Meeting begins at 1:30 pm

01

Please mute your mics

02

Please use the raise hand option to be recognized during discussion

03

Please state your name and organization after being recognized

04

The Q&A feature can be used to submit questions during presentations


Greater Houston Freight Committee


April 18, 2024

Regional Collaboration • Transportation Planning • Multimodal Mobility

Houston-Galveston Area Council

April 18th Agenda

- Opening and Welcome
- Texas Statewide Resiliency Plan
- Port of Houston Sustainability Initiatives
- Houston Truck Parking Study
- Announcements
- Adjourn

Texas Statewide Resiliency Plan

- Presenter: Shirley Li, Texas Department of Transportation

Agenda

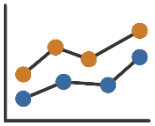
1. Overview of Statewide Resiliency Plan
2. Overview of Freight and Supply Chain Resilience Plan
3. Questions and Discussion

Texas Statewide Resiliency Plan

Greater Houston Freight Committee Meeting

April 4, 2024

Statewide Resiliency Plan purpose is to…



Evaluate data on current and future opportunities to identify vulnerabilities, gaps, needs, and opportunities

Develop strategies and measures to improve transportation resilience and mainstream resilience in operations, plans, and projects with a focus on TxDOT facilities

Build a framework and partnerships to support preparing for and recovering from disruptors

Why now?

TxDOT recognizes the need to become more resilient to climate-related and humanmade disruptors.

TxDOT initiated the SRP *before* the Bipartisan Infrastructure Law (BIL) created the PROTECT Program, which incentivizes state DOTs to create Resilience Improvement Plans (RIPs).

The SRP goes above and beyond the requirements for a RIP.

What is the Statewide Resiliency Plan?

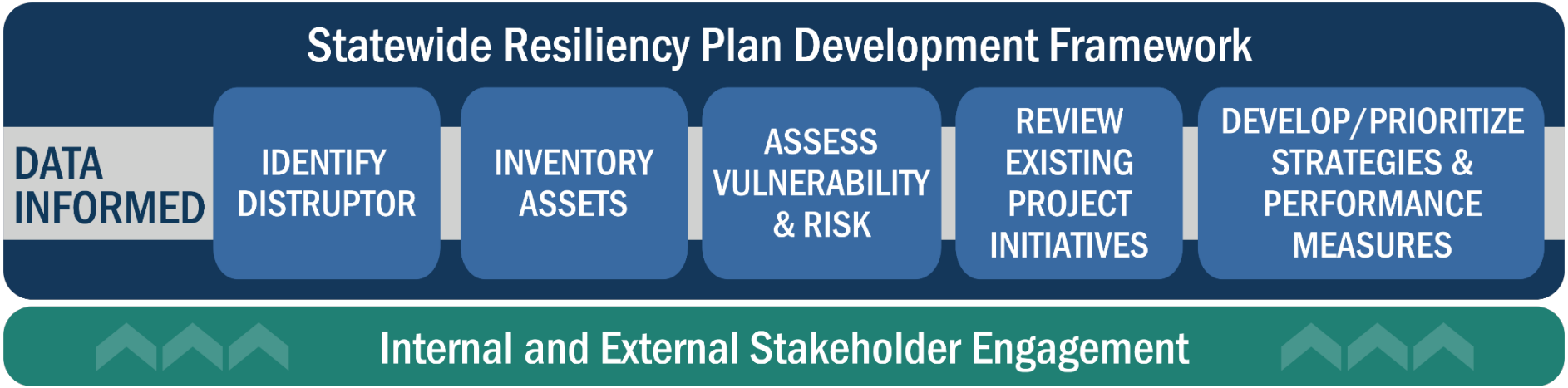
The SRP is:

- ☑ High-level first pass to assess TxDOT transportation system vulnerabilities
- ☑ Actions/strategies to help improve the resiliency of TxDOT's most vulnerable assets
- ☑ Specific to TxDOT transportation assets

The SRP *is not*:

- ✖ An emergency preparedness plan
- ✖ A detailed action plan to improve resiliency for individual cities
- ✖ An assessment of vulnerability more broadly

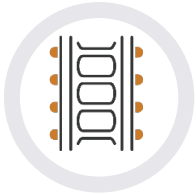
The SRP Framework



Inventory Assets

Identify and map transportation assets statewide

ROADWAYS



RAILWAYS

MARITIME PORTS

AIRPORTS

BRIDGES/ CULVERTS

BORDER CROSSINGS

TRANSIT STATIONS

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

PEDESTRIAN AND BICYCLE LANES

MAINTENANCE FACILITIES

IDENTIFY DISRUPTORS | **INVENTORY ASSETS** | ASSESS VULNERABILITY + RISK | REVIEW EXISTING PROJECTS | DEVELOP/PRIORITIZE STRATEGIES

Identify Disruptors

Consider historical trends and future projections of disruptors affecting TxDOT transportation

Key Disruptors

EXTREME HEAT

EXTREME COLD

INLAND FLOODING

COASTAL FLOODING

HURRICANE

WILDFIRE

DROUGHT

HUMANMADE*

*Humanmade includes social unrest, cyberattack, physical damage, etc.

IDENTIFY DISRUPTORS | INVENTORY ASSETS | ASSESS VULNERABILITY + RISK | REVIEW EXISTING PROJECTS | DEVELOP/PRIORITIZE STRATEGIES

Internal and External Stakeholder Engagement

Ensures that multimodal resilience needs across the state are incorporated into the Statewide Resiliency Plan.

Resiliency Steering Committee

- TxDOT District Representatives
- TxDOT Division Representatives

Internal and External Stakeholders

- TxDOT Districts & Divisions
- Cities/Counties
- Metropolitan Planning Organizations
- Academics
- State Government Agencies
- Federal Agencies
- Trucking and Industrial Associates
- Transportation Industry Stakeholders
- Non-Profits and NGOs

Coordination with Other Planning Efforts

- Statewide Long-Range Transportation Plan
- Statewide Active Transportation Plan
- Statewide Multimodal Transit Plan
- Freight Resilience Plan

Internal and External Stakeholder Engagement

Resiliency Steering Committee	Internal and External Stakeholders	Coordination with Other Planning Efforts
• **5** RSC meetings • Deliverables Review	• **40** Interviews • **12** Workshops • Data collection • Final draft review	• **10+** Coordination meetings • **10+** Data collection outreach meetings

Project Schedule

DECEMBER 2022
Statewide Resiliency Plan Kickoff

EARLY 2023
Build asset inventory, map current & future disruptors

EARLY FALL 2023
Complete vulnerability assessment

We Are Here

SPRING 2024
Coordinate with SLRTP for integration

SPRING 2023
Begin stakeholder engagement

FALL 2023
Review existing planned projects

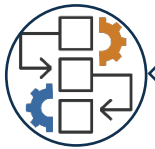
EARLY 2024
Develop resilience strategies

SUMMER 2024
Finalize Statewide Resiliency Plan

Statewide Resiliency Plan Implementation

Stakeholder Engagement

Next Steps



Finalize strategies and performance measures for plan integration

Create list of Resilience Improvement Projects

Finalize Vulnerability Assessment Dashboard

Identify next step implementation

Question

- What are some of the strategies you have been practicing to combat the resilience disruptions?
- What performance measures have you been using to tracking your resilience performance?

Thank You

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TEXAS FREIGHT & SUPPLY CHAIN RESILIENCY PLAN

Greater Houston Freight Committee Meeting

April 18, 2024

What is Freight Resiliency?

CURRENT FRP WORKING DEFINITION

Freight Resilience *is the ability of Texas's freight system to reliably operate and quickly recover from diverse disruptions. It encompasses robust infrastructure, effective risk management, and adaptive operational strategies to minimize disruptions to the state's critical supply chains.*

Key Components of Freight Resiliency

- Robust Infrastructure
- Operational Flexibility
- Effective Risk Management
- Strategic Planning
- Stakeholder Collaboration
- Leveraging Technology

Why a Freight and Supply Chain Resiliency Plan?

Texas residents and businesses experience many types of disruptions:

- Droughts
- Wildfires
- Floods
- Hurricanes
- Winter storms
- Tornadoes
- Pandemics
- Cyber attacks
- Border crossing disturbances
- Geopolitical events on global scale

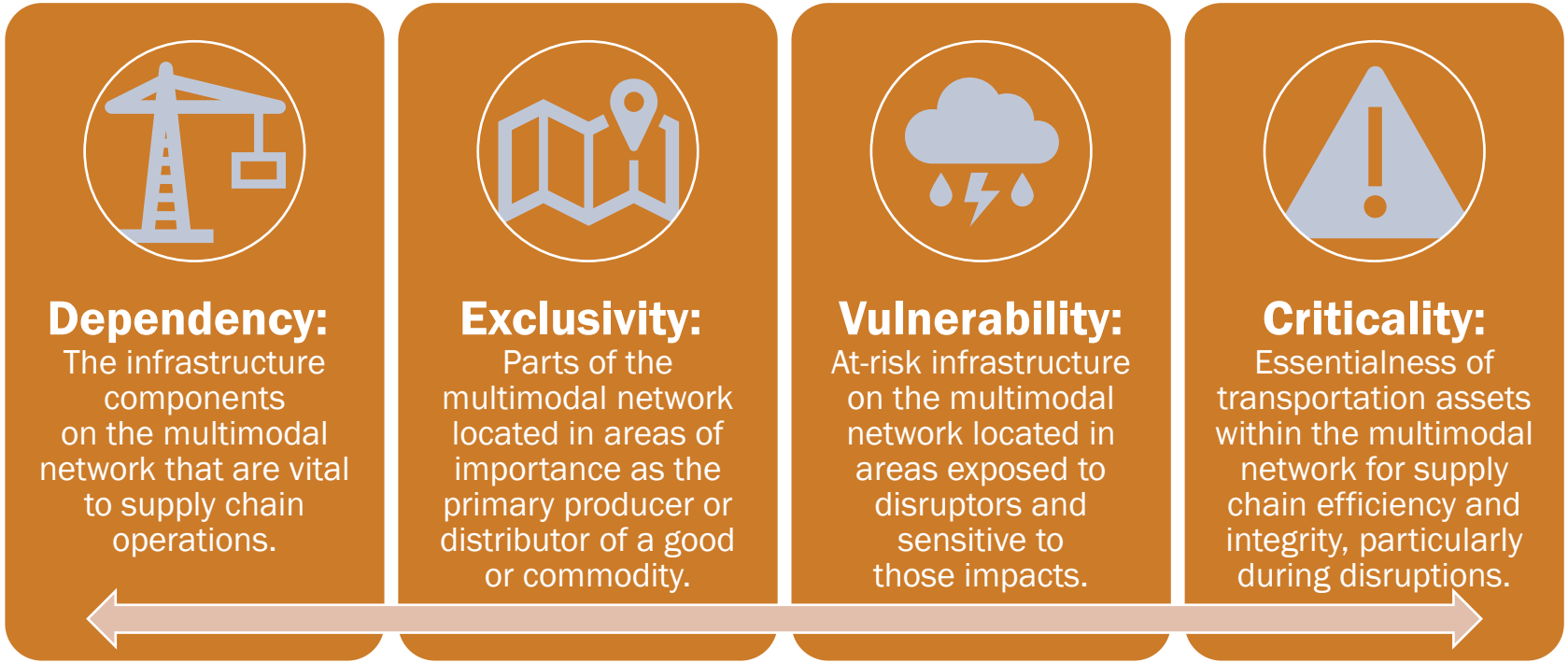
Mitigation strategies enhance pre-, during-, and post- event actions that reduce impacts

