Kingston Flooding Task Force Kick Off Meeting
City Hall, Kingston, NY
December 6, 2012 3pm-6pm

Meeting Summary

Background

Kingston has convened a Flooding Task Force. This group will meet over approximately six months to begin to address the challenges Kingston faces from waterfront flooding and sea level rise. The Task Force's goals will be to assess local risks and generate strategies that will help create a more vibrant, secure, and prosperous waterfront in the coming decades.

This community-driven process is being convened by the City's Conservation Advisory Council and the Economic Development Office, with help from the Planning Department, and will be led by a consulting team from Scenic Hudson, NYS Department of Environmental Conservation, NYS Department of State, with facilitation from the Consensus Building Institute. The City has been selected to participate in this pilot effort because it is already taking action to respond to climate change. In October, the Common Council adopted The Kingston Climate Action Plan. This Task Force will be instrumental in beginning to implement the Action Plan's recommendations, as well as contributing directly to the new Comprehensive Plan. Mayor Gallo invited the individuals representing a range of perspectives related to the Hudson-Rondout to join the Task Force.

Meeting Introduction and Welcome

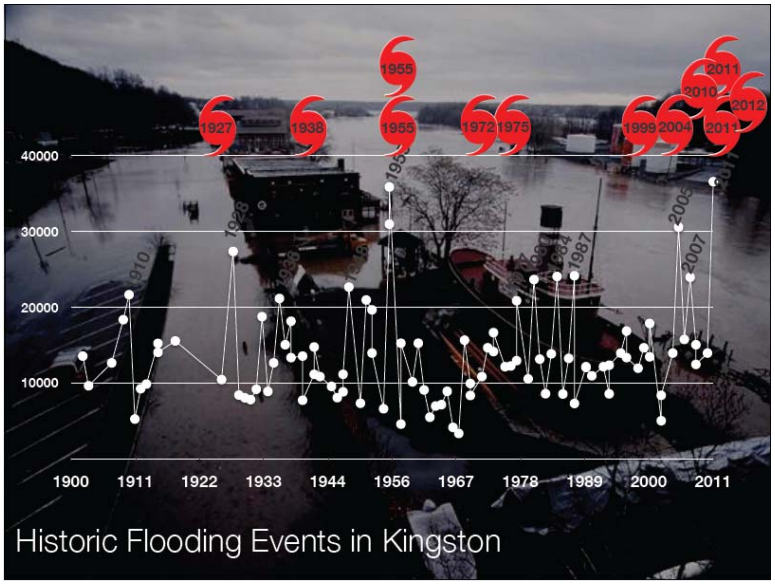
On December 6, 2012, members of the City of Kingston Flooding Task Force and interested community members and stakeholders met for the first Flooding Task Force meeting. See the meeting agenda in Appendix 1 and a full list of the 76 participants in Appendix 2. A full set of meeting presentations and the compiled map showing the work by meeting participants can be found at Kingstoncac.org.

Historic photos of flooding events in the last century, including spring freshets, provided by photographer Jack Matthews were on display in the room. Enlargements of historic picture postcards were also displayed, provided courtesy of the collection of Frank Almquist and prepared by Julie Noble. These postcards depicted Kingston's Rondout waterfront in the early 1900s, representing Kingston's industrial past and waterfront history.

Participants were welcomed by Mayor Shayne Gallo (Kingston), Frances Dunwell (NYS DEC Hudson River Estuary Program) and Steve Rosenberg (Scenic Hudson). Ona Ferguson (Consensus Building Institute) introduced the project. This is a community-driven process to address the challenges of waterfront flooding and sea level rise. The newly-formed waterfront flooding task force will spend the next six months assessing the waterfront's greatest vulnerabilities and opportunities and developing final recommendations for strategies to create a secure prosperous waterfront. The task force will focus on the City's Rondout Creek and Hudson River waterfront. Task Force members were invited to stand to be recognized.

The stated meeting objectives were for participants to:

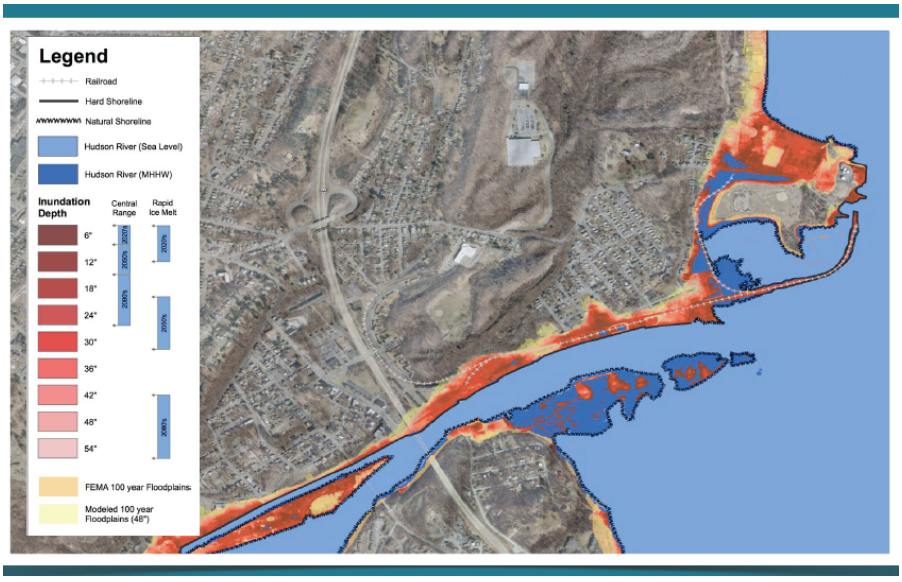
- Understand the purpose of the Flooding Task Force
- Learn about and share stories of current and future flooding hazards in Kingston
- Identify key waterfront assets
- Provide guidance for the Task Force on key aspects of waterfront resilience



Jim Noble (City of Kingston Alderman at Large) gave a presentation on how the project fits with other initiatives in Kingston. These initiatives include the Local Waterfront Revitalization Program, Kingston Waterfront Implementation Plan, Waterfront Brownfield Opportunity Area Study, Combined Sewer Long Term Control Plan, Hudson Landing Final Environmental Impact Statement, Hudson Landing Promenade Project, Climate Action Plan, Tidal Rondout Watershed Management Plan, East Strand Flood Mitigation and Storm Water Management Analysis, Comprehensive Plan Update, Waterfront Rail Refurbishment and Natural Resources Inventory and Open Space Plan.

