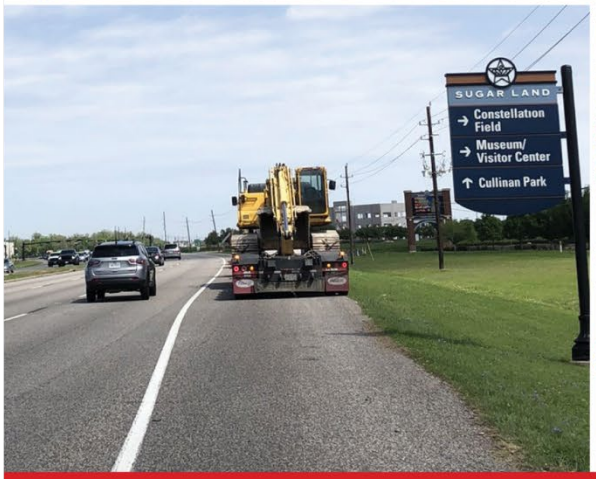

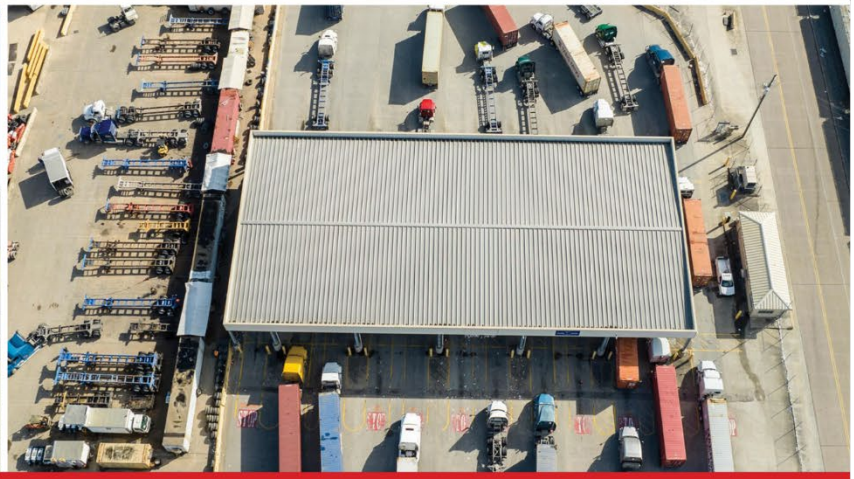

SOUTHEAST TEXAS TRUCK PARKING ACTION PLAN

July 2024

Texas Department of Transportation

TEXAS DELIVERS TRUCK PARKING
SOUTHEAST TEXAS REGION

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Acronym list

ATCMTD	Advanced Transportation and Congestion Management Technologies Deployment
ATTIMD	Advanced Transportation Technologies and Innovative Mobility Deployment
CDA	Comprehensive Development Agreement
CE	Categorical Exclusion
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CMV	Commercial Motor Vehicle
COH	City of Houston
CRIS	Crash Records Information System
DOT	Department of Transportation
DPAS	Dynamic Parking Availability Signs
EA	Environmental Assessment
EIS	Environmental Impact Statement
ELD	Electronic Logging Device
EV	Electric Vehicle
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FM	Farm to Market Road
FMCSA	Federal Motor Carrier Safety Administration
HAWK	High intensity Activated crossWalK
H-GAC	Houston-Galveston Area Council
HOS	Hours of Service

HP-ITD	Federal Motor Carrier Safety Administration's High Priority Innovative Technology Deployment
HSIP	Highway Safety Improvement Program
IH	Interstate Highway
IIJA	Infrastructure Investment and Jobs Act
INFRA	Infrastructure for Rebuilding America
JJOHRTS	Jasper-Jefferson-Orange-Hardin Regional Transportation Study
LEP	Limited English Proficiency
LNG	Liquified Natural Gas
MEGA	National Infrastructure Project Assistance Mega Grant Program
MIP	Maritime Infrastructure Program
MOU	Memorandum of Understanding
MPOs	Metropolitan Planning Organizations
MRD	Maritime Division
MTP	Metropolitan Transportation Plan
NATSO	National Association of Truck Stop Operators
NEPA	National Environmental Policy Act
NHFP	National Highway Freight Program
NHPP	National Highway Performance Program
NMFN	National Multimodal Freight Network
OOIDA	Owner-Operator Independent Drivers Association
P3	Public Private Partnership
PAAC	Port Authority Advisory Committee
Plan	Truck Parking Action Plan
PMP	Port Mission Plan
PPP	Project Prioritization Process
PROTECT	Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
RDM	Roadway Design Manual
REAL Plan	Houston Regional Express Access Lanes
RGMP	Regional Goods Movement Plan
ROW	Right-of-Way

RURAL	Rural Surface Transportation Grant Program
SETRPC	South East Texas Regional Planning Commission
SH	State Highway
SMART	Strengthening Mobility and Revolutionizing Transportation
SRAs	Safety Rest Areas
Statewide TPS	2020 Texas Statewide Truck Parking Study
STBG	Surface Transportation Block Grant
SUPs	Shared-Use Paths
TDEM	Texas Division of Emergency Management
TFMP	2018 Texas Freight Mobility Plan
THFN	Texas Highway Freight Network
TICs	Travel Information Centers
TIP	Transportation Improvement Program
TMFN	Texas Multimodal Freight Network
TPAS	Truck Parking Availability System
TTP	Texas Transportation Plan 2050
TxDOT	Texas Department of Transportation
TXTA	Texas Trucking Association
USDOT	U.S. Department of Transportation
UTP	Unified Transportation Program
V2X	Vehicle-to-Everything

Chapter 1:
Study Overview

Texas Department of Transportation

1.0 Study Overview

The Texas Department of Transportation (TxDOT) is identifying solutions for safe truck parking through the development of a Truck Parking Action Plan (Plan) for the Southeast Texas Region. TxDOT has prioritized its truck parking needs in order to invest in projects, policies, and programs that will have the greatest impact on the safety and mobility of truck drivers and the traveling public. Significant economic, population, and industry growth in the region will continue to strain the current infrastructure, thus finding solutions to ensure the safety of drivers and the efficient movement of goods is critical.

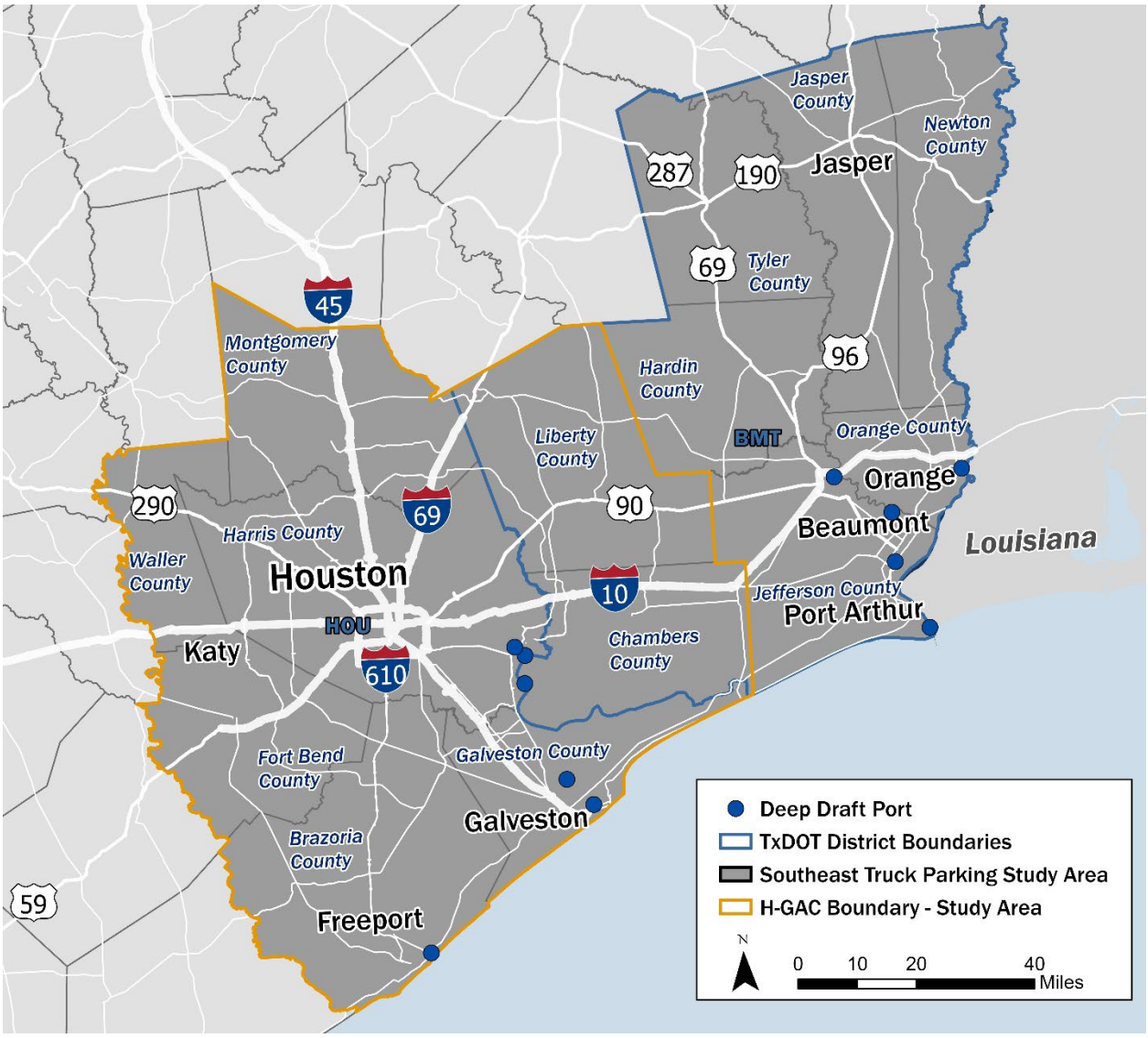
The Plan builds upon TxDOT's efforts dating back to the 2018 Texas Freight Mobility Plan (TFMP). The 2018 TFMP has led to numerous implementation efforts, including a statewide truck parking plan and program, a weigh-in-motion strategic plan and program, a freight network technology and operations plan, and freight infrastructure design considerations. After adopting the TFMP, TxDOT conducted the 2020 Texas Statewide Truck Parking Study (Statewide TPS). Completed in April 2020, the Statewide TPS provided the first comprehensive assessment of truck parking in Texas, highlighting how safe truck parking improves the safety of all motorists. The 2018 TFMP also served as a critical building block in developing policy and program recommendations for the Texas Delivers 2050 Texas Freight Mobility Plan, which continues advancing recommendations from both the TFMP and the Statewide TPS.

There are also a number of regional studies that recognize the importance of truck parking in ensuring the safety of all drivers. For instance, the Houston-Galveston Area Council (H-GAC) 2023 Regional Goods Movement Plan (RGMP), which identified a wide range of policies and programs that could be adopted to address safety; congestion; emissions; and residential and community impacts from freight activity, highlighted the critical aspect of truck parking availability. The Houston Regional Express Access Lanes Plan (REAL Plan) was developed by TxDOT's Houston District to create a long-term transportation vision to guide the continued enhancement and implementation of equitable, multimodal connectivity through an interconnected network of mobility hubs and express lanes. Solutions from the REAL Plan related to this study were used to inform recommendations related to freight mobility hubs and first mile/last mile connections to community amenities. The Houston District is currently working on the REAL 2.0 Brookshire-Katy Implementation Plan to identify transportation improvements to implement the REAL concept.