Supply chain resiliency represents a key competitive factor for industry

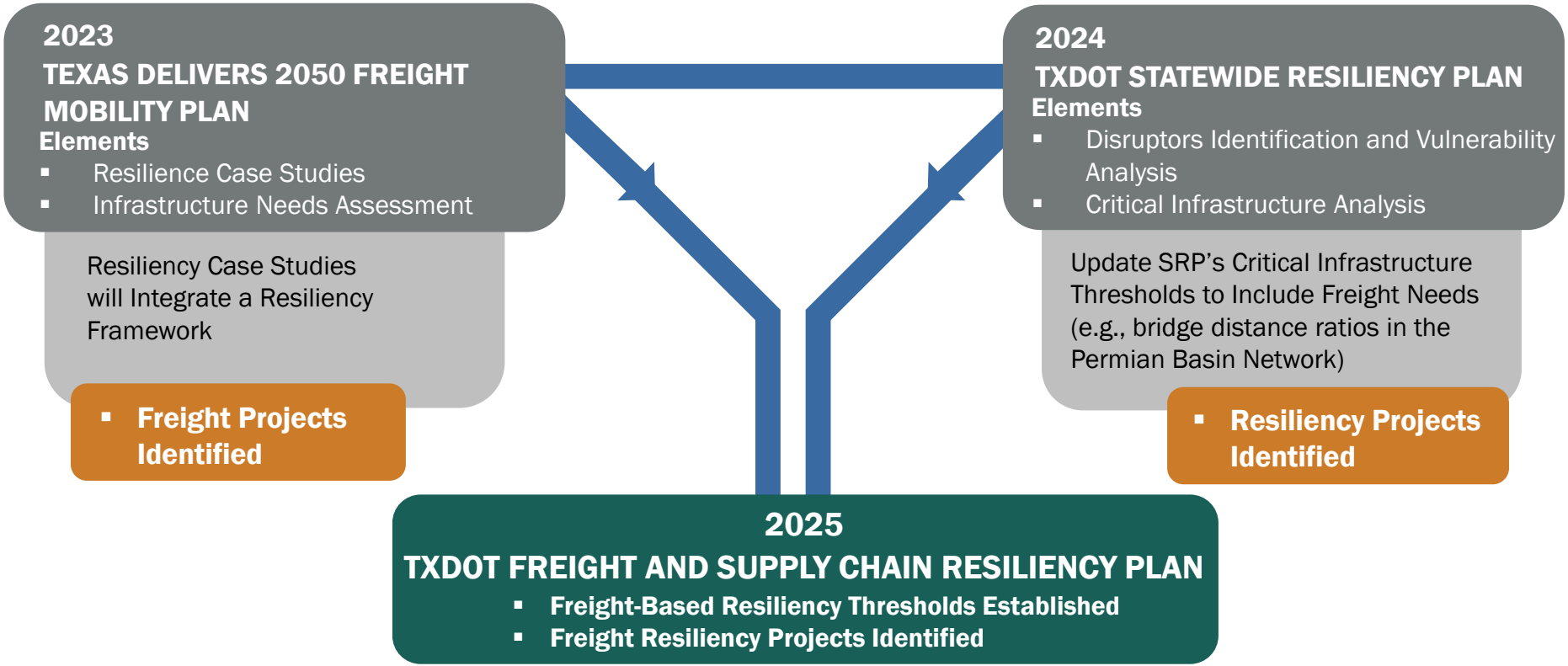
A ***Freight Resiliency Plan (FRP)*** will:

- Strengthen the Texas economy
- Enhance the quality of life for residents and visitors
- Prepare the state for new growth opportunities

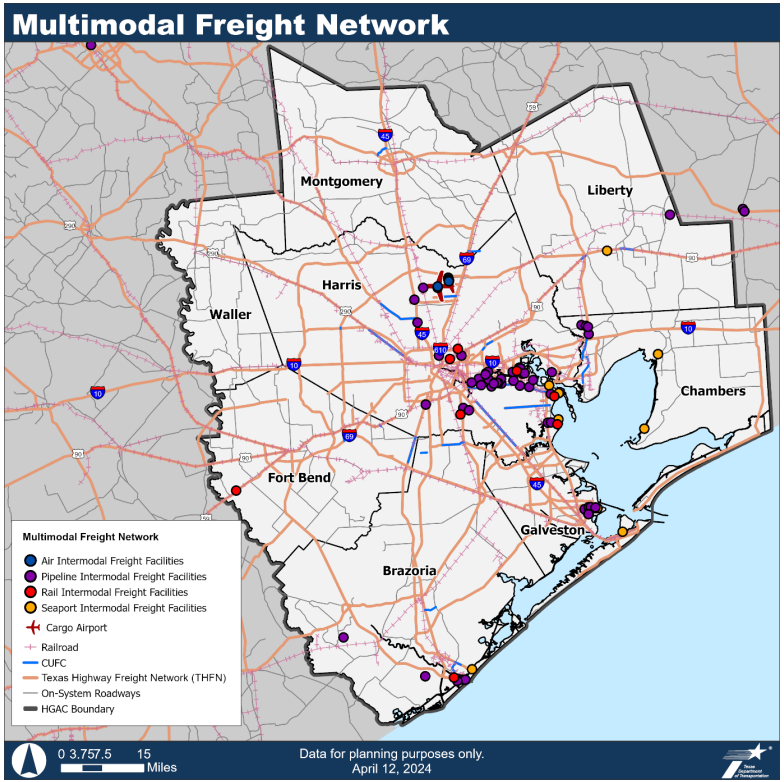
Key Definitions in the FRP Resiliency Framework



Freight & Supply Chain Resiliency Planning Alignment Framework



At-a-Glance: Multimodal Freight Network in H-GAC Region

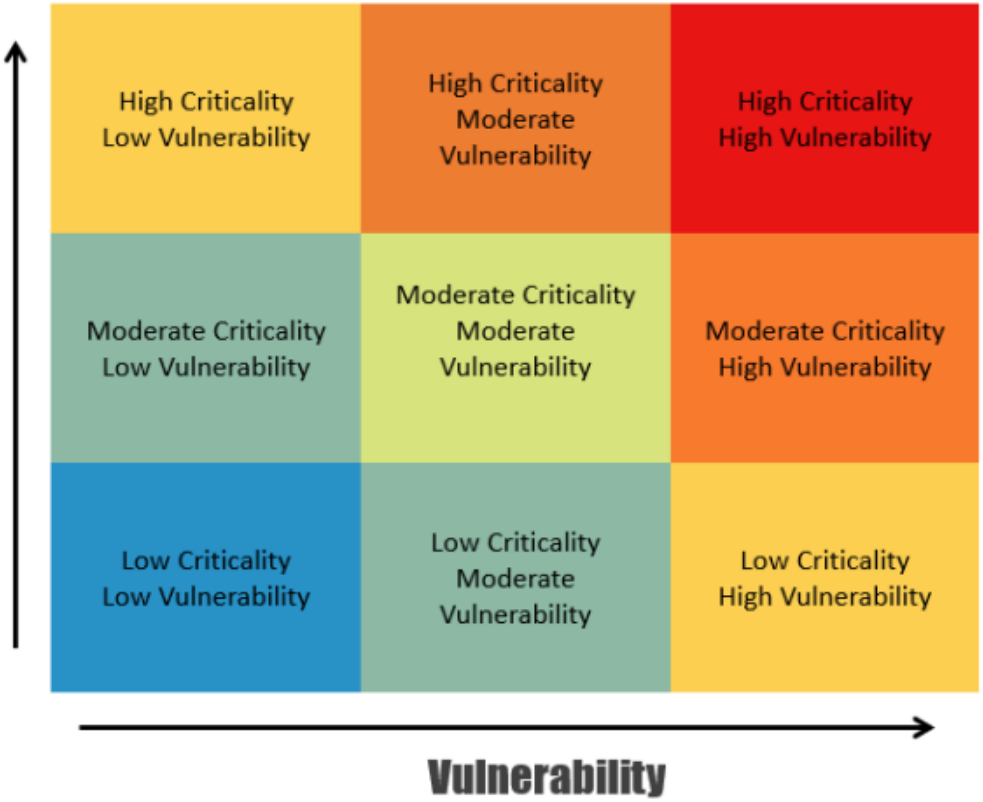


Freight Infrastructure

- *1,669 miles on the Texas Highway Freight Network (THFN)*
- *1,649 miles of freight rail*
- *One (1) major cargo-handling airport: George Bush Intercontinental Airport*
- *Eight (8) major intermodal rail facilities*
- *1,675 at-grade highway-rail crossings*
- *754 miles of petroleum pipelines*
- *802 miles of crude oil pipelines*
- *67 truck parking sites with 3,631 spaces*

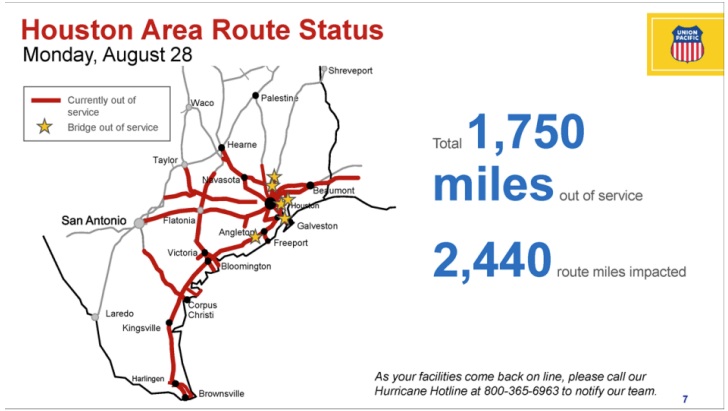
H-GAC Regional Resilience Indicator Methodology Informs the FRP

