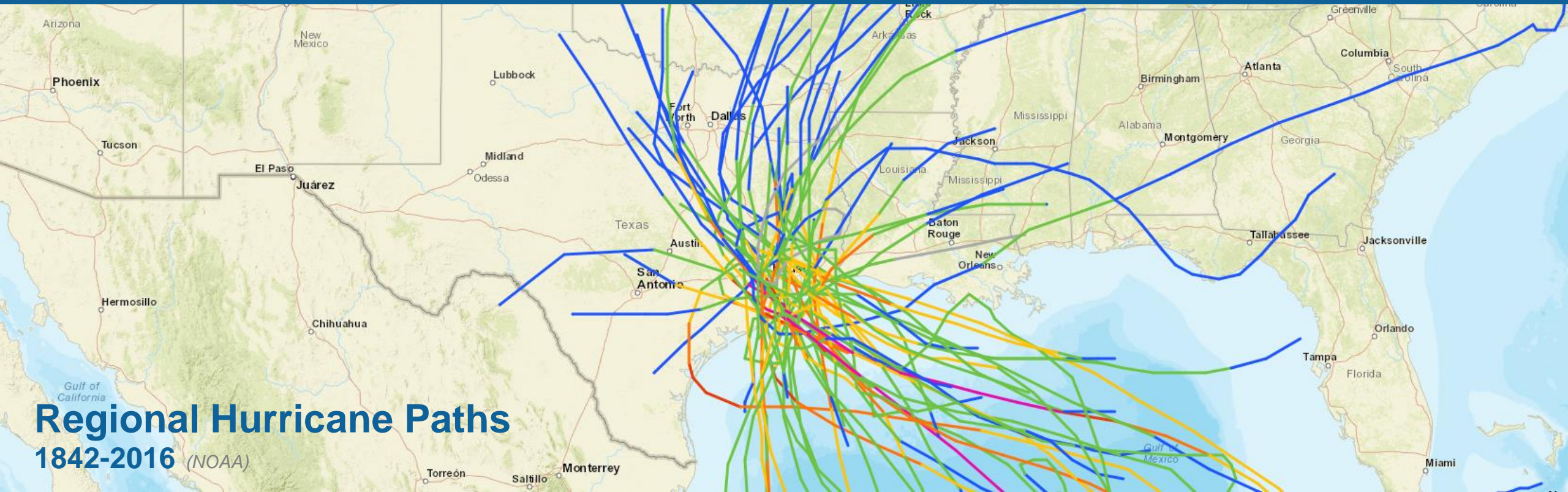


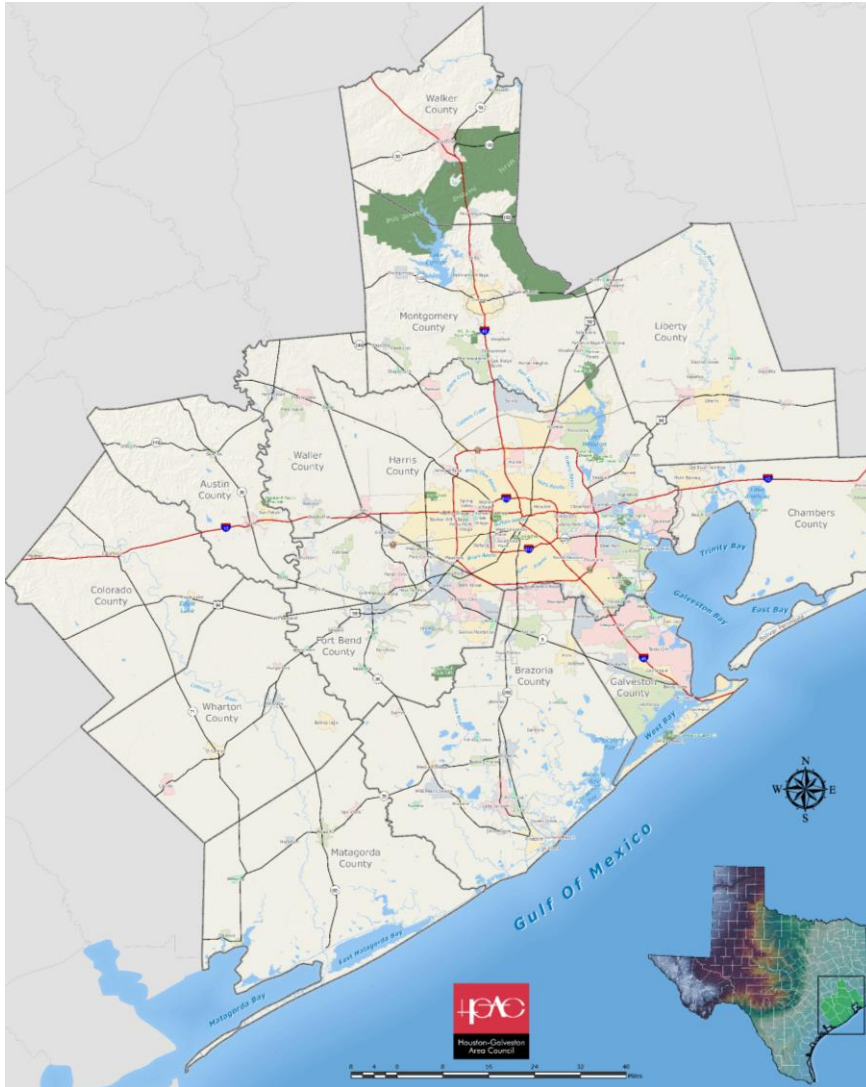
# Life on the Edge: Coastal Hazard Mitigation at the Regional Scale