1.1 Study Area

TxDOT employed a data-driven prioritization process in the Statewide TPS to identify areas with the highest need. The prioritization process was based on capacity need, safety need, and freight network significance. While almost every region in Texas is affected in some way by a lack of safe and available truck parking, nine districts that ranked as high priority were identified. The Houston District was one that had the most consistently high-priority safety needs. As truck parking needs and travel patterns are not confined to TxDOT boundaries, a data-driven approach was conducted to define regional boundaries for the study area based on truck travel patterns and parking demand. Regional truck parking demand was identified, which resulted in an expanded study area. The Southeast Region of Texas defined for this regional Truck Parking Action Plan includes the TxDOT Houston and Beaumont Districts (Figure 1-1). The data analysis determined that the Southeast Texas Region was a high-priority area with needs to invest in projects, policies, and programs that would positively impact the safety and mobility of truck drivers and the traveling public.

Figure 1-1: Southeast Texas Region Truck Parking Plan Area



The Southeast Texas Region, like most regions, has a unique set of infrastructure, industries, and challenges that influence truck parking needs and solutions. The region contains major industries, including petrochemical and energy production, transportation and warehousing, and intermodal/ containerized cargo. Regional characteristics and industries that help shape the demand for truck parking throughout the region include:

- A significant maritime system that consists of major ports including Port Houston, Port of Texas City, Port of Beaumont, and Port of Port Arthur. These four ports are all top 20 ranked U.S. ports by tonnage, with Port Houston being the top-ranked. Port Houston owns, manages, and operates the public wharves and terminals along the Houston Ship Channel, including the area's largest breakbulk facility and two container terminals. Port Beaumont and Port of Port Arthur are important to moving military personnel and equipment. The Port of Texas City primarily services the petrochemical industry, with waterborne tonnage exceeding 33 million tons annually[1]. Texas ports continue to see an increase in the volume of containers and goods. Port Freeport handled 35% more cargo in the first half of 2020, compared to the same period in 2019 and in June 2022,

[1] *2022 Texas Port Profiles*, TxDOT Maritime Division, 2022 Texas Port Profiles (txdot.gov)

Port Houston had increased container volume by 18% compared to the same period in 2021. Other major ports in the region include Port of Orange, Port of Anahuac, Sabine Pass Port Authority, TGS Cedar Port Industrial Park (a private Texas port), and Port of Galveston. Collectively, these ports are major hubs for warehousing and distribution and often require truck queuing and staging areas near port facilities for local and regional drayage movements.[2]

- Major intermodal distribution, warehousing, and manufacturing clusters along the I-10 corridor that serve a wide range of supply chains including for the energy sector, international trade, household goods, etc. This region has been experiencing significant growth in distribution centers, warehousing, and manufacturing which are prominent freight generators within the region.[3] Additionally, Houston area refineries account for 44% of the nation's petrochemical manufacturing capacity.[4] TxDOT recognized the rapid growth of freight needs of this area in its REAL Plan, which was developed in an effort to support this freight-focused integration through the development of strategic Mobility Hubs, passenger connections, and Real Lanes. The I-45 corridor is a significant freight route connecting the Houston and Dallas-Fort Worth Regions.

- This region also experiences urban congestion as the City of Houston is the fourth largest city in the country and the metro area is home to over 7.2 million people. The Statewide TPS identified Houston as an area where congestion and high truck parking needs overlap, which poses major challenges to drivers. In terms of freight mobility and congestion, nine of the top 100 truck bottleneck locations in the nation are within the H-GAC Region, according to the 2024 ATRI Top 100 Truck Bottlenecks analysis.[5]

- The Southeast Texas Region faces additional environmental challenges due to flooding. This requires planners to consider developing a freight system that can withstand flooding and major storm events and provide Federal Emergency Management Agency (FEMA) emergency management staging when needed.

The growing population and economy have led to unprecedented warehousing and distribution development in the Southeast Texas Region. This growth is leading to increased forecasted truck traffic on the regional interstates. By 2050, demand forecasts indicate a minimum of 85% increase in truck parking needs.[6]

[2] 2024-2025 Texas Port Mission Plan, Port Authority Advisory Committee, mission-plan-2024-2025.pdf (txdot.gov).

[3] 2023 Regional Goods Movement Plan, Houston-Galveston Area Council, Regional Goods Movement Plan (h-gac.com).

[4] Tatum, T., (2024, May 22). Houston Continues to Grow as a World-Class Manufacturing Powerhouse. Greater Houston Partnership, Houston Continues to Grow as a World-Class Manufacturing Powerhouse.

[5] ATRI Top 100 Truck Bottlenecks Analysis (2024).

[6] Texas Statewide Truck Parking Study, TxDOT, Texas Statewide Truck Parking Study (txdot.gov).

1.1.1 Houston District

The Houston District has more than 3,000 truck parking spaces, but none are TxDOT-public parking. This is despite significant truck parking demand that is generated by warehousing and distribution centers and maritime ports. The Houston District is home to Port Houston, the largest port by tonnage in the U.S. The City of Houston includes more than 520 million square feet of warehousing and distribution space. Because most shippers are located near large population centers and international gateways, there is a major need for staged parking in urban areas where land is often scarcer and more expensive.[7]

The Houston District deals with urban congestion and a lack of truck parking that can negatively contribute to the problem: as truck drivers search for parking, many may resort to parking on shoulders and ramps, which can cause further congestion as drivers exercise caution when approaching a truck parked adjacent to the roadway. Trucks parking along shoulders can also contribute to crashes involving parked trucks. Undesignated parking is typically a result of a lack of authorized parking and is a last resort.

Statewide TPS Highlights: Houston District

- *No public truck parking in the Houston District*
- *Multiple nodes of high to medium capacity needs on east-west corridors*
- *Houston District had the most crashes involving parked trucks in the state, 422, with 21 fatalities from 2013-2017. Additionally, there were 75 crashes involving fatigued drivers.*
- *Most truck stopping happens in the urban core, along with the eastern corridors, and towards Galveston*
- *Shortage of approximately 1,000 spaces*
- *Port Houston is the top U.S. port by tonnage*
- *Major hub for warehousing and distribution and the energy sector activity*
- *Faces challenges with FEMA and emergency management staging needs*

In addition to TxDOT, there are other organizations in the Houston area collaborating with TxDOT on transportation solutions in the region. H-GAC, the metropolitan planning organization, is one of them. H-GAC published the 2023 Regional Goods Movement Plan, which is meant as a framework to support the region's economic activity through efficient freight movement.[8]

The Statewide TPS identified 18 truck parking facilities in the Houston District that experience near or over-capacity conditions during peak hour utilization. High-needs locations often coincide with undesignated parking hot spots. Inadequate truck parking and undesignated truck parking, including along shoulders and ramps, can contribute to crashes. More than 70% of crashes involving parked trucks occurred in urban areas, including Houston and elsewhere in the Texas Triangle, which stretches from Dallas-Fort Worth, to San Antonio, and Houston.

Many high-priority safety and congestion needs have been identified in Houston. For instance, according to the 2020 Statewide TPS 19% of the Texas Highway Freight Network (THFN) mileage in the Houston District has been identified as having high-priority truck parking needs while 44% was identified as having medium-priority needs. These truck parking needs are expected to continue in the future, especially along segments of interstates I-10 and I-45.

[7] *Texas Statewide Truck Parking Study*

[8] *2023 Regional Goods Movement Plan*

1.1.2 Beaumont District

The Beaumont District is home to major maritime ports including the Port of Orange, Port of Beaumont, and Port of Port Arthur. The Port of Beaumont, one of the largest military seaports in the country, has 10 near- or over-capacity facilities during peak hour utilization. The Beaumont District's parking needs are anticipated to continually increase given its port infrastructure and proximity to major highways. It is projected to have at least 200 parked trucks per 20 miles by 2050, indicating a future truck parking capacity shortage. The Beaumont District is projected to have at least 85% more demand for truck parking by 2050.[9]

Statewide TPS Highlights: Beaumont District

- *10 facilities near or over-capacity*
- *High and medium capacity needs along I-10, particularly closer to the Louisiana border*
- *High capacity needs along I-69, specifically the intersection with State Highway 105*
- *The Beaumont District is projected to have at least 85% more demand for truck parking by 2050*
- *Beaumont District had 67 crashes involving parked trucks in the state, with 6 fatalities from 2013-17. In addition, Beaumont had 41 crashes involving fatigued drivers, with 3 fatalities from 2013-17.*

As economic growth continues in the district, continued collaboration between TxDOT and local organizations will be necessary to discover solutions to the truck parking needs. Currently, TxDOT coordinates with the South East Texas Regional Planning Commission (SETRPC), the metropolitan planning organization, on transportation solutions in the region.

The Statewide TPS identified that the Beaumont District has 3% of mileage in the high-priority category and 29% in the medium-priority category for truck parking needs on the THFN within the district. High and medium capacity needs were identified along I-10 and I-69.

The Statewide TPS also stated that over a four-year period, the Beaumont District had 67 crashes involving parked trucks in the state, with six fatalities. During the same period, the Beaumont District had 41 crashes involving fatigued drivers, with three fatalities.

1.2 Purpose

The Plan aims to assess the current supply and demand for truck parking at the regional level, identify truck parking needs, and recommend solutions to address existing and future parking gaps and needs. TxDOT worked closely with the districts and regional stakeholders to develop actionable strategies to meet truck parking needs across the region, promote partnerships with the private sector, enhance safety, reduce congestion, and improve efficiency on the Texas Highway Freight Network (THFN). The final Plan provides strategies and recommendations to address truck parking needs in the southeast region. The document is organized as follows:

- **Chapter 1: Study Overview** – Provides a general overview of the importance and types of truck parking, highlights TxDOT truck parking efforts to date, and outlines TxDOT's vision and goals for addressing truck parking challenges in the Southeast Region.
- **Chapter 2: Needs Assessment –** Inventories existing public and private truck parking supply in the Southeast Region, identifies needs related to designated and undesignated truck parking demand, and examines the effects of truck parking on safety and equity.

[9] *Texas Statewide Truck Parking Study*

- **Chapter 3: Stakeholder Engagement** – Documents the robust stakeholder engagement effort and the input received during the development of the Action Plan through a range of outreach methods including industry workshops, targeted presentations, and a truck driver survey.

- **Chapter 4: Recommendations** – Identifies both TxDOT-led and TxDOT-supported strategies and recommendations to address truck parking needs including the advancement of specific policies, infrastructure improvements, technology applications, programs, and resources for communities, agencies, and industry partners.

- **Chapter 5: Opportunity Sites** – Provides an overview of the site assessment process that was used to identify specific locations to meet regional truck parking needs, summarizes the site development and conceptual design process, and provides detailed concepts and cost estimates for six opportunity sites that were identified for further project development.

- **Chapter 6: Implementation** – Provides an overview of Federal and State funding opportunities that can be pursued to implement truck parking, as well as next steps and actions TxDOT, public agencies, and private industry can take to implement the recommendations outlined in this Plan.

Commercial truck drivers are essential to society.
Source: Project area photo on I-10 West.

1.3 Importance of Truck Parking

Truck drivers play a vital role in Texas by delivering goods to businesses and homes, ensuring food is on tables, shelves are stocked, manufacturing plants continue to operate, energy resources are available, and the flow of medical supplies is maintained. The trucking industry serves as a critical link in the supply chain, transporting over 1.2 billion tons of goods valued at $1.7 trillion annually

throughout Texas.[10] The 2023 RGMP states that trucks will continue to be the most prominent method of distribution of goods in the region transporting 933 million tons in 2050. This will equate to over 58 million truck trips, more than doubling the truck trips in 2019.

To maintain the movement of goods in the region, and throughout Texas, TxDOT must meet the demands for trucking by maintaining the safety and efficiency of Texas roadways. This includes providing adequate and strategically located safe, authorized parking to prevent increased congestion, tired drivers, lost productivity and income for drivers, higher shipping costs for businesses and consumer goods, and unsafe parking along highway shoulders and ramps.

Safe truck parking is critical because:

Safe truck parking leads to the safety of all motorists. Between 2018 to 2022, there were 144,377 commercial vehicle crashes in Texas, 2,950 of which involved parked trucks. Of the crashes that involved parked trucks, 930 caused injuries and 106 resulted in fatalities**.** [11]

Safe truck parking is vital to the state and national economy. As freight-intensive industries increase (especially those moving heavy, bulky goods, such as oil and gas, and construction), the need to develop safe truck parking is imperative.