<u>Hudson Valley Climate Hazards & Current & Future Sea Level / Hazard Areas</u>

Sacha Spector (Scenic Hudson) discussed large the storm events which have caused flooding in Kingston since 1900, including hurricanes or tropical storms in 1927, 1936, two in 1955, 1972, 1975, 1999, 2004, 2010, Irene and Lee in 2011 and Sandy in 2012, see image above. He pointed out the photographs of historic flooding and the historic postcard reproductions picturing the active Rondout industrial waterfront.



Participants, seated in groups of 4-8, then worked at their tables with large format maps of the Hudson-Rondout waterfront. Groups considered the following questions and wrote their answers on the maps: (1) What has your experience been of flooding in the Rondout and Hudson, now and in previous years? (2) How does this change your view of the waterfront? Participants discussed areas and specific buildings which have been flooded and placed yellow dots on the maps and wrote their descriptions on yellow post-it notes. The results of this exercise are in Appendix 3.

Sacha Spector then gave a presentation on coastal hazards and climate change, noting that the Hudson estuary is an arm of the sea, meaning that all shorelines up to the Troy dam are affected by tide, tidal surge and sea level rise. Hazards include inundation and erosion plus flooding from freshwater tributaries.

He showed the floodplain risk map, showing 100- and 500-year floods. He discussed projections of sea level rise caused by climate change. New York State sponsored studies project that the Hudson River near Kingston will rise up to 50 inches by 2080. The intensity of storms and their frequency and resulting storm surge are expected to increase. The large format map at each table delineated these modeled preliminary inundations zones of 6 inches to 54 inches with six-inch intervals and can be viewed in the Mr. Spector's presentation file and in the image above.

Local Context: Local Assets & Vulnerability

Emilie Hauser (NYSDEC: HRNERR) described vulnerability, which in this context depends on the sensitivity, exposure and adaptive capacity. She said it is important to prepare for risks, as preparedness and foresight are attributes of good government. What we do now will matter to future generations. According to the IPCC, "vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity."

The vulnerability of a particular structure or system is related to its exposure, sensitivity, the potential impact and the adaptive capacity of the system. Using an analogy of the three little pigs, during a flood, a house of sticks at a higher elevation will be less sensitive to the threat of flooding than a house of bricks on the water's edge. Examples of the adaptive capacity of these is the capacity to pick up the house of sticks and move it or to fit the brick house with openings so the water can flow through it. Vulnerability is a part of the risk management process.

Sacha Spector (Scenic Hudson) presented a series of maps showing inundation zones, natural resources and shoreline conditions and the waterfront assets, which were gathered from stakeholders at the January 2012 riverfront forum in Kingston.

Participants were then asked to point out assets, using a map of the waterfront, which might be vulnerable to flooding. They were then asked to write down what criteria or concepts the Waterfront Flooding Task Force should consider to prioritize community assets for risk and vulnerability assessment and adaptation analysis. Participants also identified especially important types of community assets. They were asked to consider marinas, civic spaces, infrastructure, natural resources, economic issues, transportation, commerce and recreation.

The following general themes distilled from the full suite of small group notes, which are provided in their entirety in Appendix 4:

- Consider whether new development opportunities should be limited in high risk areas
- Evaluate costs and benefits of assets
- Consider economic benefits of the waterfront and what makes these benefits possible (i.e. what draws people to the Kingston waterfront)
- Consider the cultural and historical value of assets on the waterfront
- Retain buildings that are already resilient – like the Steel House
- Uncertain if residential structures are high priority (mixed comments)
- Consider whether land can be elevated
- Consider minimizing the use of armored solutions
- Consider side effects of protective measures (e.g. increasing flood risk in adjacent areas by reflecting energy)

- Critical infrastructure (like wastewater treatment plant), assets that affect health and safety and water-dependent businesses should be prioritized
- Consider how nearby communities and other areas of the Rondout watershed will or should address this issue
- Look to other areas of the country and world for models
- Assets that affect public health and safety should be a priority
- Aim to conserve natural protective features or use them as a buffer to flooding
- Think outside the box for solutions and opportunities
- Consider effects of adaptation decisions on vulnerable populations and natural systems
- Consider Kingston's social networking assets

Desired Vision of Community Resilience

Kristin Marcell (Hudson River Estuary Program/Cornell WRI) gave a presentation on climate resilience. Resilience is the ability to absorb and/or bounce back quickly from a sudden shock. The human body can be used as an analogy. The body has many systems. If we don't take care of our body's systems (eating right, exercise, sleep etc.) we are less able to withstand or bounce back quickly from an injury or illness.

In general, resilient communities are communities that take care of their critical systems that support life, protect clean water and air and the environment, and promote economic vitality in an equitable way. Approaches that enhance community resilience include: long term thinking and planning, collaboration, diversity of strategies, decentralized efforts, flexibility, and redundancy.

Kingston must determine what conditions it wants to plan for. Present or future? 10, 100, or 500 year storm? While all risk cannot be removed, what level of risk is acceptable on the waterfront? Kristin described planning for climate preparedness as an opportunity to re-imagine, redesign, and reconnect waterfronts in Kingston and around the world. It is simultaneously an opportunity to stop reacting to devastating storms and begin planning for them – to avoid costs of the future.

