Sea Level Rise Resilience Implementation Learning Group

Final Report to the Hudson River Estuary Program

October 2017

Photos: Jeff Anzevino

The Sea Level Rise Resilience Implementation Learning Group project, funded by the Department of Environmental Conservation's 2015 Hudson River Estuary Grant Opportunity for Local Stewardship Planning, brought together leaders and waterfront resilience task force members from four Hudson River communities (City of Kingston, Village of Piermont, Village of Catskill, and Town of Stony Point)[1] to (1) share their progress in implementing flooding task force recommendations, (2) explore opportunities for additional actions that will increase their flood resilience, and (3) access resources that enable them to make progress on resilience-promoting actions. The project included a series of four workshops hosted over the course of a year by a project team comprising staff from Scenic Hudson, the Consensus Building Institute, the Hudson River Estuary Program, and the City of Kingston (as grantee), and planned with input from participants.

[1] In Kingston, Catskill, and Piermont, the municipal groups that worked on flood resilience planning were called "task forces" and funded by HREP grants, while Stony Point completed its work under the New York Rising Community Reconstruction Plan. For convenience these entities/initiatives, which preceded the Learning Group, are referred to as the "task forces".

PROJECT FOCUS

At the project's outset, the project team reviewed the progress to-date of each community in implementing recommendations from their task force reports. Based on recommendations in each community's report, the project team proposed an array of candidate topics to focus Learning Group sessions under the following broad categories: (1) Emergency Services, (2) Water Infrastructure, (3) Land Use Planning Instruments, and (4) Community Engagement. Based on prioritizations by the four communities, the project team identified the following as more specific areas of overlapping interest among the communities:

- Producing a flood preparedness guide (as exemplified by the Village of Catskill)
- Mapping/digitization of water infrastructure
- Completing assessment/emergency planning for wastewater treatment facilities
- Identifying/mapping green infrastructure opportunities
- Advancing zoning/code updates
- Learning about and implementing community engagement strategies/social media

The Planning Team worked with the four communities throughout the project to design agendas that emphasized areas of overlapping interest. These focus topics were addressed to varying degrees, depending on time constraints and availability of experts and resources. There was also overlapping interest in the topic of shoreline design guidelines, which was not explicitly addressed.

APPROACH

The project team consisted of representatives from the New York State Department of Environmental Conservation Hudson River Estuary Program (HREP)(Grantor), City of Kingston (Grantee), the Consensus Building Institute (consultant) and Scenic Hudson (consultant). This team planned and facilitated the meetings, provided meeting summaries, and in some cases presented meeting content. Throughout the project, the project team also consulted with designated representatives from each of the communities to ensure the focus areas and meeting agendas were relevant and of interest. The project team brought topical experts to the meetings to give presentations, guide exercises, lead discussions, and answer questions.

A total of 19 community members participated in the process: 6 from Kingston, 4 from Catskill, 6 from Piermont, and 3 from Stony Point. All meetings were held in Beacon, NY. Dialogues both within and across the four communities were encouraged, often through a format including 1) a plenary presentation on a topic, 2) breakout into community groups for local discussion/application, and 3) full group discussion/report out from each community. Wherever possible, the project drew on the expertise within each community to foster peer-to-peer learning.

In some instances there were "homework" assignments, either prior to or after a Learning Group meeting, which primarily revolved around information gathering. Project team members engaged with community participants to assist with these assignments in between the Learning Group meetings.

ACCOMPLISHMENTS

Resilience-Building Accomplishments

Flood Preparedness Guide for Residents and Businesses. Based on the successful collaboration of the Village of Catskill and Cornell Cooperative Extension (CCE) to produce a small, informative guide and to distribute it widely to residents and business owners in the floodplain, the remaining communities expressed interest in producing a similar guide. Village of Catskill representatives presented their guide at the first meeting, and the project team followed up with each community during subsequent meetings and between meetings. Sean Carroll, Cornell Cooperative Extension's (CCE) representative asked to work with municipalities to produce the guides, attended the second meeting to answer the participants' questions about information needs and the drafting process.

Piermont is currently finalizing its draft of the guide (which is in review by the village board and emergency management staff/volunteers). Stony Point began assembling materials for submission to CCE. Kingston has expressed interest in producing the guide and is working with its Floodplain Manager, Fire Chief and Code Enforcement Officer to gather the information. Sean Carroll is available to work with the communities on these guides until the end of 2017.

Website updates. Webpages addressing flood resilience were identified as a potentially effective community engagement strategy for all four communities. Liz LoGiudice (consultant for HREP) organized presentations and led discussions on opportunities to use social media and websites, as well as providing examples of effective websites addressing resilience. Between meetings, Liz worked with each community individually to customize the components of a website (or webpages that will be embedded into the municipal websites). Since some content overlaps across communities, Liz has been able to take advantage of such efficiencies and will continue to work with communities individually to customize each website plan and content, aiming to complete the work by the end of the year. Each community would then be responsible for uploading the content and design onto their municipal websites.

Water Infrastructure Mapping. Kristin Marcell is facilitating a pilot collaboration with Dara Mendeloff, GIS specialist at the Center for International Earth Science Information Network at Columbia University, to assist Hudson River waterfront communities in digitally mapping their waste water infrastructure. Following presentations during the Learning Group meetings, each community worked to identify the current state and availability of mapping products for their water infrastructure (also including stormwater and drinking water), which in itself represents an important baseline information-gathering accomplishment. Based on these findings, capacity, and interest, Columbia University and New School undergraduate students in GIS are currently working on mapping and assessing flood risk to manhole covers in Stony Point. Next semester a GIS intern will be hired to follow up on this work (including QA/QC). The collaborators on this initiative are seeking additional opportunities and funding to work with GIS students to advance mapping of wastewater infrastructure in the valley's waterfront communities.

The Learning Group also explored the potential for stormwater green infrastructure installations in each community. Following introductory presentations on green infrastructure (including definitions, how it works, examples, and siting considerations), each municipality was guided by

experts in an exercise to map potential green infrastructure projects that could alleviate flooding problems. The Project Team provided maps depicting factors that are important for green infrastructure siting and each community's participants made sketches of potential locations and green infrastructure solutions.

Network Building and Learning Accomplishments

A primary goal of the Learning Group workshops was to provide an opportunity for the communities to continue their learning and to deepen their connections to one another and to other resources in a position to support future efforts.

Building Ties to Outside Experts. Over the course of the four meetings, the Project Team enlisted the involvement of a number of professionals to make presentations and, in some cases, lead exercises with the group (see table below). These presentations have created links to programs and people capable of serving as resources and contacts moving forward.

Invited experts guiding the public realm vision exercise with participants.

Guest presenters at Learning Group Meetings:

Presenter	Organization	Topic
Sean Carroll	*Cornell Cooperative Extension of Dutchess County*	Flood Preparedness Guide production
Michelle Gluck	*Cornell Cooperative Extension of Dutchess County*	Water infrastructure mapping (GIS focus)
Jee Mee Kim	*HR&A Advisors*	Public realm vision (financing focus)
Jamie Maslyn Larson	*Wagner Hodgson Landscape Architecture*	Public realm vision
Emily Vail	*NYS DEC HREP*	Green infrastructure approaches
Donna Verna	*Crawford & Associates Engineering & Land Surveying*	Zoning code analysis for flood resiliency, risk and engineering review of a waste water treatment system

Deepening Ties to Project Team. In addition to spearheading and organizing the Learning Groups, the Project Team members served as important sources of expertise on a range of topics. These Project Team members will remain important resources moving forward and several are already committed to continuing their work with the communities beyond the formal end of this project. Project Team members covered the following topics in the course of the Learning Group meetings:

Presenter	Organization	Topic
Liz LoGiudice	*Education/Outreach Consultant*	Outreach and engagement strategies, web-based media
Kristin Marcell	*NYS DEC HREP*	Water infrastructure mapping
Julie Noble	*City of Kingston*	CFA grant funding, community engagement strategies
Nava Tabak	*Scenic Hudson*	Land use planning instruments
Gabrielle Weiss	*NYS DEC HREP*	Green infrastructure siting, community engagement strategies
Libby Zemaitis	*NYS DEC HREP*	Community engagement strategies, emergency management planning

Deepening Linkages Across Communities. For several years each of the four communities involved in the Learning Group have worked independently to better understand its municipality's unique risks and to begin outlining near and longer-term adaptation strategies. The Learning Group built on those individual efforts by creating an opportunity for these four communities to learn from one another and make connections that can continue beyond the Learning Group process. Some of these linkages are easily demonstrated. Piermont, Stony Point, and Kingston, for example, began working on flood preparedness guides after learning of Catskill's success and the collaboration with Cornell Cooperative Extension. Piermont has also been exploring the viability of partnering with another interested community to hire a shared consultant to coordinate its resilience planning efforts. Other benefits are less concrete but no less important. In its evaluation of the process, for example, each community highlighted the importance of the Learning Group to foster cross-community connections, and most voiced interest in maintaining and even expanding these ties. The Learning Group also created an opportunity to understand the common opportunities and challenges across communities—cross-community learning that is likely to foster dialogue and, where appropriate, future collaborations.

Maintaining Focus and Momentum. All four communities recognize the imperative to tackle long-term resilience planning, but as small communities (most with few staff and, for the most part, elected officials that serve in a largely voluntary capacity) it is difficult to maintain focus and momentum. Learning Group members credit the process with helping their communities maintain or sharpen their focus on adaptation. "Homework" assignments, for example, forced the community members from each community to interact between meetings and "take on" topics that might otherwise have slipped out of view. There is a shared sense that the Learning Group (and the

mutual accountability tied to each meeting) has served as an important catalyst for dialogue within each community, helping to maintain and/or reinvigorate waterfront initiatives and collaborations. Additionally, an initial inventory of progress to date and the regular sharing among the communities of successful actions served as positive motivational tools.

Modeling for Others. Though not yet realized, there is an interest and, for some, even a sense of responsibility to continue sharing their learnings with other communities that were not involved in the process. Repeatedly throughout the process, Learning Group members voiced interest in networking with other communities that are just now stepping into the first stages of adaptation planning. At the last Learning Group session, participants expressed interest in participating in periodic workshops or conferences that would bring together a wider array of communities as a way to share lessons and expand networking opportunities.

Products Created

The project team created several products for use by the Learning Group, many of which can be used by other communities and in planning work outside of the Learning Group (or can serve as models). They are listed below and are provided in the supplementary materials of meeting summaries.

SLR Task Force Recommendations:

- A table detailing progress made on all recommendations of the original task forces, current as of the start of the Learning Group (Nov 2016).
- A table organizing task force recommendations by the categories of Emergency Response, Water Infrastructure, Land Use Instruments, and Community Engagement, and highlighting areas of overlapping recommendations among the four Learning Group Communities.

Emergency planning guidance:

- A checklist of information needed to create a Flood Preparedness Guide (based on the Village of Catskill product) with cross-references to components of a New York State Comprehensive Emergency Management Plan.
- A document outlining the components of a New York State Comprehensive Emergency Management Plan, and sections that overlap with the information needed for a Flood Preparedness Guide.

Community engagement strategies:

- The community engagement strategy matrix, with introductory overview. (Note that this table is included in this report as a static document in the meeting #2 summary; however, in its original spreadsheet format it provides added utility as it is designed for sorting based on various categories of interest).
- A list of links to presentations/websites that address community engagement (categorized by 1) Public art and visual displays, 2) Volunteer recruitment and retention, and 3) Reaching underserved audiences)

Maps:

- For a portion of each municipality, a map depicting factors that are important for green infrastructure siting, with added participant illustrations about potential projects (based on a guided exercise).
- Maps of each community's waterfront with illustrations by participants based on the public realm vision guided exercise (including favorite existing public places/spaces, and locations and types of ideal future public places/spaces).

Left: Kingston's participatory map of public realm vision
Above: Catskill's green infrastructure siting map

Related accomplishments

In parallel with the Learning Group meetings, the communities continued to make progress on other resilience-building initiatives. Based on participant feedback, the Learning Group process was an important catalyst and motivator for the continued progress on these initiatives. Some examples of these include:

- Piermont progressed in their process to update the Local Waterfront Revitalization Program (LWRP), Stony Point was awarded funding for updating the LWRP, and Catskill submitted a grant proposal for updating their LWRP.
- Piermont has approved the hiring of a Community Resilience and Climate Adaptation Specialist to advance and coordinate work in the Village. This will be a part-time, one-year position which may be extended in the future.
- A consultant has completed both a zoning code analysis for flood resiliency and a risk and engineering review of the waste water treatment system for Catskill.
- Kingston has secured funding for and implemented various waterfront public space improvements and has incorporated green infrastructure elements into several municipal parking areas.
- Catskill and Kingston have hosted the Climate Adaptive Design program (CAD) from Cornell University, which produces multiple flood-adaptive waterfront designs created by students (and informed by local stakeholders). Catskill, which hosted CAD prior to the Learning Group, is making progress toward implementing part of a CAD design, and Piermont is currently hosting the program.

In addition to the above examples, participation and progress in the **Climate Smart Communities Program** was emphasized and encouraged to all four communities throughout the Learning Group. The Climate Smart Communities Program is a statewide program which has developed a network of New York communities committed to reducing GHG emissions and adapting to a changing climate through actions taken at the municipal level. Communities start by adopting the Climate Smart Communities Pledge, which is a municipal resolution stating the community's commitment to 10 pledge elements designed to address climate mitigation and adaptation. A further step is for a community to become a Certified Climate Smart Community. This is a designation given to communities that have taken local action toward climate resiliency through practices, plans, codes and policies.

Of the four communities, Piermont and Catskill are both Climate Smart Communities and Kingston is a Certified Bronze Climate Smart Community (and Piermont is actively working towards certification). An overview of the program was presented and communities reported on their status in the program at the first meeting. As part of the Learning Group, Climate Smart Community Task Forces were identified as one of the ways municipalities can foster community engagement. Climate Smart Communities Grants through the DEC and NYSERDA were discussed as a resource for financial assistance for communities and information about these grants was distributed to Learning Group participants.

LESSONS LEARNED

Below is a summary of key lessons learned in this process. These lessons are drawn from a post-Learning Group survey distributed to all participants, as well as reflections from the Planning Team.

- Most participants valued the group format as both a motivational and learning opportunity and expressed a strong interest in continued meetings and collaboration. They also suggested that the Learning Group could be helpful to other communities along the estuary, and expressed both interest in and a sense of responsibility to mentor others. Participants were highly engaged, open to learning, and generous with sharing their knowledge.
- Progress on implementation actions required sustained effort by the project team working with the communities between Learning Group meetings. Future efforts will ideally include time for the consultants to individually support each community.
- Making progress on projects with participants was more effective when a draft product was compiled or created, as a starting point or for editing (vs. starting with a blank slate). This is particularly important for communities without dedicated staff to address resiliency planning.
- Consistent attendance is valuable for progress (and for avoiding communication breakdowns), but can be difficult to achieve (some participants cited travel and the timing of the meetings as obstacles for participation). The approach of enlisting a slightly larger group of participants than were expected to be able to attend any one meeting ensured a generally good level of participation (i.e. there were representatives from each community at each meeting, with some of the same participants attending 3 or all 4 of the meetings).

- From a project planning perspective it can be challenging to find overlapping priorities between 4 communities of difference size, geography, and flood risk. However, most participants felt there was sufficient overlap in community interests and priorities (and the meeting focus areas) to support their progress.
- Funding for implementing priority activities was identified as important to all four communities before the Learning Group began meeting; as a result, funding opportunities were announced and explained in the meetings on multiple occasions. However, a meaningful increase in participants' familiarity and comfort with securing funding will likely require the experience of working on an actual funding opportunity.
- The project team attempted to strike a balance between including enough topics so there would be interest for each community in at least some of the issues under discussion and advancing work on specific topics/projects. This was a challenge to accomplish in the limited time (four meetings lasting just three hours each), as it did not provide sufficient time to tackle and work completely through any one topic (e.g., the project team struggled to fit all the desired topics into the agendas with sufficient time for each). However, this format was effective in allowing the project team to assess interest in follow-up efforts. Other formats should be considered in the future depending on the desired outcome (education/exposure to topics as opposed to deeper engagement on a topic/project).
- Participants expressed an interest in site visits and more case studies in future work.
- An engaged core of participants and a point person, or champion, for each community ensured a higher level of that community's engagement, learning, progress on projects, and the interest in continuing to work with the Learning Group in the future.
- Participants readily engaged in map exercises (such as green infrastructure siting and public realm visioning) and high level plenary discussions about topics such as community engagement, where they could share both successes and ongoing challenges
- The public realm visioning exercise (in meeting #4) demonstrated the ongoing interest in long-term, positive, proactive planning in these communities. Ideally this and related topics can be revisited with the Learning Group in a format that provides ample time to complete the exercise, as well as an opportunity to follow up with consultants.
- Planning for the meetings significantly exceeded the projected level of effort identified in the grant. While there will likely be efficiencies gained from this effort for future projects, additional time should be allotted for planning similar projects in the future.
- The participation of a municipal leader (Julie Noble) on the planning team, as well as regularly including a representative from each community in the planning of the Learning Group, ensured that the meetings were valuable to the participants.

Participants engaged in discussions and mapping exercises.

RECOMMENDATIONS/NEXT STEPS

Though the Learning Group process is formally concluded, there are several ongoing activities. These are briefly summarized below.

- Community Risk and Resiliency Act (CRRA) guidance materials and model local ordinances were not completed during the timeframe of the Learning Group meetings. When they are finalized and become publicly available, Kristin Marcell and her team will share them with the Learning Group, perhaps in a workshop format.
- Stony Point and Catskill will continue working to collaborate with Kristin Marcell and Dara Mendeloff on digitizing and/or mapping the municipalities' water infrastructure.
- Piermont will finalize its draft of the Flood Preparedness Guide, and will print and disseminate it in the village. Kingston and Stony Point may also pursue submission of the necessary information to Cornell Cooperative Extension to complete a guide by the end of the year.
- Representatives of all four communities will continue to work with Liz LoGiudice to finalize customized web page content by the end of the year and follow up with the appropriate municipal representatives to integrate the content into municipal websites.
- The Project Team will ensure the ability of participants to reference all materials from the meetings and to contact each other:
    - Create and disseminate a contact list of all participants (see meeting #4 summary, supplementary materials)
    - Compile all of the materials for the meeting in one location. This project report represents this compilation (see meeting summaries and other appendices).
- The Project team, with input from participants, will explore opportunities for a forum for continued engagement with the four communities as well as for fostering collaboration and information exchange across the estuary.

Participants, Project Team, and invited presenters that were in attendance at the end of the fourth Learning Group meeting.

APPENDICES

Appendix 1: Meeting Summaries and Supplementary Materials

- Meeting #1: Nov 10, 2016
- Meeting #2: March 7, 2017
- Meeting #3: June 19, 2017
- Meeting #4: Aug 29, 2017

Learning Group #1- November 10, 2016
Meeting Summary

Overview

Representatives from Piermont, Stony Point, Kingston, and Catskill met with the project planning team (NYS DEC Hudson River Estuary Program [HREP], Consensus Building Institute [CBI], Scenic Hudson) to begin coordinating work to implement recommendations from sea level rise (SLR) Task Force reports along with other flooding adaptation and mitigation initiatives. This was the first of four meetings for the "Sea Level Rise Implementation Learning Group" grant-funded project. The City of Kingston is participating in the project both as a SLR task force community and a member of the project planning team (as the HREP grant recipient and administrator).

The meeting, held at Scenic Hudson's River Center in Beacon, NY, kicked off with a brief welcome from Scenic Hudson and HREP, as well as a review of the agenda and workshop protocols by CBI. Nava Tabak with Scenic Hudson next provided a summary of progress to-date by the communities on their waterfront resilience recommendations, reviewing successes, lessons learned from the task force planning processes, and ongoing challenges to implementation. A representative from each of the communities shared examples of their implementation successes to date: Piermont has become a Climate Smart Community and launched a Community Emergency Response Team with training for approximately 15 residents, Stony Point updated a local law to comply with FEMA standards and obtained a grant to update their Local Waterfront Revitalization Program (LWRP), Kingston became a certified Climate Smart Community and is conducting a Natural Resources Inventory, and Catskill produced and distributed a flood preparedness guide and is assessing their zoning.

The bulk of the meeting was structured to elicit thoughts from each community on potential focus areas for future Learning Group (LG) workshops centered on three broad topics: (1) water infrastructure; (2) land use planning instruments; and (3) emergency services. (A fourth topic—community engagement—is to be discussed at a subsequent meeting. All four topics were identified during earlier conversations between the planning team and a representative from each community.)

To start the discussion, planning team members presented a list of candidate activities (by topic area) for future LGs based on past discussions with each community and the planning team's expertise on relevant resources and expertise it can provide. This list of possible activities was also provided as a handout at the meeting (see document in supplementary material).

After the presentations, each community met independently to determine their preferred actions under each topic for the LG to work on in subsequent meetings. The entire LG then reconvened and heard from each community about the activities they would prefer to pursue under each topic.

Key outcomes, decisions, next steps

The meeting generated several specific outcomes outlined below.

- The LG participants, including members of task forces and new community representatives, were introduced/re-introduced to each other, and shared their progress to date, successes, and some challenges.
- In the community-specific breakout sessions, each community prioritized the work (activities) they would like to pursue in future LG meetings, and in some cases identified activities for which they can serve in a teaching role due to their experience and progress. The dialogue also began to suggest areas of overlapping interest across communities, though further discussions are needed to sharpen the focus of future Learning Group meetings.
- Several participants expressed that the meeting had re-energized them to continue their adaptation work, and new participants were introduced to the groups and their work to date. Participants welcomed the mix of plenary and community-centric dialogues.

Based on the meeting, the planning team will review the feedback from communities and more clearly identify those areas with the greatest overlap that are likely to benefit from focused discussions at future LGs. They will also identify (1) additional activities that may not have been explicitly prioritized but which could serve all four communities well in making progress on adaptation and (2) potential ways to support adaptation work outside of the LG meetings (especially for those activities that were a high priority for only one or two communities).

Several information gaps were identified by the communities in their group discussions. For instance, Stony Point can benefit from a completed Climate Smart Resilience Planning report (begun by consultant Turner Miller), Catskill can assemble existing floodplain ordinance/code that could be updated to address development in the floodplain, Kingston can compare the extent of its Flood Hazard overlay district to current FEMA maps, and Piermont can compile the ordinances/codes that could be updated to better address stormwater issues. Piermont, Kingston, and Stony Point can begin to assemble the information they might put on a flood preparedness guide (as exemplified by Catskill), and all four communities can continue gathering information on the mapping status of water infrastructure. (This is not a comprehensive list of gaps or needs identified- each community will need to rely on records from their working session for more complete information).

The planning team will plan for the next LG meeting, likely to take place in February, and will send out a calendar poll with possible dates.

Meeting Participants

Piermont
Usha Wright
Lisa DeFeciani
Klaus Jacob
Laura Straus

Stony Point
Jim Monaghan
Carl Gilpatrick

Kingston
Julie Noble
Jennifer Schwartz Berky
Scott Herrington
Emilie Hauser
Kevin McEvoy

Catskill
Nancy Richards
Sean Meagher
Liz LoGiudice
Arielle Herman

Hudson River Estuary Program
Fran Dunwell
Kristin Marcell
Libby Zemaitis
Gaby Weiss

Consensus Building Institute
Bennett Brooks

Scenic Hudson
Steve Rosenberg
Nava Tabak
Jeff Anzevino
Megan Johnson

Supplementary materials

- Meeting agenda
- SLR task force recommendations synthesis table
- SLR task force recommendations progress by community table
- Meeting handout: focus topics and actions

Sea Level Rise Implementation Learning Groups
Learning Group #1

5:30 - 9:00 p.m. – Thursday, November 10, 2016
Scenic Hudson River Center, 8 Long Dock Road, Beacon NY

AGENDA

5:30-6:00 PM — **Informal Gathering**
- Food will be available starting at 5:30 p.m. and throughout the evening

6:00-6:20 PM — **Getting Started**
- Welcoming remarks
- Introductions, agenda review and discussion protocols
- Learning Group project overview

6:20-7:40 PM *(Participants take break, as needed)* — **Improving Resilience Together**
- Overview – Implementation Progress (35 minutes)
  - Community progress to-date
  - Hudson River community success stories
- Options for Moving Forward (45 minutes)
  - Water infrastructure
  - Land use instruments for resilience
  - Emergency services

7:40-8:50 PM — **Community Breakout Sessions**
- Community breakout sessions to identify priority activities related to water infrastructure, land use instruments and emergency services (50 minutes)
- Report back from each community on priority interests; full group discussion to identify common areas of interest (20 minutes)

8:50-9:00 PM — **Next Steps and Reflections**
- Review next steps
- Seek feedback on Learning Group structure

9:00 PM — **Adjourn**

	Recommendations	Catskill				Kingston				Stony Point				Piermont			
		To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done
Emergency Response	Create/update CEMP (and/or NOAA storm-ready community [SP])		X				X					X			X		
	Improve emergency communications/real time response				X				X						X		
	Post key information on emergency response on the municipal website (also under Community Engagement)		X												X		
	Train staff and volunteers on tools for emergency response and planning	X													X		
	Ensure safe access and evacuation along the waterfront during regular flood events.						X										
	Flood preparedness guide- create, distribute				X												
	Improvements to storm shelter/operations center									X							
Water Infrastructure	Use green infrastructure/architecture and nature-based features (to manage stormwater, upland flooding, CSO, erosion)			X				X		X							
	Maintain an inventory and stock all necessary replacement parts for sewage treatment plant and pump stations.				X												
	Develop a plan to mitigate both near- and long-term risk to the wastewater treatment facility.						X										
	Account for SLR in future hardening protections for WTP									X							
	Ensure that local street networks, utilities and other infrastructure function and remain connected as municipality adapts to SLR							X									
	Work with local utilities, in particular electric, gas, water, sewer, and telecommunications, to improve resilience.														X		
	Conduct a risk and engineering review to analyze adaptation, relocation, building and decommissioning options for municipal infrastructure													X			
	Cedar Pond Brook sewer interceptor- design upgrade									X							
	Map existing above and below ground infrastructure, for example: culvert assessement												X				

	Recommendations	Catskill				Kingston				Stony Point				Piermont			
		To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done
Land Use Instruments	Ensure that all plans (existing/new) address projected sea level rise and are responsive to flood resilience issues	X						X			X						
	Ensure that new proposals in flood risk areas take flood risk into account	X				X					X						
	LWRP- update/create, incorporate TF recommendations	X									X				X		
	Capital Improvement Plan	X								X				X			
	Master plan- create/update								X	X				X			
	County Natural Hazard Mitigation Plan (incorporate resiliency actions and funding opportunities)	X												X		?	
	Create/better implement floodplain management plan (incl. training for floodplain manager)	X												X			
	Building codes- review/update		X				X										
	Zoning- review/update						X			X			X				
	Adopt the sea-level rise and flood projections recommended by New York State and the Task Force for planning purposes.								X					X			
	Explore options for retreat/buyouts									X				X			
	Develop a Waterfront Resiliency Plan						X										
	Incorporate the TF recommendations into other municipal and regional plans.							X									
Community Engagement	Public presentations on storm preparedness and flood-mitigation (e.g. FEMA)	X						X						X			
	High water mark signs		X											X			
	Annual outreach to floodplain residents, tenants, prospective buyers	X				X											
	Post key information on flood risks and emergency response on the municipal website (also under Emergency Response)		X												X		
	Cornell CAD studio				X		X										
	Communicate the risks of flooding and potential adaptation solutions to vulnerable or non-English speaking populations.					X											

	Recommendations	Catskill				Kingston				Stony Point				Piermont			
		To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done	To Do	In Process	Ongoing	Done
Other	Collaborate with other waterfront/watershed communities and county and state government			X				X				X			X	X	
	Consider applying to participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS)		X							X					X		
	Conserve/restore natural protective features	X								X					X		
	Train/inform staff and elected officials on issues and incorporating information into their work (on an ongoing basis)	X				X								X			
	Climate Action Plan- create/implement							X		X							
	Establish a permanent flooding/storm resilience committee	X															X
	Join Climate Smart Communities program, initiate actions		X												X		
	Address neighborhood/asset specific recommendations		X			X											
	Incorporate cost-benefit analyses and long-term flood risk due to sea level rise and stronger storms into asset design and the prioritization of strategies to manage key municipal assets.	X												X			
	Research and evaluate land-use tools and financing mechanisms or incentives to facilitate flood adaptation in the waterfront.							X									
	Ensure opportunities exist for open space and recreation over the long term.							X									
	Track repetitive storm damage.						X										
	Evaluate the use of natural buffers and green shoreline infrastructure to reduce flood risk and erosion and conserve natural resource functions.						X										
	Continue exploring long-range adaptation possibilities including structurally and economically viable solutions that offer a long-term pathway and can help guide wise near-term investments.														X		
	Financing- research														X		
	Advocate to the state on climate change and flooding resilience issues													X			
	Relocate or raise elevation of bridges/roads (petition for funding, collaborate)									X							
	Harden shore to protect infrastructure									X							
	Keep CSRP tool updated									X							

Status of Catskill Task Force Recommendations (November 2016)						
#	Recommendation	To do	In process	Ongoing	Completed	Detail
1	Review the village comprehensive emergency management plan (CEMP) for any necessary updates.	X	X?			Checking on County's plan- believes Catskill is integrated into it and it works well (Oct 2016)
2	Improve emergency communications.				2015	Implemented CodeRed
3	Design and install high-watermark signs in the waterfront area to educate the community about flood risk and sources of flood preparedness informational resources.		X			On hold? C-G CCE was helping with sign design
4	Establish an Interim Flooding and Storm Resilience committee and create a Permanent Joint Village and Town Conservation Commission.	X				Village co-hosted a meeting on CAC
5	Invite agencies or experts to give public outreach presentations on storm preparedness and flood-mitigation options for families, businesses, institutions, structures and facilities, including funding opportunities when applicable.	X				
6	Create a flooding best practices manual for distribution to village residents and businesses.				2016	Flood Guide created and distributed with help from C-G CCE
7	Post key information on flood risks and emergency plans on the village website.		X		2016	Posted flood guide and resources from resiliency website
8	On an annual basis, direct property owners and residents of current and projected future floodplains to the Village's informational resources about flooding and emergency preparedness.	X				
9	Support regular training for the village floodplain manager (Code Enforcement Officer).	X				
10	Work with other communities in the Catskill Creek watershed to better manage stormwater and runoff.			X		1st meeting in 2015, 2nd in 2016 with them help of C-G CCE and watershed team
11	Work through the Greene County Multi-Hazard Mitigation Plan to position Catskill for resiliency actions and funding opportunities.	X				
12	Conduct a risk and engineering review of key municipal infrastructure to identify adaptation needs/options/plans		X			Crawford consultants helping
13	Maintain an inventory and stock all necessary replacement parts for sewage treatment plant and pump stations.				2014	
14	Convene a working group including representation from Village boards, committees, officials and municipal planners to review the Task Force Report and identify which/how local codes can be modified to better weather and adapt to future storms and account for sea level rise.		X			
15	Consider applying to participate in the National Flood Insurance Program (NFIP) Community Rating System (CRS), to reduce flood insurance rates and improve flood resilience.		X		2015	Considered it in 2015 but deemed not a high priority at the time given low number of policies in the Village; may re-consider in the future
16	Ensure that all proposals and plans address projected sea level rise and are responsive to flood resilience issues.	X				
17	Promote the use of Green Infrastructure techniques throughout the village to reduce flooding from runoff and minimize stormwater treatment burdens.			X		included in 2015 CAD studio, support from C-G CCE
18	Consider participating in NYS DEC's Climate Smart Communities and its new certification program, in order to receive free technical assistance and eligibility for future grant applications.		X			Adopted the pledge in 2015
19	Promote the long-term persistence of natural storm buffer areas, particularly Ramshorn-Livingston Marsh, Catskill Point, and undeveloped riparian areas along Catskill Creek (e.g. Goat Island, Pelican Island).	X				Included in 2015 CAD studio
20	Consult Task Force report for neighborhood/asset specific recommendations and begin developing strategies to address them (e.g. developing an alternate access to the school complex via Bridge Street).		X			Included in 2015 CAD studio
21	Take advantage of training opportunities from federal, state and local partners to improve staff and volunteer understanding of tools available to help plan for and respond to flood emergencies.	X				
22	Integrate departmental funding requests into a village-wide Capital Improvement Plan that incorporates and prioritizes the needs of all departments, along with phased adaptation of infrastructure to flooding and sea level rise.	X				
23	Incorporate cost-benefit analyses and long-term flood risk due to sea level rise and stronger storms into asset design and the prioritization of strategies to manage key municipal assets.	X				
24	Create an orientation packet or a presentation on flood hazards and municipal plans for all newly elected/ appointed municipal representatives, to ensure that new personnel are well-informed on the issues and procedures in the village.	X				

