

Visioning Sustainable and Resilient Regionally Integrated Infrastructure for Delivering Value on America's Energy Coast

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USACE, Galveston District (SWG)

- Chief of Engineer's Philosophy
- Civil works mission, geographic area of responsibility, and significance
- Strategy for delivering Value to the Nation (V2N)
- Coastal infrastructure system stressors and drivers
- Shared visioning for Sustainable and Resilient Regionally Integrated Infrastructure (SRRII)
- Leading change initiatives for organizational excellence to realize SRRII
- Value proposition for stakeholder partnering



Chiefs' Vision: Building Our House in the "Federal / National" Community

"Strengthen the Foundation" "What" + "How"

"Doing the routine things to an exceptionally high standard, routinely."

"Deliver the Program" "What" ⇔ "How"

"The most strategic thing we can do is deliver our mission . . . keep our promises."

"Achieve our Vision" "How" ⇔ "What"

Troop leading ourselves into an unknowable future . . . together.

Vision Why + Who + Where

Our "compelling, better tomorrow."



Deliver the Program

SWG: Mission First, Teamwork, People Always,
Constant Improvement

Achieve our Vision

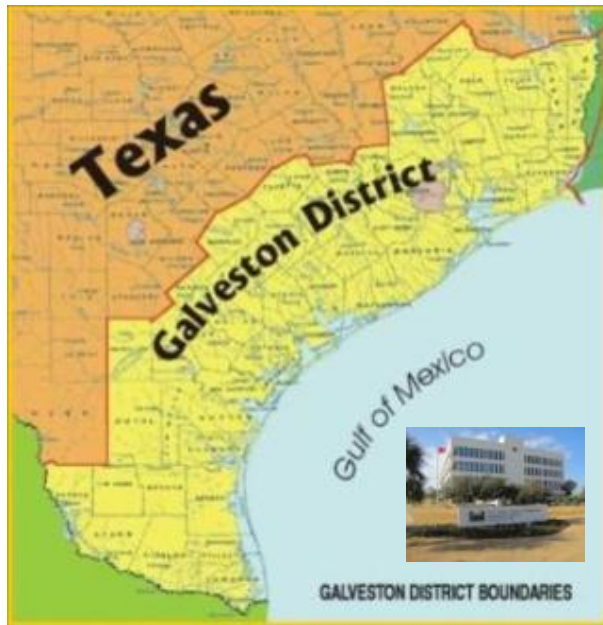
Strengthen the Foundation

SWG: People Always, Constant Improvement,
Teamwork, Mission First

Vision: Engineering Solutions to the
Nation's Toughest Problems

SWD Commanding General's Philosophy: Be Humble, Be Kind, Be Optimistic

USACE SWG Mission and Area of Responsibility 4



- Navigation
- Flood Risk Management
- Regulatory
- Ecosystem Restoration
- Emergency Management
- Interagency & International Support

- 50,000 square mile district boundary
- 28 ports handling 500+ M tons of commerce annually
- 1,000+ miles of channels
 - 750 miles shallow draft
 - 270 miles of deep draft
- 367 miles of Gulf coastline
- 30-40 M cubic yards/yr material dredged
- 16 Congressional districts
- 48 Texas counties
- 18 Coastal counties - bays / estuaries
- 9 watersheds
- 4 Louisiana parishes