Meeting participants were then asked to work in their small groups to share their ideas for what a flood-resilient Kingston waterfront would mean to them. The bulleted themes below were distilled from the full set of unedited notes from each table group and the vision statements submitted by participants, which are included in Appendix 5.

A flood resilient Kingston waterfront….

- Recovers quickly from flood events
- Has maximized use of natural protective systems to minimize flood risk
- Has structures in high risk areas designed to flood safely
- Has some uses relocated away from the shoreline in high risk areas
- Has restrictions on new development in some high risk areas
- Is protected by shoreline armoring in some areas
- Has secure critical infrastructure
- Has addressed the causes of flooding from upstream and the watershed
- Is based on models from other cities
- Is planned/designed based on the best available information
- Is able to capitalize on new opportunities
- Is an attractive place that attracts people, tourism, boaters, and benefits the local economy.
- Is based on sustainable, equitable long-term decisions that are balanced with the needs of the broader community/city

- Is based on decisions that prioritize public health and safety
- Is based on decisions that emphasize community character and preserve a “sense of place.”
- Has a strong local economy and promotes economic revitalization
- Benefits from government efforts to streamline assistance and reduce risk
- Would be inspirational

In the last few minutes of the meeting, a few participants shared key insights and topics from their discussions, and participants were asked to complete a meeting evaluation.

The task force will meet next in February 2013.

APPENDIX 1: Agenda

Kingston Flooding Task Force
Common Council Room, City Hall, Kingston, NY
December 6, 2012 3pm-6pm

Agenda

Meeting Objectives: *Participants will*

- *Understand the purpose of the Flooding Task Force*
- *Learn about and share stories of current and future flooding hazards in Kingston*
- *Identify key waterfront assets*
- *Provide guidance for the Task Force on key aspects of waterfront resilience*

3:00 Welcome and Project Overview

- Welcome – Shayne Gallo (Kingston), Fran Dunwell (NYS DEC Hudson River Estuary Program), Steve Rosenberg (Scenic Hudson)
- Introduction to the project and how it fits with other initiatives in Kingston – Ona Ferguson (Consensus Building Institute) and Jim Noble (Common Council)

3:30 Hudson Valley Climate Hazards & Current & Future Sea Level / Hazard Areas

- Presentation on coastal climate hazards – Sacha Spector (Scenic Hudson)
- Discussion of flooding in Kingston

4:00 Local Context: Local Assets & Vulnerability

- Presentation of waterfront assets from Waterfront Forum – Sacha Spector
- Discussion and prioritization of assets at risk or vulnerable to flooding

4:45 Refreshments and Networking Break

5:00 Desired Vision of Community Resilience

- Presentation of climate resilience – Kristin Marcell (Hudson River Estuary Program/Cornell)
- Discussion of what a resilient Kingston waterfront would look like in the future

5:50 Wrap Up & Next Steps

- Review next steps for the Task Force

6:00 Adjourn

Convened by the City of Kingston's
Conservation Advisory Council
Economic Development Office

INFO: 845-334- 3962
http://kingstoncac.org/ (Look under Initiatives)

In Partnership with

- Scenic Hudson
- NYS Department of Environmental Conservation
- NYS Department of State
- Consensus Building Institute
- Lincoln Institute of Land Policy

APPENDIX 2: List of Participants and Task Force Members

Core Planning Team			
Ona	Ferguson	Consensus Building Institute	oferguson@cbuilding.org
Emilie	Hauser	NYSDEC HRNERR Hudson River Estuary Training Program	eehauser@gw.dec.state.ny.us
Kristin	Marcell	NYSDEC HREP Cornell	kamarcel@gw.dec.state.ny.us
Mark	Lowery	NYSDEC Office of Climate Change	mdlowery@gw.dec.state.ny.us
Barry	Pendergrass	NYSDOS Division of Coastal Resources	Barry.Pendergrass@dos.ny.gov
Sacha	Spector	Scenic Hudson	sspector@scenichudson.org
City Staff Planning Team			
Sue	Cahill	City of Kingston - Planning	scahill@kingston-ny.gov
Julie	Noble	City of Kingston - CAC	JulieLNoble@kingston-ny.gov
Gregg	Swanzey	City of Kingston - Economic Devpt	gswanzey@kingston-ny.gov
Resource People			
Jeff	Anzevino	Scenic Hudson	janzevino@scenichudson.org
Betsy	Blair	NYSDEC HRNERR	bablair@gw.dec.state.ny.us
Bonne	Devine	NYSDOS Division of Coastal Resources	Bonnie.Devine@dos.ny.gov
Fran	Dunwell	NYSDEC Hudson River Estuary Program	ffdunwel@gw.dec.state.ny.us
Shayne	Gallo	Mayor, City of Kingston	
Libby	Murphy	NYSDEC Hudson River Estuary Program	ecmurphy@gw.dec.state.ny.us
Steve	Rosenberg	Scenic Hudson	srosenberg@scenichudson.org

Media		
Jeff	Gould	Times Herald Record
Michael	Novinsen	Times Herald Record
Lynn	Woods	Kingston Times
Task Force Members Present		
Dennis	Doyle	Ulster County Planning Department
Doris	Edwards	Riverview Baptist Church
Steve	Finkle	S. Finkle Associates
Shayne	Gallo	Honorable Mayor of the City of Kingston
Abel	Garraghan	Heritage Energy
Kevin	Gilfeather	City of Kingston - Parks & Rec
Huntley	Gill	Guardia Architects / Historic Kingston Waterfront LLC