Status of KingstonTask Force Recommendations (November 2016)						
#	Recommendation	To do	In process	Ongoing	Completed	Detail
1	Adopt the sea-level rise and flood projections recommended by New York State and the Kingston Waterfront Flooding Task Force for planning purposes.				2013	
2	Incorporate these 24 findings and recommendations from the Kingston Waterfront Flooding Task Force into other City and regional plans.			X		Done for Comp plan, BOA Plan (?), Rondout Watershed Management Plan
3	Develop a Kingston Waterfront Long-term Resiliency Plan		X			Hudson Riverport Implementation Plan (BOA)
4	Reduce Kingston's greenhouse gas emissions and contribution to sea level rise and other climate impacts through the implementation of Kingston's Climate Action Plan, green infrastructure and green architecture.			X		CAP, YardWorks, CSC certified Bronze, (CAD)
5	Ensure that all relevant City staff and elected and appointed officials are fully trained in and expected to incorporate impacts of flooding and sea-level rise into their daily work.	X				
6	Ensure that zoning designations in the Kingston 2025 Comprehensive Plan consider increasing risk and vulnerability from flooding and sea-level rise.		X			Ongoing zoning update
7	Require that proposals for new development of any kind in the Flood Hazard Overlay District take flood risk into account	X				No updates since 2009?
8	Reduce stormwater, upland flooding and combined sewer overflows through green infrastructure and best stormwater management practices.			X		Retrofitted 5 uptown parking lots with GI, (CAD)
9	Research, evaluate and implement changes to City building and zoning codes that will increase resiliency and are cost-effective and socially equitable.		X			Ongoing zoning update
10	Study the feasibility of using policy, zoning and building codes to achieve creative, water-dependent and water-enhanced uses that are resilient, including elevated, amphibious, or floating structures, wharves, berms and elevated rights of way.	X				
11	Evaluate the use of natural buffers and green shoreline infrastructure to reduce flood risk and erosion and conserve natural resource functions.		X			Waterfront Resiliency Design Project, (CAD)
12	Ensure that local street networks, utilities and other infrastructure function and remain connected as the City implements adaptation strategies to sea-level rise.			X		$60K from DOS to repair bulkhead
13	Research and evaluate land-use tools and financing mechanisms or incentives to facilitate flood adaptation in the waterfront.			X		Financing fact sheet
14	Ensure opportunities exist for open space and recreation over the long term.		X			Promenade at the Strand, NRI and Open Space Plan, Kingston Point Rail Trail, (CAD)
15	Consider future flood hazards in economic development planning.			X		BOA, completed in 2015
16	Develop a plan to mitigate both near- and long- term risk to the wastewater treatment facility.		X			WWTP Long Term Capital Plan with EFC funding (2015)
17	Host an informational public meeting with FEMA.				2013	Support from C-G and D CCE, CRS meeting on Dec 4
18	Conduct public outreach to property owners, tenants and prospective buyers in the Flood Hazard Overlay District.	X				
19	Encourage and assist community-based organizations in their efforts to communicate the risks of flooding and potential adaptation solutions to vulnerable or non-English speaking populations.	X				
20	Collaborate with other waterfront communities and county and state government to plan for coastal hazards like sea-level rise and storm surge.			X		Workshop with other FTF communities, LWRP resilience grant
21	Revise emergency management planning documents.		X			Updating CEMP
22	Employ new tools to improve real time emergency management planning.				Complete	Established Swift911
23	Ensure safe access and evacuation along the waterfront during regular flood events.		X			
24	Develop a process to map and track repetitive storm damage.	X				

Status of Piermont Task Force Recommendations (November 2016)						
#	Recommendation	To do	In process	Ongoing	Completed	Detail
1	Improve emergency communications in the Village.		X			PWRC met with fire dept. and other first responders in 2015
2	Develop a comprehensive emergency management plan.		X			
3	Work with local utilities, in particular electric, gas, water, sewer, and telecommunications, to improve resilience.		X			Planning meeting w/ local utilities for September 2016
4	Advocate and coordinate with Rockland County and Orangetown to increase infrastructure, access, and stormwater resilience.		X			Grant to upgrade Pier Road?
5	Conduct a risk and engineering review to analyze adaptation, relocation, building and decommissioning options for municipal infrastructure	X				
6	Work through the Rockland County Multi-Jurisdictional Natural Hazard Mitigation Plan to position Piermont for resiliency actions and funding opportunities.	X				
7	Establish a permanent Flooding and Storm Resilience committee				2015	PWRC
8	Proceed with application to the National Flood Insurance Program's Community Rating System (CRS) and evaluate other options to reduce the impact of increasing flood insurance rates on the community.		X			Village engineer has begun process of signing up
9	Create and implement a Floodplain Management Plan	X				
10	Incorporate findings/ recommendations of the Piermont Waterfront Resilience Task Force into the new Local Waterfront Revitalization Program.		X			
11	Identify properties which may be of high priority for acquisition/relocation in long-term resiliency plans and implement a fund to acquire such properties upon their availability.	X				
12	Continue exploring long-range adaptation possibilities for the Village of Piermont, including structurally and economically viable solutions that offer a long-term pathway and can help guide wise near-term investments.		X			
13	Create a Municipal Village Master Plan that incorporates flood resilience, adaptation planning, and other land use issues.	X				
14	Adopt and periodically update sea level rise and flood projections recommended by New York State and FEMA for municipal decision making and planning purposes.	X				
15	Train all municipal staff and emergency managers in the use of the Task Forces' risk and vulnerability assessments, sea level rise projection maps, as well as changing coastal hazards risks such as storm surges.	X				
16	Research financing options for supporting flooding adaptation, mitigation and protection measures.		X			Financing fact sheet
17	Integrate departmental budget requests into a village-wide Capital Improvement Plan.	X				
18	Consider cost-benefit analyses and long-term flood risk due to sea level rise and stronger storms in asset design and the prioritization of strategies to manage key municipal assets.	X				
19	Initiate Climate Smart Communities actions and participate in the program's new certification program.		X			PWRC working on this, GHG inventory
20	Post flood preparedness, flood resilient building, and mitigation resources on village website.		X			Some FEMA, weather and relief info posted
21	Provide presentations and public training opportunities to inform the public of flood-related issues and solutions	X				
22	Design and install high-water-mark signs throughout the 100/500 year floodplain areas to educate the community about flood risk and refer interested residents/property owners to additional sources of flood preparedness information	X				
23	Share the findings of the Piermont Waterfront Resilience Task Force and collaborate with other waterfront communities to improve understanding of and planning for coastal hazards such sea level rise and storm surge			X		FTF roundtable, met with Nyack
24	Advocate to the state on climate change and flooding resilience issues	X				

Status of Stony Point Recommendations (November 2016)						
#	Recommendation	To do	In process	Ongoing	Completed	Detail
1	Plant emergent grasses and other deeply rooting vegetation along the shoreline of Clark Park to slow wave/wake energy and reduce shoreline erosion	X				
2	Allow flexibility in height regulations to allow any future waterfront development to measure height from the base flood elevation or current existing grade, whichever is higher. Require any residential waterfront development to provide a strategy for mitigating possible sea level rise increases including incorporating wet flood proofing strategies or adapting construction to facilitate easier post-construction height increase				2015	Zoning ammended, with a waterfront overlay district. Is it comprehensive (entire waterfront)?
3	Require any future large-scale Hudson River waterfront residential development to creatively address and mitigate access restrictions of the Tomkins Avenue underpass and Beach Road (possibly by locating emergency service equipment on-site).		X			
4	Petition the County to raise the elevation of the Penny Bridge and Grassy Point Road from the Penny Bridge to the US Gypsum site to 14 feet. Look for opportunities to apply jointly for funding.	X				
5	Seek funding for and construct a shoreline protection infrastructure east of River Road. Additional consideration should be given to the alternatives evaluated herein. The Town of Haverstraw and adjoining private marina should be contacted and given the opportunity to extend any shoreline protection south into the Town of Haverstraw providing additional protection as practicable.	X				
6	Team with Rockland County to explore the re-routing of River Road through the Town's wastewater treatment plant property and out through the idling US Gypsum property. Such a route could be built to higher elevations and support better emergency access to the area during storm events. The additional land captured from the abandonment of the existing River Road could potentially support the construction of shoreline protection measures.	X				
7	Any project to harden the wastewater treatment plant should account for flood elevations of 14 feet given the remaining usable life of the treatment plant.	X				
8	The Town should consider new legislation requiring minimum setbacks from mobile homes to the mean high water line of any tidal waterbody. Consideration should be given to limiting grandfathering of this standard. The setback area could be used for alternative uses such as recreation or marina use. Additionally, the setback could support construction of a berm, which could allow the owner of the park to seek a map amendment from FEMA, thereby lowering insurance costs.	X				
9	The Town should work with Rockland County and DEC to explore the possibility of restoring the Cedar Pond Brook Estuary with native emergent vegetation. Doing so would provide ecological benefit and reduce storm surge erosion and siltation if the estuary can support denser planting.	X				
10	Consider a TDR Program that funds buyouts of homes in exchange for residential density elsewhere in the Town. The Town should consider allowing private developers to purchase homes and lots within FEMA "V-zones" and in exchange for dedication of the land or easements to the Town, to be able to apply this density to any zoning district in the Town except for the APRP and SR districts. Details of the program would have to be developed including the maximum increase in density allowed under this program, and minimum lot sizes required for buyout, but it could provide revenue that the Town can use to buy out highly vulnerable properties with owners willing to sell	X				
11	Any design of improvements or relocation of the Cedar Pond Brook Interceptor should consider future flood elevations of up to 14 feet given the usable life of the interceptor. It is suggested that further study is required, but that this is a high priority given the potential impacts that a breakage could have on the Cedar Pond Brook estuary and Hudson River.	X				
12	Assign a Town staff member involved in an emergency management role to further facilitate and continuously update the Climate Smart Resiliency Planning Evaluation Tool.	X				
13	Follow through on NYRCR recommendations for operations center and storm shelter investments.	X				
14	Prepare a comprehensive update of the Town's Comprehensive Plan. Emergency Service Providers should be involved by inclusion on the Comprehensive Plan Committee. The Plan should specifically include consideration of sea level rise and identify coastal resiliency as a goal. Flood-prone areas should be considered for open space and recreation and measures of acquiring private flood-prone lands should be explored.	X				

Status of Stony Point Recommendations (November 2016)						
#	Recommendation	To do	In process	Ongoing	Completed	Detail
15	Become a FEMA Rated Community and seek to improve ratings. The program allows for reductions to individual flood insurance rates based on the actions of the local government. Some steps that could be taken to immediately improve the Town's score include: making FEMA maps available on the Town Website; tracking repetitive flood losses; training Town employees in FEMA's Hazus-MH a hazard mitigation tool; training Town employees in flood hazard risks; installing publically visible high-water markers; developing flood/storm preparedness materials (including emergency kits, family evacuation planning, etc. and making them available on the Town website (including bilingual publications) and advertising their availability in media; and developing public information plans for pre-storm activities.	X				
16	Consider coastal vulnerability in the development of a capital improvement plan for Town Resources including parks, wastewater treatment plant, and other infrastructure. Vulnerable areas should be prioritized and infrastructure improvements should include consideration of tidal flood elevations 3 feet over current elevations.	X				
17	Update the Local Waterfront Revitalization Plan (1994) and ensure it addresses sea level rise and coastal storms. The current Plan is dated both from a goal and from a resiliency standpoint. Updating the plan could make the Town eligible for additional public funding of resiliency infrastructure projects		X			Grant received
18	Plan for storm preparedness and recovery including becoming a NOAA Storm-ready community; developing a storm emergency response and short-term recovery plan; and developing a storm evacuation plan;			X		
19	Consider developing a Climate Action Plan. The Town will receive benefits from increased energy and cost efficiency while doing its part to reduce the production of greenhouse gases.	X				

Water Infrastructure

There are several types of water infrastructure in your community: wastewater, stormwater, drinking water and conveyance/culverts. All of them can cause issues for the community if not mapped and managed.

These systems are typically also related/interconnected in your community. Good stormwater management can keep wastewater and conveyance systems and culverts from being overwhelmed. Drinking water sources can be affected by stormwater and wastewater failures. Green infrastructure slows and stores stormwater, reducing inputs to stormwater and combined sewer overflow (CSO) systems, conveyance/culverts and can help protect drinking water.

Ideally a community would go through the following process for one or more systems:

- **Complete an asset inventory** of pipes and facilities associated with each type of water infrastructure. (This may become a state requirement in the future). Consider an assessment of your drinking water sources and watershed(s).

  What we can work on together:
  - Learning if your water infrastructure is currently mapped, and how. If not, what information would you like to have in an inventory? Does your municipality use GIS?
  - Investigate the possibility of partnering with college GIS students to digitize existing water infrastructure maps.

- **Identify and prioritize issues** based on age, cost, flood/erosion risk, and water quality concerns in a vulnerability assessment. Coordinate with county water plans, if they exist.

  What we can work on together:
  - Understanding who you need to work with to inventory and assess vulnerabilities to your community's water infrastructure or drinking water.

- **Try to address issues using natural features and constructed green infrastructure.** This may open up opportunities to access underutilized sources of funding.

  What we can work on together:
  - Provide models and funding guidance for how to scope, design and implement a site-specific green infrastructure project or assess opportunities for green infrastructure community-wide.

- **Conduct engineering/planning studies for priority areas** to set the community up to be included in Intended Use Plan (IUP) for the Clean Water State Revolving Fund (CWSRF).

  What we can work on together:
  - What options could be considered over the long term to holistically address water quality and flood risk to infrastructure/ facilities?
  - What steps should be taken to secure your drinking water from drought and water quality impacts? Do you have backup sources? For how long?

- **Apply for funding. Apply to Consolidated Funding Application (CFA), Water Quality Improvement Program (WQIP) or CWSRF process to implement critical projects.**

  What we can work on together:
  - Provide case studies and funding guidance for efforts to flood-proof major water facilities, structures or other infrastructure.
  - Create a savings plan to save match funds over several years to implement grants, and address future or larger needs.

More Water Infrastructure tasks we could work on:

- Review models and examples of how communities have integrated departmental funding requests into a community-wide Capital Improvement Plans that incorporate and prioritizes the needs of all departments, along with phased adaptation of infrastructure to flooding and sea level rise.

- Provide models and funding guidance to complete a water infrastructure inventory and asset management plan. Catskill has a project like this underway.

- Determine what the best near-term approaches are to flood-proof the water infrastructure/facilities that serve your community.

- Develop a model process for how to assess the vulnerability of your drinking water to a variety of threats to quality and quantity.

- Partner with the DEC and Estuary Program to inventory and prioritize culverts. A project like this is underway in Stony Point.

Land Use Instruments

There are many different land use planning instruments that can improve flood resilience. Some initiatives, such as the Climate Smart Communities program and watershed management planning, are overarching and can include multiple planning and other tools.

- **Floodplain plans/regulations: Craft or update a floodplain management plan, flood damage prevention ordinance, or flood overlay zone.**

  What we can work on together:
  - Inventory the current floodplain plans/regulations in each municipality, and compare to model or example plans/regulations.
  - Propose updates to the existing plans/regulations to exceed FEMA requirements and account for SLR and other climate change impacts (e.g. incorporating future projected floodplain areas, re-building restrictions/ nonconforming structure regulations, tracking repetitive losses).

  Additional participants: Floodplain managers.

- **Capital Improvement Plan/Program: Create a guide for future necessary public infrastructure investments and plan for financing them.**

  What we can work on together:
  - Present model or example plans that integrate climate change impacts such as increasing flood risk.
  - Inventory of the public investments (assets) that should be included in each municipality.
  - Categorize investments based on lifespan and frequency of maintenance.
  - Begin drafting a plan.

  Additional participants: Highway department and Department of Public Works.

- **County natural hazard mitigation plans: use to thoroughly describe natural hazards faced by the municipalities, propose projects necessary to mitigate damages, and position for funding.**

  What we can work on together:
  - Review the hazards included in each county's plan and Suggest updates necessary to incorporate Sea Level Rise and other climate change impacts.
  - Research the process and timing for submitting updates and/or projects from municipalities to the county plans and identify specific hazard mitigation projects for inclusion in plans.

- **Strategic relocation planning (for private and public assets)**

  What we can work on together:
  - Defining the areas and assets at highest risk due to flooding through mapping, repetitive loss tracking, and capital spending records.

- Explore issues of social equity and how to address them in strategic relocation.
- Examine model or example plans, regulations, and case studies- how to design and finance a buyout program, rolling easements, or regulatory and tax incentives.
- Inventory public open spaces at risk and potential long-term replacement options.

- **Local Waterfront Revitalization Program (LWRP)**

  What we can work on together (the following are elements of LWRPs):
  - Define/update waterfront revitalization area boundary
  - Comprehensive inventory and analysis of existing conditions
  - Identify applicable state waterfront revitalization policies and add local specificity and potential additional needs.
  - Propose land and water uses (describe and map) and projects (area-wide or site-specific)
  - LWRP implementation techniques: Inventory and describe existing local laws and regulations, and any new ones or amendments that would improve community resilience, and work to implement the policies and proposed uses/projects.

More Land Use planning approaches we could work on:

- Watershed management planning. Including wetland/stream buffers, Natural Resource Inventories, stormwater management, partnering with other municipalities and groups, and restoration projects.
- Updating building codes to exceed minimum state requirements and adequately address climate change risks.
- Creating design guidelines for the Hudson River Estuary that can be adopted by municipalities throughout the region. See "WEDG" which is similar to "LEED" for waterfronts.
- Site planning process/subdivision regulations. Review existing regulations and identify opportunities for updates that encourage climate resilience.
- Open space conservation planning. Identify opportunity areas with the aims of increasing flood storage and buffering/protective capacities and replacing lost open space amenities, done in concert with buyouts and floodplain planning.
- Tax and market based tools. Investigate how incentives can be incorporated into new development and re-development proposals.
- Stormwater management. Create a plan/ordinance/guidance document that promotes sustainable stormwater management with an emphasis on green infrastructure.

Emergency Management

There are several actions that your community can take to improve your emergency management during flooding events. Some initiatives, including a Comprehensive Emergency Management Plan (CEMP) and your county Multi Hazard Mitigation Plan, are overarching and can include multiple planning and other tools.

- **Adopt or update a Comprehensive Emergency Management Plan (CEMP).**

  What we can work on together:
  - Identify key preparedness strategies for flooding.
  - Share response and recovery ideas.
  - Share the work of hosting EM trainings together.

  Additional participants: Emergency managers, Department of Public Works, Fire, Police, floodplain managers.

- **Post key emergency information on your website and use social media for real-time communication.**

  What we can work on together:
  - Identifying sources of information to post or link to on your website
  - Identifying platforms for real-time emergency communication via social media.
  - Identifying who in your community will manage this information and communication.

- **Create a flooding best practices guide and distribute it to all residents and businesses in the floodplain.**

  What we can work on together:
  - Identifying emergency shelters and dry parking locations.
  - Strategies for formalize and distribute the information in your municipality.
  - Creating maps for the guide with our partners at Dutchess CCE.

  Additional participants: Highway department and Department of Public Works, local businesses.

More approaches to Emergency Management we could work on:

- Implement an emergency communication platform (e.g., CodeRed, or Swift911).

- Participating in the next update of your county's Multi Hazard Mitigation Plan to ensure it identifies all climate hazards and supports projects to address them.

- Participating in the State's watershed RISK Map Discovery Program (currently in progress for northern Hudson Valley, including parts of Columbia, Dutchess, Greene, and Ulster counties), for more information contact the NYSDEC team at (518) 402-8185 or Floodplain@dec.ny.gov.

- Develop plans to ensure safe access and evacuation along the waterfront during flood events.

- Create or update an evacuation plan.

- Become a NOAA Storm-ready community.

Learning Group #2- March 7, 2017
Meeting Summary

Overview

Representatives from Piermont, Stony Point, Kingston, and Catskill met with the project planning team (NYS DEC Hudson River Estuary Program [HREP], Consensus Building Institute [CBI], Scenic Hudson) to continue coordinating work to implement recommendations from sea level rise (SLR) Task Force reports along with other flooding adaptation and mitigation initiatives. This was the second of four meetings for the "Sea Level Rise Implementation Learning Group" grant-funded project. The City of Kingston is participating in the project both as a SLR task force community and a member of the project planning team (as the HREP grant recipient and administrator).

The meeting, held at the Howland Public Library in Beacon, NY, kicked off with a brief welcome by Kristin Marcell (HREP) and a review of the agenda by Bennett Brooks (CBI). Libby Zemaitis (HREP) gave an update on funding opportunities, with emphasis on the NYSERDA Clean Energy Communities grants, the DOS County Resiliency Planning grants, and the Combined Funding Application (CFA, which will likely be announced in April). Julie Noble described Kingston's success in securing CFA grants in 2016 and provided insights on the application process. Laura Straus (Piermont) announced the imminent funding of a coordinator position in Piermont to work on implementing climate adaptation actions, and invited the other communities to consider partnering in funding such a position in the longer term. Jim Monaghan (Stony Point) announced that construction is beginning on the FEMA-funded bulkhead replacement at the town park. He also noted that the town is hiring a part-time grant writer. The main meeting topics were the Flood Preparedness Guide, water infrastructure mapping, and community engagement strategies.

Flood Preparedness Guide

Nava Tabak (Scenic Hudson) provided a checklist of information needed for the guide, including a version which relates each item on the list (as applicable) to elements of a Comprehensive Emergency Management Plan as outlined by NYS. Sean Carroll (Dutchess County CCE), the staffer who will be working with the communities to produce the map and other content for the guide, discussed the process and formats participants can use to get the information to him. The content is customizable (from the version Catskill produced), and production is expected to take about a week once all the final information is submitted. Sean can also produce standalone maps (showing the same elements that the map in the guide will have) if communities are interested.

Piermont, Stony Point, and Kingston each have already made good progress on assembling the necessary information. The presentation provided an opportunity to ask several clarifying questions of Sean and the Catskill representatives, and all three communities are expected to move forward in producing guides in the near future.

Water Infrastructure Mapping

Kristin Marcell and Michelle Gluck gave a presentation illustrating the benefit to communities of digitally mapping water infrastructure, as well as reviewing the technical needs and considerations for such a project. As proposed, the project would include the inventorying of existing data (already completed), setting up a GIS database, and working with Columbia University students to digitize and field-verify existing wastewater infrastructure maps. Jen Zunino-Smith (Cornell Cooperative Extension, Rockland County) gave an overview of an ongoing project to map the county's MS4 (stormwater) infrastructure. In order to move forward we need to gauge the level of interest by the four learning group communities, and get confirmation that they would be willing to share existing data.

Community Engagement Strategies

Gabrielle Weiss, Libby Zemaitis, and Julie Noble presented a spreadsheet with a wide array of possible community engagement strategies that could serve as the focus for future Learning Groups and/or cross-community collaboration. In their presentation, they illustrated examples of strategies from each category of engagement (e.g. education, governance, arts, technology, outreach), and demonstrated how the table can be sorted based on various categories (such as cost or time frame). The municipality representatives then worked within their groups to review the strategies and prioritize those that seem most relevant or attractive to them. Each group reported back to the full learning group on their top three choices (sometimes more) for community engagement, which were as follows:

Piermont: kayak tours of waterfront, outreach programs with Columbia (Lamont-Doherty), public art in parks, website and social media, engagement about upcoming road work (elevating), flood preparedness guide

Stony Point: Bulletin board or art installation in new dog park, participate in Trees for Tribs, posting info on new website, social media pages and/or on ConstantContact newsletter

Kingston: build on CAD and create a gallery space for designs, website, develop flood preparedness guide in English and Spanish, replace storm gauge

Catskill: public arts (possibly tie to Lumberyard project), pop-up green stormwater infrastructure street demo, climate-related event publicity

Key outcomes, decisions, next steps

The meeting generated several specific outcomes outlined below.

- Participants from Piermont, Stony Point, and Kingston had questions answered about producing the Flood Preparedness Guide and can begin sharing the needed information with Sean Carroll.
- Participants gained a better understanding of what is involved and the decisions needed to create digital maps of water infrastructure. The next step is for each community to decide its level of commitment to this project. The planning team will arrange for a follow-up teleconference to answer additional questions.

- In the community-specific breakout sessions, each community prioritized the community engagement activities they are most interested in pursuing. The planning team will review these and propose next steps to advance activities of mutual interest in subsequent meetings.

The planning team let participants know that the next two meetings will likely be in June and September.

Meeting Participants

Piermont
Nathan Mitchell
Laura Straus

Stony Point
Jim Monaghan

Kingston
Jennifer Berky
Emilie Hauser
Kevin McEvoy
Julie Noble
Lucy Potter

Catskill
Arielle Herman
Liz LoGiudice
Nancy Richards

Hudson River Estuary Program
Kristin Marcell
Libby Zemaitis
Gabrielle Weiss

Consensus Building Institute
Bennett Brooks

Scenic Hudson
Nava Tabak

Cornell Cooperative Extension
Sean Carroll
Michelle Gluck
Jen Zunino-Smith

Supplementary materials

- Meeting agenda
- Flood Preparedness Guide checklist (with cross reference to CEMP items)
- CEMP outline with cross reference to Flood Preparedness Guide items
- Community engagement strategy overview and table handouts

Sea Level Rise Implementation Learning Groups
Learning Group #2

5:00 - 7:45 p.m. – Tuesday, March 7, 2017
Community Room, Howland (Beacon) Public Library
313 Main Street, Beacon, NY

AGENDA

4:45-5:00 PM **Informal Gathering**
- Food will be available starting at 4:45 p.m. and throughout the evening

5:00-5:20 PM **Getting Started**
- Welcoming remarks
- Introductions, agenda review and discussion protocols
- Updates
    - Consolidated Funding Application Release
    - Relevant updates from each community
    - Other

5:20-5:40 PM **Flood Preparedness Guide**
- Cross-community discussion on information-gathering efforts needed for Flood Preparedness Guide: progress, challenges and opportunities, other elements to incorporate into guide, possible nexus with CEMP
- Consider next steps

5:40-6:20 PM **Water Infrastructure Mapping**
- Overview of assets mapping effort approach and timing
- Cross-community discussion on approach; seek community feedback on information needs and standards
- Consider next steps

6:20-7:20 PM **Community Engagement – Overview and Breakout Sessions**
(Participants take break, as needed)
- Presentation on possible options for using Learning Group to support community engagement efforts (20 minutes)
- Community breakout sessions to identify priority activities (30 minutes)
- Report back from each community on priority interests; full group discussion to identify common areas of interest (10 minutes)

7:20-7:40 PM **Open Discussion**
- Opportunity for communities to raise issues for group discussion

7:40-7:45 PM **Next Steps and Reflections**
- Review next steps, elicit feedback on Learning Group discussions

7:45 PM **Adjourn**

Flood Preparedness Guide Checklist: CEMP overlap

For SLR Implementation Learning Group

Flood Preparedness Guide

CEMP Section II-6>Preparedness>Public Education and Awareness> Educate the public about the different protective measures that could be implemented, reiterating the message of individual and family preparedness

- List of emergency shelters (including addresses and information on which can accommodate pets)
    - *CEMP Section II-3: Preparedness>Facilities>References to shelter efforts for mass care, pets/service animals, and other support facilities that may necessitate operational support.*

- List of safe areas for parking cars in case of a flood (including addresses)
    - *CEMP Section II-3: Preparedness>Facilities>References to shelter efforts for mass care, pets/service animals, and other support facilities that may necessitate operational support.*

- List of flood prone roads (including detailed descriptions of most susceptible portions, and/or illustrated on a map)
    - *CEMP Section I-4: General Considerations & Planning Guidelines>Situation>Designate hazard areas of concern*

- Evacuation routes (including detailed descriptions and/or illustrated on a map)
    - *CEMP Section II-1c: Preparedness>Planning>Evacuation Planning*

- Where to get information on flood zones (e.g. town hall, library)

- Information on the available emergency notification/communication systems (e.g. reverse 911, town or county system)
    - *CEMP Section III.6: Response>Public Warning and Emergency Information> Identify how public information will be relayed via a Public Information Office (PIO), Joint Information Center (JIC), or otherwise*

- Emergency contacts (e.g. fire, police, village/city/town)

- Flood preparedness and recovery resources to refer to in the guide (see Catskill guide, amend as needed)
    - CEMP Section II-6>Preparedness>Public Education and Awareness> Educate the public about the different protective measures that could be implemented, reiterating the message of individual and family preparedness

New York State CEMP Outline - Flood Guide Overlap

Executive Summary

1. Inside the Front Cover
    - Signatory page stating the effective date of the plan.
    - Revision table.
    - Record of distribution (if applicable).
    - Table of contents including supplemental annexes (attached or not).

2. Executive Policy Regarding Emergency Management
    - What the mission of this plan is, what it covers.
    - When this plan would be implemented, under what circumstances.
    - The jurisdiction's official policy on emergency preparedness.
    - Identification of elected leadership and decision-makers, how decisions will be made in case of an emergency (ie chain of command, etc.)

Section I - General Considerations & Planning Guidelines

1. Introduction
2. Purpose
3. Scope
4. Situation
    - Part of hazards identified (flood)
    - Hazard areas of concern identified (flood map)
5. Assumptions
    - Describes what disaster can be expected, what that information is based on
6. Concept of Operations
7. Authority
8. Plan Maintenance and Distribution

Section II - Preparedness

1. Planning
    a. Mitigation Planning

b. Response Planning

c. Evacuation Planning

- Mapping, public communication/ emergency alert

d. Continuity Planning

2. Training and Exercising
3. Facilities

- Temporary parking, shelter locations

4. Capability Assessment
5. Equipment, Services, and Donated Goods
6. Public Education and Awareness

Section III - Response

1. The Role of the Chief Executive
2. Alert/ Notification
3. Activation
4. Response Levels
5. Resource Management/ Direction and Control
6. Public Warning and Emergency Information
7. Information Collection Assessment and Evaluation
8. Restoring Public Services
9. Communications
10. Implementation of Protective Measures
11. Assignment of Roles and Responsibilities
12. Emergency Medical and Public Health
13. Mass Care and Temporary Housing

Section IV - Recovery

1. Overview, including short-term and long-term recovery plans.

- Debris removal line

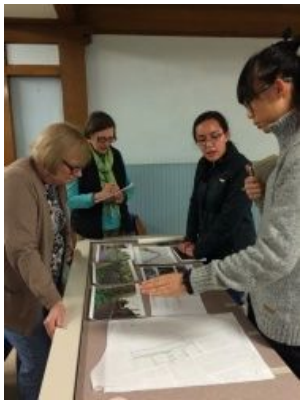
2. Damage Assessment

Learning Group #2

Community Engagement Strategies

March 7, 2017

Engaging, educating and empowering your community is a fundamental aspect of adapting to climate change. There are a range of community engagement strategies, from short to long term, and low to high costs. This is a summary of strategies that may be effective for Hudson River Learning Group communities.


Identify your top 3 strategies to explore for your community, and the planning team will report back with more information at Learning Group #3.

Engagement strategies are organized so you can quickly identify those matching your criteria. Links to case studies are included for a more in-depth look.