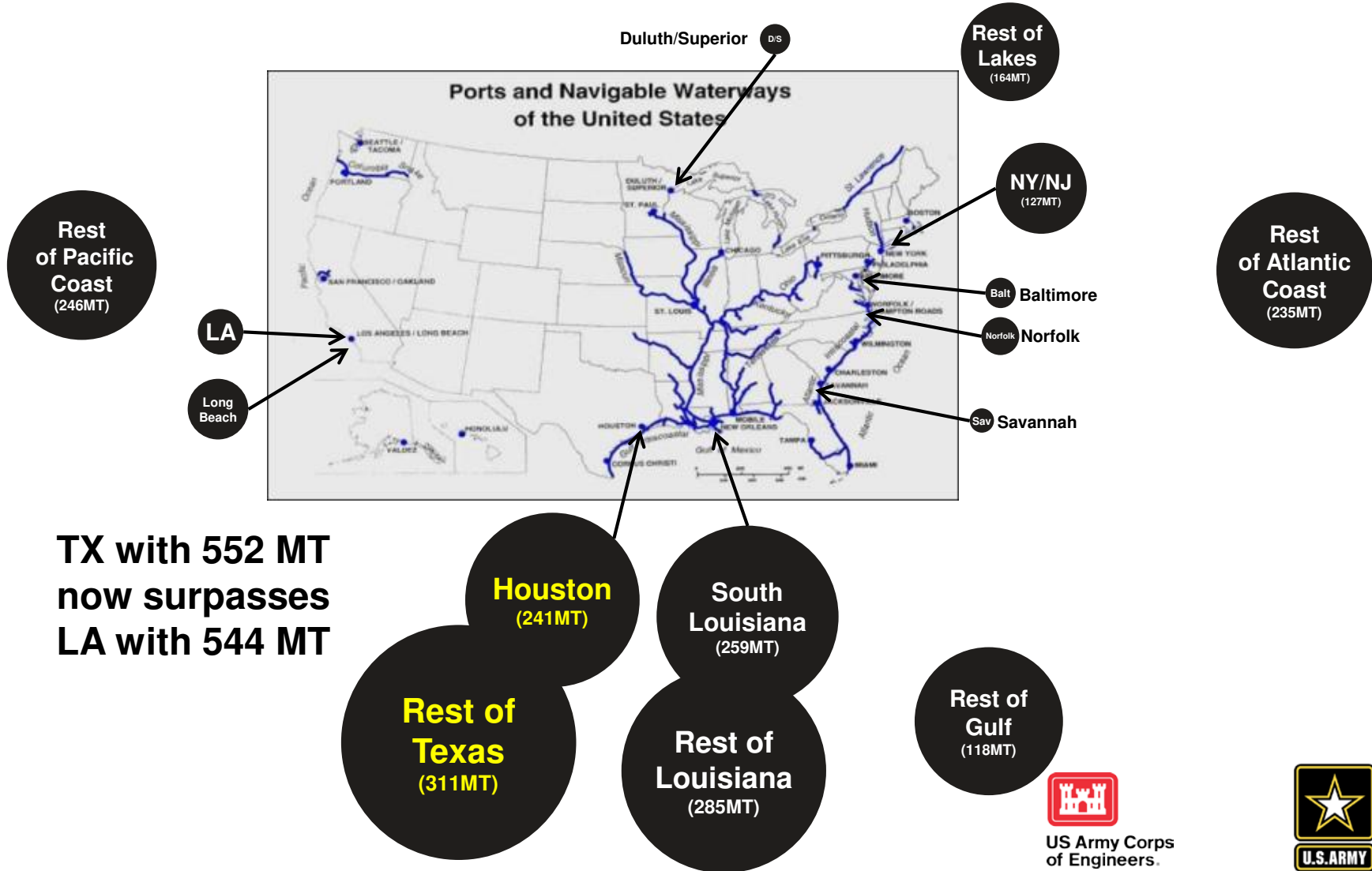


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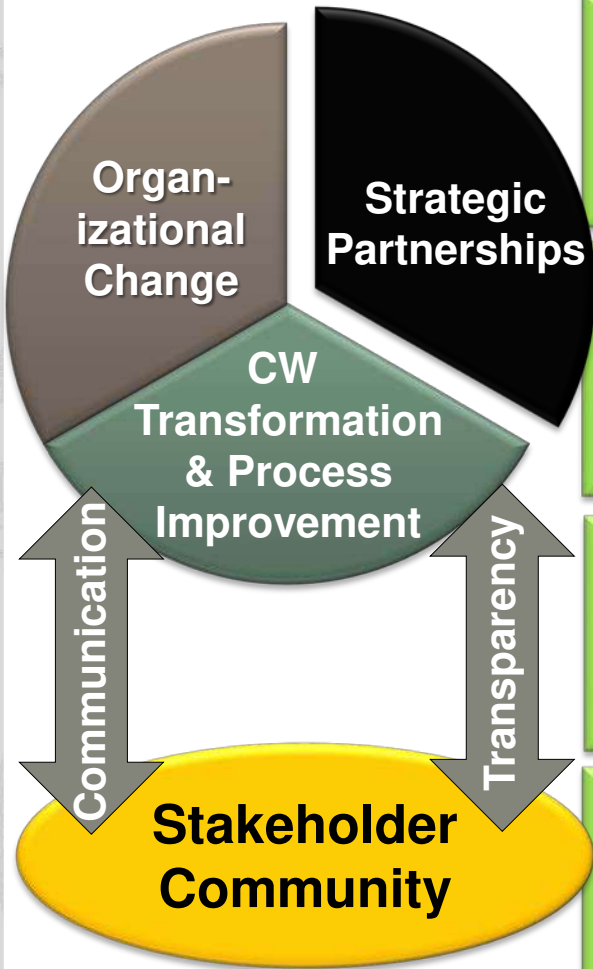
Significance of Navigation Commerce as a National Economic Driver

