Hudson River Estuary Program Climate Resilience Program

Neil Bettez

Climate Resilience Program Coordinator
Hudson River Estuary Program

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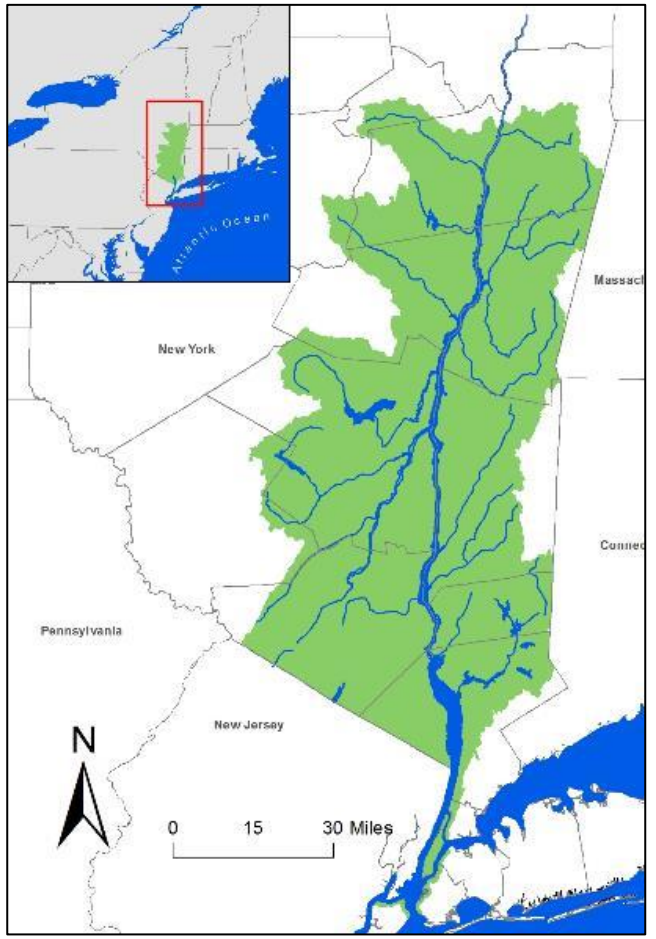
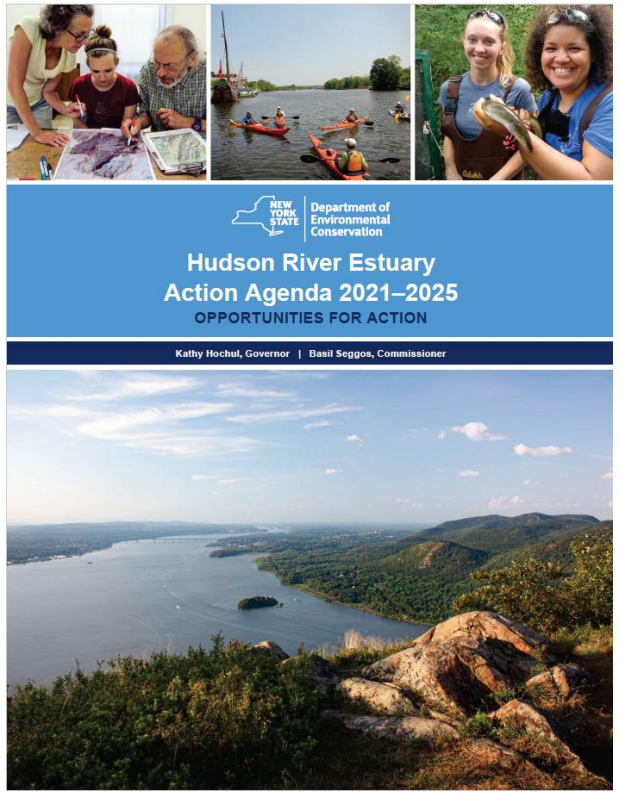
Hudson River Estuary Program

Helping people conserve, restore, and enjoy the Hudson River

- Fish, wildlife, and habitats
- Clean water
- Healthy streams
- Conserved natural areas
- Education
- River access
- Climate Adaptation and Resilience





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Climate Change Effects and Impacts

Climate hazards

Trends in our climate

- Increasing temperatures

- Changing precipitation patterns

- Rising sea level

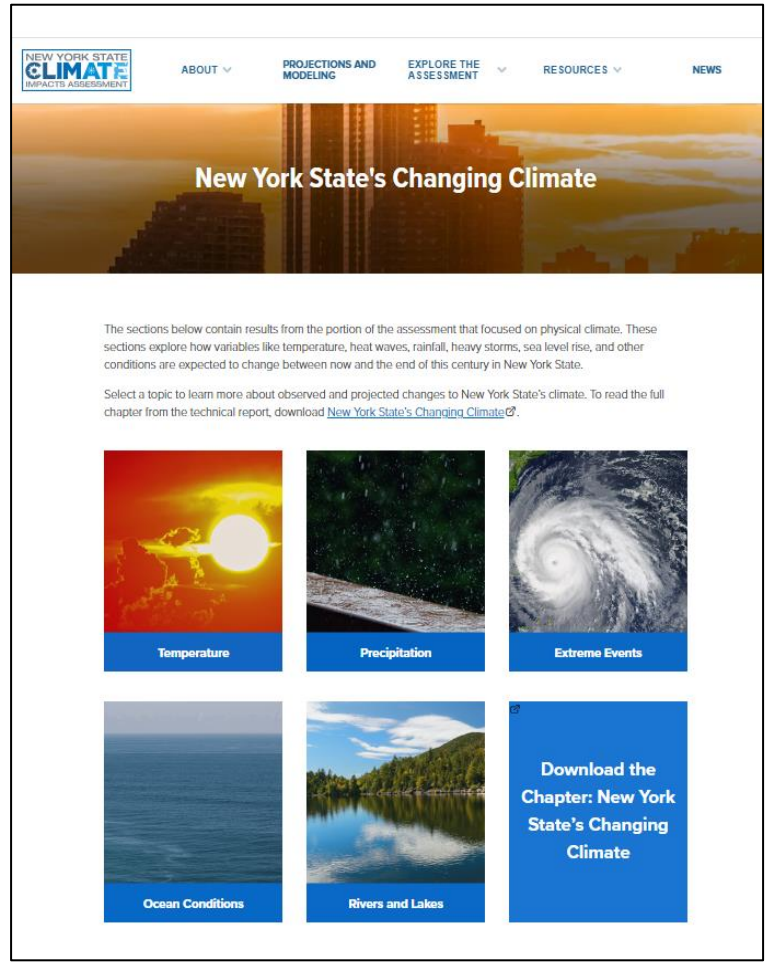
Climate risks

Impacts to humans

- Heat waves

- Short-term drought

- Flooding



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The Hudson River Estuary Climate Team helps communities plan and take actions that build community adaptation and resilience to climate change.