Jeff Taebel, FAICP

Director, Community and Environmental Planning  
Houston-Galveston Area Council

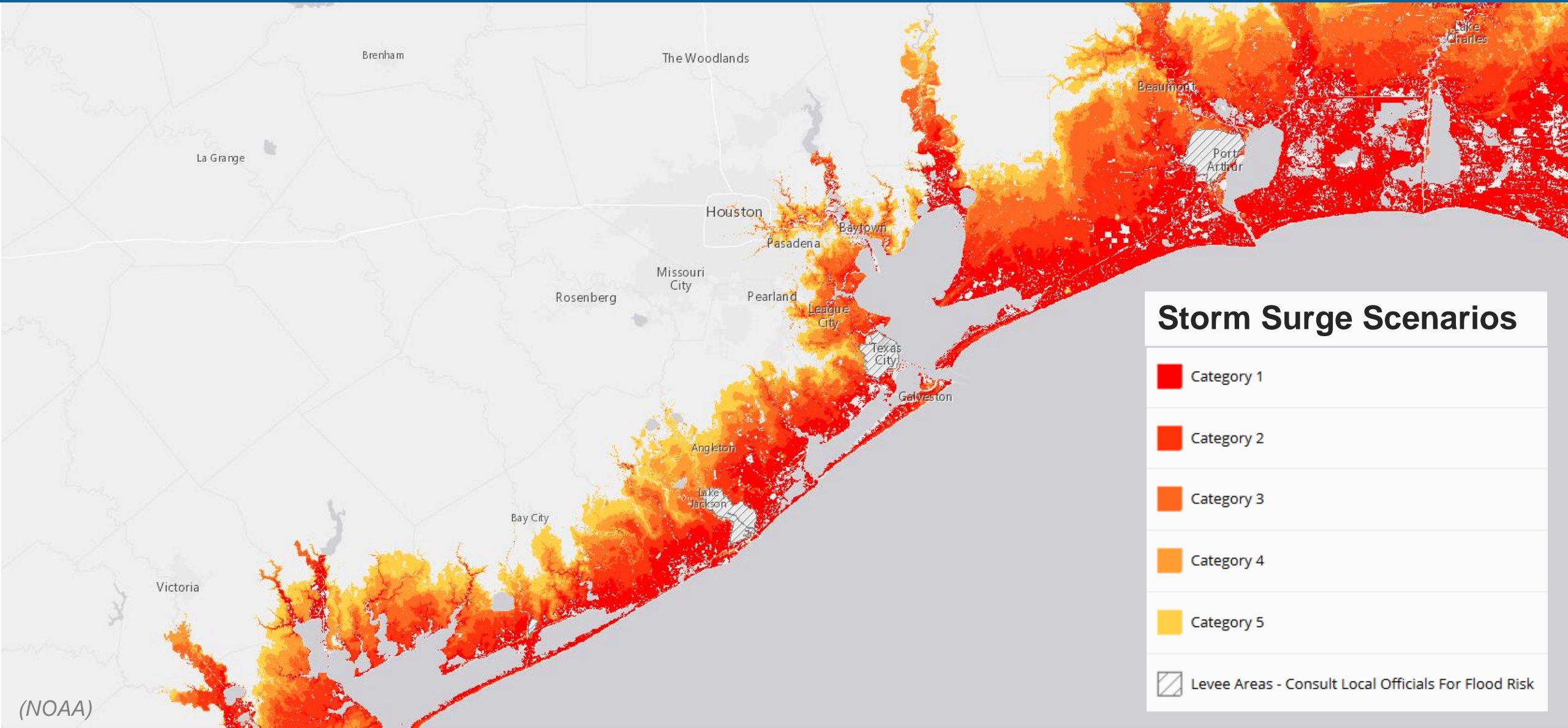


# H-GAC Overview

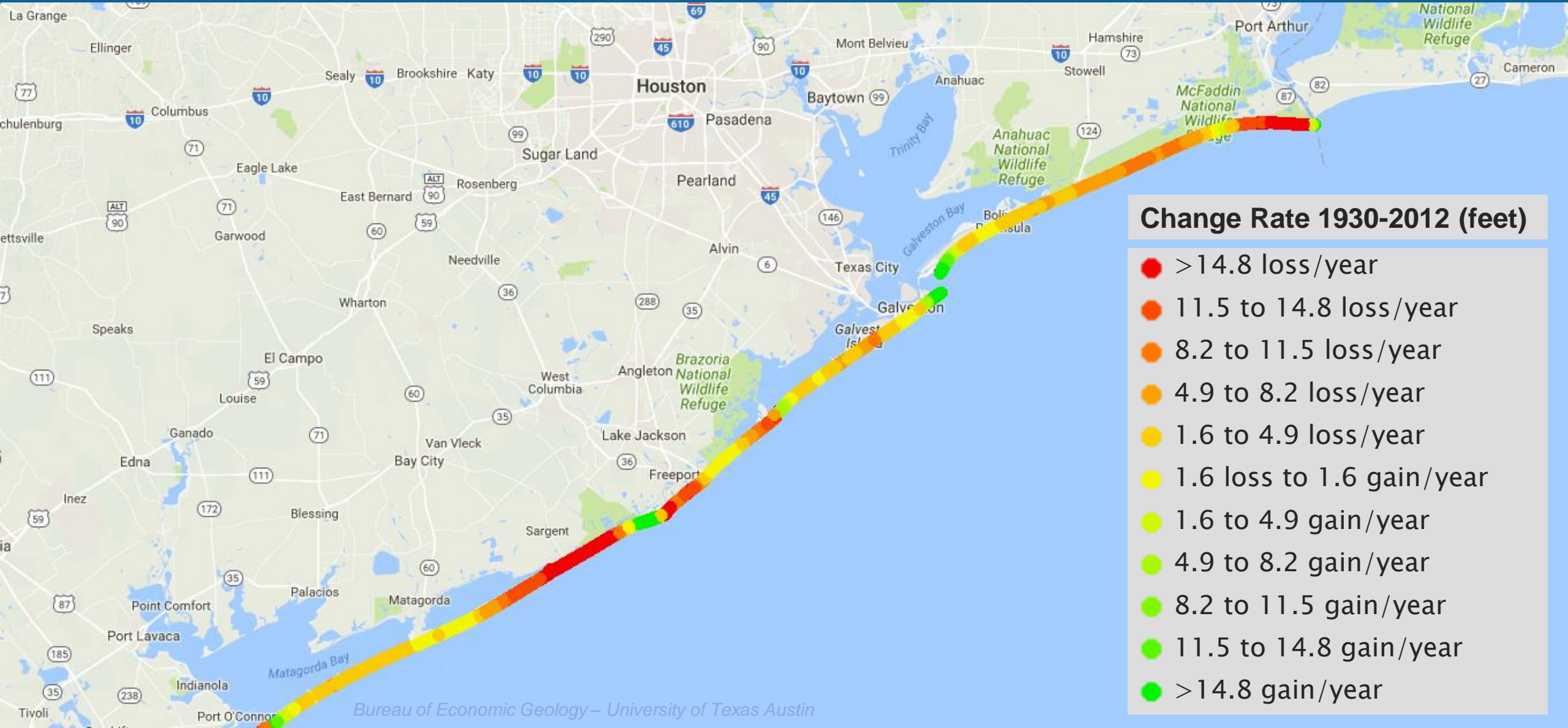


- Voluntary association of governments
- 13 Counties, 134 Cities
- Population 6.9 million
- 12,312 square miles
- 1,927 miles of shoreline