Frank	Guido	Mariners Harbor
Kyla	Haber	City of Kingston - Planning
Sandy	Henne	Hudson River Cruises
Scott	Herrington	Kingston City Marina, Harbormaster
Samir	Hrichi	Ship to Shore
Joseph	Hurwitz	Joseph Hurwitz & Associates, Architects
Gayle	Johnson	New Central Baptist
Ann	Loeding	Friends of Kingston Waterfront
Patrick	McDonough	Hudson River Maritime Museum
Kevin	McEvoy	Kingston Land Trust
Jon	McGrew	Trolley Museum
James	Noble	City of Kingston - Common Council At Large
Julie	Noble	City of Kingston - CAC
Steve	Noble	City of Kingston - Environmental Education
Lisa	Pugliese	Steelhouse
John	Reinhardt Sr.	Kingston Fire Department
Mike	Schupp	City of Kingston - Public Works
Allan	Shope	Clearwater Board President
Art	Snyder	Ulster County Emergency Management
Task Force Members Not in Attendance		
Deborah	Brown	City of Kingston - Common Council Ward 9
Tim	Feeney	Feeney's Shipyard
Tom	Hoffay	City of Kingston - Common Council Ward 2
Rob	Iannucci	Waterfront Landowner
Steve	Johnson	Kingston Planning Board
Tom	Perna	AVR Development
Steve	Schabot	City of Kingston - Parks and Rec Board
Ralph	Swenson	City of Kingston - City Engineer
Allen	Winchell	City of Kingston - Sewage Treatment Plant
Other Participants Present		
Frank	Almquist	Master Gardeners CCEUC
Jennifer	Berky	Kingston Resident
David	Bruner	Kingston Transition Town
Nora	Budziak	Town of Ulster Resident
Renno	Budziak	Ulster County Planning Board Member
George "Bob"	Cacchio	Kingston Wastewater Treatment Facility / CAMO Pollution Control
Dave	Conover	Clearwater
Susan Spencer	Crowe	Kingston Resident
Robert	Dennison	VHB Engineering
Diane	Dintruff	Esopus Environmental Board
Nadine	Ferraro	Steelhouse Community Relations
Jeanette	Howell	New Central Baptist

Stephen	Ladin	Kingston Resident
Amanda	Lavalle	Ulster County Dept of the Environment
Mary	Mc Namara Tashjian	Lower Esopus Watershed Partnership
Teryl	Mickens	Rural Ulster Preservation Company
Tim	Moore	Rondout Rowing Club
Jim	Murac	Milone and MacBroom
Peter	Roberts	Friends of Historic Kingston
Abigail	Robins	Kingston Resident
Brenna	Robinson	City of Kingston Economic Development
Stephen	Savona	Savona's Trattoria and Pizzeria
Casey	Schwartz	Kingston Conservation Advisory Council
Tom	Sheil	Milone and MacBroom
Susan	Spear	US Senator Gillibrand's office
Lisa	Terwilliger	Kingston Resident
Cassandra	Thomas	New Central Baptist
Joan Williams	Washington	Kingston Resident
Leroy Jr.	Washington	Kingston Resident
Jason	Winner	Scenic Hudson
Stephen	Yarabek	Kingston Climate Change Committee

APPENDIX 3: Participant Experiences of Flooding

Residences

1. Homes along North Street. Currently vulnerable to flooding and loss of access.

Critical facilities

2. Emergency Services Marine Station – damaged during Sandy. Boats moved to other marinas or taken out of water before storm.

Museums and cultural centers

3. Cornell Building: waterfront side flooded
4. Trolley Museum and line (line is being raised 4 inches)
5. Maritime museum had 6' of water in the upper level and 3' of water in the lower level. The upper level was hard to dry out – it was not a flood proofed design.
6. The Clearwater homeport had 1 ½' of water but did well. It was design for 5' above flood elevation.
7. Lighthouse – oil tanks tipped and the furnace needs to be replaced

Recreational and natural assets

8. Loss of recreational assets/cultural assets which are tourism generators
9. Opportunities for boaters, tourists, local recreation
10. Gallo Park
11. Rotary Park
12. Block Park (Block Park floods from storm runoff.)
13. Kingston Point Park. Beach lost sand. Parking lot flooded. High water from high tides currently causing flooding.
14. Current and future tourism potential in Kingston Point Marsh for kayaking
15. Kingston Point Marsh and floodplain
16. BMX track and its parking lot
17. The walkway along the creek

Lands slated for new development

18. "Brickyard" (Sailor's Cove) and the Hudson Landing Property
19. Iannucci's property needs to be raised
20. Island Dock – Former industrial site. Plans for residential development are said to be "on hold." Currently vacant. Maximum land elevation said to be about +3 feet.

Businesses

21. Feeney's Boat Yard
22. Steelhouse Restaurant
23. Marinas/Commercial waterfront

Infrastructure

24. Waste water treatment plant
25. Future use of Heritage Energy oil tanks/site
26. Raw sewage seen discharging from pump station up on land
27. Water levels up from Rondout Creek coming up through storm drains
28. CSX Railroad bridge. Major freight link to NYC and points west. Vulnerable to high discharge of Rondout Creek.
29. Wastewater Lift Station – Block Park: Sand bagged during flood events for protection. Three staff rescued during Hurricane Sandy ("Sandy").
30. Heritage Energy – Access cut off during Hurricane Sandy

Water quality

31. Environmental risks from flooding of shore uses like boat yard, oil storage tanks etc)
32. Oil tank spill around Kingston Point and up the Rondout with the tide (to Hideaway marina)
33. Old Gas Plant. Contamination site.

34. Old Oil Storage Tanks. Flooded during Sandy contaminating water.

Flooding on specific streets

35. Spring St.: on top of a spring, lots of water flows out here and flows down Delaware Street to the dip in Akron Street.
36. Akron St.: runoff from limestone mines is heavy during rains and results in flooding.
37. Abeel St. and W. Strand St. were particularly affected Sandy
38. Roadway (E. Strand) floods at most rains and high tides
39. Catherine Street: Andrew Lyte property
40. Corner of Gill Street
41. Foot of Tompkins Street rain event related. During Sandy the water was 5 feet deep.
42. In front of blue building on Iannucci's property (at dip in road, across from WWTP)
43. Vicinity of Sycamore/East Strand streets.

