

## **DEVELOPING A SEA LEVEL RISE ADAPTATION PLAN FOR THE STATE OF DELAWARE**

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**Keywords:** Sea Level Rise, Adaptation, Planning, State of Delaware, Coastal Management

Several studies using possible greenhouse gas emissions scenarios have predicted global sea level rise (SLR) increases between 18 and 59 cm over the next century. Tide gauge records show a rate of SLR for the State of Delaware over the past century of ~3.2 mm/yr, which proves to be comparable to those of Massachusetts, New York and Virginia (2.59 – 4.47 mm/yr). The broad spectrum of coastal impacts introduced by ongoing SLR can be complicated and sometimes difficult to understand. Uncertainty presented by scientific projections of these changes in SLR have made planning for and adapting to this natural hazard quite challenging.

Delaware's numerous coastal resources are imperative to the state's aesthetic and economic well-being. The state's impounded marshes are important habitat for migratory waterfowl and aquatic biota, but are sediment starved. Delaware's sandy ocean beaches are vital to its tourism industry and are supported by frequent beach replenishment projects. The Delaware Bay supports a viable blue crab, conch and eel fishery while serving as a major marine transportation center for the East Coast. The main impacts of Sea Level Rise; inundation and shoreline recession; increased flooding from severe weather events; saltwater contamination of ground water and surface water supplies; and elevated water tables; could have catastrophic effects on these coastal resources. The expense of inadequately preparing and planning for these impacts can be injurious, hence the necessity to develop and design possible solutions to the problem with minimum impact on the environment and cost-effectiveness. An adaptation plan will serve to provide stability and control of the effects of SLR on coastal processes, include mitigation efforts, and increase the ability of coastal areas to sustain physical impacts of SLR, while maintaining physical safety of affected areas and individuals involved.

To address the environmental and economic threats posed by SLR, the Delaware Coastal Programs has begun a two year initiative to develop a statewide SLR Adaptation Plan. This will be done by a collaborative stakeholder group, supported by viable data collection and analysis, using local level data, scientific models and dependable future scientific projections. Several modeling and data analysis methods are already in use such as high resolution LiDAR data, 3D GIS mapping, marsh elevation and sedimentation rates, and basic model outputs that project or simulate inundation, erosion, overwash, saturation and accretion of marshes or coastal floodings. These analytical syntheses will then be utilized to assist and inform coastal managers in Delaware in the decision-making aspect of the planning process. This phase of the process necessitates involvement of a diverse stakeholder group (including state agencies, nonprofit organizations, citizens and

others) in the characterization and prioritization of SLR issues in Delaware, further data needs assessment, and the formulation and implementation of recommendations for comprehensive planning and management strategies.

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