- Categories: arts, technology, outreach, governance and education
- Goal: awareness, education and participation
- People and financial resources: low (green), moderate (yellow) and high (orange)
- Potential partners and funders
- Primary target of outreach: event attendees, online community, specific target audience/area, community-wide
- Timeframe: short, long and ongoing
- Depth of interaction: low, moderate and high

[strategies on next page]

Community Engagement Matrix - Learning Group #2

Strategy	Focus Area	Goal	Work/ capacity required	Expected cost	Potential partner(s)	Potential funders	Primary target of outreach	Time frame	Depth of engage ment	Case study/ example	Link
Visual art displays	Arts	Awareness + Education	Moderate	$$	Local artists and art institutes, higher ed + schools	CFA, NEA Art Works	Community-wide	Short	Low	Artists and Climate Change: installations	Case study link
Performance Art event with discussion	Arts	Participation	Moderate	$$	Local artists, art institutes and production companies (Arm of the Sea Theater, Lumberyard)	CFA, NEA Art Works	Event attendees	Short	Moderate	Anu, Artists and Climate Change: performance	Case study link
Community design contest	Arts	Education + Participation	Moderate	$$	Local businesses	CSC, DEC EJ grants	Event attendees	Short	High	NYC bike rack design competition, Boston bench design competition	Case study link
Systems drawing sessions	Arts	Education + Participation	Moderate	$	Art schools	NEA Art Works + similar	Event attendees	Short	Moderate	Andrea Frank - SUNY New Paltz	Case study link
Sculpture/ land art installation	Arts	Awareness + Education	High	$$$	Local artists	HREP, NEA Art Works + similar	Community-wide	Long	Low	High water line	Case study link
Posting info on and updating website	Technology	Education	Low	$	Cornell WRI, HREP, local higher ed intern		Online community	Ongoing	Low	Who to call during a flood	Case study link
Social media	Technology	Awareness, Education + Participation	Low	$			Online community	Ongoing	Moderate		Case study link
Email Newsletter	Technology	Education	Low	$	Cornell WRI, HREP, local higher ed intern		Online community	Ongoing	Low	Kingston Mayor's Message, Yonker's This Week	Case study link
Flood Guide printing and distribution	Outreach	Education	Moderate	$$	Cornell Cooperative Ext.	CSC	Target group or area	Short	Moderate	Catskill flood guide	Case study link
Small scale neighborhood meetings	Outreach	Awareness, Education + Participation	Moderate	$	Cornell Cooperative Ext.	DEC EJ grants	Target group or area	Long	High	Baltimore case study	Case study link
Beach/ shore cleanup	Outreach	Participation	Moderate	$	Watershed groups, Scenic Hudson, Riverkeeper	DEC EJ grants	Event attendees	Short	Moderate	Annual Riverkeeper Sweep	Case study link
Tree planting + maintanence	Outreach	Participation	High	$$	HREP Trees for Tribs	HREP	Event attendees	Ongoing	Moderate	Trees for tribs	Case study link
Fisherman outreach (distribute materials, have conversations, etc.)	Outreach	Awareness, Education + Participation	Moderate	$	HREP fisheries	HREP	Target group or area	Long	Moderate	DEC Cooperative Anglers Program	Case study link
Participatory mapping exercises	Outreach	Education + Participation	High	$$	TNC, HREP, Local higher ed	HREP, TNC, Greenway grants	Event attendees	Long	High	Kingston FTF mapping exercise	Case study link

Community Engagement Matrix - Learning Group #2

Strategy	Focus Area	Goal	Work/ capacity required	Expected cost	Potential partner(s)	Potential funders	Primary target of outreach	Time frame	Depth of engage ment	Case study/ example	Link
Walking or kayak tours	Outreach	Education + Participation	Moderate	$	Historic societies, volunteers, Recreation Departments, local kayak clubs or outfitters	DEC EJ grants	Event attendees	Short	Moderate	Friends of Historic Kingston tours	Case study link
Participate or have Tables/ displays at special events	Outreach	Education + Participation	Low	$$	Local higher ed, HREP	HREP, SeaGrant	Event attendees	Short	Low	Hudson River Valley Ramble	Case study link
Proactive, effective media communication	Outreach	Awareness, Education + Participation	Moderate	$$	Local radio station, higher ed for PSA development, CCE	DEC EJ grants	Community-wide	Ongoing	Moderate	Denizens of the Deep	Case study link
Partner w/ Chamber of Commerce to educate local businesses	Outreach	Awareness + Education	High	$	Chamber of commerce, business owners	CFA	Target group or area	Ongoing	High	Partners Helping Partners	Case study link
Public meetings (Common Council, Planning Board, etc.)	Governance	Awareness + Education	Moderate	$			Event attendees	Ongoing	Moderate	Rebuild by Design, Center for Rural Design	Case study link
Community taskforces (eg flooding/ climate)	Governance	Education + Participation	High	$$	Multiple	HREP, DOS	Event attendees	Ongoing	High	Climate Smart Community Task Force	Case study link
Transparency efforts (posting meeting notes online, etc.)	Governance	Awareness + Education	Low	$			Online community	Ongoing	Low	ICMA Building Transparent Communities	Case study link
Conservation Advisory Council	Governance	Education + Participation	High	$$	HREP, Scenic Hudson, Hudsonia, local higher ed, New York State Association of Conservation Commissions		Community-wide	Ongoing	High	Village of Red Hook CAC	Case study link
Local Waterfront Revitalization Plan	Governance	Participation	High	$$$	DOS, HREP	DOS	Target group or area	Long	High		
New or updated comprehensive plan	Governance	Participation	High	$$$			Community-wide	Long	Moderate	Metropolitan Council Planning Guide	Case study link
Local higher education/ research partnerships (interns working for muni gov, CAD, research to answer local questions, etc.)	Education	Awareness, Education + Participation	High	$$	Environmental Consortium of College and Universities	Cornell WRI	Varies	Varies	Varies	Climate-Adaptive Design, Resilient Communities Project	Case study link
Climate change/ waterfront curriculum	Education	Education + Participation	Moderate	$	M (local elementary + secondary schools, HREP)	HREP, SeaGrant, Teaching the Hudson Valley	Target group or area	Ongoing	Moderate	Hudson River Estuary Climate Change lesson project	Case study link
Student-driven data collection	Education	Education + Participation	High	$$	M (local elementary + secondary schools, HREP)	HREP, SeaGrant, Teaching the Hudson Valley	Target group or area	Ongoing	High	Eel project, Day in the Life of the Hudson River	Case study link

Community Engagement Matrix - Learning Group #2

Strategy	Focus Area	Goal	Work/ capacity required	Expected cost	Potential partner(s)	Potential funders	Primary target of outreach	Time frame	Depth of engage ment	Case study/ example	Link
Sand sculpting/ modeling/ erosion demo	Education	Education + Participation	High	$$	M (local elementary + secondary schools, HREP)		Event attendees	Short	Moderate	Teach Engineering curriculum, Erosion in Rivers	Case study link
Acronyms	CCE	Cornell Cooperative Extension				HREP	Hudson River Estuary Program				
	CFA	Consolidated Funding Application				NEA	National Endowment for the Arts				
	CSC	Climate Smart Communities				PSA	Public Service Announcement				
	DEC	Department of Environmental Conservation				TNC	The Nature Conservancy				
	DOS	Department of State				WRI	Water Resources Institute				
	EJ	Environmental Justice									

Learning Group #3 - June 19, 2017
Meeting Summary

Overview

The Sea Level Rise Implementation Learning Group held its third session June 19, 2017, with representatives from Piermont, Stony Point, Kingston, and Catskill meeting with the project planning team (NYS DEC Hudson River Estuary Program [HREP], Consensus Building Institute [CBI], Scenic Hudson) to continue coordinating work to implement recommendations from sea level rise (SLR) Task Force reports along with other flooding adaptation and mitigation initiatives. The City of Kingston is participating in the project both as a SLR task force community and a member of the project planning team (as the HREP grant recipient and administrator). The meeting was held at the River Center at Long Dock Park, Beacon, NY.

Analyses to Support Local Adaptation Strategies

Donna Verna with Crawford & Associates presented on two projects she has been leading in the Village of Catskill, both funded by Hudson River Estuary Program grants and recommended by the Catskill Waterfront Resilience Task Force

1. Zoning Code Analysis for Flood Resiliency. Crawford & Associates reviewed the Flood Damage Prevention Law (FDPL), zoning code, and NYS Uniform Code. Based on the review they recommend a Flood Overlay District based on the 0.2% annual chance flood area (aka 500-yr floodplain), and changes to standards, allowed uses and processes associated with implementing these laws.

2. Risk and Engineering Review of Waste Water System. This review included the waste water treatment plant (WWTP), combined sewer overflows (CSO), and pumping stations in the village. For each of these components, Crawford & Associates developed an elevation-based analysis that compared the year when the asset (and its components) will become vulnerable (based on high SLR projections) to the end of the service life of that asset. They reviewed adaptation options and are making recommendations, including a design to adapt the WWTP itself in its existing location.

The next step for the zoning analysis is implementation. Nancy Richards with Catskill reported that she is working on grant funding to support implementation but that while the planning board is supportive of this, it is taking more effort to get the village board behind the need to implement the consultant's recommendations. Gaby Weiss with HREP pointed out that having a plan for adaptation "on the books" can allow a community to use post-disaster funding to re-build to the plan's standards (rather than to the previous state)

Managing runoff with Green Infrastructure (GI)

Emily Vail from the Hudson River Estuary Program (HREP) gave a presentation overviewing green infrastructure approaches for managing stormwater, which aim to reduce rainwater runoff by allowing it to infiltrate into the ground. The presentation included many examples of these practices, highlighted

other benefits of green infrastructure, and referenced additional resources. Gaby Weiss (also from HREP) then led an exercise in siting green infrastructure. She explained the main considerations for siting green infrastructure (such as topography, soil type, and land ownership), and provided large maps for each community showing a portion of the community with overlaid data that is useful for siting GI. The representatives from each community worked with the planning team and Emily to identify potential locations for GI projects on the maps. Each community was asked to review the potential locations with others in their municipality and identify the most viable GI infrastructure by late July to inform follow-up discussions at Learning Group #4.

Strengthening Community Engagement

Liz LoGiudice led a discussion about effective outreach/engagement strategies. Each community described the general engagement level and challenges it faces, revealing notable differences in these areas. For instance, Catskill has difficulty with volunteer recruitment and retention for climate adaptation efforts in contrast to a generally highly engaged community in Piermont. Kingston has a large Spanish-speaking community that is under-engaged and city leaders are seeking ways to outreach effectively to that community. Groups shared elements of past successful engagement efforts, such as Piermont's newletter (which is written and distributed by a private citizen rather than the Village) and the Kingston Land Trust's new "tierra y comida" events. Liz suggested that climate change adaptation could be incorporated into the work of existing community groups.

The group began a discussion about municipal websites and other social media as engagement tools. Again, there has been some success, but also reports of information being difficult to find on these websites. It was noted that both Piermont and Stony Point are in the process of updating their websites and there was an interest in developing broad content that could be customized by each community. The project team provided a handout with ideas for content topics, and asked that attendees 1) visit their municipal websites by the next meeting and identify where climate resilience (or flood resilience) information is located, 2) identify a potential way to incorporate a link to resilience web content from the home page, and 3) choose from the list of content topics (and any others) so we can work to create common but customizable web content. There was brief discussion of the merit of a stand-alone site (vs. pages within the municipal site), and a general agreement that the group would also like more information on social media.

Key outcomes, decisions, next steps

The meeting generated several specific outcomes and next steps outlined below.

- Participants from Piermont, Stony Point, and Kingston were introduced to zoning code and waste water systems analyses (from Catskills) which may be of use in their own planning.
- Participants learned about Green Infrastructure and began to identify potential sites for such projects in their communities. Specifically, each community was asked to identify and inform the planning committee of what it see as its most viable sites six weeks prior to the August 29 Learning Group #4.
- Each community will consider possible website content elements and how they might fit in to the structure of its municipal websites for the next meeting. The planning team (led by Liz) will follow up with participants and suggest a web structure and basic content.

The planning team will include the presentation slides with meeting materials for participants (and absentee participants) reference. Bennett reminded attendees of meeting #4 (the final in the series) scheduled for August 29th, but suggested re-polling the group to ensure good attendance. The planning team will consult with municipality representatives to craft the next meeting's agenda.

Supplementary materials

- Meeting agenda
- Handouts
    - updated financing fact sheet
    - constructed stormwater green infrastructure techniques
- Presentation slides
    - zoning code and wastewater infrastructure analyses in Catskill
    - green infrastructure basics
    - green infrastructure siting

Meeting Participants

Piermont
Usha Wright

Stony Point
Jake Cataldo
Jim Monaghan

Kingston
Kevin McEvoy
Julie Noble

Catskill
Liz LoGiudice (also a consultant for the planning team)
Nancy Richards

Hudson River Estuary Program
Kristin Marcell
Emily Vail
Gabrielle Weiss

Consensus Building Institute
Bennett Brooks

Scenic Hudson
Nava Tabak

Cornell Cooperative Extension
Michelle Gluck

Crawford & Associates Engineering & Land Surveying
Donna Verna

Sea Level Rise Implementation Learning Groups
Learning Group #3

12:30 to 4:00 p.m. – Monday, June 19, 2017
Scenic Hudson River Center, 8 Long Dock Road, Beacon NY

AGENDA

12:30-1:00 PM **Informal Gathering**
- Lunch will be available starting at 12:30 p.m. and throughout the afternoon

1:00-1:10 PM **Getting Started**
- Welcoming remarks
- Introductions, agenda review and discussion protocols

1:10-2:10 PM **Managing Runoff with Green Infrastructure**
- Introduction to Green Infrastructure
- Community breakouts sessions to identify potential candidates for green infrastructure within each community
- Strategies and next steps to pursue green infrastructure

2:10-3:00 PM *(Participants take break, as needed*) **Strengthening Community Engagement**
- Developing effective webpages and social media
- Brainstorming effective outreach/engagement strategies to address communities' core concerns; draw from matrix case studies as possible

3:00-3:30 PM **Analyses to Support Local Adaptation Strategies**
- Overview of Crawford & Associates recent work in Catskill
  - Wastewater treatment plant vulnerability analysis
  - Land use analysis
- Opportunity for questions and comments

3:30-3:50 PM **Updates**
- Consolidated Funding Application Release
- April Waterfronts conference
- Regional Plan Association Peer-to-Peer Network

3:50-4:00 PM **Next Steps and Reflections**
- Review next steps; elicit feedback on Learning Group discussions

4:00 PM **Adjourn**

FINANCING WATERFRONT RESILIENCE

State and federal resources for communities

2017 Summary of financial assistance programs

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

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

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

NYS Consolidated Funding Application

New York State's Consolidated Funding Application (CFA) allows communities to design comprehensive projects and with one application, apply to multiple state funding sources. Communities may not apply to federal programs such as FEMA through the CFA. You can download the 2017 CFA Available Resources (PDF) online.

LOCAL EXAMPLE: CONSOLIDATED FUNDING APPLICATION

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

Overview of Financial Assistance Programs

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

Municipal planning

Collaboration and public outreach

Resilient structures

Waterfront economy

Emergency management

Floodplain protection

☑CFA = grants included in the NYS Consolidated Funding Application

New York State Department of Environmental Conservation (NYS DEC)

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

Hudson River Estuary Program Grants

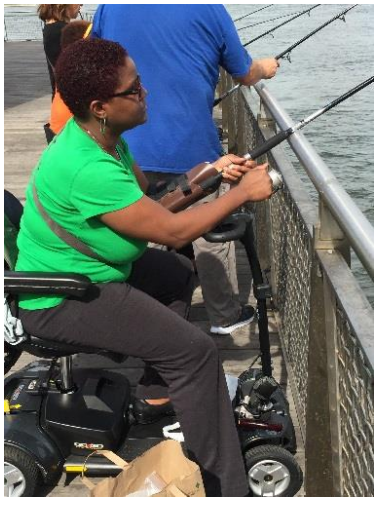
The 2017 Request for Applications (RFA) for Hudson River Estuary Grants ($670,000) cover *Local Stewardship Planning* and *River Access Improvements for People of All Abilities*. These Requests for Applications (RFAs) implement priorities of the Hudson River Estuary 2015-2020 Action Agenda. Grant awards range from $10,500 to $50,000 and require a 15% match. All prospective applicants must register in advance in the New York State Grants Gateway where they can also search and download the full RFA by searching for 'Hudson River Estuary.' Funding for the grants is provided by the New York State Environmental Protection Fund (EPF). For more information on these opportunities, contact HREPGrants@dec.ny.gov and sign up for our Climate Resilience Newsletter.

Local Stewardship Planning

Up to $450,000 is available to help communities and local organizations advance six categories of local projects and programs through planning, feasibility studies, and/or design:

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

Deadline: 3:00 pm, July 12, 2017



River Access Improvements for People of All Abilities

Up to $220,000 is available to local organizations and communities to improve accessibility at existing river access sites for boating, fishing, swimming, wildlife-dependent recreation, or educational interpretation. Projects may include construction of physical improvements, purchase of adaptive equipment, or development of accessibility improvement plans. Accessibility projects should include accessible parking and pathway to the new element or a reference that these already exist. Incorporating principles of universal design is strongly encouraged.

Deadline: 3:00 pm, July 12, 2017

Climate Smart Communities (CSC) Grants

Climate Smart Community (CSC) grants ($9.5M) will support municipal projects that implement certain CSC actions and help them become certified in the program. 50% match required.

Implementation projects fund $10,000 and $2 million to:

- Flood risk reduction
- Extreme event preparation
- Reduction of vehicle miles travelled
- Reduction of food waste, landfill methane leakage or hydrofluorocarbons emissions

Certification projects fund $10,000 to $100,000 to:

- Adaptation, land use, transportation and organic waste management planning
- Inventory and assessment actions aligned with CSC certification requirements

Contact: Climatechange@dec.ny.gov, 518-402-8448

Deadline: 4:00 pm, July 28, 2017, ☑CFA

Water Quality Improvement Project

The WQIP program ($87M) is a competitive, reimbursement grant program that directs funds from the New York State Environmental Protection Fund to projects that reduce polluted runoff, improve water quality and restore habitat in New York's waterbodies. High priority wastewater treatment improvement projects require a 15% match. Land acquisition for source water protection, salt storage, aquatic habitat restoration, municipal separate storm sewer system (MS4), and non-agricultural nonpoint source abatement and control projects require a 25% match. General wastewater infrastructure improvement projects require a 60% match.

Contact: User.Water@dec.ny.gov

Deadline**:** 4:00 pm, July 28, 2017, ☑CFA

Trees for Tribs

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

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

Deadline: Apply by March 1, 2017 for Spring plantings, August 1, 2017 for Fall plantings

Environmental Facility Corporation (EFC)

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

Wastewater Infrastructure Engineering Planning Grant

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

Contact: Susan Van Patten, NYS DEC, 518-402-8267, CFAWater@gw.dec.state.ny.us

Deadline: 4:00 pm, July 28, 2017, ☑CFA

LOCAL EXAMPLE: WASTEWATER INFRASTRUCTURE ENGINEERING PLANNING

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

Clean Water State Revolving Fund

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

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

Deadline: Open enrollment

Green Innovation Grant Program

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

- Bioretention
- Downspout disconnection
- Establishment or Restoration of, Floodplains, Riparian buffers, Streams or Wetlands
- Green roofs
- Green walls
- Permeable pavements
- Stormwater Harvesting and Reuse, *e.g.* Rain Barrel and Cistern Projects
- Stormwater Street Trees / Urban Forestry Programs Designed to Manage Stormwater

Contact: Suzanna Randall, EFC, 518-402-7461, GIGP@efc.ny.gov

Deadline: 4:00 pm, July 28, 2017, ☑CFA

Federal Emergency Management Agency (FEMA)

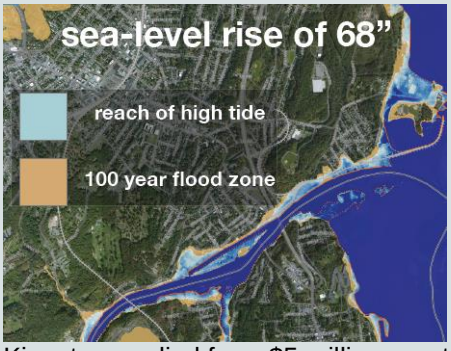
FEMA is a national agency that administers programs providing flood insurance, hazard mitigation assistance, and public assistance grants.

Hazard Mitigation Assistance

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

- Hazard Mitigation Grant Program (HMGP) assists in implementing long-term hazard mitigation measures. HMGP funds are triggered by a declared disaster and funneled to individual municipalities through the NYS Division of Homeland Security and Emergency Services (DHSES).
- Pre-Disaster Mitigation (PDM) provides funds on an annual basis for hazard mitigation planning and projects.
- Flood Mitigation Assistance (FMA) provides funds on an annual basis for projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP).

LOCAL EXAMPLE: HAZARD MITIGATION GRANT



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

Public Assistance Grant Program

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

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

Community Rating System

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

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

LOCAL EXAMPLE: COMMUNITY RATING SYSTEM

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

Department of State (DOS)

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

Local Waterfront Revitalization Program

The Local Waterfront Revitalization Program (LWRP) provides technical assistance, and matching grants ($15.2M) on a reimbursement basis to villages, towns, cities, and counties located along New York's coasts or designated inland waterways, to prepare or implement strategies for community and waterfront revitalization. Funds require a 25% match (15% for environmental justice communities) and the grant categories currently are:

- Preparing or Implementing a Local Waterfront Revitalization Program (LWRP)
- Updating an LWRP to Mitigate Future Physical Climate Risks
- Redeveloping Hamlets, Downtowns and Urban Waterfronts
- Planning or Constructing Land and Water-based Trails
- Preparing or Implementing a Lakewide or Watershed Management Plan
- Implementing a Community Resilience Strategy

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

Deadline: 4:00 pm, July 28, 2017, ☑CFA

LOCAL EXAMPLE: LOCAL WATERFRONT REVITALIZATION PROGRAM

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

Additional Financial Assistance Resources

New York State Energy Research and Development Authority (NYSERDA)

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

Clean Energy Communities Program

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

Contact: cec@nyserda.ny.gov

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

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

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

Grant Program for Parks, Preservation and Heritage

The OPRHP is providing grants ($20M) for acquisition, planning, development, and improvement of parks, historic properties, and heritage areas. Project awards up to $500,000 with 50% required match, or 25% match for projects that are located in high-poverty district.

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

Deadline: 4:00 pm, July 28, 2017, ☑CFA

LOCAL EXAMPLE: PARK DEVELOPMENT

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

US Department of Housing and Urban Development (HUD)

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

Community Development Block Grant Program (CDBG)

HUD is offering competitive grants ($20M) for community development projects. Resilient drinking water, clean water and/or stormwater infrastructure projects could be applied for under Category 1: Public Infrastructure ($750,000 max, $900,000 for joint applicants, no match required), construction and renovation under Category 2: Public Facilities ($300,000 max), and risk assessment and engineering projects could be applied for under Category 4: Community Planning ($50,000 per project, 5% match).

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

Deadline: 4:00 PM, July 28, 2017, ☑CFA

Empire State Development (ESD)

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

Empire State Development Grant Funds

The ESD is offering grant funds ($150M) in the 2017 consolidated funding application. Category 2 is for infrastructure investment that can foster new economic development (grant funds cover up to 25% of project soft costs).

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

Deadline: 4:00 pm, July 28, 2017, ☑CFA

NYS Hudson River Valley Greenway

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

Greenway Communities Grant Program

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

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

Deadline: 4:00 pm, September 8, 2017

LOCAL EXAMPLE: GREENWAY COMMUNITIES GRANT

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

Open Space Funding Options

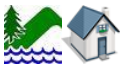
Preserving land as open space in floodplains and in coastal areas is an important aspect of flood resilience recommendations. Here are several options for municipalities looking to preserve open space in their community:

LOCAL EXAMPLE: REAL ESTATE TRANSFER TAX

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

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

Summary table of all funding assistance programs

Agency	Assistance Program	Priority Funding Categories	Grant amounts, required match	Deadline, CFA
DEC	✓ Estuary Grants		$10,500-$50,000, 15%	7/12/17
	✓ CSC Grants		$10,000-$2M, 50%	7/28/17 ☑CFA
	✓ WQIP		15-60%	7/28/17 ☑CFA
	✓ T4T		N/A	3/1, 8/1/17
EFC	✓ WIEP		≤$100,000, 20%	7/28/17 ☑CFA
	✓ CWRLF		N/A	Open
	✓ GIGP		10-60%	7/28/17 ☑CFA
FEMA	✓ HMGP, PDM, FMA		N/A	Trigger by natural disaster
	✓ PA, CRS		N/A	Open
DOS	✓ LWRP		15-25%	7/28/17 ☑CFA
OTHER	✓ NYSERDA		≤$250,000, 0%	Open until 9/30/19
	✓ OPRHP		≤$500,000, 25-50%	7/28/17 ☑CFA
	✓ HUD		$50,000 - $900,000, 0-5%	7/28/17 ☑CFA
	✓ ESD		75% for soft costs	7/28/17 ☑CFA
	✓ Greenway		$5,000 - $10,000+	9/8/17
	✓ Open Space		N/A	N/A

CONTACT INFORMATION

Libby Zemaitis
Climate Outreach Specialist, Hudson River Estuary Program
New York State Department of Environmental Conservation
(845) 256-3153 | Libby.zemaitis@dec.ny.gov | www.dec.ny.gov

Constructed Stormwater Green Infrastructure (CSGI) Techniques

Constructed stormwater green infrastructure (CSGI) techniques consist of practices that manage stormwater runoff, or water from rain or snow that "runs off" across the land, primarily by promoting or mimicking natural rainwater infiltration into soils and groundwater.

CSGI practices are designed to mimic the infiltration processes of natural areas at a smaller scale. Infiltration allows water to soak into the ground rather than running off into low-lying areas or flowing directly into streams. Many CSGI practices are supported by soil and vegetation which absorb water and improve water quality through filtration and biogeochemical processes. Several CSGI, like daylighting, rely on access to sunlight, which can kill bacteria and viruses, to improve water quality.

CSGI practices are generally preferred over hard stormwater management infrastructure (e.g. curbs, catch basins, sewer mains, tunnels, outfalls or detention ponds). CSGI practices that reduce runoff identified in the NYSDEC Stormwater Management Design manual are listed below. Other CSGI practices exist and there is a lot of room for innovation in this arena.

Detailed specifications for all practices can be found in the NYS Stormwater Management Design Manual (NYSDEC 2015).
http://www.dec.ny.gov/docs/water_pdf/swdm2015entire.pdf

Examples of CSGI

Types of constructed stormwater green infrastructure techniques include, but are not limited to, the following:

- Tree planting/street tree pit
- Vegetated swale
- Bioretention
- Raingarden
- Disconnecting rooftop runoff
- Stream daylighting
- Green roofs
- Stormwater planters
- Rain barrels and cisterns
- Porous pavement
- Infiltration or recharge basins

Tree planting/street tree pit: This technique consists of planting or conserving trees to can reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. Trees can be used for applications such as landscaping, stormwater management

practice areas, conservation areas and erosion and sediment control. Stormwater street tree pits reduce stormwater volumes and velocities discharging from highly impervious areas through rainfall interception and evapotranspiration.

Vegetated swale: This technique uses natural drainage paths, or vegetated channels, to slow water moving over land, reduce peak discharge, and provide infiltration into the soil instead of constructing underground storm sewers or concrete open channels.

Bioretention: This technique captures stormwater in a shallow depression underlain by a deep (4 feet or greater) planting bed with engineered soils. It is planted with vegetation that can tolerate both wet and dry conditions and includes an underdrain and a pretreatment area to capture sediment (Figure 1). Bioretention can be designed to treat up to 5 acres of contributing drainage area.

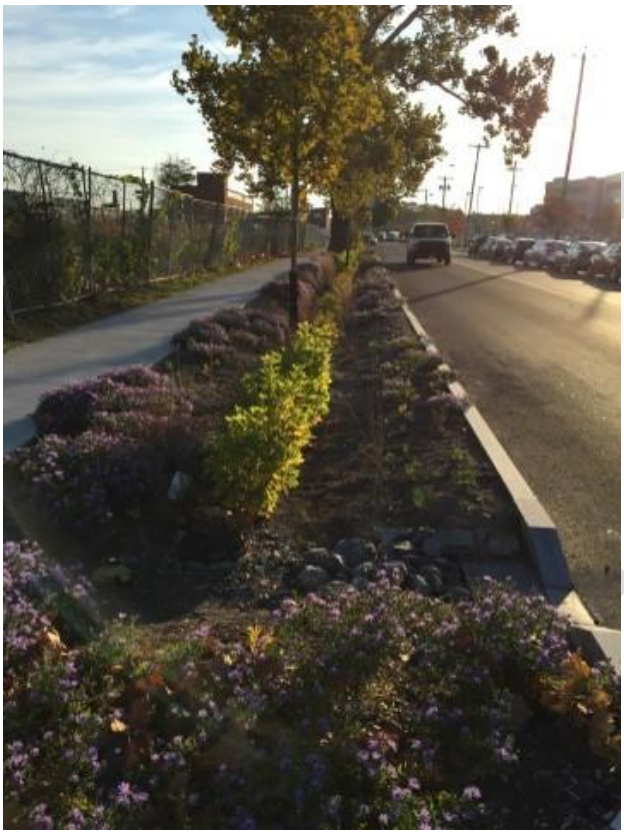


Figure 1. Bioretention area capturing runoff from street in Syracuse, NY. Credit: NYS Environmental Facilities Corporation.

Rain garden: This technique uses a conditioned planting soil bed and planting materials in a shallow depression to store, manage and filter small volumes of stormwater runoff. Rain gardens can be designed to treat up to 1,000 square feet of contributing drainage area (Figure 2).

Disconnecting rooftop runoff: This technique directs runoff from residential rooftop areas and upland overland runoff flow to designated pervious areas, ideally with vegetation, to reduce runoff volumes and rates (Figure 2).

Figure 2. Cistern collecting rooftop runoff and diverting it to a rain garden in Troy, NY. Credit: NYS Environmental Facilities Corporation

Stream Daylighting: This technique uncovers previously-culverted/piped streams to restore natural habitats, better attenuate runoff by increasing water storage, promote infiltration, and help reduce pollutant loads (Figure 3).

Figure 3. Daylighting of the Saw Mill River in Yonkers, NY. Credit: NYS Environmental Facilities Corporation

Green roofs: This technique captures runoff with a layer of vegetation and soil installed on top of a conventional flat or sloped roof. The rooftop vegetation allows evaporation and evapotranspiration processes to reduce the volume and discharge rate of runoff entering conveyance system (Figure 4).

Figure 4. Green roof on at SUNY ESF. Credit: NYS Environmental Facilities Corporation

Stormwater planters: This technique consists of small landscaped stormwater treatment devices, like large planters, that can be designed as infiltration or filtering practices.

Rain barrels and cisterns: This technique includes practices that capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities where it can infiltrate into the ground (Figure 2 and 5).

Figure 5. Rain barrel capturing rooftop runoff. Credit: NYS Environmental Facilities Corporation

Porous pavement: This technique is an alternative to conventional paved surfaces. It is designed to infiltrate rainfall through the surface, thereby reducing stormwater runoff from a site and providing some pollutant removal in the underlying soils (Figure 6).

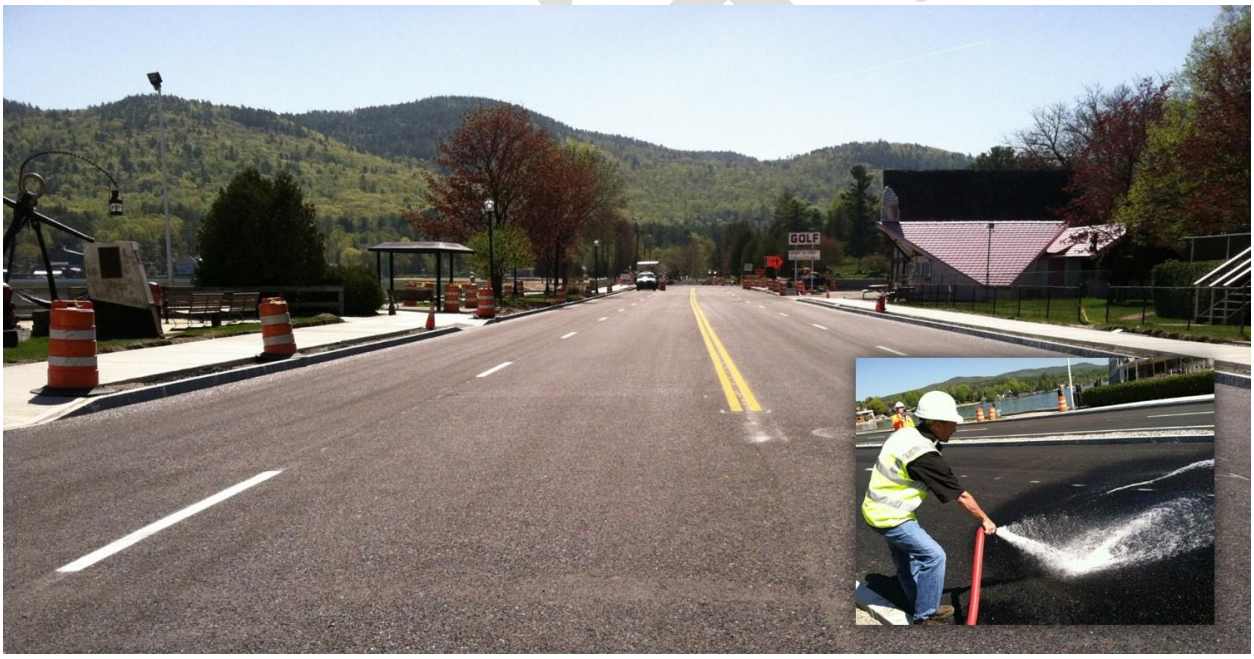


Figure 6. Porous pavement and a demonstration of infiltration in Lake George, NY Credit: NYS Environmental Facilities Corporation

Infiltration or recharge basins: This technique diverts stormwater into temporary storage, where it gradually infiltrates into the ground. They provide increased stormwater storage capacity, reduce flow rates into collector systems and surface water bodies, and

may be combined with natural resource restoration or other floodplain restoration (Figure 7). In dense urban areas large concrete basins may be sited under other structures such as parking lots.

Figure 7. Constructed wetland recharge basin in Long Island, NY Credit: NYS Environmental Facilities Corporation

Examples of specific locations where CSGI has been implemented

There are many examples of CSGI throughout New York State. Several websites offer case studies of a variety of project types:

- Environmental Facilities Corporation Green Innovation Grant program: www.efc.ny.gov
- Hudson River Estuary Program Green Infrastructure Program: http://www.dec.ny.gov/lands/58930.html
- NYC GreenStreet Program: http://www.nyc.gov/html/dep/html/stormwater/using_green_infra_to_manage_stormwater.shtml
- Onondaga County Save the Rain Program: http://savetherain.us/
- Buffalo Sewer Authority Green Infrastructure Program: http://raincheckbuffalo.org/

- NYS Department of Environmental Conservation Water Quality Improvement Grants: http://www.dec.ny.gov/pubs/4774.html

Site-Specific examples

- Rain garden: Kingston Library http://www.dec.ny.gov/lands/86684.html
- Vegetated swale: Village of Greenwood Lake http://www.dec.ny.gov/lands/73096.html
- Stream Daylighting: Saw Mill River, Yonkers http://daylightyonkers.com/
- Pervious Pavement: Lake George's Beach Road Project: www.efc.ny.gov/Default.aspx?tabid=452
- Green Roof: Logan Gardens, Manhattan http://www.dec.ny.gov/lands/101086.html
- Stormwater Planter: Ardsley Bus Shelter http://www.dec.ny.gov/lands/74996.html
- Cisterns: SUNY New Paltz http://buoy.newpaltz.edu/cisterns.php
- Green Streets: Quail Street www.efc.ny.gov/Default.aspx?tabid=452

Factors to consider in design, engineering and maintenance for restoration or construction

CSGI or drainage that is undersized for the location and the volume of water can be overwhelmed in smaller storms. CSGI that is oversized can result in loss of vegetation, if the vegetation doesn't have access to enough water. Water control structures may be needed to manage water storage and rate of release.

CSGI must be designed with consideration for drainage area characteristics including runoff volume, runoff composition, including particular pollutants of concern, soils, depth to groundwater and bedrock. Consideration must be given to the location and depth of other infrastructure underneath (electric, water utilities, etc.) if water will be infiltrating through the ground.

Constructed practices that infiltrate potentially contaminated road runoff shouldn't be too close to a well-field or drinking water sources. Road salt and other deicers can affect water quality and vegetation.

Vegetation must be adaptable to both very wet and very dry conditions. Lack of maintenance can result in vegetation, debris or sediment blocking necessary conveyance paths (e.g. drainage pipes, clogged pores in porous pavement, downspouts from green roofs).Detailed specifications for all practices can be found in the NYS Stormwater Management Design Manual (NYSDEC 2015). http://www.dec.ny.gov/docs/water_pdf/swdm2015entire.pdf

Village of Catskill

Draft Zoning Code Analysis For Flood Resiliency and Risk and Engineering Review of WW System

June 19, 2017

Crawford & Associates Engineering & Land Surveying, PC

Background


RESILIENT
CATSKILL
Report of the Catskill Waterfront
Resilience Task Force

ZONING CODE ANALYSIS FOR FLOOD RESILIENCY

Update Zoning and Codes

The Village of Catskill should plan for resilient land use patterns and encourage safe, resilient structures in the waterfront area through planning, zoning, permitting and building codes in existing and new development.