- H-GAC resilience methodology accounts for
  - Criticality
  - Vulnerability
- The TxDOT FRP resilience methodology will include preparation, response, and recovery needs within vulnerability and criticality assessments across 5 key supply chains



Freight Resilience Considerations in the 2045 RTP

- 2045 RTP - Appendix J. Resilience
  - Immediate Duration of Harvey Impacts:
    - August 28 – September 22, 2017 UP Facilities Closed or Partially Closed



- 2045 RTP
  - Strategy 2: Maintain [Asset Management]]
    - Rehabilitation and Reconstruction of Roadway Pavements and Structures
    - **Infrastructure Resiliency**
    - Transit Facility State of Good Repair

FRP Project Outcomes

Awareness of the parts of the TMFN most at-risk to potential threats/disruptions

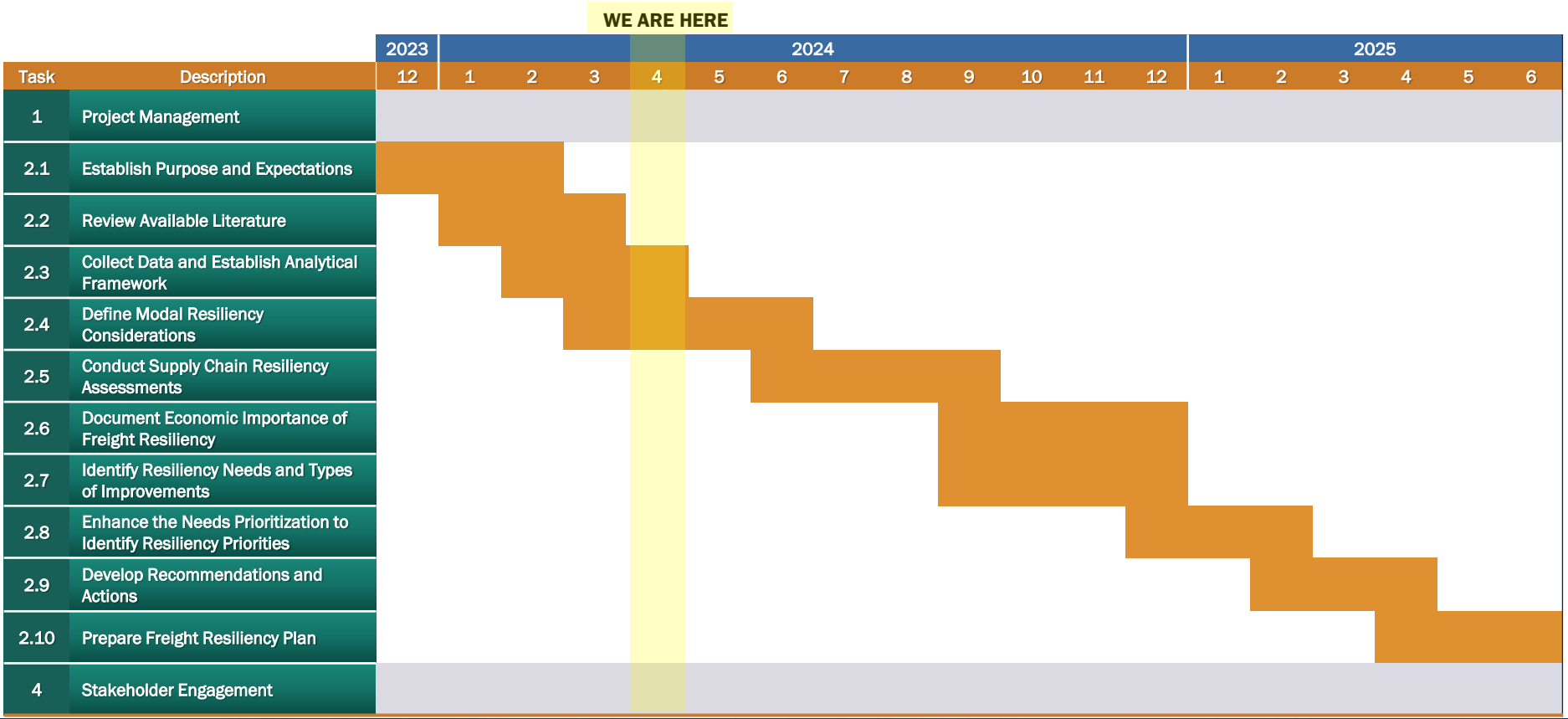
Understanding the impact of geopolitical events on Texas supply chains that operate in a global and interconnected economy

Understanding of the economic impacts to the State economy and industries from disruptions to supply chain operations (loss of economic output, wages, and trade)

Prioritization of the freight projects identified in the UTP for benefits or contributions towards increasing freight network resiliency

Freight-specific recommendations that address the needs identified throughout the Plan development

Project Schedule



Next Steps

- Define modal resiliency considerations
- Conduct supply chain resiliency assessments
- Meet with Multimodal Resiliency Working Group
- Continue stakeholder interviews

Thank You – FRP Team

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Houston Truck Parking Study

- Presenters: Brian Comer, HNTB

Southeast Texas Truck Parking Action Plan

H-GAC Greater Houston Freight Committee

April 18, 2024

Agenda

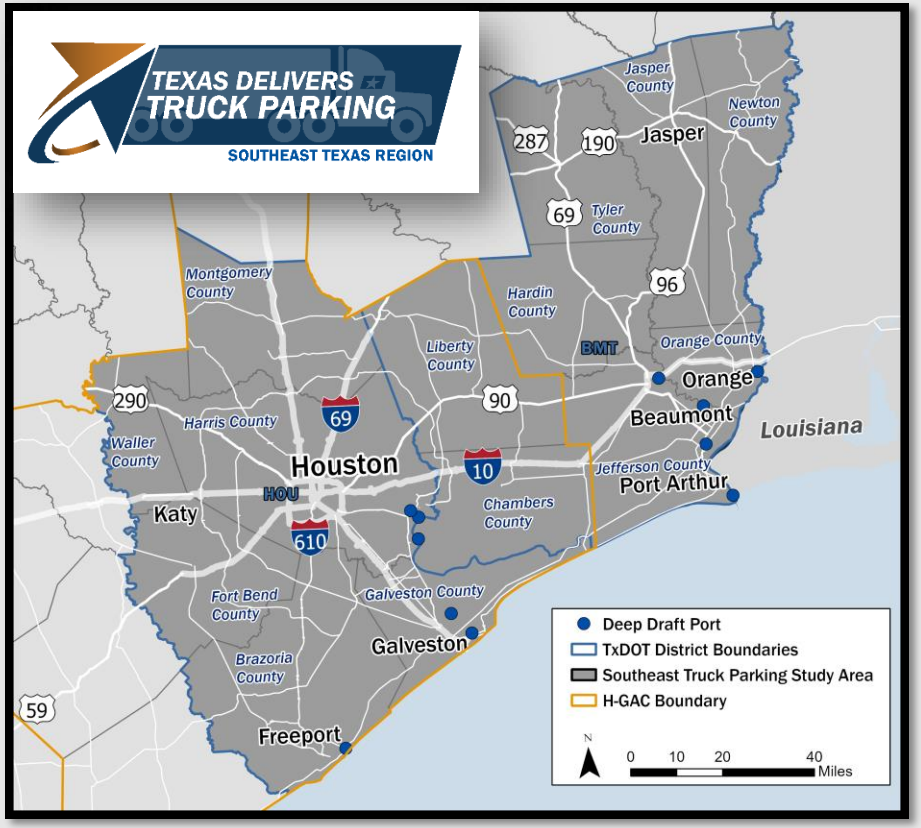
1. Overview of Truck Parking Action Plan
2. What we have heard to date
3. Potential projects, policies, and programs
4. Schedule and next steps

Overview of Truck Parking Action Plan

Southeast Texas Truck Parking Action Plan

- TxDOT Transportation Planning and Programming Division
  - Recommendation from the *2020 Statewide Truck Parking Study (TPS).*
  - TxDOT-led and supported local action plans.
  - Study Area: TxDOT Houston and Beaumont Districts, H-GAC, Southeast Texas Regional Planning Commission, and ports.
  - Stakeholder engagement.
  - Outcomes: conceptual action plans, preliminary cost estimates, short, mid, and long-term phasing concepts.

Summer 2024 – Final Action Plan



Why do truck drivers need to park?

Federal Hours of Service (HOS) regulations include strict provisions on driving limits and rest breaks, enforced by in-cab electronic logging devices.

Local community regulations/ordinances restrict parking locations and duration.

Types of Truck Parking

10-hour Rest

Challenge:

- Drivers on roads for days and weeks for cross-country trips.

30-Minute Break

Challenge:

- Off-duty drivers cannot move the truck for any reason.

Time Off

Challenge:

- Off-duty independent drivers need a place to park their truck.

2+ Hour Staging

Challenge:

- Drivers pick up and deliver freight at manufacturing plants, warehouses, and distribution centers.

Emergency

Challenge:

- Incidents that close or congest the roadway result in drivers needing a place to park.

Intermodal (Ports)

Challenge:

- Truck staging/parking needs near ports.

Stakeholder Engagement

What We've Heard

What We Have Heard to Date: Ports

- Ports are supportive of truck parking near facilities and near interstates.
- Ports are actively planning for truck parking projects (Port of Orange, Port of Beaumont, and Port of Port Arthur).
- TGS Cedar Port industrial park plans for staging/queuing space within individual warehousing facility footprints.
- Port Galveston currently moves trucks off city streets to queue on port property.
- Port Freeport is planning for additional truck parking and the number of trucks could double in the next several years.

Port of PORT ARTHUR

GALVESTON WHARVES

PORT FREEPORT

What We Have Heard to Date: Lack of Truck Parking

- There is a need to incentivize private development.
- Must think creatively about land use.
- There are opportunities for shared-use facilities (commercial malls, speedways, and fairgrounds).

