

SEA LEVEL RISE TASK FORCE

Steering Committee Meeting November 7, 2008

Discussion Notes

Sea Level Rise:

- IPCC's current estimates of SLR leave out ice-sheet dynamics. New estimates being produced by Columbia University to support the NYC adaptation task force do incorporate ice sheet dynamics but focus on the NYC coastline alone.
- The NYSERDA Climate Impacts Assessment effort, which Columbia is also involved in, will be considering SLR projections for coastal Long Island and for the Hudson River up to Troy and may be very useful to the task force effort. Frank Buonaiuto from Hunter College will be working on this coastal analysis.
- SLR projections for coastal Long Island should be within 1-2" of NYC projections. The difference will be mostly due to land movement and currents.

Storms:

- As sea level rises storms will have a greater impact on coastal areas. Columbia has developed estimates for how storm recurrence intervals (1 in 100 year storms) will change when SLR projections are included. For instance, the current 1 in 100 year storm is projected to occur about every 50-65 years by 2020 and once every 14 years by 2080. There are no estimates for storm recurrence intervals at this point that incorporate changes in storm intensity or frequency, only rising sea levels.
- The steering committee meeting on September 15th included presentations from researchers at Rutgers and Columbia. Norb Psuty from Rutgers explained how increased water levels would exacerbate the impact of coastal storms. If historical coastal storms are modeled using sea level rise projections for 2050 they create record high levels of coastal flooding.
- Storm surge will be considered in the NYSERDA effort but not modeling of salt front – that is a more extensive modeling project.

Planning with SLR projections:

- Even the best estimates for SLR and storms still have a lot of uncertainty and it is important that we take an adaptive management approach that can be modified over time.
- The steering committee recommendations offer ranges of change and estimates that include ice melt. It will be up to decision makers to make the final choice of which numbers are most appropriate for their planning process and time frame.
- NYC Panel on Climate Change will be developing indicators that can be monitored over time to determine trends in SLR (i.e. is it accelerating or

decelerating?) to determine if planning efforts should focus on higher-end scenarios and adjust impacts assessments accordingly.

- NYC plans to create an institutionalized system where climate change estimates are updated regularly following the international IPCC process (approx. every 5 years).

Climate Adaptation Planning Efforts in New York

Adam Freed, New York City Mayor's Office - NYC Climate Change Adaptation Task Force

- The NYC adaptation planning effort is part of the larger PLANYC effort initiated by Mayor Bloomberg that is planning for sustainability in NYC. Climate change is a major focal point of the PLANYC effort.
- The adaptation efforts of PLANYC include hazard mitigation planning and disaster preparedness, a review of critical infrastructure, a city-wide strategic planning process, outreach to vulnerable communities, and a review of NYC building codes.
- The NYC Climate Change Adaptation Task Force is tasked only with identifying critical infrastructure in NYC that could be at risk from the effects of climate change and to develop adaptation strategies to secure these assets. The larger PLANYC effort will include other climate risk issues.
- Projections of the effects of climate change are being developed by the NYC Panel on Climate Change – a panel similar to the IPCC. They are being summarized in a climate risk information packet for decision makers.
- The NYC Climate Change Adaptation Task Force consists of 5 working groups: communication, transportation, energy, water and waste, and policy. They will consider the effects of all aspects of climate change on infrastructure. Wetlands and parkland will be considered critical infrastructure in the inventory.
- At this stage the working groups have completed their inventories of at-risk infrastructure and assessed the implications of climate change on each type of infrastructure. They are now prioritizing impacts. The next step is to develop and prioritize adaptation strategies.
- A final report will be complete by late 2009.
- NYC task force tools are being developed as a model that can be used elsewhere in the nation and internationally. They will be available to the NYS SLRTF soon.

Amanda Stevens, NYSERDA - NYSERDA's efforts to summarize the impacts of climate change in NYS

- The NYSERDA Environmental Monitoring, Evaluation, and Protection program (EMEP) does a regular 5-year research planning process. The most recent process was done in 2007 in partnership with the NY Academy of Sciences. For the first time climate change and alternative energy were included as priorities. Two foci were identified – research on GHG cost reduction curves and an integrated climate impacts assessment for New York.