Tackling Climate Change requires communities undertake both mitigation and adaptation/resilience actions.

The Hudson River Estuary Climate Team helps communities plan and take actions that build community adaptation and resilience to climate change.

What is climate adaptation and resilience?

Mitigation is reducing the impact of climate change on our planet and involves actions which remove or reduce greenhouse gas emissions, including:

- transitioning to low carbon sources of energy;
- using emerging technologies to reduce or remove carbon dioxide from the atmosphere;
- protecting natural carbon sinks, such as forests and oceans, which remove carbon dioxide from the atmosphere; and
- changes to reduce our collective carbon footprint, such as using changing the way we travel.

Clean Energy Communities (CEC) Program

- Focused on energy use
- Short list of high-impact actions
  - 1 of 10 is becoming a Certified CSC
- Complete actions to access CEC grants

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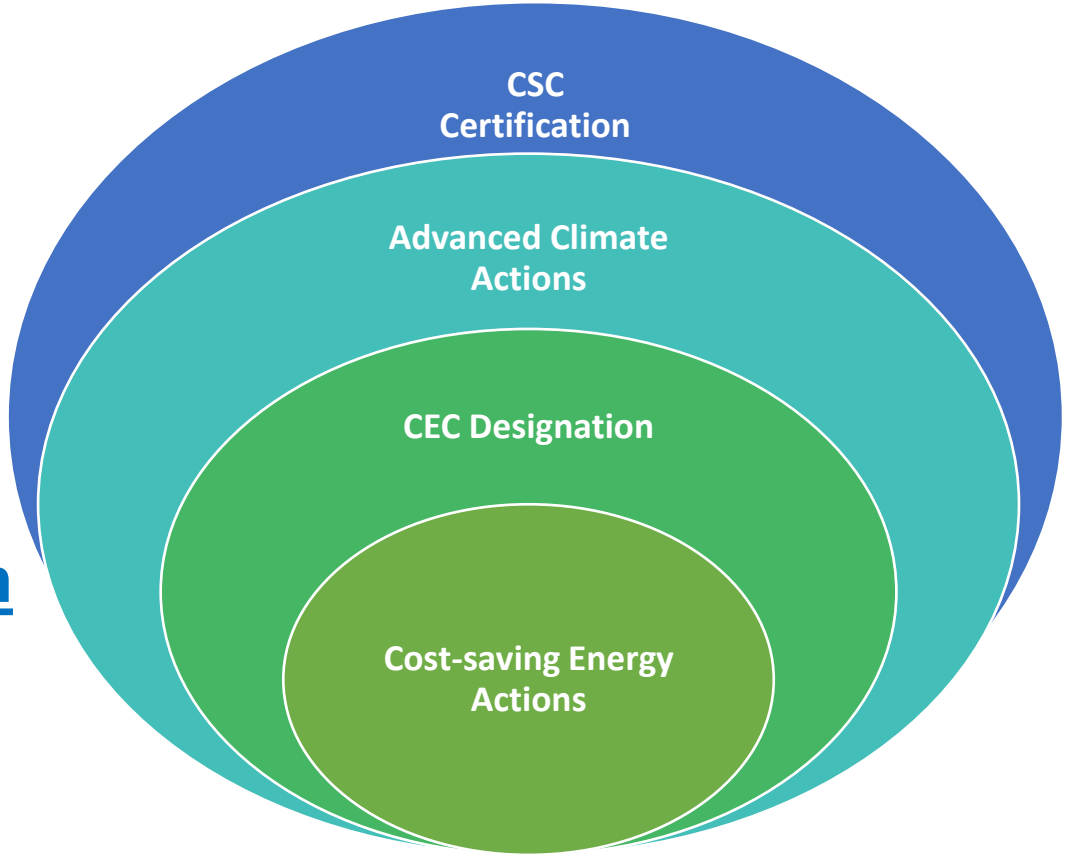

Climate Smart Communities (CSC) Certification

- Comprehensive climate action program
- 12 actions, 100+ pledge elements (PE)
- Improve score on CSC grant applications

NEW YORK STATE
Climate Smart Communities

The Hudson River Estuary Program can assist communities to implement climate adaptation actions that earn points toward Climate Smart Communities (CSC) Certification.

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The Hudson River Estuary Climate Team helps communities plan and take actions that build community adaptation and resilience to climate change.

What is climate adaptation and resilience?

Adaptation means adjusting to the effects of change and involves understanding the adverse effects of climate change and taking action to prepare for, adapt to, and minimize those effects.

The Hudson River Estuary Climate Team helps communities plan and take actions that build community adaptation and resilience to climate change.

What is climate adaptation and resilience?

Resilience means preparing for the impacts of climate change and building capacity to recover quickly from those impacts.

The Hudson River Estuary Climate Team helps communities plan and take actions that build community adaptation and resilience to climate change.

What is climate adaptation and resilience?

Adaptation and Resilience actions help communities adjust, prepare, respond and recover from the expected risks and hazards.

- Adaptive waterfront planning and design for sea level rise;
- Taking action to protect buildings and infrastructure from slow and rapid onset weather events such as culvert right sizing, zoning changes.
- Increasing green spaces in urban areas, restoring wetlands, adding green infrastructure to increase flood absorption capacity; and
- Planting trees to help manage extreme heat in urban areas

The Hudson River Estuary Climate Team is here to support communities on their Adaptation and Resilience journey

- Recognize that adaptation is complicated, especially for smaller municipalities and disadvantaged communities, which have limited resources to tackle big issues
- Explore range of adaptation pathways
- Recognize opportunities to address other issues while adapting to climate risks
- Build a regional culture of adaptation and resilience
- Populations disproportionally impacted by environmental hazards must be included

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CSC Certification Pledge Elements (PE) within Certification Action #7

1. PE7 Action: Climate Vulnerability Assessment
2. PE7 Action: Evaluate Policies for Climate Resilience
3. PE7 Action: Climate Adaptation Plan
4. PE7 Action: Climate-resilient Hazard Mitigation Plan
5. PE7 Action: Heat Emergency Plan
6. PE7 Action: Shade Structures Policy
7. PE7 Action: Cooling Centers
8. PE7 Action: Conserve Natural Areas
9. PE7 Action: Watershed-based Flood Mitigation Plan
10. PE7 Action: Design Flood Elevation & Flood Maps
11. PE7 Action: Freeboard Policies
12. PE7 Action: Green Infrastructure
13. PE7 Action: Culverts & Dams
14. PE7 Action: Riparian Buffers
15. PE7 Action: Strategic Relocation
16. PE7 Action: Nature-based Shorelines
17. PE7 Action: National Flood Insurance Program Community Rating System
18. PE7 Action: Watershed Plan for Water Quality
19. PE7 Action: Source Water Protection
20. PE7 Action: Water Conservation & Reuse
21. PE7 Action: Water-smart Landscaping