Data Source: USACE, Waterborne Commerce Statistics Center – 2015

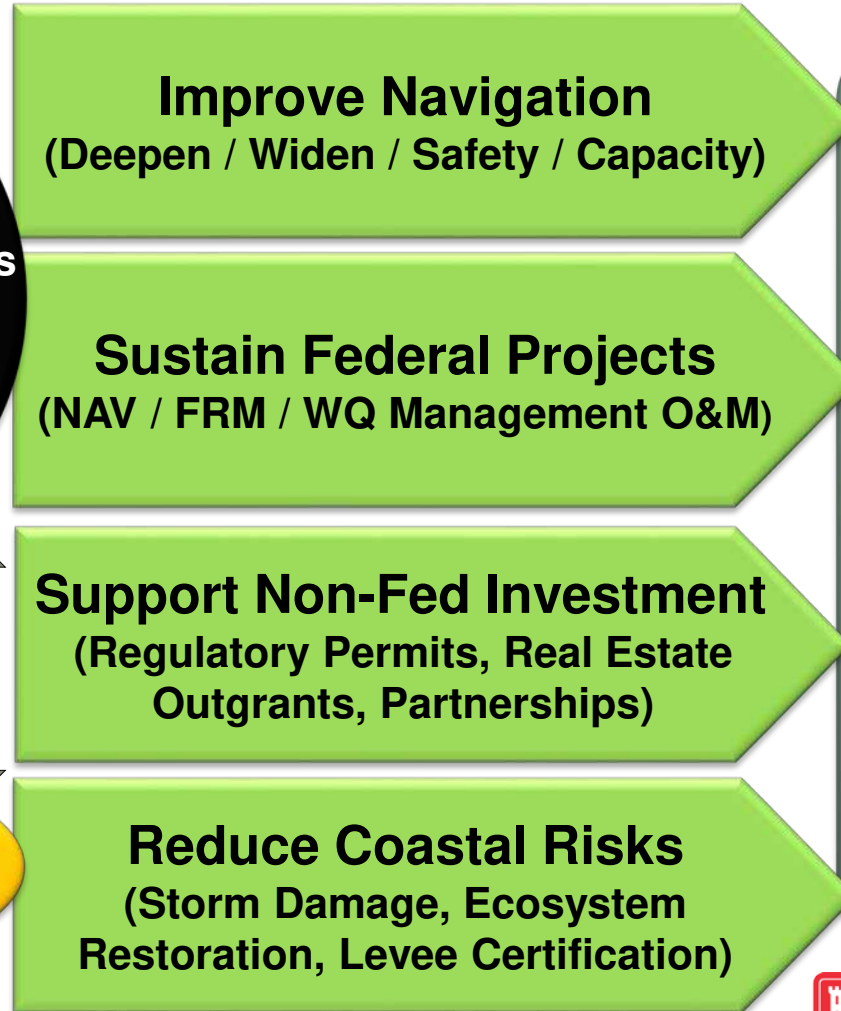


SWG Strategy for Delivering V2N

Maximizing Capital



Lines of Effort



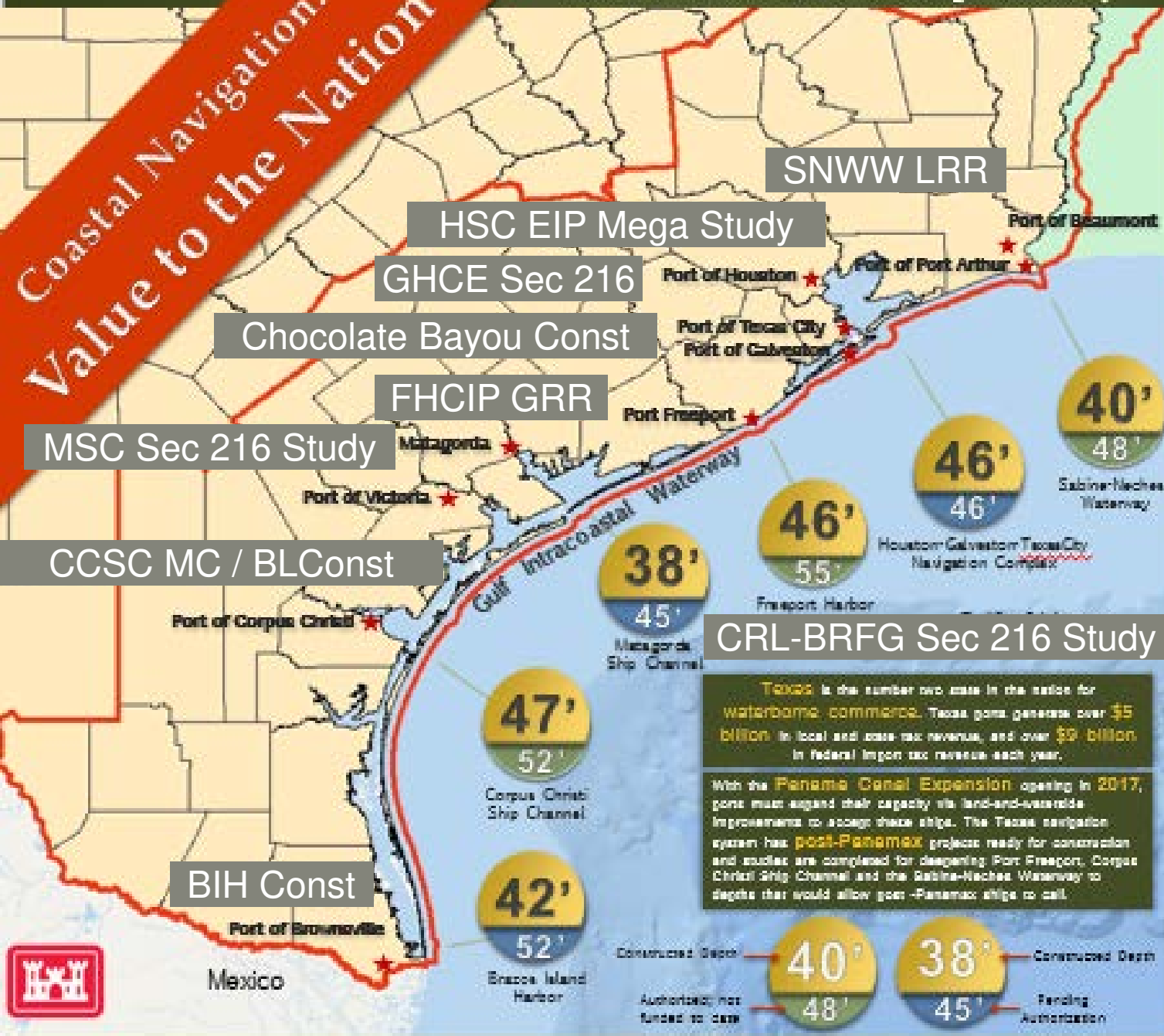
Future



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**Coastal Navigation:
Value to the Nation**



SNWW LRR

HSC EIP Mega Study

GHCE Sec 216

Chocolate Bayou Const

FHCIP GRR

MSC Sec 216 Study

CCSC MC / BLConst

CRL-BRFG Sec 216 Study

Texas is the number two state in the nation for waterborne commerce. Texas ports generate over \$5 billion in local and state tax revenue, and over \$9 billion in federal import tax revenue each year.

With the Panama Canal Expansion opening in 2017, ports must expand their capacity via land-and-water-side improvements to accept these ships. The Texas navigation system has post-Panamax projects ready for construction and studies are completed for deepening Port Freeport, Corpus Christi Ship Channel and the Sabine-Neches Waterway to depths that would allow post-Panamax ships to call.

