



Everything New Orleans

## Louisiana officials establish formula for anticipating sea-level rise

Published: Tuesday, February 07, 2012, 9:30 PM



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By

State **coastal restoration** and **levee** projects should be designed to anticipate an average 3.3 feet increase in sea level over the next 100 years, according to a new **Coastal Protection and Restoration Authority** report. But the project designs must also consider whether changing circumstances, including a reduction in the speed in which coastal land is sinking or a possible catastrophic increase in atmospheric temperatures, could produce sea levels rises of only 1.6 feet or as high as 4.9 feet by 2112.



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Louisiana Coastal Protection and Restoration Authority

The 2012 Master Plan for the Louisiana coast provides the blueprint for a sustainable future on the starving, sinking deltas that form our landscape.

**The report** released this week by the **Louisiana Applied Coastal Engineering and Science Division (LACES)** provides planners with a formula for anticipating the rate of "relative sea level rise" — the combination of the effects of sinking soils and rising water levels — at varying locations along the coast.

Louisiana is unique among the nation's coastal states in having some of the world's highest rates of soil subsidence in the footprints of present and past deltas of the **Mississippi River** that make up the eastern two-thirds of the state's coastline.

Rising water levels are caused by a combination of natural and human-caused warming of the atmosphere, often referred to as climate change.

That warming causes molecules of ocean water to expand, which results in higher water levels. It also is speeding the melting of ice in the Arctic, Antarctic and in glaciers around the world, adding water to the world's oceans. Changes in rainfall rates may also add water to the oceans.

The White House Council on Environmental Quality has ordered federal agencies to consider the effects of human-induced climate change in designing longer term federal projects, including the potential effects of

“abrupt climate change,” where rising temperatures could cause larger than predicted increases in ice melt, and thus sea level rise.

The majority of proposed coastal restoration and levee projects will be either partly financed with federal money or will require permits from federal agencies.

However, the report recommends against using a similar relative sea level rise formula adopted in 2008 by the **Army Corps of Engineers** because it is too broad-based to deal with the differing sea level rates along the state’s coastline, said Garret Graves, chairman of the authority.

The corps formula relies on water rise measurements made at only two locations along the state’s coast, at Grand Isle and near Lake Charles. The corps formula also requires the long-term average record of measurements at those locations to be used, which the report says does not take into account more complex recent changes in subsidence and sea level rise at various locations during the recent past, including studies showing that subsidence in wetland areas over oil and gas fields dropped off as the extraction of oil, gas and water from underground formations was reduced.

However, both methods provide wiggle room for planners to adjust the results to apply to local situations. The corps has made such adjustments in determining the heights of levee upgrades in the New Orleans area, for instance.

The state formula, however, provides a more detailed review of how to make such adjustments for planners designing projects under the state’s coastal protection and restoration master plan.

The state formula also calls for using estimates of the amount of material added to soils by growing vegetation, which could be as much as a quarter of an inch of height a year. Designers of restoration projects must assure enough sediment is added to wetland projects to assure water levels don’t rise to levels that will drown and kill the vegetation, however.

The report also calls for planners to use the results of new studies that show increases in water heights in the Gulf vary from east to west along the state’s coastline, ranging from 3.93 millimeters a year southeast of the river’s bird foot delta to only 2.48 millimeters a year off the mouth of the Calcasieu River near the Texas border.

The full report and a less technical summary are available on the web at [www.coastal.la.gov](http://www.coastal.la.gov).

Public comments on the report will be accepted through March 7 by e-mail at **LACES@la.gov**, or by mail at Coastal Protection and Restoration Authority of Louisiana; 450 Laurel Street, Suite 1200; Baton Rouge, LA 70804-4027; ATTN: LACES – SLR Comments.

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