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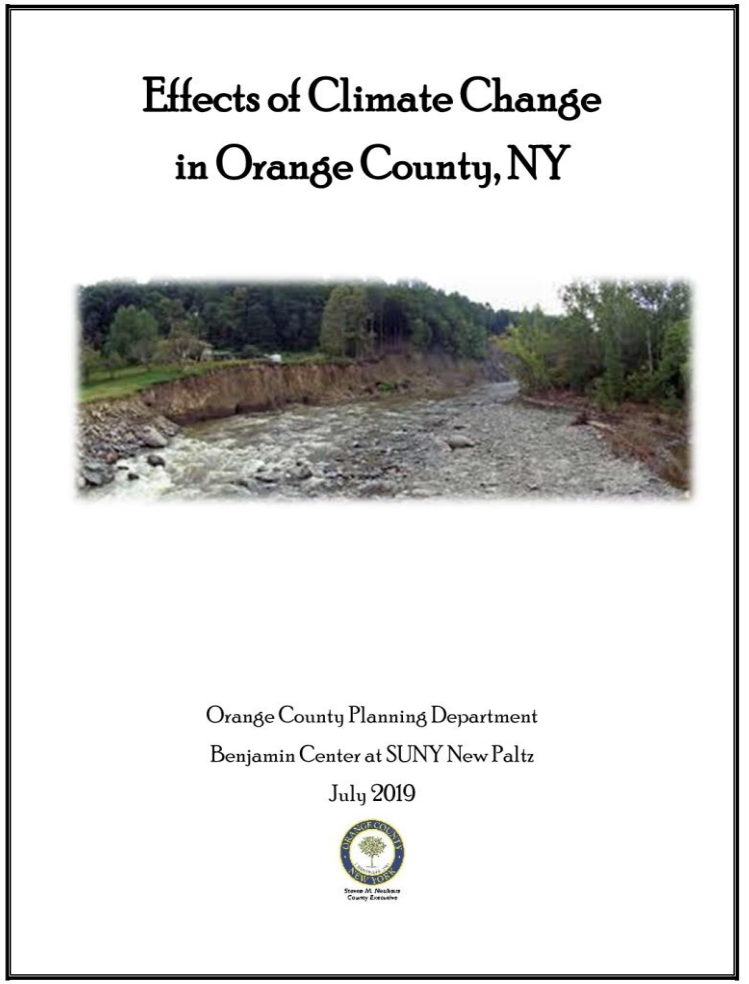
7. Enhance community resilience to climate change.

Pledge Element (PE) 7 Action: Climate Vulnerability Assessment (4 Points)

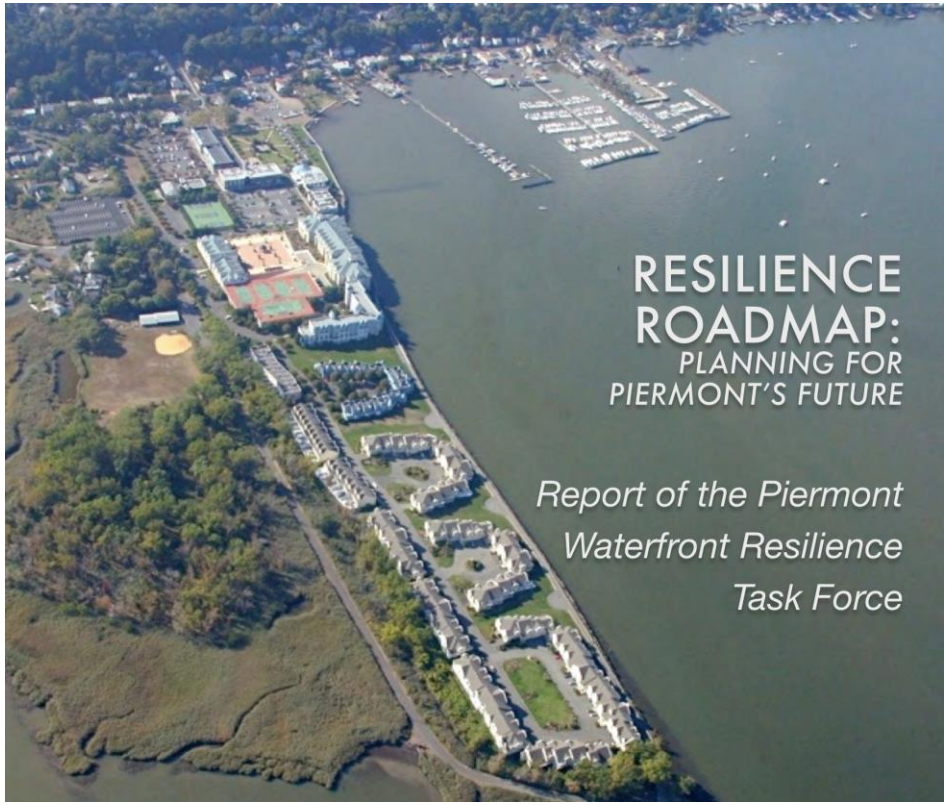
- Involves identifying, analyzing and prioritizing the effects of climate hazards and risks, like flooding, heat stress or short-term drought.
- Hazards and risks are physical events or trends that could affect either a segment or the entire community, specific areas, assets, or entire systems (for example, transportation or energy infrastructure) including the local economy and industries.
- A vulnerability assessment process should consider diversity, equity, inclusion and justice (DEIJ) from start to finish since vulnerabilities will likely lead to varying risks across the diverse populations in your community.



7. Enhance community resilience to climate change.

Pledge Element (PE) 7 Action: Climate Adaptation Plan (3-15 Points)

