Responding To Sea Level Rise in New York State:

The efforts of the NYS Sea Level Rise Task Force

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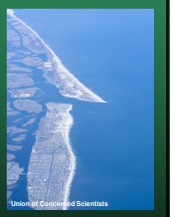
Hudson River Estuary

Initiatives to help NYS prepare for climate change

- NYS Climate Action Council
- NYS Sea Level Rise Task Force
- ClimAID: NYS Climate Impacts Assessment
- Sustainable Shorelines

Creation of the Task Force

- 62% of the NYS population lives in coastal areas
- Legislation passed in 2007
- Scope: Troy Dam to tip of Long Island
- Charged with the creation of a report by January 1, 2010



Sea Level Rise in NYS

Hudson Valley railroads are close to sea level

- 15" in NY Harbor in 150 yrs
- Harbor tide gages show rise of 4-6" since 1960
- Causes: warmer water takes more space, melting ice sheets, geologic forces
- Sea level rise affects all of the estuary

Storm surge

Suffolk County shoreline after the 1938 "Long Island Express" hurricane.

- Caused by low pressure, wind, tides
- Four Category 3 hurricanes have hit NYS since 1900
- Storm surge affects all of the estuary

DRAFT ClimAID Sea Level Rise Projections

Lower Hudson Valley & Long Island	**2020s**	**2050s**	**2080s**
Sea Level Rise[1]	+ 2 to 5 in	+ 7 to 12 in	+ 12 to 23 in
Sea Level Rise[2] Rapid Ice Melt	~ 5 to 10 in	~ 19 to 29 in	~ 41 to 55 in
Mid-Hudson Valley & Capitol Region	**2020s**	**2050s**	**2080s**
Sea Level Rise[1]	+ 1 to 4 in	+ 5 to 9 in	+ 8 to 18 in
Seal Level Rise[2] Rapid Ice Melt	~4 to 9 in	~ 17 to 26 in	~ 37 to 50 in

[1] Shown is the central range (middle 67%) of values from model-based probabilities (16 models x 3 scenarios) rounded to the nearest inch.

[2] The rapid ice melt scenario is based on acceleration of recent rates of ice melt in the Greenland and West Antarctic Ice sheets and paleoclimate studies.

Note: Baseline is average sea level from 1971-2000.

Examples of what we've learned about our coastal zone

- SLR is happening now and will affect the entire ocean and estuarine coastline.
- We are already highly vulnerable to a powerful coastal storm.
- This vulnerability will increase in area and magnitude over time.

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Examples of what we've learned about our coastal zone

- Natural features (like wetlands) currently provide critical human services at a large scale at almost no cost.
- Replicating these services with human solutions would be prohibitively expensive.
- NY is rapidly losing tidal wetlands.
- These features and public access to beaches are at high risk from shoreline hardening.

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Examples of what we've learned about our coastal zone

- Env. and econ. costs associated with structural protection measures may make them more expensive and less effective than elevation and planned relocation away from the shoreline, particularly in less urban areas.
- Decisions must be site appropriate

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Examples of what we've learned about our coastal zone

- NYS and local govts are investing and permitting new infrastructure and development in high risk areas.
- Decision makers need tools to ID areas at risk.
- In many areas critical maps of coastal hazards are inaccurate or out of date.

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Examples of what we've learned about our coastal zone

- There are low cost, high benefit actions that can be taken now to reduce vulnerability.
- Government response must be coordinated across all jurisdictions.

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How can we reduce vulnerability along our coastal shoreline?

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Key Concepts to Reduce Coastal Vulnerability

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Key Concepts to Reduce Coastal Vulnerability

- Adopt SLR projections
- Define areas of greatest current vulnerability
- Define areas of greatest future vulnerability
- Reduce vulnerability in high risk areas and transition to long term cost-effective measures that emphasize natural flood protection systems

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Recommendations

- Adopt SLR projections in NYS
  - Use best available science
  - Update on a regular basis
  - Incorporate into planning at state and local levels

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Recommendations

- Define areas of greatest current vulnerability
  - Use FEMA coastal high hazard areas
    - V, VE, V 1-30 zones
    - "Areas of Moderate Wave Action" (A zone areas subject to wave action of 1.5 to 3 ft)
  - Serve as basis for additional review under state regulatory authority and guidance (SEQRA, Tidal Wetlands Act, etc)

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Recommendations

- Define areas of greatest future vulnerability
  - Map areas at greatest risk from SLR and storm surge and sites of potential wetland migration
  - Develop maps and tools for local governments
  - Serve as basis for additional review under state regulatory authority and guidance (SEQRA, Tidal Wetlands Act, etc)

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Recommendations

- Reduce vulnerability in coastal areas and support increased reliance on non-structural measures and natural protective features to reduce impacts from coastal hazards.
  - Phase in over time
  - Emphasize coastal planning to adapt
  - Direct new development away from high risk areas
  - Develop programs to fund elevation and/or relocation of structures or systems in high risk areas

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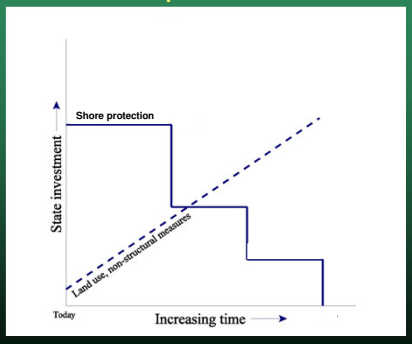
Conceptual model



Recommendations

- Provide updated maps and tools for decision makers
- Provide guidance and support for adaptation planning
- Evaluate public health risks and emergency response needs
- Raise public awareness of vulnerabilities to SLR and strategies to adapt

Recommendations

- Require NYS agencies to incorporate SLR into decision-making
- Ensure long term interagency coordination on science and policy
- Develop funding mechanisms
- Conduct research and monitoring to track and understand coastal change
- Seek changes to federal programs consistent with these recommendations

Where can I find more information?

- Task Force website: http://www.dec.ny.gov/energy/45202.html
- Listserv: http://lists.dec.state.ny.us/mailman/listinfo/sealevelrisetaskforce
- Mail to : Mark Lowery
  Office of Climate Change, NYSDEC
  625 Broadway
  Albany, NY 12233-1030

Your thoughts?

- What is most important and relevant to you on this topic?
- What are the implications of the sea level rise projections presented?
- Do you have thoughts on this approach to reduce vulnerability?