	**Difficulty**
		
☐ Support efforts on compliance with restrictions during droughts. ☐ Collaborate on public presentations and share resources on the impacts of climate change on water systems and access, in addition to water conservation education.	**Low**	**Low**
Lead: Nyack Water Department, Nyack Sustainability Dept., Nyack Climate Smart Committee **Partners** Rockland County Task Force on Water Resources Management, Rockland County Department of Health.		
RESOURCES		
Climate Smart Communities Grant Program Drinking Water State Revolving Fund EPA Water Infrastructure Finance and Innovation Act		

FEMA Flood Mitigation Assistance Grant Program NYS DEC Resilient Watersheds Grant Program NYS DEC Water Quality Improvement Project Program NYS DOT Transportation Advancement Program NYS Drinking Water Source Protection Program Water Technical Assistance Watershed Protection and Flood Prevention Operations (WFPO) Program Water Infrastructure Finance and Innovation Act (WIFIA) Program Dr. Van Abs Preliminary Assessment of the Ramapo & Hackensack Watersheds Report (2017) Riverkeeper "Impacts of Road Salt on Public Drinking Water Supplies" slide presentation from September 2025. Rockland County Flood Mitigation Reports Rockland County Water Conservation Initiatives and Plan		

3-SEA LEVEL RISE AND STORM SURGE

REGIONAL CLIMATE PROJECTIONS

Intense storms can cause storm surge, as we experienced in Superstorm Sandy. Storm surge is the rise in seawater level caused solely by a storm pushing water up. Storm tide is the total observed seawater level during a storm, which is the combination of storm surge and normal tide.

Sea level rise and storm surge will impact buildings and infrastructure, including trees with water and salt, which can cause severe stress and death to some species.

The chart below shows the projected levels of sea-level rise for the New York City/Lower Hudson Region in 6 NYCRR Part 490, which the New York State Department of Environmental Conservation formally adopted in September 2024.

Projected levels of sea-level rise for the New York City/Lower Hudson Region

Time Interval	Low Projection	LowMedium Projection	Medium Projection	HighMedium Projection	High Projection	Rapid Ice Melt Projection
2030s	6 inches	7 inches	9 inches	11 inches	13 inches	NA
2050s	12 inches	14 inches	16 inches	19 inches	23 inches	NA
2080s	21 inches	25 inches	30 inches	39 inches	45 inches	83 inches
2100	25 inches	30 inches	36 inches	50 inches	65 inches	114 inches
2150	38 inches	47 inches	59 inches	89 inches	177 inches	NA

TOP CONCERNS – SEA LEVEL RISE AND STORM SURGE

Sea level rise and storm surge will affect the residents of the riverfront multistory apartments, two boat clubs, the Nyack Marina and Nyack Memorial Park.

Built Environment

- Flood damage along the waterfront to boats, buildings, docks, moorings, pier along the waterfront
- Damage to the built environment from floating storm debris, such as loose boats, piers, logs, etc.
- Parking lot flooding – damage and evacuation needs

Natural Environment

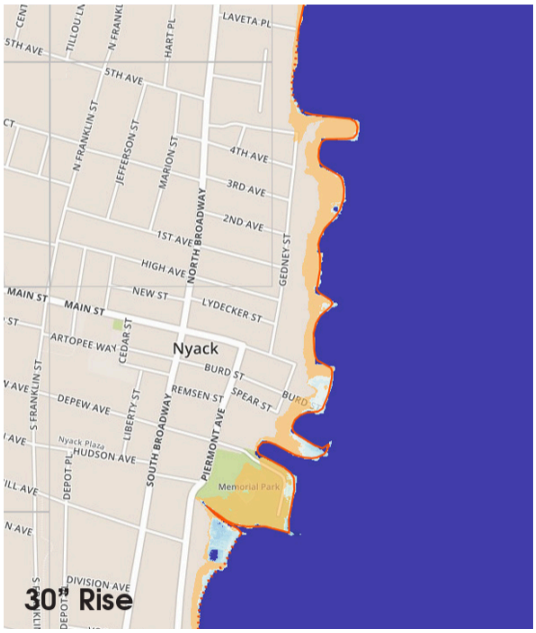
- Saltwater damage to plants
- Riverbank erosion