Constructed Depth: 40', 38'

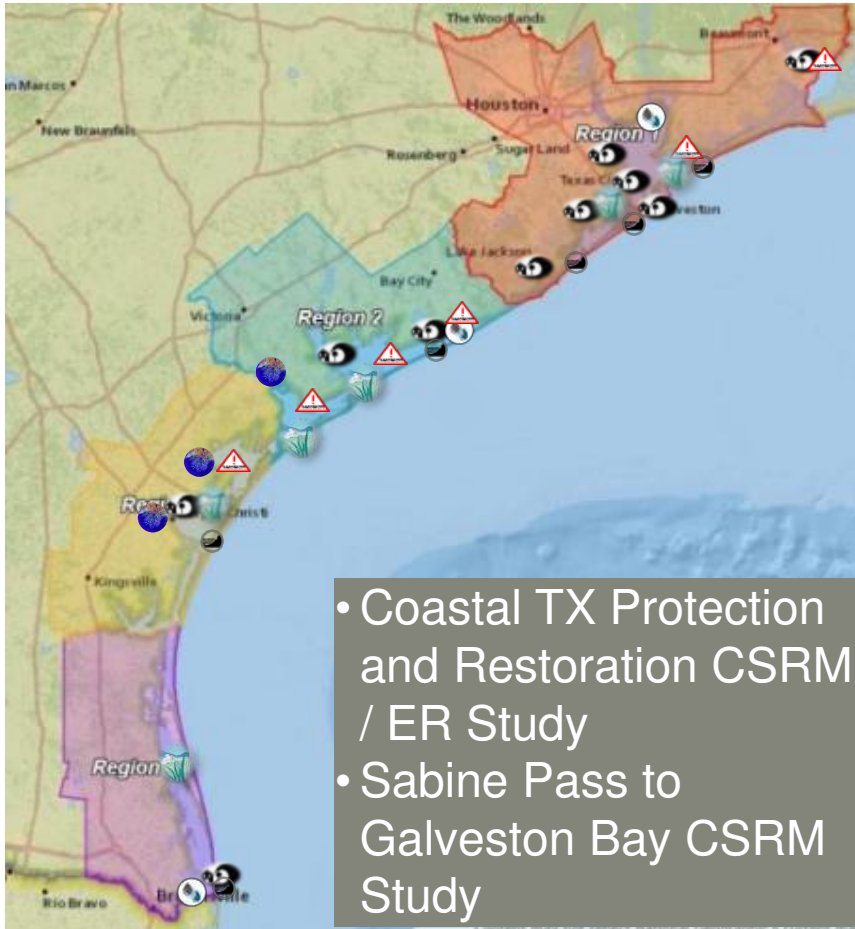
Authorized, not funded to date: 48', 45'

Pending Authorization: 46', 46'

- LEADING U.S. PORTS**
(2015 Tonnage)
- Houston #2 - 240.9 million tons
#1 Foreign Tonnage & #2 Total Tonnage
 - Beaumont #5 - 87.2 m.tons
#1 Military Port in World
 - Gulf Intracoastal Waterway (79 million tons - Texas portion)
#3 Inland Waterway
 - Corpus Christi #8 - 85.7 m.tons
America's Energy Gateway
 - Texas City #15 - 42.9 m.tons
Services Largest Petrochemical Complex
 - Port Arthur #19 - 25.8 m.tons
Vital Break-Bulk Port
 - Freeport #32 - 21.1 m.tons
Connecting Global Services Via Caribbean Relay Port
 - Matagorda to include Port of Port Lavaca and Port of Point Comfort #45 - 11.8 m. tons
Generates Annual Business Revenues of Nearly \$2 Billion
 - Galveston #51 - 10.4 m.tons
#4 Cruise Ship Port
 - Brownsville #66 - 7.7 m.tons
#1 Ship Recycling Port
 - Victoria (#70 - 6.7 m.tons)
#2 Shallow-Draft Port for Domestic Crude Petroleum



Addressing Problems and Opportunities in the Coastal Protection and Restoration Program



Economic damage from coastal storm surge



Inland shoreline erosion



Gulf shoreline erosion



Loss of T&E Critical Habitats (migratory bird habitat, critical T&E habitat, shellfish habitat)