Short/Medium Term Actions & Strategies

14. **Convene a working group including representation from Village boards, committees, officials and municipal planners to review the Task Force Report and identify which/ how local codes can be modified to better weather and adapt to future storms and account for sea level rise (possibly with a consultant). Considerations may include:**

- Revisions to zoning and codes to more specifically address flood risk areas and extend those areas to reflect projected sea level rise and future conditions; this could include:
  - Special floodzone or waterfront overlay district that corresponds to floodway, 10-year and 100-year flood areas, and future SLR areas, with a corresponding building permit process
  - Preferred shoreline treatments for sea level rise and flood resilience
  - Resilient building standards
  - Steep slopes ordinance
  - Stormwater management techniques
  - Code for securing fuel tanks and other potentially bouyant tanks/structures
- Consider requiring property owners in flood-prone areas to include additional flood-proofing and adaptive measures for new, substantially damaged or substantially improved buildings above the FEMA standard (for example, by exceeding the 2-foot freeboard requirement in local code); *NOTE - upon consultation with the state and the floodplain manager.*

Lead Implementer: **Village Board (initiate and appoint)**

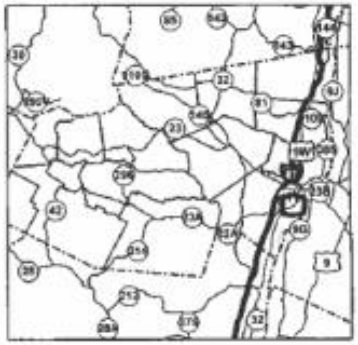
Existing Village Regulations That Address Flooding

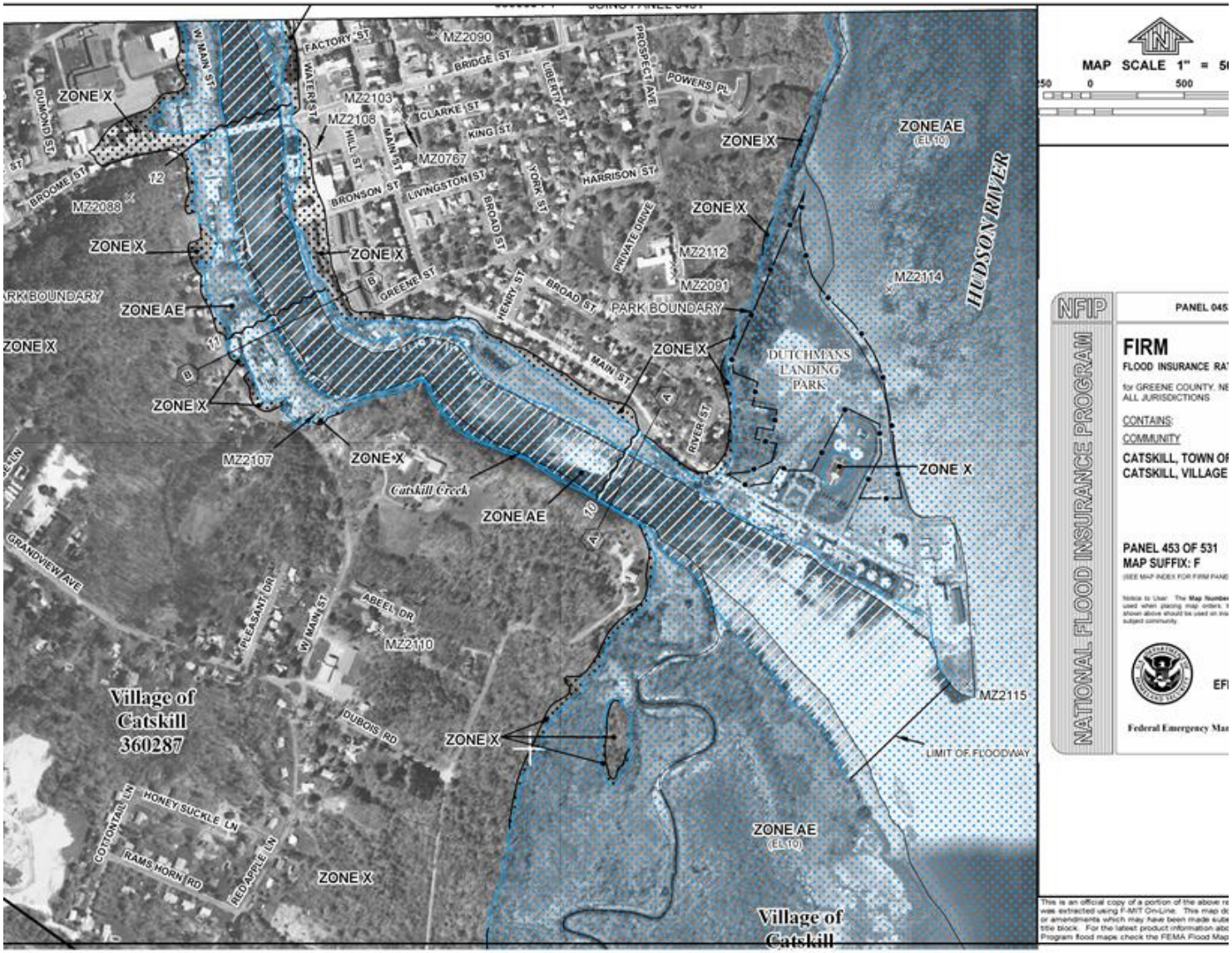
- Village of Catskill Flood Damage Prevention Law (FDPL)
- Village of Catskill Zoning Code
- NYS Uniform Code
  - Includes specific provisions related to construction in a flood area

Zoning

- Boundaries
- Uses allowed within districts
- Standards pertaining to development in districts
- Process for attaining approval of development in districts

Existing Village Zoning Map

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PROSPECT AVE
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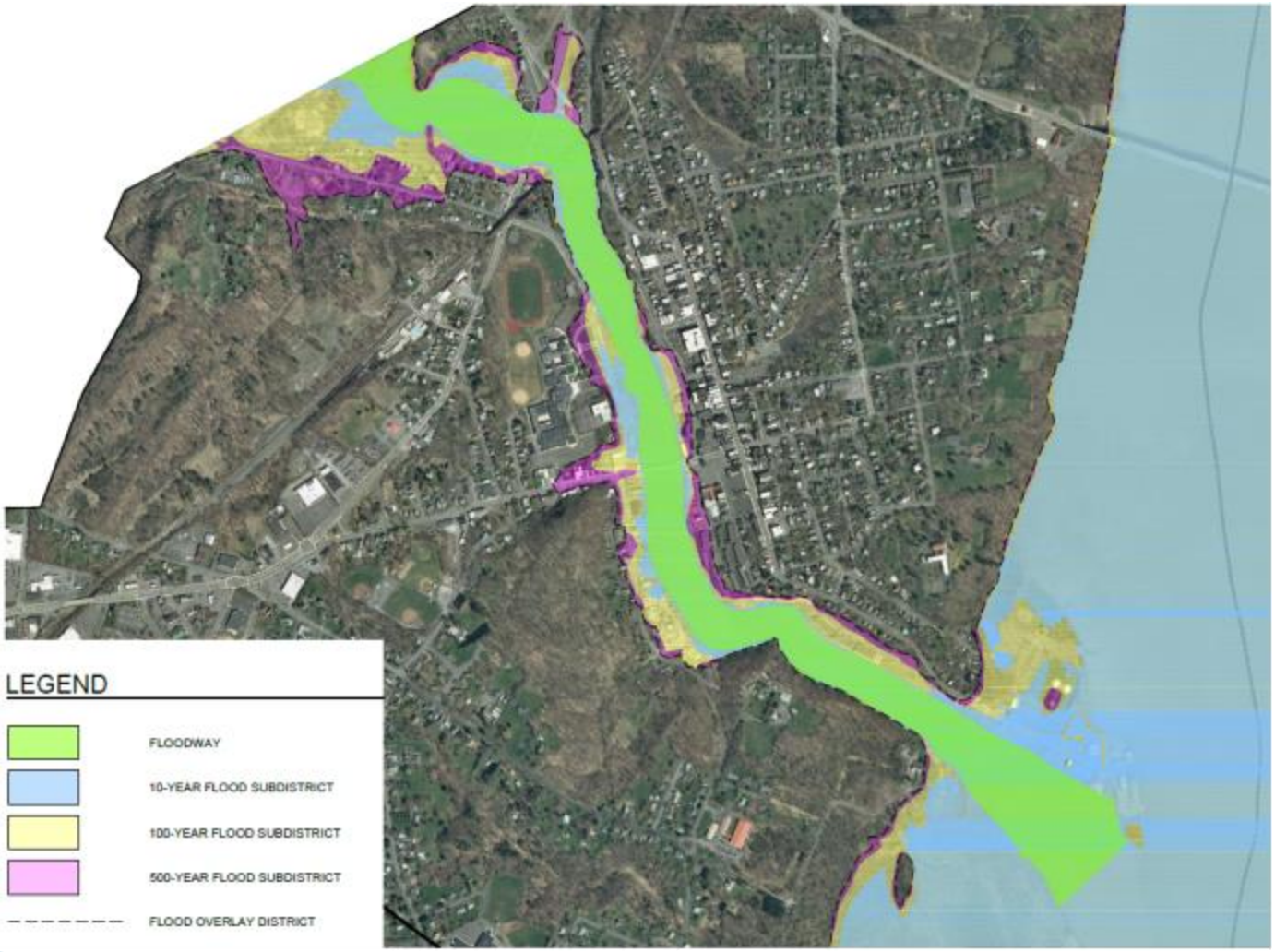
YORK ST
HENRY ST
PRIVATE DRIVE
PARK BOUNDARY
DUTCHMANS LANDING PARK
RIVER ST
Catskill Creek
GRANDVIEW AVE
PLEASANT DR
ABEEL DR
DUBOIS RD
HONEY SUCKLE LN
RAMS HORN RD
COTTONTAIL LN
RED APPLE LN
Village of Catskill 360287
Village of Catskill
LIMIT OF FLOODWAY

Use of 0.2% Annual Chance Flood Area as Boundary of Flood Overlay District

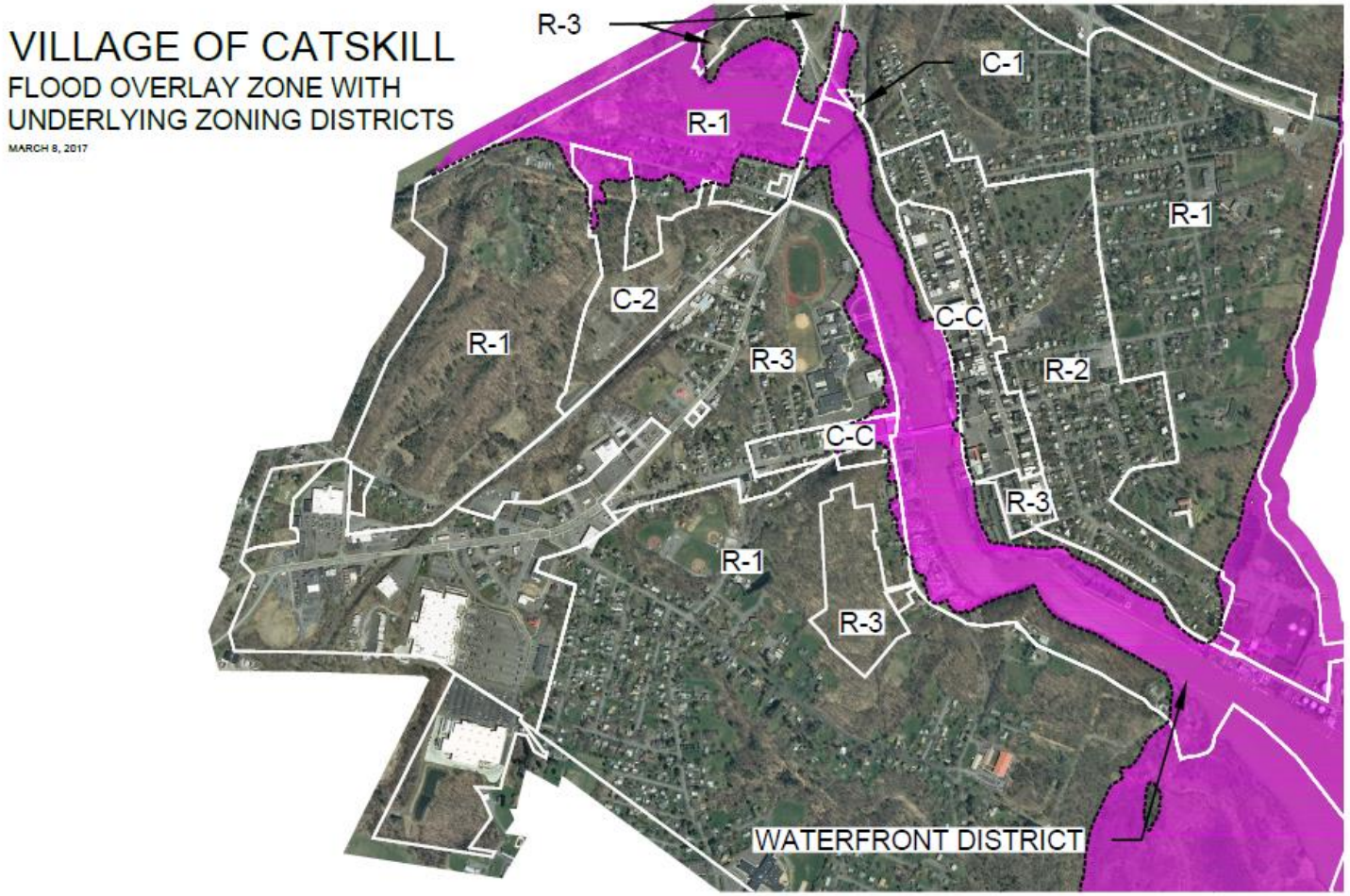
- The use of the 0.2% annual chance flood area is advantageous for the following reasons:

  1) Boundaries already established and depicted on FIRMS
  2) Most buildings at risk of flooding per the Task Force report are within the 0.2% area
  3) Ensures conformance with NFIP
  4) Legal precedent

Flood Overlay District



Flood Overlay with Underlying Districts



Use Consideration

The allowance of existing uses within the potential Flood Overlay sub-districts can be based on weighing the risk to public health and safety, damage to assets, business downtime, and accessibility, risky and costly rescue efforts, future blight, with the proposed use currently allowed in the Zoning Regulations.

The Village may decide to allow a use in consideration that, when flood resilient standards (such as building size and elevation) are applied, the risk of flooding is sufficiently reduced.

Applicability and Process

- All development as defined in the FDPL, construction and substantial improvement of buildings and structures within the Flood Overlay District shall be required to obtain:
  - FDPL permit
  - Special Use Permit and Site Plan Review by Planning Board

Standards for Flood Overlay District

- Setbacks
- Building Size and Height
- Building Elevation and Floodproofing
- Fuel Tanks
- Flood Resilient Construction
- Utilities

Building Elevation & Floodproofing

All new and substantially improved residential structures within the Flood Overlay District shall be elevated such that their lowest floor (including basement) is elevated to the (0.2% annual chance *flood level, or BFE + med 2080 level (3') + 2 feet, or other, whichever is stricter)*.

Next Steps

1. **Continue the process begun by the Task Force and the Climate Adaptive Design Studio of envisioning a resilient waterfront, possibly through a Comprehensive Planning process.**

Next Steps

2. Using the draft Section 3.10 Flood Overlay District included in this report as a guide, include in the planning process, discussions that focus on a potential flood overlay district with consideration of the following:

Next Steps

- acceptable uses to be allowed on the waterfront in consideration of future flood risk
- appropriate standards that can mitigate potential flood risk
- an appropriate boundary for a Flood Overlay District
- application of the regulations to non-conforming buildings and uses.

Next Steps

3. **When available, consider the flood management guidelines and model local laws being developed by the State under the Community Risk and Resiliency Act (CRRA), particularly in regard to the elevation of buildings in flood areas and the adoption of more stringent building standards.**

Next Steps

4. Consult the State Floodplain Manager to ensure that any desired revisions are conformant with NFIP standards and the NYS Uniform Code.

5. Officially revise the Zoning Regulations that result from the planning process.

RISK AND ENGINEERING REVIEW WWTP AND PUMP STATIONS


VILLAGE OF CATSKILL
WASTEWATER
TREATMENT PLANT SITE
CATSKILL CREEK
HUDSON RIVER


PUMPING STATION #3
PUMPING STATION #2
CSO 004
CSO 007A
HUDSON RIVER
VILLAGE OF CATSKILL WASTEWATER TREATMENT PLANT SITE
PUMPING STATION #1
CSO 003A
CSO 002
CATSKILL CREEK

Reduce Infrastructure Risks

The Village of Catskill should ensure that critical infrastructure and services are robust and resilient - able to function during and after major events with minimal damage or downtime.

Immediate Actions

11. Work through the Greene County Multi-Hazard Mitigation Plan to position Catskill for resiliency actions and funding opportunities:

- Update the plan to identify coastal hazards specific to the Village of Catskill, including shoreline erosion, sea level rise, and hurricanes
- Use the plan to propose retrofits for flood vulnerable infrastructure in the village

(NOTE - these updates will make the community eligible for hazard mitigation funds.)

Lead implementer: **Flooding and Storm Resilience Committee/Joint Conservation Commission and Village Board**

Implementation timeframe goal: **next 6 months**

12. Conduct a risk and engineering review of key municipal infrastructure to identify adaptation needs/options/plans for:

- Wastewater treatment plant
- Pump stations
- Primary roadways
- Water supply
- MainCare (oil terminal)
- Greene County Highway Department
- Other municipal facilities

Lead implementer: **Village Board (with consultant)**

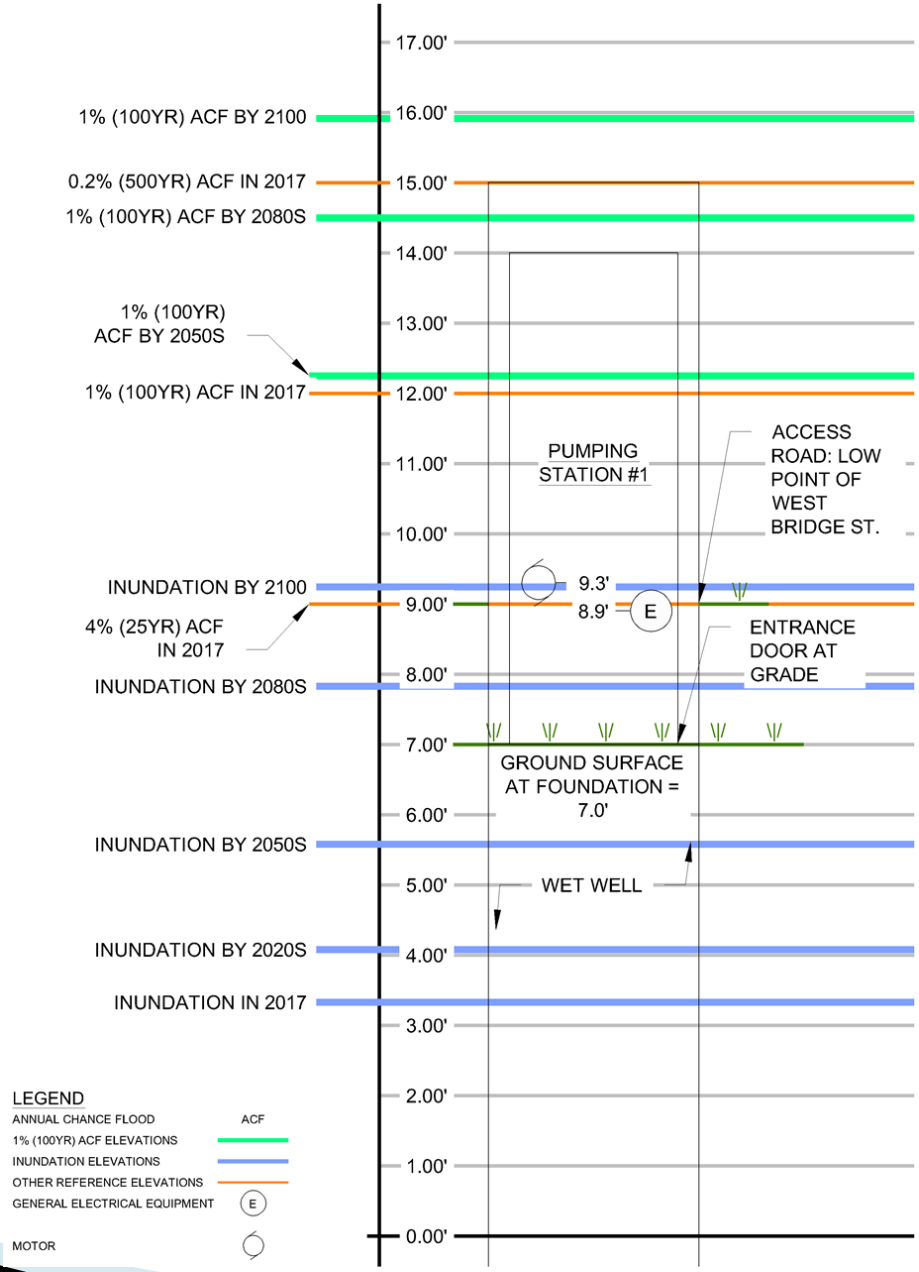
III. APPROACH TO FLOOD RESILIENCE

The process used to review the wastewater treatment system follows the Flood Resilience Guide for Water and Wastewater Utilities published by the United States Environmental Protection Agency (USEPA) in 2014 , as summarized in Figure 1.

- Vulnerability was considered to be the propensity to be adversely affected by flooding.
  - Structures and equipment must be below the flood elevation, must have a pathway for water to reach it, and must have the potential to be damaged by water to be considered vulnerable.

Table 1: NYS Sea Level Rise (SLR) Projections for the Mid-Hudson Region

Time Interval	*Low Projection*	*Low-Medium Projection*	*Medium Projection*	*High-Medium Projection*	**High Projection**
2020s	*1 inch*	*3 inches*	*5 inches*	*7 inches*	**9 inches**
2050s	*5 inches*	*9 inches*	*14 inches*	*19 inches*	**27 inches**
2080s	*10 inches*	*14 inches*	*25 inches*	*36 inches*	**54 inches**
2100	*11 inches*	*18 inches*	*32 inches*	*46 inches*	**71 inches**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0.2% (500YR) ACF IN 2017
1% (100YR) ACF BY 2080S
1% (100YR) ACF BY 2050S
1% (100YR) ACF IN 2017
INUNDATION BY 2100
4% (25YR) ACF IN 2017
INUNDATION BY 2080S
INUNDATION BY 2050S
INUNDATION BY 2020S
INUNDATION IN 2017
PUMPING STATION #1
ACCESS ROAD: LOW POINT OF WEST BRIDGE ST.
9.3'
8.9'
E
ENTRANCE DOOR AT GRADE
GROUND SURFACE AT FOUNDATION = 7.0'
WET WELL
LEGEND
ANNUAL CHANCE FLOOD ACF
1% (100YR) ACF ELEVATIONS
INUNDATION ELEVATIONS
OTHER REFERENCE ELEVATIONS
GENERAL ELECTRICAL EQUIPMENT
E
MOTOR

Pump Station 1

Vulnerable Component	Elevation at Which Equipment is Vulnerable to Flooding (ft)	Vulnerable Year	End of Service Life
LIFT PUMP	8.9	2017	2050
MDP	8.9	2017	2050
LIFT PUMP	9.0	2017	2050
LIFT PUMP MOTOR	9.3	2017	2030
LIFT PUMP MOTOR	9.3	2017	2030
PUMP DISCONNECT	9.5	2017	2050
VFD	9.5	2017	2030
VFD	9.5	2017	2030
PUMP DISCONNECT	9.5	2017	2050
PUMP CONTROLLER	9.5	2017	2030
SUBPANEL	11.0	2017	2050
JUNCTION BOX	11.0	2017	2050

I. ADAPTATION DESIGN CONSIDERATIONS

In order to improve the resiliency of the wastewater treatment system, the Village can adapt to future flood conditions. Adaptation options include projects such as floodproofing structures, elevating equipment, relocating facilities, and more. The following codes, standards, and guidelines are applicable to the design and permitting of wastewater system components:

- The New York State Uniform Fire Prevention and Building Code
- The Draft New York State Flood Risk Management Guidance for the Implementation of the Community Risk and Resiliency Act
- The 10 States Recommended Standards for Wastewater Facilities


Waste Water Treatment Facility
10 Main Street


FINAL SETTLING TANKS
TRICKLING FILTERS
STORAGE SHED
GENERATOR SHED
PRIMARY SETTLING TANKS
WWTP ADMIN BUILDING (1ST FLOOR) & HEADWORKS (BASEMENT)
AERATION TANKS (NOT IN USE)

- Equipment and Structures Currently Vulnerable to Flooding
  - Pump Station #1
  - Pump Station #3
  - The main WWTP building, which houses the WWTP headworks, disinfection equipment, sludge disposal equipment, maintenance workshop and administrative offices.
  - The WWTP final settling tank
  - The WWTP backup generator
  - Access to the vulnerable buildings and structures

- Adaptation Options for WWTP

- Moving the WWTP
- Decentralize wastewater treatment
- Fill and Soft Shoreline
- Barriers: Levees and Floodwalls

- Lessons Learned

NEW YORK
STATE OF
OPPORTUNITY

Department of
Environmental
Conservation

New York State
Water Resources Institute
Cornell University

Green Infrastructure Intro

Emily Vail

Hudson River Estuary Program

NYS Department of Environmental Conservation

New York State Water Resources Institute at Cornell University

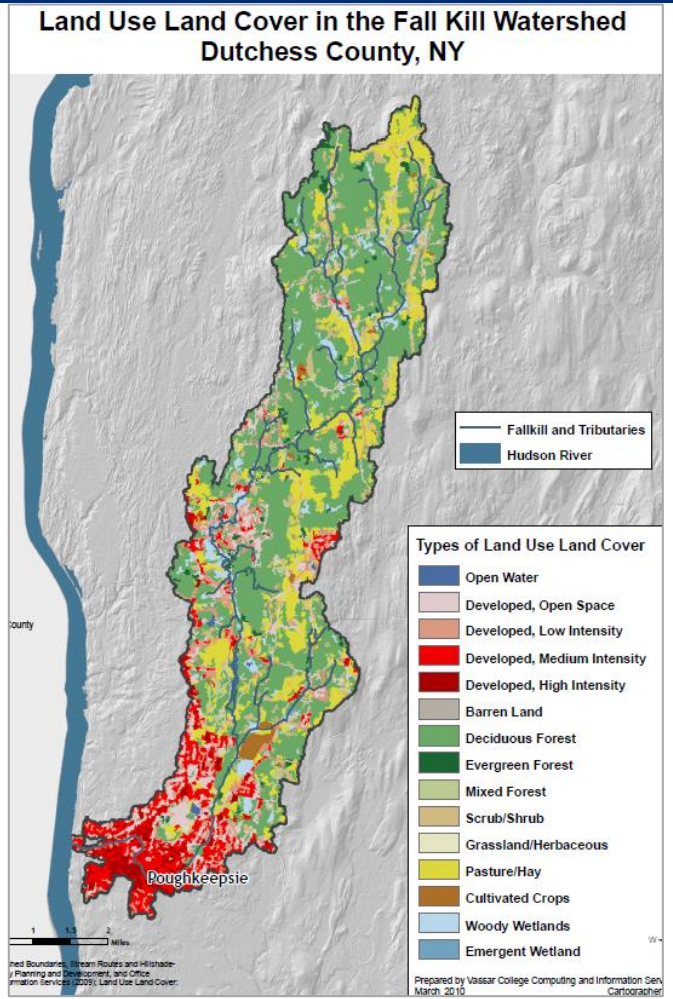
June 19, 2017

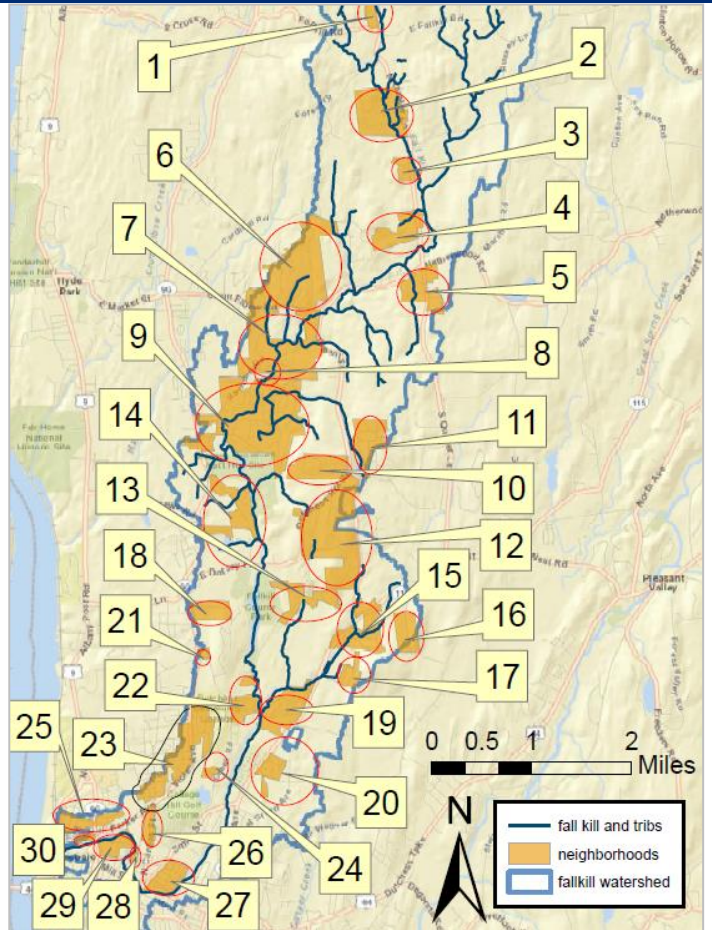
Presentation Outline

- Stormwater runoff
- Green infrastructure
- Examples of practices
- What you can do
- Resources

Rain Garden at Piermont Library

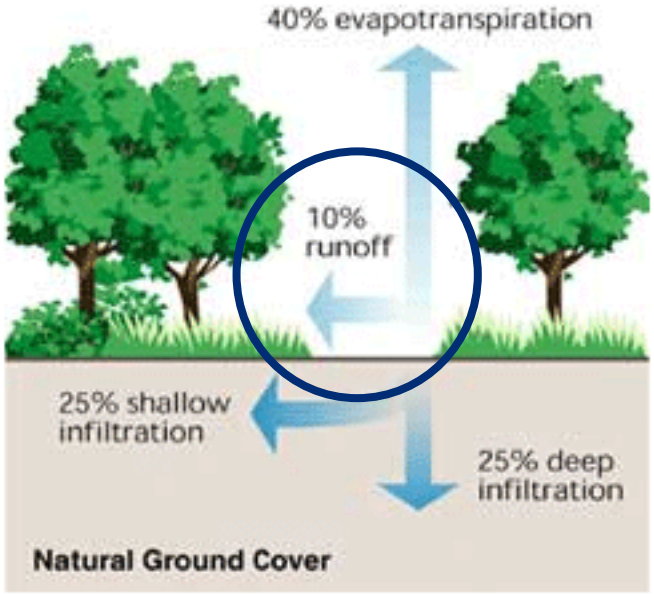
Watershed Thinking

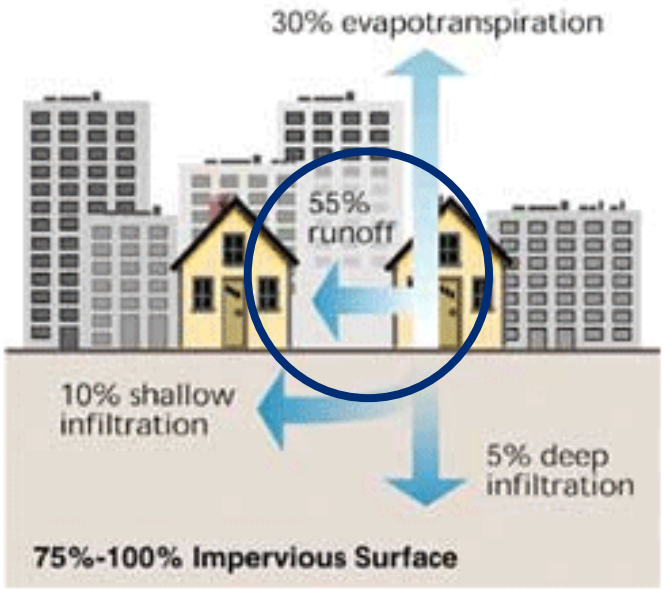




Fall Kill Neighborhood Source Assessment

Impervious Surfaces and Stormwater Runoff



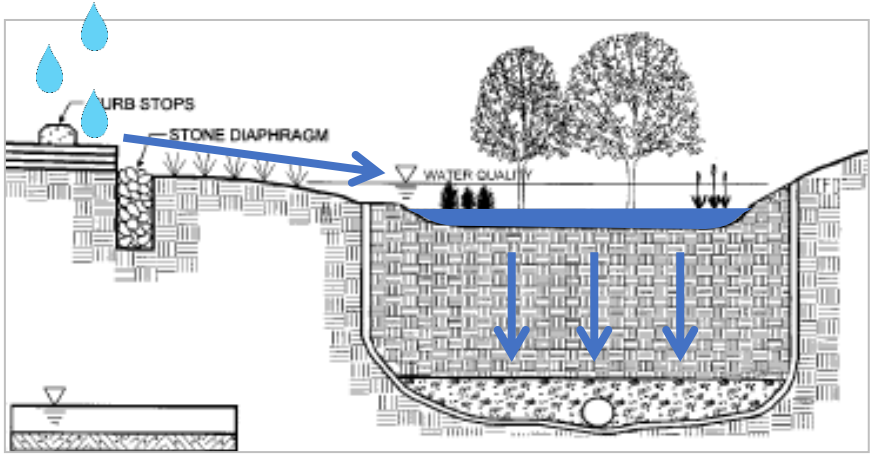


Stormwater Carries Pollutants

- Polluted runoff causes most stream impairments in the Hudson Valley
- Traditional stormwater management
  - Impervious surface -> storm sewer -> streams

What is green infrastructure?

