



NROC Council Meeting
Portsmouth, NH
February 5, 2015

Meeting Materials

This was the Winter NROC meeting, during which the EC and partners provided updates; the MyCoast project was highlighted; and a facilitated discussion of the resilience task force recommendations was held. To set the stage for that discussion, attendees also heard from the NEFP, CEQ, and the NE Regional Collaborative for Climate Adaptation.

Attached are the following materials and presentations from the meeting:

- DOI Metrics Expert Group (*Peter Murdoch, USGS*)
- RPB Ecosystem Health and Restoration subcommittee status report (*Bill Hubbard, USACE*)
- New England States Climate Resilience Collaborative (*Chris Skoglund, NH DES*)
- New England Federal Partners address “Preparing the Nation for Impacts of Climate Change” (*Susan Russell Robinson, USGS*)
- Resiliency Assessment Interim Briefing: Casco Bay Region Climate Change Adaptation Planning (*William DeLong, Dept. of Homeland Security*)

Summary of recent activity by the DOI Metrics Expert Group (DMEG) for measuring change in coastal resilience

P.S. Murdoch, US Geological Survey, DMEG co-chair

Through the Disaster Relief Appropriations Act of 2013 (P.L. 113-2), Congress appropriated \$829 million (\$786.7 after sequestration) for the Department of the Interior (DOI, the Department) and its bureaus to address impacts from Hurricane Sandy. With these funds, DOI initiated nearly 150 restoration, mitigation, and science projects within the coastal region of the northeastern U.S. (Figure 1). The goals of the DOI program were to (a) restore and rebuild national parks, national wildlife refuges, and other Federal public assets in the wake of Hurricane Sandy, (b) increase the resiliency and capacity of coastal habitat and communities to withstand storms and reduce the risk and amount of damage caused by such storms, (c) improve our understanding of resilience dynamics in the Northeast coast, and (d) improve the ability of our coastal communities and ecosystems to maintain critical natural resource functions that are valuable to stakeholders. Assessing the effectiveness of these projects, individually or as a group, for improving the resiliency of the northeastern coast was not part of the original planning of the DOI program. However, such an assessment is essential for developing best practices, determining gaps in knowledge, sustaining or enhancing the improvements in coastal resilience created by the project activity, and communicating the effective use of tax dollars to the American people.

To address this challenge, the Department of the Interior Regional Leadership team for the Hurricane Sandy Supplemental Funding Program convened a team of physical science, ecosystem science, and socio-economic experts (the DOI Metrics Expert Group: DMEG) to garner advice on selecting metrics needed to conduct an effective assessment of the DOI efforts at improving coastal resilience. The immediate goal of the assessment is to determine if the DOI projects provided potential best practices or filled gaps in knowledge or methods that could improve future projects to further enhance or sustain coastal resilience.

The DMEG has produced a preliminary report describing an assessment strategy and a range of potential metrics of coastal resilience. This report has just completed a peer review in late January, for a publication target of March, 2015. The DMEG will recommend a set of core measurements from their preliminary list, establish a geo-referenced meta-data database and mapping tool for linking data across projects, and recommend environmental measurements as needed to establish baseline resilience data for the funded projects in the coming months. Socio-economic metrics will be selected for testing through a partnership between the DMEG and the Coastal Green Infrastructure and Ecosystem Services Committee (CGIES) under the Council for Environmental Quality (CEQ). The DMEG will be expanded this spring to include other Federal agencies that are sponsoring resilience projects, to begin a collaborative process of selecting core measurements that allow sharing of results across the Federal resilience programs.

Ocean Health

Objective 2 Subcommittee Report

Co-Chairs:

USACE - Bill Hubbard

EPA – Ivy Mlsna

Objective 2 Products:

Subcommittee team formed – any additions?

Spreadsheet of federal funding opportunities being maintained

Ocean Health project endorsement criteria being finalized and we welcome input.

Northeast list of restoration/conservation projects NEEDS NROC input. Additional input regarding endorsement criteria is also welcome.

OBJ 2 – Team – FEB 2015

NE RPB - Objective 2 Team Members Identified by RPB leads

Capt. J. C. Flumignan
US Department of Transportation

Jean McInnis, BS, MS, CHMM
Mohegan Tribe of Indians of Connecticut

Christine Clark
Natural Resource Conservation Service

Ted Diers
NH Department of Environmental Services

David Kozak
CT DEEP-Office of Long Island Sound Programs

Harry Yamalis
CT Department of Energy & Environmental Protection

Catlin Chaffee
RI CRMC

Rick Bennet
U.S. Fish & Wildlife Service-NE Region

John Catena
NOAA Restoration Center
NMFS-NOAA

Ivy MIsna
EPA - Ocean and Coastal Protection Unit

Jan Smith
MA Office of Coastal Zone Management

William Hubbard
U.S. Army Corps of Engineers

Hunt Durey, Acting Director
Division of Ecological Restoration
Massachusetts Department of Fish & Game

Kevin Lucey
Restoration Coordinator, NH Department of Environmental Services

Andrew Milliken
North Atlantic Landscape Conservation Cooperative

Others (Maine)?

Northeast RPB Criteria for Ocean Health Enhancement Projects

CRITERIA: RPB endorsed projects must be:

- endorsed by a RPB member organization.
- improve Ocean Health (e.g. diadromous fish passage, eelgrass, salt marshes, nesting colonies).
- have a public or NGO proponent identified.
- incorporate climate change considerations.
- must provide for long-term or permanent benefits for fish and wildlife habitat.
- uncertainties for major components of proposed projects clearly identified (e.g. permitting issues, public controversy, real estate conveyances, flood plain impacts, etc.)
- incorporate adaptive management, i.e. process/funding in place, by monitoring the extent that project objectives/expected outcomes are being achieved and mechanisms available to adjust proposed practices/methodology that need to be altered to meet objectives/outcomes.
- must be as maintenance free as possible (i.e. self sustaining post-construction).
- if a project is for a living shoreline, it must provide protection or erosion control for, or otherwise compliment, adjacent habitat.

Action: As a subcommittee of the RPB, we will request the full RPB review these criteria used to endorse the list of ocean health projects as a regional set of priorities. Additional conversations and development of criteria need to happen before this request.