NYACK'S VULNERABILITY SUMMARY – Sea Level Rise and Storm Surge

The Nyack Local Waterfront Revitalization Program report (2017) describes the projections and potential impacts of sea level rise on the waterfront in Nyack:

> Although most of the village would have a high enough elevation to be protected from sea level rise, the waterfront residential towers are very vulnerable. Using the highest projections, the Riverfront co-op risks having a small portion of the parking area inundated, but the majority of the site would be within the 100-year floodplain. The West Shore Towers would be slightly inundated on its waterfront edge, whereas the Gedney Street-Main Street site would have small amounts of inundation on the waterfront edge but slightly more inland. Both of these sites would be approximately halfway into the floodplain. All of lower Memorial Park (the area below the veterans memorial, approximately 75% of the site) would be covered by the floodplain, and the waterfront portions would be inundated. The most vulnerable parcels on the waterfront are the Clermont Condominiums and the Nyack Marina. In the worst-case scenario for 2050, the Clermont Condominiums risk having half of their site inundated with water and the Nyack Marina boat ramp would be underwater, as would a small portion of the parking area and waterfront restaurant. [2]

The map below shows the areas that would be inundated in a 100-year storm with 30" sea level rise, the medium projections for the 2080s in the chart above. Map Source: Nyack Local Waterfront Revitalization Program Report, page 58.



[2] Nyack, **Local Waterfront Revitalization Program** (Village of Nyack, updated 2021), 57, https://www.nyack.gov/local-waterfront-revitalization-program.

Public and private properties along the waterfront, which all needed significant repairs after Hurricane Irene and Superstorm Sandy, remain vulnerable to sea level rise and storm surge.

Over the past fifteen years the bulkhead and moorings at Nyack Marina have been rebuilt, a bridge over the inlet between Memorial Park was built in a manner to withstand sea level rise and storm surge impacts. The Village-owned restaurant next to the moorings was razed, plans for a new structure will be designed and engineered to future conditions on the river. The Memorial Park waterfront will be renovated in 2026 with new resilient plantings and design features that account for future projections.

Nyack Boat Club reports that to protect the investment of over $450,000 to repair after Sandy, it has taken steps to adapt and prepare for future impacts. Commodore Clifford Selover reported:

> As a result of the losses incurred, the Club has continually invested in mitigating the effects of rising seawater and hurricane-force winds and rainfall. This investment has included raising the heights of our pilings; investing in heavier, more robust ramps and docks, upgrades to our electrical systems, and strengthening our bulkhead against erosion. Our seawall is continually repaired and resurfaced to mitigate the effects of erosion, and our pier decking is continually replaced on an annual rotating plan.
>
> Among the changes made, our policies and practices for mooring boats were reviewed and rewritten to require members to upgrade their ground tackle to prevent the loss of boats in storms and heavy weather.
>
> Our insurance policies, and contingency reserve accounts are continually reviewed to ensure that the Club's risk assessments are up-to-date, and our financial infrastructure is positioned to withstand any future events on the order and scale of Superstorm Sandy.

At the Clermont Apartments Hurricane Irene and Superstorm Sandy caused severe damage to the lower level and the marina. Board member Laura Greenberg reported:

> In Sandy, all units on the first floor had water intrusion up to several feet and the owners had to be relocated, the garage level entrance lobbies and electrical systems were compromised, and the marina sea wall was severely damaged. Irene caused similar damage, and the main parking garage flooded enough to destroy several cars. Clermont has reconstructed a more stable seawall on the east side of our marina, and relocated all seven electrical stations, elevating them to 3 feet above the high water line. Residents on the first level have been advised to acquire flood insurance for the contents of their units. The Board advises residents to sign up for both Village and State weather alerts.