- Different approach to stormwater – natural & engineered systems
- Reduce runoff by allowing stormwater to infiltrate and be used by plants

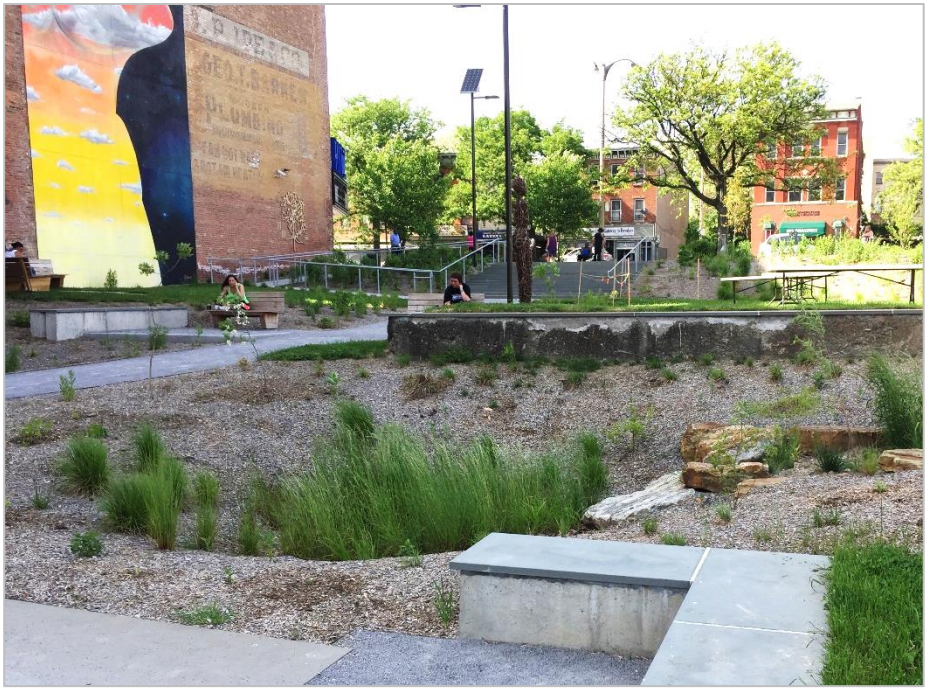


NYS Stormwater Management Design Manual

Bioretention area, Vassar College

Green Infrastructure

- Scales – site, neighborhood, sewer-shed, municipality, watershed, region
- Provides multiple benefits by
  - Slowing runoff
  - Removing pollutants
  - Keeping water out of the sewer system
  - Adding vegetation to the landscape

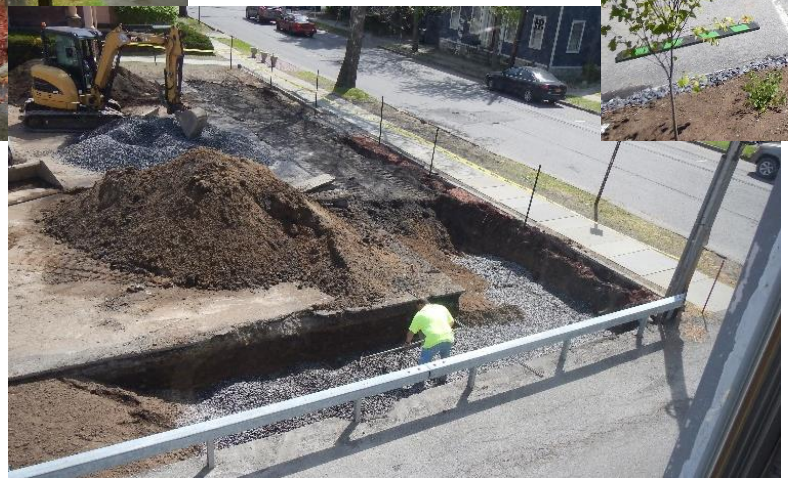


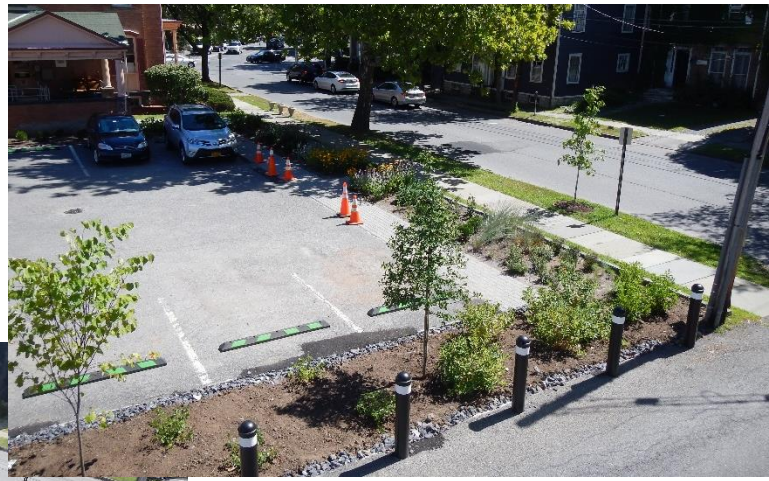
Safe Habors Park, Newburgh

Green Infrastructure at Ulster County Lot

Before

Construction





After

Why Use Green Infrastructure?

- New development – required to reduce runoff with green infrastructure (if >1 acre of disturbed soil)
- Redevelopment – more lenient

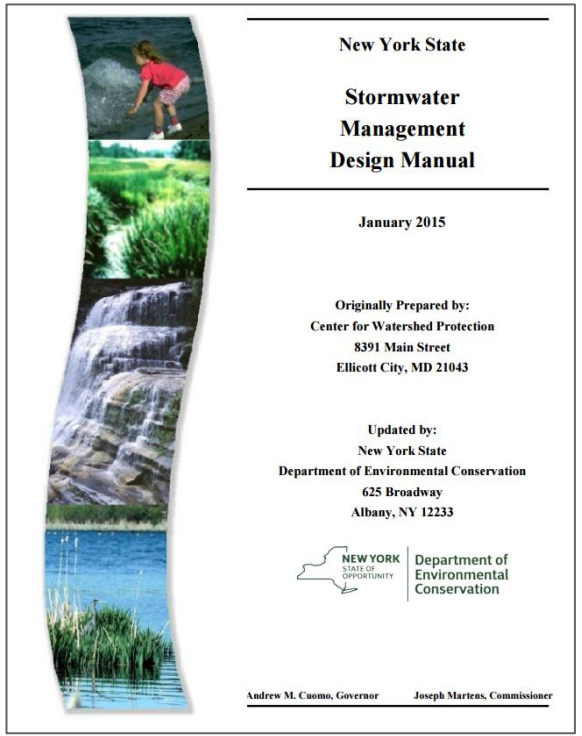
DEC Construction Stormwater Permit

- Retrofits – generally not required, improving existing infrastructure

What is the problem you want to solve?

NYS Stormwater Management Design Manual

1. Planning
   - Preserve natural areas → Avoid stormwater
   - Reduce impervious surface cover → Reduce stormwater
2. Green infrastructure practices → Manage stormwater



Green Infrastructure Principles

- Wide range of practices for different applications
- Infiltrate or store runoff for reuse
- Treat stormwater closer to where rain falls
- Several small practices instead of one large one

Pervious Pavement and Vegetated Swale,
Roeliff Jansen Community Library

Rain Garden/Bioretention Area

- Shallow, vegetated depression, stores waters and filters it through soil

Kingston Library

Uptown Municipal Lot, Kingston

Vegetated Swale

- Linear, vegetated channel

Bard College, Red Hook

Village Hall, Greenwood Lake

Green Roof

- Layers of soil and vegetation on rooftops that capture runoff

SUNY Orange, Newburgh

Marist College, Poughkeepsie

Porous Pavement

- Paved surfaces that allow stormwater to infiltrate

Pervious pavers at Kingston municipal lot

Lamont-Doherty Earth Observatory, Orangetown

Rain Barrel or Cistern

- Capture and store roof runoff to re-use (non-contact)

Wooster Hall, SUNY New Paltz

Private home in Orangetown

Infiltration Practices

- Focus on infiltration, can be underground

StormChamber, Orangetown Highway Department

Dry Well, Kingston Municipal Lot

Other Green Infrastructure Practices

- Street trees
- Stormwater planters
- Stream daylighting
- Stream buffer restoration

Tree pit, Troy

Bus Shelter, Ardsley

Potential Benefits of Green Infrastructure

- Manage stormwater (quality and quantity)
- Recharge groundwater
- Reduce sewage overflows
- Improve resiliency/reduce flooding
- Cool urban areas – energy savings
- Provide wildlife habitat
- Improve air quality
- Improve human health
- Increase land values
- Beautify neighborhoods

Rain Garden at Vassar College

Green Infrastructure Success

- What is the goal?
- Select appropriate sites
- Projects need to be:
  - Designed,
  - Installed, and
  - Maintained properly

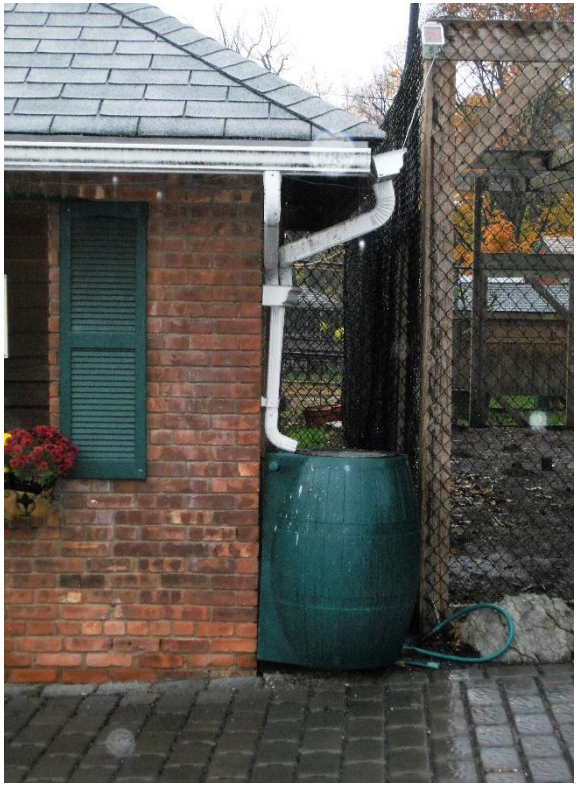
What you can do

- Identify potential sites (now and with other local experts)
- Consider opportunities for implementation
- Grants to help
  - Planning: Hudson River Estuary Grants
  - Implementation:
    - DEC Water Quality Improvement Program
    - EFC Green Innovation Grant Program

Rain Garden at Cornell Cooperative Extension's Agroforestry Resource Center

Resources

- Hudson River Estuary Program
  - Green Infrastructure Examples
  - Grants
- Lower Hudson Coalition of Conservation Districts guide for planning boards
- Pace University guide for CACs
- EPA Stormwater Planning guide
- EPA economic benefits case study: Lancaster, PA
- NRDC The Green Edge: How Commercial Property Investment in Green Infrastructure Creates Value



Rain Barrel, Forsyth Nature Center, Kingston

Thank You!

- Emily Vail
- Watershed Outreach Specialist
- Hudson River Estuary Program
- emily.vail@dec.ny.gov
- (845) 256-3145

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Flickr: www.flickr.com/photos/nysdec

New York State Water Resources Institute
Cornell University

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

Green Infrastructure

Siting

Factors for green infrastructure siting

Topography

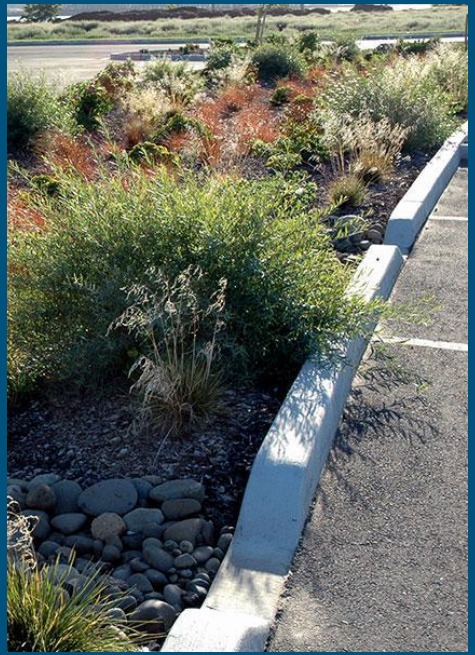
Wetlands and streams

Land use and ownership

Soil type + Groundwater depth

Topography

- Retain and infiltrate water in flat areas
- Slow water on steep slopes

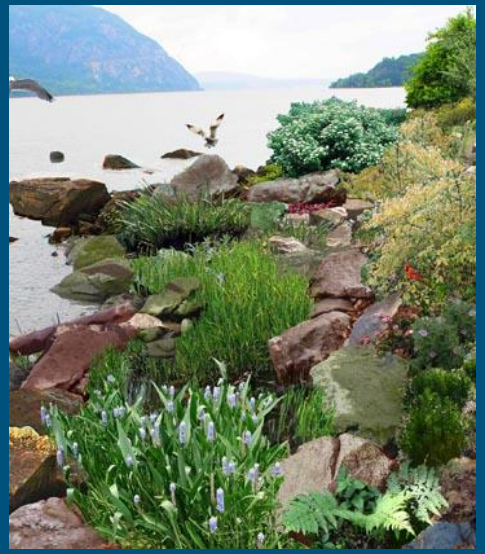


Topography

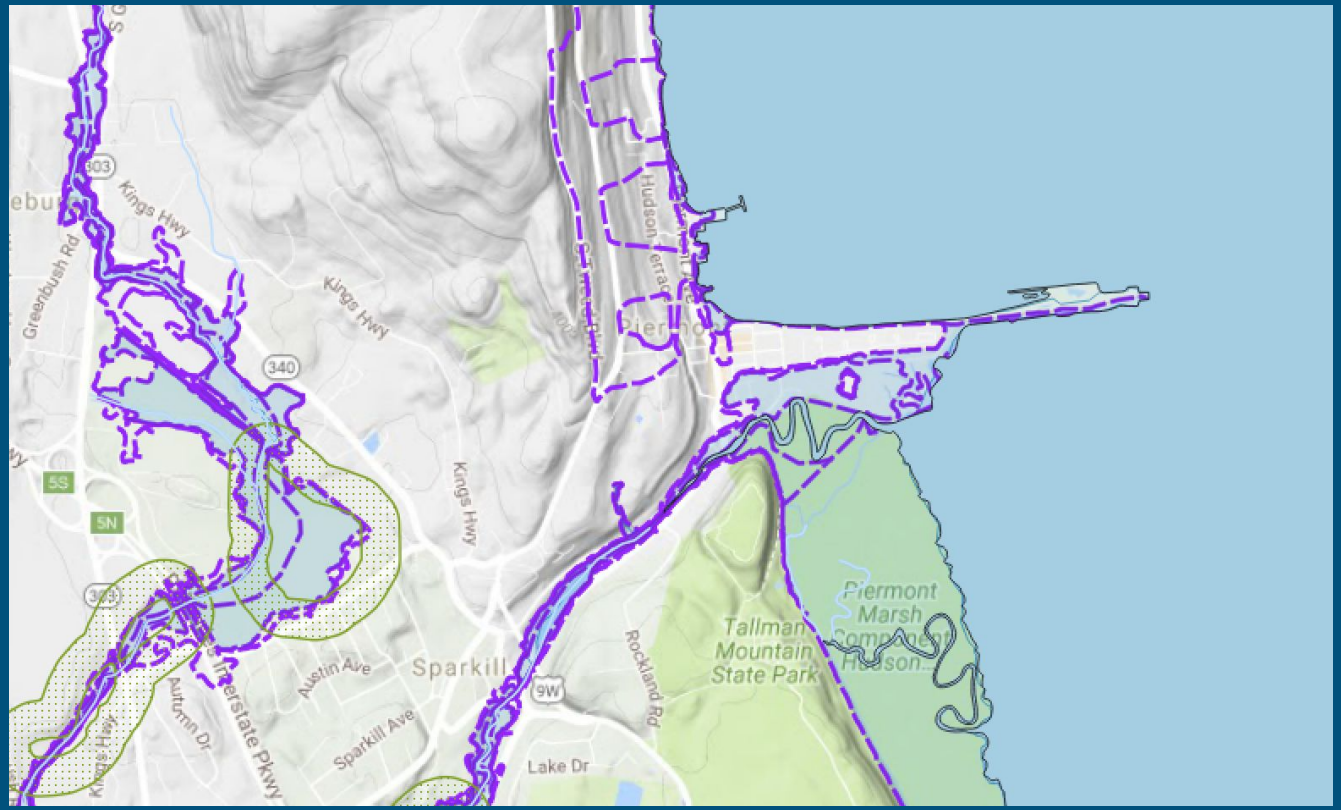

303
Kings Hwy
Kings Hwy
340
S Tweed Blvd
Hudson Terrace
Piermont Ave
Piermont
5S
5N
303
Kings Hwy
Palisades Interstate Pkwy
Austin Ave
Sparkill
9W
Rockland Rd
Tallman Mountain State Park
Piermont Marsh
Autumn Dr
Sparkill Ave
Lake Dr

Wetlands and streams

- Protect with buffers
- Can you restore or improve the site?
- Erosion control on banks

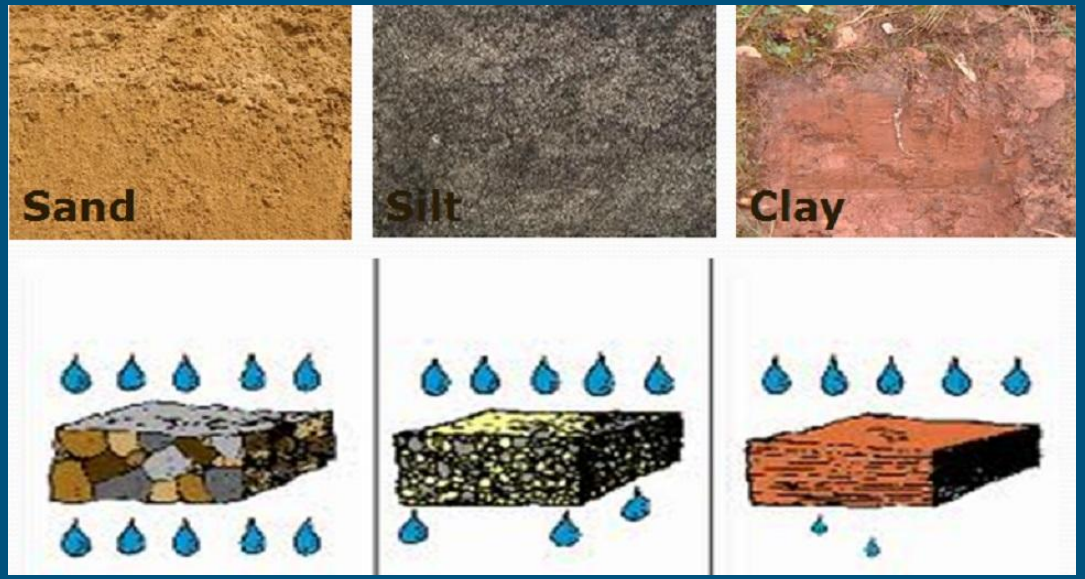


Wetlands and streams



Soil type

- Higher sand content usually means better infiltration rates, but each site needs to be tested.
- Less than 3’ of depth to groundwater or bedrock won’t infiltrate



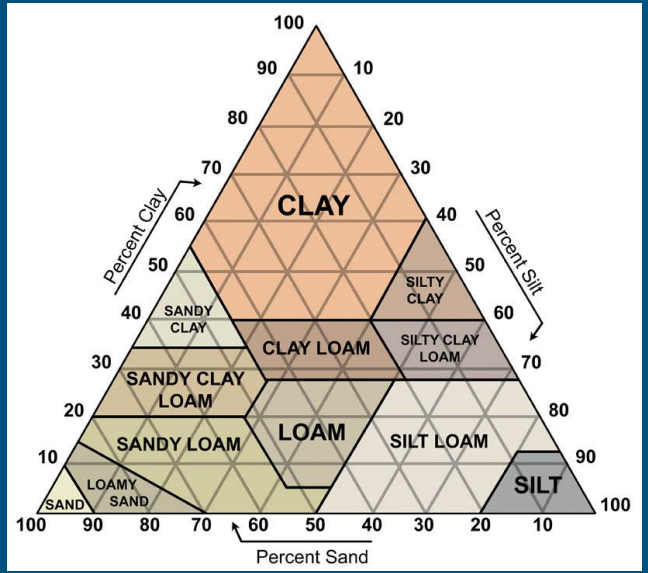
Soil type + groundwater depth

- Does the soil drain well, and groundwater/bedrock is more than 3’ below the surface?

    Infiltrate!

- Does the soil drain poorly or there’s groundwater/ bedrock near the surface?

    Build a constructed wetland or swales to clean and slow down



Soil type + groundwater depth

Land use and ownership

- Who owns the site?
- How big is the site?
- Can you disconnect impervious areas within or adjacent to the site?

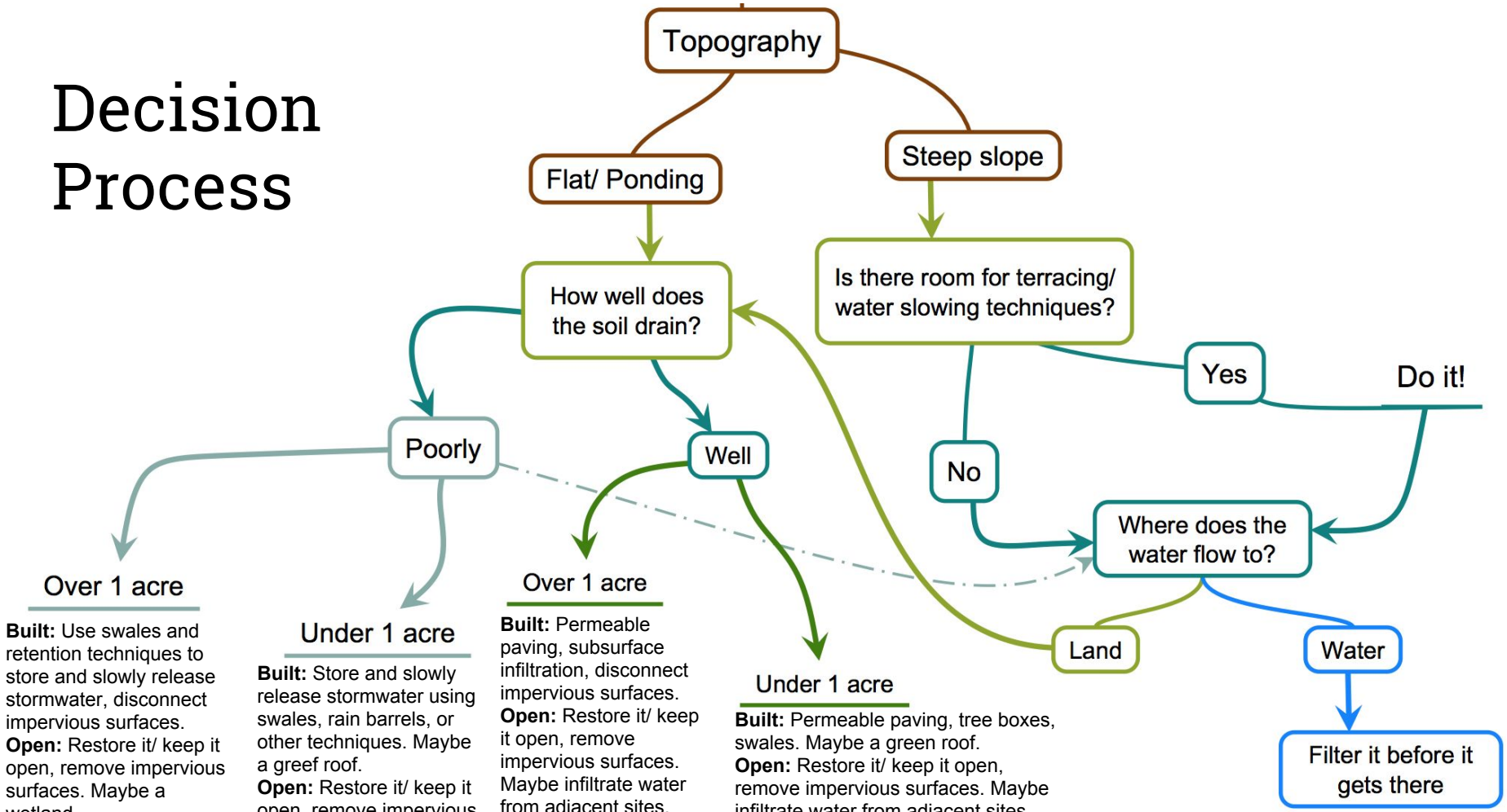
Land use and ownership

As you’re working

- What are problem areas that either produce a lot of runoff or flood now?
- Who owns the land?

  Could they work with you on this project? (Schools, large property owners)
- Are there projects coming up that could incorporate green infrastructure?

Decision Process



Learning Group #4 – August 29, 2017
Meeting Summary

Overview

The Sea Level Rise Implementation Learning Group held its fourth session August 29, 2017, with representatives from Piermont, Stony Point, Kingston, and Catskill meeting with the project planning team (NYS DEC Hudson River Estuary Program [HREP], Consensus Building Institute [CBI], Scenic Hudson) to continue coordinating work to implement recommendations from sea level rise (SLR) Task Force reports along with other flooding adaptation and mitigation initiatives. The City of Kingston is participating in the project both as a SLR task force community and a member of the project planning team (as the HREP grant recipient and administrator). The meeting was held at the River Center at Long Dock Park, Beacon, NY. This was the final in a four-meeting series planned under the grant.

Public Realm Vision: A Framework for Transformation

Jamie Maslyn Larson (landscape architect and urban designer, principal at Wagner Hodgson Landscape Architecture) and Jee Mee Kim (planner and real estate advisor, principal at HR&A Advisors) provided a presentation on Public Realm Visioning. The Public Realm Vision is a place-based design concepttool for identifying public spaces that are vital to a community's identity and quality of life. Jamie and Jee Mee drew on their extensive experience to give examples of this process from concept to execution (including funding) in several locations around the country. Following the overview presentation, participants from each community were asked to sketch ideas on large maps based on the following questions: 1) What are your favorite public places and spaces (as you would show a newcomer on a tour of your community)? 2) Imagining yourself in the future, where your dream for an ideal (vibrant, friendly, resilient) public realm has come true, give another tour- where would you go and what would a newcomer see? 3) Describe how the dream future public realm came to be (who catalyzed and helped, how got started, process, easy wins, milestones/tipping points that led to big action).

This presentation and exercise represented a return to big picture thinking that was undertaken during sea level rise task force processes, but with a novel framework for design and incorporating the ongoing work. Feedback from the group included the need to consider the impact of and constraints associated with scale (i.e. relatively small communities along the Hudson), importance of physical and place-based connectivity, ways to tie in to existing planning processes (and incorporate fresh ideas), and consideration for ensuring transformative visions do not result in gentrification. Jamie and Jee Mee underscored their interest in working with Hudson River waterfront communities using the Public Realm Vision Framework and welcomed opportunities for follow-up.

Community Engagement: Web-based Media & Other Strategies

Since the group's last meeting in June, Liz LoGiudice advanced work on website content and design considerations for the four communities. Liz sought feedback on website page title, tagline, and headings. The group brainstormed ideas and discussed target audiences (what users will come to the

site seeking information) and design options such as using links to other sites and optimizing for search keywords. Liz shared a list other websites which could either serve as examples or have content that may be of interest. The participants expressed a preference for a website focus on adaptation (rather than mitigation or climate change).

With the goal of having a website publishable by the end of the year for each community, Liz is to provide the communities with guidance on keywords to help finalize the wording for sites, and each community will provide Liz with information on their accomplishments that should be included on the page (which can be provided via the Learning Group project survey). Liz is intending to have website completed by the end of the year.

Moving forward

Updates:

- Piermont is reviewing a draft of its flood preparedness guide (bringing to village board and emergency managers for input)
- Catskill and Stony Point are moving forward with water infrastructure mapping initiatives (Catskill is already doing some digital mapping). Dara is working on options for funding (or working with a class) to support working with interested communities in 2018.
- Community Risk and Resiliency Act (CRRA)- Flood Risk Management Guidance will be publicly available soon; model local laws are behind schedule, but Kristin will inform communities when they are available. Kristin expressed a willingness to arrange for some kind of briefing – in-person workshop, webinar, etc. – to review the guidance and model local laws once it is completed and available.

Participants had an open discussion about the Implementation Learning Group process to provide feedback to the planning team. Overall, there was positive feedback from participants about the benefit of this group. Positive aspects included benefitting from other communities' ideas, as well as having a "forcing function" to continue to be engaged and make progress on resilience-related initiatives that may not have otherwise happened. Challenges or areas for improvement identified included the time commitment (both for participants and for planning team), distance to meetings, need for ways to integrate between the communities during working sessions to increase learning from each other, and fundamental differences between the four communities (e.g. size, infrastructure at risk, progress on various initiatives).

Future needs and/or wishes identified were:

- Topical workshops that include outlining concrete steps for accomplishing certain tasks (e.g. how to site and implement green infrastructure projects, how to review/improve a development proposal)
- Recruiting the involvement of additional participants from each community
- Arranging for site visits to see individual community projects

- Including additional communities so there is more overlap with like-communities (e.g. for Kingston with other cities)
- Developing tools for addressing proposed development in waterfront areas
- Continuing cross-community collaboration, perhaps twice a year, using a combination of discussion/collaboration framework and workshops on specific topics. Participants had mixed views whether these gatherings should focus solely on the four communities or invite in others.

Participants filled out a survey with specific questions about the overall Learning Group process to assist the planning team in understanding what worked well and what could have been improved, and how to continue supporting progress in the communities. Participants also filled out paperwork for grant match tracking requirements.

Key outcomes, decisions, next steps

- Each community will continue to work with Liz on webpage development
- Planning team will share the contact information for the group with all participants
- Planning team mailed out the survey to participants who were not in attendance
- Kristin will inform the communities when CRRA products are available, and consider options for a more hand's-on review of these materials with the group
- Planning team will consider options for assembling all meeting materials in a centralized location accessible for participants for future reference

Supplementary materials

- Meeting agenda
- Presentation materials
    - Public Realm Vision
    - Community Engagement links
- Participant contact list
- Learning Group survey

Meeting Participants

Piermont
Lisa Defeciani
Laura Straus
Sylvia Welch
Usha Wright

Stony Point
Jake Cataldo
Carl Gilpatrick

Kingston
Kevin McEvoy
Julie Noble
Jennifer Schwartz Berky

Catskill
Arielle Herman
Liz LoGiudice (also a consultant for the planning team)
Nancy Richards

Hudson River Estuary Program
Kristin Marcell
Katie Matus
Libby Zemaitis

Consensus Building Institute
Bennett Brooks

Scenic Hudson
Nava Tabak

Guest speakers/attendees
Jee Mee Kim (HR&A Advisors)
Jamie Maslyn Larson (Wagner Hodgson Landscape Architecture)
Eli Sands (Wagner Hodgson Landscape Architecture)

Sea Level Rise Implementation Learning Groups
Learning Group #4

12:30 to 4:00 p.m. – Tuesday, August 29, 2017
Scenic Hudson River Center, 8 Long Dock Road, Beacon NY

AGENDA

(Note: Following the meeting, Nava will be providing an optional tour of the adjacent Long Dock Park for any interested Learning Group participants. Please plan your travel accordingly.)

12:30-1:00 PM **Informal Gathering**

- Lunch will be available starting at 12:30 p.m. and throughout the afternoon

1:00-1:20 PM **Getting Started**

- Welcoming remarks
- Introductions, agenda review and discussion protocols
- Contractual updates and reminders

1:20-2:15 PM **Public Realm Vision: A Framework for Transformation**

- Lessons learned from national projects executed by the presenters and discussion of ways that public realm planning and design can support climate adaptation and economic development goals in the Hudson Valley
- An interactive conversation to discuss specific Learning Group challenges and opportunities

Jamie Maslyn Larson RLA is an urban designer, landscape architect and Principal at Wagner Hodgson Landscape Architecture in Hudson, NY. Jamie's extensive portfolio of public realm work demonstrates that landscapes can transform the function and identity of our cities and communities. Her designs merge issues like climate change, infrastructure and development with culture and environment to create public space projects that solve problems and improve quality of life.

Jee Mee Kim, Principal at HR&A Advisors, brings over 15 years of experience advising public and private clients on development strategies and master planning, with a focus on transportation planning, transit-oriented development, and resiliency.

2:15 -3:00 PM **Community Engagement: Web-based Media & Other Strategies**

- Discuss and identify web content of interest across all four communities
- Consider specific strategies (community art, visual representation, etc.) to strengthen community engagement

3:00 -3:45 PM **Moving Forward**

- Brief review of next steps related to emergency preparedness guide, water infrastructure inventory, CRRA land use guidelines
- Open discussion on Learning Group process: How do we build on the work we've done together?