Products/results:

1. Comprehensive inventory of those restoration and conservation activities that relate closely to ocean planning goals and objectives. –

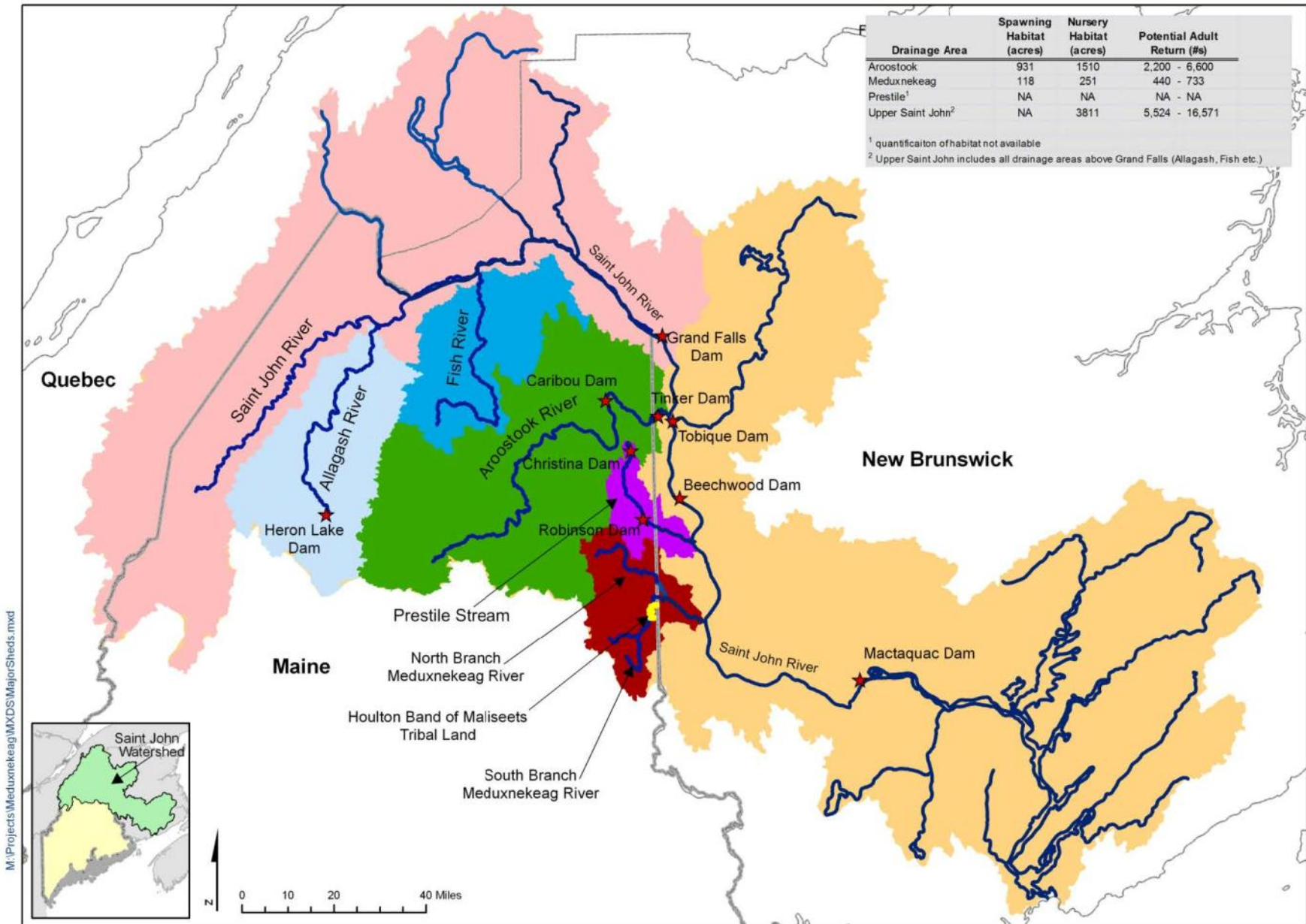
The subcommittee has produced and will maintain an updated list of restoration and conservation priority projects. This list will be coordinated with the full RPB.

The subcommittee will request the RPB review this list and at the next RPB endorse these projects as ecological priorities of the NE-RPB plan. This endorsement will assist project proponents in obtaining state, federal and NGO funding.

Products/results:

2) Comprehensive inventory of federal funding sources for ocean and coastal conservation and restoration projects.

The subcommittee has produced and will maintain an updated list of these funding sources. This list will be coordinated with the full RPB.



Major US Tributaries of the Saint John River and Potential Atlantic Salmon Return