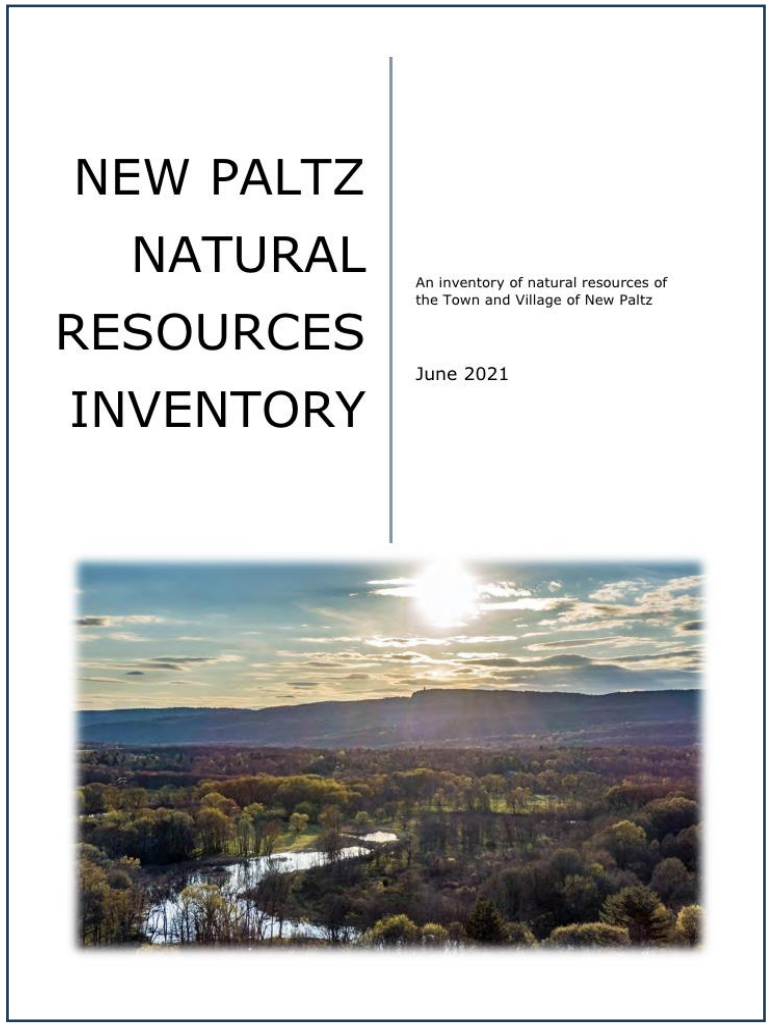
- Address vulnerabilities identified in your Climate Vulnerability Assessment
- Climate adaptation plan outlines a vision and set of strategies to improve a community's resilience to climate change based on its local physical, economic, and social vulnerabilities.
- Builds capacity to evolve with changing conditions and protect resources for generations to come.



6. Implement climate-smart land use.

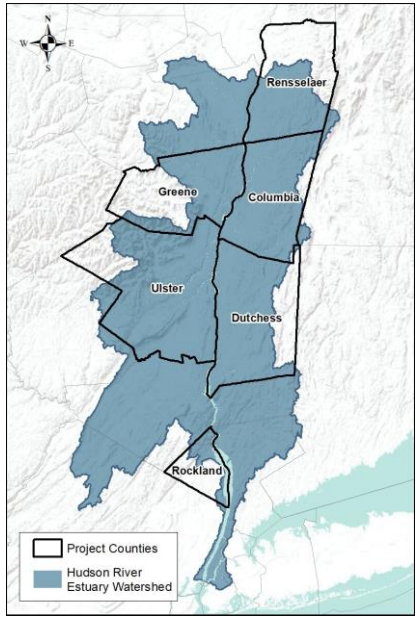
Pledge Element (PE6) Action: Natural Resources Inventory (NRI) (8-10 Points)

- Inventory of the natural resources to provide a foundation for municipal land-use and conservation planning.
- Identify priorities and strategies for protecting important natural features, updating municipal plans, developing ordinances or overlay zones, and reviewing development projects.
- Certain natural, undeveloped areas serve as a buffer against some types of extreme weather that are increasing with climate change; for example, wetlands often have the capacity to absorb floodwaters and, as a result, they help prevent flood damage to infrastructure in developed areas.



Partners

We work with Hudson Valley Regional Council Climate Action Planning Institute Adaptation (CAPI Adapt) in Dutchess and Westchester Counties to partner with municipalities and complete PE7 Resilience Actions (Climate Vulnerability Assessment, and Climate Adaptation Chapters for the municipality's Climate Action Plan from the NYS Climate Smart Communities (CSC) program.



We also work with five Cornell Cooperative Extensions (CCE) in six counties (Columbia, Dutchess, Greene, Rensselaer, Rockland, Ulster,) that partner with municipalities to complete PE7, PE9 Resilience Actions (Climate Change Education) from the NYS Climate Smart Communities (CSC) program. These actions include culvert management plans, updating local policies, emergency flood guides for residents and businesses, incorporating resilience into comprehensive planning.

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Hudson Valley Flood Resilience Network

The Hudson Valley Flood Resilience Network (FRN) connects local governments who are committed to taking actionable steps to manage current and future flood risk by:

- Convening communities for peer learning on projects and strategies
- Coordinating local and regional efforts
- Sharing opportunities for funding and training
- Facilitating communication between local governments and regional partners
- Communicating on challenges and barriers as a unified voice
- Catalyzing flood adaptation actions

https://www.hvfloodresiliencenetwork.org/

Flooding at Esopus Meadows Preserve in the Town of Esopus on December 23, 2022.

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Join Flood Resilience Network (FRN)

Members: Representatives from town, village, city, and county governments in the Hudson River estuary watershed

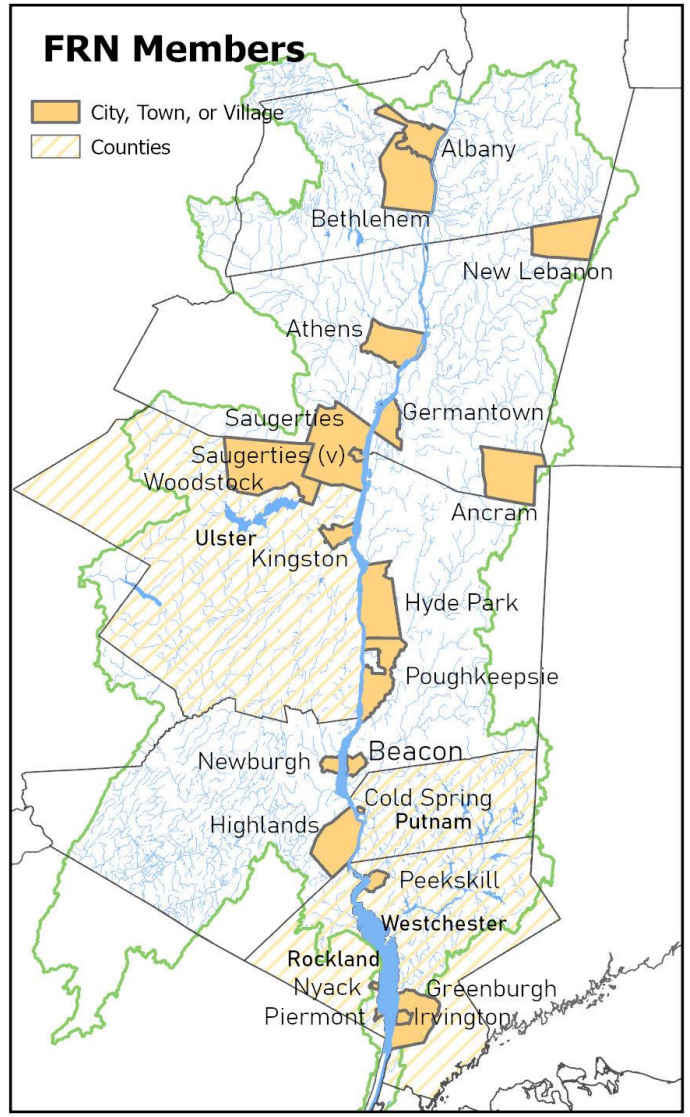
- 38 representatives from 25 municipalities

Partners: Staff from agencies, regional organizations, or private-sector consulting firms working on flood resilience

- Contribute pro-bono time, expertise, capacity, and resources to advance Network Members' flood resilience goals
- 35 representatives from 28 organizations

Members and Partners: notified about upcoming events.