Detail on hazards of flood events on the Lower Strand/Rondout Creek area:

- In Irene they expected wind event but got a rain event (Irene). Bulk of flooding a result of amount of rain and runoff coming through the Rondout Creek.
- Huge amount of mud and trees went through the Strand
- All marinas flooded and lost assets
- Boats hung up along the shores, caught in branches of trees
- Businesses turned away thousands of dollars in business to prepare for Sandy after their experience with Irene
- Flooding is even a problem just from snow runoff in the spring, not only an extreme event issue.
- Flooding went upstream to Rosendale

Detailed effects to specific businesses:

Steelhouse

- Loss of business/employees
- Kitchen shut down after this hurricane
- 4 ½ ft of water in the building, loss of entire kitchen
- Loss of $ business over 2 years
- Frustration of not one person from the city coming to see the damage or even calling

Savona's

- Lucky up to this point, but see the water getting closer to my front door

Mariner's

- Frequently flooded up to 3 to 4 feet in the cellar, more recently Irene 2011 and Sandy 2012

Rip Van Winkle (boat tours)

Flooding, loss of business – up to 11 days in 2011. 2012 more loss

APPENDIX 4: Guidance to Task Force on Prioritization of Assets

I. Specific priority assets in vulnerable areas (in no particular order.)

1. Waste water treatment plant and pump stations. The sewage plant affects the city and Port Ewen. Pumping, collection, regulators infrastructure are vulnerable.
2. Cornell Building: Historic boat works.
3. Apartment building and residents
4. Strand area: Major attraction area. Lower strand must be considered as one area. Waterfront district is a large tax generator during its high season.
5. Museums (Maritime and Trolley) bring people out to the restaurants.
6. Restaurants: Steelhouse, Savona, Mariner's
7. The whole Rondout area is important to Kingston. Restaurants/boating/museums.
8. Marinas (Kingston Marina – significant attraction, draws traffic both from lower river headed north and upper river/canal system/Great Lakes headed south; Esopus marina)
9. Marine Station on East Strand. Police vessels out of service when this was damaged.
10. Kingston Harbor - restaurants and shops are not relevant without it. Cruise ships dock here.
11. Kingston Point Park and Beach. Great for families, people bring children to the trolley ride.
12. Churches
13. Residential
14. Feeney's Boat Yard - huge employer and tax driver
15. Utilities (Electrical distribution system, gas distribution system, water mains (fire hydrants), energy supply (oil tanks at Kingston Point)
16. Oil tanks
17. Brownfields and superfund sites which may be affected by flooding and inundation
18. Lighthouse, marinas and tour boats like Rip Van Winkle
19. Historic buildings
20. Tourism
21. Lighthouse (Kingston/ Rondout)

II. What criteria or concepts should Task Force consider to prioritize community assets for risk assessment and adaptation analysis?

Consider whether new development opportunities should be limited in high risk areas

1. Don't put people in harm's way in development decisions.
2. New development zoned to move back from inundation.
3. Make sure new development takes flood risk into account.
4. Don't increase our vulnerability by advocating more building in areas that we know will flood in the future.
5. Protection of potential development areas
6. Don't put things in spaces you are worried about losing.
7. Look at zoning code for waterfront
8. 90% of vulnerable part is currently undeveloped
9. Buyers of property should expect this to happen.

10. Do these buyers have good information going into this?
11. Greatest asset may be the lack of development on the Rondout waterfront due to failed industry in the mid-century – will make it easier to create a new vision.

Evaluate costs and benefits of assets

12. Propose a Cost Benefit Analysis
13. Need to look at cost to protect/ adapt
14. We need to balance the costs of rebuilding vs. benefits of being on the water
15. Can't keep going back to the government and ask them to pay for it again and again
16. When does the onus go on the people doing business there to decide to adapt or move?

Consider economic benefits of the waterfront and what makes these benefits possible (i.e. what draws people to the Kingston waterfront)

1. Consider the economic base/tax base.
2. Prioritize based on what draws people to the waterfront – economic benefit. Walkway not even completed in Kingston and people wanted to be on it!
3. Whatever draws people to the river – biggest economic generator and opportunity to revitalize
4. Waterfront access potential and preservation
5. Look for urban development projects that can have social and economic and environmental health as a goal to build the tax base
6. Waterfront - People visit because it's on the water, can't just move it away because it won't be the same.
7. Since there is no more industry in the area, the Rondout needs to develop tourism even more. No area can flourish without an active restaurant/shopping/night life area.

Consider the cultural and historical value of assets on the waterfront

8. Historic/cultural identity preservation (nature of the waterfront)
9. Figure out edge condition formula that is consistent for history and environmental concerns
10. "we're a working waterfront"
11. Protecting the right to bulkheads ("it was an industrial waterfront, grassy knolls obliterate that history")
12. Concern for preservation of landmarks with restrictions

Retain buildings that are already resilient

13. Retain buildings that are resilient, for instance the Steel House, assuming they can continue to operate with post-flood hose downs (questionable if they are sustaining major damage to their operating systems, e.g., walk-in refrigerator).