- The GHG cost curves study is being done by Center for Climate Strategies. Preliminary curves will be available in 3 months and a final product in 6-9 months.
- The climate impacts assessment is being done through a joint effort among Cornell and Columbia universities and Hunter College. It will be an 18-month project. The study will be a first step to determine where gaps are and where we need to focus in the future.
- Sectors addressed: Agriculture and Ecosystems, Coastal Zones, Energy and Other Related Infrastructure, Transportation and Communications Infrastructure, Public Health, Water Resources and Other Related Infrastructure.
- Economic and policy guidance will be developed as they examine case studies (1-2) in each sector. Stakeholders will be engaged to get practical view of vulnerabilities and get a sense of what type of climate information will be most useful to user groups making management decisions.
- Coordination with other efforts will be a key component of the project and it will be important for the SLRTF to inform NYSERDA of the types of new information that might be useful to the SLRTF effort.

Kristin Marcell, DEC Hudson River Estuary Program - Rising Waters scenario planning effort in the Hudson Valley

- The Rising Waters project is a multi-stakeholder scenario planning project to prepare for climate change in the Hudson Valley.
- The Nature Conservancy is leading the effort along with 5 major partners: the Cary Institute for Ecosystem Studies, the NYS DEC Hudson River Estuary Program, NYS DEC/NOAA Hudson River National Estuarine Research Reserve, the Cornell University Water Resources Institute, and Sustainable Hudson Valley.
- The project is using a model used by corporations like Royal Dutch Shell to develop realistic plausible scenarios or stories of the future based on the best available information today on the drivers of environmental (esp. climate), social, economic, and technological change and how they relate to one another.
- The point of the scenarios is not to predict the future but to describe a potential range of futures and then develop strategies that will work across the range.
- The process began in late 2007 and will be complete by early 2009. The effort has involved nearly 150 experts and stakeholders in the process to date.
- The scenarios are built around two key variables. How much do we do to adapt to climate change and how much of what we do aims to work with nature (planned retreat) versus working to control nature (installing floodwalls).
- The scenarios are complete. Now the group is working on developing strategies that work across all the range of potential futures in the Hudson Valley.

Report from Sector Work Group Chairs

Ecosystems Working Group

Sarah Newkirk, The Nature Conservancy and Karen Chytalo, DEC

- Ecosystems work group is up and running. Their first meeting was October 29th.
- A base inventory of at-risk natural resources is complete. The next step is assessing data availability so that impacts can be prioritized and quantified. There are lots of data gaps so the group is focusing on data that is accessible and listing areas that have a great need for data collection.
- The work group will focus efforts on habitats not on specific species unless there is a great need to highlight a particular species.
- The group feels that some attempt to develop an economic evaluation of ecosystem services would be very useful.
- The group feels that SLR impacts on storm surge and storm recurrence intervals should be incorporated into efforts (not changes in storm frequency/intensity)
- The group plans to coordinate closely with the infrastructure group

Summary of Progress to Date - October 31, 2008:

The Natural Resources Working Group met on October 29, 2008. The purpose of the meeting was to bring NRWG members up-to-date with the work of the Sea Level Rise Task Force, and begin to make progress toward its objectives. The objectives of the NRWG are described in the charter, and were discussed at this meeting. In sum, the working group will:

- Identify the natural resources at risk from sea level rise;
- Prioritize and attempt to quantify these risks;
- Identify solutions or approaches for mitigating risks; and
- Begin to identify costs of solutions and sources of financing

The NRWG heard presentation from Betsy Blair and David Van Luven regarding coastal natural resources in the Hudson River Estuary and the Rising Waters project. Heather Young described tidal wetlands losses in the New York Marine District. Sarah Newkirk and Anton Benson described their work on the Long Island Coastal Resilience project, and the SLR projections and data that are being gathered in furtherance of that project.

The NRWG discussed the need for a planning window – is the SLRTF looking to develop plans over the next 20, 50 or 100 years? It was suggested that the Task Force should use both short term (perhaps 20 years) and long term (100 years) planning horizons. The NRWG also discussed the need for a better definition of the scope of this project. Specifically, should the working groups be considering the characteristics of episodic events that are – or may be – related to sea level rise? The working group discussed the need to be explicit about levels of uncertainty, debate among experts, and time-frames in all the recommendations made. There was general agreement on this point.