RECOMMENDATIONS -- SEA LEVEL RISE AND STORM SURGE		
Nyack Marina and Memorial Park	**Cost**	**Difficulty**
		
☐ **Ensure that new construction in the marina and park is resilient.** Account for projected sea level rise and storm surge and to withstand inundation.	High	High
☐ **Select salt- and inundation-tolerant trees and other plantings.**	Low	Low
Lead: Village Administrator and Sustainability Coordinator **Partners** Nyack Parks Commission, Nyack Tree Committee		
Private Waterfront Properties	**Cost**	**Difficulty**
Buildings/Parking area flooding at waterfront residences ☐ Alert residents of potential flooding so they can move their cars. ☐ Engage with other municipalities through participation in the Hudson Valley Flood Resilience Network **Lead:** Property Owners/Managers **Partners:** Village of Nyack, New York Sea Grant, Hudson Valley Resilience Flood Network **Resources:** Forthcoming guidance document from NY Sea Grant on high tide flooding, tide tables, and Stevens Flood Advisory System.		
Boat Club Properties ☐ Support efforts to protect property and ensure continued operations. **Lead**: Property Owners/Members **Partners:** Village of Nyack, New York Sea Grant		
☐ **Plan for evacuation at flood prone areas at the waterfront**. Provide evacuation support for those without personal transportation.	Low	Med
☐ **Ensure compliance and encourage proactive measures** in development and renovations at waterfront properties. **Lead:** Nyack Building Department Partners: Rockland County Office of Fire & Emergency Services	Med	Med

4-CLIMATE CHANGE-RELATED ILLNESS

REGIONAL CLIMATE PROJECTIONS

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Extreme heat and heat waves can be expected to result in an increase in incidences of heat-related illnesses, including heat stroke, heat exhaustion, rhabdomyolysis, heat syncope, heat cramps, and heat rash. National heat related deaths have risen significantly in recent years and are the leading cause of weather-related fatalities. The annual number of deaths caused by heat surpasses those caused by other extreme weather events like hurricanes, floods, and tornadoes combined according to recent data.

Heat stroke is the most serious heat-related illness. It occurs when the body can no longer control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106°F or higher within 10 to 15 minutes. Heat stroke can cause permanent disability or death if the person does not receive emergency treatment.[3] Heat stroke can cause permanent disability or death if the person does not receive emergency treatment.

Increasing temperatures and rainfall will provide better breeding conditions for ticks and mosquitoes, which transmit infectious diseases such as Lyme disease and West Nile Virus. Warmer climates contribute to expanded habitat for species from tropical areas.

The increased usage of air conditioning systems that would result from increased temperatures brings with it the opportunity for elevated incidence of legionella among residents.
Flooding and extreme weather events have the ability to contaminate surface water sources, increasing the risk of waterborne diseases like cholera.

Tick bites can cause serious illness, including Lyme Disease and Rocky Mountain Spotted Fever. In New York State and Rockland County, Lyme disease is the most common disease spread by ticks. Others include babesiosis, anaplasmosis, ehrlichiosis, Rocky Mountain Spotted fever, hard tick relapsing fever and Powassan encephalitis. The NYS Department of Health also warns that "the products you use to repel or kill ticks contain chemicals that can also cause health effects, especially if not used properly. Learn about ticks and the diseases they spread, and how you can limit your risk of exposure to potentially harmful chemicals."

Decreased air quality and increased temperatures can be a major concern for residents with respiratory or cardiac diseases. Wildfires, floods, and storms can worsen air quality and increase exposure to pollutants, further impacting respiratory health. Increasing ground-level ozone and/or particulate matter from forest fires nationwide can be expected to increase incidences of health

[3] Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH). "Heat Stress." Accessed July 18, 2025. https://www.cdc.gov/niosh/topics/heatstress/.

problems, such as diminished lung function, increased hospital admissions and emergency room visits for asthma, and increases in premature deaths.

TOP CONCERNS – Climate Change-Related Illnesses

Extreme Heat

- Extreme heat and heat waves can cause a range of illnesses and death.

Air Pollution

Ground level ozone and wildfire smoke can exacerbate respiratory illnesses and heart disease.

Vector-Borne Disease

Ticks:-- Lyme Disease, Babesiosis, Rocky Mountain Spotted Fever, anaplasmosis, babesiosis, etc.
Mosquitoes – West Nile Virus, Eastern Equine Encephalitis, Zika, Dengue, Malaria, etc.

Mental health

Mental health challenges including stress, anxiety, depression, and PTSD.

RECOMMENDATIONS -- Climate Change-related Disease		
Heat-related illness	**Cost**	**Difficulty**
See Heat section above for buildings, cooling centers, and target populations.		
		
