

Draft Report on Chesapeake Bay Watershed Climate Change Impacts

A draft report fulfilling Section 202(d) of Executive Order 13508

Executive Summary

Climate change will complicate the ability to meet Chesapeake Bay management and restoration goals. The Chesapeake Bay watershed includes six states and the District of Columbia; and has the highest land area to water volume ratio of any estuary in the world making it highly responsive to prevailing weather conditions in the watershed. Changes in climate patterns, superimposed on population growth, land use change, and other environmental management challenges, are likely to affect the region's ability to meet Chesapeake Bay Program restoration and conservation targets. Shifts in key climatic variables may significantly increase the currently projected costs and timelines for achieving water quality and living resource restoration goals. Additionally, the Chesapeake Bay region has some of the highest land subsidence rates along the Eastern Seaboard, creating extremely vulnerable shorelines. Many of the region's urban centers and particularly significant ecosystems are in low-lying areas that are particularly vulnerable to sea-level rise and storm surge. As an example, Hampton Roads, Virginia is one of the nation's population center's most at risk from sea-level rise and storm surge due to the concentration of people living in this vulnerable low-lying area. Most wetlands on Maryland's eastern shore are likely to be inundated under even moderate sea-level rise scenarios. Due to the comprehensive nature of climate change effects federal agencies must take collective action to ensure that these effects are considered in the development of regional restoration goals and conservation strategies.

The federal government must develop climate change response strategies. Federal agencies own approximately 3.2 million acres within the Chesapeake Bay watershed, representing about 8% of the total watershed land area. The federal landholdings include Department of Defense facilities, National Wildlife Refuges, National Parks, and National Forest Lands, all of which are vulnerable to climate changes. Additional landholdings, owned by state and private organizations are supported with federal funding. All federal landholders and non-federal landholders receiving federal support should implement climate change response plans to minimize impacts on their resources in light of projected changes. This report focuses on how federal agencies can and should respond to these impacts and provide guidance and support to stakeholders as they develop similar adaptation strategies.

This report responds to Section 202d of Executive Order 13508 (EO) which charges Federal agencies to make recommendations to "...assess the impacts of a changing climate on the Chesapeake Bay and develop a strategy for adapting natural resource programs and public infrastructure to the impacts of a changing climate on water quality and living resources of the Chesapeake Bay watershed." Section 601 of the EO directs the Secretaries of Commerce and Interior to organize and conduct research and scientific assessments to evaluate the impacts of climate change in future years and to support development of a strategy to adapt to climate change impacts on the Chesapeake Bay watershed. This report provides an overview of some of the anticipated impacts of climate change on Bay resources, and examples of existing federal programs that could collaborate on adaptive responses. The report is divided into six major parts: Executive Summary, Background, Overview of Impacts, Adaptive Actions, Technical Needs, and Climate Change Strategies.

This report recommends a range of technical, management and adaptation strategies across multiple timelines. It also recommends a process that continually builds upon the best available scientific information because so much of our understanding of climate change and our ability to project impacts is still developing. Many of the recommended strategies should be implemented immediately, and all adaptation efforts should be reviewed and modified as new information becomes available. The recommendations in this report are based on a review of numerous studies on the impacts of climate change on coastal zones and watersheds and recent management reports on the mid-Atlantic region

(including in the Chesapeake Bay). Although there is still much uncertainty surrounding climate change projections and specific impacts, available information is sufficient to begin adapting to and mitigating the most likely impact scenarios and to raise awareness among policy makers and the public. In summary, the potential significance of climate impacts to the Bay demands taking both adaptive and mitigative action now, with strategies designed to be regularly adjusted as our understanding of climate change impacts on the Bay continues to evolve.

Key recommendations in this report are to:

1. Develop a centralized Chesapeake Bay climate change coordination program to address climate adaptation activities and management decisions throughout the Chesapeake Bay watershed;
2. Integrate climate change concerns into Chesapeake Bay Program activities and strengthen legislative authority;
3. Enhance existing and/or develop new technical information and decision support tools to better understand, project, and respond to climate change and its impacts e.g., modeling, observation stations, remote sensing, etc.;
4. Establish adaptation guidance for managing federal programs, federally-managed lands, and federally financed state, local, and private lands;
5. Develop a coordinated strategy for climate change outreach and education; and
6. Develop federally coordinated plans for supporting climate change adaptations.

A complete presentation of these recommendations is provided in the full report.