

What could a flood-resilient Kingston waterfront look like?

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Kingston taking steps now

- Zoning: Riverfront district and flood overlay (new construction to 2' above Base Flood Elevation)
- Updating comprehensive plan
- Other plans including Local Waterfront Revitalization Program
- Some owners making properties flood-resilient



What is the long term vision for the waterfront?



What is the lifespan of infrastructure?



What assets do we want to conserve?

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Accommodate: Can we design a waterfront to flood safely?

Example strategies:

- Seal off structure
- Elevate site, structure or systems
- Design to get wet
- Dampen water energy with vegetation
- Store water on landscape



Elevated structures with flood gates, Hamburg, Germany

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Accommodate: Floodproofing



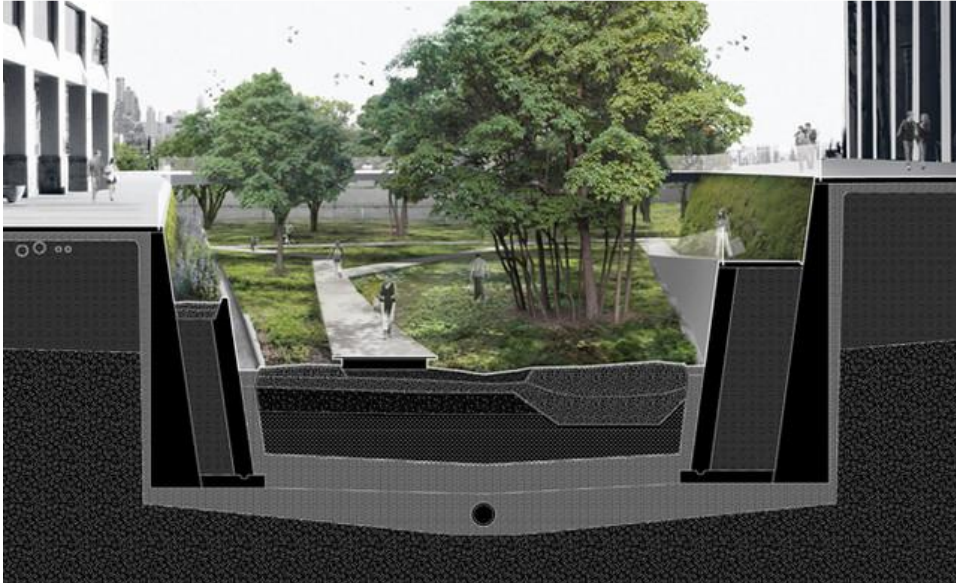
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Accommodate: Streets Designed to Flood New York City



Accommodate: Parks Designed to Flood New York City



Accommodate: Parks designed to flood Rotterdam, Netherlands





**Accommodate: Design houses to flood
Waterrijk, Netherlands**



**Accommodate: Store water on the landscape
Waterblad de Wednel, Netherlands**

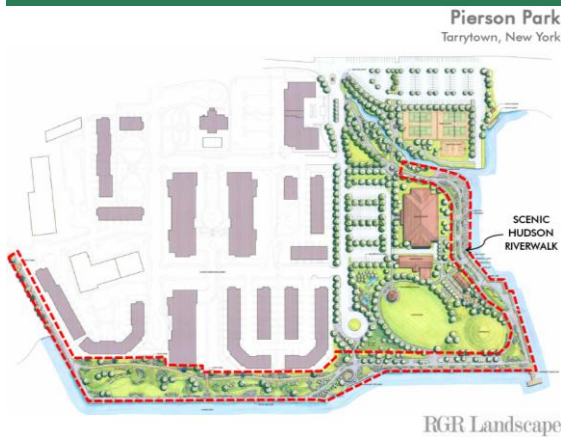
**Accommodate: Store water on the landscape
Singapore**



**Accommodate: Green infrastructure
to reduce wave/surge energy**



Riverwalk Park at Tarrytown



Fortify: Can we protect the shoreline with a barrier?