☐ **Coordinate with partners to provide appropriate guidance** about preventing heat-related illness targeted especially to vulnerable populations, including the elderly, pregnant women, outdoor workers and people with pre-existing conditions. **Lead:** Rockland County Department of Health, Montefiore Nyack Hospital **Partners**: Village Administrator, Sustainability Coordinator	Low	Med
☐ **Modify work schedules and practices** to ensure the health and safety of DPW and other workers. ☐ **Follow guidance on acclimatizing to heat** especially for outdoor workers. **Lead**: Village Administrator and Sustainability Coordinator **Partners**: Rockland County Department of Health	Med	Med
Resources CDC guidance on acclimatization Climate Change and Health Climate Resources for Health Education		☐
Air Quality	**Cost**	**Difficulty**
		
☐ **Provide guidance on improving indoor air quality** through adequate ventilation and filtration and access to services during outbreaks.	Low	Low
☐ **Ensure access to services for vulnerable populations** during periods of high levels of pollutants or smoke.	TBD	TBD
☐ **Upgrade public facilities to improve indoor air quality** as needed.	TBD	TBD
Lead: Lead: Village Administrator, Building Department, and Sustainability Coordinator **Partners**: Nyack Hospital, Rockland County Department of Health		
Vector-Borne Disease	**Cost**	**Difficulty**
		
☐ **Provide guidance on detection and prevention** through official and social media. **Lead:** Village Administrator and Sustainability Coordinator **Partners:** Rockland County Department of Health, Nyack Hospital	Low	Low

☐ **Promote /require maintenance and design improvements** to reduce mosquito habitat. ☐ **Coordinate to enhance surveillance and reporting** **Lead:** Rockland County Department of Health **Partners:** Nyack Building Department	Med	Med
Resources Rockland County Hazard Mitigation Plan Vol I. Section 4.3.2 Disease Outbreak CDC How to Prevent Tick and Mosquito Bites NYS DOH Ticks information		

COMPOUND EVENTS

In planning for adaptation and especially for emergencies, we need to envision and prepare for the possibility of hazards occurring in quick succession, combining with one or more other hazards and/or an extended power outage. Outages during cold or very hot weather present a special set of challenges, endangering everyone and particularly those with preexisting medical conditions and those relying on medical devices or refrigeration for medications.

O&R works to prepare for emergencies and reduce outages through grid automation, cable improvements, smart metering and reporting, vegetation management and undergrounding lines.

This section provides recommendations for preparing for and responding to extended power outages concurrent with other hazardous events. A chart showing key emergency response partners is provided at the end of the section.

TOP CONCERNS – COMPOUND EVENTS

Communications

- Maintaining coordinated communication systems among emergency management team
- Delivery of emergency communications with the community

Shelter (cool and warm)

- Emergency shelter – Developing a network of options

Backup energy systems

- Availability of backup power at critical facilities, traffic signals
- Availability of backup power at gas stations, markets, and voting stations
- Backup power for homeowners – options and proper use

Disruptions to transportation

- Access to EV charging and availability of gasoline
- Evacuation and emergency trips to shelter and emergency services

Recovering

- Potential organizational and funding challenges in extreme conditions

RECOMMENDATIONS -- COMPOUND EVENTS		
Emergency Plans	**Cost**	**Difficulty**
Convene the Village's Emergency Response Team regularly The Village should convene the key staff and officials responsible for emergency response on a regular basis to review procedures and update as needed. **Lead:** Village Administrator	Low	Low
Form a Resiliency Team consisting of important stakeholders, including representatives of the Village's Emergency Response Team, the Nyack Sustainability Coordinator, local business and residents, and that will meet annually with the Orangetown Emergency Management Committee, a representative of the Rockland County Department of Fire and Emergency Services and Rockland County Department of Health. **Lead:** Village Administrator	Low	Low
Improve and update the Village's Emergency Response Plan The plan should be reviewed and expanded to include additional detail and guidance, including a continuity of operation plan. It should be kept current with the best available projections concerning the frequency and severity of extreme storm events and should be checked and updated as needed annually. **Lead:** Village Administrator	Low	Low
Host Emergency Preparedness Workshops **Lead:** Village Administrator, Sustainability Coordinator **Partners:** Department of Homeland Security-Citizen Preparedness Corps	Low	Med
Update the Nyack section of the Rockland County Multi-Hazard Mitigation Plan using the online portal, during the interim between the County's updates. **Lead:** Village Administrator	Low	Low
Emergency Power Backup and Microgrids	**Cost**	**Difficulty**
Determine where back up power would be needed in our community besides critical infrastructure –what types, costs and possible funding.	Low	Med
Provide information about back up power options, including V-enabled household energy, for businesses and homeowners.	Low	Low
Explore opportunities for microgrids.	Low	High
Lead: Village Administrator and Sustainability Coordinator		
Shelters (warm and cool)	**Cost**	**Difficulty**
Identify and describe shelter locations. Include potential for on-site shelters in multifamily buildings and agreements with neighboring communities. See also cooling centers recommendations.	Low	Med
Lead: Village Administrator and Sustainability Coordinator		
Emergency Preparedness	**Cost**	**Difficulty**

