

In early March, Catalysis Adaptation Partners performed a vulnerability assessment for real estate along the Kingston waterfront. The cumulative expected damage to buildings and land improvements from all storms over time was computed for two years in the future: 2060 and 2100. For each year, both a low and a high sea-level rise scenario were modeled. For 2060, 20" and 36" of sea-level rise were selected. For 2100, 33" and 68" of sea-level rise were selected. Cumulative expected damage was computed assuming that no action would be taken to protect against sea-level rise in any way in the coming years. See the attached document for a summary of the vulnerability assessment results.

The planning team is recommending that the COAST model now be used to test some possible adaptation strategies that would result in less damage to waterfront real estate over time. The COAST model will be run again, under the assumption that certain adaptation measures have been implemented to protect the waterfront from flooding from Hudson River and Rondout Creek. The model will then project for us the avoided damages over time. If we project how much damage would be avoided, and compare that to the cost of the adaptation measures, we can obtain a benefit:cost ratio.

The ideas below were recommended by the planning team for analysis based on the discussions the Task Force has had to date. In order to run the COAST model, the exact beginning and end points of each adaptation strategy will need to be identified. We will have enough time and resources to look at 3 adaptation scenarios under two sea-level rise scenarios. We would like to know if the task force approves of these scenarios, and whether there might be other workable scenarios to test, either in these areas, or in other parts of the waterfront.

Area: Wilbur to Island Dock

I. Road access between Dock Street and the Eddyville Bridge: Public safety access and public access for deliveries and consumers will affect the viability of the waterfront businesses in this corridor. Do we want to support existing and/or allow continued economic development in these areas or not? COAST can estimate the avoided damage to facilities in this area for the following adaptation scenarios. Rough estimates for construction will be obtained, and the model will project avoided damages. Then a benefit:cost ratio will be developed. The Task Force will need to discuss what happens to the properties on the south (water) side of the road. A decision for this area will need to be made between 36" and 66" of sea-level rise.

Possible road elevation scenarios:

- a. Elevate portions or all of Abeel Street from Wilbur (or city line or to Eddyville bridge) to Dock Street. Elevate Dock St to Broadway.
- b. Elevate Abeel Street to Block Park and abandon Dock St. (use Abeel for access).

II. Management of Block Park and Island Dock: The decision to elevate or abandon Abeel will also affect how Block Park and Island Dock are managed. The COAST tool could be used to estimate the tax benefit of developing Island Dock, if it became viable for real estate development after adaptation

investments. How much will it cost to fortify the land in Island Dock over the long term? Can we value natural habitat benefit? A decision for this area will need to be made between 0 and 36" of sea-level rise.

Possible Block Park/Island Dock scenarios:

- a. Elevate a portion of Block Park for marina services and allow the rest to flood. Build a protected wharf behind Island dock, with dredging of channel, and fortify and develop a portion of Island Dock to protect wharves and back channel.
- b. Elevate a portion of Block Park for marina services and allow the rest to flood. Allow Island Dock to be a park with public access that is designed to flood over the long term. Allow Island Dock to submerge creating wetland and fish spawning habitat over the long term that will provide some protection to marinas in back channel.

Area: Strand and Ponckhockie

The Ponckhockie and Strand neighborhoods are connected by Strand Road and are similar in elevation. What is the economic development benefit in these areas? What are the cumulative property losses in these scenarios? What is the cost of the flood management structures?

I. Ponckhockie: Is the land between Strand Road and the water elevated and developed, are buildings floating, or is this area greenspace reclaimed by water? A decision for this area will need to be made between 0 and 36" of sea-level rise.

Possible Ponckhockie neighborhood scenarios:

- a. Elevate the roadway/trolley with bridge over low area to allow stormwater flow into Rondout with tide gates
- b. Elevate the roadway/trolley curving inland in flooded area (near church) with green infrastructure (wetland pocket parks) to absorb floodwaters and pumps
- c. Buyout repetitive loss properties
- d. Floodproof with changes to zoning and building code requirements

Possible Strand scenarios: Is the land between the Strand road and the water elevated and developed, are buildings floating, or is this area greenspace reclaimed by water? A decision for this area will need to be made between 0 and 36" of sea-level rise.

- a. Floodproof businesses and historic buildings along the Strand and relocating in the long term
- b. Elevate Strand road and historic buildings as a berm
- c. Elevate all of waterfront along Strand
- d. Relocate Strand road inland of high water line