Examples:

- Bulkheads
- Seawalls
- Dikes/levees
- Barriers



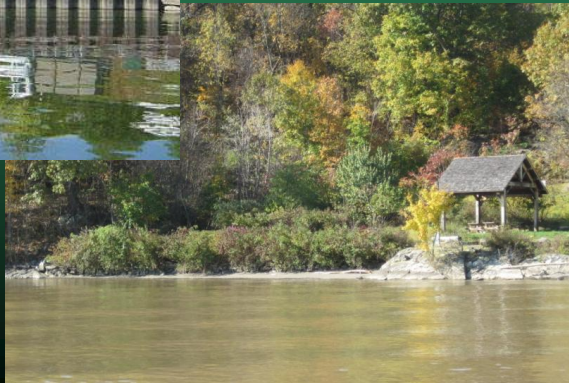
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Consider armoring to prevent erosion carefully



Or like this?

Protection like this?



Esopus Meadows Preserve after several storms



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Fortify: Levees in New Orleans



Fortify: Waal River, Netherlands



Should some structures be moved out of harm's way?



Different strategies for different scales

- Site – Floodproofing, elevation, site protection, relocation
- Neighborhood – seawalls, levees, breakwaters, living shorelines, relocation
- Reach/region – surge barriers, wetland restoration, channel modification



Simulations

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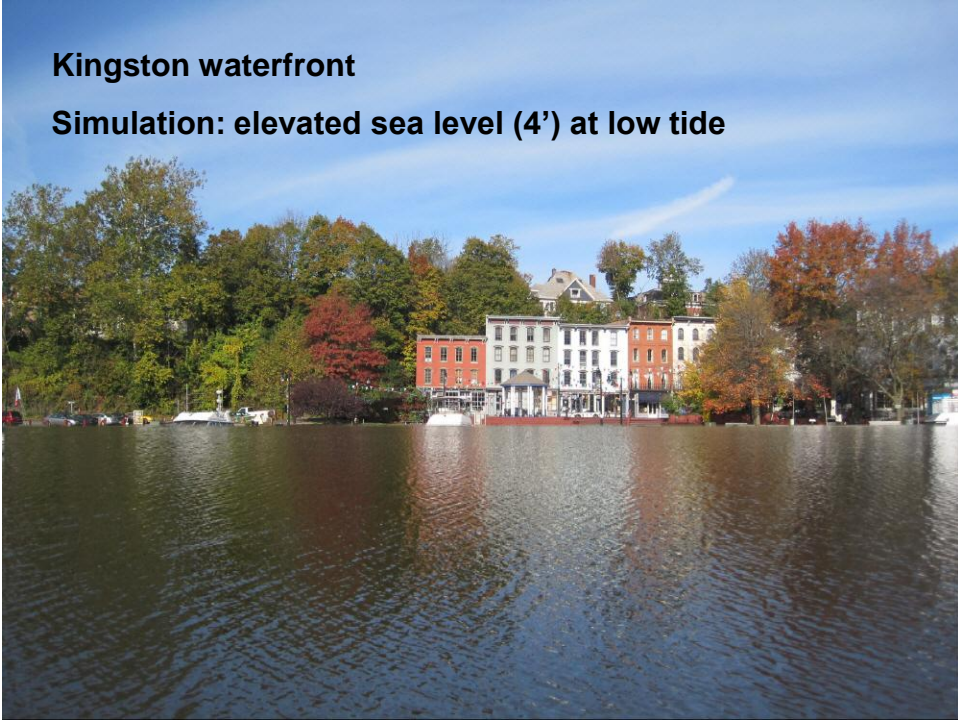


Kingston waterfront low tide



Kingston waterfront

Simulation: elevated sea level (4') at low tide



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Simulation: elevated sea level (low tide), armored protection



Kingston waterfront

**Simulation: elevated sea level (low tide), vegetated
revetment, floodproofed buildings**



Kingston waterfront

**Simulation: elevated sea level (low tide), strategic
retreat**



What do you think?

- Do any of these seem possible in Kingston?
- What questions do you have about these strategies?

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Questions?



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