3:45-4:00 PM **Participant Survey and Closing Remarks**

- Review next steps
- Closing remarks
- Complete participant survey

4:00 PM **Adjourn**

PUBLIC REALM VISION: A FRAMEWORK FOR TRANSFORMATION

JAMIE MASLYN LARSON, PRINCIPAL
LANDSCAPE ARCHITECT & URBAN DESIGNER

WAGNER HODGSON LANDSCAPE ARCHITECTURE
HUDSON, NY

JEE MEE KIM
PLANNER & REAL ESTATE ADVISOR

HR&A ADVISORS, NEW YORK, NY

WHAT IS THE PUBLIC REALM?

The Public Realm is a vital aspect of the built environment that contributes greatly to a community's unique identity and quality of life: its streets, parks, plazas, sidewalks and open spaces.

It is where civic interaction occurs- meeting neighbors, relaxing, events, discourse, recreating, protests and celebrations.

good civic life = good public realm

WHAT IS A PUBLIC REALM VISION ?

An inspiring design tool that provides strategies for the investment, management and development of the public realm.

Different from a comp plan or an open space plan- it is place-based and can integrate economic development, infrastructure, urban design, operations, maintenance, governance, and other site systems or conditions (like climate change) into a coherent vision.

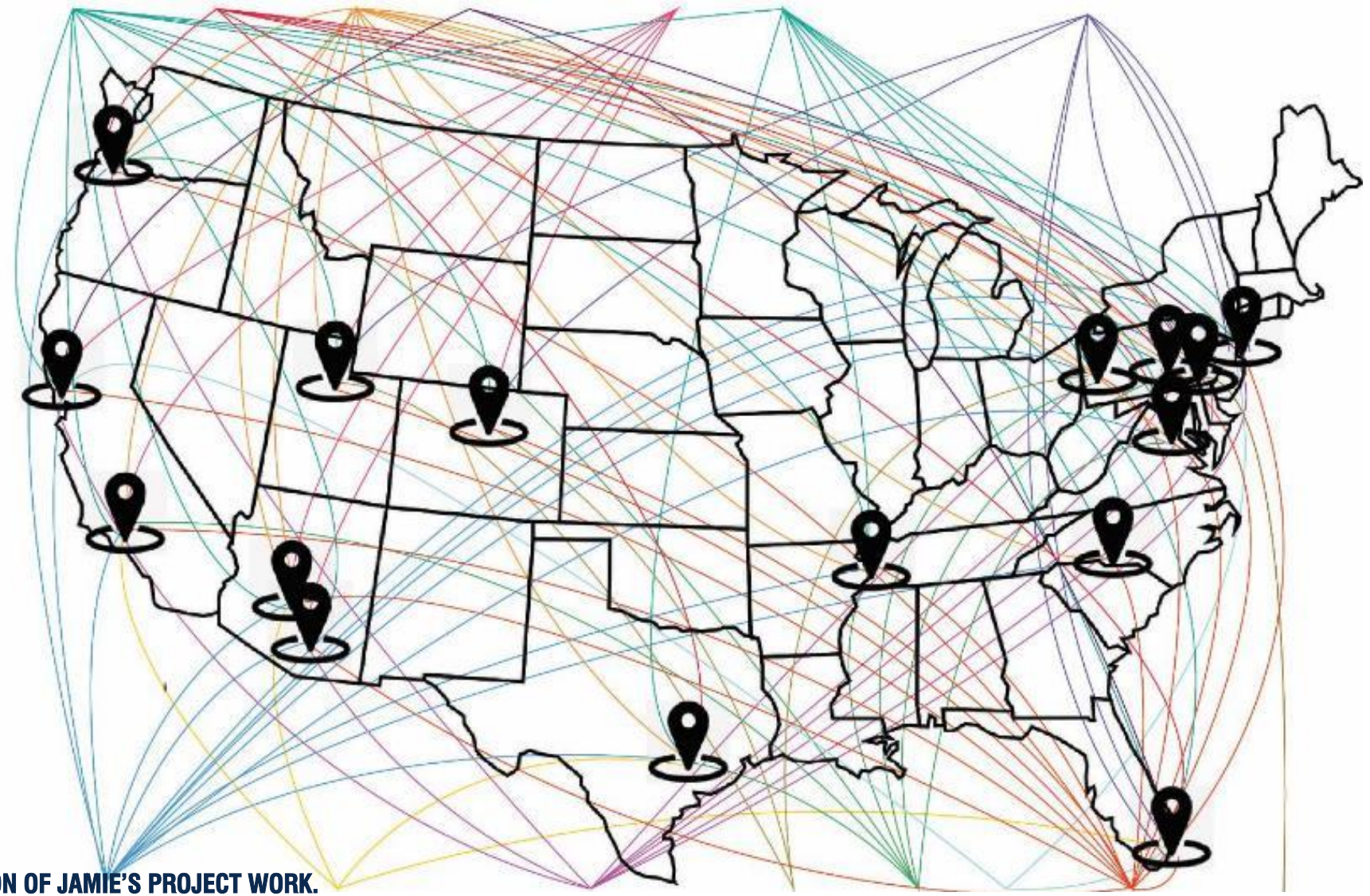
- **Community-supported**
- **Extends beyond political cycle (because it takes time to implement)**
- **Detailed, but flexible too**

OUR WORK IS IN MAKING TRANSFORMATIVE PUBLIC SPACES WITHIN COMPLEX PHYSICAL, POLITICAL & COMMUNITY CONTEXTS

JAMIE LED THE REDEVELOPMENT OF GOVERNORS ISLAND FOR EIGHT YEARS

JEE MEE PREPARED A BENEFITS CASE AND FUNDING STRATEGY FOR A FLOOD BARRIER IN CONEY ISLAND

FOR THE LAST 20 YEARS, CITIES OF EVERY SCALE, ACROSS THE NATION, ARE STARTING THE TRANSFORMATION OF THEIR URBAN AREAS WITH A PUBLIC REALM VISION.



LOCATION OF JAMIE'S PROJECT WORK.

CONTEMPORARY PUBLIC REALM DESIGN MAKES PLACES LIKE THESE

GOVERNORS ISLAND, 2010

INTO RELAXING PUBLIC SPACES THAT INTEGRATE INFRASTRUCTURE AND CLIMATE CHANGE, ENHANCE IDENTITY, AND ATTRACT DEVELOPMENT

GOVERNORS ISLAND, 2013

OLD INFRASTRUCTURE

HIGH LINE, NY, NY

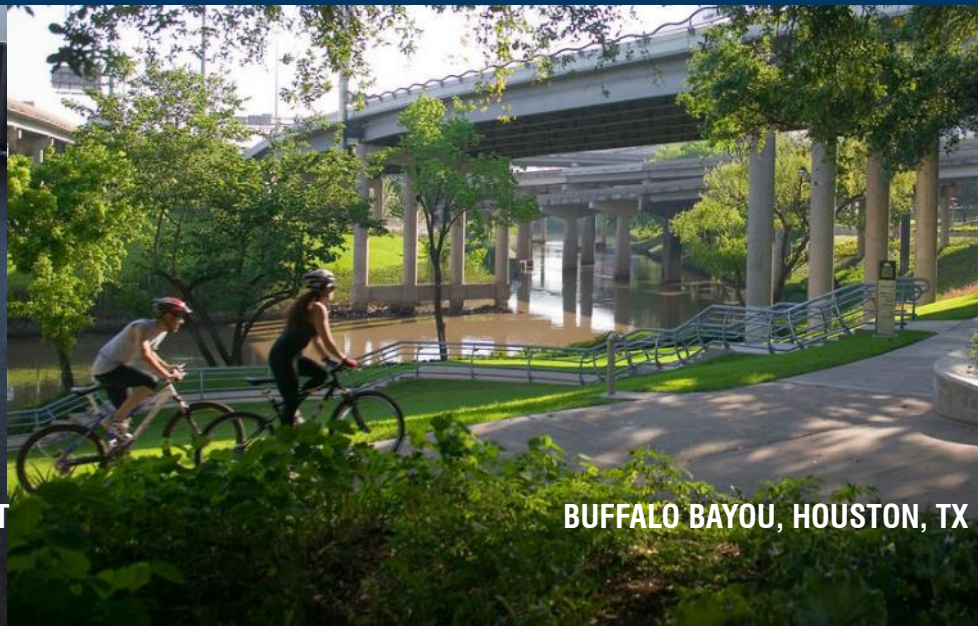
DISCONNECTED WATERFRONTS

CHICAGO RIVERWALK, IL

BROWNFIELD SITES

BUFFALO, NY WATERFRONT

FLOODWAYS AND HIGHWAYS



BUFFALO BAYOU, HOUSTON, TX

OLD INFRASTRUCTURE

LEADS TO…

NEW DEVELOPMENT
EXPANDED TOURISM IDENTITY

DISCONNECTED WATERFRONTS

LEADS TO…

IMPROVED TENANT OCCUPANCY
“REBRANDING” OF BUSINESS DISTRICT

BROWNFIELD SITES

LEADS TO…

CLEAN UP INDUSTRIAL WASTE
TURNOVER OF STAGNANT LANDS TO MOTIVATED DEVELOPERS

FLOODWAYS AND HIGHWAYS

LEADS TO…

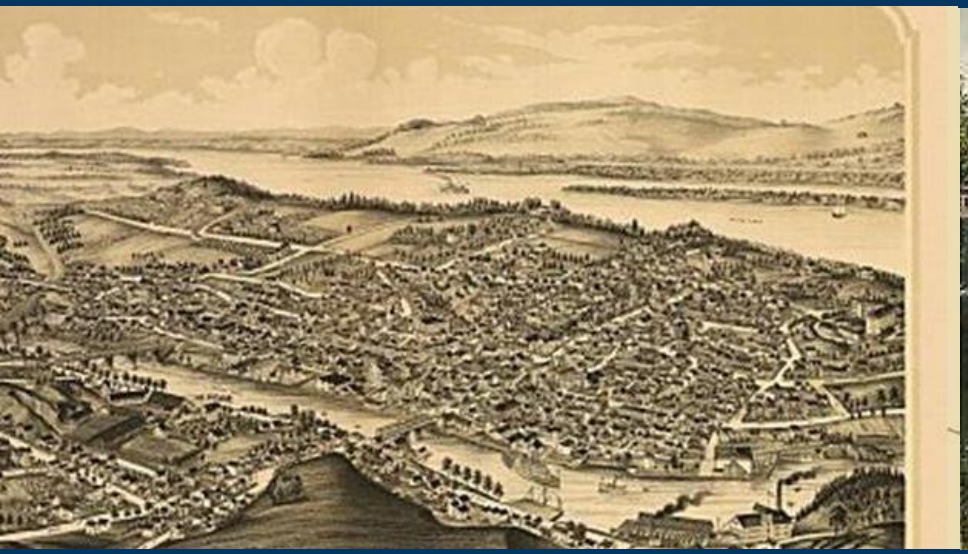
EXPANDED RECREATION SPACES
ATTRACTS/RETAINS WORKFORCE
IMPROVED STORMWATER SYSTEMS

1. HOW CAN CREATING A PUBLIC REALM VISION BRING CLARITY, CONFIDENCE, AND CONSENSUS TO ADDRESS THE NEXT GENERATION OF CHALLENGES?

2. HOW CAN HUDSON VALLEY COMMUNITIES UTILIZE THIS APPROACH?

PIERMONT

KINGSTON



CATSKILL

STONY POINT

FIVE KEY STEPS TO CREATING A PUBLIC REALM FRAMEWORK.

STEP ONE: DECIDE

STEP TWO: ORGANIZE

STEP THREE: FUND

STEP FOUR: VISUALIZE

STEP FIVE: IMPLEMENT

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STEP FIVE: IMPLEMENT

A BIG CHALLENGE IS MOVE BEYOND DAY TO DAY… "LACK OF RESOURCES. SPREAD TOO THIN. ONLY A FEW SHOW UP FOR COMMUNITY MEETINGS. NIMBYISM. WE NEED TO CREATE JOBS, NOT FANCY PUBLIC SPACES. REAL-TIME PROBLEMS NEED TO BE ADDRESSED EVERY DAY. PRIVATE SECTOR REAL ESTATE DOESN'T THINK LONG TERM. TOO MANY/NOT ENOUGH OUTSIDERS. AFFORDABILITY. LAND OWNERS LACK INTEREST OR RESOURCES TO DO ANYTHING. WE'D BE LUCKY TO GET ANYONE INTERESTED IN DEVELOPING HERE. CANT AFFORD IT. WE ALREADY HAVE PLANNING FATIGUE. WHERE TO START?"

STEP ONE: DECIDE

FIND YOUR CHAMPIONS!

CREATE A LEADERSHIP TEAM AND STRUCTURE THAT CAN FOCUS ON THE BROADER VISION FOR THE LONGER TERM, BEYOND POLITICAL CYCLES.

FIVE KEY STEPS TO CREATING A PUBLIC REALM FRAMEWORK.

STEP ONE: DECIDE

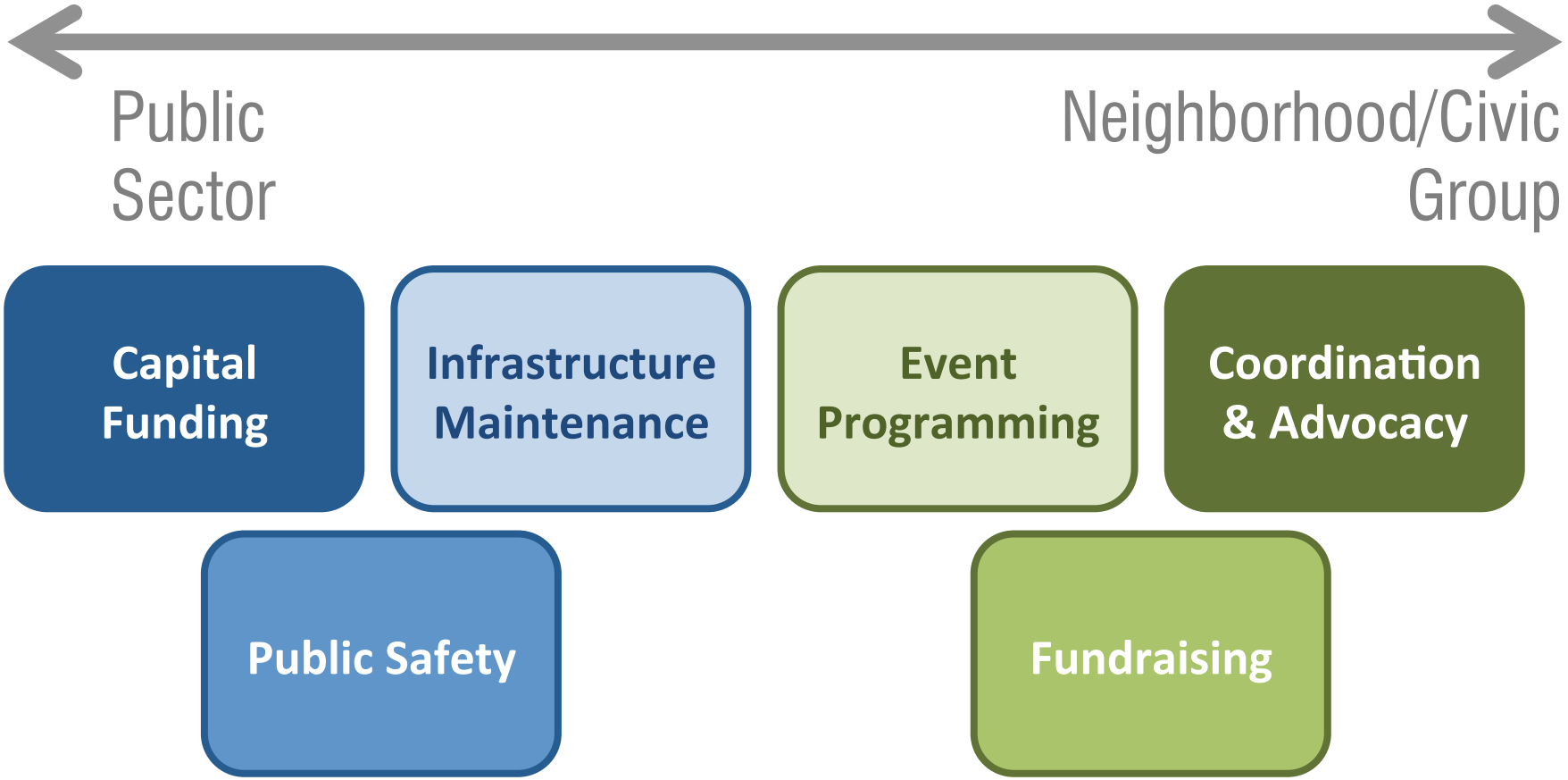
STEP TWO: ORGANIZE

STEP THREE: FUND

STEP FOUR: VISUALIZE

STEP FIVE: IMPLEMENT

PUBLIC AND PRIVATE PARTIES CAN SERVE COMPLEMENTARY ROLES IN SUPPORT OF VIBRANT NEIGHBORHOODS.



Cincinnati Center City Development Corporation: Non-profit Downtown partnership created by City and businesses to oversee redevelopment

Challenge: Downtown Cincinnati void; crime and urban decay

INTERVENTION: REDEVELOPMENT OF FOUNTAIN SQUARE INTO VIBRANT HEART OF DOWNTOWN

- ACTIVE YEAR-ROUND PROGRAMMING
- PURCHASE AND REHABILITATION OF DERELICT PROPERTIES

FIVE KEY STEPS TO CREATING A PUBLIC REALM FRAMEWORK.

STEP ONE: DECIDE

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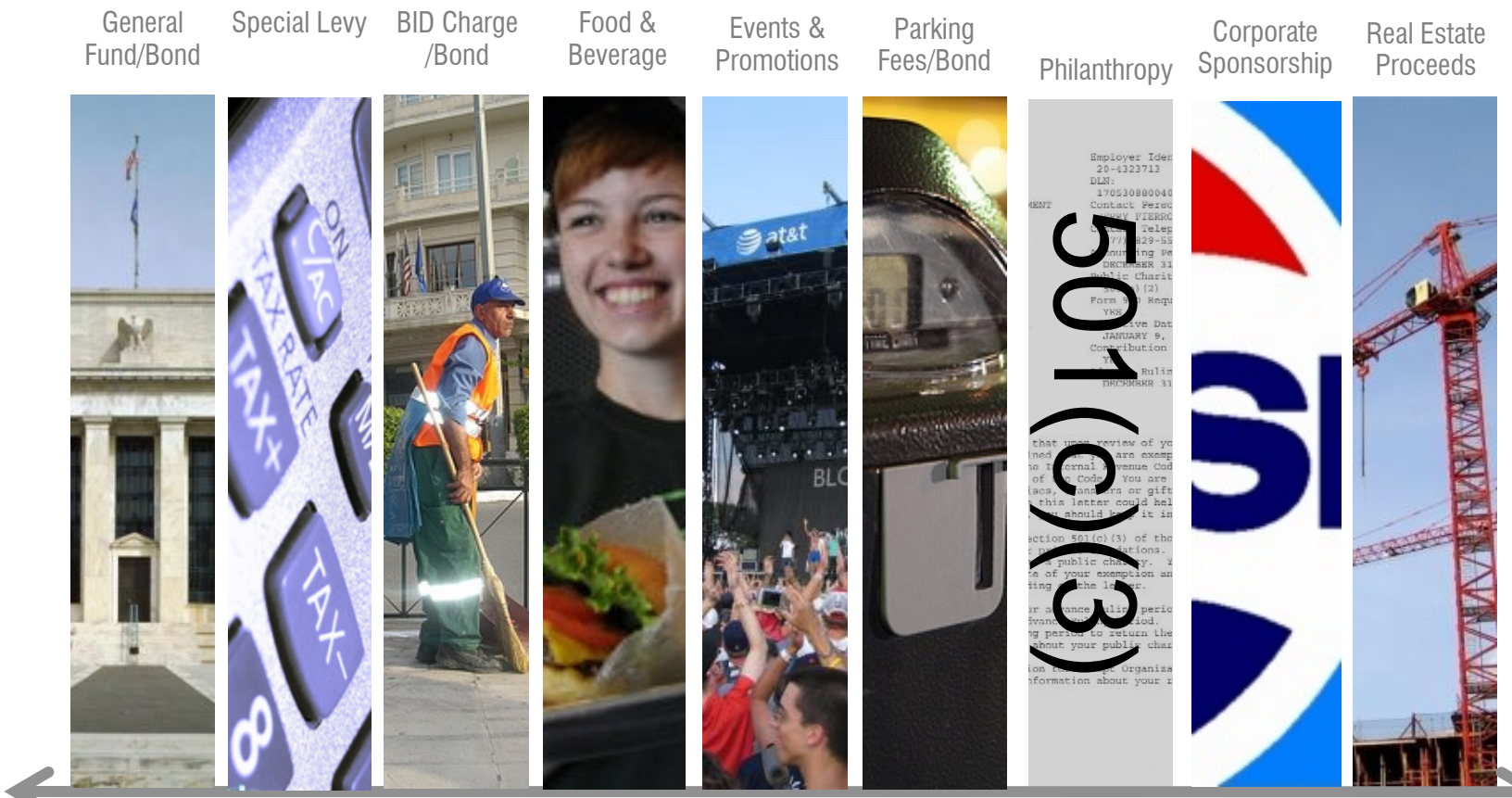
STEP FOUR: VISUALIZE

STEP FIVE: IMPLEMENT

VIBRANT PUBLIC SPACES RELY ON A FULL SPECTRUM OF FUNDING SOURCES.



DIFFERENT SOURCES OF FUNDING CAN BE LEVERAGED THROUGHOUT DIFFERENT STAGES OF A PROJECT'S LIFECYCLE.

PLANNING <

Less intensive
Sources: pooled funding through private and public contributions, foundations, State and local planning grants (BOA, LWRP)

CAPITAL <

Intensive, one time commitment
Sources: projects with multiple benefits can leverage funding from multiple sources, value capture mechanisms (TIF, joint development)

OPERATIONS & MAINTENANCE <

Level of intensity based on type of project
Sources: Event/programming revenue, corporate sponsorships, philanthropy

FIVE KEY STEPS TO CREATING A PUBLIC REALM FRAMEWORK.

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STEP FOUR: VISUALIZE

STEP FIVE: IMPLEMENT

STEP TWO: VISUALIZE

THREE PROJECTS/THREE CHALLENGES/THREE SOLUTIONS:

1. **GOVERNORS ISLAND-** A MULTI PHASED REDEVELOPMENT PROJECT THAT STARTED WITH A PARK
2. **DREXEL UNIVERSITY-** A FULLY DEVELOPED URBAN CAMPUS
3. **MESA CITY CENTER-** A PROJECT TO ATTRACT REDEVELOPMENT TO A FORGOTTEN DOWNTOWN

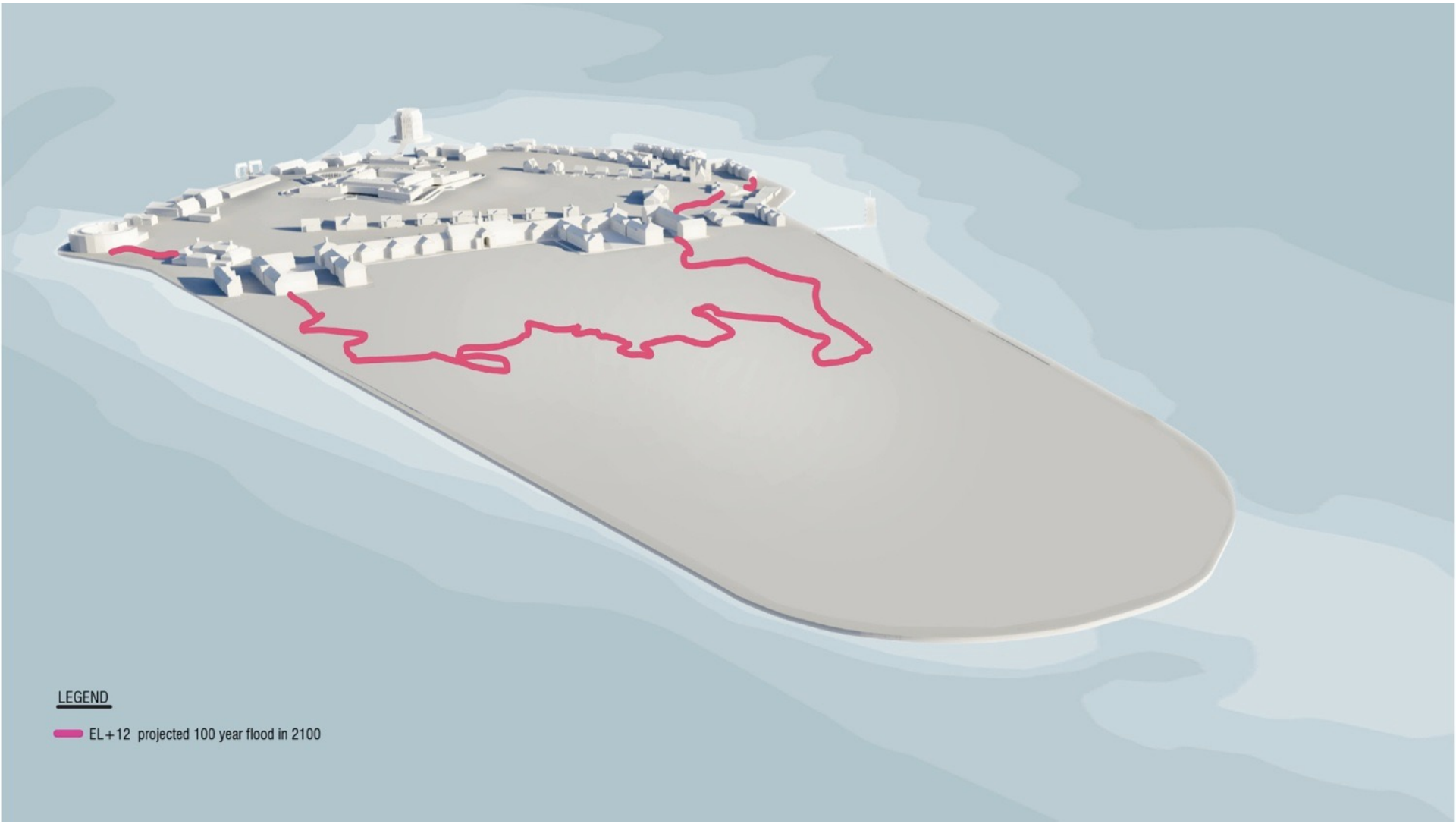
ALL PROJECTS INVOLVED A TEAM OF DESIGN CONSULTANTS, ECONOMISTS, ENGINEERS, STAKEHOLDERS, COMMUNITY, AND SPECIALISTS.

(I WAS PRINCIPAL IN CHARGE OF ALL OF THESE PROJECTS WHEN I WORKED AT WEST 8)

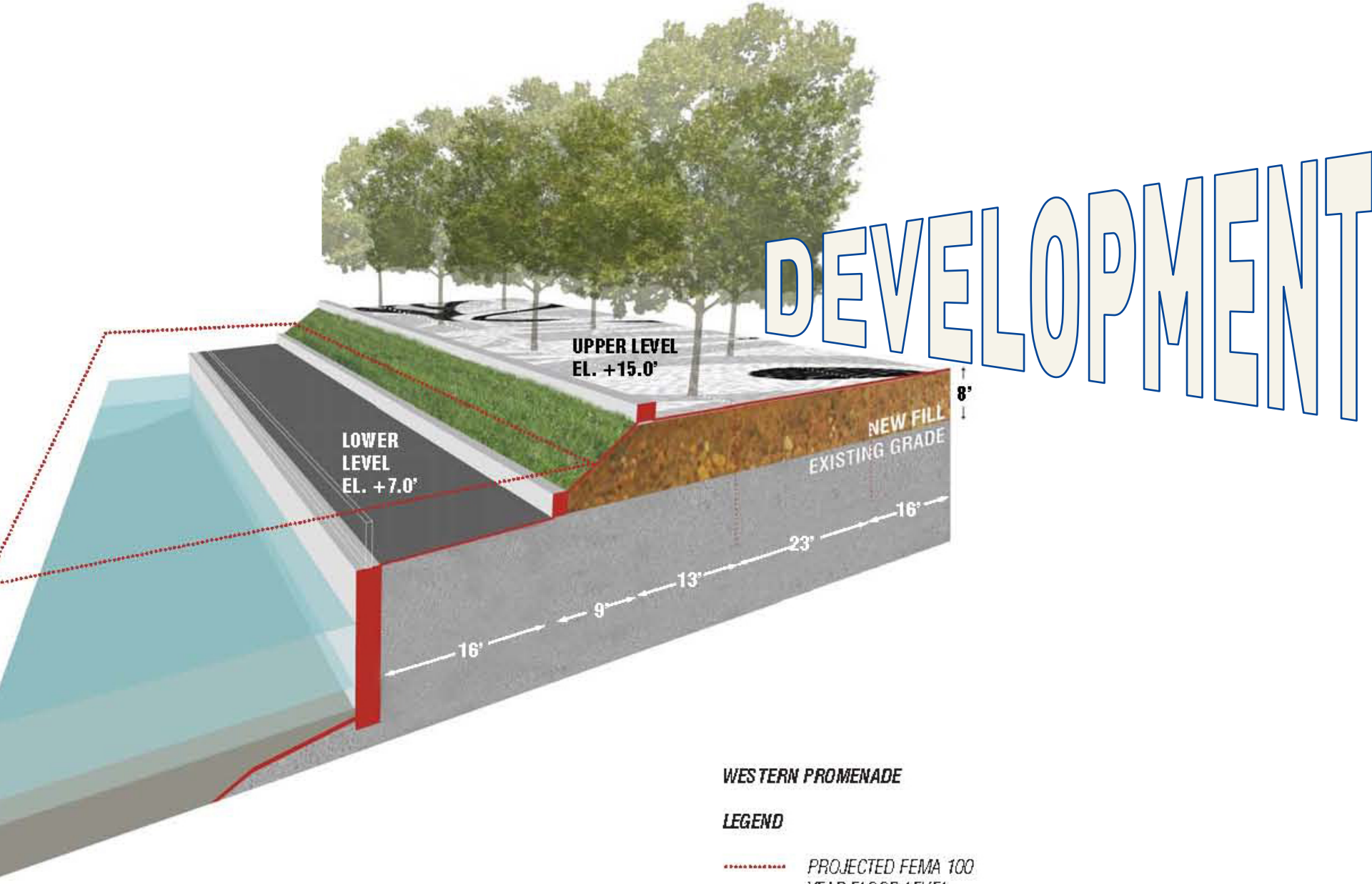
GOVERNORS ISLAND PARK AND PUBLIC SPACE
NEW YORK, NY

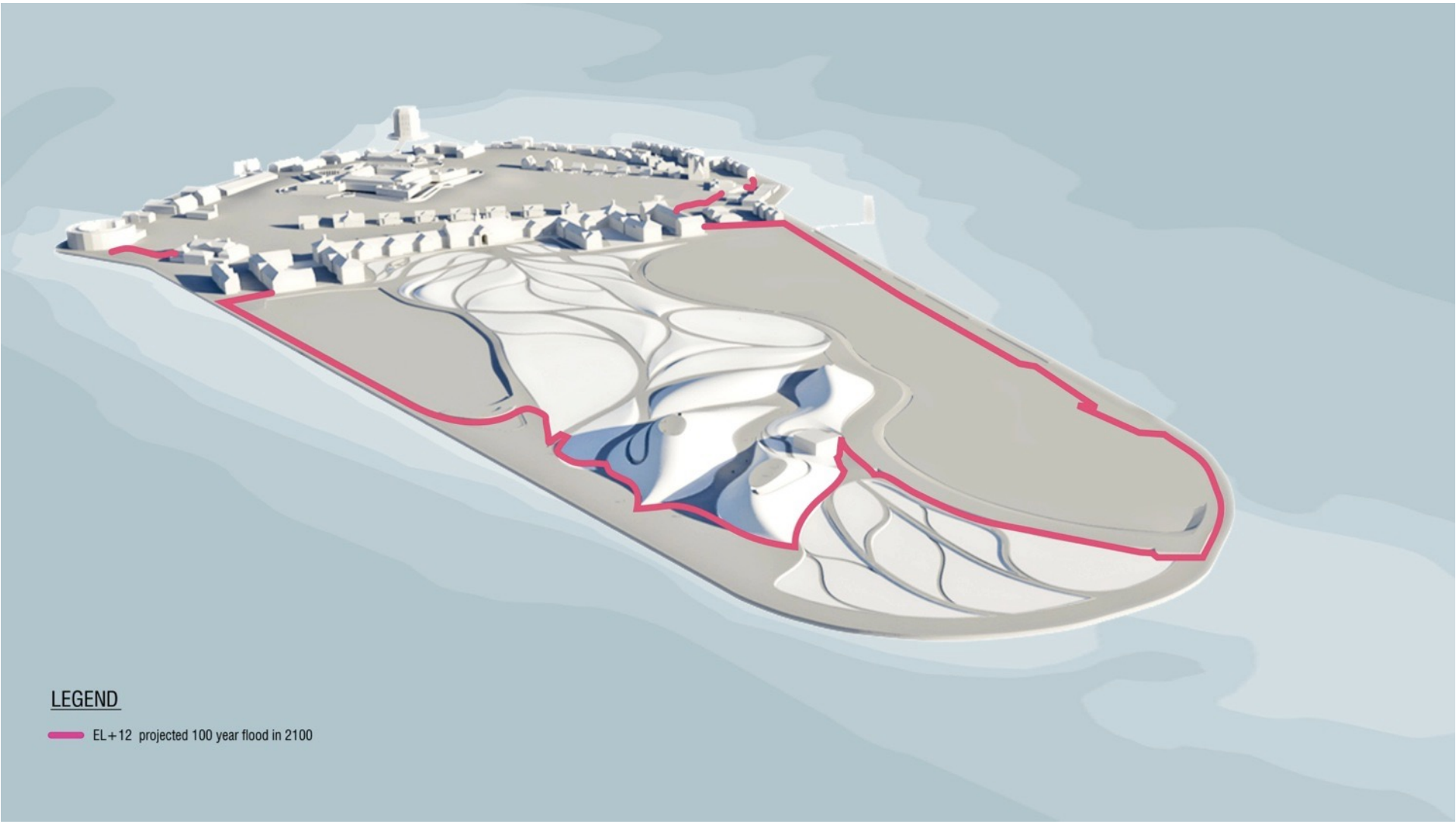

1.5 M SQ FT OF VACANT PROPERTY


SOISSONS LANDING
SOISSONS DOCK
GOVERNORS ISLAND NATIONAL MONUMENT
PIER 101
COLONELS ROW
NOLAN PARK
PARADE GROUND
THE GREAT PROMENADE
LIGGETT TERRACE
DEVELOPMENT ZONE
HAMMOCK GROVE
HISTORIC DISTRICT
PLAY LAWN
SOUTH BATTERY
LIBERTY TERRACE
DEVELOPMENT ZONE
YANKEE LANDING
THE HILLS
YANKEE PIER
THE GREAT PROMENADE
SOUTH PROW
NPS BOUNDARY
0' 100' 250' 500'
PIER 10
LIMA PIER


