

Study: Major hurricane could devastate Houston

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With the 2010 Atlantic hurricane season less than a week away, a new analysis from experts at several Texas universities is warning that a major hurricane could devastate the Houston/Galveston region. A report issued today by the Rice University-based Severe Storm Prediction, Education and Evacuation from Disasters Center (SSPEED) indicates that even a moderately powerful hurricane could endanger tens of thousands of lives and cripple the Houston Ship Channel, which is home to about one-quarter of U.S. refineries.

SSPEED's report was unveiled today at the 2010 Coastal Resilience Symposium, a one-day workshop at Rice that brought together regional, national and international experts to discuss how the Houston region can be made more resilient to severe storm impacts.

"There are warning signs across the board," said SSPEED Director Phil Bedient, Rice's Herman Brown Professor of Engineering and a co-author of the new report. "Ike was a Category 2 [hurricane](#), and it caused \$30 billion in damage. Had that same storm struck 30 miles farther south, it could easily have caused \$100 billion in damage. Had it struck that location as a Category 4 storm, like Carla, the results would have been catastrophic."

The new report comes from an ongoing two-year study commissioned from SSPEED in 2009 by the nonprofit Houston Endowment. SSPEED has assembled a team of more than a dozen leading experts from Rice University, the University of Texas at Austin, Texas A&M University,

the University of Houston, Texas Southern University and several other institutions to examine flood risks, evacuation readiness, industrial vulnerability and both structural and nonstructural approaches for mitigating storm impact.

SSPEED's report indicates:

- Existing dikes and levees along the Houston Ship Channel were barely adequate during Hurricane Ike and would not protect all refineries from the storm surge of a more powerful hurricane or even an Ike-like Category 2 hurricane striking farther south.
- More than 65 percent of water-crossing bridges in the Galveston Bay area may be especially vulnerable to damage from a powerful hurricane like Katrina.
- Highway infrastructure to evacuate the 1 million residents living in evacuation zones today is inadequate, and 500,000 more are expected to move into these zones by 2035.
- There is a "major disconnect" between the level of coastal flooding that would be caused by a major hurricane and the 100-year floodplains that flood insurance is based upon.

Bedient said one need look no further than the Houston Ship Channel to get a clear sense of the region's vulnerability. The ship channel is home to one of the nation's busiest ports and about one-quarter of U.S. refineries. The Coast Guard estimates a one-month closure of a major port like [Houston](#) would cost the national economy \$60 billion.

Despite this, government regulations require dikes and levees that can protect ship channel facilities against only the 100-year flood of 14-15

feet. Bedient said that based upon results from supercomputer models at the University of Texas, Austin, Ike could have caused a 20- to 25-foot storm surge along the ship channel if it had struck about 30 miles farther south.

"Our team is taking an in-depth, scientific look at structural proposals like the Ike Dike and other dike solutions, as well as nonstructural proposals related to land use," said Rice's Jim Blackburn, professor in the practice of environmental law and co-author of the new report. "Our work so far has revealed a number of different structural and nonstructural solutions. There are dozens of communities along the coast, and each is unique in some way. We are attempting to identify the most cost-effective and environmentally acceptable methods of providing a basic level of protection, including both structural barriers and nonstructural approaches that take advantage of natural features like barrier islands and storm-surge storage in wetlands."

Blackburn said SSPEED's goal is to propose policy options to decision makers at the state, local and federal level with an unbiased assessment of the economic and environmental costs and benefits of all approaches so that an informed decision on the future of the region can be made.

"And make no mistake about it - the solutions that are chosen to deal with this flood-surge problem will determine the landscape of the future for the upper Texas coast," Blackburn said.

Provided by Rice University

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