Before the e-commerce boom, big-box retailers had truck drivers deliver loads to three to five distribution centers across the country, but now they deliver to dozens of warehouses. By 2050, freight tonnage is projected to more than double while parking demand exceeds 170%.[12] This increase in tons corresponds to a similar increase in household spending with purchases of consumer goods and services leading to more freight activity.

Safe truck parking matters in terms of time and money. The lack of safe and effective truck parking causes truck drivers to lose approximately $9,300 revenue earning miles and $4,600 each year simply looking for safe truck parking. Those costs impact everyone, from the driver down to the consumer.

*Southeast Region: Between 2018-2022 there were **31,376** crashes in the study region involving commercial vehicles; **640** involved parked trucks, **9** resulted in fatalities.*

Finding solutions to truck parking is important in preserving the Texas highway system. Since truck drivers often cannot find a place to park safely, many choose to park on shoulders and ramps, which are not designated for parking. This is a major safety hazard and damages the pavement, guard rails, and other state property, which is not designed to withstand the weight nor accommodate the size and maneuvers of freight.

1.3.1 Types of truck parking

Truck drivers require parking for different reasons, which creates unique challenges for various types of drivers to find parking that meets their needs (Figure 1-2). Drivers must adhere to the Federal Motor Carrier Safety Administration's (FMCSA) hours of service (HOS) regulations that place specific time limits on driving and require rest intervals. Drivers often need to park and wait for their delivery time windows at shippers and receivers, and sometimes they are affected by unexpected road closures or congestion. Finally, truck drivers are essential workers who need to take personal breaks for rest

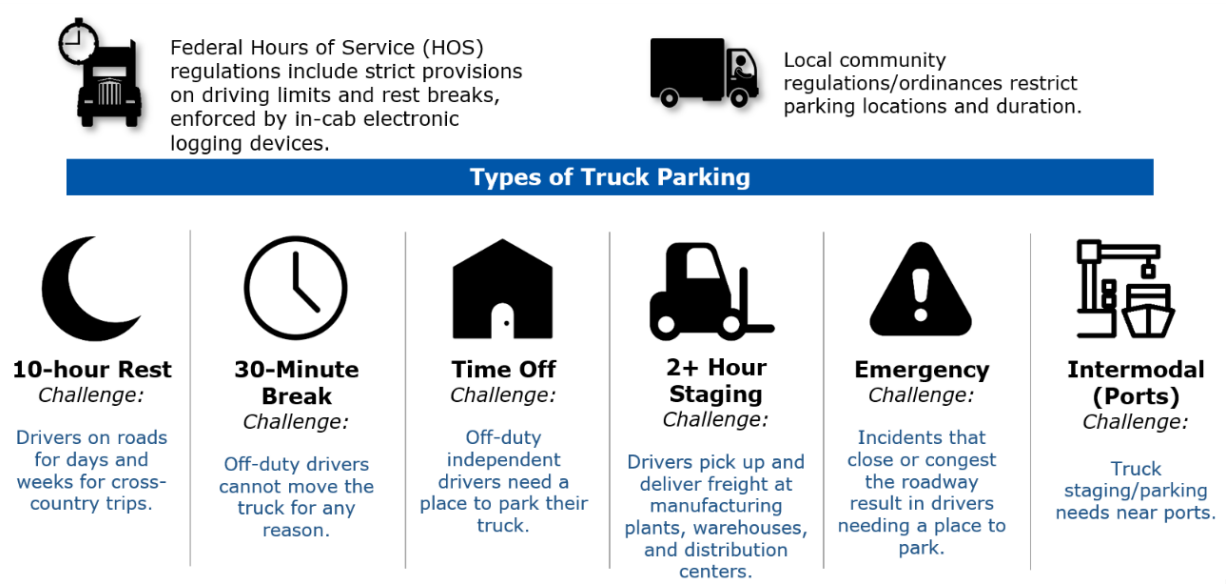
[10] *Texas Statewide Truck Parking Study*

[11] 2018-2022 TxDOT CRIS Data Analysis completed by Cambridge Systematics

[12] Texas Delivers 2050 Freight Plan

and safety. Ensuring that truck drivers are well rested and capable of safely operating the trucks is essential not only to their own safety, but also to the safety of all roadway users.

Figure 1-2: Common Reasons for Truck Parking



1.3.2 Truck Parking Regulations

Commercial Motor Vehicle (CMV) labor regulations are under the purview of the FMCSA, which propagates rules to increase safety on the road. For CMVs, the mandatory HOS regulations have the greatest impact on their need for truck parking. The most recent HOS regulations (updated in September 2020) are outlined below in Table 1-1:

Table 1-1: Summary of Hours-of-Service Rules for Property-Carrying Drivers

HOS Provision	Description
11-Hour Driving Limit	May drive a maximum of 11 hours after 10 consecutive hours off-duty.
14-Hour Limit	May not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time does not extend the 14-hour period.
30-Minute Driving Break	Drivers must take a 30-minute break when they have driven for a period of eight cumulative hours without at least a 30-minute interruption. The break may be satisfied by any non-driving period of 30 consecutive minutes (i.e., on-duty not driving, off-duty, sleeper berth, or any combination of these taken consecutively).
60/70 Hour Limit	May not drive after 60/70 hours on duty in 7/8 consecutive days. A driver may restart a 7/8 consecutive day period after taking 34 or more consecutive hours off duty.
Sleeper Berth Provision	Drivers may split their required 10-hour off-duty period as long as one off-duty period (whether in or out of the sleeper berth) is at least two hours long and the other involves at least seven consecutive hours spent in the sleeper berth. All sleeper berth pairings must add up to at least 10 hours. When used together, neither time period counts against the maximum 14 hour driving window.
Adverse Driving Conditions	Drivers are allowed to extend the 11-hour maximum driving limit and 14-hour driving window by up to two hours when adverse driving conditions are encountered.

HOS Provision	Description
Short-Haul Exception	A driver is exempt from the requirements of §395.8 and §395.11 if: the driver operates within a 150 air-mile radius of the normal work reporting location, and the driver does not exceed a maximum duty period of 14 hours. Drivers using the short-haul exception in §395.1€ (1) must report and return to the normal work reporting location within 14 consecutive hours and stay within a 150 air-mile radius of the work reporting location.

Source: https://www.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations, August 19, 2023.

HOS regulations are strongly enforced by the Texas Department of Public Safety and penalties can be high. To avoid these steep fines, drivers are under pressure to find parking as quickly and efficiently as possible while trying to maintain their pick-up/delivery schedules. In some cases, however, drivers will choose to face a parking violation fine by parking in an unauthorized location to avoid HOS violations which are typically higher and can impact their current trip by forcing them to stop until they are allowed to re-enter their driving time.

To increase compliance with HOS regulations, most truck drivers are required to track their HOS with an electronic logging device (ELD). An ELD monitors a vehicle's engine to capture data on vehicle movement, miles driven, and duration of engine operation (engine hours). This approach to HOS monitoring replaced a paper version, which provided drivers with some leeway in finding parking within the HOS limits. With the full implementation of the ELD mandate in December 2019, time and location are now tracked more precisely. This allows for closer enforcement of existing HOS regulations, which makes finding parking within allowable time limits even more critical.

All of this means truck drivers face tough choices when they reach their HOS limit. Many have no better option than to park in undesignated and unsafe areas or drive beyond their daily HOS limit, which puts everyone at risk.

1.4 Plan Review

The following TxDOT transportation and freight planning efforts were reviewed to ensure consistency and guide the direction of future truck parking implementation activities in the region.

1.4.1 TxDOT Mission and Vision

TxDOT's mission is to "Connect you with Texas." As such, the agency's vision is to be a "forward-thinking leader delivering mobility, enabling economic opportunity, and enhancing quality of life for all Texans."

1.4.2 Texas Transportation Plan Goals

Over the next 30 years, the Texas transportation system will face many challenges, most notably population and employment growth. To ensure the future transportation system works for the traveling public and the "economy in motion," TxDOT developed the Texas Transportation Plan 2050 (TTP), *Connecting Texas 2050*. This plan focuses on determining the needs of the multimodal system, exploring technology innovations that could improve safety/mobility, and planning for future capital investments – all focused on bringing Texans' vision of the future to fruition. To achieve this, the TTP created a series of goals for future transportation investment and decision-making:

- Promote safety
- Preserve our assets
- Optimize system performance
- Deliver the right projects
- Focus on the customer
- Foster stewardship

1.4.3 Texas Delivers 2050: The Texas Freight Mobility Plan

Texas has the second-largest economy in the nation and the seventh-largest in the world. To support the growing economy, TxDOT has recently updated its TFMP, developed the Statewide TPS, and conducted several implementation projects to advance freight planning and goods movement. The Statewide TPS was developed to support the goals of the TFMP, and both plans were designed to achieve the goals of the TTP.

Integral to Texas' prosperity and development is having a safe, efficient, and reliable freight system that connects Texas to global and domestic trade markets and supports the state's future growth. Published in March 2023, Texas Delivers 2050: The Texas Freight Mobility Plan focuses on congestion, safety, system operations, asset management, connectivity, international border crossings, community impacts/benefits, resiliency/security, and funding. The plan updated the TMFN, which facilitates the efficient movement of goods by concentrating investment on the most critical corridors and junctions to the freight industry. Goals of Texas Delivers 2050 included to improve the safety, efficiency, and performance of the TMFN, enhance the contribution of the transportation infrastructure to economic competitiveness, maintain, preserve, and modernize the TMFN, and to reduce congestion and improve system effectivity.

1.4.4 2020 Statewide Truck Parking Study

The Plan builds off the Statewide TPS, which obtained and analyzed statewide truck location data, collected information on all public and private sector truck parking facilities, engaged with drivers and other stakeholders, identified truck parking needs and shortages, and developed recommendations to address those needs. This study set the stage for future implementation efforts at the regional and district levels.

The goals of the Statewide TPS were to:

- Improve safety, reduce congestion, and enhance economic competitiveness of the Texas Multimodal Freight Network.
- Reduce undesignated truck parking on TxDOT right of way.
- Develop actionable strategies to meet truck parking and basic driver needs across the state, including oversize/overweight loads.
- Identify ways to partner with the private sector to meet the state's truck parking needs.
- Leverage technology to ensure efficient use of TxDOT-maintained truck parking.
- Address parking needs at key truck generators including seaports and border ports of entry.

1.4.4.1 Policy, Outreach, and Coordination Strategies

The Statewide TPS led to the development of a comprehensive set of strategies to address truck parking needs in Texas. There are three broad categories of strategies that were developed: policies, infrastructure, and technology and programs.

- **Policies.** Broad policy recommendations are provided to help change the way Texas approaches truck parking.
- **Infrastructure.** Specific infrastructure strategies that provide safe, efficient, and desirable truck parking that makes Texas roadways safer, better maintained, and more efficient.
- **Technology and Programs.** A collection of technology and programs that can be undertaken to improve the effectiveness of existing truck parking and facilitate the development of new truck parking.

While developing the potential policies, TxDOT identified that over 90% of truck parking in Texas is provided by the private sector, thus requiring stakeholders to take the lead on some of the recommended strategies. As a result, TxDOT developed both TxDOT-led and TxDOT-supported policy strategies.

The Statewide TPS includes six TxDOT-led policy recommendations. These policies focused on areas under the control of TxDOT and included planning, operations, project development, and right of way acquisition. The Statewide TPS also outlined TxDOT-supported policies to provide recommendations and resources for local communities, agencies, and the freight industry. TxDOT can serve a supporting role and be the catalyst for initiating action. More detail can be found in the Truck Parking Recommendations and Action Plan Report.