LEGEND
EL+12 projected 100 year flood in 2100

A NEW DATUM FOR FUTURE DEVELOPMENT




LEGEND
EL+12 projected 100 year flood in 2100


CAT
345C
CAT

A NEW IDENTITY- READY FOR NEW DEVELOPMENT

DREXEL UNIVERSITY PUBLIC REALM PLAN
PHILADELPHIA, PA

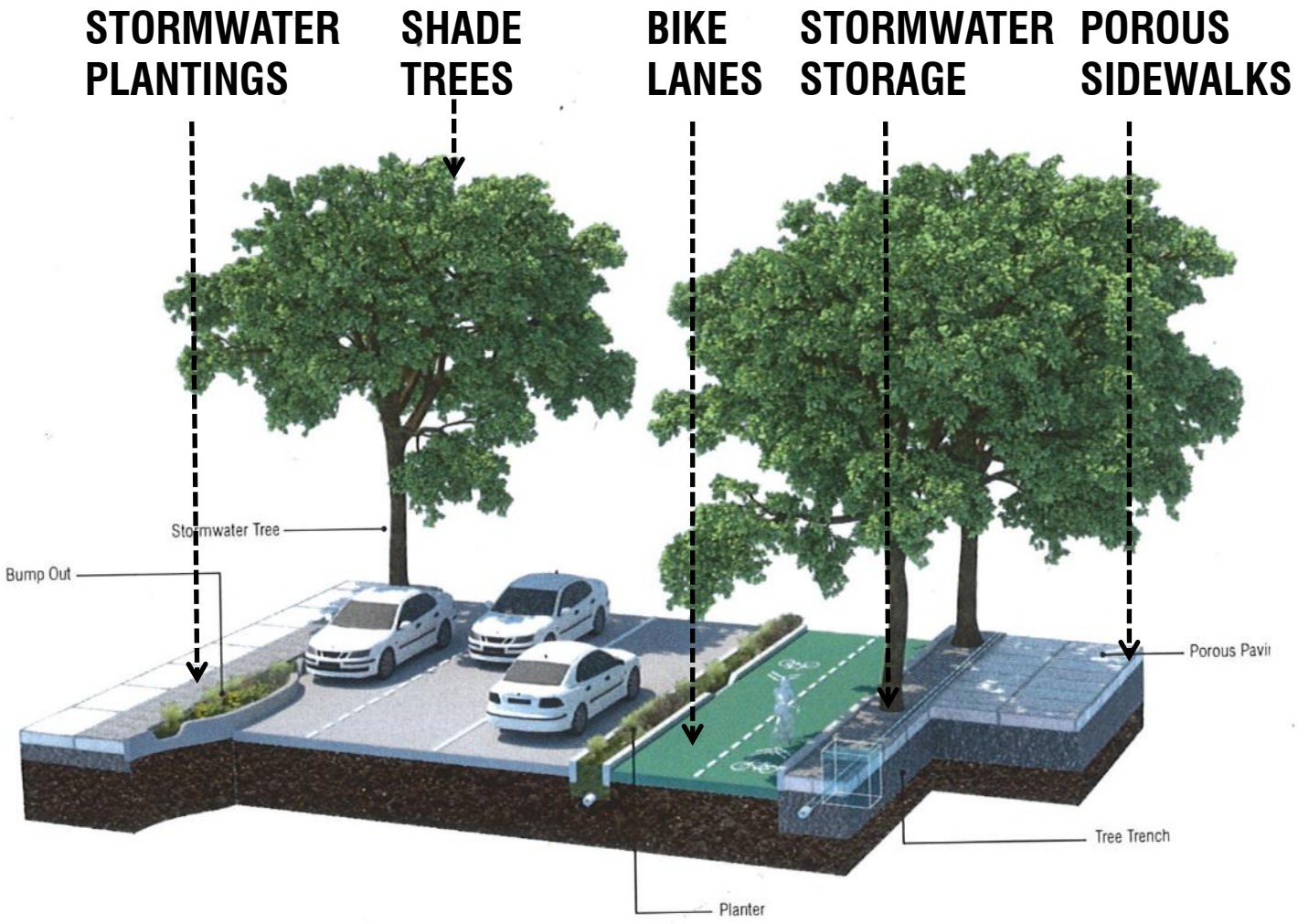

DREXEL UNIVERSITY

DREXEL'S "QUAD" IS ITS 3.5 MILES OF STREETS & SIDEWALKS

CITY OF PHILADELPHIA WATER DEPARTMENT "GREEN CITY CLEAN WATERS" INITIATIVE

GOAL: REDUCE THE STORMWATER POLLUTION ENTERING WATERWAYS **BY 85 PERCENT**

“ENHANCED” STREETSCAPE- PROVIDES MULTIPLE BENEFITS



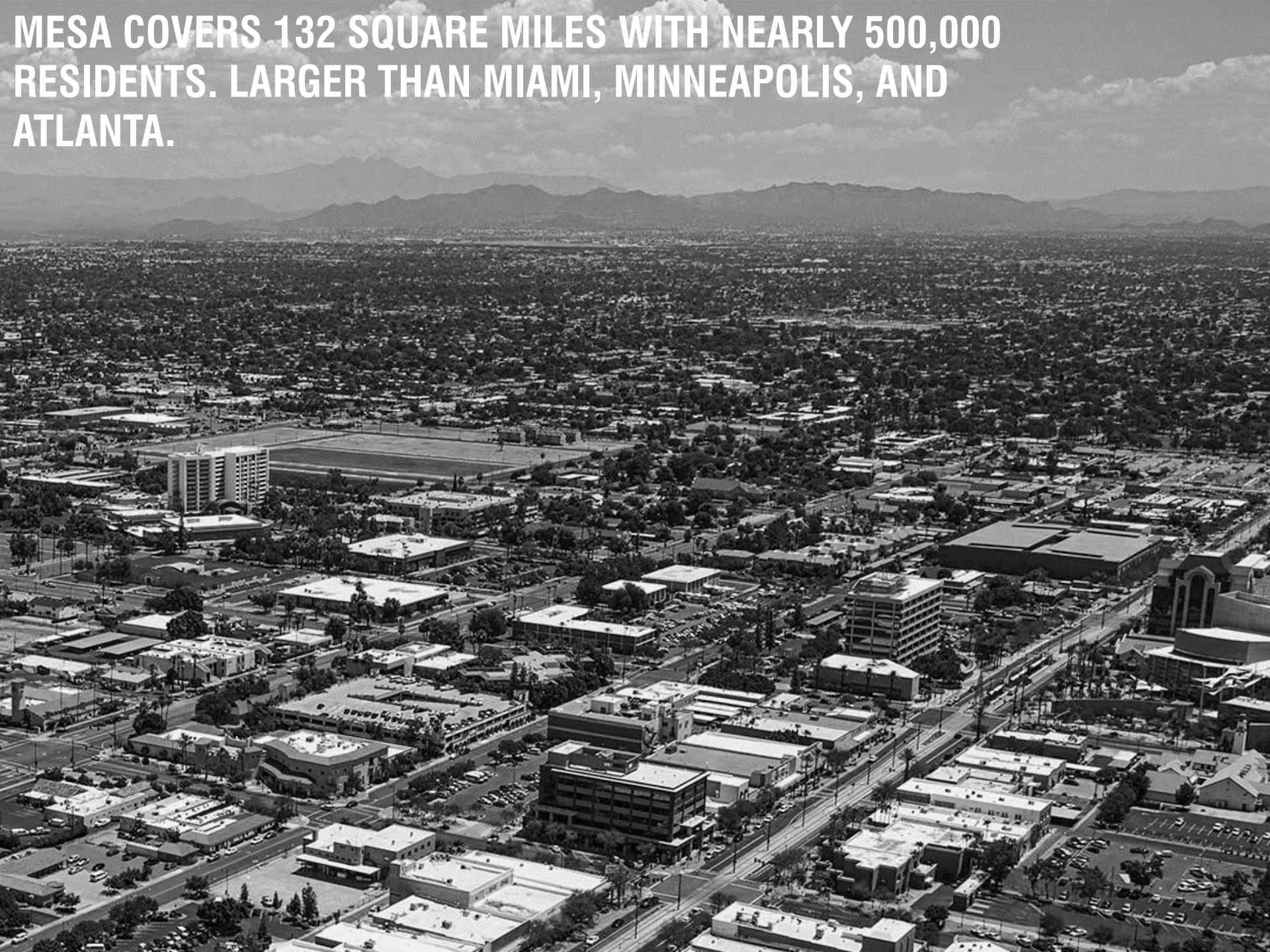

35TH STREET
34TH STREET
33RD STREET
JFK BOULEVARD
MARKET STREET
CHESTNUT STREET

STORMWATER + BIKEWAYS + GREEN SPACES + NEW BUILDING SITES

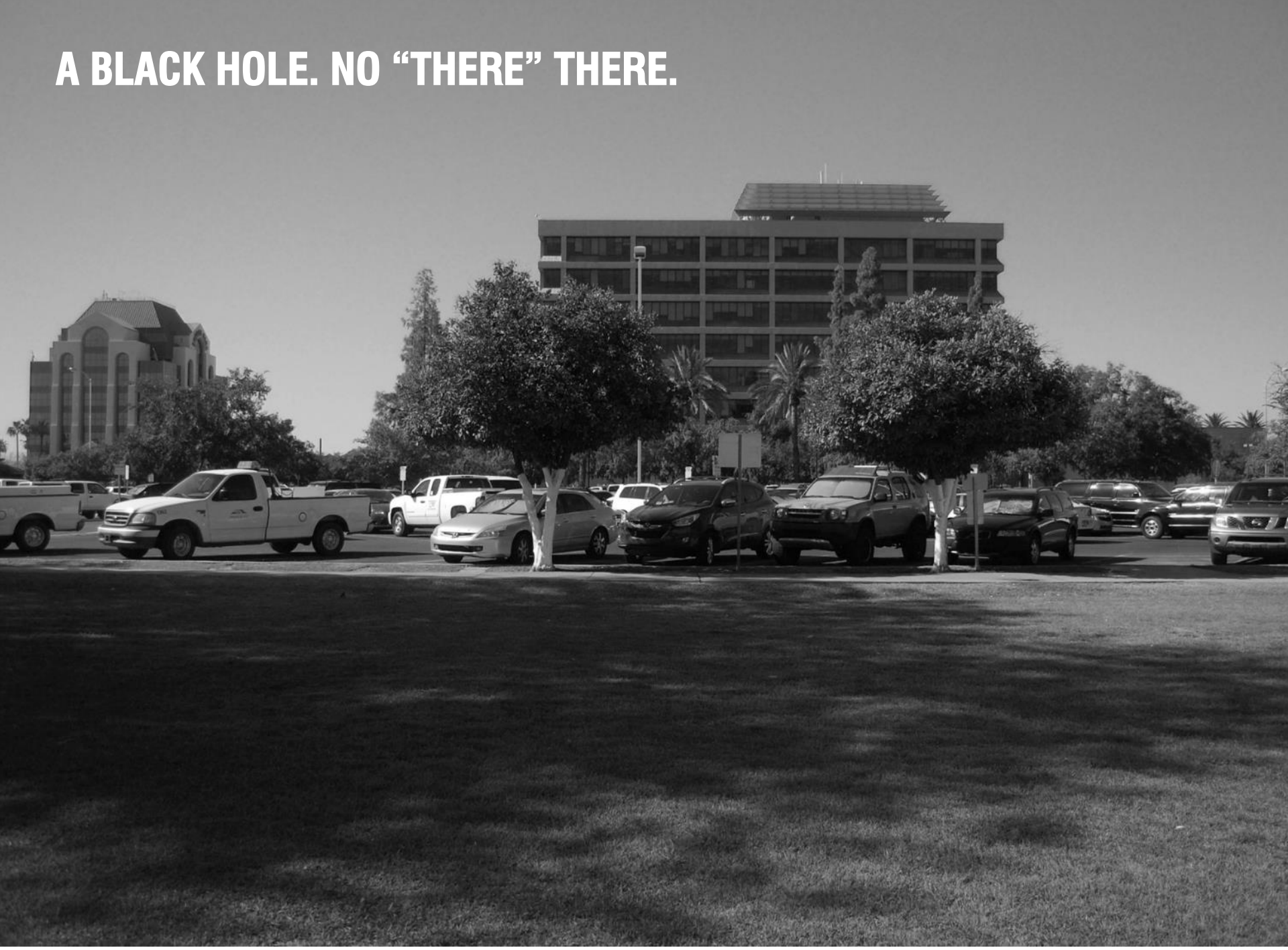

33rd St
ALL TRUCKS EXCEEDING 15 TONS
ONE WAY
drexel
SEPTA
#1 IN THE REGION, 7 LOCATIONS IN P
Penn Medicine

ACTIVE, HEALTHY STREETSCAPES AND NEIGHBORHOOD

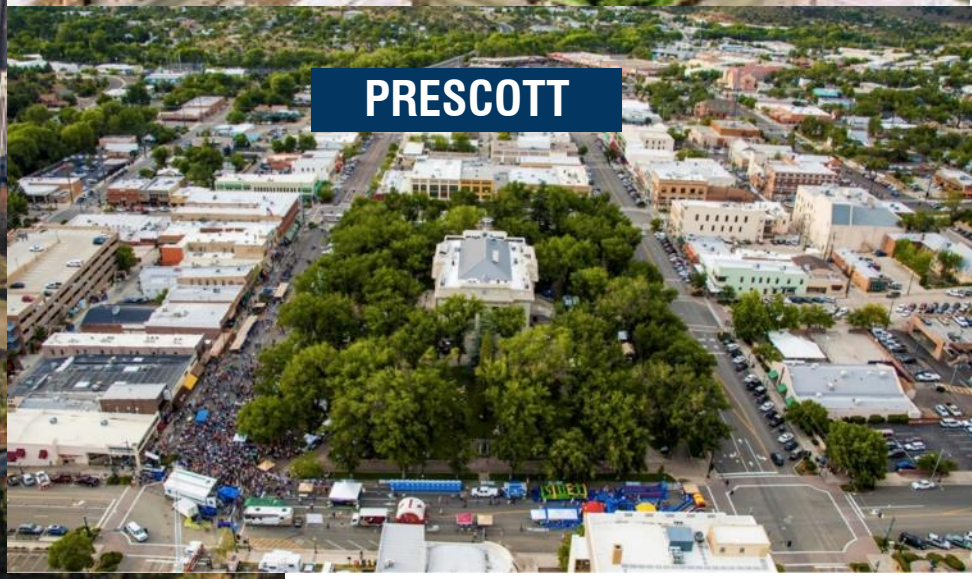
MESA CITY CENTER
MESA, AZ

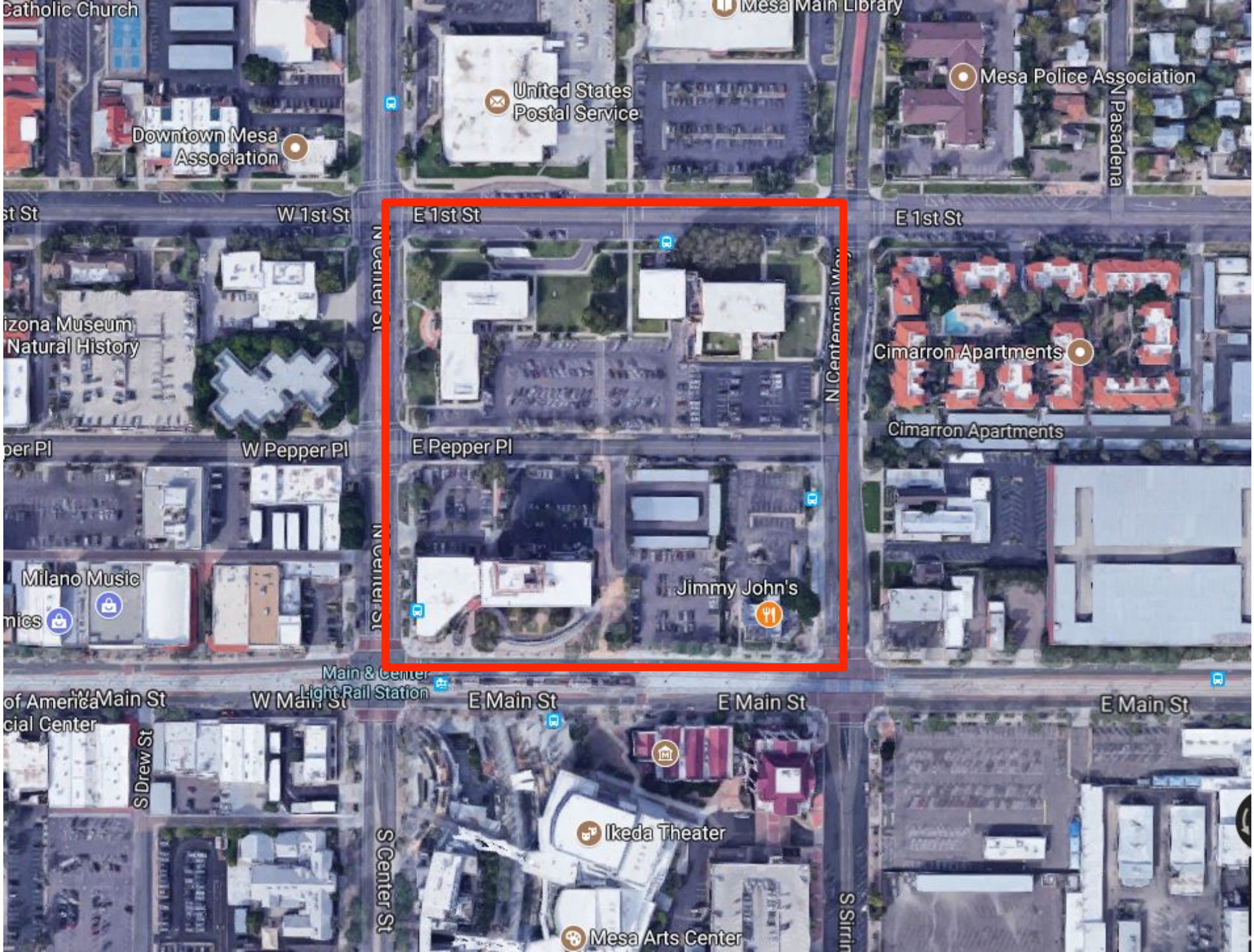

MESA COVERS 132 SQUARE MILES WITH NEARLY 500,000 RESIDENTS. LARGER THAN MIAMI, MINNEAPOLIS, AND ATLANTA.

A BLACK HOLE. NO “THERE” THERE.

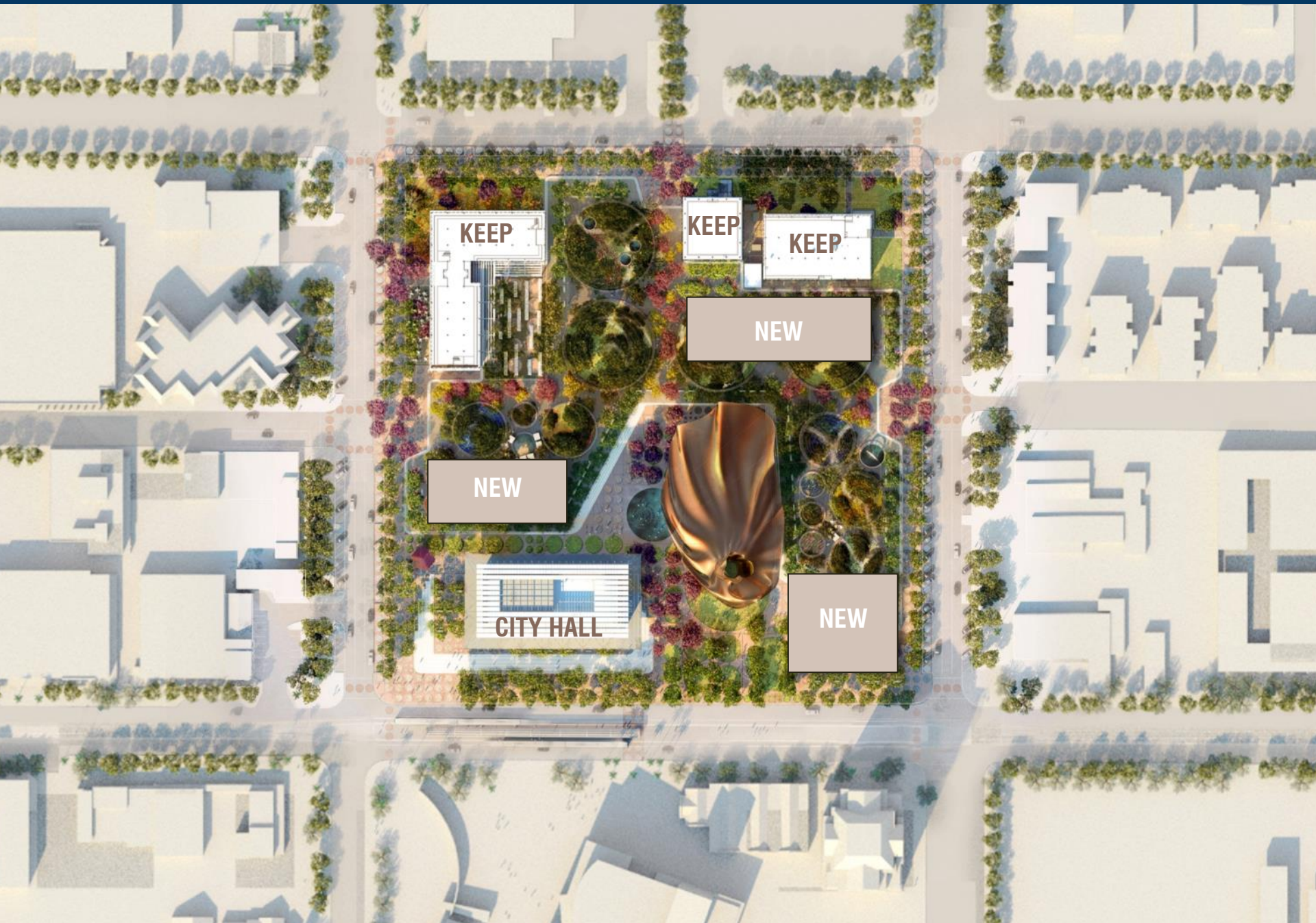


THE “SQUARE” –A TIME TESTED APPROACH FOR CIVIC PLACEMAKING




Catholic Church
Mesa Main Library
United States Postal Service
Mesa Police Association
Downtown Mesa Association
N Pasadena
W 1st St
E 1st St
E 1st St
N Center St
N Centennial Way
izona Museum Natural History
Cimarron Apartments
Cimarron Apartments
per Pl
W Pepper Pl
E Pepper Pl
N Center St
Milano Music
mics
Jimmy John's
Main & Center Light Rail Station
of America cial Center
W Main St
W Main St
E Main St
E Main St
E Main St
S Drew St
Ikeda Theater
S Center St
Mesa Arts Center
S Sirrin

NEW PUBLIC SPACE *AND* NEW DEVELOPMENT SITES



“IS THIS OK?” ASK THE COMMUNITY WHAT THEY WANT!

LARGE SCALE SHADE WITH INTERESTING POCKETS IS IMPORTANT

COFFEE + TEA + BOOZE COMBINED WITH FOOD BUILD INTERESTING AREAS.
A TASTE OF MESA

ART, EVENTS + ACTIVITIES THAT BUILD ON MESA'S IDENTITY.
MESA IS A LARGE TALENT POOL

USING THE CITY CENTER AS A SPRING BOARD POINT TO EXPERIENCE THE REST OF DOWNTOWN.

Mesa Needs to be Iconic!

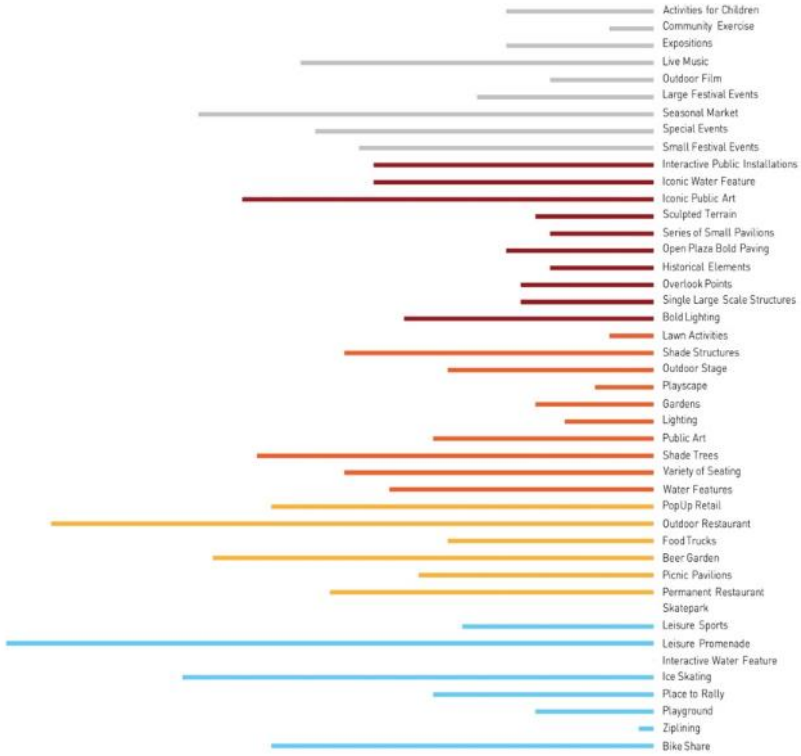
BRANDING AND SOCIAL MEDIA

DIG DEEP


1895
1912
1927
I would go to Mesa City Center
AGAIN & AGAIN if . . .

LEARN, QUANTIFY, MEASURE

TOP REQUESTS:
Leisure Promenade
Iconic Public Art
Outdoor restaurant
Seasonal Market
Ice Skating
Shade trees



WE INTEGRATED THEIR REQUESTS INTO THE DESIGN

FIVE KEY STEPS TO CREATING A PUBLIC REALM FRAMEWORK.

STEP ONE: DECIDE

STEP TWO: ORGANIZE

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WATERFRONT PARK
STREET FURNISHINGS
STREETSCAPE
EASY WINS
LONG TERM
BIKE PATHS
LIGHTING
POP UP PARK
RFP FOR DEVELOPMENT

PILOT PROJECT + VENDOR PARTNER = EASY WIN

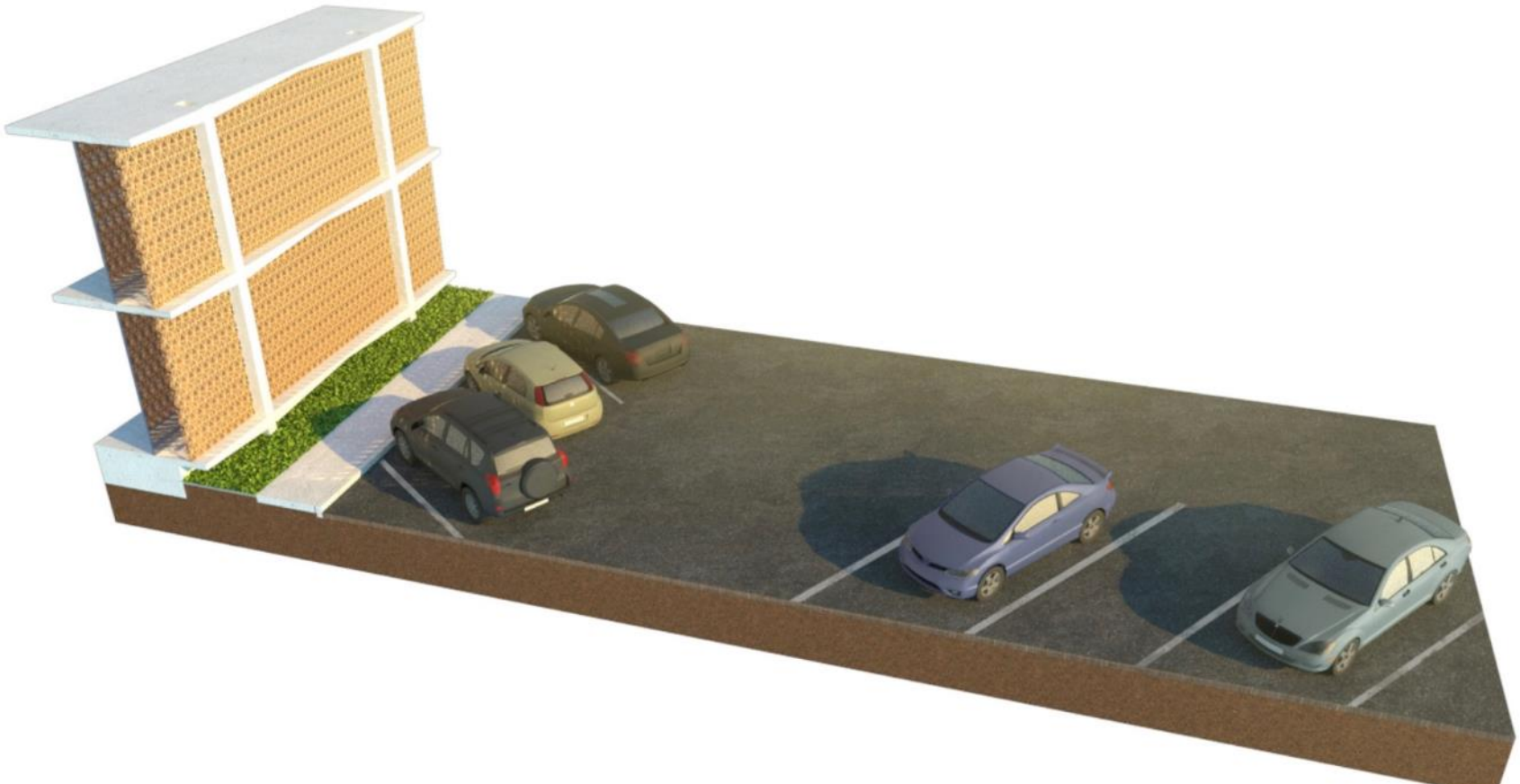
PUBLIC INPUT WITH POST-IT® NOTES

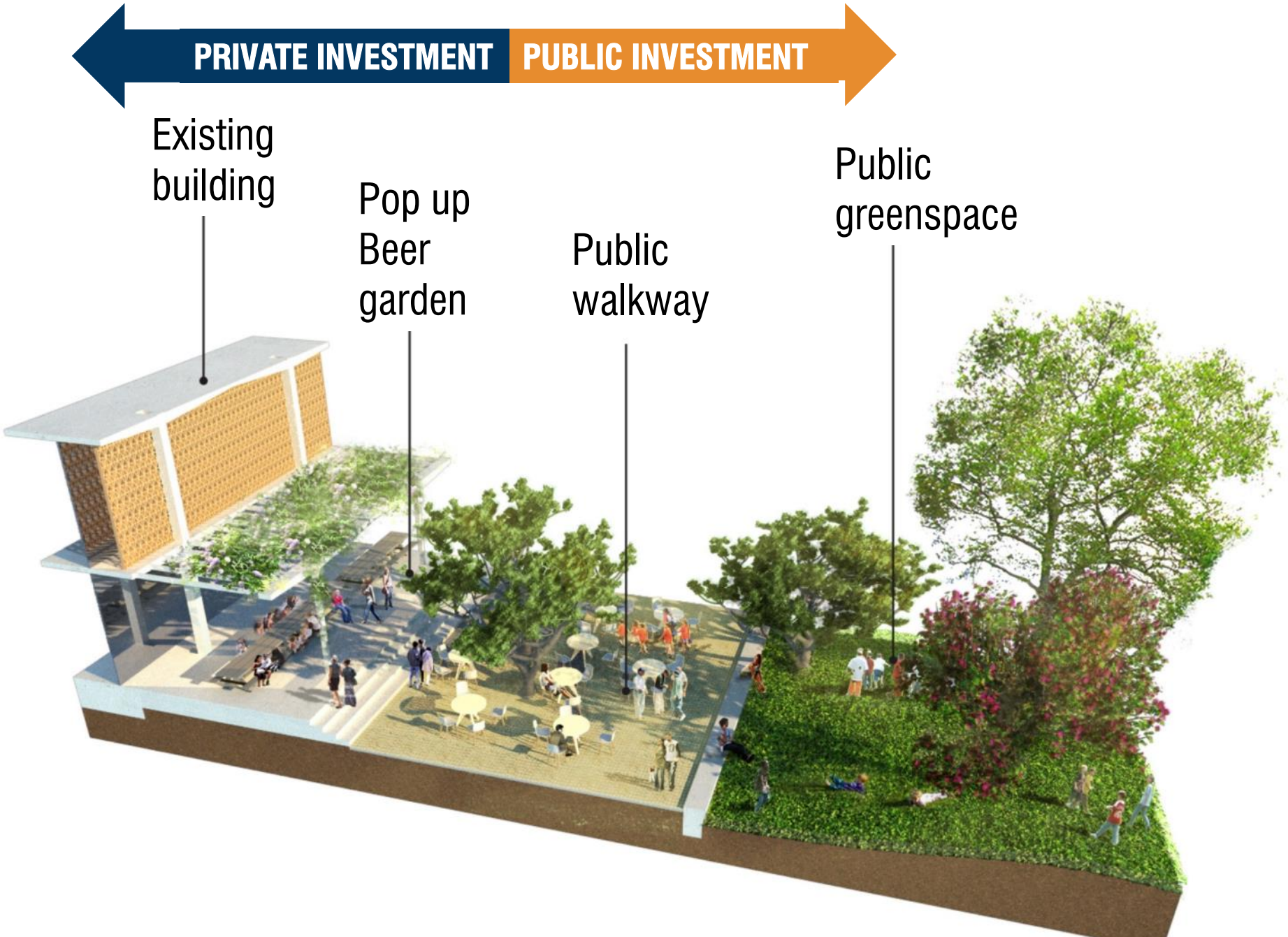
GOVERNORS ISLAND BIKESHARE PROGRAM

TEMPORARY PARK + PROGRAMMING= EASY WIN!

