The Office of Infrastructure Protection

National Protection and Programs Directorate
Department of Homeland Security

Regional Resiliency Assessment Program

Casco Bay Region Climate Change Adaptation RRAP

July 2017

DHS and Climate Change Adaptation

- DHS is charged with "coordinating the overall Federal effort to promote the security and resilience of the Nation's critical infrastructure" (Presidential Policy Directive - 21)

- Presidential Executive Order 13653, Preparing the United States for the Impacts of Climate Change, November 2013

- DHS Climate Action Plan directs us to develop and implement a strategy to engage in a systematic and coordinated public-private sector dialogue with the infrastructure community.

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Casco Bay Region RRAP Objectives

- Identified gaps in our understanding of regional or sector specific issues related to climate change impacts to critical infrastructure resilience

- Provided data, including climate change impact projections, and developed methodologies to help regional stakeholders better understand and manage the risks associated with extreme weather and other impacts of climate change

- Conducted data collection activities, such as open-source research, interagency coordination, subject matter expert interviews, and facilitated discussion workshops to fill identified data requirements

- Provided technical assistance to the development of climate change adaptation plans and strategies

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Preliminary Findings

- Electric Power System Modeling (Argonne National Lab)
  - Potential for future brown-outs due to increases in temperature
  - Potential for power supply issues tied to generation and transmission in warmer climates

- Storm Surge Modeling (University of Mississippi)
  - Sea-level rise leads to greater storm surge and increased risk to critical infrastructure

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Technical Assistance

- Downscaled Climate Modeling

  - made the downscaled climate modeling data used in the RRAP available to project stakeholders and the public for use in broader adaptation planning and preparedness applications

  - Produced a primer for data users

- Climate-based Regional Rainfall and Runoff Intensity-Duration-Frequency Curves

  - This implementation task developed "next generation" IDF curves for the Casco Bay Region using data from the regional climate modeling activities (Implementation Task 1) and radar-based rainfall data activities (Implementation Task 2), to account for future climatic conditions.

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Technical Assistance

- Radar-based Rainfall Modeling
    - Used historical weather radar data to provide a higher-resolution geospatial record of rainfall trends than is currently available
    - High-resolution, spatial rainfall data can be used to develop new hydrologic models that provide a better representation of runoff, to integration into regional climate modeling for better projections of location-specific changes in key climate conditions

- Storm Surge Infrastructure Risk Analysis
    - Utilized storm surge inundation scenarios to develop a risk-based prioritization of critical infrastructure assets in the coastal areas of Portland and South Portland
    - In cooperation with the University of Mississippi's National Center for Computational Hydroscience and Engineering

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Data Locations

- George J Kostas Research Institute for Homeland Security (@ Northeastern University

  - http://www.northeastern.edu/kostas/rrap/

  - http://www.northeastern.edu/kostas/wp-content/uploads/2017/03/Maine-RRAP-RA-FINAL-no-links.5-13.pdf

  - Select the final report, or the related data under 'Phase 2 – Implementation'

Data Locations

- Northeast Regional Climate Center (@ Cornell University)

  - http://precip.eas.cornell.edu

  - Click on the documentation tab (fourth tab across the top). On the left side menu, click on Related Studies.

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For more information, visit:
www.dhs.gov/critical-infrastructure

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