Loss of Natural Delta Processes

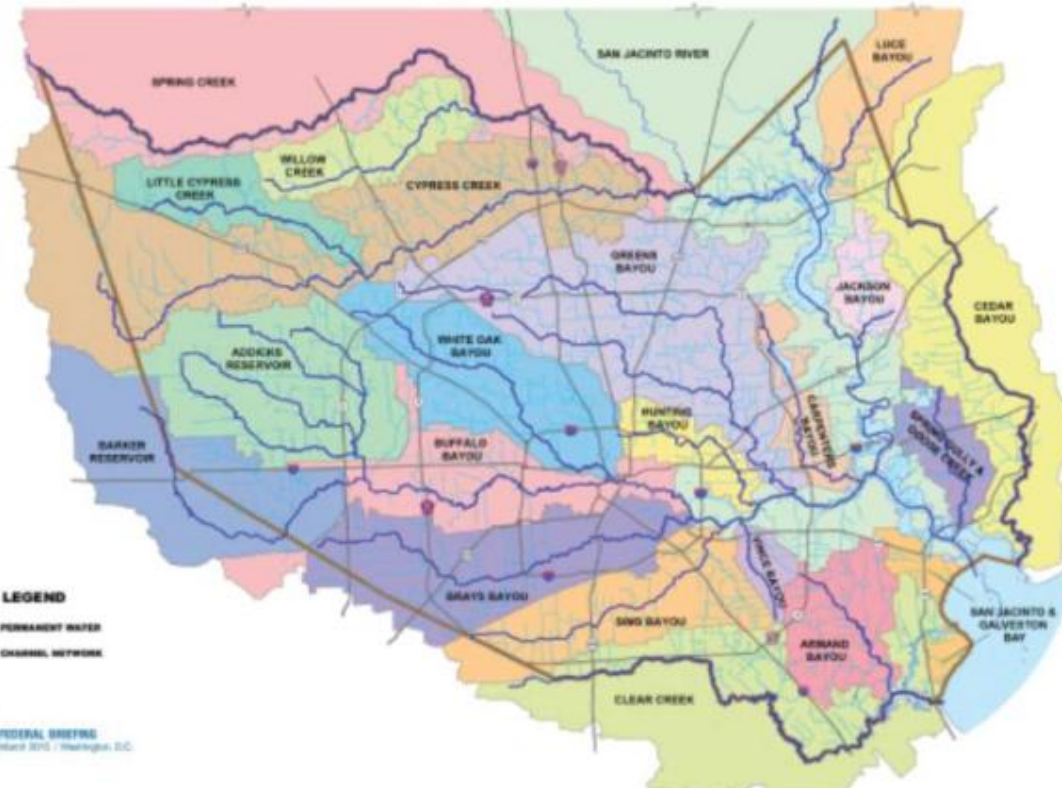


Disrupted Hydrology



Identifying Problems and Opportunities in the Watershed Flood Risk Management Program

- Metro Houston Regional Watershed Assessment
- Addicks & Barker Reservoirs System Study
- SE Texas Regional Watershed Assessment
- Metro Brownsville Regional Watershed Assessment



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Contributors to Civil Works Program Risks and Uncertainties

Stressors:

- Extreme storm water levels (rivers, coast)
- Dynamics of coastal shorelines, islands, wetlands, sediments, and debris
- Drought effects on water availability and quality
- Aging, outmoded, and/or exhausted infrastructure & equipment (e.g., locks, PAs, dredges)
- Program funding levels



Drivers:

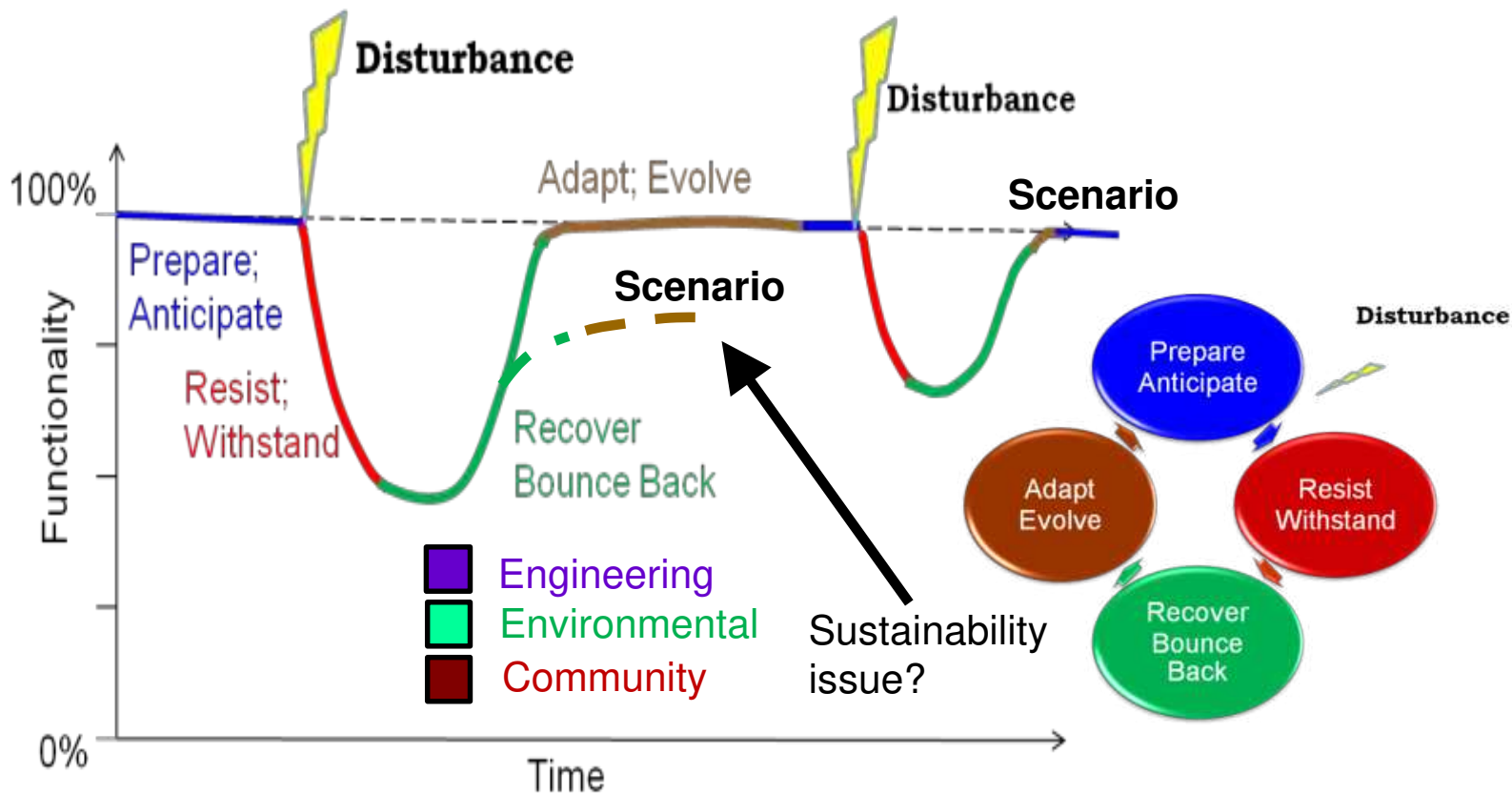
- Relative sea level change
- Changing legislation/policies
- Resource availability (e.g., energy, land)
- Development patterns/rates and modifications to natural systems