Establish clear emergency alert resources and procedures and inform the community about them.	Low	Low
Host Emergency Preparedness Workshops Department of Homeland Security	Low	Med
Ask insurance agents, real estate agents, and lenders to participate in education and planning.	Low	Med
Disseminate Emergency Preparedness Guidance for Households and Businesses including personal or family evacuation plans, at-home emergency kits, emergency supply lists, evacuation kit recommendations.	Low	Low
Disseminate Public Information on Emergency Maps, such as expected inundation areas, evacuation routes, evacuation bus pick-up locations, locations of severe weather shelters, locations of pet shelters.	Low	Low
Lead: Village Administrator and Sustainability Coordinator		
Partners Rockland County Office of Fire & Emergency Services, Orangetown Emergency Management Committee, Creative Aging Nyack, Nyack Senior Center, Nyack Senior Housing, Homeowners associations and management in large multi-families, Meals on Wheels **Resources** Village of Nyack Emergency Home Page Life-Support Equipment Assistance | Orange & Rockland Access and Functional Needs Registry for people on life support O&R Outage Alerts		

EMERGENCY RESPONSE PROVIDERS AND RESOURCES

The Village of Nyack
The Village maintains an Emergency Operations Plan that designates roles for officials and staff in preparing and mobilizing for disasters. The plan calls for the mayor or other designated Chief Emergency Officer to assess all information received from any/or all town or village officials, the Town of Orangetown Police Department (OPD), Village of South Nyack / Grandview Police Department, Village of Piermont Police Department, New York State Police, Nyack Fire District, all Local EMS agencies, and the Rockland County Office of Fire and Emergency Services. The CEO may declare an Emergency (Disaster) after all information is assessed.

The Village of Nyack Emergency Response Team The Village's Emergency Response Team consists of the Mayor, Deputy Mayor, Village Administrator, Assistant to the Village Administrator, Department of Public Works Supervisor, Building Inspector, Village Attorney, Village Clerk, Fire Inspector, Chief Water Operator, Nyack Fire Chiefs, Goosetown Communications, Orange and Rockland Utilities. The Team commits to addressing the needs identified in this assessment by keeping the Nyack Emergency Operations Plan and checking for updates annually.

Rockland County Office of Fire & Emergency Services
https://www.rocklandcountyny.gov/departments/fire-emergency
responds to natural disasters such as snowstorms, floods, and hurricanes; technical disasters such as chemical spills; and hazardous materials incidents. We provide 911 service for the residents of Rockland County, where they dispatch fire companies and ambulance squads.

Rockland County Department of Health
https://www.rocklandcountyny.gov/departments/health
Mission Statement – The mission of the Rockland County Department of Health is to protect and promote optimal health for all residents. We envision a safe, healthy county for our residents to live, work and play, and where everyone has an equal opportunity for a healthy and productive life. Response resources include:

Rockland County Task Force on Water Resources Management
https://www.rocklandcountyny.gov/departments/health/environmental-health/task-force-on-water-resources-management
The Rockland County Task Force on Water Resources Management's mission is to develop a County Water Plan that ensures a safe, long-term water supply for Rockland County that incorporates sustainability, demand-side principles and conservation. It shall assemble, examine, and investigate relevant data, further County goals regarding protection of floodplains, woodlands, and wetlands, increasing groundwater supply, reducing storm water runoff, and preventing flood damages to residents and businesses. The Task Force shall also develop education and outreach programs, seek funding opportunities, and report its findings, conclusions, and recommendations to the Legislative and Executive branches of County government.