1.4.4.2 Key Findings and Recommendations

Addressing truck parking needs must be a coordinated public-private effort and include improvements discussed in the study as well as the initiation of new statewide programs and policies. Current and future efforts should focus on:

- **Policy and Program Recommendations:** The State should take short- and medium-term actions to fully advance truck parking policy and program recommendations outlined in the Statewide Truck Parking Study.
- **High priority Truck Parking Capacity Investments:** The State should undertake near-term expansion and upgrading of truck parking facilities in the highest need areas.
- **Low and Medium Truck Parking Capacity Investments:** The State should undertake:
  - Advancement of feasibility studies for the medium and low need truck parking facilities located on high need highway segments.
  - Monitoring the remaining facilities to ensure changing truck parking needs are met without the need for a complete update of the Statewide Truck Parking Study.
  - Ensuring that the Unified Transportation Program (UTP) project prioritization incorporates truck parking safety and congestion considerations.
  - Outlining how to advance the truck parking projects through project development and implementation.

- Identifying potential funding sources to pay for needed investments in truck parking infrastructure.

- Focusing efforts at the corridor, border, energy production regions, district and MPO levels on identifying and addressing truck parking needs.

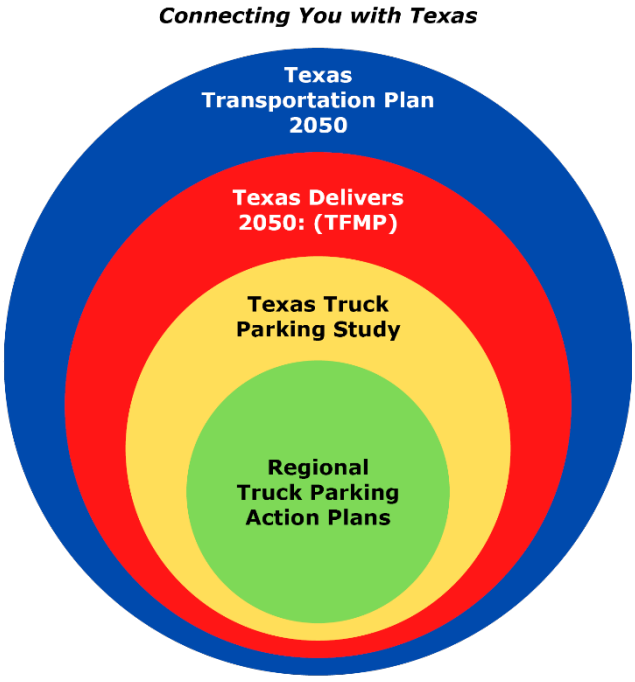
These steps are crucial to addressing truck parking needs and impacts in Texas and advancing TxDOT's commitment to support a safer highway system, continued economic growth and development, and quality of life for all Texans.

1.5 Vision, Goals, and Objectives

The Plan's vision and goals directly support the Statewide TPS, Texas Delivers 2050, and the TTP. They were developed utilizing a multi-pronged approach that included:

- Assessment of TxDOT mission, vision, and statewide plans for relevant goals and objectives
- Review of needs identified in the Statewide TPS for the Houston and Beaumont Districts
- Documentation of implementation priorities from TxDOT District and TPP staff
- Review of recent truck parking legislation and funding programs
- Consideration of stakeholder input and unique characteristics of the project area

Visit www.txdot.gov and search "Truck Parking" to learn more.



The Southeast Truck Parking Action Plan Vision and Goals supports previous Plans and Studies

Vision: The Southeast Texas Region envisions a THFN with adequate truck parking spaces located where they are most needed, outfitted with the amenities drivers require. To accomplish this vision, the Region will leverage innovative solutions to ensure cost-effective improvements are developed to meet truck parking needs.

Goals and Objectives: While the goals are directly aligned with the Statewide TPS goals, the objectives consider local lessons from the Statewide TPS and feedback from TxDOT District staff and stakeholders.

Figure 1-3 outlines the Southeast Texas Region Truck Parking Action Plan's goals and objectives.

Figure 1-3: Southeast Texas Region Truck Parking Goals and Objectives

Goal 1 - Reduce crashes involving parked trucks and improve truck driver safety

- Focus on reducing undesignated truck parking through new and expanded truck parking in the Southeast region
- Improve safety through design of new and improved truck parking facilities, including lighting
- Improve resiliency by considering emergency truck parking needs during major incidents within the region including, but not limited to, storm and flooding events

Goal 2 - Invest with an eye toward the life-cycle cost of infrastructure

- Consider the long-term benefits and costs associated with design and amenity decisions
- Reduce shoulder damage by reducing undesignated parking and hardening of ramp shoulders in freight-intensive areas

Goal 3 - Develop truck parking facilities in/near freight-intensive areas

- Embrace innovative ideas like "cell phone lots" near major freight areas

Goal 4 - Support the Port of Beaumont, Port Houston, and other multimodal connectivity points

- Evaluate potential opportunities to improve truck parking near intermodal facilities, such as the Ports of Houston and Beaumont, rail, and other multimodal connectivity points to ensure drivers can maximize load pick-up/drop-off times
- Support the implementation of the REAL Plan

Goal 5 - Improve economic development and quality of life in Southeast Texas

- Reduce unproductive legal driving hours used to find parking by building new and expanded capacity
- Identify opportunities to address freight impacts on overburdened communities

Goal 6 - Support private-sector truck parking development and innovation

- Develop a strong and evolving relationship with the private sector to encourage policy, program, technology, and communication collaboration

Goal 7 - Improve the truck driver experience and quality of life in Southeast Texas

- Prioritize driver needs that can help prevent crashes and improve productivity
- Focus on the diverse range of truck parking needs (HOS breaks, staging, emergencies)
- Consider truck parking needs for owner-independent drivers who do not have options for parking their truck during their time off
- Address the truck parking needs of various industry segments: drayage, agricultural, bulk, e-commerce, over-size/over-weight, etc.

Goal 8 - Leverage technology to solve truck parking challenges

- Embrace technologies, like TPAS, that match available truck parking supply with demand
- Future-proof investments to handle future industry demands – like alternative fuels, autonomous trucking, or new modes (i.e., Freight Shuttle)
- Integrate truck parking solutions with other TSMO initiatives in the region – like ConnectSmart, TPAS, WIM/VC, and Freight Shuttle

Chapter 2:
Needs Assessment

Texas Department of Transportation

2.0 Needs Assessment

Truck parking needs can vary widely between regions, neighboring municipalities, and even within local communities and neighborhoods depending on a range of factors. For instance, communities near major freight routes like I-10 may see trucks parked overnight along highway shoulders and ramps when truck stops and other designated parking facilities are at capacity. Areas with large concentrations of freight-intensive land uses and truck-generating facilities often experience an influx of trucks staging as drivers wait for pick-up and delivery windows during certain times of the day which can cause increased congestion and create safety issues when trucks park in unauthorized locations. In urbanized areas and neighborhood communities, local ordinances may prohibit truck parking on local streets or within city limits, forcing local owner-operators to park in unauthorized areas, such as on neighborhood streets or vacant lots which can result in fines.

To better understand the unique truck parking needs in the Southeast Texas Region, a comprehensive data assessment was conducted to better understand existing public and private truck parking facilities, designated and undesignated parking demand, and the safety and equity impacts of truck parking. The needs assessment leverages information and data collected for the Statewide TPS along with updated crash data to analyze truck movements and stopping events on the THFN and within census tracts throughout the region. The following chapter provides a summary of the results of this assessment and is organized as follows:

- **Truck Parking Supply** – provides a regional inventory of public and private truck parking facilities
- **Truck Parking Demand** – quantifies truck parking demand at designated and undesignated locations based on GPS data

- **Crash Analysis** – updates the Statewide TPS safety analysis of crashes involving parked trucks within the Southeast Texas region
- **Areas of Greatest Need** – identifies truck parking needs on the THFN based data driven prioritization factors
- **Equity Analysis** – assesses the impacts of truck parking on equity focus areas

A more detailed analysis of the results of this assessment can be found in the *Needs Assessment Technical Memorandum*.

2.1 Truck Parking Supply

Accurately identifying designated truck parking capacity, which includes an inventory of the number of spaces at both public and private parking locations, is a critical first step to help understand the scope of truck parking challenges in the Southeast Texas Region. Designated truck parking locations are parking facilities where truck drivers are allowed and encouraged to park, such as truck stops and Safety Rest Areas (SRAs) and Travel Information Centers (TICs). This section provides an overview of how the regional supply of truck parking was collected, processed, analyzed, and validated, along with the subsequent inventory results.

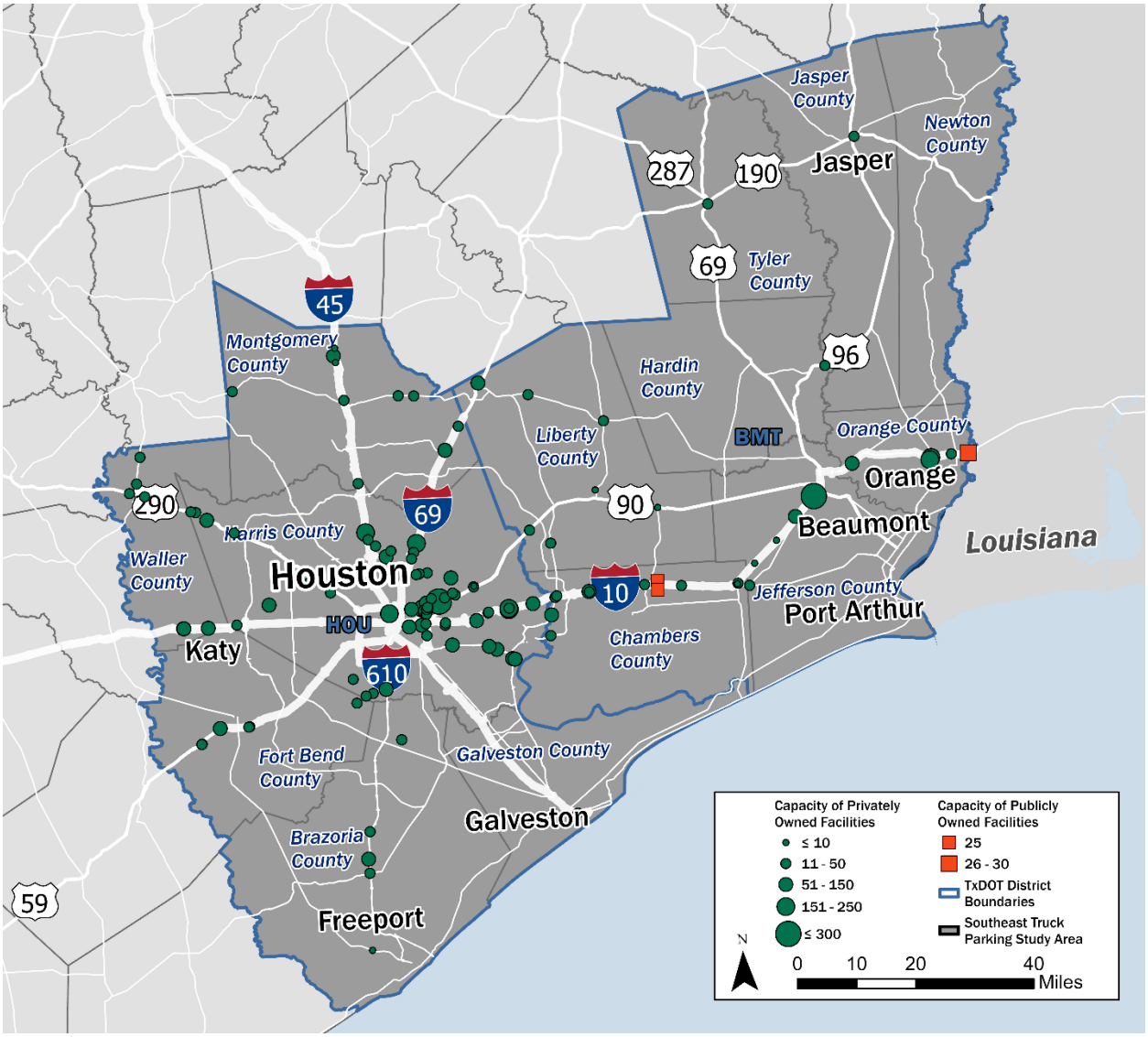
For the purpose of this study, any private truck parking sites that appeared to have fewer than ten spaces were excluded. Private secure truck parking facilities, private truck stops with services (including commercial chains), and all public sites (typically SRAs and TICs) were included. For private facilities, the information on the capacity for truck parking was not always consistent. As a result, analysis leveraged multiple data sources including information from the Statewide TPS, crowdsourced driver-facing parking applications, and aerial imagery to develop the most accurate capacity estimate given the limitations in data availability.