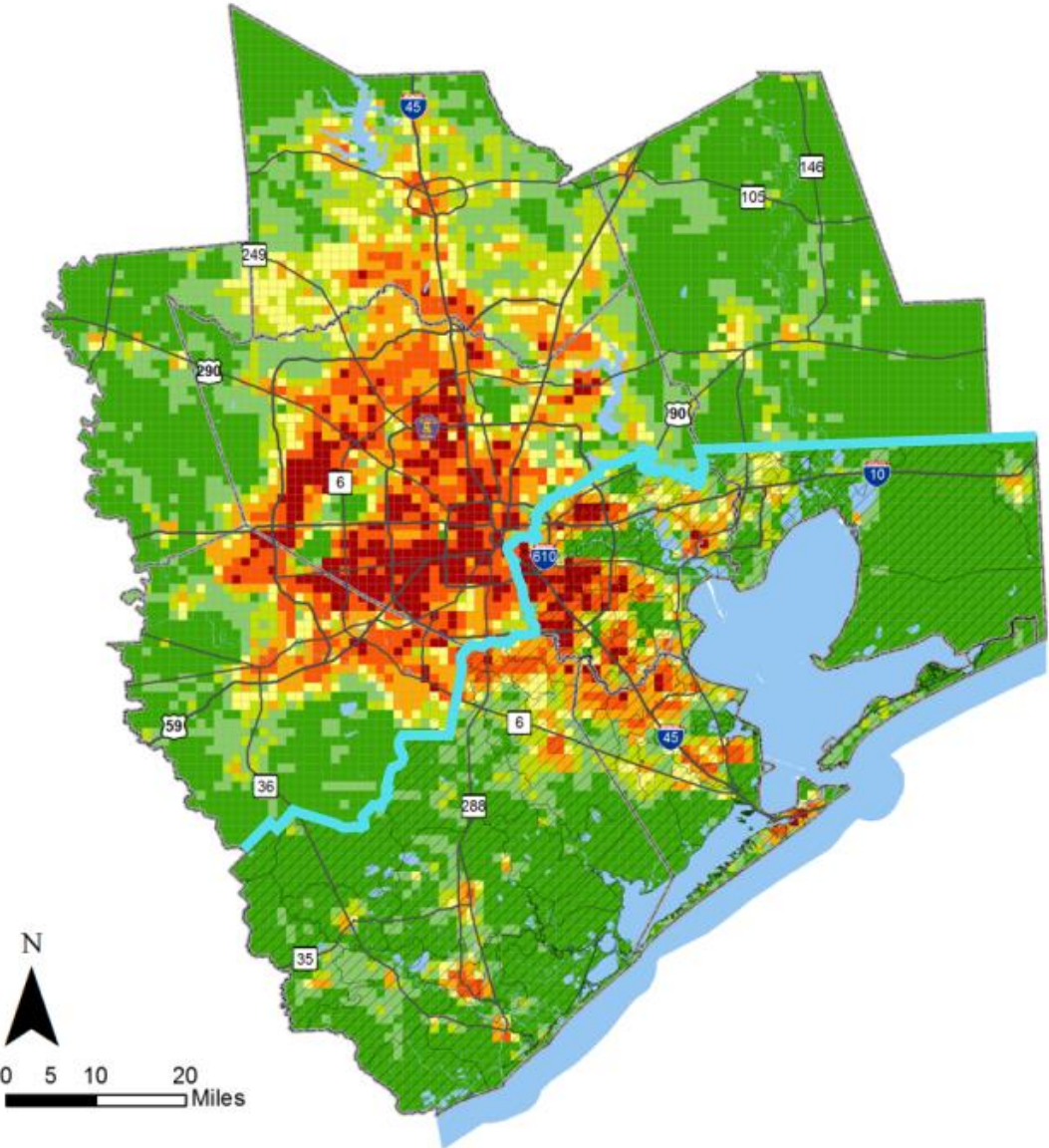
# Gulf Coast Storm Surge Scenarios



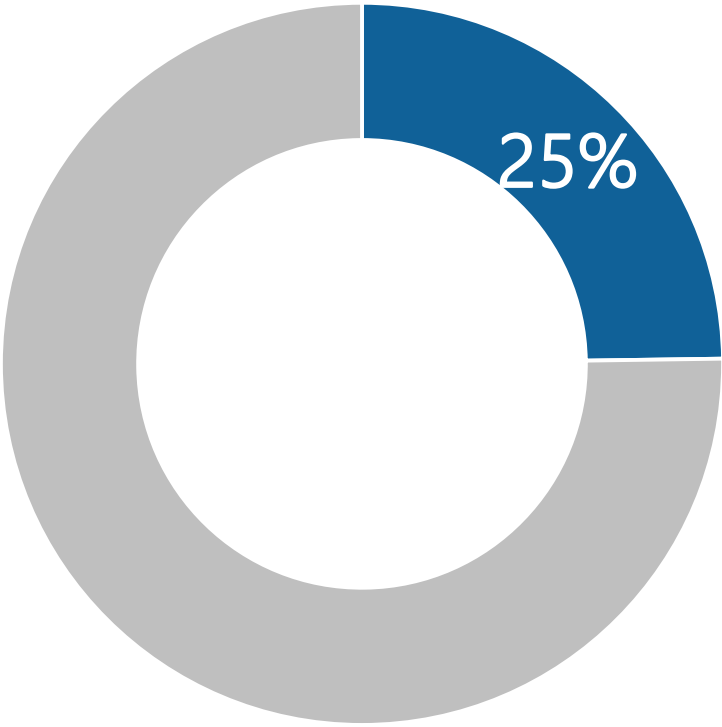
# Coastal Erosion Shoreline Change



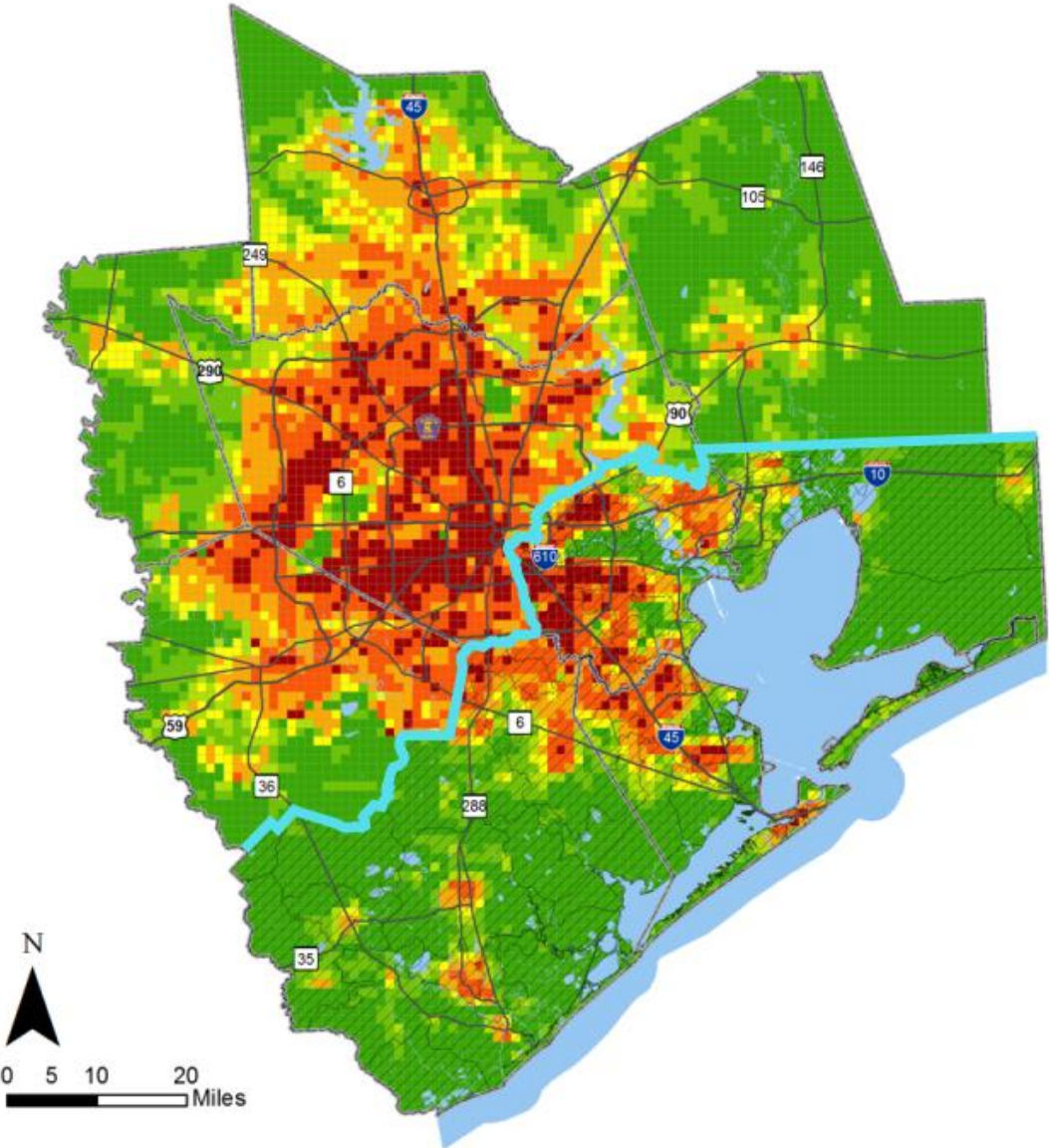
# 2016 Population



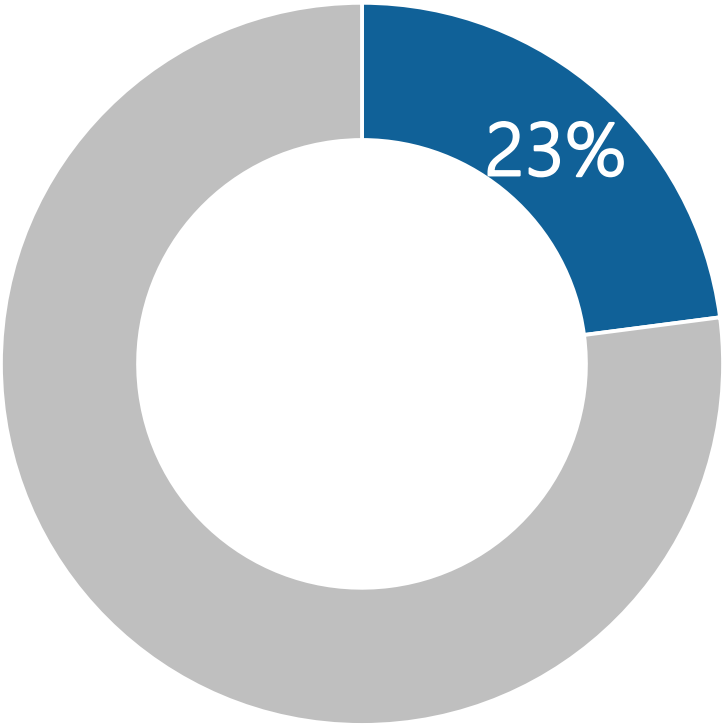
Population in Hurricane Evacuation Zone  
**1,650,000**



# 2040 Population



Population in Hurricane Evacuation Zone  
**2,300,000**





# H-GAC Mitigation Planning



Home elevation in Crystal Beach (FEMA)



# Regional Hazard Mitigation Plan

## Stakeholder convening

7 counties

71 participating cities

## Vulnerability analysis



## 852 actions

Adopt floodplain regulations

Enlarge ditches

Build early warning system

Develop a drainage master plan

Harden key infrastructure

# Climate Change Adaptation Strategies

Expert panel: future climate assumptions, 25 recommendations for adaptation grouped into four key strategy areas, including:



**Houston-Galveston Area Council  
Foresight Panel on Environmental Effects**



# Climate Change Adaptation Strategies

Expert panel: future climate assumptions, 25 recommendations for adaptation grouped into four key strategy areas, including:

## How we manage

Use credible climate predictions for planning/design



**Houston-Galveston Area Council  
Foresight Panel on Environmental Effects**



# Climate Change Adaptation Strategies

Expert panel: future climate assumptions, 25 recommendations for adaptation grouped into four key strategy areas, including:

## How we manage

Use credible climate predictions for planning/design

## How we grow

Avoid new developments in flood-prone areas



**Houston-Galveston Area Council  
Foresight Panel on Environmental Effects**



# Climate Change Adaptation Strategies

Expert panel: future climate assumptions, 25 recommendations for adaptation grouped into four key strategy areas, including:

## How we manage

Use credible climate predictions for planning/design

## How we reinvest

Longer horizons for infrastructure planning

## How we grow

Avoid new developments in flood-prone areas



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Foresight Panel on Environmental Effects**



# Climate Change Adaptation Strategies

Expert panel: future climate assumptions, 25 recommendations for adaptation grouped into four key strategy areas, including:

## How we manage

Use credible climate predictions for planning/design

## How we grow

Avoid new developments in flood-prone areas

## How we reinvest

Longer horizons for infrastructure planning

## How we recover/reconstruct

New mechanisms for regional prioritization and funding



**Houston-Galveston Area Council  
Foresight Panel on Environmental Effects**



# Regional Sustainable Development Plan

## Resiliency



To be a great region in 2040, we should increase our resiliency to disaster and a changing environment.