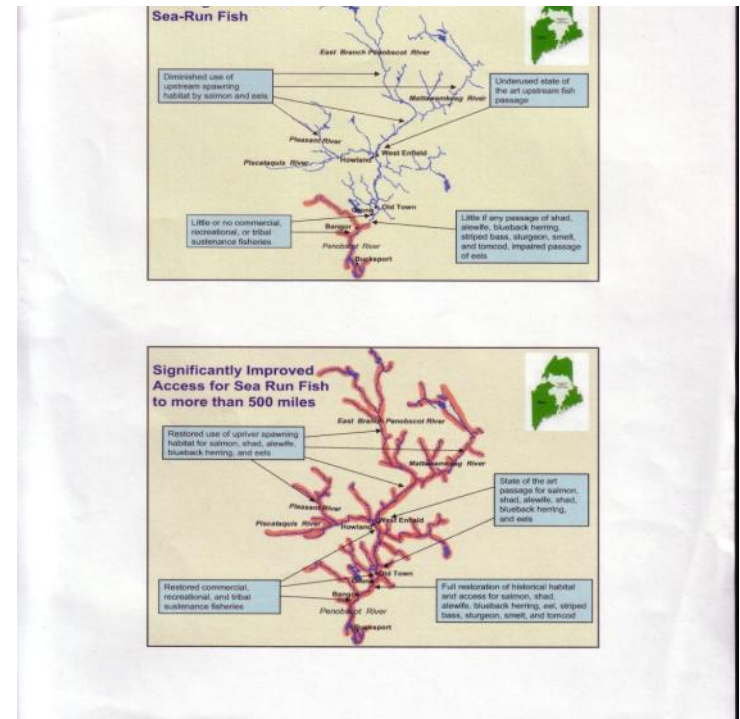
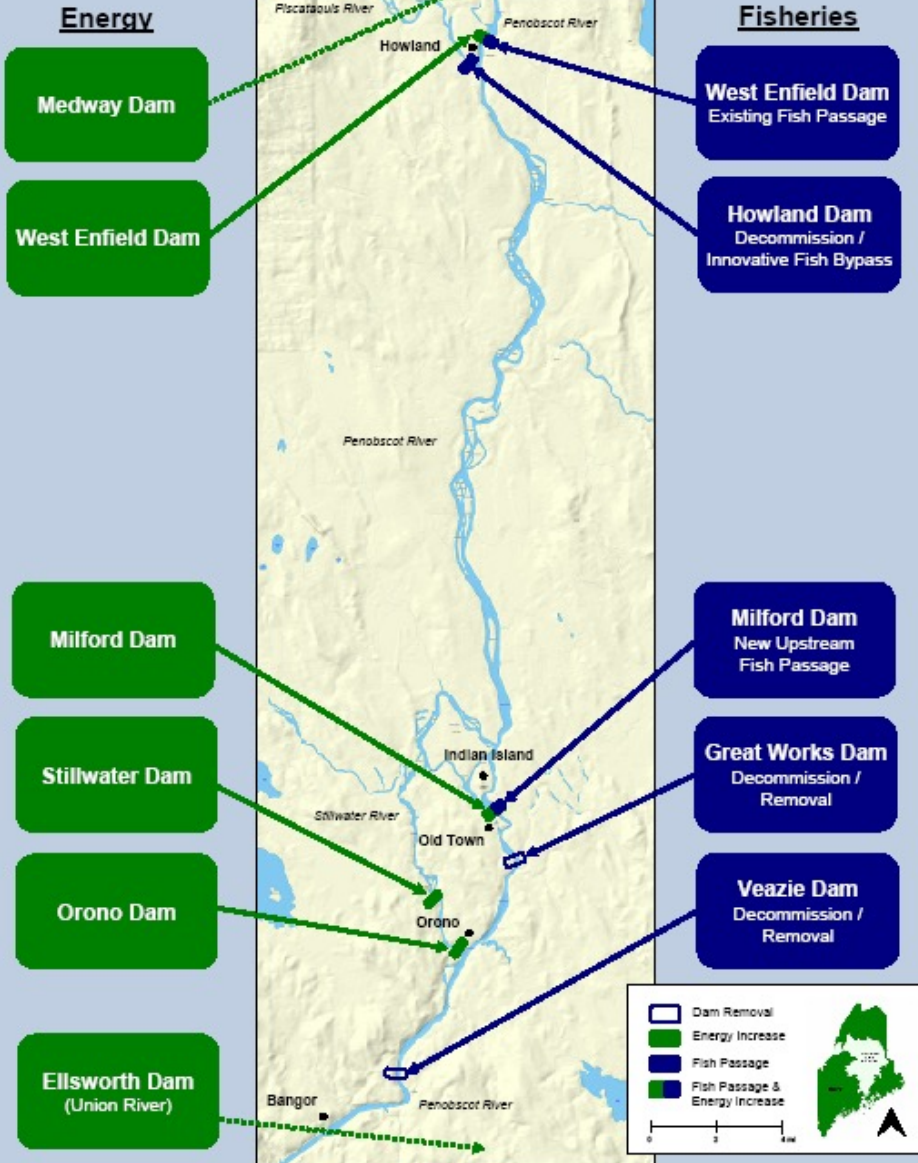
Figure 2



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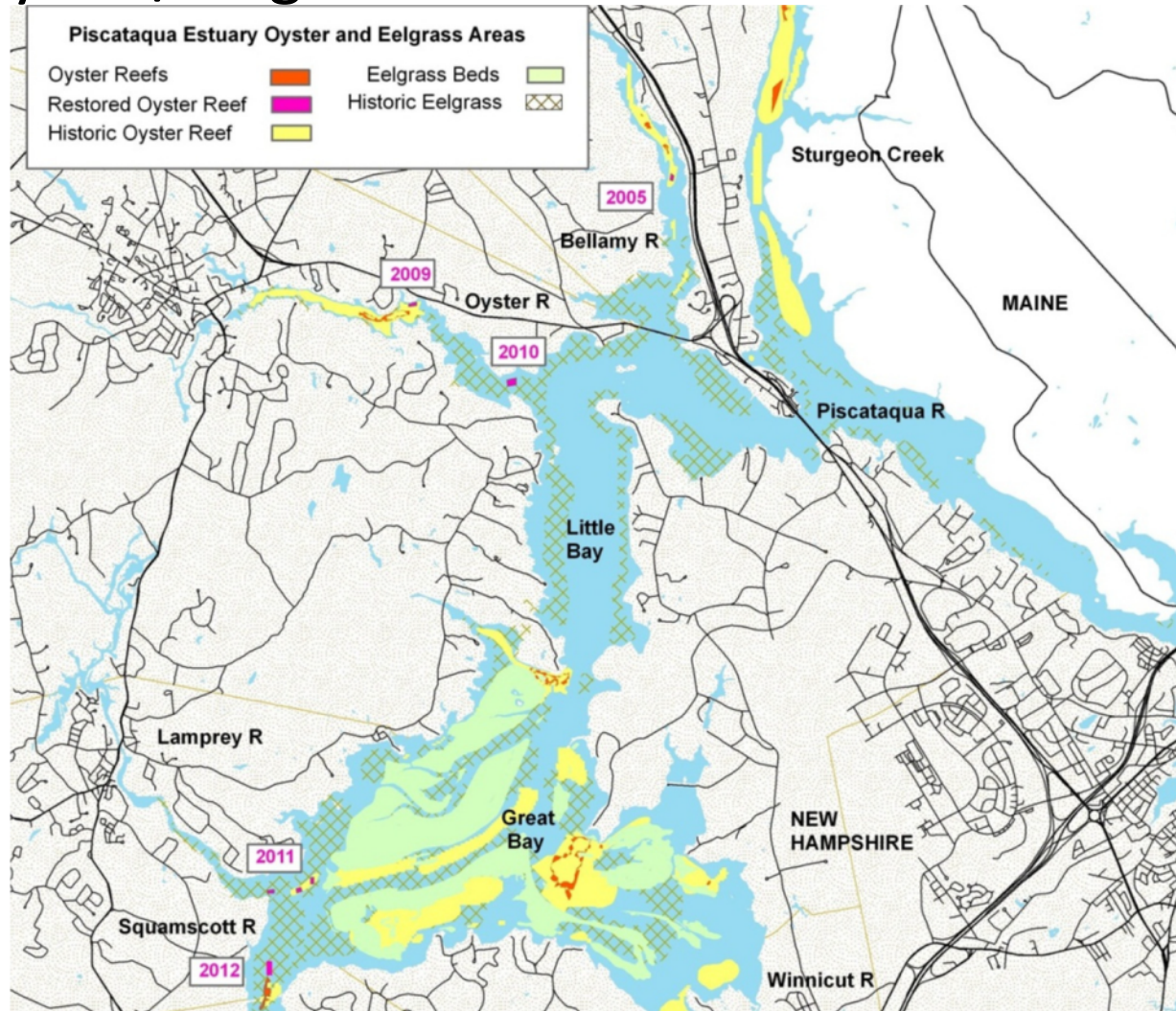
Penobscot River Restoration Project