- The NRWG has developed the following inventory of resources-at-risk, to begin its work:
- Tidal wetlands
- Natural shorelines
- Beach/dune/swale communities
- Coastal bluffs
- Intertidal locations
- Groundwater (as it influences marshes, rather than drinking water)
- SAVs
- Seal haul-out areas
- Barrier islands and associated features
- Shifts in benthic habitats related to SLR
- Freshwater aquatic ecosystems
- Freshwater tidal marshes
- Horseshoe crabs
- Plovers, terns, and other threatened or endangered species

The next step is to develop a matrix of what data are available, and establish what is known about how SLR and storms will impact each element in our inventory.

Infrastructure and Community Resilience Workgroup

Lisa Weiss, DOT and Suzanne Mattei, DEC

- First meeting will be Dec 5th from 10-12.
- The group will focus on developing efficient ways to incorporate information gathered in other efforts, like the NYC task force, into the work group and then begin to consider issues outside the city including septics, brownfields, closed landfills, and historic fill sites.
- The group plans to coordinate closely with ecosystems group.
- The group plans to focus not just on what we can do about SLR but what are the mechanisms that we can use to implement them - state plans, policies etc.

Status Report – November 3, 2008:

To date, the Infrastructure and Community Resilience Work Group (IWG) co-chairs have assembled a Draft Issues Summary Outline (Outline), dated November 2, 2008, and an evolving membership roster. The Outline (attached) contains key infrastructure components, overall impact questions to address, and planning factors to consider. It is subdivided into four parts which include the following:

- Part 1: Assessment of Anticipated Impacts Related to Sea Level Rise
- Part 2: Recommendations for Adaptive Measures
- Part 3: Recommendations for More Protective Standards and Enforcement
- Part 4: Recommendations to Amend Local/State Regulations or Statutes to Respond to Climate Change

In addition, the IWG has identified an organizational structure to accomplish the work described in the Outline and in the implementing documents for the Task Force. The structure consists of the core work group with approximately 15 – 20 members supported by infrastructure-based subgroups and technical advisory resources (roster attached). The subgroup chairs will also be members of the core work group. The subgroup advisory membership will vary in size and include the following:

1. Water - Drinking and Waste
2. Solid Waste
3. Energy
4. Transportation
5. Communications
6. Shoreline Protection (close alignment with Natural Systems WG)

The IWG will build upon work that is currently in process or planned such as New York City Climate Change Adaptation Task Force, NYSERDA, NYSDOT and The Nature Conservancy Rising Waters Partners in order to maximize efficiencies, avoid redundancy and capitalize on economies of scale.

The kick-off meeting for the IWG is planned for Thursday, November 20, 2008, 10 am – 12 pm, NYSDEC Region 2 Office, Long Island City, NY. Video-conferencing and conference calling may be available.

Issues Summary Outline

Part 1: Assessment of Anticipated Impacts Related to Sea Level Rise

- Key infrastructure areas of concern regarding permanent inundation or increased risk of flooding include:
 - Communications: Television and radio broadcasting
 - Cable TV, phone and internet delivery systems
 - Wire-based telephone and internet delivery systems
 - Wireless television, telephone and internet delivery system
 - Energy: Commercial oil & gas terminals (importation)
 - Electricity generating plants (including oil, gas, coal, nuclear)
 - Electrical delivery infrastructure
 - Gas pipelines and steam pipes
 - Shoreline protection: Loss of beaches, dunes, mudflats, wetlands and other barriers
 - “Topping” of existing bulkheads, seawalls, breakwaters, groins
 - Shoreline businesses (including those w/hazardous chemicals)
 - Residential and commercial buildings in near shore areas
 - Social service infrastructure – schools, hospitals, prisons; amenities
 - Transportation: Underground subway systems and rail tunnels
 - Underground road tunnels
 - Surface rail and road systems

- Airport runways located in low-lying areas
- Commercial shipping
- Water: Sewage treatment plants
- Wastewater/stormwater pipes, stormwater outfalls, catch basins
- Septic systems
- Surface drinking water systems and well water systems
- Drinking water delivery pipes
- Solid Waste: Landfills, including active and closed sites
- Waste transfer stations and waste recycling facilities at shoreline
- Waste incinerators
- Historic fill, brownfields and Superfund sites at shoreline