What We Have Heard to Date: Emergencies and Natural Hazards

- Hurricanes and flooding present a problem for freight movement.
- Truck parking areas could serve a dual purpose for emergency vehicle/supply staging.
- Truck staging for hurricane evacuation/emergencies should be away from storm surge.
- Freight villages should include staging areas for emergency events/FEMA.

Potential projects, policies, and programs

Potential Projects, Policies, Programs, and Technologies

TxDOT - Led

- New parking capacity
- Technology (TPAS, ConnectSmart, data)
- Truck parking guidance
- Education campaign
- Integrate truck parking into project development process

TxDOT - Supported

- New parking capacity
- Innovative funding partnerships
- Industry-provided truck parking

TxDOT-Led Infrastructure Improvements

Truck Parking Implementation

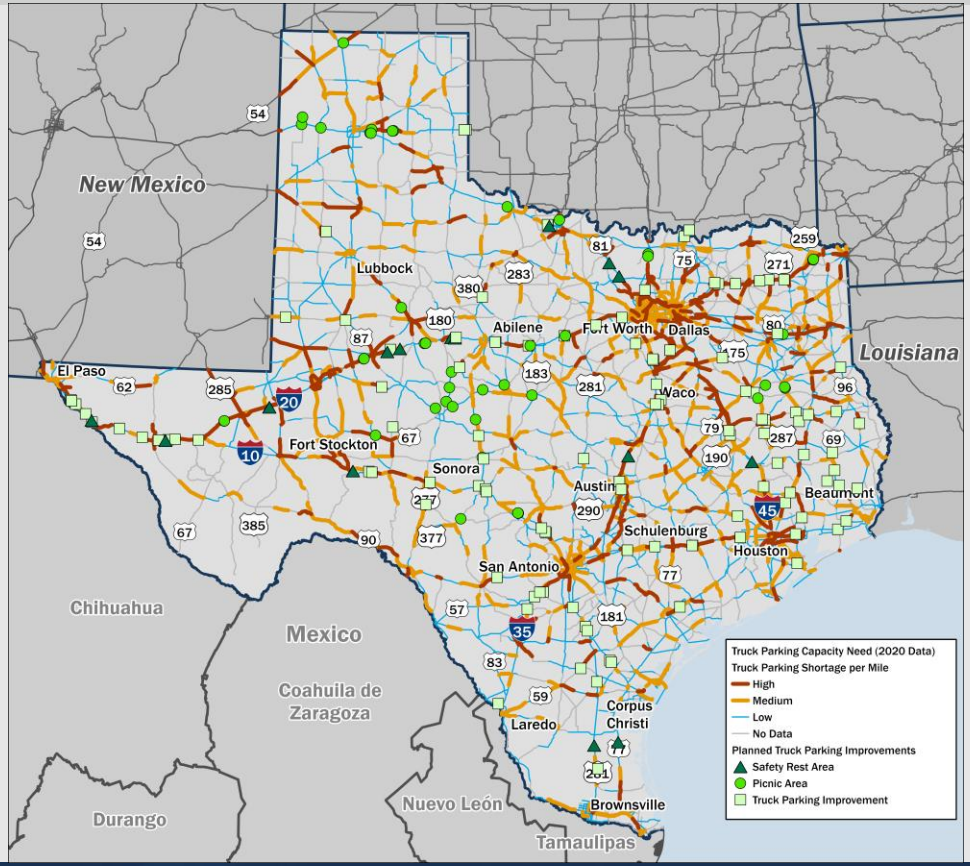
I-10 Corridor Coalition Technology
Truck Parking Availability System (TPAS)

California	243 Miles	6 Sites
Arizona	392 Miles	8 Sites
New Mexico	164 Miles	5 Sites
Texas	881 Miles	18 Sites
Total	1,680 Miles	37 Sites

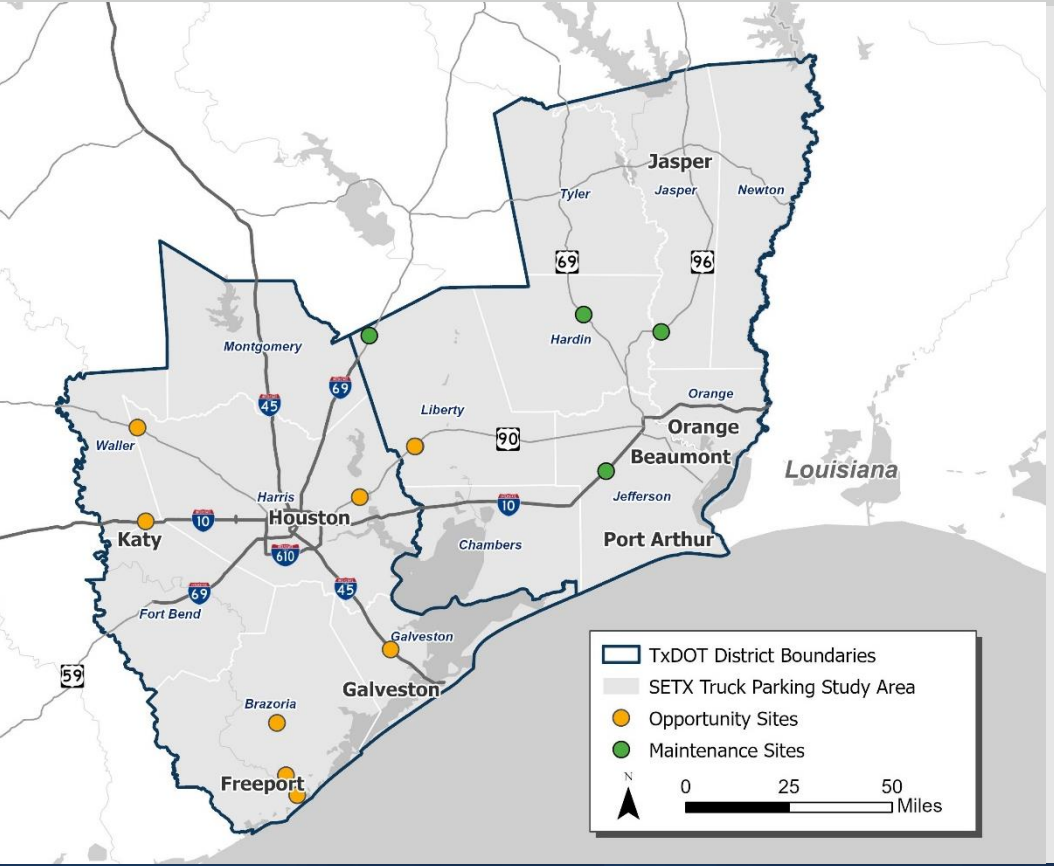
NM DMS sign on I-10 west of Las Cruces
(Source: NMDOT)

Planned Statewide Truck Parking Improvements

- TxDOT's Maintenance Division is managing statewide investment in truck parking improvements.
- Coordinating prioritization and funding is happening with each of the 25 districts.
- Planned truck parking improvements are shown as green symbols on the map.



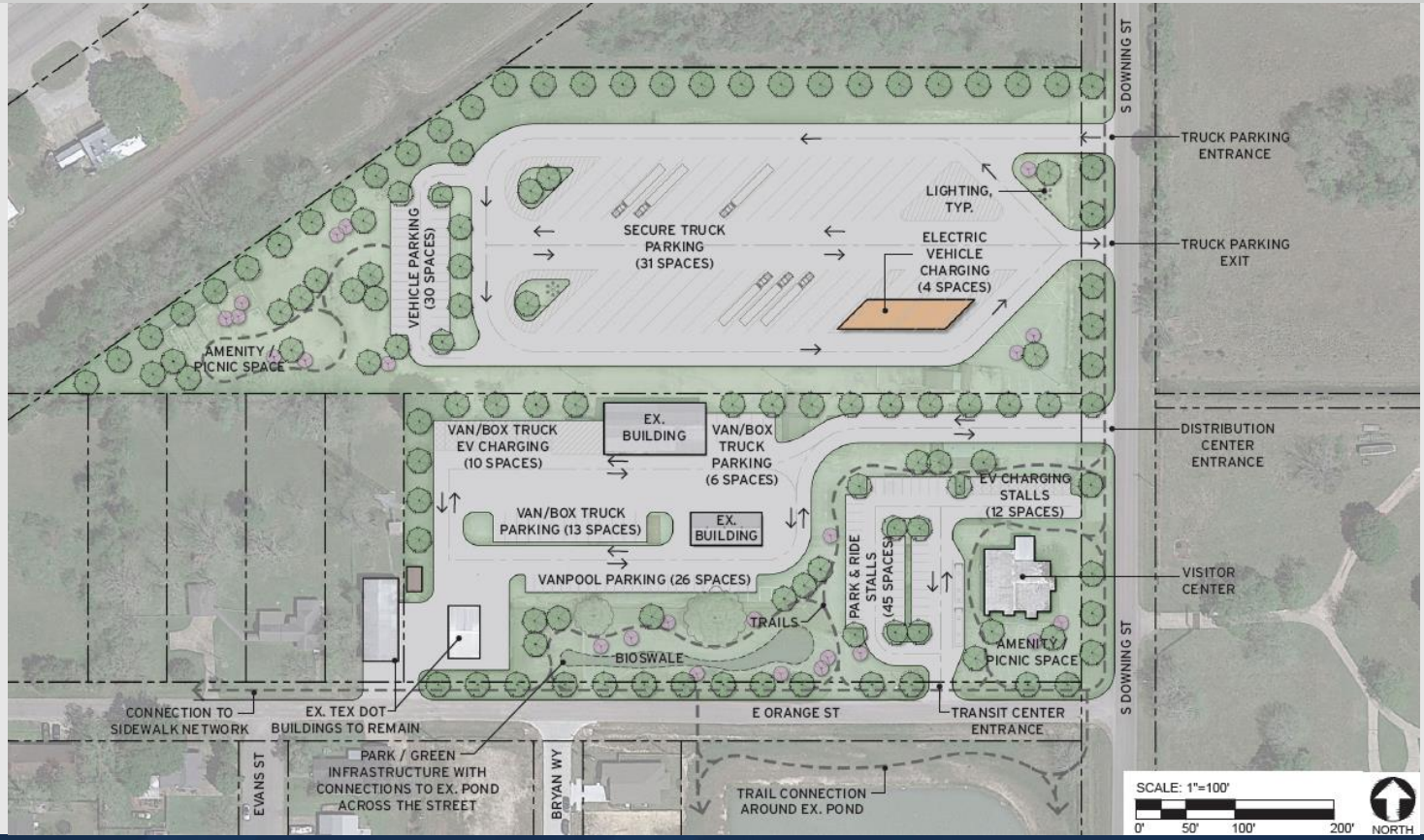
Southeast Texas Truck Parking Opportunity Sites



- Opportunity sites identified by the Houston and Beaumont Districts and regional stakeholders will include concept design for new truck parking facilities.
- The action plan will reference sites being upgraded by TxDOT District Maintenance and queuing areas for the ports.
- The action plan will also identify opportunity areas for potential freight villages.