Balancing the Environment, Economy and Quality of Life in Maine's Largest Watershed

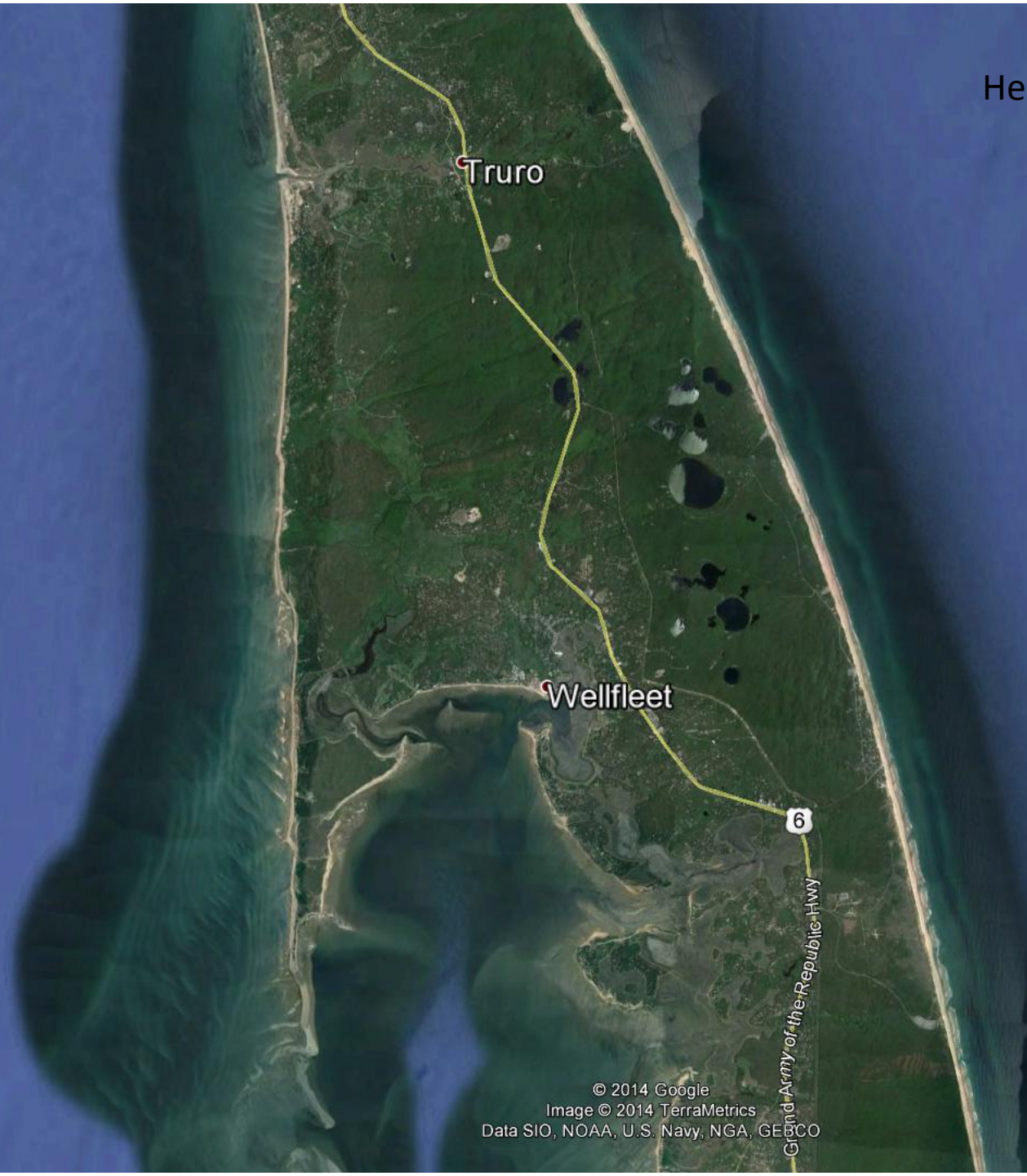


Great Bay Watershed NH

Oyster/Eelgrass Restoration and Dam Removals



Herring River Watershed
Cape Cod, MA



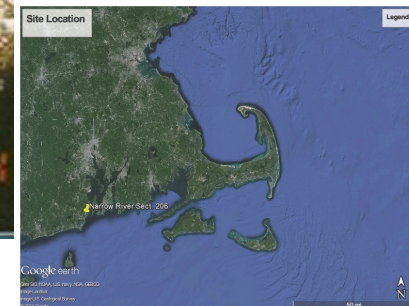
Truro

Wellfleet

6

Grand Army of the Republic Hwy

Bird Island – Roseate Tern Nesting



Bird Island Restoration Project

Distribution
and
Abundance
vs.
Vulnerability
(habitat)