Overall impact questions:

1. Which are currently experiencing inundation, and which are most vulnerable to future impacts?
2. Rate each potential impact for relative significance (severe, significant, less significant) and relative time of impact (current or x years)
3. Identify any recognized threshold at which a system will fail.
4. What is the estimated total acreage and value of property in the 100-yr and 500-yr floodplain?
5. What is the total acreage that would be inundated at a certain level of sea level rise?
6. Which high-density residential/commercial areas are at high risk for inundation now? In x years?
7. Which industrial/waste sites pose the greatest risk for release of contaminants now? In x years?
8. What data do planners/engineers need to factor inundation risk into building/infrastructure design?
9. Does the existing division of authority between state and local government and among local governments impede accomplishing these objectives? What frameworks could be more effective?
10. What are the state standards for emergency management plans? How could they be strengthened?
11. Are the rights of public participation and environmental protection at risk of being impaired or curtailed in the name of emergency planning?
12. What are the risks to business continuity from coastal inundation?
13. What are the legal/social impediments to getting these things done? How can they be overcome?

Part 2: Recommendations for Adaptive Measures

Communications

1. What actions are communications companies taking to plan for impacts on their broadcasting systems or service delivery systems?

2. What further measures should we recommend? How can the state facilitate/assist these efforts?

Energy

1. What actions are Con Edison, NYPA and LIPA taking to plan for impacts on their electricity generating facilities and energy delivery/distribution systems? What actions are commercial fuel terminals taking to plan for impacts on their piers and infrastructure?
2. What further measures should we recommend? How can the state facilitate/assist these efforts?

Shoreline Protection

1. What actions are being taken in the public or private sector to plan for impacts on existing shoreline barriers, waterfront industries and near-shore residential and commercial buildings? What further measures should we recommend? How can the state facilitate/assist these efforts?
2. For proposed new human-made shoreline armoring, what designs are being discussed and how can we ensure careful review of natural or “soft shore” alternatives (including using or enhancing natural barriers) and evaluation of risks related to inadequate maintenance?

Solid Waste

1. What actions are marine district municipalities taking to plan for sea level rise on open and closed landfills, waste transfer stations and recycling facilities, and waste incinerators?
2. What actions are marine district municipalities taking to plan for impacts on historic fill, brownfields and Superfund sites?
3. What further measures should we recommend? How can the state facilitate/assist these efforts?

Transportation

1. What actions are the MTA, State DOT, City DOT, Port Authority and other planning bodies taking to plan for impacts on subway, rail and road systems and tunnels, as well as airports?
2. What actions are the New York Container Terminal and other maritime businesses taking to plan for impacts on their piers or infrastructure, including the potential need to elevate?
3. What further measures should we recommend? How can the state facilitate/assist these efforts?

Water

1. What actions are municipalities taking to plan for impacts on their sewage treatment plants, wastewater and stormwater sewer pipes, outfalls, catch basins, and septic systems, surface drinking water or well water supply systems and distribution systems?
2. What further measures should we recommend? How can the state facilitate/assist these efforts?

Part 3: Recommendations for More Protective Standards and Enforcement (Integrate Infrastructure Adaptation Strategies into State Environmental Plans)

Planning documents to consider related to infrastructure adaptation include, but are not limited to:

- Economic Development
 - Local zoning plans
- Energy Plans
 - NYS Energy Plan
 - Local energy planning
- Emergency Management Plans
- Health, Education and Social Welfare Plans
- Natural Resources Management Plans
 - Local zoning planning related to coastal areas, open space and water resources
 - NYS Open Space Plan and Comprehensive Wildlife Conservation Strategy
 - Local open space plans
 - Non-governmental organizations' land preservation and management plans
- Solid Waste Plans
 - NYS Solid Waste Management Plan
 - Local solid waste management plans
- Water - Drinking Water and Wastewater Plans
 - Drinking water resource management plans
 - Combined sewer overflow management plans

Part 4: Recommendations to Amend Local/State Regulations or Statutes to Respond to Climate Changes

- Key statutes and regulations related to infrastructure impacts include, but are not limited to:
- Building Codes
- Coastal Erosion Hazards Area Act regulations
- Freshwater Wetlands Act and regulations
- National Flood Insurance Program