Uncertain if residential structures are high priority (mixed comments)

14. Figure out how to manage existing flood-vulnerable homes going forward.
15. Protection of residences that are vulnerable

16. Houses in the flood zone should not be the reason for adapting on the Rondout

Consider whether land can be elevated

17. Need to consider capability and "permission" to make changes such as raising land.
18. Concern: if raising level of the Strand, what about things that do not get raised

Consider minimizing the use of armored solutions. Consider side effects of protective measures (e.g. increasing flood risk in adjacent areas by reflecting energy)

19. Be sure to look at assets with a variety of adaptations, not just hard-scaped bathtub
20. Hard bulkheads might not be the answer, could use porous surfaces
21. Avoid protective measures like levees that displace flood waters to adjacent areas.
22. Make sure protective measures don't have negative effects on adjacent areas.
23. Concerns: if sea wall, how high do you build it?
24. Elevate or move vulnerable uses

Critical infrastructure (like wastewater treatment plant), assets that affect health and safety, and water-dependent businesses should be prioritized

25. Critical infrastructure should be prioritized.
26. Assets regulated under state regulations are a priority. For example, the sewage treatment plant must meet state operating standards.
27. Invest in assets that if left alone would result in water quality challenges.
28. Certain things need to be on the waterfront necessarily, others don't. Certain things can move, others can be designed to withstand flooding
29. Proposed parking garage – move up behind police department
30. Water-dependent business should be a priority
31. Consider "keystone assets" or assets that if you reduce vulnerability to it you also reduce vulnerability to many other assets and address a variety of flooding issues
32. Protect or move the sewer plant.
33. Public health and safety (#1: "This is so basic and fundamental that it may be taken for granted, and therefore could get overlooked.")
34. Things that affect public health and greater areas than waterfront properties
35. Upgrading the drainage and sewer systems and all contributing conduits with respect to their ability to take flow from the park (Hasbrouck) and Ponckhockie neighborhoods
36. Consider "gating" important structures with heavy metal gates with gaskets

Consider how nearby communities and other areas of the Rondout watershed will or should address this issue. Look to other areas of the country and world for models

37. Become aware of how NYC will be addressing flood risks, evaluate whether any of these will affect our community vulnerability, and factor these findings into your (our!) strategy.
38. Become aware of upstream actions in Rondout Creek watershed that may affect our vulnerability, and factor these into our strategy.
39. Think economic revitalization as a whole on the estuary – need to preserve access to the river

40. 9W is one big runoff conduit, any way to slow this down?
41. Disconnect gutters from sewers – conduct sub-basin by sub-basin education to explain importance of this

Aim to conserve natural protective features or use them as a buffer to flooding

42. Find opportunities to create wetlands as the water levels rise
43. Enhance tidal wetlands
44. Consider fortifying wetlands
45. Encourage recreation by softening shoreline
46. Enhance and build up wetlands adjacent to Millen's Scrap Yard

Think outside the box for solutions and opportunities

47. No engineering solution. Engineering opportunities – task force needs to understand what is possible on the waterfront
48. Focus on projects that delineate human and environmental opportunities/potential of the future (upcoming century) – not preserving the status quo, which is futile
49. Consider the future - What projects will we be doing when your first grader goes into college
50. Look to models in the rest of the world – buildings that float. We are not the only ones struggling with this issue.
51. Need a Harbor Management Plan to review assets and what options we have to relocate objects and to prevent flooding.

Consider effects of adaptation decisions on vulnerable populations and natural systems

52. Consider those assets that are least able to adapt themselves – vulnerable populations, ecosystems, and non profits with low budgets

Consider Kingston's social networking assets

53. Kingston is a tightly knit community with social capital; this is an important asset for resiliency and should be considered.

Other

54. Construct a raised or floating walkway along the river
55. Concern for preserving one asset over another, doesn't protection cover all assets? (i.e. if we are saving one aren't we saving all {this is the bathtub effect, either in or out, i.e. with a sea wall})
56. This is a value judgment: what can adapt, what can't

APPENDIX 5: Developing a vision for a flood-resilient Kingston waterfront

This appendix contains the unedited notes of what people wrote down during their table discussions about what a flood resilient Kingston would look like, plus vision statements submitted by participants.

A flood resilient Kingston waterfront….

Recovers quickly from flood events

- Ability to recover quickly
- It can bounce back
- The developed area can absorb destructive force of flood but can bounce back to contribute to the cultural, economic & social aspects of the community
- Resiliency is reflected in how quickly we recover
- Businesses return to operations rapidly.
- Flooding should be a temporary inconvenience – not a catastrophe
- Whatever is going on at waterfront needs to be able to resume as quickly as possible – businesses, railways
- Able to bounce back
- Quickly recover from a flood
- A wash and wear waterfront.
- Not damaged by natural events.
- Allow life as usual to continue during storm and rain events

Has maximized use of natural protective systems to minimize flood risk

- Secure Sleightsburg Spit (the wetland in Town of Esopus) to the extent possible
- Consider doing plantings like *phragmites* or willow to put some biomass in the floodplain to absorb force
- Green space along the river.
- Waterfront parks like Kingston Point
- Kingston Point Park and Beach replaces the lost wetland and is moved to the AVR Hudson Landing shoreline
- Healthy habitats
- Have lots of open spaces
- Use biomass in areas where needed
- Include more parkland and “floodable” land uses and preserve walkways
- An enhanced riparian forested buffer with less hard walkways to allow for access to the creek’s green areas
- NOT be diked

Has structures in high risk areas designed to flood safely

- Look at Steelhouse model – it survives floods well. Even the new Clearwater space had a foot of water during Sandy
- Be above water
- Resilient building construction code for areas in the floodway
- Design/construction to absorb force.
- Concrete floors like in the Maritime Museum
- All zoning and planning would allow for flooding
- Flood-adaptive buildings should be considered in planning approvals
- Developed areas need to be able to withstand storms.

- We should have strict flood resiliency standards for people who want to build in the floodplain going forward.
- First floor use restrictions: flow through uses like portable seating, washable, etc.
- Reflect resiliency, best practices in updated zoning code
- Break away walls
- Elevate critical systems
- Can't build to today's code – build to tomorrow's code
- Design spaces in places that flood safely
- Review FEMA building codes
- Possible fill along the Strand
- Intelligent land use regulations
- Use strict building and planning guidelines to have buildings without critical activities on first floor and could be used again (break away walls) parking or retail kiosks on first floor
- Assets that can tolerate inundation temporarily should be recognized
- At Kingston Point Park raise the road to preserve access;
- Gate buildings that can't be re-engineered to withstand surges
- Develop policies and design standards for development and redevelopment that takes into account the prevalence and frequent occurrences of flooding
- Get new technology that will rebound to water; mold; drying faster materials.