In total, there are **119 truck parking facilities in the study region,** including public facilities, private secure truck parking, and commercially owned truck stops with amenities and services. These facilities provide an estimated **7,213 truck parking spaces** to the study region. Capacity is greatest within the vicinity of I-69 and I-10, as well as in the eastern portions of the Houston area. Facilities in dense urbanized areas tend to be privately-owned with publicly owned facilities often situated outside of major cities or on rural stretches of corridors. In the study area, the only public facilities are located outside of Houston city limits.

Figure 2-1 shows the results of the truck parking inventory. It depicts both public and private facilities along with their estimated capacities.

There are **only three public facilities in the Southeast Texas Region,** including two SRAs and one TIC, all located in the Beaumont District. The public facilities comprise an estimated 80 parking spaces, or approximately 1.1% of all spaces in the region. There are 116 private truck parking facilities with an estimated 7,133 parking spaces, equaling 97.5% of truck parking facilities 98.9% of spaces in the region. Of the total 119 truck parking locations, **95 locations have capacity of fewer than 100 spaces**, 19 locations have a capacity of 100 to 199 spaces, and only six locations have capacity of over 200 parking spaces, with the maximum capacity at 300 spaces.

Figure 2-1: Capacity of Truck Parking Facilities across Southeast Texas

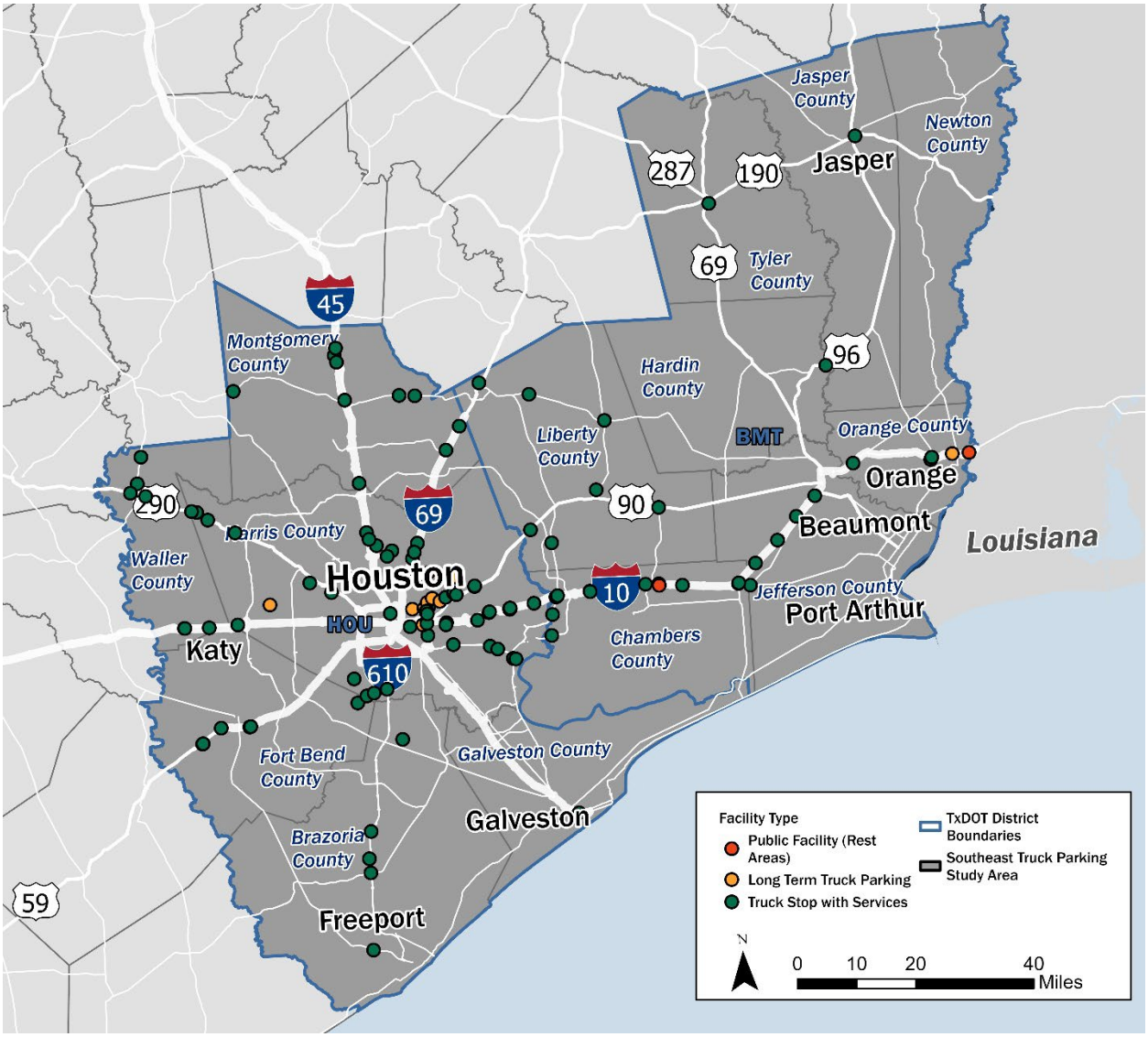


Source: Compiled by Cambridge Systematics using Statewide TPS and other public data sources

Privately-owned facilities can be separated into two categories: truck stops with services and long-term truck parking facilities, which are often used by owner-operators and smaller fleets for extended parking needs. Truck stops offering services are often preferred by truck drivers as they typically provide amenities such as restrooms, food, and fuel. These stops comprise roughly 90% of all facilities and provide nearly 82% of private spaces, at 5,813 spaces. Secure truck parking facilities account for ten locations in the region, or 9.2% of facilities, but hold 18.5% of all spaces, indicating the vast size of these lots despite being located intermittently throughout the region.

Figure 2-2 shows the abundance of both types of private truck parking facilities along I-10, I-69, and on the eastern side of the greater Houston area. The three public facilities are all located outside the city limits, within Chambers and Orange counties.

Figure 2-2: Designated Truck Parking Facilities by Type



Source: Compiled by Cambridge Systematics using Statewide TPS and other public data sources

As seen in Figure 2-2, truck parking supply is unevenly distributed throughout the 14 counties in the Houston and Beaumont Districts. Importantly, the number of truck parking locations in any given district is not reflective of the level of truck activity or demand for parking.

Table 2-1: Parking Spaces in the Districts and Counties

Location Name	Number of Parking Spaces	Percentage of parking spaces	Amount of Locations	Percentage of locations
Houston District	5,560	77.1%	N/A	
Beaumont District	1,653	22.9%	N/A	
Harris County	4,382	60.8%	119	49.6%
Chambers County	537	7.4%	12	10.1%
Remaining counties combined	2,294	31.8%	48	40.3

2.2 Truck Parking Demand

Source: INRIX Parking Facility Demand image of Chambers County Rest Area

Identifying demand, or the total number of trucks that want to park in a location or geographic area, is a critical component of understanding if a specific location, corridor, or geographic area has a shortage or surplus of truck parking. The 119 identified facilities are considered designated truck parking facilities. Parking is considered undesignated when it occurs outside of a designated truck parking facility within a roadway right-of-way.

The regional truck parking demand assessment uses GPS information provided by INRIX to estimate the demand at designated parking facilities, preferred locations for trucks to park, and undesignated areas such as on-street parking or along roadway ramps and shoulders. The demand analysis was conducted census tract level and at the corridor level using the THFN corridors. Census data was pulled from the U.S. Census Bureau (2019) and the 2023 THFN hosted by TxDOT. This data was then compared against the INRIX data for the same period to estimate the percentage of trucks captured in the study area. The resulting percentages were used to develop expansion factors which were then applied to the raw data to estimate total truck parking demand in the Southeast Texas region.

2.2.1 Demand at Designated Facilities

Demand at designated truck parking locations includes the estimated peak hour demand and estimated average daily demand defined as:

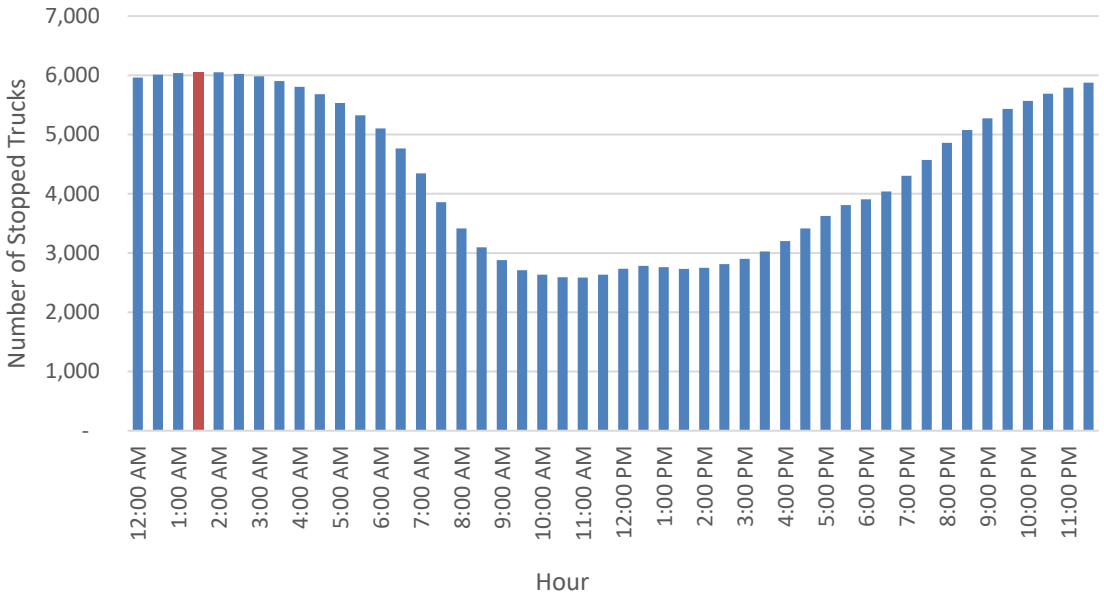
- **Peak Hour Demand:** Calculated by first identifying the region wide peak hour and then totaling the average number of trucks parking at a given designated location during that time period. Truck parking demand is typically the highest overnight, and facilities are often at or over capacity at these times.

- **Average Daily Demand:** The number of trucks parked at a particular location during an average weekday. It is helpful for understanding the total number of trucks parking at a location throughout a 24-hour period, but because trucks arrive and depart throughout the day this value

does not indicate the number of spaces needed to accommodate trucks that need parking at the same time.

Within the study region, the peak hour for truck parking begins at 1:30 a.m., as shown in Figure 2-3, with 6,053 trucks parked at this peak hour on an average day. The lowest demand occurs at 11 a.m. on an average day with 2,585 trucks parked at the same time in the study region.

Figure 2-3: Hourly Truck Parking Demand



Source: Cambridge Systematics analysis using 2019 INRIX data

While peak hour demand is essential for understanding capacity constraints, parking duration as well as average daily demand give a better view of daily truck operations in the region. Table 2-2 shows that peak hour utilization is over capacity for truck stops and public facilities. Truck stops also have a much higher average daily demand than other facility types, accounting for 92% of all average daily demand. Peak hour and average daily demand are highly correlated as seen in Figure 2-3.