EMERGENCY RESPONSE PROVIDERS AND RESOURCES

The Task Force Water Conservation Education Program includes public presentations on Rockland-specific water data and education. Some of those presentations include discussions on the impacts of climate change on water systems and access, in addition to water conservation education. These presentations are tailored to the audience. We would be more than happy to collaborate on public presentations and sharing resources as needed.

Orange & Rockland Utilities
Orange & Rockland coordinates with all municipalities in emergencies involving power outages and provides emergency alerts and special programs to customers with special needs. The company's How to Prepare for a Power Outage webpage includes information on signing up for text alerts and the Life-Support Equipment Program, and a home preparation checklist.

Town of Orangetown Office of Emergency Management Committee
https://www.orangetown.com/office-of-emergency-management-committee/
The mission of the Orangetown Office of Emergency Management is to maintain a high level of planning and preparedness, to protect the citizens of Orangetown, to reduce loss of life, protect important assets, and reduce any disruption or destruction to local commerce and institutions; all while assisting and supporting the town government and emergency services with preparing, responding and recovering from a disaster.

To accomplish this task, the Office of Emergency Management will identify personnel and institutions in the community that can play a key role in improving Orangetown's response to major incidents or disasters and will maintain open communications with these entities. The Office of Emergency Management will assist in the education of the public, town employees and emergency services about emergency preparedness. The Office of Emergency Management will collect and disseminate emergency information as well as liaison with the Rockland County Office of Emergency Management and other agencies as needed to accomplish the stated mission

Nyack Fire Dept https://www.nyackfire.org/
The Nyack Fire Department provides 100% volunteer fire service to the villages of Upper Grand View, South Nyack, Nyack & Upper Nyack in Rockland County, NY. The District maintains 6 fire stations housing 8 fire apparatus, 1 marine unit, and the high angle rescue team. The District is administered by 5 publicly elected commissioners, who oversee the annual budget, including apparatus maintenance, fire station maintenance, firefighting equipment purchase & maintenance, as well as OSHA & NFPA compliance.

Nyack Community Ambulance Corps https://www.nyackems.org/
Nyack Community Ambulance Corps is a volunteer organization that responds to emergency calls in the Village of Nyack. Members range from young high school students in theYouth Corps, to men and women aged 60 and older. Ongoing CME (Continuing Medical Education) classes and drills keep members certified and up to date in every aspect of emergency care.

Orangetown Police Department https://www.orangetown.com/groups/department/police/

Montefiore Nyack Hospital
The hospital conducts a Vulnerability Assessment and updates its Comprehensive Emergency Plan annually. Top vulnerabilities can vary from year to year. The hospital maintains redundancy in communication systems in case of loss of power and remote connections. A new

EMERGENCY RESPONSE PROVIDERS AND RESOURCES
generator to be installed in 2026 will enable the hospital to provide air conditioning to patients in the case of a power outage. The hospital organizes webinars, distributes a community newsletter and coordinates other outreach to promote public health and commits to collaborating with Nyack on outreach outlined in the plan.
Nyack Public Schools District -Wide Emergency Response Plan details the protocols addressing emergencies.

NYACK BUILDINGS & CRITICAL INFRASTRUCTURE

The chart below provides information about publicly and privately owned buildings, and critical infrastructure relevant to adaptation planning.