Has some uses relocated away from the shoreline in high risk areas

- Get rid of major infrastructure (WWTF (waste water treatment facility) that is already underwater in the Rondout
- Move WWTF out of flood zone
- Steelhouse and other buildings right on the river – should they be removed?
- Properties/businesses that are not resilient and don't have historic value shouldn't be there.
- Remove, through buy-outs, people and buildings from repetitively flooded areas
- Floods have changes perception of the group, extreme events like Irene and Sandy change what should be rebuilt where
- Money for rebuilding could go to schools and safety and instead it is going to homeowners
- Some places should be rebuilt other shouldn't
- Areas that can't handle temporary inundation need to be moved.
- No building within the flood zones.
- Move City Beach to shoreline on North Street by AVR development
- Move historic framed buildings to a safe place
- Not have key infrastructure such as wastewater treatment plant in flood zone
- Move the STP (sewage treatment plant)!
- have museums and restaurants, but move uphill

Has restrictions on new development in some high risk areas

- Future development should NOT be in the flood / inundation zone.
- We should develop a policy for non-developed areas.
- Leave Island Dock undeveloped
- No new buildings in areas of future risk – should be a consideration in planning decisions
- Limit hard development
- Do not allow new buildings in flood prone areas
- Future development outside the flooded are

Is protected by shoreline armoring in some areas

- Protection would be in the form of wall, barrier, but would lose sight of the creek, concern is height

- Gating, like in Coney Island
- Steelhouse and Cornell shops – beautiful historic buildings, protect these.
- Install a dike to reduce risk to flooding once in 50 years.
- Could bulkheads be flexible and float/raise up to act as a barrier?
- Raising bulkheads a possibility – protection of necessary critical assets (WWTP)
- New Central Baptist church remains where it is.
- Secure the existing Rondout business, churches and residents with a dyke upon which the trolley would run.
- Existing built environment protected

Has secure critical infrastructure

- Secure infrastructure
- Decrease the vulnerability of our facilities
- More secure WWTP and other sewage infrastructure
- Critical infrastructure relocated

Has addressed the causes of flooding from upstream and the watershed

- Try to prevent the upper Rondout from getting clogged and then causing flooding
- Collaborate with other communities and New York City with regards to flood resilience plans (the importance of NYC to the process is that the flood surge strategy there will affect what happens further north and NYC also affects flooding on Rondout Creek coming from upstream due to its reservoir system controlling water flow to some extent).

Is based on models from other cities

- Look at models from other places of flood resilience: Holland, United Arab Emirates. Look at architectural norms like building your house like a boat. Holland even has floating homes.
- Consider islands, diking, gates like Holland, floating docks
- Watch what NYC is doing

Is planned/designed based on the best available information

- Decision making is based on good knowledge of flood causes and events.
- Good information product on natural processes and what to expect is needed.
- Look at many alternatives, do CBAs (cost benefit analyses), risk analysis. What's the true cost of shutting down the waterfront for one week? Like we have to during a storm/flooding.
- Study of the taxable value of the waterfront and how can this value improve? Look at Kingston Point, Island Dock, and development near Millens (Hudson Landing)

Is able to capitalized on new opportunities

- Opportunity: The creek is a great hurricane hole, excellent hiding place for hurricanes and strong winds. Millions in (dollars) boats came in for shelter from Irene, lots of work to keep them from washing ashore so they declined these people during Sandy, unless they were in a dire situation. Could improve the dock structure.
- Being prepared to take advantage of funding or other opportunities: be ready with a plan.
- Economic opportunity - resiliency in infrastructure and design – may still have economic hit – but– continue to promote design.

Is an attractive place that attracts people, tourism, boaters, and benefits the local economy.

- Attractive, desirable waterfront area
- Boaters entering the Rondout experience a pleasant entry.
- Where are the boats going to dock? We need to accommodate them.
- Where possible, property is protected, minimized damage, for those that have no solution, also, have that solution without changing the character of the waterfront
- Have access to the water for recreation and water dependent industry and transportation
- Draw tourist and residents to its clean water for recreation, historical and cultural assets
- Waterfront access would be public all along the shoreline. Ways to cross the creek to Esopus.

Is based on sustainable, equitable long-term decisions that are balanced with the needs of the broader community/city

- Focus on sustainable uses
- People in CA have voted to increase taxes temporarily to pay for project to address problem. They realized that if they didn't pay now they would suffer in the long run. Could we do something like that here?
- Be appropriately responsive to flood events and sea level rise based on importance of resources, and be forward looking to future changes in sea level and flooding
- Let's make sure that we are willing to make the harder more expensive decision if it's better in the long run.
- Can we instead stabilize in the long run and big picture?
- Give future developers ideas to build that are sustainable, have strategies in place to survive
- Need to make it self-sustaining, repairable, profitable.
- Balance between development, growth desires and water conditions.
- Important to make goals attainable
- Reflects the willing[ness] to accept the great inevitable expense
- This is very expensive only some may be able to afford it. This is an equity issue.
- Balance of the city, need community-wide approach
- We suffer from a perception that we are three towns in one. Uptown, midtown and downtown..Would the rest of the city support the downtown?
- Even though the flood happens here it impacts others

Is based on decisions that prioritize public health and safety

- Secure and clean up toxics at Central Hudson Gas and Electric [manufactured gas plant?} and Millen's [scarp yard] sites.
- Need to think about new sources of energy to avoid oil spills
- Safe
- Why not take the long view? Attack the problem at the source. Global warming, over population, use of resources
- Need to make the waterfront safe
- A waterfront that is planned to meet human safety concerns
- Desirable and safe waterfront
- High density development in areas that do not flood.
- Protect public health, avoid seage spills and sewage treatment plant downtime
- An environmentally safe waterfront area

Values community character and preserves a "sense of place."