Parking Capacity on TxDOT ROW

- Lighting
- Restrooms
- Picnic areas
- Trail and sidewalk connections
- EV Charging
- Park and ride



Port Freeport Site

- Grew out of an innovative partnership between TxDOT and Port Freeport where TxDOT will build the truck parking infrastructure and Port Freeport will operate and maintain it.
- Provides staging area truck parking spaces with an office building for Port Freeport operations staff.
- Provides EV charging stations for trucks and passenger vehicles and aligns with TxDOT's NEVI Plan.

Dual Usage: Emergency Staging and Truck Parking

FEMA Staging

- Distribution hub for affected regions

Truck Parking

- Operational asset for supply chain

Partnership

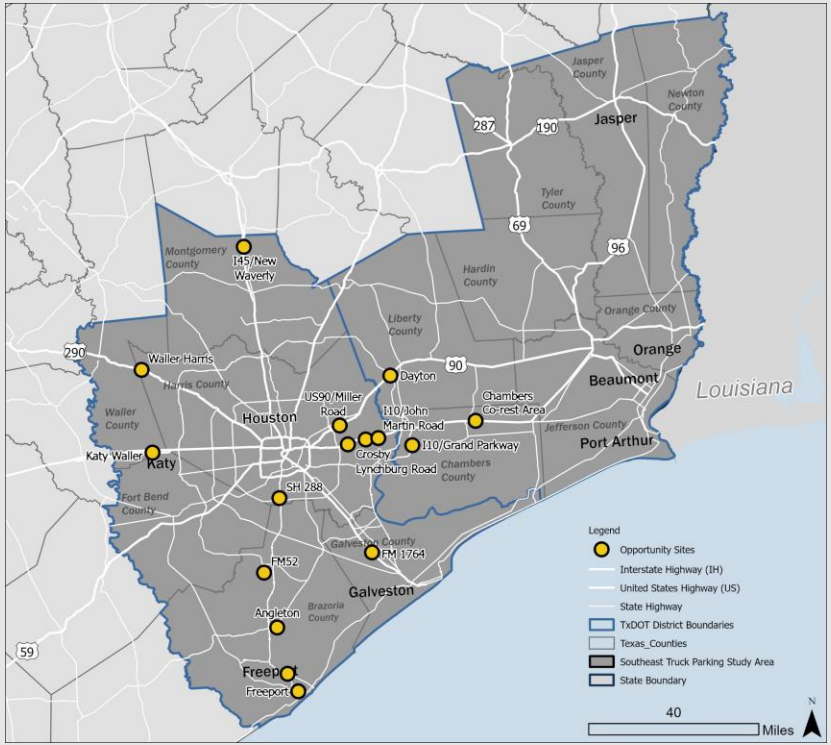
- Capital Funding
- O&M Costs

Photos:
FEMA Staging Area at Montgomery, AL

Chambers County Safety Rest Area, TX

Criteria for Selecting Dual Usage Sites

- Assess opportunity sites for effectiveness as emergency staging areas



Criteria for selecting truck parking opportunity sites as dual-purpose emergency staging area:

- Located outside of Special Flood Hazard Area (SFHA)
- Paved acreage, a min of five acres
- Site distance to communities in flood zones for potential to serve as evacuation points
- Trucking access and capacity for ingress and egress routes
- Amenity accessibility
- Truck parking demand

TxDOT-Supported

Truck Parking Implementation

Truck Parking Policy Considerations

- Incorporate Truck Parking planning:
  - Metropolitan/Long Range Transportation Plans
  - State and Regional Freight Plans
  - Comprehensive Plans
  - Land Use Plans
  - Programs, Policies, and Ordinances
  - Development and Permitting Review

Onsite Truck Parking

Onsite Truck Parking: Recognize

- Shippers of Choice* are manufacturers, distributors, and retailers who
  - **Value and respect** drivers
  - Improve **driver detention**
  - Provide amenities (like **truck parking**) and accessible facilities
  - Work with drivers to **build partnerships** and accelerate the movement of goods

Daikin Texas Technology Park (DTTP) in Waller, TX

*Shipper of Choice originates from FreightWaves

Texas Shipper of Choice Program

- Step 1. **Promote** the award program through a credible agency such as the Texas Trucking Association
- Step 2. **Build** the program.
  - Establish award criteria and formulate an impartial selection method for awardees
  - Pick an informed selection committee
  - Develop marketing materials and a dedicated website for drivers to submit nominations
  - Create an annual schedule
- Step 3. Seek and build **relationships** with public and private partners
- Step 4. **Connect** with FreightWaves (Optional)

Onsite Truck Parking: Include Truck Parking in TIA

Online Tool for Estimating Number of Truck Parking Spaces Needed

Estimate daily truck trips from:

- Traffic impact studies at new developments
- Actual counts at the existing facilities

Estimate percent of truck trips that need parking

- Approximately 10.6% for distribution warehouses estimated from this analysis

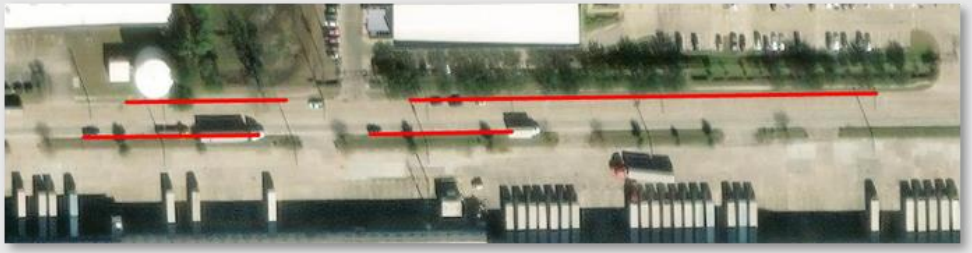
Estimate the peak parking need

- Distribution Warehousing = 37%

- A warehouse that generates 300 daily truck Trips will have:
  - 32 trucks (10.6%) that need parking throughout an average day
  - 12 trucks (37%) will need parking at the same time
- Therefore, 12 truck parking spaces are needed

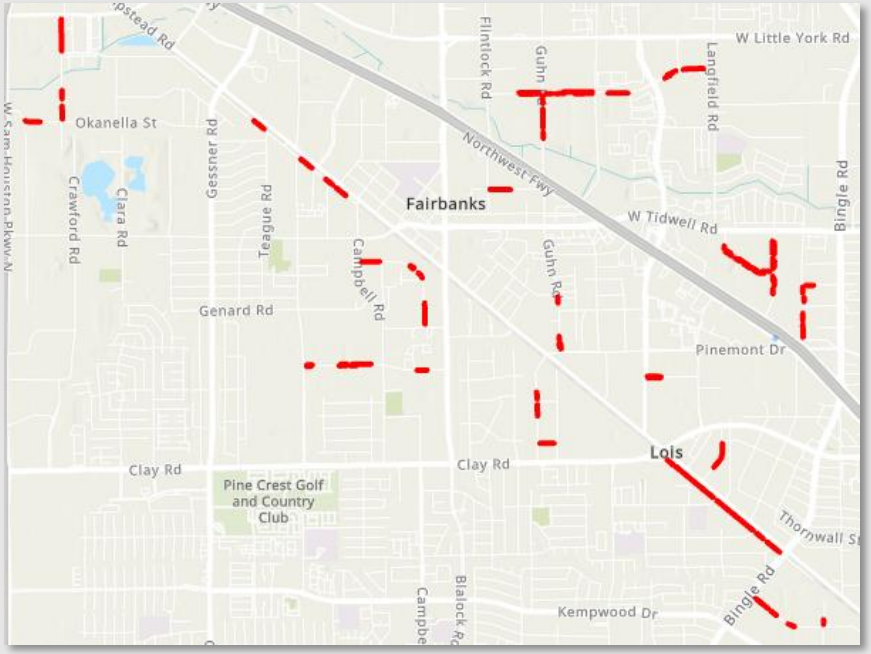
Curbside Parking

- Identify pilot locations
- Determine appropriate technology
- Publicize pilot
- Launch pilot program
- Track key performance indicators
- Decide to end or expand program



Curbside Parking: Methodology for Identifying Potential Locations

- Low speed limits
- Undivided roads
- Minimum of two lanes wide with shoulders on at least one side
- Ample setback from curb cuts
- Non-residential/non-retail land uses



Example: Northwest Houston outside of 610 Loop W and near US 290 and Hempstead Hwy.

Curbside Parking: Management Systems

Identify appropriate curbs → Determine appropriate technology → Launch pilot program → Publicize pilot → Track key performance indicators → Decide to end or expand program

Applications	Monitoring	Dashboard	Enforcement	Cost	Average
Automotus	5	4	5	1	3.75
Cleverciti	5	4	4	3	4
Parkunload	2	4	3	4	3.25
SafariAI	5	4	4	2	3.25
Populus	Not evaluated by Town of Leesburg				
Connect Smart					

2022 CMS evaluation conducted by Town of Leesburg, Virginia for Historic Downtown Loading Zone Management Study

Additional Policies and Programs (TxDOT Led)

Integrate truck parking into project development process

Evaluate excess ROW for truck parking viability

Allow truck-parking in auto-designated areas at existing public facilities during off-hours

Integrate truck parking into the Strategic Highway Safety Plan (SHSP)