- SEQRA and regulations
- Solid Waste Management Act
- State Pollution Discharge and Elimination System (SPDES) regulations
- Tidal Wetlands Act and regulations
- Zoning Laws

Infrastructure & Community Resilience Work Group Membership Roster 11-3-08

Co-Chairs:

- Suzanne Mattei, DEC Region 2
- Lisa Weiss, NYS DOT Route 9A

Municipalities/Counties:

- Adam Freed, Liaison to City, NYC Sea Level Rise Adaptation Task Force
- Anthony (Tony) Sutton, Westchester Cty Dept of Emergency Services, w/Mike Volk
- Brad Tito, Office of Nassau County Executive, Deputy Dir. of Environmental Coord.
[need Suffolk County representative]

Sci./Technical Experts:

- Bonnie Devine & Barry Pendergrass, Dept. of State Coastal Resources Mgt Program
- Representative, DEC Division of Water, floodplain mgt, with Anna Servidone
- Klaus Jacob, Columbia Univ. LDEO, infrastructure expert
- Kytt McManus, Columbia University CEISIN, GIS
- Dr. Irwin Redlener, Dir., Nat'l Ctr for Disaster Preparedness, Columbia U.

Public Policy Experts:

- Joel Auerbach, Jaybach Associates (insurance)
- Richard Morse, Ecology & Environment, Inc. (emergency planning)
- Rob Pirani, Regional Plan Association
- Elizabeth Yeampierre, UPROSE

Subgroup Coordinators:

- Communications: ___ [name]___
- Energy: ___[name]___, NYSERDA
- Shoreline Protection: John Cryan, DEC Region 2
- Solid Waste: Ken Brezner, DEC Region 2
- Transportation Systems: ___[name]___, State Dept of Transportation Water: Kathie Dello, DEC Div. of Water, Albany

Other Advisory Experts/Resources

- Toby Thacher, Thacher Associates, LLC
- Cynthia Rosenzweig, Earth Institute, Columbia Univ.
- Dewitt Davies, Suffolk County Planning or representative
 - Energy Subgroup Advisory Resources:
 - Nancy Anderson, Sallan Foundation
 - Peter Goldmark, Env'tl. Defense
 - Randy Price, Con Edison
 - Dave Lodemore and Bob Teetz Nat'l Grid (LIPA, Keyspan, Niag. Mhwk)
 - Karen Chytala, DEC – liaison to Natural Resources Working Group
 - Mike Stankiewicz, DEC – liaison to Coastal Erosion Hazard Area program
 - Shoreline Protection Subgroup and Residential/Commercial Impacts Advisory Resources:
 - Ed Johnson, Staten Is. Institute of Arts & Sciences
 - Edward J. Kelly, Exec. Dir., Maritime Assn of Port of NY/NJ
 - Debra Mans, NY-NJ Harborkeeper
 - Paul Mankiewicz, The Gaia Institute
 - Jim Lane, Esq., Sierra Club – New York
 - Beryl Therman, North Shore Waterfront Conservancy
 - MaryAnn Johnston, Affil. Brookhaven Civic Organizations, Suffolk County
 - Transportation Subgroup Advisory Resources:
 - Gene Russianoff, NYPIRG (subways & rail)
 - Chris Zeppie, Port Authority
 - Water and Wastewater Subgroup Advisory Resources:
 - Dan Rosell, DEC Div of Air, modeling saltwater intrusion
 - Gina D'Agrosa, Westchester County Planning, water mgt, land use
 - Sandi Allen, DEC Div. of Water (water supply mgt & treatment)
 - Larry Chertoff, Environmental Market Analysis
 - Marilyn Gelber, Indep. Community Fndtn/past DEP Comm'r
 - Communications Subgroup Advisory Resources: in process
 - Solid Waste Subgroup Advisory Resources: in process

Legal Work Group

The legal work group role is to serve as a resource to address legal questions as they arise during the work of the other work groups. They will review the recommendations from the sector work groups and their interaction with relevant federal, state and local laws and regulations.

The Legal Work Group is currently developing its membership and focusing on two initial objectives:

1. An inventory of existing laws and regulations relevant for shoreline protection that will likely affect or be affected by recommendations made by the task force, and
2. Compiling and evaluating the national and international legal debate about legal mechanisms that could be employed to address consequences of sea level rise.