- Manage a sense of place for the community
- Public and private sites that maintain and honor the individual and community "sense of place" that a waterfront embodies

Has a strong local economy and promotes economic revitalization

- Have acceptable risks (economic resiliency)
- Marinas are economically important. How can they be made more resilient?
- Need to make waterfront more economically viable
- Invest to protect maritime assets w/o which economic vitality disappears
- We know that the economic value of this area is completely reliant on being on the river.
- Meet the goals of the community (economic and otherwise)
- Peaceful, safe, sound environment for the Rondout community as well as the waterfront businesses
- The waterfront is arguable the premier economic driver for the City of Kingston – remembering that we must enhance that first and foremost to succeed.

Doesn't subsidize risky decisions

- You should get one shot – we'll rebuild it once – then you're on your own
- Business is business, anyone in it is taking risk.
- Harder to get financing in a flood zone

Works with government

- Government should have some responsibility for what is and is not allowed. Public infrastructure decisions and those that affect loss of life and safety
- Streamline assistance process – whether through FEMA or Small Business Admin – Also w/ re-opening inspection –i.e UCHD (Ulster County Health Dept.)
- Have floodplain inspections

Is flexible and adaptable

- Flexibility required to accept change

Would be inspirational

- Be an inspiration to people everywhere.

The following are written statements participants submitted (some individual, some submitted by small groups).

They wrote that a Kingston waterfront resilient to flooding in fifty years would:

1. Include a public infrastructure that assists in helping quickly recover from a flood, and a combination of public and private sites that maintain and honor the individual and community "sense of place" that a waterfront embodies.
2. Make more resilient: Start with basic engineering discussion- what can rationally be done to protect asset: move on to review FEMA building codes for guidance look to minimize risk of land uses to people and limit hard development to elevations about HIGH above storm tide/water rise - BUT ALLOW FOR KINGSTON TO USE WATER FRONT FOR ECONOMIC REVITALIZATION.
3. A waterfront that is planned to meet human safety concerns and allow for adaptive use of sites with activities or structures that will still be viable after water recedes – use strict

building and planning guidelines to have buildings without critical activities on first floor and could be used again (break away walls) parking or retail kiosks on first floor.

4. Flood resilient water front: One which reflects the extraordinary changes that future environmental conditions will confront us with and equally in addressing them.
5. See flooding as a temporary annoyance, not a life changing crisis. Assets that can tolerate inundation temporarily should be recognized. Areas that can't handle temporary inundation need to be moved. All of this needs to be consider in the context of the "new future normal" sea level and storm tides. A wash and wear waterfront.
6. Kingston waterfront would meet the goals of the community (economic and otherwise) in a sustainable and resilient way.
7. Kingston waterfront in fifty years would be intelligently planned to achieve a desirable and safe waterfront.
8. Secure the existing Rondout business, churches and residents with a dyke upon which the trolley would run. Kingston Point Park Beach replaces the lost wetland and is moved to the AVR / Lighthouse shoreline. No building within the flood zones.
9. Future development outside the flooded area; Existing built environment protected; Critical infrastructure relocated.
10. Would have access to the water for recreation and water dependent industry and transportation with healthy habitats.
11. At Kingston Point Park raise the road to preserve access; Move City Beach to Shoreline on North Street by AVR development
12. Have lots of open spaces: not have cirtical support systems (sewer plant); cater to business that can withstand high water – float; modify terrain when possible to be above high water levels.
13. Be able to withstand climate change through mitigation of rising waters. Use biomass in areas where needed; gate buildings that can't be re-engineered to withstand surges; move historic framed buildings to a safe place; do not allow new buildings in flood prone areas; high density development in areas that do not flood.
14. Be similar to Kingston Point Park during the recreational era (Note from transcriber: KPP used to be a dayliner landing with Ferris wheel and other tourist activities) but with modern enhancements. It would draw tourist and residents to its clean water for recreation, historical and cultural assets. Tourist related buildings would be enhanced similar to structures like the old steak house; more floating docks would be constructed, waterfront access would be public all along the shoreline. Ways to cross the creek to Esopus; resilient public transportation along the Rondout.
15. Be able to withstand flooding with regards to existing development and have public policy standards with regards to future development; not have key infrastructure such as wastewater treatment plant in flood zone; collaborate with other communities and New York City with regards to flood resilience plans (the importance of NYC to the process is that the flood surge strategy there will affect what happens further north and NYC also affects flooding on Rondout Creek coming from upstream due to its reservoir system controlling water flow to some extent).

16. Develop policies and design standards for development and redevelopment that takes into account the prevalence and frequent occurrences of flooding, e.g. floor levels raised 4 to 5 feet and sealed construction systems that prevent intrusion of water.
17. NOT be diked; include more parkland and “floodable” land uses and preserve walkways; protect public health, avoid seage spills and sewage treatment plant downtime (move the sewage treatment plant!); have museums and restaurants, but move uphill; recognize the bold work of your task force;
18. An environmentally safe waterfront area would create a peaceful, safe, sound environment for the Rondout community as well as the waterfront businesses.
19. An environment where culture, nature community exist with changing climates
20. Design infrastructure to adapt to changing climate; get new technology that will rebound to water; mold; drying faster materials.
21. Would be reconstructed more simply for durability and left
22. Be appropriately responsive to flood events and sea level rise based on importance of resources, and be forward looking to future changes in sea level and flooding
23. An enhanced riparian forested buffer with less hard walkways to allow for access to the creek’s green areas.
24. The waterfront is arguable the premier economic driver for the City of Kingston – remembering that we must enhance that first and foremost to succeed.
25. Be an inspiration to people everywhere.
26. A Kingston waterfront resilient to flooding in fifty years would be the best “hurricane hole” port in the storm during hurricane season.