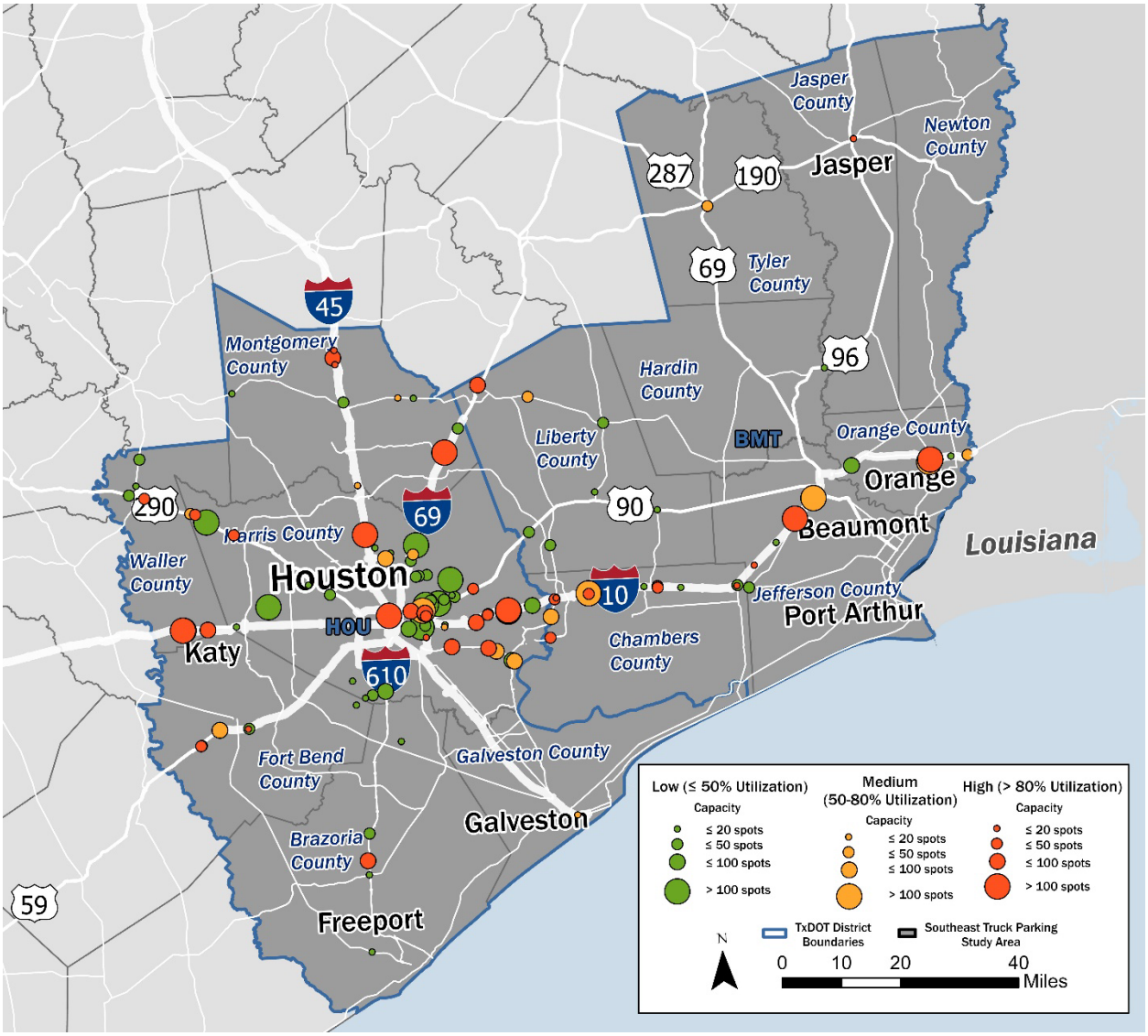
Table 2-2: Average Peak Hour Utilization and Daily Demand

Ownership	Average Peak Hour Utilization	Average Daily Demand	Percent of Average Daily Demand
Truck Stop with Services	102%	19,530	92%
Secure Truck Parking	27%	1,284	6%
Public Facilities	129%	440	2%

Source: Cambridge Systematics analysis using 2019 INRIX data

Figure 2-4 shows the geographic distribution of truck parking facilities by peak hour utilization. Many of the designated locations that fall within the highest utilization category are along the I-10, I-69, and I-45 interstate corridors. The utilization categories used are low (< 50% utilization), medium (50 to 80% utilization), and high (> 80% utilization). Across all facilities, 39% have high rates of utilization and 19% have medium utilization. Of the three public facilities in Orange and Chambers counties, two have high utilization rates and one has medium utilization.

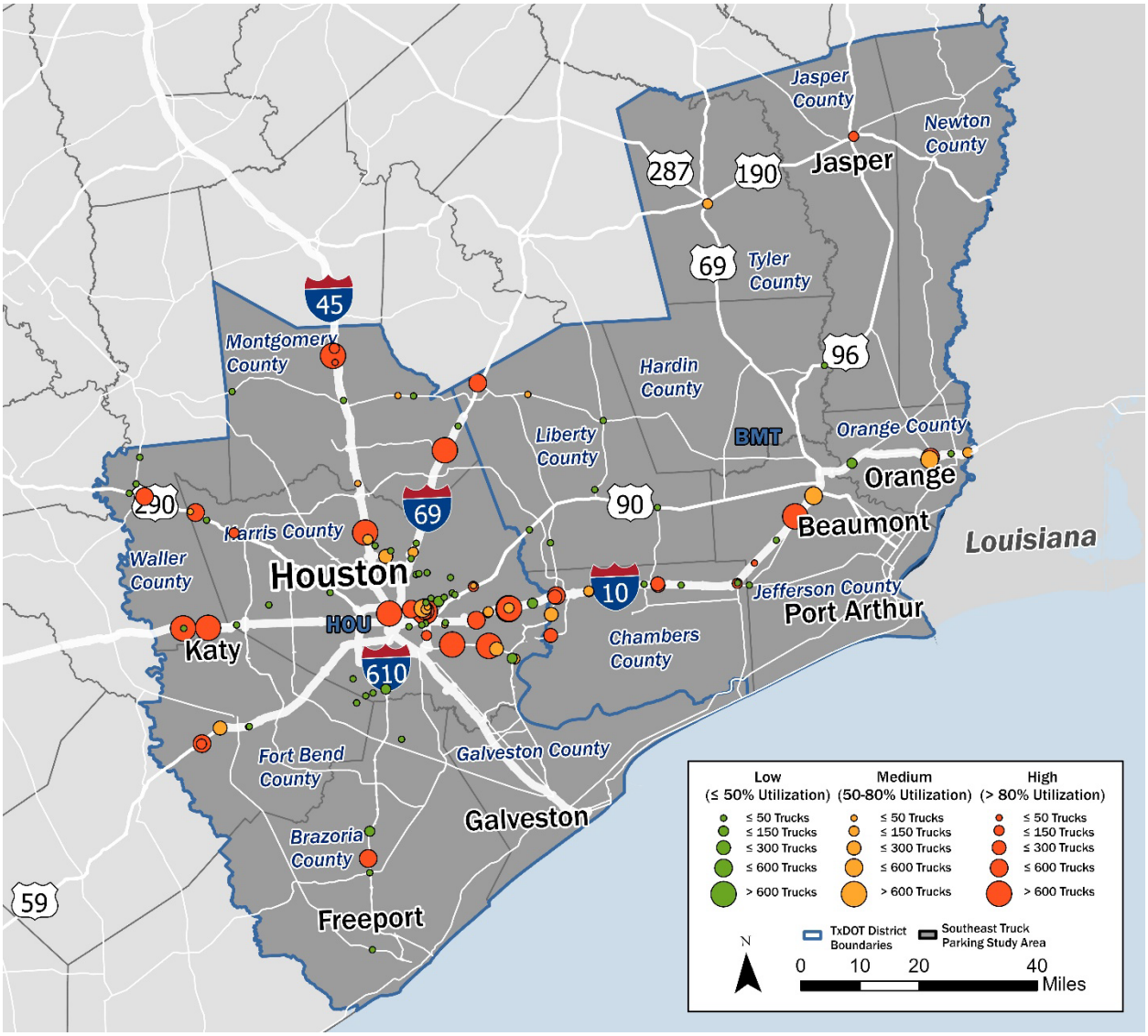
Figure 2-4: Peak Hour Utilization at Designated Locations by Truck Parking Capacity



Source: Cambridge Systematics analysis using 2019 INRIX data

Demand tends to concentrate at highly utilized facilities along major corridors such as I-45, I-69, and I-10 and in urban areas including Houston, Katy, and Beaumont. The average daily demand within Beltway 8 in Houston is particularly high, comprising 5,119 trucks or 24% of average daily demand in the whole region. Figure 2-5 shows the average daily demand at designated parking facilities.

Figure 2-5: Average Daily Demand at Designated Facilities



Source: Cambridge Systematics analysis using 2019 INRIX data

In addition to understanding peak hour and daily average parking demands throughout the region, analyzing the duration of parking incidents provides insight into the parking needs of truckers including for overnight stays, staging, or other hours of service requirements. Based on the INRIX data analysis, short breaks and staging (0-4 hours) account for 62% of the overall parking at designated facilities, which accounts for most of the daytime activities of truckers. Longer duration breaks for 10-hour rest and extended staging (4-14 hours) account for 38% of the total parking in the study area during the defined analysis period.

2.3 Demand at Undesignated Facilities

Undesignated locations are defined as any area outside of a designated parking facility that falls within the right-of-way (ROW). Truck drivers often use these locations for parking when they are unable to find available space at designated parking facilities within a time allotted to them by HOS regulations. The truck GPS data used for this study was overlaid onto the ROW to estimate the number of trucks parked on shoulders of Interstate freeway ramps, highways, and local roads.

The results of the undesignated parking analysis were summarized by two different geographies:

- **By corridor** –TxDOT's THFN was broken into corridor segments less than five miles in length with a half mile on either side of the highway creating a buffer of a mile from the centerline of the roadway. All trucks parked within any roadway ROW inside a corridor segment were assigned to that segment.