Public Awareness Campaign

Educational Toolkit – Help raise awareness about why truck parking matters

- Social media resources
- Fact sheets
- Posters
- Graphics
- PowerPoint slides

Policy Toolkit – Peruse ideas and suggestions for implementing change

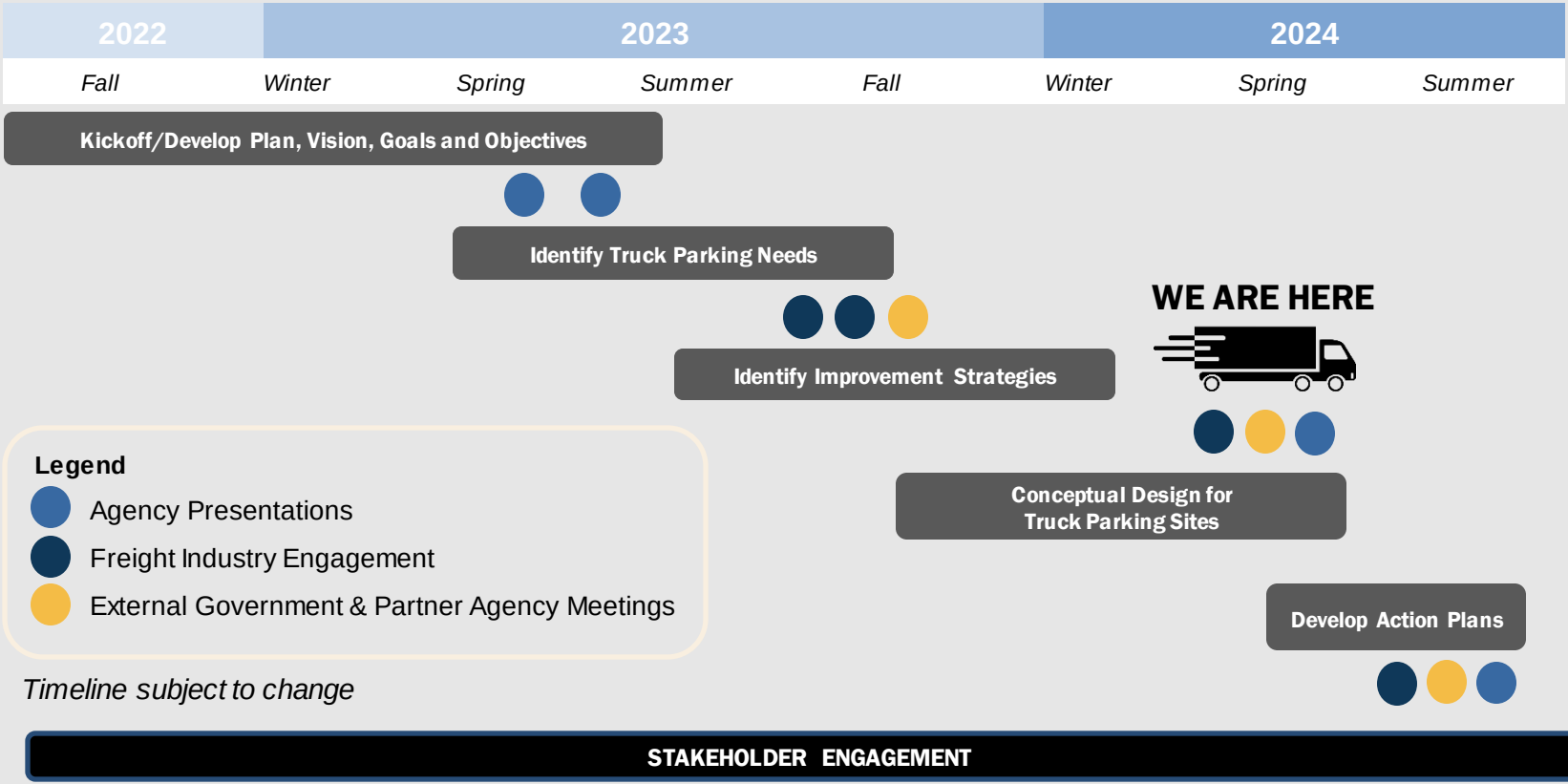
- Local government resources
- Private industry resources

Partnerships/Coordination with the Private Sector

Agencies and Organizations	Cities and Counties	Public/Private
• BAYTRAN • SETRPC • H-GAC • Maritime ports	• Local ordinances • Public opposition to truck parking	• Freight Village

Schedule & Next Steps

Project Milestones and Schedule



Thank you!

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  Brian Comer, AICP
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TEXAS DELIVERS TRUCK PARKING
SOUTHEAST TEXAS REGION

Any questions?

Thank you for participating. Your input helps TxDOT deliver truck parking to the southeast Texas region!

Port Houston Sustainability Initiatives

- Presenter: Kelli Gallagher, Port Houston

Port Houston Sustainability Initiatives

Kelli Gallagher

PORT HOUSTON

DISCUSSION TOPICS

- ***Who*** is Port Houston (vs. the Port of Houston)?
- ***Why*** focus on sustainability and decarbonization?
- ***Where*** are we focusing?
- ***What*** are we doing?
- ***Q&A***

PORT HOUSTON

- Local Sponsor and advocate of the Houston Ship Channel
- Public terminals — including Bayport, Barbours Cut and Turning Basin
- Mission: Driving Regional Prosperity

PORT HOUSTON

THE NATION'S BUSIEST WATERWAY

Port Houston

- 8 public facilities all cargos
- 3.5MM TEU
- 7000 Trucks / Day
- Largest project cargo & steel port
- Houston Ship Channel "Project 11"

Houston Ship Channel

- 200 private facilities
- World scale petro-chem complex
- Energy & chemicals capital
- 550MM BBL storage
- Over 1200 pipelines all products

Together

$3.4 MILLION
JOBS NATIONWIDE

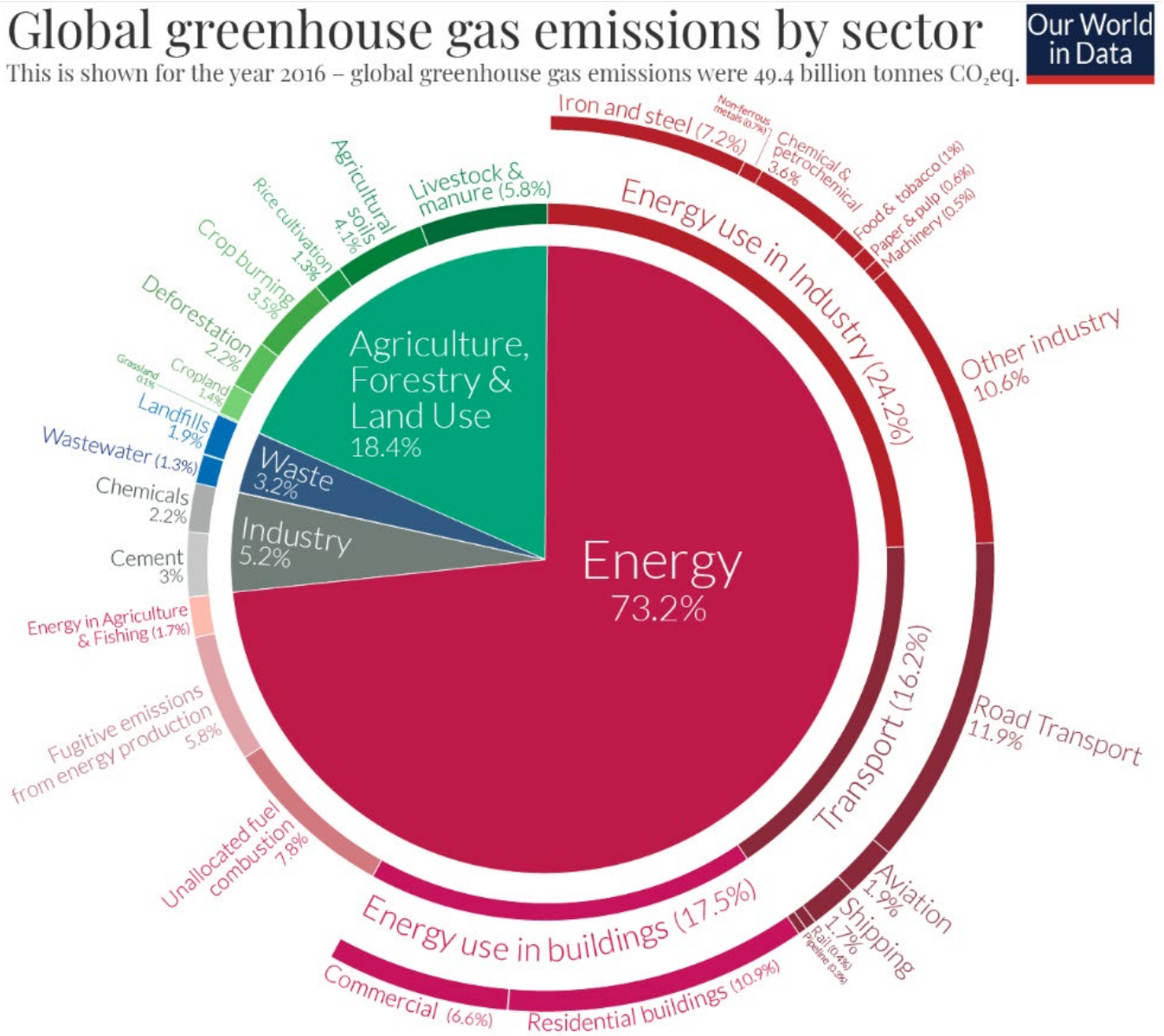
$906 BILLION
ECONOMIC IMPACT ACROSS THE U.S.

