

**“Climate change is real. It is here,
and it is happening now,
in our backyards
and around the globe.”**

Jane Lubchenco, Ph.D.

Under Secretary of Commerce for Oceans and Atmosphere
Administrator, National Oceanic and Atmospheric Administration



ADAPTING TO CLIMATE CHANGE: A PLANNING GUIDE FOR STATE COASTAL MANAGERS



NOAA Office of Ocean and Coastal Resource Management
www.noaa.gov



Coastal Zone Management Act

- “Because **global warming** may result in a substantial sea level rise with serious adverse effects in the coastal zone, coastal states must anticipate and plan for such an occurrence.”

Coastal Zone Management Act

- “...the management of **coastal development** to minimize the loss of life and property caused by improper development in flood-prone, storm surge, geological hazard, and erosion-prone areas and in areas likely to be affected by or vulnerable to **sea level rise**, land subsidence, ... and by the destruction of natural protective features such as beaches, dunes, wetlands, and barrier islands.”

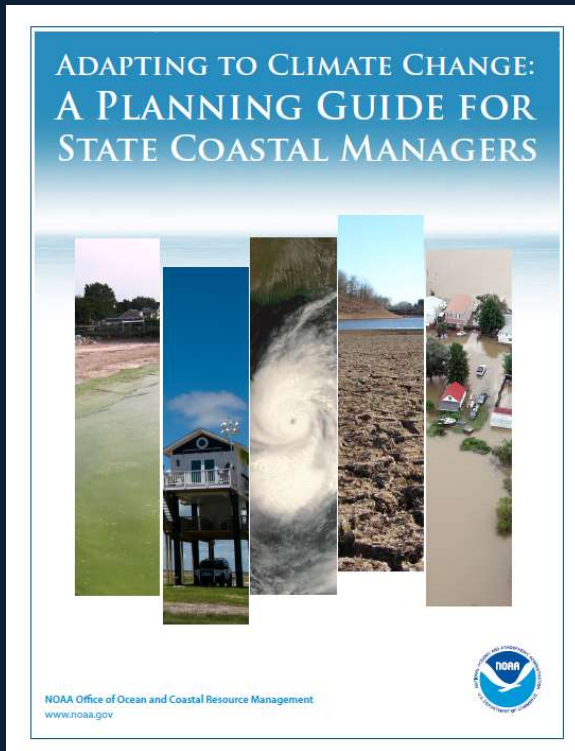
Coastal Zone Management Act

- “...priority consideration being given to coastal-dependent uses and orderly processes for siting major facilities related to national defense, energy, fisheries development, recreation, **ports and transportation**, and the location, to the maximum extent practicable, of new commercial and industrial developments in or adjacent to areas where such development already exists.”

Ports and Climate Change Adaptation



Planning Guide Organization



- Climate Change Phenomena
- Establish the Planning Process
- Assess Vulnerability
- Create an Adaptation Strategy
- Adaptation Measures

Climate Change Phenomena

- Rising sea levels
- Fluctuating Great Lake levels
- Increasing storm intensity and frequency (in some cases)
- Changing precipitation patterns
- Increasing air temperature
- Increasing water temperature
- Ocean acidification

Establish the Planning Process

- Scope out Level of Effort and Responsibility
- Assess Resource Needs and Availability
- Assemble Planning Team and Establish Responsibilities
- Educate, Engage, and Involve Stakeholders

Assess Vulnerability

- Identify Climate Change Phenomena
- Identify Climate Change Impacts and Consequences
- Assess Physical Characteristics and Exposure
- Consider Adaptive Capacities
- Develop Scenarios and Simulates Change
- Summarize Vulnerability and Identify Focus Areas

Create an Adaptation Strategy

- Set Goals
- Identify Actions
- Evaluate, Select, and Prioritize Actions (at this point, they are not just recommendations, they are actions that have been selected for implementation)
- Write Action Plans

Adaptation Measures

- Impact Identification and Assessment
- Awareness and Assistance
- Growth and Development Management
- Loss Reduction
- Shoreline Management
- Coastal and Marine Ecosystem Management
- Water Resource Management and Protection

What Ports Can Do



What Ports Are Already Doing

Consider climate in existing planning efforts

- Port of Gulfport – Port Elevation
- Port of New Orleans – Hazard Mitigation Planning
- Port of Long Beach – Wetlands Restoration



Design a Plan Implementation and Maintenance Process

- Adopt the Plan
- Implement the Plan
- Integrate Plan Findings into Other State Planning Efforts and Programs
- Track, Evaluate, and Communicate Plan Progress; and, importantly
- Update the Plan

Appendices

- Potential Federal Funding Sources
- Federal Laws and Executive Orders Relevant to Climate Change on the Coast
- Regional Climate Summaries



[http://coastalmanagement.noaa.gov/
climate/adaptation.html](http://coastalmanagement.noaa.gov/climate/adaptation.html)

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