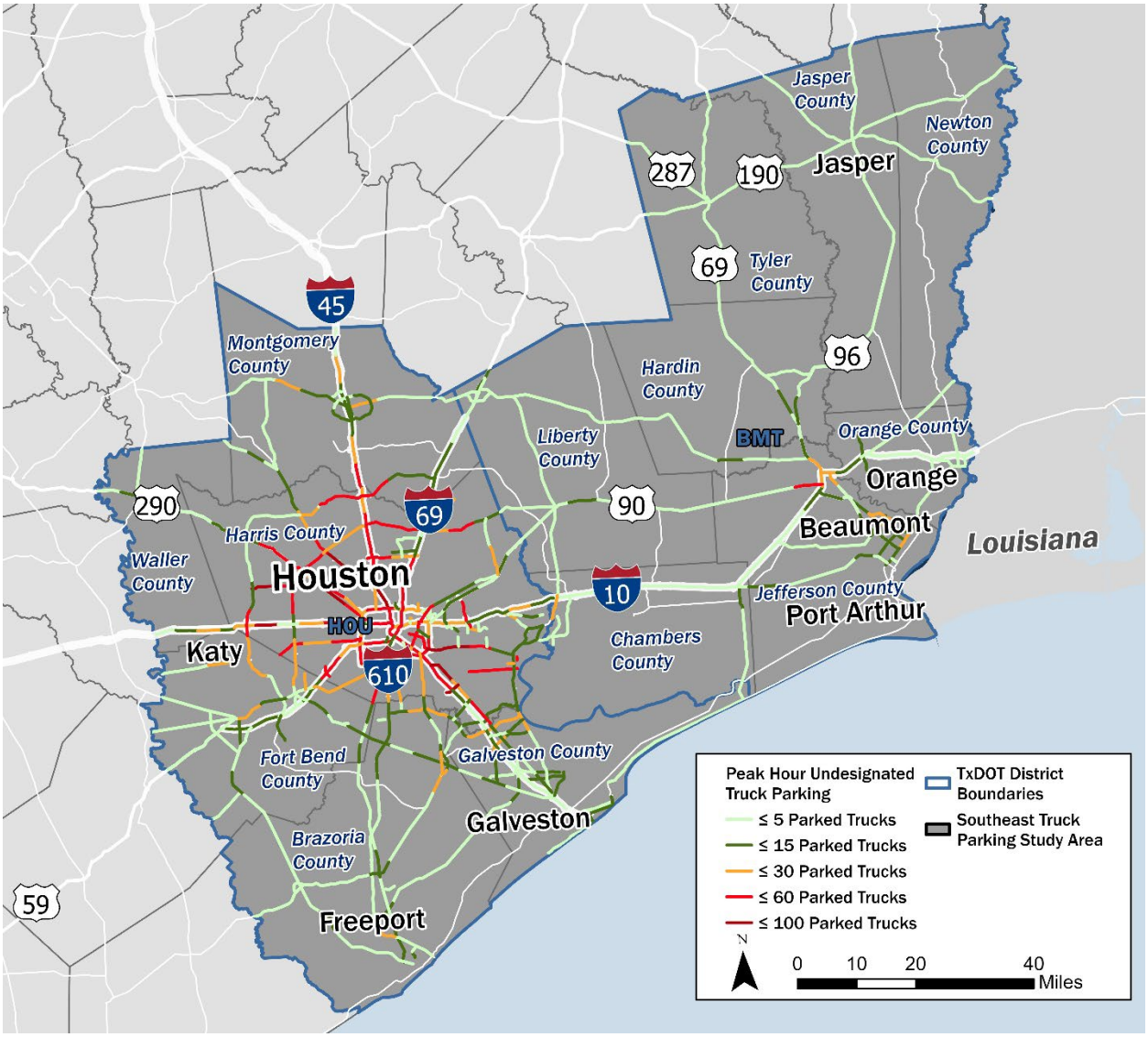
- **By census tract** – Census tracts are determined by the U.S. Census Bureau and represent roughly equal levels of population creating large difference in size between rural and urbanized areas. There were 1,187 census tracts within the study area encompassing the Houston and Beaumont TxDOT Districts.

Undesignated parking is widespread in the region and typically concentrated near metro areas, especially Houston. Table 2-3 displays segments with more than 60 undesignated parked trucks while Figure 2-6 shows peak hour undesignated parking by corridor. Segments outside the Houston metro area with high levels of undesignated parking include US 90 west of Beaumont, FM 518 near League City, and SH 332 near Freeport.

Table 2-3: Major Roadways with more than 60 Undesignated Parked Trucks

Corridor	Location
SH 225	Near I-610 intersection
SH 3	Near I-45 intersection
I-10	Near SH-99 intersection
SH 249	Northwest Houston
Hempstead Road	Adjacent to US 290
Farm-to-Market (FM) 529	Near SH 99 intersection
I-45	Between Shephard Dr and I-610

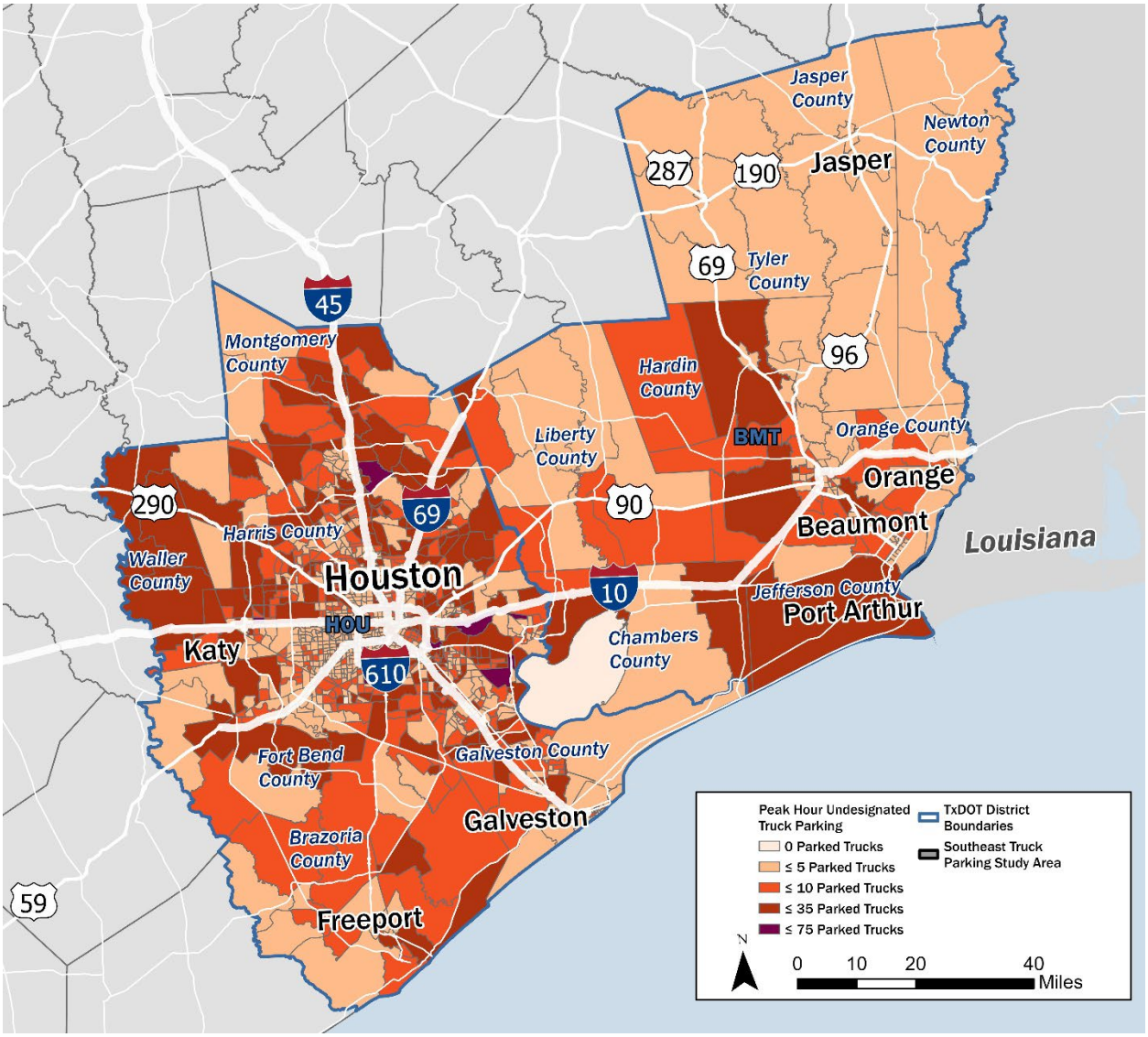
Figure 2-6: Peak Hour Undesignated Parking by Corridor



Source: Cambridge Systematics analysis using 2019 INRIX data

There are 7 census tracts in the region with the highest levels of undesignated truck parking (above 35 parked trucks) as highlighted in Figure 2-7. Six of these are within the Houston area, while undesignated levels are particularly high in the Buffalo Bayou area on the East side of the city south of I-10. Other locations with high concentrations of undesignated parking include where I-610 and SH-288 intersect corresponding to a large logistics area and I-10 near Katy in a mixed-use area where there still are several logistics centers such as the Academy Warehouse. Finally, north of Houston along I-45 there is a high concentration in the city of Spring in an area that is notably mixed with more housing and large open areas of land.

Figure 2-7: Peak Hour Undesignated Parking by Census Tract

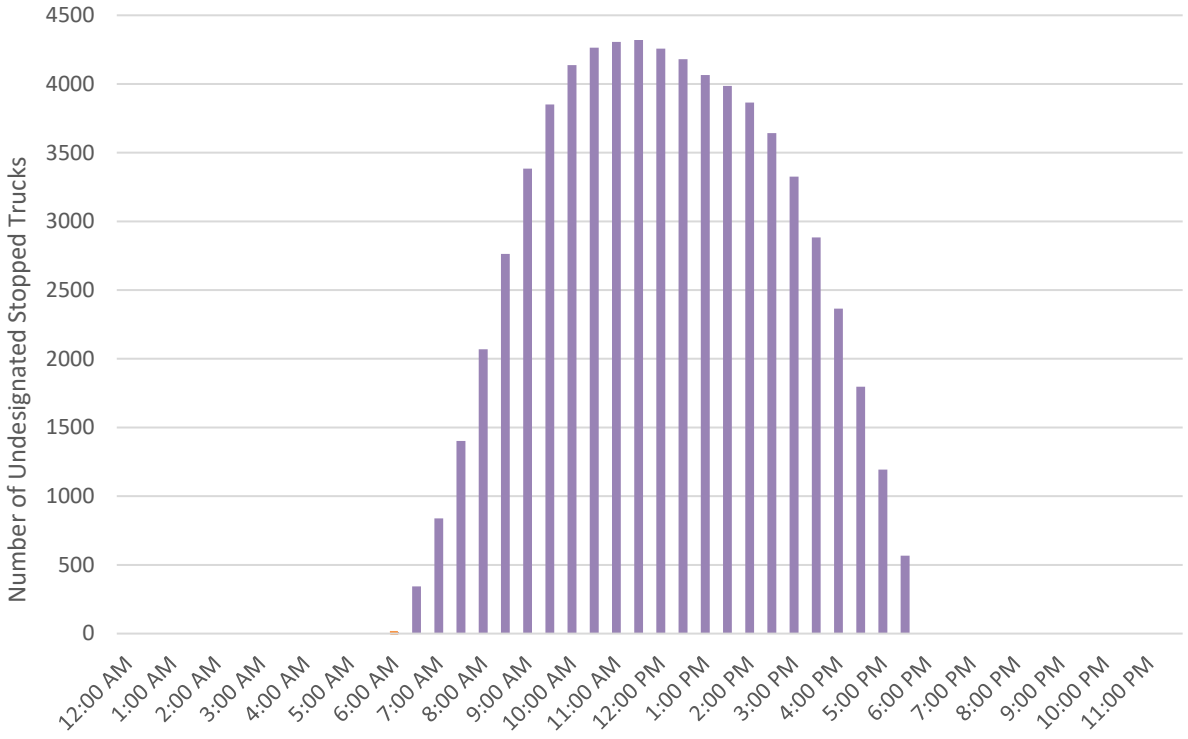


Source: Cambridge Systematics analysis using 2019 INRIX data

As previously mentioned, undesignated parking is a function of truck drivers' needs, including overnight parking and staging, not being met by designated facilities. Similar to the results of the designated parking analysis, approximately a third of trucks are short staging for one to four hours, while 31% of trucks are taking breaks that are less than an hour. Extended parking that lasts between 4-14 hours makes up the remaining truck parking stops during the analysis period.

