Landscape-Scale Non-structural Hurricane Surge Mitigation for the Texas Coast:
The Role of Non-governmental Organizations

Jim Blackburn
Rice University
Professor
Civil and Environmental Engineering
Co-Director, SSPEED Center

December 12, 2013
SSPEED Center
The Center is based out of Rice University and collaborates with leading academic institutions, the private sector and public entities.
Major funding from Houston Endowment
Hurricane Ike

Category 2
$25+ billion in damages
4th costliest in U.S. History
112 deaths
2.6 million lost power
Hurricane Ike Missed Most of Us
 Ike Surge Flowing Back Into Gulf
4 Days After Landfall –
Excellent Flood Storage

Photo: Bryan Carlile
Landscape-Scale Non-Structural Concept
Spartina Alterniflora and Other Coastal Wetland Plants Define Resiliency –

Learn From The Marsh
Embrace It
Emulate It
Non-Structural Constraints for the Texas Coast

- No New Regulation
- Minimal to No Expansion of Federal Ownership and Control
- Respect for Private Property
- Minimize Federal Dollars

Constraint Requires Creativity, Cooperation and NGO Involvement
Low-Lying Lands of Galveston Bay

Economy As Non-Structural Alternative

Could We Develop a Different Economy Here - -

A Resilient Economy Based on Use, Appreciation and Protection of our Natural Values?
Possible Non-Structural Economic Concepts

1. Recreation/Eco-Tourism

2. Natural Resource Value Trading Concept
Proposed Lone Star Coastal National Recreation Area
ACTIVE OUTDOOR RECREATION PARTICIPANTS BY THE NUMBERS

- BICYCLING: 60 million
- CAMPING: 45 million
- FISHING: 33 million
- HUNTING: 13 million
- PADDLING: 24 million
- SNOW SPORTS: 16 million
- TRAIL: 56 million
- WILDLIFE VIEWING: 66 million

Source: Outdoor Industry Foundation
Creative Recreation-Tourism Organizational Concepts

- Lynn Scarlett suggested some form of National Recreational Area based on Boston Harbor Islands NRA
- National Parks Conservation Association arrived to assist in the development of National Park Service-focused proposals
NGO’s With Property
1. Houston Audubon Society
2. Texas Nature Conservancy
3. Galveston Bay Foundation
4. Scenic Galveston
5. Ducks Unlimited
6. Cradle of Texas Conservancy
7. Galveston Historical Society
8. Boy Scouts
Public Leadership and Rules

Partnership Among Local, State and Federal Governments and NGOs

No New Regulation

No Involuntary Participation

Sec. James Baker

John Nau
Opportunity Knocks: Potential Economic Impact of the Proposed Lone Star Coastal National Recreation Area

By the 10th year, tourist visitation triples, economic impact quadruples to $192 M in sales, and local tourism-related jobs increase by 11%.
Network Governance

• Partnership between federal, state and local governments, NGOs and private landowners
• Participate only by agreement of parties
• No new land use rules and regulations
• All pursued on willing buyer, willing seller basis
Proposed Lone Star Coastal Nat’l Rec Area Partnership
(as determined by Partnership Agreement)
Drafting of Proposed Legislative Concepts

- Partnership Committee and Steering Committee Met Over 6 Months
  - 15+ NGOs
- Partnership Committee Comprised Predominantly of Vested NGOs and Local, State and Federal Vested Agencies
- Process Under Overall Guidance of National Parks Conservation Association
Proposed Administration of LSCNRA

- Partnership Comprised of NPS + landowning entities including NGOs
- Lone Star Coastal Alliance – NGO formed to raise money in support of LSCNRA
- LSCNRA Advisory Committee – comprised of non-vested partner NGOs.
Next Stop in the Process
Possible Non-structural Economic Concepts

1. Recreation/Eco-Tourism

2. Natural Resource Value Trading Concept
What is the Value of This *Spartina* Marsh?

Fish Habitat Value?
Bird Habitat Value?
Carbon Sequestration Value?
Natural Resource Value Trading System

- Intended to Offer Second Economic Engine to Lone Star Coastal National Recreation Area (Complements outdoor and historic recreational tourism)

- Based on Existence and Development of Private Sector Demand For Certain Natural Resource Functions and Values

- Examples:
  - Florida
  - Oregon
  - Chesapeake Bay
Non-Regulatory Market for Ecological Services?

- 1.3 million acres of private land below 20 foot contour in Chambers, Galveston, Brazoria and Matagorda Counties
- Most have evaluated and rejected wetland mitigation banking
- Private sector farming and ranching running dry (e.g. no water, low profits)
- Would respond to private market overtures – but are there any?
Potential Opportunities

• Natural Resource Damages

• Changing Corporate Attitude
  – Corporate Web Sites
  – Coca Cola and attitude about water
  – Zero footprint
    • Carbon
    • Water
    • Ecological

• Philanthropic

• Gift
Proposed Lone Star Coastal Exchange (LSCE)

Sellers → Trading Platform → Buyers

$ $ $  

Flood Storage  
Conservation of Existing Habitat  
Neo-tropical Migrant Habitat Creation  
Coastal Wetland Creation/Migration  
Migratory Waterfowl Habitat Creation  
Prairie Habitat Creation  
Forest Lands Habitat Creation  
Carbon Sequestration  
Endangered Species Habitat
Potential Corps or FEMA Value Proposition
Elements of Trading Platform

- Geographic Information System
- Standard Setting
- Process for Determining Landowner Eligibility
- Project Development
- Verification
- Transaction Platform
Transaction Platform

- Connects Buyers and Sellers
- Provides Long-Term Project Registration
- Provides Credit Tracking
- Design Based on Type of Standards and Credits

References:
- www.thebaybank.org/marketplace
Role of NGO’s in LSCE

- Working with sellers on creation of habitat values
  - freshwater wetland creation expertise
  - prairie creation expertise
  - seed supply source
  - marsh creation

- Hosting the transaction platform

- Assessment of credit value

- Verification of credit value

- Maintaining the accounts
Conclusion

• NGOs essential to implementation of creative non-structural surge damage reduction concepts

• Flexible

• Not a government

• Willing to innovate

• Willing to pursue creative ways to achieve their more general goals
Contact Me

- **Jim Blackburn** - [blackbur@rice.edu](mailto:blackbur@rice.edu)
- **SSPEED Center** - [http://sspeed.rice.edu/ssspeed/](http://sspeed.rice.edu/ssspeed/)