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Concepts of Resilience against Disturbances and System Sustainability



Goal is for Texas Coast to be:

- A resilient community with healthy ecosystem
- Positioned for sustainable economic growth
- Supported by strategic partnerships that support Non-Federal investment



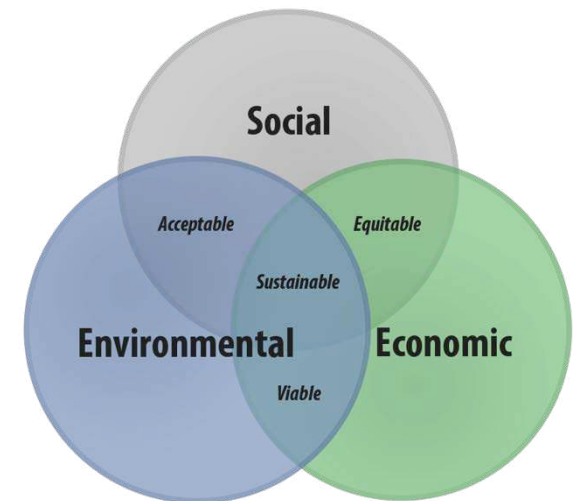
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...the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental and social benefits through collaborative processes.

Key Elements:

- Science and engineering that produces operational efficiencies
- Use of natural processes to maximum benefit
- Broadening and extending benefits provided by projects
- Science-based collaborative processes to organize and focus interests, stakeholders, and partners



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Natural and Nature Based Features (NNBFs) in Water Infrastructure Improvements for the Nation (WIIN) Act

SEC. 1184. CONSIDERATION OF MEASURES.

(a) DEFINITIONS.—In this section, the following definitions apply:

(1) NATURAL FEATURE.—The term “natural feature” means a feature that is created through the action of physical, geological, biological, and chemical processes over time.

(2) NATURE-BASED FEATURE.—The term “nature-based feature” means a feature that is created by human design, engineering, and construction to provide risk reduction in coastal areas by acting in concert with natural processes.



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Integration of NNBFs with Traditional Engineered Features Water Infrastructure Improvements for the Nation (WIIN) Act

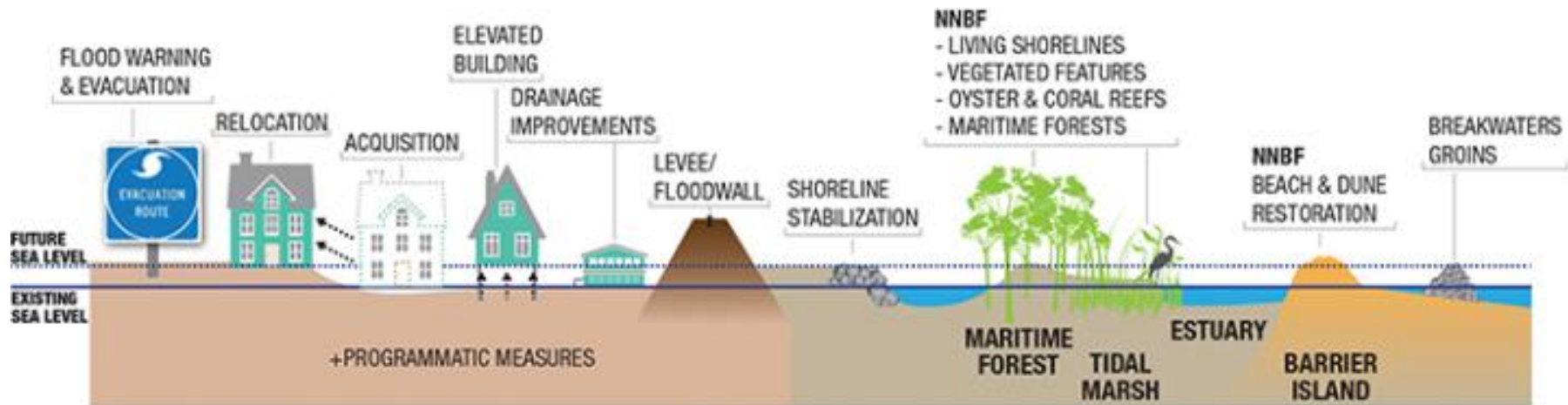
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SEC. 1184. CONSIDERATION OF MEASURES. (continued)

(b) REQUIREMENT.—In studying the feasibility of projects for flood risk management, hurricane and storm damage reduction, and ecosystem restoration the Secretary shall, with the consent of the non-Federal sponsor of the feasibility study, consider, as appropriate—

- (1) natural features; (2) nature-based features;
- (3) nonstructural measures; and (4) structural measures.

(c) REPORT TO CONGRESS.— Excerpted



Multiple Lines of Defense (MLD)



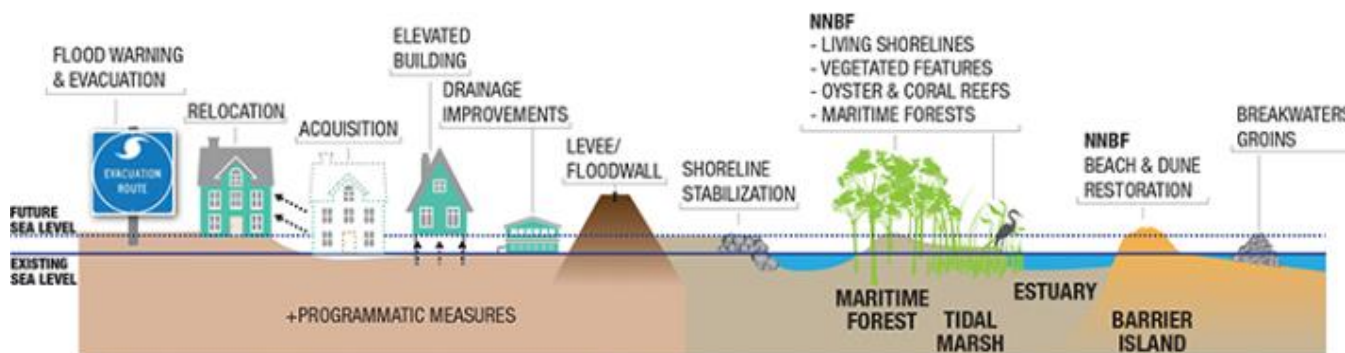
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SRRII Shared Visioning