### Storm Defense Systems



### Reduce Emissions



### Mitigation & Adaptation



### Rapid Recovery Plan



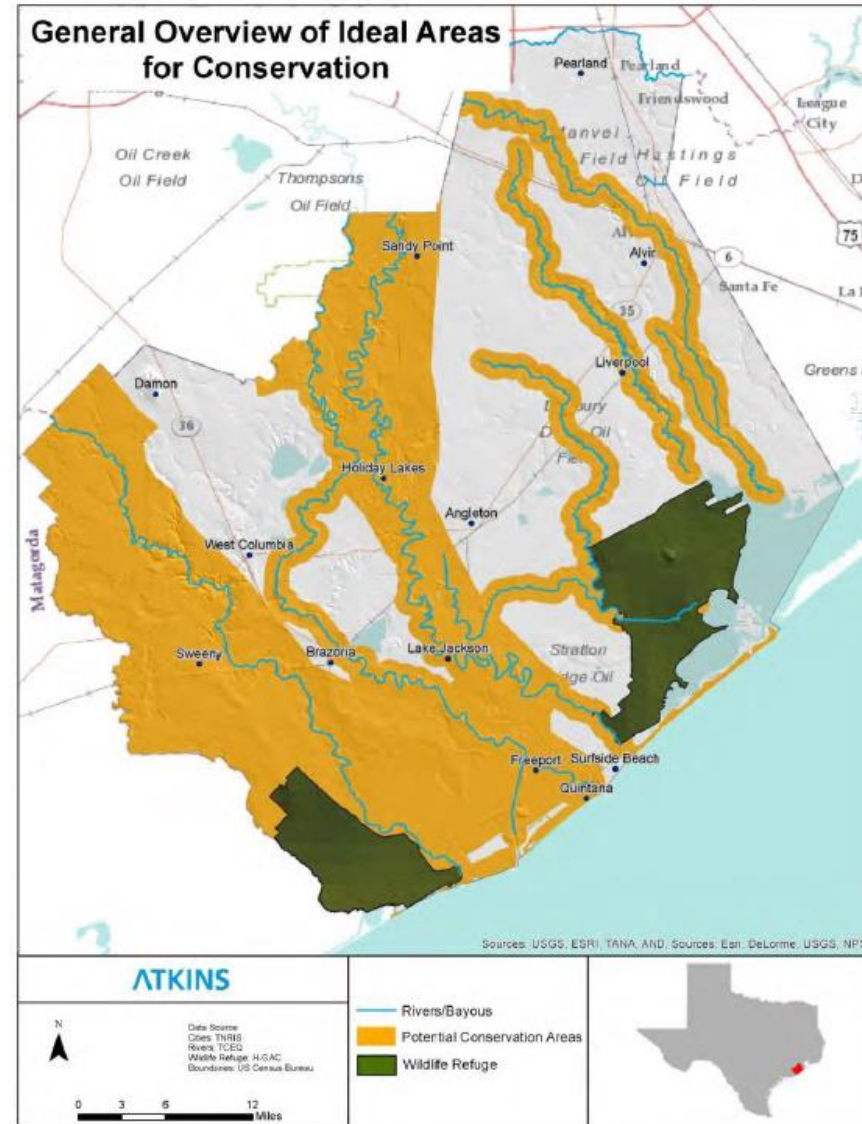
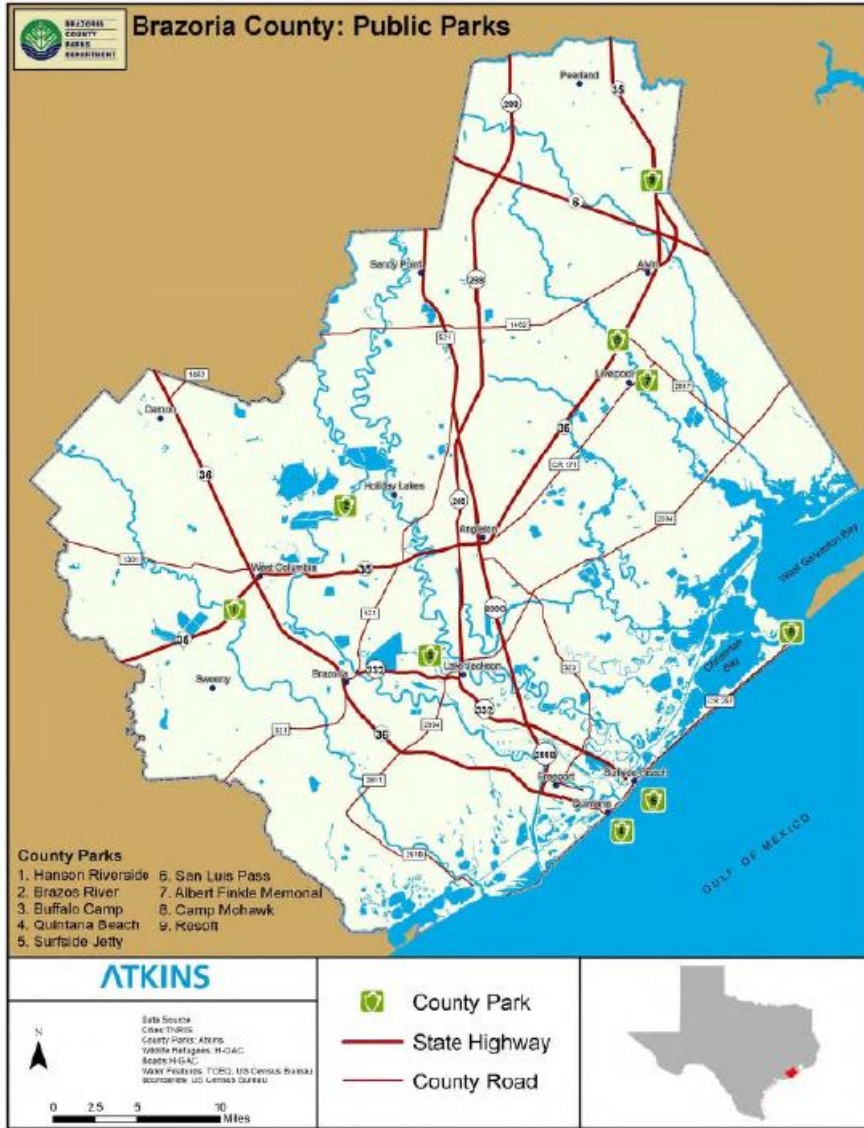
### Evacuation Planning