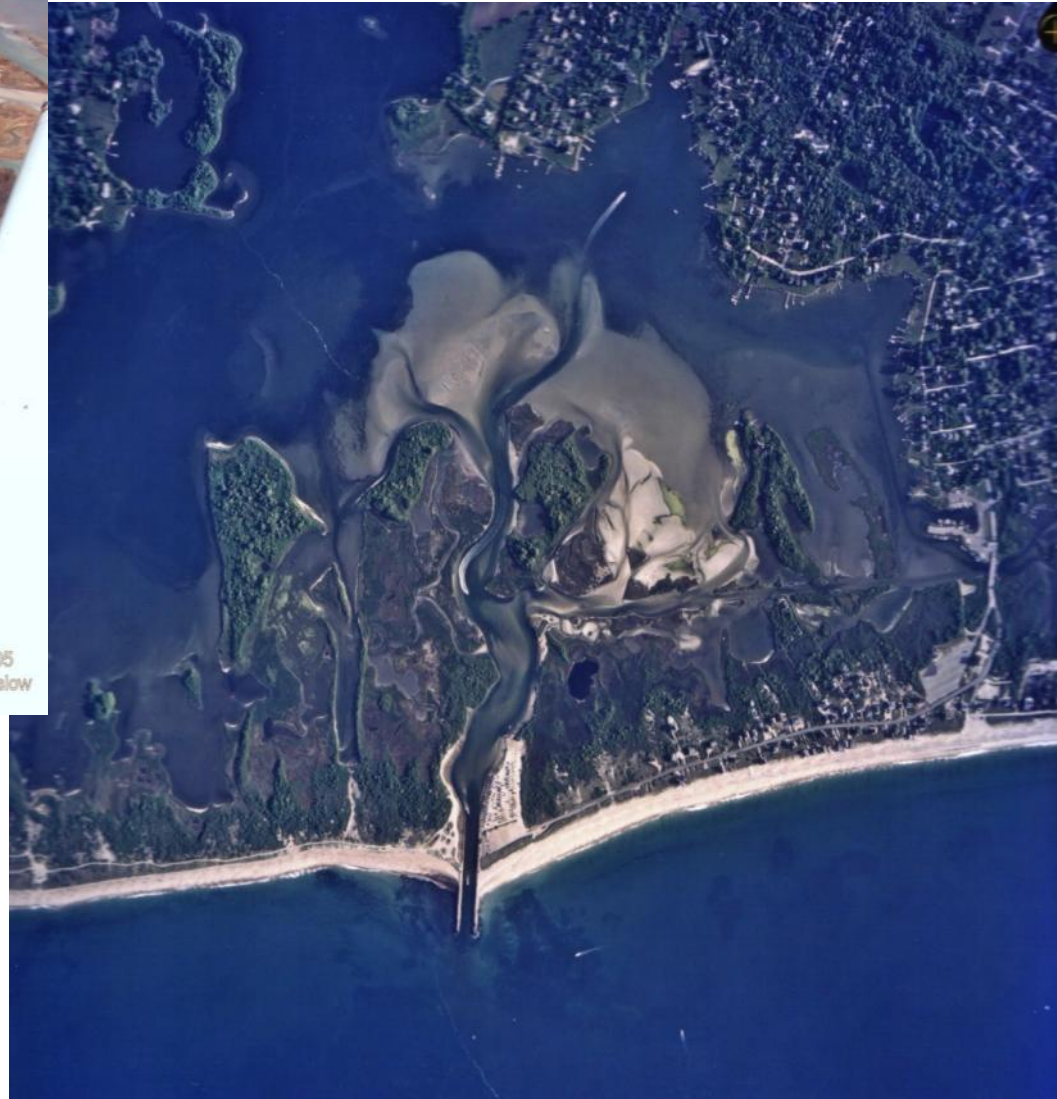


Blackstone River Watershed

Massachusetts and Rhode Island



Coastal Salt Ponds Restoration



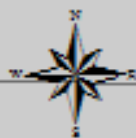
**Eelgrass and
Anadromous
Fisheries
Restoration**

Mill River Stamford, CT






NEXT STEPS FOR OBJ 2 SUB-COMMITTEE OF RPB


- Refine Criteria
- Populate Project list with short descriptors
- Link data layer of projects to Northeast Ocean Data Portal
- Brief back to RPB in June





Legend


-  Watershed Projects
-  Dam Removal/Fish Passage Projects
-  Salt Marsh Restoration Projects


 Shawsheen River Dam Removals



 Kent's Island Marsh, Newbury


 Little River Stream Naturalization


 Beaver Dam Brook, Wetlands MA


 Neponset River Watershed Study



 Broad Cove Hingham


 West End Marsh, Provincetown
 Provincetown Dike Fish Passage


 Plymouth / Plymco Dam Removals


 Herring River Watershed


 Coatley River - Barstow's Dam Removal



 Palm Isanno Marsh, Orleans
 Smith Lane, Eastham



 Fall River Dam removals


 Village Marsh, Sandwich


 Davis Road / OR-7, Orleans

 Hix Bridge Westport

 Coonamissett River
 Mashpee Watershed Study

 Bucks Creek Chatham
 Champlain Creek Chatham

 Farm Pond, Oak Bluffs

 Aquinnah Menemsha Watershed Study

Questions?

New England States Climate Resilience Collaborative

Chris Skoglund

Climate Change Program, NHDES

Christopher.skoglund@des.nh.gov

603-271-7624

Collaborative Goals

- ***Connect the States*** - Enable the states to share best practices for helping drive local resilience (e.g., policies, investments, programs) and address cross-boundary issues related to infrastructure resilience, ecological resilience and disaster preparedness
- ***Advocate with Federal Agencies*** - Facilitate advocacy with federal partners to increase investment in the region and to implement specific recommendations from the President's *State and Local Task Force on Climate Preparedness and Resilience*
- ***Obtain Funding*** - Seek grant funding that can be more easily obtained as a group of states to help foster resilience in New England communities
- ***Provide Continuity*** - Ensure that adaptation and resilience initiatives continue as administrations change over time.

Funding & Resources

- \$65,000 grant provided Jane's Trust Foundation in December 2014.
- The Institute for Sustainable Communities will assist the Collaborative in making progress on these four goals, **especially Goal #2 and Goal #3.**
- ISC will hold periodic calls with senior climate staff from each of the New England states. One or several conference calls may also be held with the Commissioners at their request.

DRAFT Work Plan Tasks

- 0. Complete MOU among states and identify advisory team of state staff.***

- 1. Research Local, State, and Federal Regional Climate Activities and Needs (February-March)***
 - State Climate and Network Priorities*
 - Regional Climate Activities and Needs*
 - Current Regional Federal Agency Priorities*
 - Local Government Priorities (interviews with a small and targeted group of New England municipal leaders)*

DRAFT Work Plan Tasks

2. Co-Design and Facilitate a Day-long Network Convening (late March / early April)

- A primary focus may be to develop a strategy to engage regionally-based federal agencies based on the Task Force Recommendations.*

3. Support the Development of a Regional Climate Planning Tool (TBD)

- Develop a criteria or “specifications” sheet for a planning tool*
- Research other potential climate planning tools and compare benefits and implementation challenges*

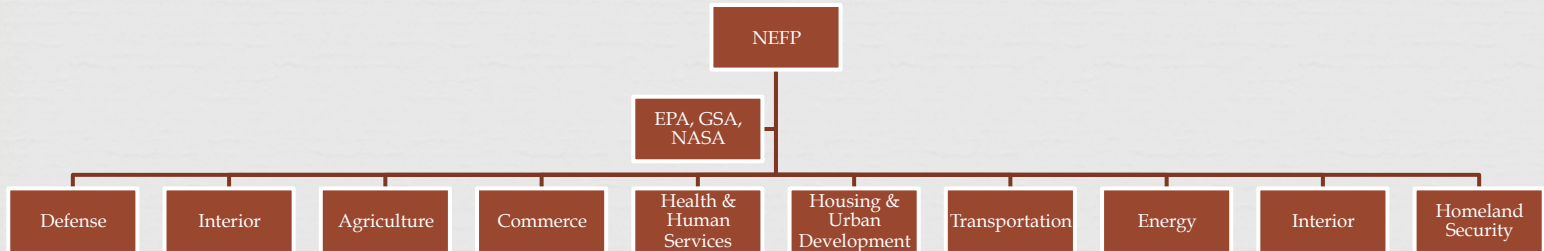
New England Federal Partners address “Preparing the Nation for Impacts of Climate Change”



Presentation to NROC

February 5, 2015

Susan Russell-Robinson, NEFP chair and **Ellen Mecray**,
co-chair Climate Work Group



Who are the New England Federal Partners? Formed in 2009

GOALS:

- 1) Improve cross agency communication,
- 2) Identify and support opportunities to develop and demonstrate cross-agency cooperation,
- 3) Identify and support opportunities to coordinate federal activities,
- 4) Identify and support opportunities for collaboration across federal agencies, and
- 5) Ensure stakeholders and decision-makers in the region have the most effective federal support.