Nyack Buildings/Infrastructure List	
Village Hall 9 North Broadway, Nyack	The building is not vulnerable to flooding. It has a mobile generator hookup and is used as a base of operations in emergencies. It is not appropriate for use as a cooling center. A new roof, energy efficiency heat pump HVAC, new windows and rooftop solar installation are planned for 2025.
Department of Public Works (DPW) 63 Catherine St., Nyack	Flooding at DPW has been mitigated. It has a generator hookup for mobile generators kept at DPW.
Jackson Hose #3 / Chelsea Hook & Ladder #2 63 Catherine Street, Nyack	The Village of Nyack owns the building that is the current home of Chelsea Hook & Ladder #2.
Highland Hose Co. #5 288 Main Street Nyack	
Jackson Engine Co. #3 13 Park Street Nyack	
Nyack Senior Center 90 Depew Ave, Nyack	The Senior Center is one of the buildings that has been designated as a cooling center. There are no specific plans in place for operating it in this way. It has a generator hookup for mobile generators.
Nyack Head Start 85 Depew Ave, Nyack	The Village of Nyack owns the building occupied by Nyack Head Start.
Nyack Water Plant Rte. 59 West Nyack	The plant has a permanent diesel generator. The Village plans to design and construct a new Granular Activated Carbon (GAC) absorption system for PFOA and PFOS removal in order to meet New York State's Maximum Contaminant Levels. The new treatment system will be housed in a newly constructed building approximately 2,150 SF in size. The new treatment facilities will include carbon vessels, a below grade clear well, associated pumps, and electrical equipment. Additional site work includes modification to the existing flood wall onsite, construction of new walkways, a gravel driveway, blowoff pit, and piping, and restoration of an existing gravel

Nyack Buildings/Infrastructure List

	driveway. A new, 3,500-gal emergency diesel generator (750kW) will replace the existing emergency generator and is sized to be able to run for 3 days.
Sewer Pump stations By Nyack Marina and by 101 Gedney	These stations are critical infrastructure. They are not vulnerable to projected sea level rise, but are prone to overflow during heavy rain and flooding.
Montefiore Nyack Hospital 160 N Midland Ave, Nyack,	Nyack Hospital experienced severe flooding in the past and is planning to install hydraulic flood barriers as well as a generator that enables continued operations during a power outage. The new generator will allow the hospital to provide air conditioning as well as improve heating and lighting during outages. The generator and floodgates are expected to be installed by the end of 2026. Longer term, the hospital is working with the Nyack Water Department, Veolia and Rockland County to assure access to potable water in the case of emergencies related to infrastructure or contamination. The hospital employs energy efficiency measures to decrease demand.
Waterfront Private Properties	Parking garages in these buildings flood during storm tides. Residents move their cars. The Gedney St. parcel development plans include consideration of impacts on proposed building and public park space. Nyack Boat Club and Nyack Yacht Club – made substantial repairs and implemented improvements since Superstorm Sandy.
Multi-family Housing	Nyack has a large concentration of rental housing at Nyack Plaza, Tallman Towers, and Depew Manor. Some of these buildings have community rooms with AC. The Plaza and Depew Manor both have community rooms with AC. Other housing complexes include Rockland Gardens, on Sickles Ave, and Rose Gardens on Sixth Ave, Waldron Terrace and Warren Hills, and the apartments at the top of Sickles Ave by the Thruway entrance.
Nyack Library	The library does not have a backup generator. However, the facility may serve as a refuge during periods of extreme heat or cold, as it is equipped with both air conditioning and heating systems
Nyack Center 58 Depew Avenue	The Center has access to a generator, which they need to run a sump pump. The building does/does not have hookup to operate all electrical systems on a mobile generator.
Voting locations	Nyack Library, Nyack Senior Center, St. Ann's
Food Markets	Nyack Fresh Market is a large market in downtown Nyack. It does not have backup power but has hookups for a generator and a vendor on call.
Gas stations	The Mobile station on Rte.59 and the Sunoco station on South Broadway were equipped after Sandy for operating generators.
Traffic Signals	Most have generator hookups.. They are needed mostly at 9W/Rte 59.

TIMELINE FOR IMPLEMENTATION

The following list indicates how to phase the implementation of the actions outlined in the preceding sections. Phase one actions will be addressed in 2026. Phase 2 actions are projected for completion by the end of 2027. Convening the local emergency management team is a top priority for the first phase, as is improving the Village website resources on emergency planning and response for the community. These initial projects will lay the groundwork for the coordination among the Village and community partners for ongoing collaboration.