- https://www.hvfloodresiliencenetwork.org/join



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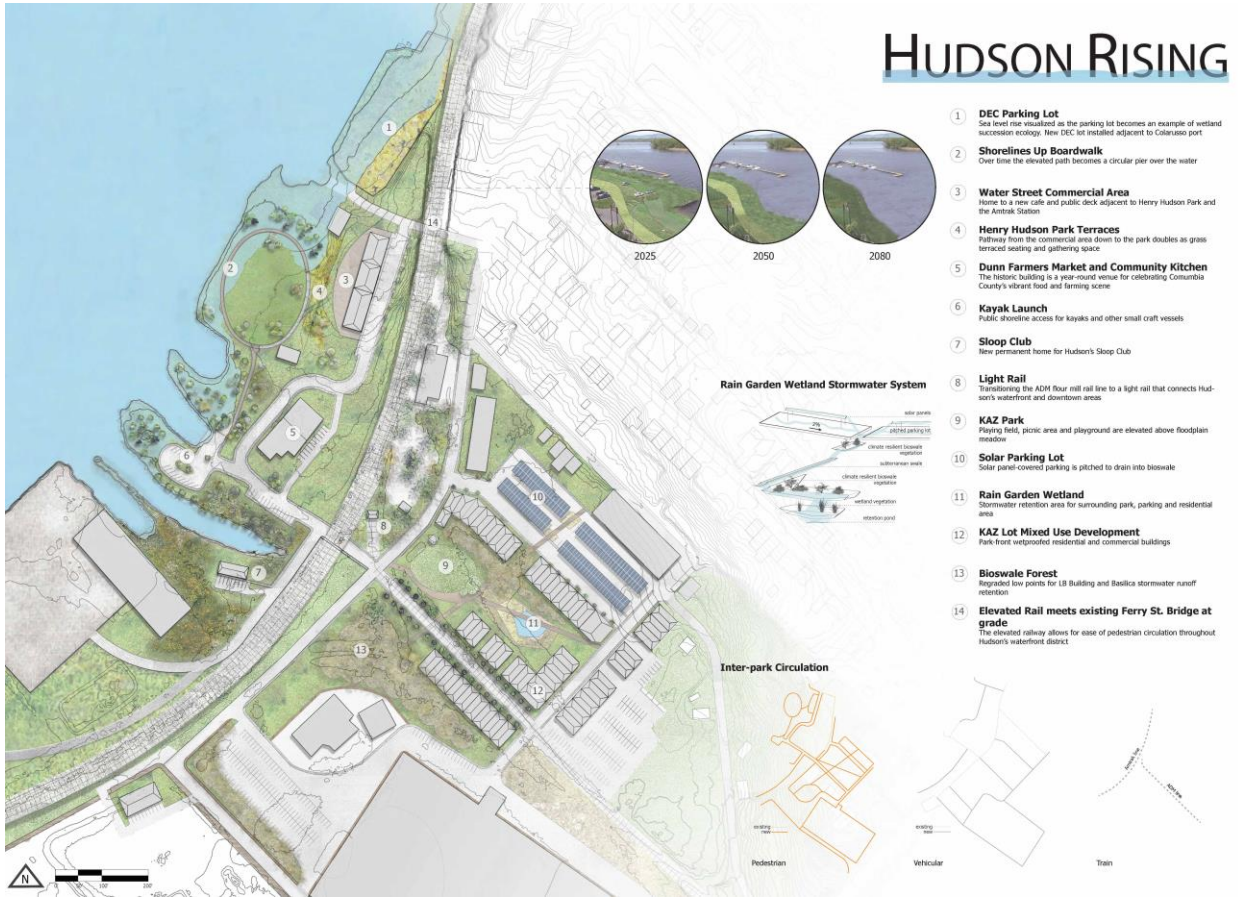
Climate-adaptive Design (CaD)

CaD Phase I: Award-winning collaboration with a Cornell University landscape architecture studio class.

Students produce concept design boards and educational materials based on public input, inspiring communities to reimagine more climate resilient and connected waterfront areas.



CaD Phase I Concept for City of Hudson by Sara Hirsch, Kyle Sitzman, and Alice Sturm, 2016

NEW YORK STATE WATER RESOURCES INSTITUTE
Cornell University

Cornell University

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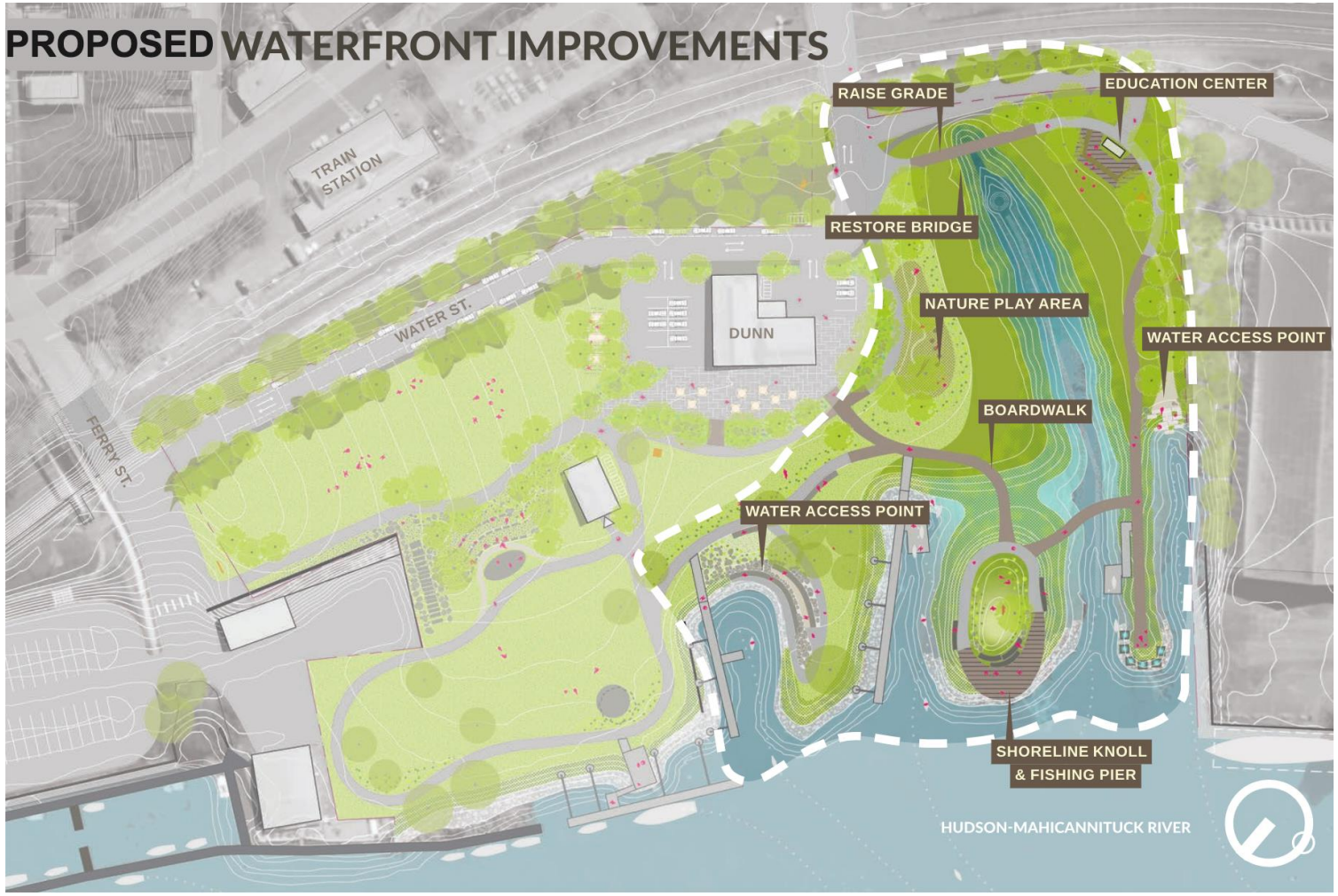
City of Hudson Climate Adaptive Waterfront Park