Work Groups:

- Climate - Dave Hollinger (USDAS/USFS) and Ellen Mecray (DOC/NOAA)
- Ocean Planning - Mel Cote (EPA), Dan Hubbard (DHS/USCG) and Betsy Nicholson (DOC/NOAA)

It's time to prepare Americans.



“...SCIENCE, ACCUMULATED AND REVIEWED OVER DECADES, TELLS US THAT OUR PLANET IS CHANGING IN WAYS THAT WILL HAVE PROFOUND IMPACTS ON ALL OF HUMANKIND...THOSE WHO ARE ALREADY FEELING THE EFFECTS OF CLIMATE CHANGE DON'T HAVE TIME TO DENY IT – THEY'RE BUSY DEALING WITH IT.”

- PRESIDENT OBAMA, 2013

Implementation Climate Action Plan (2013) and Executive Order 13653 (2013)



Four Work Groups (national):

1. Agency Climate Adaptation for federal assets (buildings, infrastructure, work environments, lands and natural resources) [EPA chair]
2. U.S. Climate Resilience Toolkit <http://toolkit.climate.gov>
- released November 2014 [NASA, NOAA, OSTP cochairs]
3. Climate Natural Resources Working Group [DOI, NOAA, CEQ co-chairs]
4. Resilient Infrastructure Working group [DOE, DHS, NSS co-chairs]

One Task Force: State, Local and Tribal Leaders Task Force
- report delivered to President in November 2014
http://www.whitehouse.gov/sites/default/files/docs/task_force_report_0.pdf

About the Task Force: Briefings from Sarah McKearnan, Vermont Agency of Natural Resources

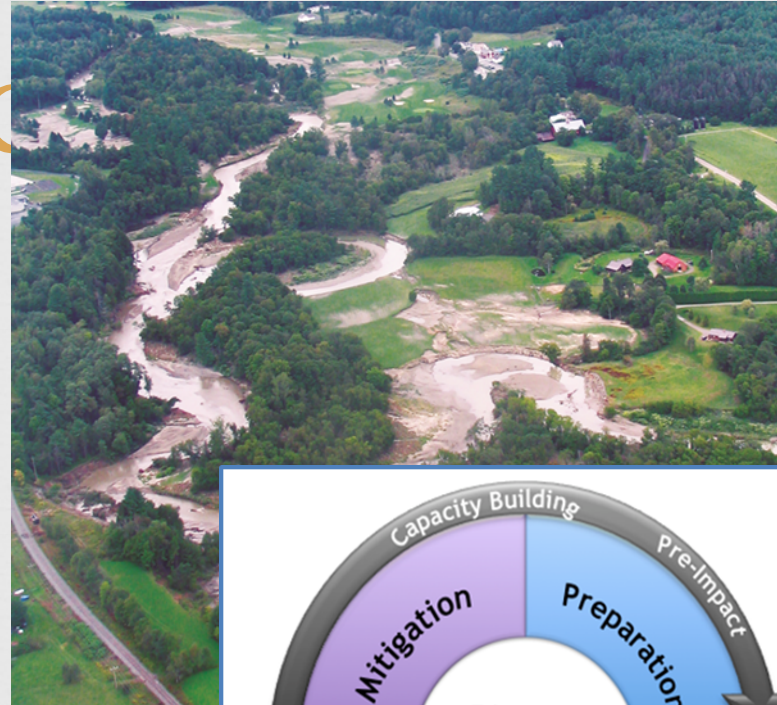


- ❧ Convened in December, 2013
- ❧ Governors (IL, VT, HI, WA, MD, DE, GU, CA, VT) mayors, county commissioners, tribal leaders
- ❧ Charge was to focus on executive action:
 1. Remove barriers
 2. Create incentives
 3. Modernize federal programs to support resilience
 4. Provide tools



Task Force Report presented Seven Themes

1. Build resilient communities
2. Improve Infrastructure
3. Ensure resilience of natural resources
4. Preserve human health and ensure resilient populations
5. Support climate smart hazard mitigation and disaster preparedness and recovery
6. Understand/act on economics of resilience
7. Build capacity for resilience



New England Federal Partners Approach



- ❧ Work in small groups to explore each theme and the specific actions described in the recommendations.
- ❧ Identify current work that fulfills each recommendation.
- ❧ Select a point of contact for each agency to:

(1) Follow up with agencies that did not participate in small group to ensure all activities identified.

(2) Document web sites that can serve as reference materials for further discussion and to answer questions.

Example of Results – from Theme 3: Ensuring Resilience of Natural Resources



3.4 Promote integrated watershed management and planning

to protect water quality and quantity. 28 Longer periods of more intense drought, increased evaporation due to higher temperatures, degradation of forests and landscapes, variable precipitation patterns, and changes in mountain snowpack may impact the quality and quantity of water for drinking and for agricultural and ecological needs. Increases in extreme precipitation events also create serious concerns for water quality, as much of the Nation's infrastructure is not designed to accommodate short-duration, high-intensity rain events. Federal policies and programs should encourage and incentivize integrated, multi-jurisdictional, watershed-based approaches to manage stormwater, reduce flood risk, and protect water quality and quantity. Such policies and programs should leverage resources to realize the multiple benefits of helping communities become more sustainable and resilient. Actions to advance this recommendation include:

3.4.1 Federal agencies including EPA, NOAA, and DOI, should work with State and local governments, Tribes, and territories to support the development of comprehensive regional data-provisioning and modeling initiatives to provide decision-makers with adequate information to plan for and adapt to climate change impacts on water quality and quantity.

3.4.2 EPA and other Federal agencies should improve stormwater and water quality BMPs, including green infrastructure practices, to reflect enhanced understanding of climate impacts on water quality, and help institutionalize them into stormwater and water quality management programs at all levels of government.

3.4.3 Federal agencies including EPA, USACE, DOI, and USDA should work together to develop a national, integrated water strategy that focuses on interagency support for watershed restoration, groundwater partnerships, water (storm and waste) reclamation and reuse, and water conservation. Establish regional interagency water security partnerships that include state, local, and tribal representatives.

