



COASTAL MANAGEMENT & INFRASTRUCTURE

State and Territory Coastal Zone Management Programs play a critical role in the planning, design, permitting, and implementation of coastal green and gray infrastructure projects.

Coastal infrastructure is a spectrum with projects effectively incorporating a combination of green and gray elements

Green Infrastructure

Coastal “green infrastructure” is a term used to describe natural and nature-based features which both provide ecosystem functions and human benefits. Coastal green infrastructure can include natural features such as dunes, beaches, salt marshes, coastal wetlands, oyster reefs, coral reefs, mangroves, and coastal forests. These features provide ecosystem functions such as water filtration, nutrient storage, and habitat for species. These features can also alter sediment transport and capture and have significant benefits in stabilizing shorelines to reduce erosion as well as to absorb water inundation and wave energy, reducing impacts of coastal flooding and storm surge.

State and Territory Coastal Zone Management (CZM) Programs promote and utilize green infrastructure in many ways. CZM Programs protect existing natural features from coastal development. They also plan, design, and implement projects to restore or create green infrastructure. Examples of projects include beach renourishment, dune restoration and vegetation planting, using concrete balls and oyster spat to plant new oyster reefs, combinations of rock, sand, wood, and vegetation to create living shorelines.

Gray Infrastructure

Coastal “gray infrastructure” is a term used to describe human-engineered coastal hardened structures such as breakwaters, groins, jetties, and seawalls which are designed to shape the coastline by altering the movement of sediment and waves and to provide coastal protection from erosion, flooding, and storm surge where the structures are installed. Coastal gray infrastructure also includes critical infrastructure that exists in the coastal zone such as wastewater facilities, roads, power generation facilities, etc.

State and Territory CZM Programs manage the use of hardened structures for coastal protection within the coastal zone. CZM Programs also assess vulnerabilities to critical coastal infrastructure and design strategies to enable the infrastructure to adapt to changing coastal conditions—often in partnership with local communities and other State agencies such as State Departments of Transportation. When adaptation projects are done to make critical coastal infrastructure more resilient, CZM Programs are regularly involved in the planning, design, engineering, permitting, and/or implementation of these projects.

COASTAL MANAGEMENT PROGRAM EXAMPLES

Town of Wiscasset Wastewater Treatment Plant Coastal Resilience

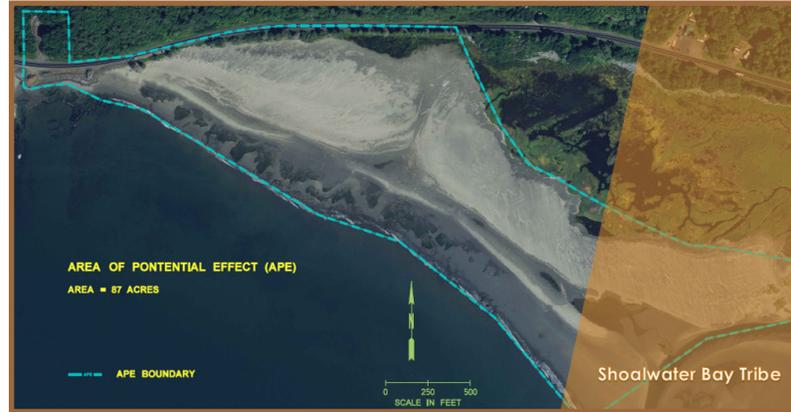
The Wiscasset waste water treatment plant in Wiscasset, Maine is surrounded by the Sheepscot River in the Maine coastal zone and is highly susceptible to major precipitation events, tidal extremes, and sea level rise. The Maine Coastal Program provided funding through the Municipal Planning Program Coastal Community Grants to assess the vulnerability of the waste water treatment plant to climate change impacts including coastal flooding, sea level rise, storm surge, and precipitation and to identify adaptation strategies for the critical coastal community infrastructure. The recommendations were incorporated into the capital improvement plan for the facility and the town initiated efforts to plan specific improvements to elevate and protect structures as well as to relocate the facility. This effort also created a transferable method for evaluating treatment plant infrastructure that has been used for other facilities in Maine.



Maryland Resilience Through Restoration Program

The Maryland Coastal Management Program (MCMP) Resilience Through Restoration Initiative provides communities with financial and technical assistance to implement nature-based infrastructure projects to protect communities, economies, and ecosystems from climate change impacts. These projects include shoreline restoration, beneficial use of dredge material, tidal marsh restoration, dune restoration, landscape-level green infrastructure, and other nature-based practices. The MCMP is monitoring and tracking project performance to inform adaptive management needs and future designs.

The Coastal States Organization (CSO) is a nonprofit organization that represents the Governors of the Nation's coastal States, Territories, and Commonwealths on national ocean and coastal policy issues to maintain the health and vitality of our Nation's coasts.



Graveyard Spit Dune Restoration and Community Resilience Project

The Washington Coastal Zone Management Program, in collaboration with the Washington Department of Transportation and other key partners, are completing the final design and permitting for the Graveyard Spit Restoration and Resilience Project, which is supported by the National Coastal Resilience Fund. This project consists of an innovative nature-based dune and dynamic revetment to restore and protect Graveyard Spit, located on the northern shore of Willapa Bay. The project is intended to halt the ongoing loss of the spit and the vulnerable back-barrier estuary, while also protecting vital community infrastructure that is threatened by coastal erosion, flooding, and sea level rise. The project will maintain marsh and tidal embayment environments; enhance habitat for critical species; provide coastal hazard mitigation for the lands of the Shoalwater Bay Tribe and the communities North Cove and Tokeland; and protect State Road 105, the region's primary transportation and utility corridor.



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