2021: $125k grant awarded to City of Hudson for Phase II: Advancing conceptual designs with community engagement and developing preliminary design alternatives with cost estimates.

2024: $200k grant awarded to City of Hudson to develop final engineering plans and bid documents for construction.



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Sustainable Shorelines

Promoting strategies that preserve or enhance shoreline ecology and natural benefits while *also* meeting engineering needs for stabilization in a changing climate.

https://hrnerr.org/sustainable-shorelines/

Dockside Park, Cold Spring

Demonstration Site Network

Hudson Estuary Trees for Tribs

Providing free trees and shrubs for landowners to plant along the tributary streams (“Tribs”) of the Hudson Estuary.

Trees for Tribs webpage

Falling Waters Preserve, Glasco, Ulster County

Removing Barriers, Reconnecting Streams

Improving stream connectivity for fish and aquatic organisms reducing local flood hazards through:

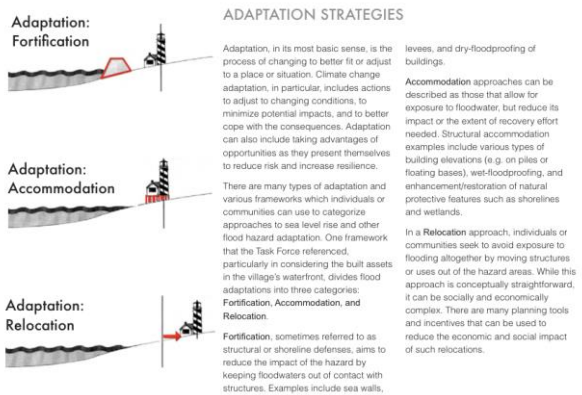
- Culvert assessment, prioritization, and replacement
- Dam removal reconnaissance, planning, and implementation

https://cals.cornell.edu/water-resources-institute/watersheds/hudson-river-estuary/watershed-management/aquatic-connectivity-and-barrier-removal

Assistance Available for Climate Resilience

The Hudson River Estuary Program and our partners provide multiple opportunities for communities to receive assistance in improving their climate resilience by supporting our natural life support systems, like floodplains, forests and wetlands, in the valley. For example:

- **Climate-adaptive Design (CaD) Studio** +
- **Receive Support and Recognition: Climate Smart Communities** +
- **Climate Resiliency Partnership: Helping Communities Complete Adaptation Actions** +
- **Grants Relating to Climate Adaptation** +
- **Green and Natural Infrastructure to Manage Stormwater** +
- **Conserving Nature in Your Community** +
- **Natural Shorelines to Reduce Flooding and Erosion** +
- **Trees for Tribs to Restore Stream Buffers** +
- **Right-sizing Culverts and Bridges** +



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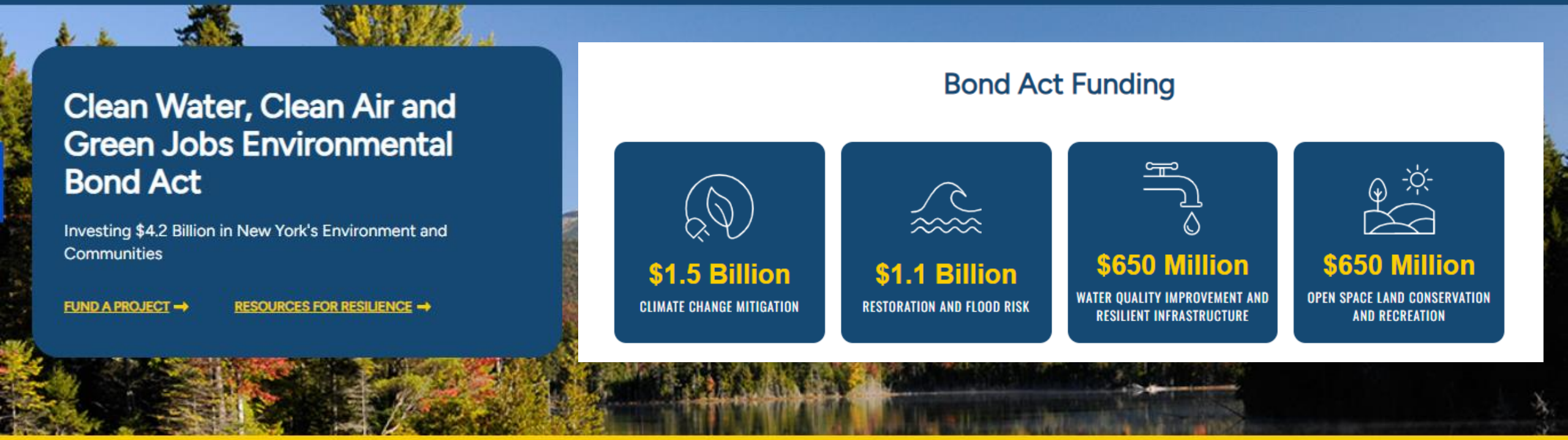
https://dec.ny.gov/nature/waterbodies/oceans-estuaries/hudson-river-estuary-program/climate-adaptive-communities



Clean Water, Clean Air and Green Jobs Environmental Bond Act

Investing $4.2 Billion in New York's Environment and Communities

FUND A PROJECT → RESOURCES FOR RESILIENCE →

Bond Act Funding

$1.5 Billion
CLIMATE CHANGE MITIGATION

$1.1 Billion
RESTORATION AND FLOOD RISK

$650 Million
WATER QUALITY IMPROVEMENT AND RESILIENT INFRASTRUCTURE

$650 Million
OPEN SPACE LAND CONSERVATION AND RECREATION

Stay Updated

Sign up to receive updates on the Bond Act programs and news.