- ☞ Calls out EPA, NOAA, DOI, USACE and USDA.
- ☞ Ties to New England Interstate Water Pollution Control Commission goals and actions (New England States plus NY).
- ☞ Keith Robinson, USGS New England Water Science Center Director, volunteered to be agency lead and to follow up with federal agencies not in this small discussion group.

Example of Results – from Theme 3: Ensuring Resilience of Natural Resources



USDA and DOI should require climate resilience planning for natural resources. State and regional planning processes such as State Wildlife Action Plans and State Forest Action Plans should be required to consider impacts of climate change and address 3.1.3 resilience priorities.

USFS Dave Hollinger
NOAA Ellen Mecray
DOI Mary
Ratnaswamy/Andrew
Milliken

http://www.na.fs.fed.us/ra/specialinitiatives/sustainability/state_forest_action_plans120215.pdf
<http://neclimateus.org/>
<https://necsc.umass.edu/>
<http://northatlanticcc.org/>

- Used spreadsheet format (similar to NROC) to:
 - Identify points of contacts.
 - Capture web links to State Forest Actions Plans and State Wildlife Actions Plans.
 - Called out related web resources such as NExUS
<https://neclimateus.org>

NE_xUS neclimateus.org



Comprehensive links to programs and organizations

NEclimateUS.org

HOME | REPORTS AND TOOLS | ONGOING ACTIVITIES | PROGRAMS AND ORGANIZATIONS | NEEDS | BIBLIOGRAPHY

MEETING NEXUS
CONTACT US

NEclimateUS.org (a.k.a. NEXUS) is a searchable online database gateway to climate information for the Eastern US, Atlantic Canada, and maritime region known as the NEXUS.

NEXUS summarizes available plans and reports; climate organizations; ongoing projects for climate information ideas and publications. This search tool for climate information seeks to provide collaborative opportunities related work in the Eastern US and Atlantic Canada.

For more guidance on how to use resources in NEXUS, please visit the [NEXUS](#) page. The database is currently under development and the sponsor is welcome [feedback](#).

This online database was developed through the collaborative efforts of the National Oceanic and Atmospheric Administration, North Atlantic Landscape Conservation Cooperative, National Wildlife Federation and Environment Canada.

Keyword Search Go

Name	American Association of State Climatologists (AASC)
Name	American Association of State Highway and Transportation Officials Transportation Resource Center
Name	American Association of State Highway and Transportation Officials (AASHTO) Transportation Resource Center
Name	Appalachian Landscape Conservation Cooperative (ALCC)
Name	Atlantic Climate Adaptation Solutions Association (ACASA)
Name	Atlantic Coastal Zone Information Steering Committee

Resource for finding or adding ongoing activities





3.3 Support resilience planning for ocean and coastal ecosystems. Ocean acidification, changes in salinity, and increasing water temperatures along coasts and within estuarine systems are growing concerns among fisheries and resource managers. Climate-related ocean acidification and hypoxia (a lack of oxygen in the water) are also serious threats to ocean health, especially for corals and coral reefs and the communities that depend on ocean and coastal resources. Of particular concern to remote communities, especially islands and Alaska Natives villages, is the ongoing impact of coastal erosion and thawing of permafrost that may be caused or made worse by climate change.

- ❧ No actions for 3.3
- ❧ Referenced to see recommendations on coastal infrastructure (2.1).
- ❧ Opportunity for NROC to provide regional granularity.



Next Steps for NEFP



- ❧ Confirm points of contacts for each of the 105 actions.
- ❧ Complete identification of activities in the New England region that are underway in FY2015 and those that may continue or might start in FY2016.
- ❧ Continue small group approach to address the seven themes and tie to four national subgroups:
 - ❧ Disaster Recovery & Resilience
 - ❧ Built Systems: Transportation, Water, Energy and Facilities Infrastructure
 - ❧ Natural Resources and Agriculture
 - ❧ Communities: Human Health and Community Development



RESILIENCY ASSESSMENT INTERIM BRIEFING

Casco Bay Region Climate Change Adaptation Planning



WHAT IS THE RRAP?

The Regional Resiliency Assessment Program (RRAP) is a cooperative, non-regulatory assessment program implemented to examine the resilience of critical infrastructure and systems through regional analysis. The program, led by the Department of Homeland Security (DHS) Office of Infrastructure Protection (IP), addresses a range of hazards that could have significant consequences, both regionally and nationally.

Each RRAP typically involves data gathering and analytical effort followed by continued technical assistance to support resilience-building. RRAPs can incorporate various components, including voluntary facility vulnerability assessments, targeted studies and modeling, first responder capability evaluations, subject matter expert workshops, and other valuable information-exchange forums.

The Office of Infrastructure Protection leads the national effort to mitigate risk to, strengthen the protection of, and enhance the all-hazard resilience of the Nation's critical infrastructure.



WHY CLIMATE CHANGE IN MAINE?

Across the globe, changes in the earth's climate have been observed for decades in rising sea levels and temperatures and shrinking polar ice. Climate change in Maine is evident in increasingly frequent intense storm events and in the region's shorter, warmer winters and longer, hotter summers. Regional climate modeling efforts indicate that these changes will continue¹ and will result in significant near- and long-term implications for critical infrastructure, which will ultimately affect the safety, economic prosperity, and quality-of-life of Maine residents.

The foundation of the Casco Bay Region Climate Change Adaptation RRAP is a stakeholder-driven assessment of community and infrastructure vulnerabilities that includes development of adaptation data and methodologies. This process aligns with the Principles for Effective Adaptation identified by the Intergovernmental Panel on Climate Change,² which advocates for place- and context-specific approaches to adaptation that promote coordinated and complementary interagency actions to mitigate risks and foster broader resilience. To achieve these goals, the Casco Bay RRAP process involves the following six steps:

STEP 1 Assess climate-change-related impacts and vulnerabilities to lifeline sector infrastructure systems through preliminary analysis and modeling activities

STEP 2 Identify dependencies, interdependencies, and cascading effects of the loss of regional infrastructure systems through site visits, interviews, and facilitated meetings with a wide range of stakeholders

STEP 3 Identify gaps in our understanding of regional or sector-specific issues related to climate change impacts on critical infrastructure resilience

STEP 4 Assist interagency partners in developing a common analytic baseline for assessing climate change impacts to critical infrastructure

STEP 5 Provide data and develop methodologies to help the region's communities and businesses better understand and manage the risks associated with extreme weather and other impacts of climate change

STEP 6 Coordinate efforts to enhance climate resilience and adaptation by providing technical assistance for the development of climate change adaptation plans and strategies