>275 MILLION TONS/YR
NATION'S LARGEST PORT BY TONNAGE

BUSIEST U.S. WATERWAY:
10,000 VESSELS
&
200,000 BARGE
TRANSITS ANNUALLY

PORT HOUSTON

THE DECARBONIZATION CHALLENGE



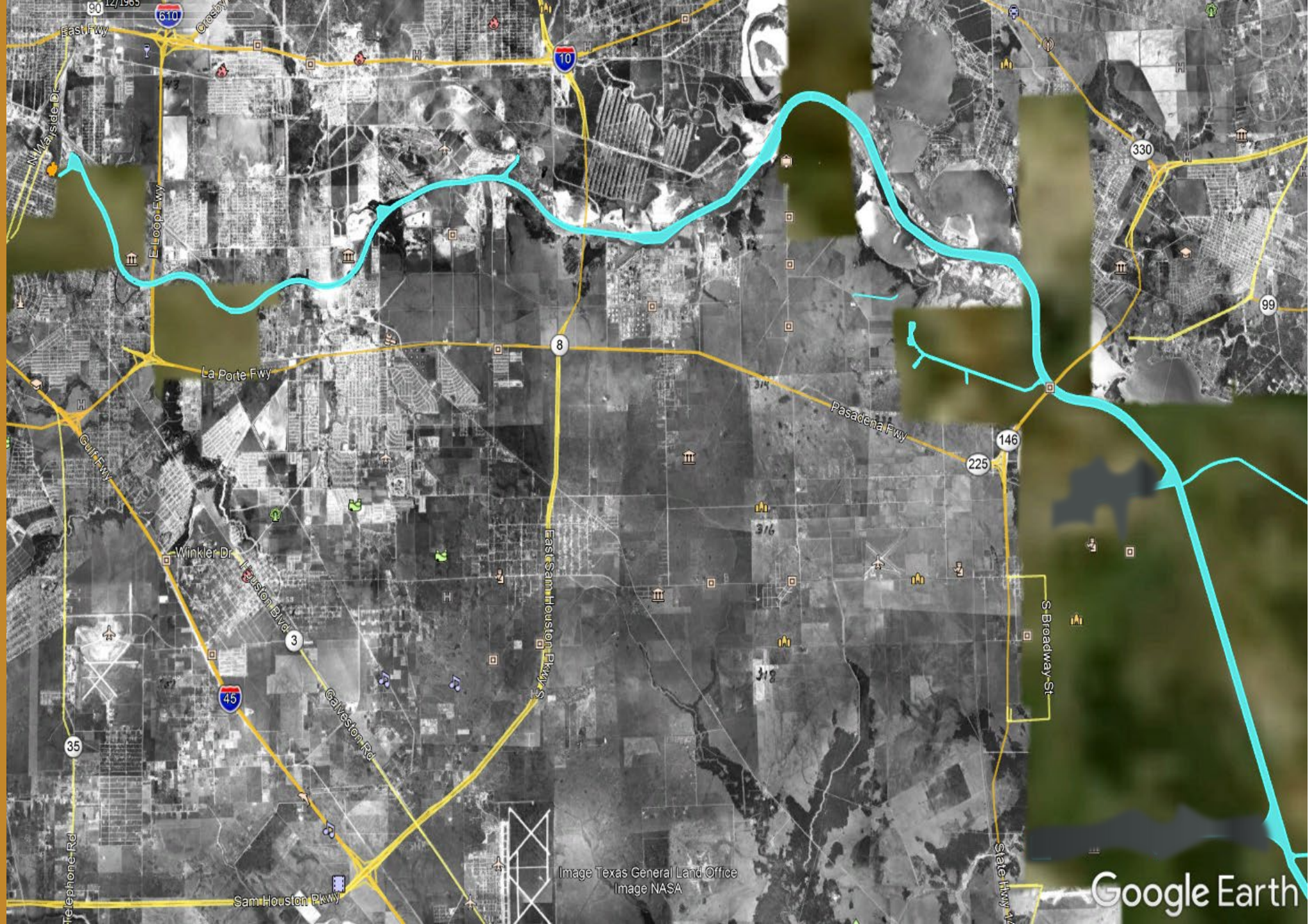
PORT HOUSTON

THE DECARBONIZATION CHALLENGE…

Illustrative Proportions of GHG's (1000 Tons)

Values are Estimates / Block Sizes Not To Scale

PORT HOUSTON



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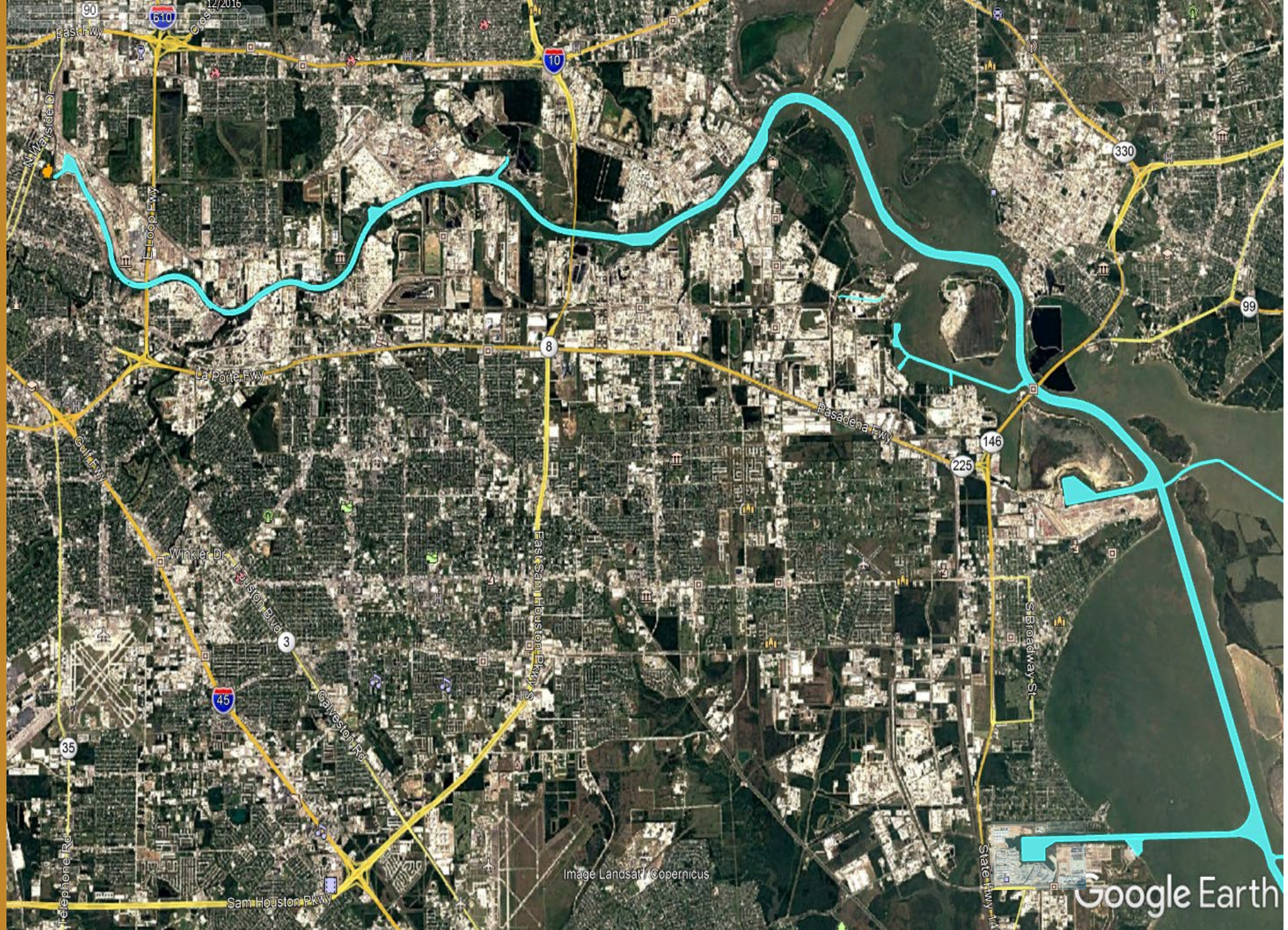
PORT HOUSTON



TODAY

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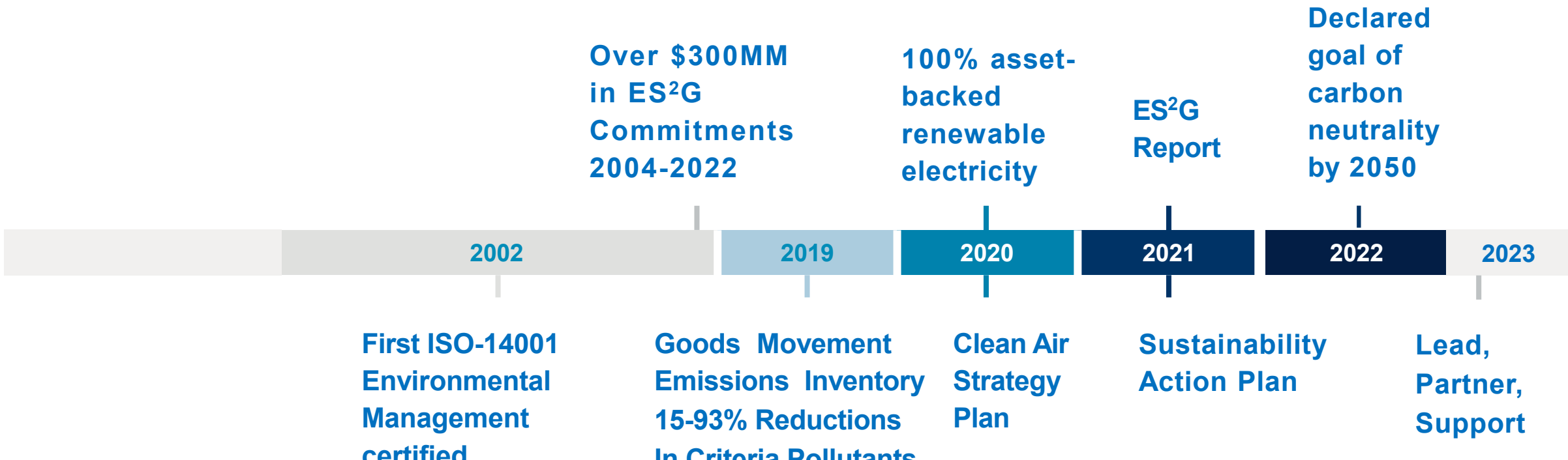
SHARED RESOURCE

COMMITMENTS TO SUSTAINABILITY



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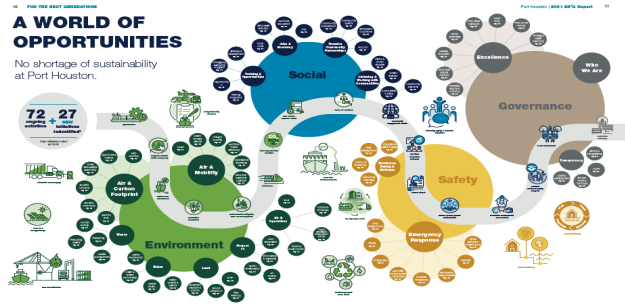
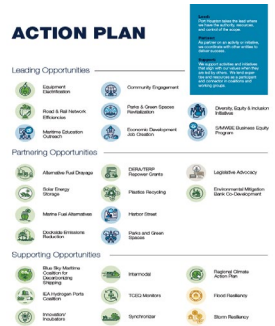
Questions	*Answers*
Stakeholder Priorities?	Clean Air & Energy, Community
How to Work Together?	Lead, Partner, Support