### Public Awareness



# Regional Sustainable Development Plan





# Regional Storm Defense Proposals



# Coastal Spine System



- “Ike Dike” concept, Dr. William Merrell, Texas A&M Galveston
- Expanded to adjacent coastal areas
- Structural approach to storm defense

# Houston-Galveston Area Protection System (H-GAPS)



- Severe Storm Prediction, Education and Evacuation from Disasters (SSPEED) Center at Rice University
- Integrated structural and ecosystem services approach

# Gulf Coast Community Protection & Recovery District



**GCCPRD**  
The Gulf Coast Community Protection and Recovery District



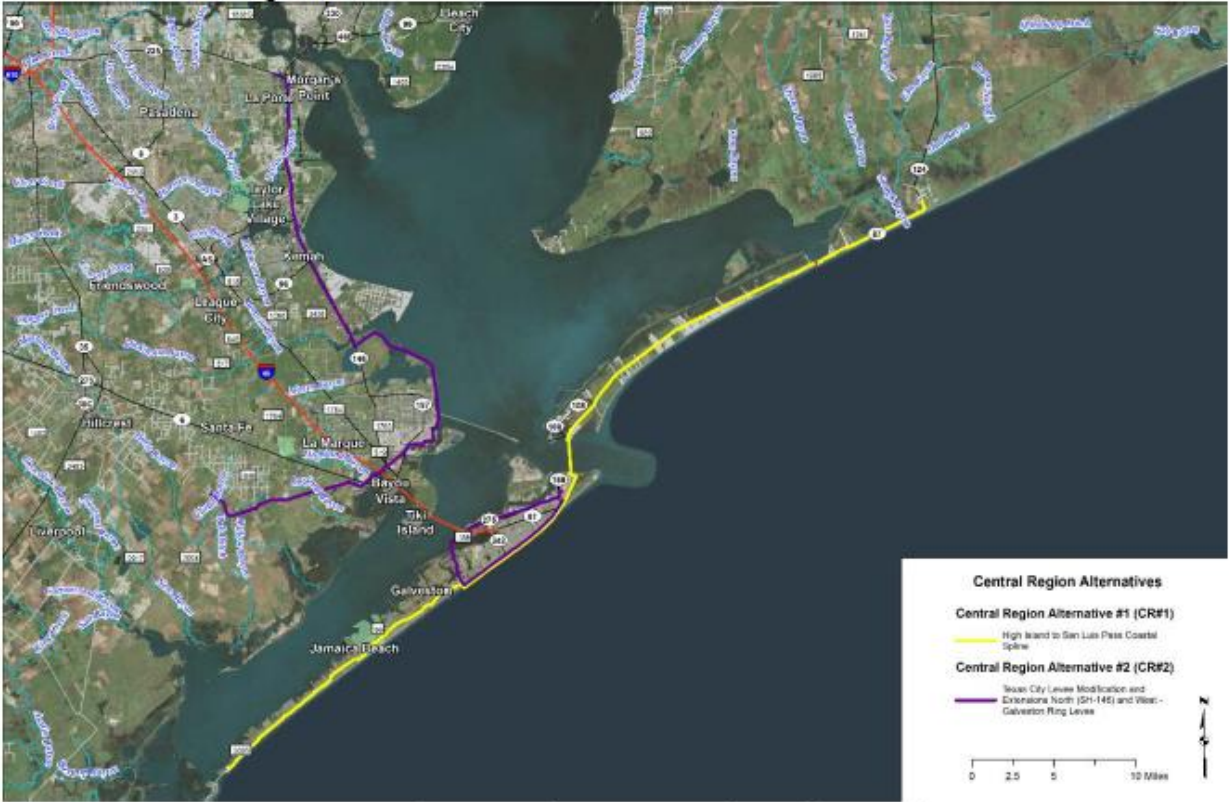
STORM SURGE SUPPRESSION STUDY  
**PHASE 3 REPORT**  
RECOMMENDED ACTIONS  
June 21, 2016




## Central Region Alternatives

*Galveston, Chambers, and Harris Counties*

- Central Region Alternative #1 (CR#1) - High Island to San Luis Pass Coastal Spine
- Central Region Alternative #2 (CR#2) - Texas City Levee Modifications and Extensions North (SH-146) and West--Galveston Ring Levee