- Interconnected portfolio of partnered projects across business lines.
- Incorporates Regional Sediment Management (RSM), Engineering with Nature (EWN), Natural and Nature Based Features (NNBF), and Multiple Lines of Defense (MLD).
- Nested/networked infrastructure interoperating regionally to deliver broad spectrum of enduring economic, environmental, and social values.
- Value proposition for pursuit via inter-operational synergies:
 - Transformed organizational technical, business, and management processes,
 - High performing workforce culture, and
 - Parties who understand, contribute to, and value the concepts and support infusion into practice.



Leading Change Initiatives for Organizational Excellence to Realize SRRII

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- **SRRII** shared visioning is the focal point
- **Enhanced stakeholder engagement** for closer V2N working relationships that support non-Federal investment
- **Active Project Management (APM) and Workload / Workforce (WL/WF) Management** for confident delivery on commitments
- **Evolved governance and Vertical Team (VT) integration** for increased organizational efficiency in mission execution
- **Knowledge management and continuous process improvement** for complete/efficient records continuity/recall, discovery learning, and improving competencies/capabilities
- **Energizing the workforce** for improved career satisfaction and productivity



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Enhancing Strategic Partnerships for Delivering V2N

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- Texas coast shared visioning for alignment of agency values toward mutually desired outcomes
 - Vibrant regional and national economy
 - Resilient and sustainable communities
 - Healthy, diverse, and functional ecosystems
- Driving progress through regularly-engaged partnering and governance
 - Multi-agency participation (Local, State, Federal)
 - Shared vision steering
 - Identifying / resolving barriers to progress
- Team building, collaboration, and unified communications
 - Articulating challenges and successes
 - Building stakeholder awareness and support for action
 - Supporting elected officials with needed information

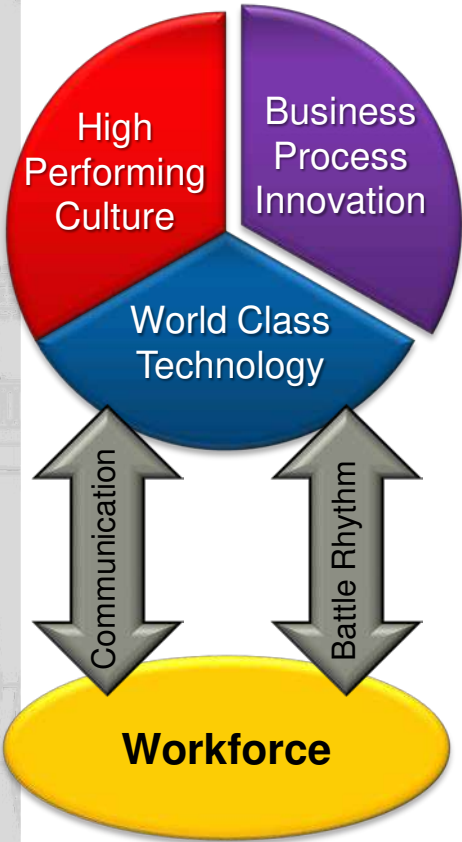


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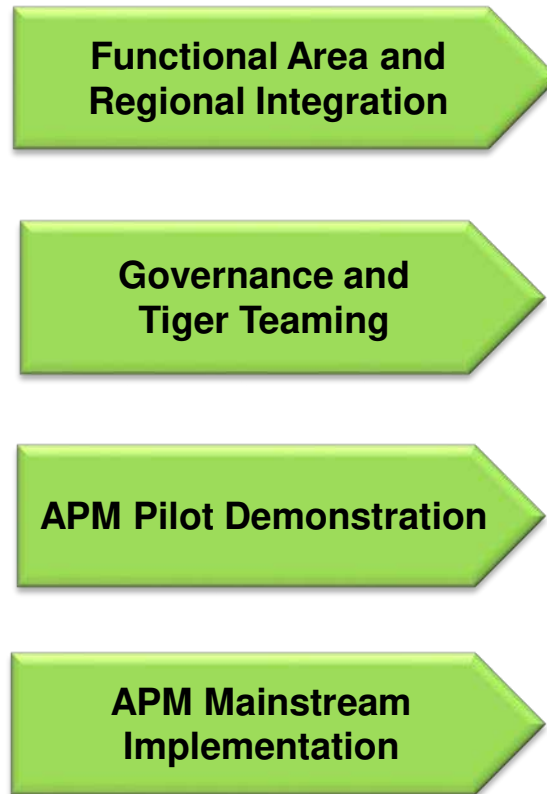
APM and WL/WF Management Strategy

