enGULFed!

Rethinking Smart Growth for Louisiana’s coastal communities

Camille Manning-Broome, Director of Planning
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Who is CPEX?

Every Community in Louisiana made extraordinary through planning excellence.

CPEX helps create highly functional, equitable communities throughout Louisiana that capitalize on their unique qualities through community-driven planning and implementation.
“Deltas are the best places to live on earth... if you can deal with the water.”

— Steven Slabbers
Creation of Mississippi Delta

-3000 BC - 2000 BC - 1000 BC 1 AD 1000 AD 2000 AD

Gulf of Mexico

2650 BC
Sale - Cypremont

1550 - 850 BC
Teche

850 BC - 950 AD
St. Bernard

950 - 1650 AD
Lafourche

1200 - 1450 AD
Plaquemine

1400 > AD
Belize
Current Sedimentation

Gulf of Mexico

2650 BC
Sale - Cypremont

1550 - 850 BC
Teche

850 BC - 950 AD
St. Bernard

950 - 1650 AD
Lafourche

1200 - 1450 AD
Plaquemines

1400 > AD
Belize
Mississippi River Levee Construction (ca.1900)

The Great Flood of 1927

- Most destructive river flood
- Over 700,000 people displaced
- 246 deaths
GEOGRAPHY AND EVOLUTION

Mississippi River & Tributaries
GEOGRAPHY AND EVOLUTION

The Louisiana Coast

1932-2000 >2000 sq miles lost
The Louisiana Coast
2000-2005 > 217 sq miles lost
GEOGRAPHY AND EVOLUTION

Dealing with Coastal Land Loss

Prepared by:
U.S. Geological Survey
National Wetlands Research Center
Lafayette, Louisiana
GEOGRAPHY AND EVOLUTION

Aggressive Efforts are Needed

Landsat Thematic Mapper 5 Hurricane Katrina Comparison Images
Upper Breton Sound Area

April 16, 2004

September 7, 2005

Lake Leary

Caernarvon
ASSETS

Total Combined Truck Flows
New York, NY

Total Combined Truck Flows
Los Angeles, CA

ASSETS

Total Combined Truck Flows
Houston, TX

Total Combined Truck Flows
New Orleans, LA
Total Combined Truck Flows
Louisiana
Tonnage on Domestic Waterway Network

Note: Figure shows dock-to-dock annual shipment volumes (tonnages) by 4-digit Performance Monitoring System Commodity Class and annual shipment volumes (tonnages, dollar-valued trades) to and from U.S. seaports and foreign countries, broken down by 4-digit Harmonized Schedule Commodity Codes.

Data From U.S. Army Corps of Engineers

Annual Tons of Freight by Water
Offshore oil and gas pipelines in Gulf of Mexico

LA ranks 1st in crude oil production and 2nd in natural gas production.
Nation’s Top Fishing Ports

Commercial Fishery Landings at Major U.S. Ports 2007

Legend
Millions of pounds
- 10
- 50
- 100
- 500
- 1,000

Source: NOAA Fisheries 2008
Levees

Impact and Effect

Channeling of sediment deposits into Gulf of Mexico instead of coastal wetlands

causing subsidence and erosion and thus

Less Protection from Storms
Impact and Effect

- Destroy wetlands directly
- Spoil banks cut off natural water supply to wetlands

causing salt water intrusion and erosion
Invasive Species

Impact and Effect

Damage marshes by burrowing and feeding on vegetation causing erosion
**Relative Sea Level Rise**

**Impact and Effect**

Inundation of wetlands and other low-lying lands causing erosion, intensified flooding and salt-water intrusion.
Relative Sea Level Rise

1 – 3 foot rise

A 3-foot rise would leave New Orleans and many other cities surrounded by the Gulf, protected only by levees. Even Baton Rouge would have to worry about the encroaching sea.
Hurricanes

Hurricane Paths Along The Central Gulf Coast 1831-1992

- BETSY - SEPT. 1965
- CAMILLE - AUG. 1969
- BANE - SEPT. 1977
- BOB - JULY 1979
- FREDERICK - SEPT. 1979
- DANNY - AUG. 1985
- ELENA - AUG.-SEPT. 1985
- JUAN - OCT. 1985
- BONNIE - JUNE 1986
- ANDREW - AUG. 1992

CRITICAL PATH TO NEW ORLEANS
THREATS

Storm Surge

Inundation Potential

Note: This map was made using information from the SLOSH MOMs, which is a mosaic of numerous hypothetical scenarios. It should represent a worse case scenario of the storm surge. The initial tide level is started at 2.2 feet. It does not account for inland flooding due to heavy rainfall or the addition of waves on top of the storm surge.
Terrebonne Land/Water Change
1988-2005
Great Economic Loss

“Economic losses will increase by 50-65 percent in the 2030 timeframe driven by economic growth and subsidence, as well as the impacts of climate change.”

PLANNING IN LOUISIANA
Parish Planning Activities

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<th>Activity</th>
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<tr>
<td>Advanced Tools</td>
<td>10</td>
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</tbody>
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Municipal Capacity

Population of Louisiana Cities, Towns, and Villages

- < 5,000 Pop.: 21%
- > 5,000 Pop.: 79%

Population Loss Between 1990 - 2000

- Lost Population: 40%
- Did Not Lose Population: 60%
Louisiana Speaks Regional Plan

- 50-year guide for growth and development
- 35 coastal parishes
- Largest community outreach effort in U.S. History (27,000 citizens)
  - Surveys – 2,500+
  - Workshops – 1,000+
  - Regional Polling – 23,000+
- Engaged people in choices and consequences
Why Coastal Communities?

• Need more than just good evacuation plans
• Standard development practices aren’t appropriate in Louisiana’s Coastal Areas
• Need to develop best practices for coastal development that is designed for the geography, economy and culture of the coast
• Need to prepare against the various risks faced by our communities
Coastal Communities

Measures to prevent loss

- more investment in non-structural measures.
- Re-examine “permanent” vs. “temporary buildings in rural coastal areas.
- Adaptations to address near-term risks, and mitigation to address longer-term risks.
- Policy makers can and must take a leadership role in driving a coordinated response across individuals and sectors (ie. Development decisions)
Coastal Parishes

- Adopted Comp Plans
- Zoning
- Subdivision Regulations
- I-Codes Only
Coastal Best Practices

Local

National

International

Coastal Science & Engineering

Local & Regional Planning

Regulatory Structures & Systems

Landscape Architecture, Spatial & Geographic Systems
Looking to Others: Two Deltas
Spatial Planning Approach
Patterns of Land Development

Cultural Patterns
PATTERNS OF LAND DEVELOPMENT

Individual Property
Isle de Jean Charles, Louisiana
Biloxi-Chitimacha-Choctaw tribe

After decades of frequent flooding, water encroachment, and land subsidence, they faced the painful decision of whether to stay or go.
THREATS

Louisiana 2006

Red points represent 500 residents, distributed randomly within 2000 census block groups. Map by R. Campanella based on USGS, ESRI, and US Census data.

Future Louisiana

Solid gray color indicates all areas below one foot above sea level.

Future Challenge
“Deltas are the best places to live on earth... if you can deal with the water.”

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