Action	Phase
Review and update Nyack Emergency Plan	1
Convene *Climate Resilience Team* of key village, town and county stakeholders fall 2026	1
Update and Expand Nyack's Response and Preparedness information on the Village website.	1
Clarify/publicize early warning system options for the public	1
Encourage backup generator installations.	2
Assess/Plan for backup power needs at key community sites	1
Host emergency preparedness workshops	1
Coordinate with the partners on outreach about heat, disease, water, flooding DOH WTF Hosp	1
Establish/expand cooling and warming center options. Cooling Center Action	2
Plan for emergency shelters	2
Create a heat emergency plan	2
Develop tools and programming for increasing weatherization and efficiency upgrades and heat pump conversions.	2
Seek funding and technical support for the above building improvements.	2
Map opportunities and develop plans and outreach to property owner, seek funding for reducing impervious surface by removing paving to add more planting.	1
Update tree inventory and management plan	1
Apply for/implement tree maintenance grant	1
Water Plant support --Investigate funding sources and cost saving measures, including Demand Response.	1
Water Plant support-Acquire temporary barriers to protect the water plant from flooding if riverbank berms are overwhelmed.	1-2
Continue to maintain and improve the storm sewer system.	ongoing
Complete mapping of MS4 system.	
Obtain a HydroVac truck.	1-2
Install new flushers and aeration devices.	1-2
Continue with the collaboration with Nyack Hospital and others to ensure redundancy in hospital water quality/supply.	ongoing
Support efforts at waterfront properties to plan and implement measures to improve resilience.	ongoing

RESOURCES

NATIONAL, STATE, AND REGIONAL REPORTS

New York State Adaptation and Resilience Plan

Northeast Chapter of the Fifth National Climate Assessment

Climate Projections for the Hudson Valley Cornell CALS

NYS Climate Impacts Assessment

NOAA State Climate Summaries NY 2022

NYS Dept Of Health Climate Change and Health Program

Climate and Health Workshop Slides 2024

NYS Association of County Health Officials website

Changing Climate, Changing Forests: The Impacts of Climate Change on Forests of the Northeastern United States and Eastern Canada

TOOLS AND GUIDANCE

A Start Guide For Addressing Flooding and Erosion in Hudson Waterfront Communities Hard copy available from Nyack Library and Village of Nyack Building Department.

Neighborhoods at Risk

The Climate Explorer

Flood Risk Communication Workshop Presentation

Handouts and templates from the above workshop

US Climate Resilience Toolkit

LOCAL REPORTS

Rockland County Hazard Mitigation Plan

Rockland County Flood Mitigation Report-Hackensack River

RC Hazard Mitigation Plan Vol II. Section 9 Nyack

Orange & Rockland Climate Change Resilience Plan

Orange & Rockland Nyack Public Workshop Presentation

Nyack 2030 Climate Action Plan

EXTREME HEAT

NYS Extreme Heat Action Plan

NYS DEC Extreme Heat website

NYS Storymap Extreme Heat and Health in New York State

NYS Home Energy Assistance-Cooling Assistance Benefit

Climate Change and Heat-EPA

Climate Smart Communities Cooling Centers Planning Guidance Document

Climate Smart Communities Heat Emergency Plan Guidance Document

What Happens When Extreme Heat and Air Pollution Collide

Air conditioning heats the climate. So how can I keep cool?

EXTREME WEATHER

NOAA Storm Events Database

FEMA Risk Map
FEMA Floodsmart webpage

Tool - Projecting Extreme Precipitation Del. River Basin

StormReady

Rockland County Flood Mitigation Reports

New York State Flood Risk Management
Guidance for Implementation of the
Community Risk and Resiliency Act

Delayed longer term effect of hurricanes

Storm Mitigation Planning - Urban Forest

Association of State Floodplain Managers webinar Building and Sustaining Relationships and Community Networks

DISEASE

NYS DOH Presentation--Communicable Disease and Climate Change

How Harvard will Teach Future Doctors

PREPAREDNESS

Ready Rockland for elderly etc.

FEMA Are You Ready Guide

FUNDING

Building Resilient Infrastructure and Communities
Drinking Water State Revolving Fund

EPA Water Infrastructure Finance and Innovation Act

EPA Water Technical Assistance

Watershed Protection and Flood Prevention Operations (WFPO) Program

NYS DEC Non-Agricultural Nonpoint Source Planning and MS4 Mapping Grant
NYS DEC Water Quality Improvement Project Program

NYS DEC Resilient Watersheds Grant Program
NYS DOS Inland Flooding and Local Waterfront Revitalization Program Implementation Projects
YS DOT Transportation Advancement Program,
FEMA Flood Mitigation Assistance Grant Program