

# Pasadena Citizens' Advisory Council

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## Summary of Tuesday, March 26, 2013 Meeting

### Hurricane Surge Suppression Efforts

#### Gulf Coast Community Protection and Recovery District

Former Harris County Judge Robert Eckels spoke as President of the Gulf Coast Community Protection and Recovery District, a 6-county local government corporation formed by Gov. Rick Perry after Hurricane Ike to consider options for storm surge protection on the Upper Texas Gulf Coast. The counties are Brazoria, Galveston, Harris, Chambers, Jefferson, and Orange. Appointed by the Governor, the board of directors includes the county judge of each of the 6 counties. The Galveston County Judge is currently the chair. Eckels is the president. All serve as volunteers.

The district has no funding to do its own research on hurricane surge suppression options. It is tracking hurricane surge proposals made by others, including the Ike Dike proposed by Professor William Merrell of Texas A&M Galveston and the array of methods offered by the Severe Storm Prediction, Education, and Evacuation from Disasters (SSPEED) Center, co-chaired by Jim Blackburn and Phil Bedient of Rice University. Eckels sees the district as the body that will take the best of the ideas and develop agreement among the coastal counties on a comprehensive plan that all can support and that protects homes, industry, and other employment centers in a way that is coordinated but respectful of differing needs.

#### Severe Storm Prediction, Education, and Evacuation from Disasters (SSPEED) Center

Jim Blackburn, co-chair, said the Severe Storm Prediction, Education, and Evacuation from Disasters (SSPEED) Center was established in 2007 as an organization of mostly universities to better address severe storm impacts and evacuation strategies in the Gulf Coast area. With funding from the Houston Endowment, SSPEED Center has looked at the lessons learned from Hurricane Ike. Earlier work includes establishment of a real-time warning system for the Medical Center area that was developed after the severe flooding from Tropical Storm Allison.

Blackburn emphasized the importance of preventing hurricane surge damage by reminding us that the Hurricane of 1900 and another deadly storm a few years later changed the future of Galveston. Galveston was once the major city in the region. It was surpassed by Houston as Houston was developed while Galveston struggled to recover from the two deadly storms.

Some facts reminded us of the damage done by Hurricane Ike. It was a Category 2 hurricane based on wind speed but had a much bigger surge than Category 2 storms have, leading to recommendations to change the way storms are categorized. The surge was 17-18 feet in

Chambers and Jefferson County. It caused \$24 billion of damage and was the third costliest storm in history until 2012's Hurricane Sandy hit the New York-New Jersey area. In addition, 112 people died and 2.6 million lost power. As serious as these impacts were, the storm would have done significantly more damage had it made landfall west of where it did, as had been predicted.

The SSPEED Center is looking at the same 6-county area previously discussed, but recently Matagorda County asked to be incorporated into the proposals SSPEED Center is developing. SSPEED Center is not studying the Ike Dike but believes it is compatible with its proposals.

The SSPEED Center proposals are a combination of structures that include some smaller dikes and gates across the Houston Ship Channel at the Hartman Bridge as well "soft" changes that include developing a Lone Star National Recreation Area.

The recreation area is shown on the Lessons from Ike slides as "green clouds." SSPEED proposes networking existing natural areas along the coast in this area and expanding them. They also propose redesign of the economy along the coast where farmers are struggling to obtain the water they need for crops and cattle and could benefit from a new way to earn money from their land. Eco-farming might include growing vast areas of trees that would be appealing for recreation but would also help industry meet environmental goals, as Dow Chemical in Freeport is proposing. The end result could be a national park like the Everglades or Golden Gate Park.

The levees proposed in the slides do not protect the west end of Galveston Island. To do that would require something large like the Ike Dike. One of the most challenging areas to protect is the Clear Lake area. SSPEED Center proposes elevating SH 146. In the Seabrook and Kemah area it would need to extend to 20-25 feet above sea level, which some find unacceptable. Another option is to put the gates at Morgan's Point to protect more of the Port of Houston, instead of at the Hartmann Bridge.

The SSPEED Center proposals for the Houston Ship Channel are intended to protect industry as well as all residences and other businesses that would flood when surge pushes up the channel. Blackburn said he has seen data showing that ship channel industries provide 150,000 jobs and bring in \$5 billion in tax revenues. The economic repercussions of extensive damage would be felt across the country, not just locally. The ecological impacts of releasing large amounts of chemicals from facilities would damage Galveston Bay, which in turn would cause economic impacts there, too.

Some computer models have shown that a storm making landfall at San Luis Pass would send a surge of 20-22 feet up the Houston Ship Channel. The 100-year storm surge is predicted to be 25 feet. SSPEED Center studies estimate that 2794 out of 3320 tanks along the ship channel would be vulnerable to a 25-foot surge.

Some areas of the ship channel are low, but at or close to each side of the Hartman Bridge the land is 25 feet above sea level. With this natural advantage, some diking and a smaller set of

gates than the Ike Dike, it would be relatively cheap and quick to protect the ship channel upstream of the bridge as far as the east side of Houston. Blackburn estimated costs at less than \$1 billion, to be paid for with a local bond issue because it is highly unlikely that federal or state funds would be forthcoming. Asked why industry can't pay for it all if the intent is to protect industry, Blackburn said the intent is not just to protect industry but also communities that would be damaged by high surge levels in the channel. Thus support from industry and taxpayers seems fair.

The SSPEED Center website contains additional information and technical presentations. <http://sspeed.rice.edu/sspeed/> The center's fifth anniversary will be celebrated in September with a major conference that will look at this and their other projects. Lessons from Hurricane Sandy will be presented by those doing research to prevent surge and flooding damage in that area.

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