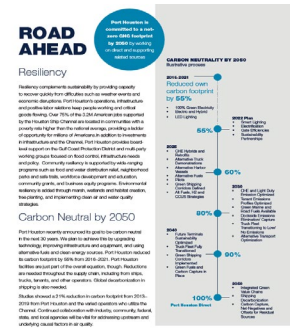
SUSTAINABILITY and ES²G ™

November 2021



March 2022





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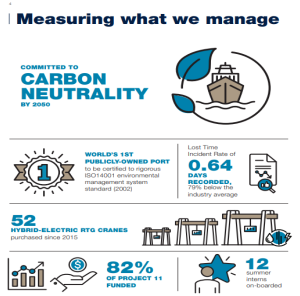

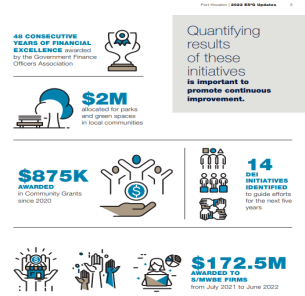

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SUSTAINABILITY ACTION PLAN

OPPORTUNITIES AND ENGAGEMENT MODEL

LEADING

- CHE Electrification
- Maritime Education Outreach
- Parks & Green Spaces Revitalization
- Diversity, Equity & Inclusion Initiatives
- Freight Mobility Renewal
- Community Engagement Events
- Economic Development Job Creation
- S/MWBE Business Equity Program

PARTNERING

- Alternative Fuel Drayage
- Dockside Emissions Redux
- Harbor Street
- Environmental Mitigation Bank Co-Development
- Solar PV & Energy Storage
- DERA/TERP Repower Grants
- Parks and Green Spaces
- Marine Fuel Alternatives
- Plastics Pyrolysis Value Chain
- Legislative Advocacy

SUPPORTING

- Decarbonization in Shipping
- Innovation / Incubators
- TCEQ Monitors
- Regional Climate Action Plan (CAP)
- Storm Resiliency
- IEA Hydrogen Ports
- Intermodal
- Synchronizer
- Flood Resiliency

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ENGAGEMENT MODEL

LEAD

ALL 28 STS CRANES
are fully electric

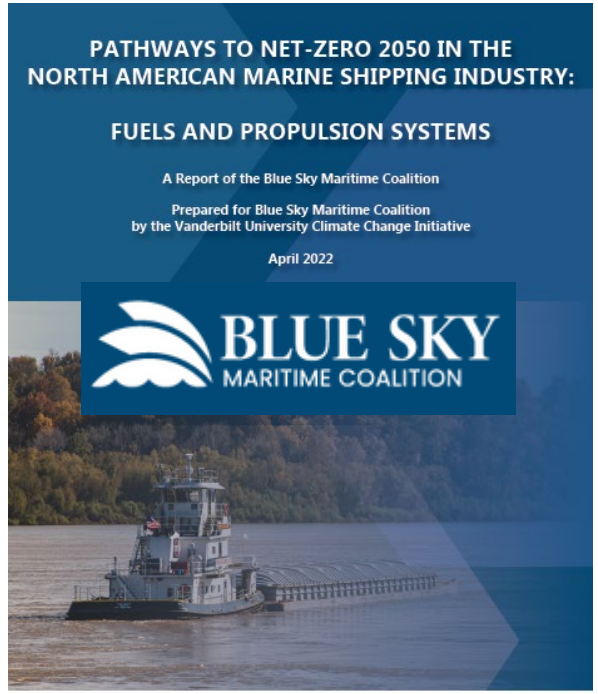
100% Renewable Electricity

ELECTRIC YARD TRUCK
piloting has begun

57 HYBRID ELECTRIC RUBBER TIRE GANTRY (RTG) CRANES
purchased since 2015

5 ELECTRIC POOL VEHICLES
for port use

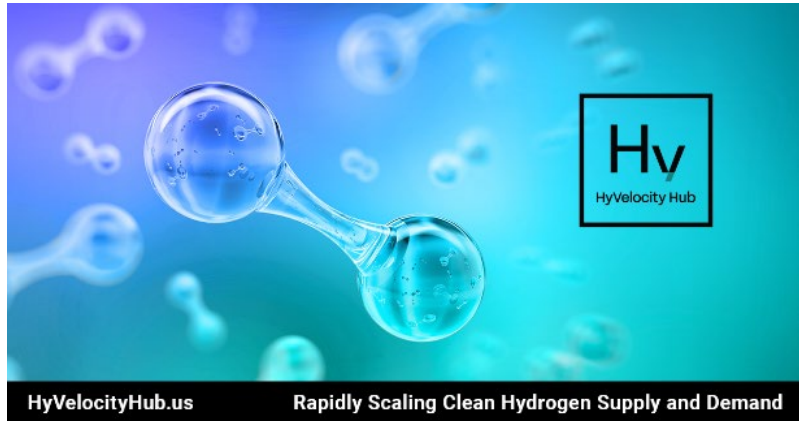
SUPPORT



BLUE SKY MARITIME COALITION

Vanderbilt Climate Change Initiative
VANDERBILT UNIVERSITY

PARTNER



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LEAD: PROJECT 11

Project 11: CLEAN HYBRID AND SCR DREDGES

BAYPORT CONTAINER TERMINAL – WHARF 6

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POSSIBILITIES

PORT HOUSTON

POSSIBILITIES

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DRAFT IN PROGRESS

2050 ROADMAP

	2016	2020	2022-25	2030	2040	2050
	Carbon footprint reduced 0%	Scope 1-2 Carbon footprint reduced 55%	60%	70%	90%	Carbon footprint reduced 100%
Scope 1 & Scope 2 **Lead**	**Baseline emissions established** **Scope 2** • LED lighting	**Scope 1** • Purchase hybrid-electric RTG cranes only **Scope 2** • Implement 100% renewable electricity • Continue LED lighting	**Scope 1** • Purchase zero-emission terminal tractors • Purchase zero-emission pool cars • Pilot zero-emission forklifts and other cargo handling equipment **Scope 2** • Evaluate solar generation opportunities	**Scope 1** • Purchase zero-emission forklifts and other cargo handling equipment • Consider zero-emission construction and operations for terminal and inland expansions • Maximize waste recycling **Scope 2** • Implement solar and wind generation • Generate and distribute clean electricity for microgrids	**Scope 1** • Complete cargo handling equipment transition to zero-emission • Optimize future terminals for efficiency and minimal emissions **Scope 2** • Continue clean electricity generation and implementation	**Scope 1** ✓ RTG cranes hybrid or electric ✓ Terminal tractors zero-emission ✓ Other cargo handling equipment zero-emission ✓ Pool cars and trucks zero-emission ✓ Residual emissions offset with nature-based solutions **Scope 2** ✓ Electricity 100% renewable since 2020, augmented as needed
Scope 3 & Beyond Value Chain **Partner & Support**		**Beyond Value Chain** • Documented emissions via 2019 GMEI Report	**Scope 3** • Inventory carbon footprint of Port Houston procurement / suppliers • Identify and pilot carbon neutral construction materials • Inventory tenant emissions and create policy • Minimize employee travel emissions • Encourage clean dredging **Beyond Value Chain** • Facilitate pilot of zero-emission drayage trucks and electric/fuel infrastructure • Develop regional drayage strategies • Pilot shore power • Capture leading practices in ocean and harbor vessels • Continue to apply for a variety of state and federal grants • Define green corridors for U.S. Gulf Coast	**Scope 3** • Prioritize carbon neutral materials in purchasing • Implement tenant emissions policy **Beyond Value Chain** • Support wide-spread adoption of zero-emission drayage truck fleets and charging/fueling truck stops • Encourage transition to low/zero-emission ships, harbor vessels, and locomotives • Assist transition to lower-emission container transport options, like freight shuttles or containers on barge • Pilot green shipping corridors • Pilot carbon capture technology	**Scope 3** • Prioritize carbon neutrality in capital goods and professional services • Develop offsets to address remaining carbon emissions • Encouraging sustainable investments **Beyond Value Chain** • Complete optimization of shore power use and/or zero-emission vessels • Zero-emission vessels • Implement green shipping corridors • Monitor transition to low/zero-emission locomotives	**Scope 3** ✓ Vessels, trucks and suppliers at carbon neutral/net zero standards ✓ Remaining emissions offset ✓ Investment profiles consistent with sustainability goals ✓ Tenant-operated terminals and facilities meet carbon neutral standards **Beyond Value Chain** ✓ Carbon neutrality adopted across the industry, including drayage trucks, ships, harbor vessels, locomotives ✓ Optimized use of green shipping corridors

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**All plans and projects subject to feasibility and business alignment – timing subject to technology development and commercialization cycles. Noted future percentages represent Port Houston goals.*

2050 ROADMAP

2022-25

Scope 1: PORT EQUIPMENT
- Purchase zero-emission terminal tractors
- Purchase zero-emission pool cars
- Pilot zero-emission forklifts and other CHE

Scope 2 : ELECTRICITY
- 100% Renewable Electricity Source
- Solar generation opportunities evaluated

Scope 3: SUPPLIERS & EMPLOYEES
- Inventory carbon footprint of Port Houston procurement / suppliers
- Develop strategies and tactics to align carbon neutrality
- Identify & Pilot carbon neutral construction materials
- Tenant emission inventory
- Employee emissions minimized
- Encourage clean dredging/ DMPA

Beyond Value Chain: PORT OPERATORS and OTHERS
- Facilitate pilot of zero-emission drayage trucks and electric/fuel infrastructure
- Regional Drayage Strategies
- Pilot Shore Power
- Capture leading practices in ocean and harbor vessels
- Grants e.g. MEGA, DERA, TERP
- Define Green Corridors for USGC, International

NET-ZERO ROADMAP PROGRESS

IDENTIFY | MAP | EVALUATE/ PILOT | PRIORITIZE | EXECUTE

EDF NET ZERO ABATEMENT SOLUTION FRAMEWORK

(source: Pathways to Net Zero: The Decisive Decade, EDF / Deloitte, 2021)

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THANK YOU

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Announcements

Upcoming Meetings

Freight and Rail Grants Workshop

- When: June 11th from 10 am – 2 pm
- Where: TBD
- Topics
  1. Best practices and resources for applicants from the FRA grant writing team
  2. NOFO process
  3. Freight federal funding opportunities
  4. Port representatives will provide freight-related information
- Invitation and agenda to follow

Greater Houston Freight Committee Survey

Link - https://forms.office.com/r/BKseE3T3aw

Thank you

Next Greater Houston Freight Committee

- July 18, 2024, and October 17, 2024 (tentative)

- Staff contact: Sydni Ligons, sydni.ligons@h-gac.com