LONG TERM = PERMANENT PARK AND BIKE PATHS

MESA:
PRIVATE/PUBLIC PARTNERSHIP + ADAPTIVE REUSE = EARLY PROJECT




PRIVATE INVESTMENT
PUBLIC INVESTMENT
Existing building
Pop up Beer garden
Public walkway
Public greenspace

PEOPLE = SUCCESS!

LAWN ON D: Programming and events activate underutilized 2.7 acre space in Boston

- Most Instagrammed location in Boston (Spring 2016)
- Revenue topped $1.2 million in 2016 season, three times more than in 2015
- 200,000 visitors between May and October 2016

THANK YOU!

JAMIE MASLYN LARSON
JMASLYN@WAGNERHODGSON.COM
518-567-1791

JEE MEE KIM
JKIM@HRAADVISORS.COM
646-695-5292

2. HOW CAN HUDSON VALLEY COMMUNITIES UTILIZE THIS APPROACH?

PIERMONT

KINGSTON

CATSKILL

STONY POINT

EXERCISE:

1. **I'M A NEWCOMER TO YOUR TOWN. PLEASE SHOW ME YOUR FAVORITE PUBLIC PLACES AND SPACES.**

EXERCISE:

1. I'M A NEWCOMER TO YOUR TOWN. PLEASE SHOW ME YOUR FAVORITE PUBLIC PLACES AND SPACES.

2. NOW IT'S THE FUTURE, WHERE YOUR DREAMS FOR A MORE VIBRANT, FRIENDLY AND RESILIENT PUBLIC REALM HAVE COME TRUE. TAKE ME ON ANOTHER TOUR - DESCRIBE TO ME WHERE WE WOULD GO & WHAT WE WOULD SEE.

EXERCISE:

1. I'M A NEWCOMER TO YOUR TOWN. PLEASE SHOW ME YOUR FAVORITE PUBLIC PLACES AND SPACES.

2. NOW IT'S THE FUTURE, WHERE YOUR DREAMS FOR A MORE VIBRANT, FRIENDLY AND RESILIENT PUBLIC REALM HAVE COME TRUE. TAKE ME ON ANOTHER TOUR - DESCRIBE TO ME WHERE WE WOULD GO & WHAT WE WOULD SEE.

3. IN THIS FUTURE SCENARIO, TRY TO TELL US ANY OF THESE:
   - WHO HELPED YOU GET THERE?
   - HOW DID YOU START?
   - WHAT GOT THE COMMUNITY REALLY EXCITED?
   - WHAT NEWS MADE THE FRONT PAGE OF THE PAPER?
   - WHEN DID YOU KNOW YOU HAD MOMENTUM?
   - WHAT RELATIONSHIP MADE ALL THE DIFFERENCE?
   - HOW DID YOU ENVISION THE IDEAS?
   - WHAT WAS THE TIPPING POINT THAT LED TO BIG ACTION?

Sea Level Rise Implementation Learning Group
Meeting #4 ~ August 29, 2017
Community Engagement Presentation Links

Public Art and Visual Displays

Cool Globes – Hot ideas for a cooler planet
http://www.coolglobes.org/view-the-globes/

High Water Line
http://highwaterline.org/

Earth Celebrations – Hudson River Pageant
http://earthcelebrations.com/hudson-river-pageant-2012

Yale Climate Connections - https://www.yaleclimateconnections.org/

Artists & Climate Change
https://www.facebook.com/artistsandclimatechange

High Water Mark Signs – information
http://www.nws.noaa.gov/os/water/high_water/

High Water Mark Signs – guide
http://www.nws.noaa.gov/os/water/high_water/get_sign.shtml

Volunteer Recruitment and Retention

NYS Association of Conservation Commissions
http://www.nysaccny.org/

Town of Red Hook CAC
http://www.redhook.org/AdvisoryCommittees/AboutCAC.html

VT Climate Action Network Starting an Energy Committee Guide
http://www.vecan.net/forming-and-maintaining-a-town-energy-committee/

Reaching Underserved Audiences

Center for Climate Preparedness Stakeholder Capacity Building
http://www.communityresilience-center.org/stakeholder-capacity-building/

Baltimore, MD Sustainability Outreach
http://www.baltimoresustainability.org/make-a-kit-build-a-plan-help-each-other/

University of Minnesota Center for Rural Design
https://ruraldesign.cfans.umn.edu/rural-design

Sea Level Rise Implementation Learning Group

List of Participants

Catskill

Nancy Richards	(nrichards@villageofcatskill.net)
Arielle Herman	(intheweedseco@gmail.com)
Liz LoGiudice	(liz.logiudice@gmail.com)
Sean Meagher	(sfmeagher@yahoo.com)

Kingston

Julie Noble	(julielnoble@kingston-ny.gov)
Emilie Hauser	(eehauser@gmail.com)
Scott Herrington	(captain836@aol.com)
Kevin McEvoy	(laeassoc@earthlink.net)
Lucy Potter	(potter.p.lucy@gmail.com)
Jennifer Schwartz-Berky	(jsberky@honestrategic.com)

Piermont

Usha Wright	(usha.wright@gmail.com)
Lisa DeFeciani	(lisadefeciani@gmail.com)
Klaus Jacob	(jacob@ldeo.columbia.edu)
Laura Strauss	(laurastraus@verizon.net)
Nathan Mitchell	(nmitchell@novusis.net)
Sylvia Welch	(sawelch10968@yahoo.com)

Stony Point

Jim Monaghan	(supervisor@townofstonypoint.org)
Carl Gilpatrick	(cgil1130@yahoo.com)
Jake Cataldo	(MCoyle@townofstonypoint.org)

Planning Team

Bennett Brooks (Consensus Building Institute)	bbrooks@cbuilding.org
Liz LoGiudice (Consultant)	liz.logiudice@gmail.com
Kristin Marcell (NYS DEC HREP)	kristin.marcell@dec.ny.gov
Julie Noble (City of Kingston)	julielnoble@kingston-ny.gov
Nava Tabak (Scenic Hudson)	ntabak@scenichudson.org
Libby Zemaitis (NYS DEC HREP)	libby.zemaitis@dec.ny.gov

Learning Group – Tell us how it went!

The questions below are to get your feedback on the Learning Group process and how it relates to resiliency work in your community.

What task force community are you from?

Complete this section with other members of your community.

1. Resilience Projects – Please list below all projects your community has completed in the last two years, is working on now or is planning to work on in the next year related to flood resilience.

    a. Indicate which, if any, were influenced or inspired by your community's involvement in the learning group
    b. If you have applied for and/or received funding for any of these projects, please list funding source and amount, if you can.

    Consider projects related to:
    - updating planning/zoning
    - emergency planning
    - community outreach on flooding or resilience
    - considering resilience in economic development or redevelopment
    - mapping of infrastructure or infrastructure upgrades
    - design/implementation of green infrastructure
    - other projects that you feel increase your community's resilience to flooding

Project	**Inspired or informed by LG?**	**Funding $/Source**

Complete the next two sections by yourself.

2. Outcomes - Consider what you know now compared with what you knew or thought your community was capable of two years ago.

    a. Did this process help you advance the recommendations of your community's vulnerability assessment or resilience planning efforts?

    Not at all *A little* *Some* *A lot* *Don't know*

    b. Was there enough overlap between your community's interests and the topics that were presented to support your progress?

    Not at all *A little* *Some* *A lot* *Don't know*

    c. Did the learning group meetings help your community to advance its resilience goals more than if your community had just received assistance separately?

    Not at all *A little* *Some* *A lot* *Don't know*

    d. Did you gain insight into funding opportunities or how to begin applying for funding for a resilience project as a part of this process?

    Not at all *A little* *Some* *A lot* *Don't know*

    e. Would you want to participate if we reconvened this learning group in the future?

    Not at all *A little* *Some* *A lot* *Don't know*

    f. What do you think were 2-3 most important or useful aspects or outcomes of the learning group process?

    g. Would you recommend this process to another municipality? Do you have suggestions of other communities that may benefit from this process?

3. Meeting design - How did the meetings work for you?

    a. How many task force meetings have you attended, including this one?

        0 1 2 3 4

    b. Was the format useful or would you have preferred more guest speakers/experts, more interactive group exercises, field trips or some other way to learn?

    c. Is there a topic from the learning group meetings or another topic that you'd like to spend time on in the future?

    d. Did you do more work outside of the meetings or during the meetings?

    e. If we were to replicate this process in the future, would you like meetings to be more or less often or the same? Shorter or longer or the same? Why?

    f. Was travel or timing of the meeting an obstacle for members of your community attending? Were there any other obstacles to attendance that we should understand?

4. Additional feedback - Please provide any other thoughts you have about this process, and what could be improved if we were to organize similar networking efforts in the future.

Appendix 2: Additional Materials

- Village of Catskill Flood Preparedness Guide for Residents and Businesses
- Financing Waterfront Resilience: State and Federal Resources for Communities (2017)
- Participant and project team contact list

Village of Catskill
Flood Preparedness Guide
for Residents and Businesses

One of the wonderful things about living in the Village of Catskill is being near the water. The Hudson River and Catskill Creek are part of what makes the Village such a special place. But, the river and the creek put some areas of the Village at risk of flooding.

Flooding is not just a problem for people who live near the water. All residents should be aware of risks and know how to find information and help when flooding occurs. Whether you live in the flood zone or not, being prepared for an emergency is important. Keep this guide handy so you know where to find help if you need it.

Produced with assistance from:

Cornell University Cooperative Extension | NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation | New York State Water Resources Institute, Cornell University

Know Your Risk and Stay Informed!

Know Your Zone: If you live close to the Catskill Creek or the Hudson River, you may live in the **flood zone** and you should be prepared to secure your home and evacuate quickly. If you're not sure if you are at risk, check the map in this guide. Flood maps are also located on the Village of Catskill website http://www.villageofcatskill.net/ or at the Catskill Village Offices at 422 Main Street.

Sign Up for the Community Emergency Notification System: Greene County uses the Community Emergency Notification System to inform residents of emergency situations. You can sign up to make sure you receive notifications at home **and** on your cellphone.
Register at http://www.greenegov.com or call (518) 635-5120.

New York Alert: You can sign up for the New York State notification system to receive phone calls or emails that will alert you to serious or emergency situations. Register at https://www.nyalert.gov/

Emergency Contacts

Write important contact numbers here:

Fire Department 911

Police Department 911

Village Hall (518) 943-3830

Insurance Agent _____

Plumber _____

Heating Contractor _____

Electrician _____

Landlord _____

Important Flood Words You Should Know

Flood Watch: Flooding is possible.

Flood Warning: Flooding is occurring or will occur soon. If advised by officials to evacuate, do so immediately.

Flash Flood Warning: Unexpected flooding is imminent. Seek higher ground immediately. Two key elements contribute to flash floods: rainfall intensity, and length of time that it has been raining. Flash floods are the #1 weather-related killer in the United States.

100-Year Flood: We often hear the term 100-year flood, but what does it mean? A 100-year flood is an event that has a 1% chance of occurring in any given year, so it can happen two years in a row. A 100-year flood has a 25% chance of occurring over a 30 year period. If you live in the FEMA 100-year floodplain, you are at high risk of experiencing flooding and may be required to have flood insurance.

Finding Help

Emergency Shelters:

For People—

Community Life Church
20 West Main Street
Catskill, NY
(518) 943-3292

For Pets—
Humane Society of
Columbia & Greene Counties
111 Humane Society Road
Hudson, NY
(518) 828-6044

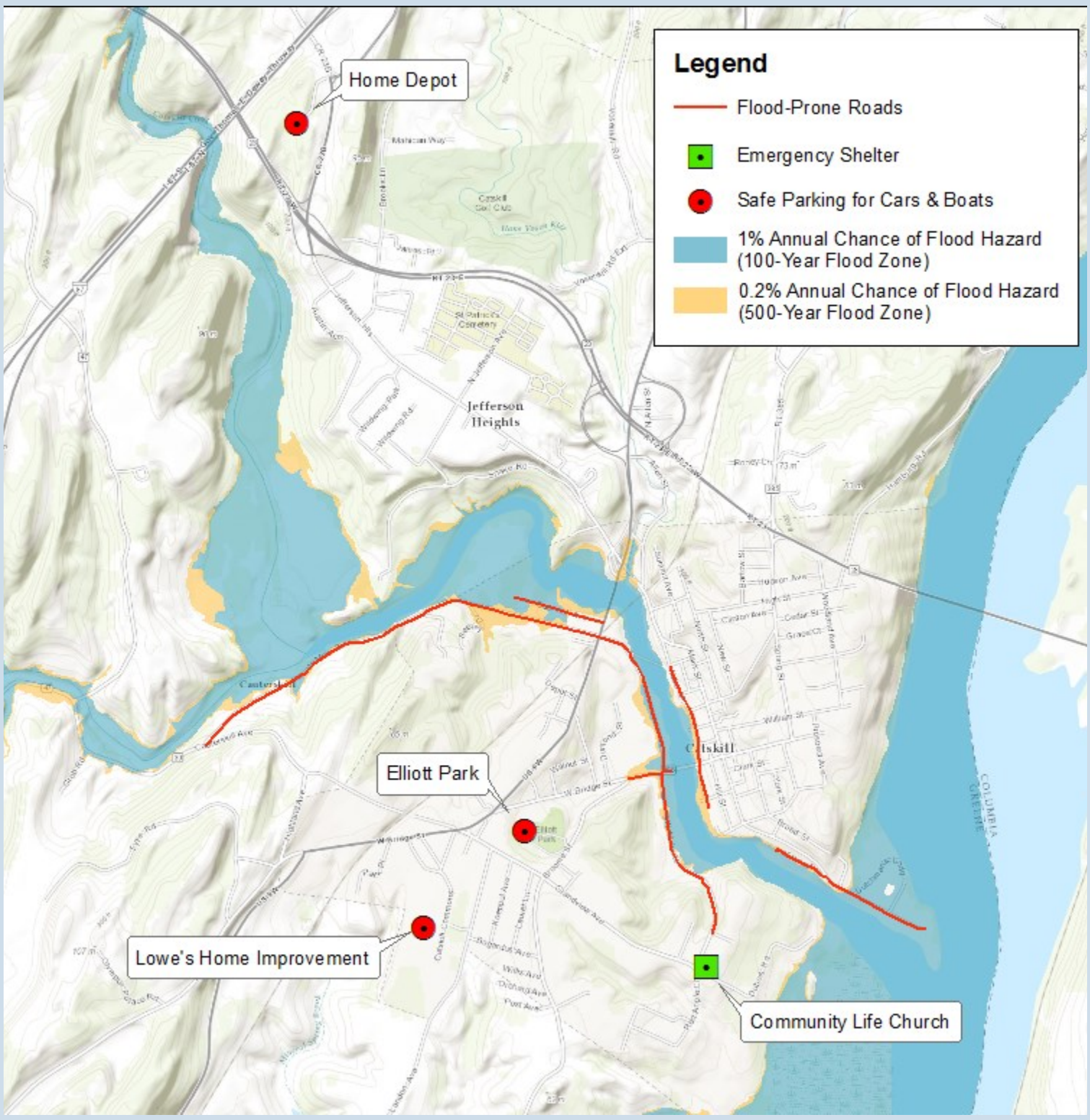
Safe Parking for Cars & Boats:
Call Village Hall before parking at these locations.

Home Depot
695 Route 23B
Leeds, NY
(518) 943-1135

Lowe's Home Improvement
60 Catskill Commons
Catskill, NY
(518) 943-6330

Elliot Park
Broome Street
Catskill, NY

Debris Removal & Flood Recovery:
Contact Village Hall



The 1, 2, 3 of Flood Preparedness

1.) Before A Flood—Make A Plan

- Make an emergency evacuation & communication plan for family and pets, including identifying where you will meet in an emergency.
- Talk with your neighbors about emergency plans, especially for those with special needs.
- Know where you and your loved ones will stay if your home is flooded.
- Check with your insurance agency about buying a flood insurance policy. Homeowners insurance does not cover damage from flooding.
- Learn the safest route from home or work to higher ground or your emergency meeting spot. Keep a gas can filled for emergencies.
- Gather important documents, including a list of valuables, and keep off site, or in a waterproof container in your emergency supply kit.
- Take steps to prepare your home so that flood damage will be minimal.

Assemble A Flood Emergency Kit

First Aid & Medications

- a week's supply of prescription medications
- non-prescription medication
- first aid kit
- hand sanitizer & hand wipes

Food & Provisions

- soap & toiletries
- change of clothing
- rain gear
- sturdy shoes
- sleeping bag and bedding
- food & provisions for all family members, including pets
- extra pair of glasses and/or contact lenses

Emergency Communications

- battery-powered radio with fresh batteries
- cell phone & charger
- whistle to signal for help
- flashlight with fresh batteries

Important Contacts & Documents

- a list of family physicians and important medical information
- photocopies of important documents, including homeowners insurance
- identification cards, credit cards, cash & checks

Prepare Your Home

If you live in a high-flood risk area:

- Elevate your furnace, water heater, electrical panel and other utilities. Secure propane, kerosene & oil tanks.
- Stow or secure lawn mowers, barbeque grills & other items that may be carried away by floodwaters if your area is under flood warning.
- Store cleaning supplies and other hazardous materials up high so they will not be carried away by flood waters.
- Install check valves to prevent water from backing up drains.
- Have emergency waterproofing supplies, such as sandbags, and know how you can install them quickly, easily and effectively.

2.) During A Flood—Be Ready to Act

- Stay informed by tuning into local radio, television and weather reports. Battery-operated radios are affordable and widely available.
- Disconnect appliances if it is safe. Don't go into any room if water covers electrical outlets or power cords.
- If told to evacuate, do so immediately. Be sure to lock your home.

BEWARE OF FLOODWATER!

If your house is surrounded by floodwater, move to the highest possible point and call 911.

Do not drive into floodwaters. Two feet of water will carry your car away. Turn around—don't drown!

Do not stand on bridges or near the shore during a flood.

Do not sightsee during a flood! You could put yourself and others in danger.

Floodwater may be contaminated. Do not wade or swim in it!

3.) After A Flood—Returning Home

- **If advised to evacuate, wait until you are told it is safe before returning home.**
- Stay informed— tune into local news for information on road closures, boil water alerts, etc.
- Exercise caution when entering flood-damaged buildings. Buildings may not be safe.

If your home has been flooded

- Do not turn on electrical appliances until checked by a licensed electrician.
- Care should be taken to drain water gradually from the building to avoid structural damage.
- Walls and floors should be disinfected or replaced to avoid growth of mold and mildew.
- Well water should be tested for bacteria before drinking. Contact Cornell Cooperative Extension for help with testing: (518) 622-9820 x 0.

Flood Recovery References

This guide was produced using the following resources. Please visit these websites for more information on flood preparedness.

NY Extension Disaster Education Network: http://emergencypreparedness.cce.cornell.edu

National Weather Service Flood Safety: http://www.floodsafety.noaa.gov/

National Flood Insurance Program: https://www.floodsmart.gov/floodsmart/

NYS Office of Emergency Management: http://www.dhses.ny.gov/oem/ or prepare.ny.gov

First Steps to Flood Recovery: https://www.extension.purdue.edu/floodpub/

FEMA Flood Preparedness: http://www.ready.gov/floods

Disaster Preparedness and Pets: http://wmdart.org/pet-preparedness/

American Red Cross Repairing Your Flooded Home: http://www.redcross.org/images/MEDIA_CustomProductCatalog/m4540081_repairingFloodedHome.pdf

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FINANCING WATERFRONT RESILIENCE

State and federal resources for communities

2017 Summary of financial assistance programs

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

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

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

NYS Consolidated Funding Application

New York State's Consolidated Funding Application (CFA) allows communities to design comprehensive projects and with one application, apply to multiple state funding sources. Communities may not apply to federal programs such as FEMA through the CFA. You can download the 2017 CFA Available Resources (PDF) online.

LOCAL EXAMPLE: CONSOLIDATED FUNDING APPLICATION

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

Overview of Financial Assistance Programs

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

Municipal planning

Collaboration and public outreach

Resilient structures

Waterfront economy

Emergency management

Floodplain protection

☑CFA = grants included in the NYS Consolidated Funding Application

New York State Department of Environmental Conservation (NYS DEC)

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

Hudson River Estuary Program Grants

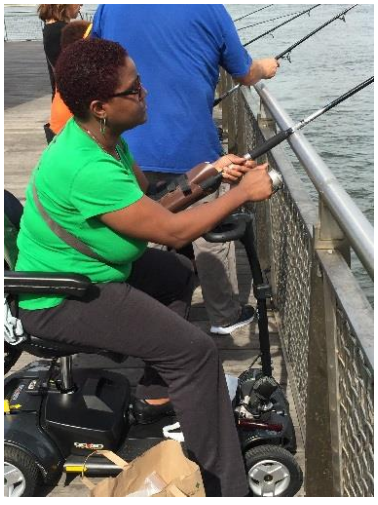
The 2017 Request for Applications (RFA) for Hudson River Estuary Grants ($670,000) cover *Local Stewardship Planning* and *River Access Improvements for People of All Abilities*. These Requests for Applications (RFAs) implement priorities of the Hudson River Estuary 2015-2020 Action Agenda. Grant awards range from $10,500 to $50,000 and require a 15% match. All prospective applicants must register in advance in the New York State Grants Gateway where they can also search and download the full RFA by searching for 'Hudson River Estuary.' Funding for the grants is provided by the New York State Environmental Protection Fund (EPF). For more information on these opportunities, contact HREPGrants@dec.ny.gov and sign up for our Climate Resilience Newsletter.

Local Stewardship Planning

Up to $450,000 is available to help communities and local organizations advance six categories of local projects and programs through planning, feasibility studies, and/or design:

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

Deadline: 3:00 pm, July 12, 2017



River Access Improvements for People of All Abilities

Up to $220,000 is available to local organizations and communities to improve accessibility at existing river access sites for boating, fishing, swimming, wildlife-dependent recreation, or educational interpretation. Projects may include construction of physical improvements, purchase of adaptive equipment, or development of accessibility improvement plans. Accessibility projects should include accessible parking and pathway to the new element or a reference that these already exist. Incorporating principles of universal design is strongly encouraged.

Deadline: 3:00 pm, July 12, 2017

Climate Smart Communities (CSC) Grants

Climate Smart Community (CSC) grants ($9.5M) will support municipal projects that implement certain CSC actions and help them become certified in the program. 50% match required.

Implementation projects fund $10,000 and $2 million to:

- Flood risk reduction
- Extreme event preparation
- Reduction of vehicle miles travelled
- Reduction of food waste, landfill methane leakage or hydrofluorocarbons emissions

Certification projects fund $10,000 to $100,000 to:

- Adaptation, land use, transportation and organic waste management planning
- Inventory and assessment actions aligned with CSC certification requirements

Contact: Climatechange@dec.ny.gov, 518-402-8448

Deadline: 4:00 pm, July 28, 2017, ☑CFA

Water Quality Improvement Project

The WQIP program ($87M) is a competitive, reimbursement grant program that directs funds from the New York State Environmental Protection Fund to projects that reduce polluted runoff, improve water quality and restore habitat in New York's waterbodies. High priority wastewater treatment improvement projects require a 15% match. Land acquisition for source water protection, salt storage, aquatic habitat restoration, municipal separate storm sewer system (MS4), and non-agricultural nonpoint source abatement and control projects require a 25% match. General wastewater infrastructure improvement projects require a 60% match.

Contact: User.Water@dec.ny.gov

Deadline**:** 4:00 pm, July 28, 2017, ☑CFA

Trees for Tribs

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

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

Deadline: Apply by March 1, 2017 for Spring plantings, August 1, 2017 for Fall plantings

Environmental Facility Corporation (EFC)

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

Wastewater Infrastructure Engineering Planning Grant

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

Contact: Susan Van Patten, NYS DEC, 518-402-8267, CFAWater@gw.dec.state.ny.us

Deadline: 4:00 pm, July 28, 2017, ☑CFA

LOCAL EXAMPLE: WASTEWATER INFRASTRUCTURE ENGINEERING PLANNING

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

Clean Water State Revolving Fund

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

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

Deadline: Open enrollment

Green Innovation Grant Program

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

- Bioretention
- Downspout disconnection
- Establishment or Restoration of, Floodplains, Riparian buffers, Streams or Wetlands
- Green roofs
- Green walls
- Permeable pavements
- Stormwater Harvesting and Reuse, *e.g.* Rain Barrel and Cistern Projects
- Stormwater Street Trees / Urban Forestry Programs Designed to Manage Stormwater

Contact: Suzanna Randall, EFC, 518-402-7461, GIGP@efc.ny.gov

Deadline: 4:00 pm, July 28, 2017, ☑CFA

Federal Emergency Management Agency (FEMA)

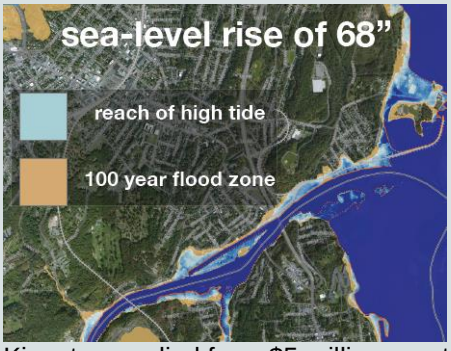
FEMA is a national agency that administers programs providing flood insurance, hazard mitigation assistance, and public assistance grants.

Hazard Mitigation Assistance

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

- Hazard Mitigation Grant Program (HMGP) assists in implementing long-term hazard mitigation measures. HMGP funds are triggered by a declared disaster and funneled to individual municipalities through the NYS Division of Homeland Security and Emergency Services (DHSES).
- Pre-Disaster Mitigation (PDM) provides funds on an annual basis for hazard mitigation planning and projects.
- Flood Mitigation Assistance (FMA) provides funds on an annual basis for projects to reduce or eliminate risk of flood damage to buildings that are insured under the National Flood Insurance Program (NFIP).

LOCAL EXAMPLE: HAZARD MITIGATION GRANT



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

Public Assistance Grant Program

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

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

Community Rating System

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

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

LOCAL EXAMPLE: COMMUNITY RATING SYSTEM

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

Department of State (DOS)

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

Local Waterfront Revitalization Program

The Local Waterfront Revitalization Program (LWRP) provides technical assistance, and matching grants ($15.2M) on a reimbursement basis to villages, towns, cities, and counties located along New York's coasts or designated inland waterways, to prepare or implement strategies for community and waterfront revitalization. Funds require a 25% match (15% for environmental justice communities) and the grant categories currently are:

- Preparing or Implementing a Local Waterfront Revitalization Program (LWRP)
- Updating an LWRP to Mitigate Future Physical Climate Risks
- Redeveloping Hamlets, Downtowns and Urban Waterfronts
- Planning or Constructing Land and Water-based Trails
- Preparing or Implementing a Lakewide or Watershed Management Plan
- Implementing a Community Resilience Strategy

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

Deadline: 4:00 pm, July 28, 2017, ☑CFA

LOCAL EXAMPLE: LOCAL WATERFRONT REVITALIZATION PROGRAM

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

Additional Financial Assistance Resources

New York State Energy Research and Development Authority (NYSERDA)

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

Clean Energy Communities Program

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

Contact: cec@nyserda.ny.gov

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

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

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

Grant Program for Parks, Preservation and Heritage

The OPRHP is providing grants ($20M) for acquisition, planning, development, and improvement of parks, historic properties, and heritage areas. Project awards up to $500,000 with 50% required match, or 25% match for projects that are located in high-poverty district.

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

Deadline: 4:00 pm, July 28, 2017, ☑CFA

LOCAL EXAMPLE: PARK DEVELOPMENT

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

US Department of Housing and Urban Development (HUD)

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

Community Development Block Grant Program (CDBG)

HUD is offering competitive grants ($20M) for community development projects. Resilient drinking water, clean water and/or stormwater infrastructure projects could be applied for under Category 1: Public Infrastructure ($750,000 max, $900,000 for joint applicants, no match required), construction and renovation under Category 2: Public Facilities ($300,000 max), and risk assessment and engineering projects could be applied for under Category 4: Community Planning ($50,000 per project, 5% match).

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

Deadline: 4:00 PM, July 28, 2017, ☑CFA

Empire State Development (ESD)

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

Empire State Development Grant Funds

The ESD is offering grant funds ($150M) in the 2017 consolidated funding application. Category 2 is for infrastructure investment that can foster new economic development (grant funds cover up to 25% of project soft costs).

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

Deadline: 4:00 pm, July 28, 2017, ☑CFA

NYS Hudson River Valley Greenway

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

Greenway Communities Grant Program

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

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

Deadline: 4:00 pm, September 8, 2017

LOCAL EXAMPLE: GREENWAY COMMUNITIES GRANT

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

Open Space Funding Options

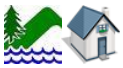
Preserving land as open space in floodplains and in coastal areas is an important aspect of flood resilience recommendations. Here are several options for municipalities looking to preserve open space in their community:

LOCAL EXAMPLE: REAL ESTATE TRANSFER TAX

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

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

Summary table of all funding assistance programs

Agency	Assistance Program	Priority Funding Categories	Grant amounts, required match	Deadline, CFA
DEC	✓ Estuary Grants		$10,500-$50,000, 15%	7/12/17
	✓ CSC Grants		$10,000-$2M, 50%	7/28/17 ☑CFA
	✓ WQIP		15-60%	7/28/17 ☑CFA
	✓ T4T		N/A	3/1, 8/1/17
EFC	✓ WIEP		≤$100,000, 20%	7/28/17 ☑CFA
	✓ CWRLF		N/A	Open
	✓ GIGP		10-60%	7/28/17 ☑CFA
FEMA	✓ HMGP, PDM, FMA		N/A	Trigger by natural disaster
	✓ PA, CRS		N/A	Open
DOS	✓ LWRP		15-25%	7/28/17 ☑CFA
OTHER	✓ NYSERDA		≤$250,000, 0%	Open until 9/30/19
	✓ OPRHP		≤$500,000, 25-50%	7/28/17 ☑CFA
	✓ HUD		$50,000 - $900,000, 0-5%	7/28/17 ☑CFA
	✓ ESD		75% for soft costs	7/28/17 ☑CFA
	✓ Greenway		$5,000 - $10,000+	9/8/17
	✓ Open Space		N/A	N/A

CONTACT INFORMATION

Libby Zemaitis
Climate Outreach Specialist, Hudson River Estuary Program
New York State Department of Environmental Conservation
(845) 256-3153 | Libby.zemaitis@dec.ny.gov | www.dec.ny.gov

Sea Level Rise Implementation Learning Group

List of Participants

Catskill

Nancy Richards	(nrichards@villageofcatskill.net)
Arielle Herman	(intheweedseco@gmail.com)
Liz LoGiudice	(liz.logiudice@gmail.com)
Sean Meagher	(sfmeagher@yahoo.com)

Kingston

Julie Noble	(julielnoble@kingston-ny.gov)
Emilie Hauser	(eehauser@gmail.com)
Scott Herrington	(captain836@aol.com)
Kevin McEvoy	(laeassoc@earthlink.net)
Lucy Potter	(potter.p.lucy@gmail.com)
Jennifer Schwartz-Berky	(jsberky@honestrategic.com)

Piermont

Usha Wright	(usha.wright@gmail.com)
Lisa DeFeciani	(lisadefeciani@gmail.com)
Klaus Jacob	(jacob@ldeo.columbia.edu)
Laura Strauss	(laurastraus@verizon.net)
Nathan Mitchell	(nmitchell@novusis.net)
Sylvia Welch	(sawelch10968@yahoo.com)

Stony Point

Jim Monaghan	(supervisor@townofstonypoint.org)
Carl Gilpatrick	(cgil1130@yahoo.com)
Jake Cataldo	(MCoyle@townofstonypoint.org)

Planning Team

Bennett Brooks (Consensus Building Institute)	bbrooks@cbuilding.org
Liz LoGiudice (Consultant)	liz.logiudice@gmail.com
Kristin Marcell (NYS DEC HREP)	kristin.marcell@dec.ny.gov
Julie Noble (City of Kingston)	julielnoble@kingston-ny.gov
Nava Tabak (Scenic Hudson)	ntabak@scenichudson.org
Libby Zemaitis (NYS DEC HREP)	libby.zemaitis@dec.ny.gov