Means

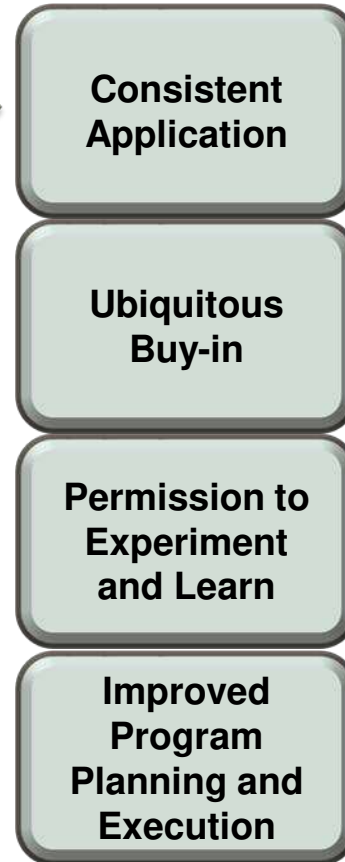


Ways

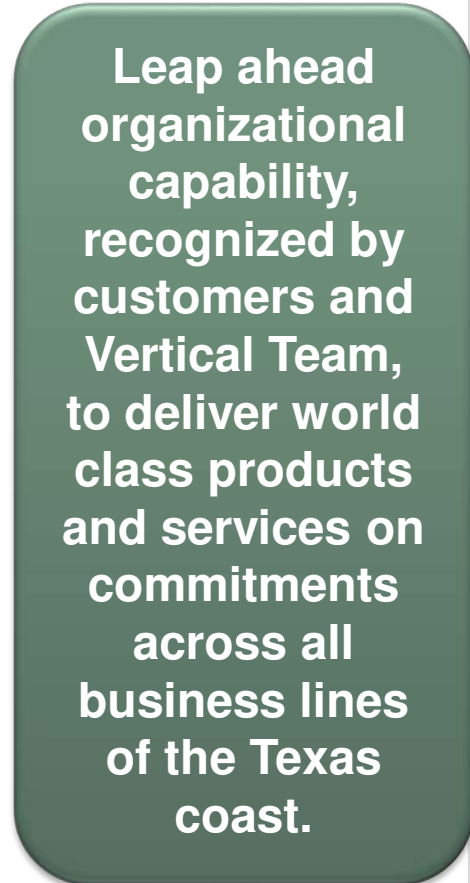
Lines of Effort



Desired Outcomes



End State



Evolved Governance and VT Integration

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- District governance of strategic direction, functional integration, program execution, business management, resource management, and workforce management
- Bi-weekly VT synchronization meetings
- Mega Study and Mega Project tiered governance organizational model



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“Manage”

- Plan
- Execute
- Adapt

“Intersect”

- Infuse new knowledge
- Tech transfer enterprise tools
- Pilot-demo & prove innovations
- Improve on-the-job workforce skills

“Shape”

- Enhance strategic partnerships
- Address policy and authority “conundrums”
- Revolutionize business practices
- Evolve science to close priority knowledge gaps
- Co-develop / apply enabling technologies

“Analyze”

- Objectively monitor performance
- Identify key uncertainties, inefficiencies, and barriers to decision making

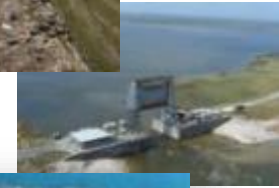
Knowledge Management and Continuous Process Improvement



Coastal Science and Engineering Collaborative (CSEC) Objectives

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- Transfer new science into practice faster
 - Deliver science and engineering to improve coastal project life cycle systems performance and cost
- Develop business collaboratively
 - Bring together capabilities, resources, and funding from multiple partners
 - Derive overall greater value than could be achieved separately
- Link academics to practice
 - Student learning experiences
 - Cultivate recruiting opportunities



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Workforce Management Strategy

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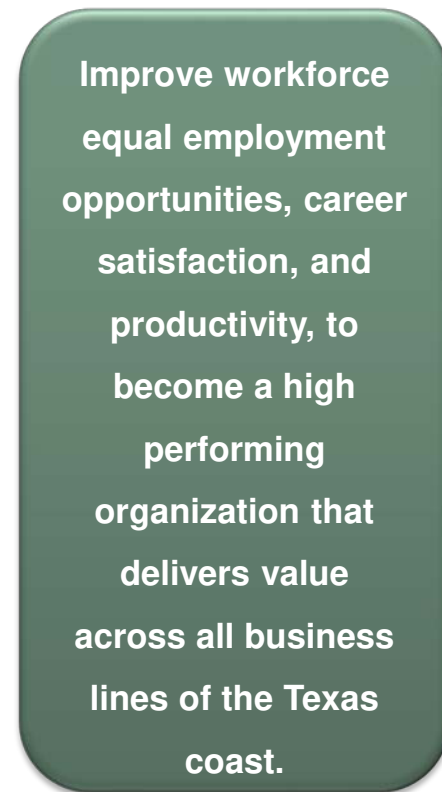
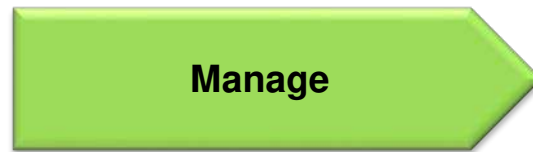
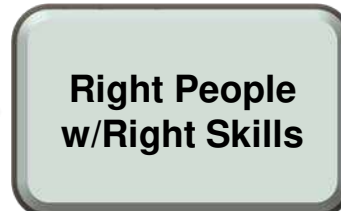
Means

Ways

Desired Outcomes

End State

Lines of Effort



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- ***Vibrant regional economy*** driving need for ***resilient coastal communities*** and ***healthy ecosystem*** on America's Energy Coast
- ***Increasing partnerships*** across navigation, coastal storm and flood risk management, and ecosystem restoration business lines
- Addressing authority, policy, resourcing, and business process challenges with focus on ***Strengthening the Foundation***
- Existing and new authorities for studies and projects to derive V2N through ***Delivering the Program***
- Compelling, sustainable budgets and partnering to ***Achieve the Vision***



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