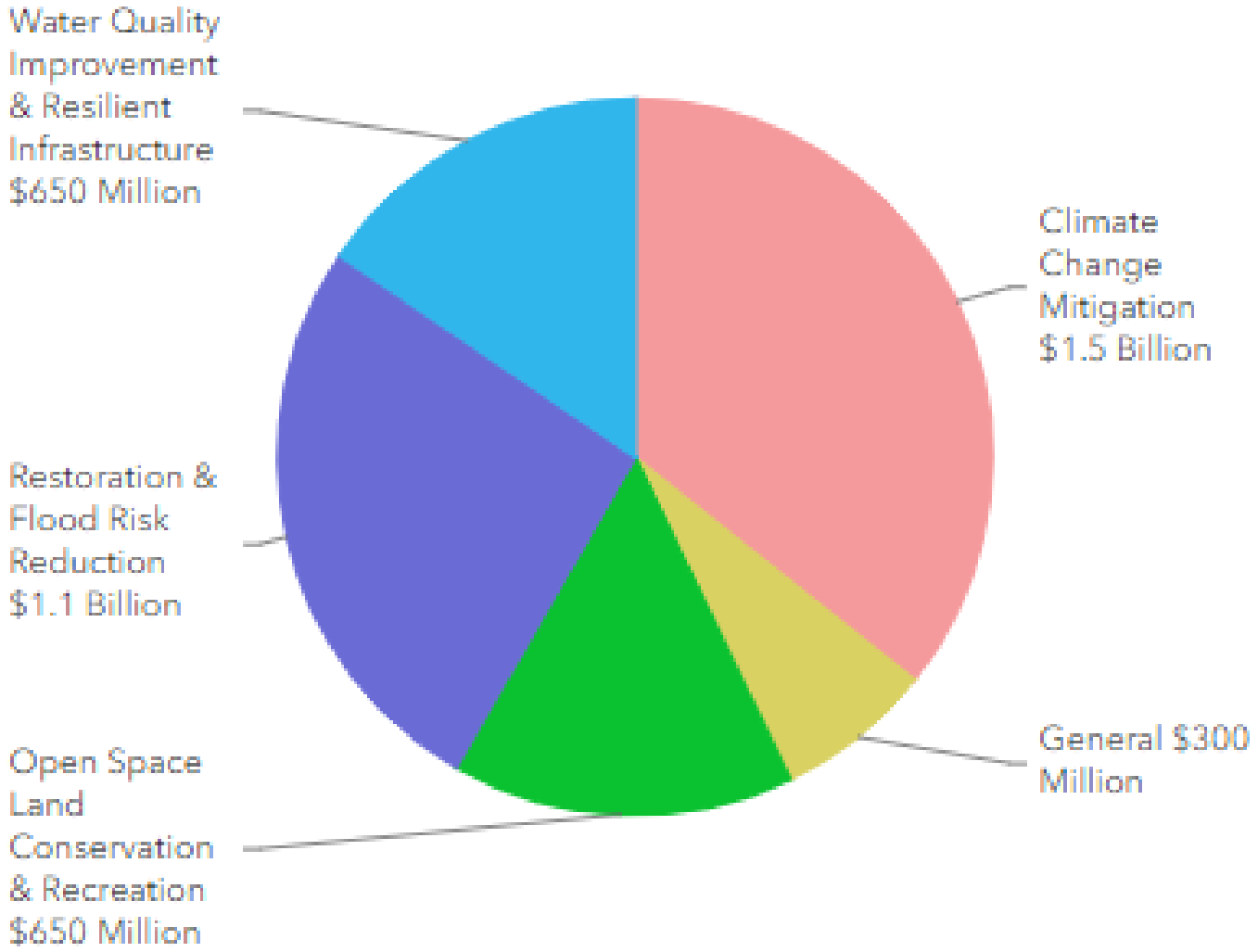
SIGN UP

Overview

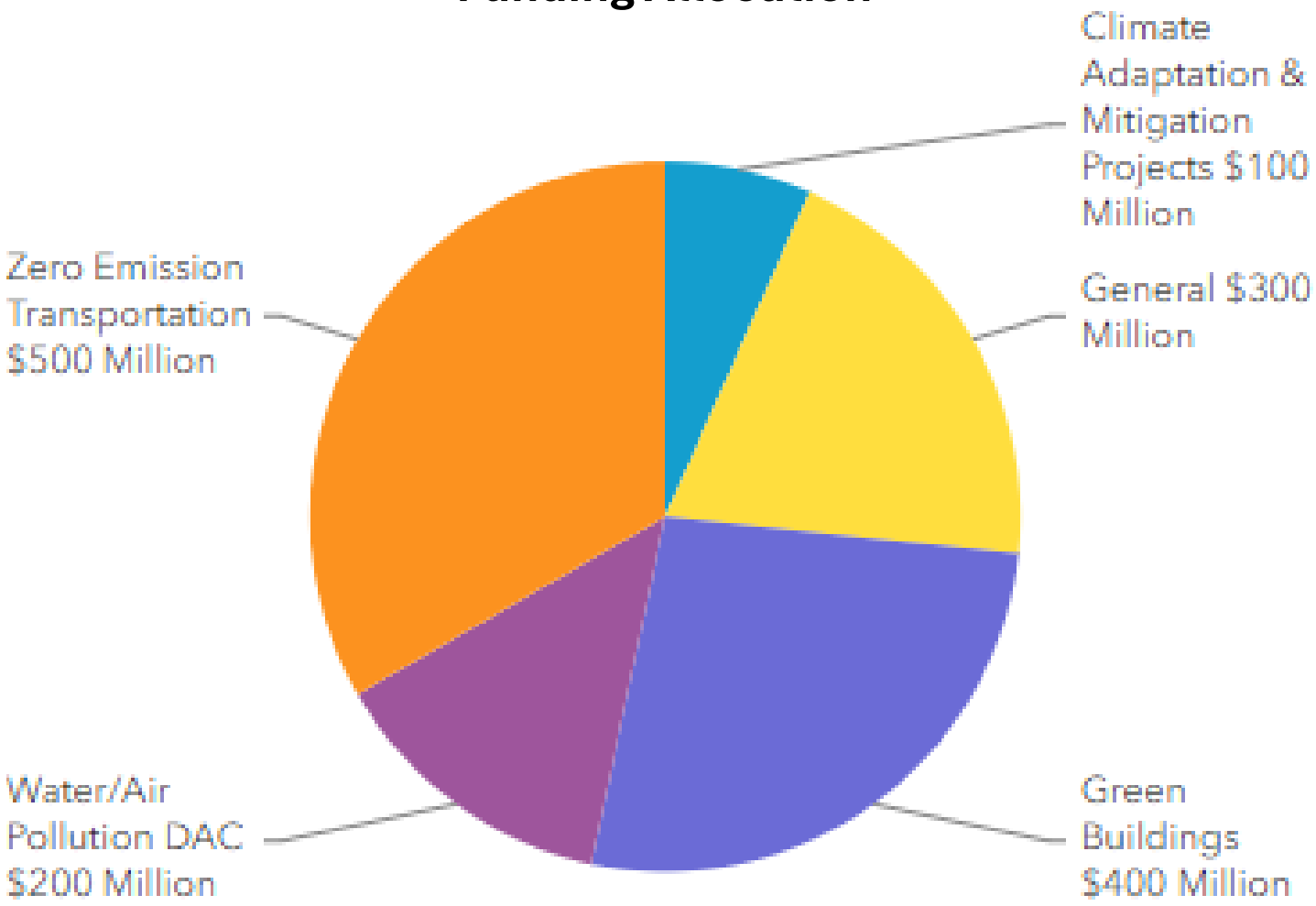
On November 8, 2022, New Yorkers overwhelmingly approved a ballot proposition to make $4.2 billion available for environmental and community projects. State agencies, local governments, and partners can access funding to protect water quality, help communities adapt to climate change, improve resiliency and create green jobs.

