

## Taking a Comprehensive Planning Approach to Address Coastal Vulnerabilities

Coastal residents are vulnerable to many risks, including loss of life and property damage from storm-surge flooding. Such risks are likely to increase in the future. Rising sea levels and loss of coastal wetlands will likely dramatically increase property damage and other risks from tropical storms and hurricanes. And changing climate patterns could make large and powerful storms more common. Although these changes are deeply uncertain and difficult to predict, policy-makers must address them.

Spurred on by Hurricanes Katrina and Rita in 2005, the State of Louisiana, through its Coastal Protection and Restoration Authority (CPRA), decided to systematically address its coastal planning challenges by developing *Louisiana's Comprehensive Master Plan for a Sustainable Coast*. Given the hundreds of potential projects to consider, the stakeholders with competing interests and objectives, and the significant and deep uncertainties involved, CPRA asked RAND for analytical support.

Key results of that effort included the following:

- RAND helped develop a science-based, objective approach to identify a comprehensive strategy of different investments in risk-reduction projects (e.g., levees) and restoration projects (e.g., sediment diversions) to reduce flood risk and stabilize coastal land over a 50-year time frame. The strategy accounts for significant constraints on funding and other factors.
- The selected investments were chosen to perform well in scenarios that reflect different assumptions about future sea-level rise, the rate at which coastal land subsides (through sediment compaction and other processes), and other key uncertainties.
- The approach enabled state policymakers and stakeholders to decide among different strategies to best achieve statewide goals, despite deep uncertainties about the future and differing preferences about the appropriate balance of flood risk reduction, ecosystem restoration and conservation, and economic activity.
- The resulting \$50 billion 50-year Master Plan is the first comprehensive strategy for Louisiana's coast to receive broad support from the Louisiana public and the federal, state, and local agencies engaged in protecting the Gulf Coast. It passed the Louisiana legislature unanimously in May 2012 and is being implemented.
- CPRA policymakers will continue to use the approach to help secure long-term funding, refine their near-term implementation strategy, and adapt the Master Plan over time as conditions change.

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Coastal risks exist nationwide, as shown by Superstorm Sandy's toll on the Mid-Atlantic coastal states. States at risk of flooding from Atlantic storms face challenges similar to those Louisiana faces in planning for a more resilient coastline. Also, California policymakers are trying to address that state's vulnerability to sea-level rise and other threats to the Sacramento–San Joaquin River Delta. These and other coastal areas can benefit from the approach applied in Louisiana, which helps bring differing goals or points of view and deep uncertainty about the future into a common analytical framework. In turn, this framework allows decisionmakers to identify a more robust solution for coastal recovery and long-term risk reduction.

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