**Central Region Alternatives**

- Central Region Alternative #1 (CR#1)  
High Island to San Luis Pass Coastal Spine
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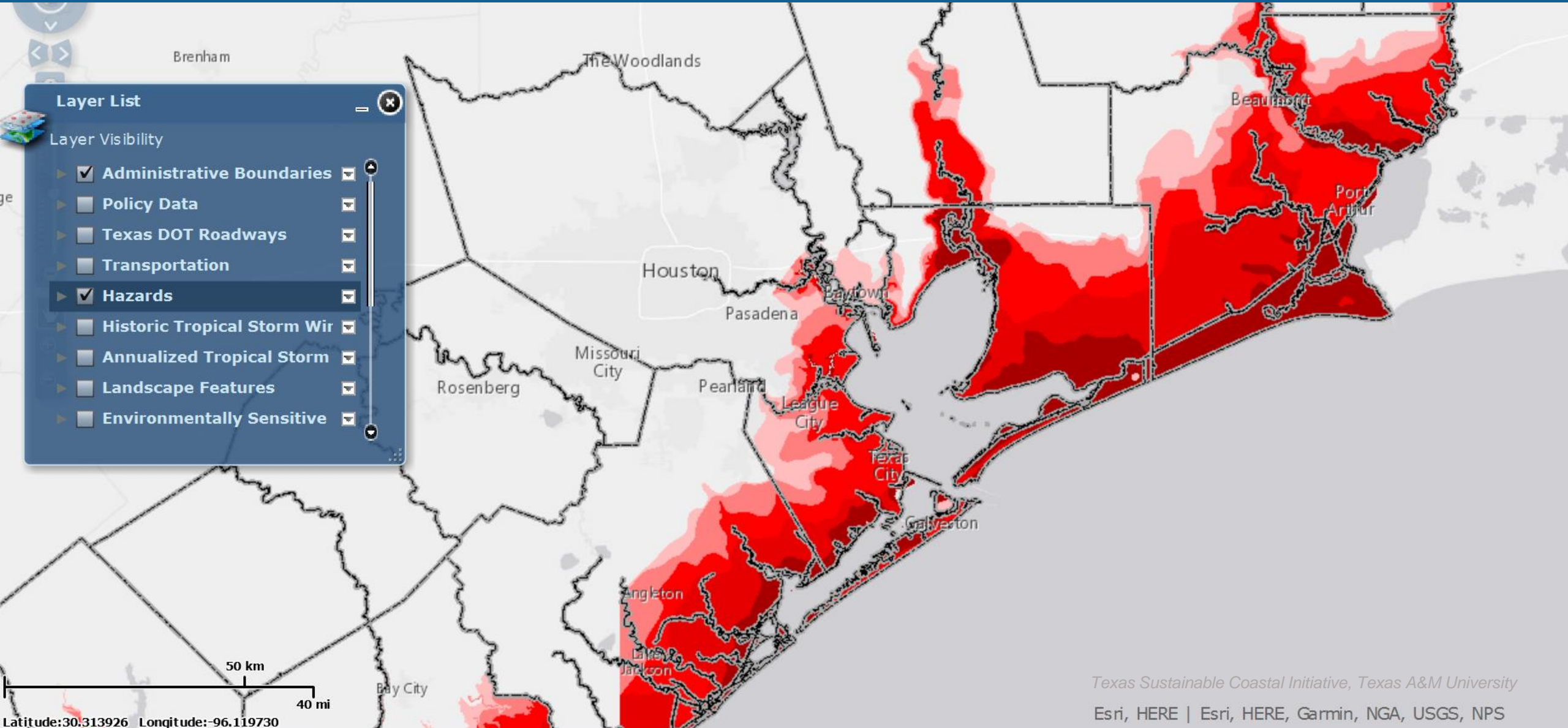
0 2.5 5 10 Miles

Figure 15: Central Region Alternatives Selected for Development

# Tools for Hazard Mitigation Planning



# Coastal Communities Planning Atlas



# Community Health and Resource Management (CHARM) Model



# These Things Take Time





# Contact/Resource Information

**Jeff Taebel, FAICP**

713-993-4560 | [jeff.taebel@h-gac.com](mailto:jeff.taebel@h-gac.com)

## Resources Links

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<b>Houston-Galveston Area Council</b>	<i><a href="http://h-gac.com">h-gac.com</a></i>
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<b>Regional Hazard Mitigation Plan</b>	<i><a href="http://h-gac.com/community/community/hazard/hazard_mitigation_plan.aspx">h-gac.com/community/community/hazard/hazard_mitigation_plan.aspx</a></i>
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<b>Foresight Panel on Environmental Effects</b>	<i><a href="http://h-gac.com/community/environmental-stewardship/fpee">h-gac.com/community/environmental-stewardship/fpee</a></i>
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<b>Our Great Region 2040</b>	<i><a href="http://ourregion.org">ourregion.org</a></i>
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<b>Coastal Communities Planning Atlas</b>	<i><a href="http://coastalatlus.arch.tamu.edu">coastalatlus.arch.tamu.edu</a></i>
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<b>CHARM Model</b>	<i><a href="http://tcwp.tamu.edu/CHARM">tcwp.tamu.edu/CHARM</a></i>
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<b>Gulf Coast Community Protection &amp; Recovery District</b>	<i><a href="http://gccprd.com">gccprd.com</a></i>
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