Bond Act Funding will support new and expanded projects across the State to safeguard drinking water sources, reduce pollution, and protect communities

Funding Allocation



Climate Change Mitigation Funding Allocation



Climate Change Mitigation Funding Breakdown

Up to $1.5 Billion to Reduce Air Pollution and Fight Climate Change

- Funding will support climate change mitigation projects that increase energy efficiency, reduce carbon emissions, sequester carbon, mitigate methane emissions, and help communities better prepare for severe weather and changing climate conditions.

Not Less Than $100 million to support climate adaptation and mitigation projects through the Climate Smart Communities Program.

$300 million for other projects to combat climate change including:

- Urban forestry - projects such as forest and habitat restoration, for purchase and planting of street trees and for projects to expand the existing tree canopy and bolster community health.
- Projects that reduce urban heat island effects such as green roofs, open space protection, community gardens, cool pavement projects, projects that create or upgrade community cooling centers, and the installation of reflective roofs where installation of green roofs is not possible.
- Projects that utilize natural and working lands to sequester carbon and mitigate methane emissions from agricultural sources, such as manure storage through cover and methane reduction technologies.

Tributary Restoration and Resiliency; River Access

Approximately $1Million in Grant Funding is available for Seven Types of Projects:

Tributary Restoration and Resiliency; River Access

Approximately $1Million in Grant Funding is available for Seven Types of Projects:

Tributary Restoration and Resiliency ($800,000)

- Dam removal: feasibility study, planning, and implementation; and road-stream crossing (culvert) design and right-sizing replacement;

- Stream Crossing (i.e., culvert or bridge): Design plans for mitigation/right-sizing of a single stream crossing (culvert or bridge) or multiple crossings within the same municipality/county.

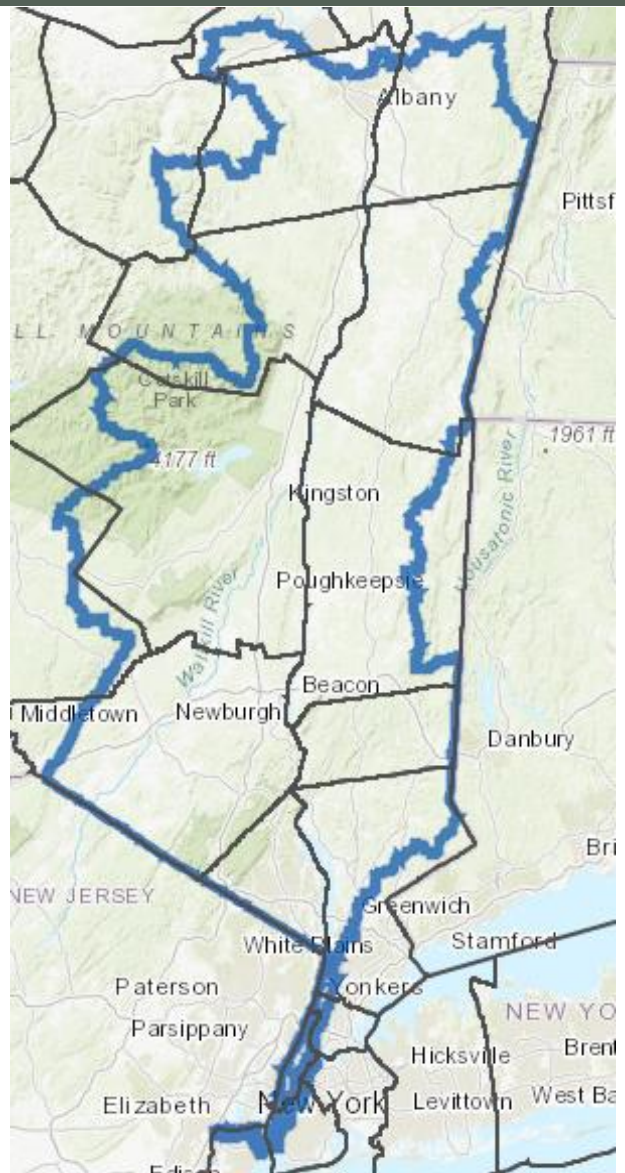
Tributary Restoration and Resiliency; River Access

Approximately $1Million in Grant Funding is available for Seven Types of Projects:

River Access ($200,000)

- Planning and Implementation of Access Site Resiliency to Flooding and Sea-Level Rise: Applicants may apply for planning and/or implementation of resiliency projects at Hudson River and tidal tributary public access sites addressing the hazards of intense storms, flooding, and shoreline loss due to climate change and sea-level rise.

Grants Program And Funding Opportunities For The Hudson River Estuary



The deadline for applications is December 12th, at 3 p.m.

To be eligible, projects must be located within the boundaries of the Hudson River Estuary Program.

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Hudson River Estuary Grants Webinar Series

WEDNESDAY, OCTOBER 9, 2:00 – 3:00 P.M.

Tributary Restoration and Resilience

This series will profile recent projects funded by the Hudson River Estuary River Grants Program. In this webinar, grantees will share successes from their work, lessons learned, and tips for designing an effective project.

The webinar will be recorded and will be available on this page at a later date.

REGISTER

THURSDAY, OCTOBER 17, 2:30 – 3:30 P.M.

River Access

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REGISTER

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