MAINE RRAP PARTICIPANTS



FEDERAL GOVERNMENT



- ▶ Environmental Protection Agency
- ▶ Federal Emergency Management Agency
- ▶ Department of Homeland Security National Cybersecurity and Communications Integration Center / National Coordinating Center for Communications
- ▶ National Oceanic and Atmospheric Administration



STATE & LOCAL GOVERNMENT



- ▶ Maine Governor's Energy Office
- ▶ Maine Department of Environmental Protection
- ▶ Maine Emergency Management Agency
- ▶ Maine Office of Information Technology
- ▶ Maine Office of Geographic Information Systems
- ▶ Maine Department of Transportation
- ▶ Maine Department of Agriculture, Conservation and Forestry
- ▶ Maine Turnpike Authority
- ▶ Maine Port Authority



CITY GOVERNMENT & REGIONAL PLANNING



- ▶ Greater Portland Council of Government
- ▶ Cumberland County Emergency Management Agency
- ▶ City of South Portland
- ▶ City of Portland
- ▶ Portland Water District
- ▶ Town of Saco Water District
- ▶ Town of Brunswick Sewer District
- ▶ Town of Freeport
- ▶ Casco Bay Estuary Partnership
- ▶ Portland Jetport



STATE ASSOCIATIONS & INSTITUTIONS



- ▶ University of Maine Climate Change Institute
- ▶ University of Southern Maine
- ▶ Southern Maine Planning and Development Commission
- ▶ University of Maine Extension



PUBLIC & NON-PROFIT ORGANIZATIONS



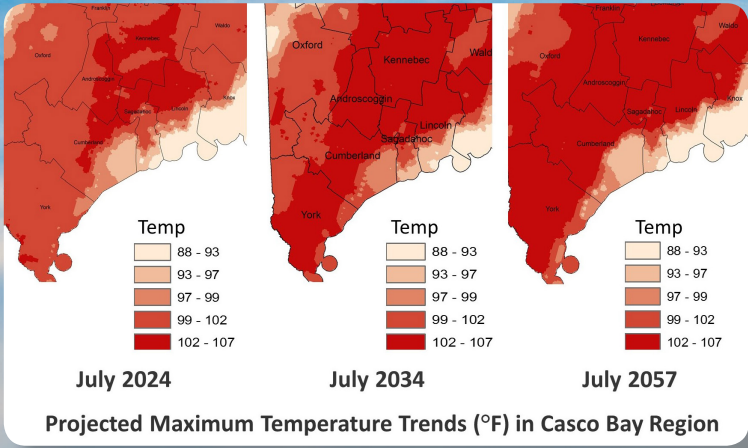
- ▶ Conservation Law Foundation
- ▶ Casco Bay Lines



PRIVATE SECTOR



- ▶ Trans-Canada/Portland Natural Gas Transmission System
- ▶ Central Maine Power
- ▶ AT&T Wireless
- ▶ Verizon Wireless
- ▶ St. Lawrence & Atlantic Railroad
- ▶ Global Petroleum



99%
of the
world's
oceans

The Gulf of Maine is warming faster than 99% of the world's oceans, which could increase the intensity of hurricanes and coastal storms in the near term³

INTERIM FINDINGS



ENERGY

Increasing temperatures affect seasonal electricity demands (e.g., increased cooling demand in the summer) and power plant output and transmission line capacity, which could cause rolling brown outs if electric infrastructure does not adapt

Coastal electric infrastructure assets are vulnerable to sea-level rise and storm surge, which could lead to local power outages that impact dependent infrastructure systems

The greater prevalence of invasive species in Maine increases the risk to transmission infrastructure during storms

Increased flooding in certain areas has already necessitated the relocation of transmission lines and other electrical power infrastructure



WATER AND WASTEWATER

Surface runoff into lakes will increase as extreme precipitation events become more common

Adaptive actions taken without consideration of interdependencies could lead to unintended systemic consequences

Rising sea levels will increase the salinity of coastal aquifers, which will significantly impact drinking water supply



TRANSPORTATION

Storm surge could affect low-lying roads and causeways, rail lines, and marine infrastructure, including South Portland marine oil terminals, the International Marine terminal, and ferry terminals

Locally relevant guidance from the State on what climate impacts to plan for is lacking

Coordinated regional planning is difficult when individual communities engage in their own local planning (i.e., home-rule)



TELECOMMUNICATION

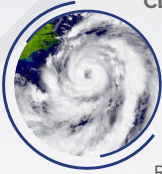
Higher temperatures require greater cooling of wireless and cell tower equipment

Facilities are susceptible to ice damage, which could affect communications within the region

Telecommunication infrastructure is frequently co-located on transportation infrastructure

Heavy precipitation or ice storms could prevent access to sites that are damaged or require fuel for backup power sources

PATH FORWARD



CLIMATE MODELING

- Conduct region-specific, dynamically downscaled climate modeling and develop tutorials
- Analyze high-resolution, region-specific historical precipitation data
- Develop regionalized hydrological models of future climate
- Refine coastal storm surge modeling



INFRASTRUCTURE

- Continue electric infrastructure climate change resiliency assessments
- Evaluate renewable energy roadmap for Maine
- Assess coastal aquifer saltwater intrusion

“By 2055, electrical transmission line **capacity will decrease by as much as 8%** under the projected 9°F temperature increase in Maine, while **demand will increase by as much as 10%** as more residents demand air conditioning.”

THE CASCO BAY REGION CLIMATE CHANGE ADAPTATION RRAP IS LINKED TO SEVERAL CURRENT MAINE AND DHS ACTIVITIES:

- ▶ University of Maine Climate Change Institute’s framework and platform for Climate Adaptation and Sustainability (CLAS) planning for Maine communities
- ▶ May 2014 Waterfronts of Portland and South Portland Maine Urban Land Institute Resilience Panel Report, which recommends further evaluation of lifeline infrastructure climate change risks (e.g., energy and water assets vulnerable to sea level rise and increasing storm surge)
- ▶ Maine Department of Transportation participation in a Federal Highway Administration-sponsored climate resilience pilot project for integrating vulnerability and criticality assessments into asset management
- ▶ University of Maine Cooperative Extension Service culvert vulnerability and adaptation project to inform decision-making, maintenance, and management
- ▶ Detailed DHS pilot studies of infrastructure dependencies and interdependencies throughout the Nation (the Casco Bay region is one of the pilot locations)
- ▶ DHS-facilitated Maine Climate Change Adaptation Planning Exercise, scheduled for Spring 2015



For more information about the Casco Bay Region Climate Change Adaptation RRAP, contact

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William.delong@hq.dhs.gov

Donald Erskine

IP Regional Director
Federal Region One
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RESOURCES

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