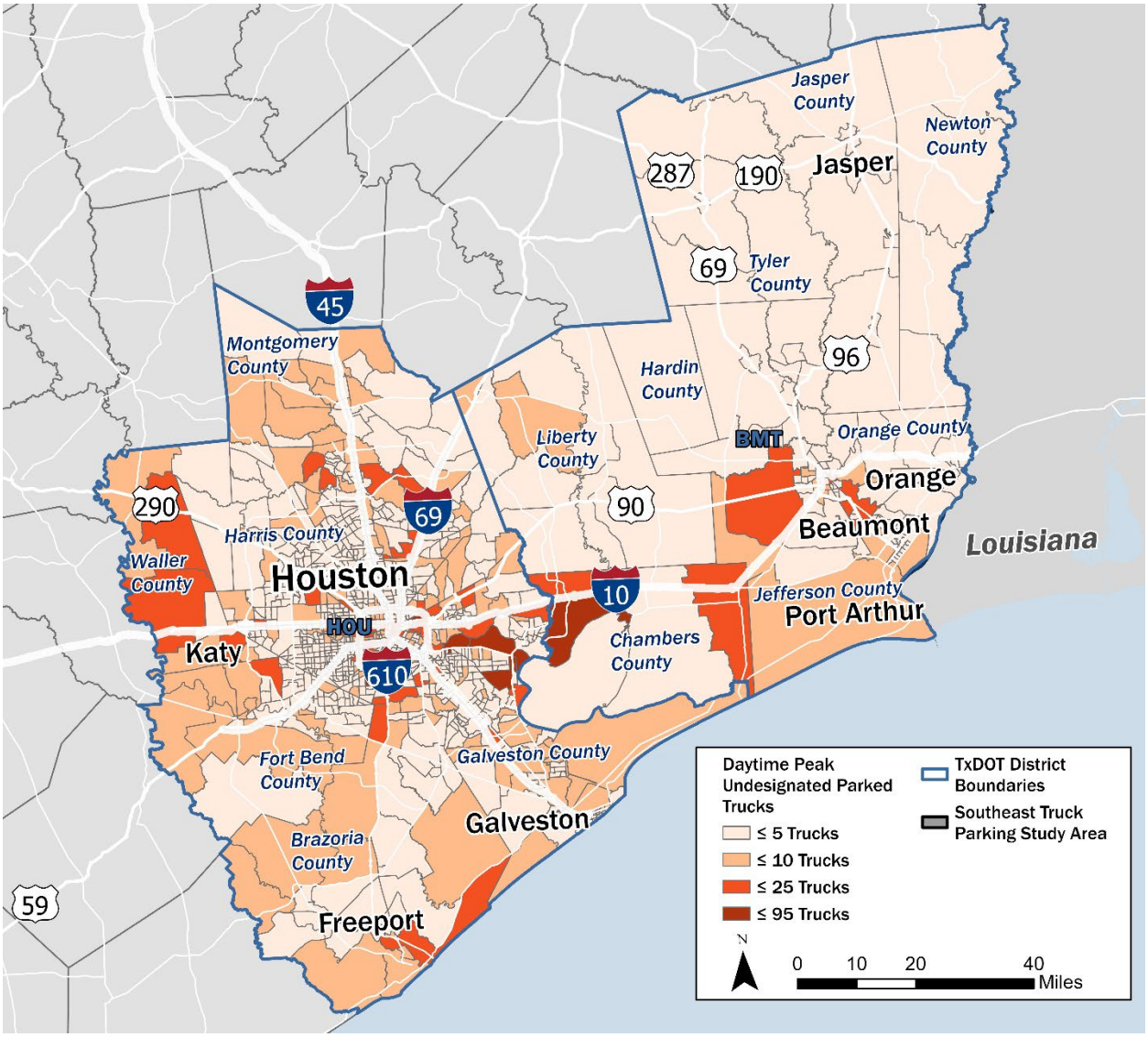
In order to better understand the sufficiency of daytime parking needs of truck drivers in the study region, a daytime peak was also calculated for undesignated parking locations based on truck parking incidents that start and end between 6 a.m. and 6 p.m. Figure 2-8 shows the parking needs for this daytime activity. The peak hour for parking activity within the daytime hours is 11:30 a.m.

Figure 2-8: Daytime Parking Activity



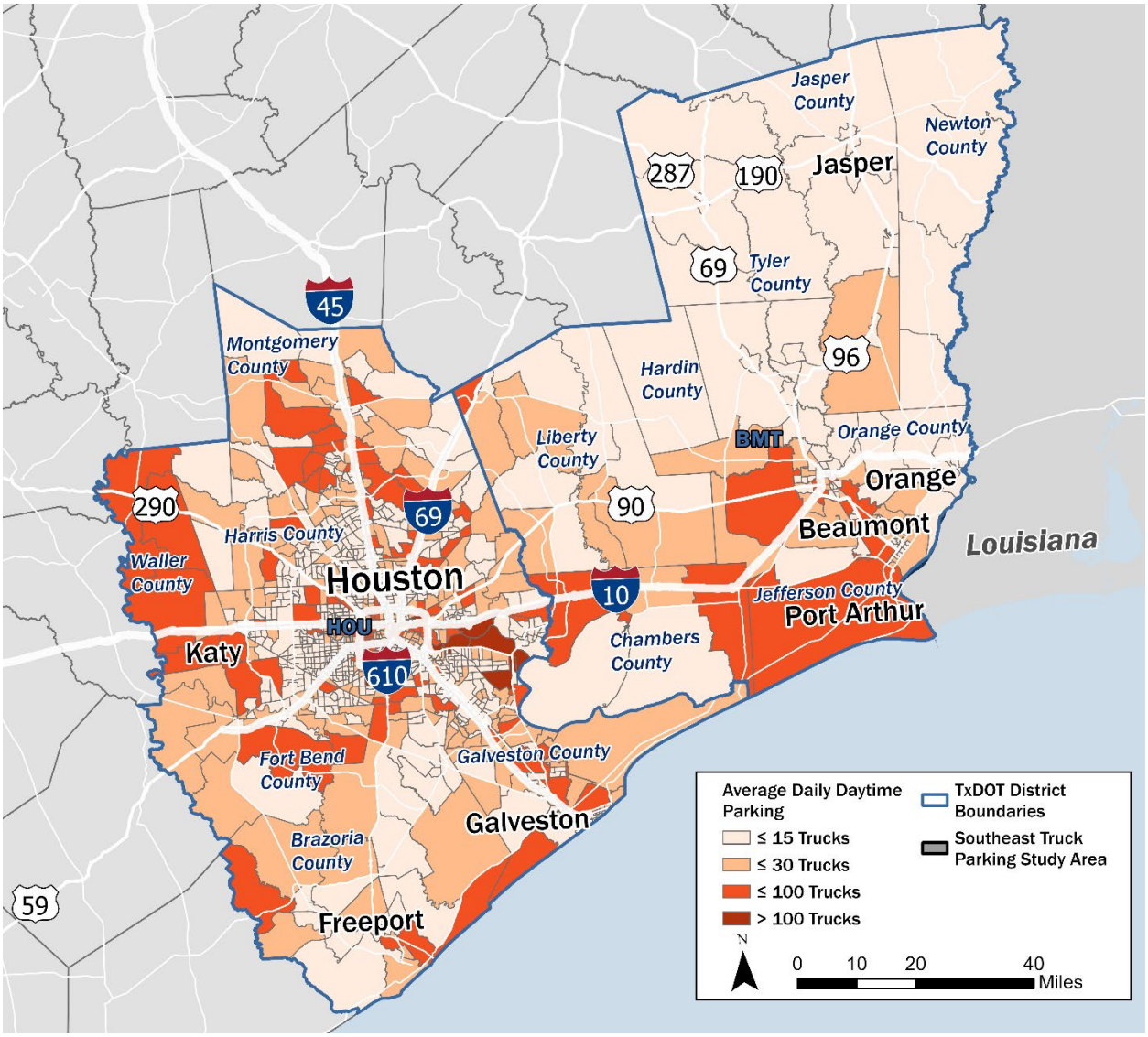
The average number of trucks parking in an undesignated area throughout the daytime hours within the study region is show at the corridor level in Figure 2-9 and at the census tract level in Figure 2-10 during the daytime peak hour. The daytime peak parking demand indicates the number of additional parking spaces needed to accommodate trucks that all need parking at the same time. As expected, undesignated parking occurs near many of the ports and industrial land uses.

Figure 2-9: Daytime Peak Hour Undesignated Parking by Census Tract



Source: Cambridge Systematics analysis using 2019 INRIX data

Figure 2-10: Average Daily Daytime Undesignated Parking by Census Tract

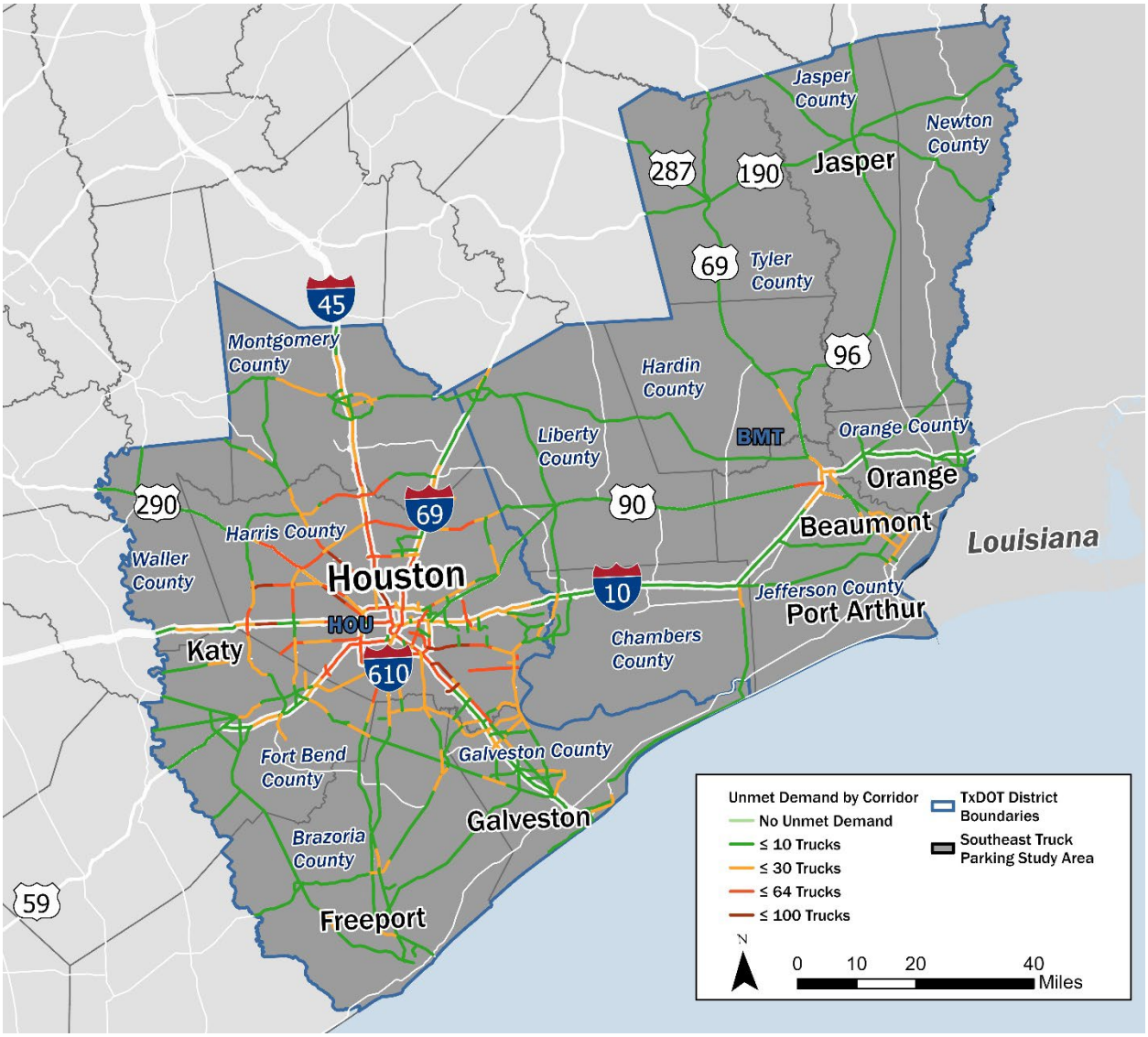


Source: Cambridge Systematics analysis using 2019 INRIX data

2.4 Unmet Demand and Other Needs

The shortage or surplus of truck parking is determined by calculating the difference between the total demand and supply of truck parking spaces within a corridor segment or census tract. Total demand is defined as the sum of trucks parking at designated facilities and within undesignated ROW during the peak overnight hour. Figure 2-11 summarizes the gap between truck parking demand and supply by major corridor segments.

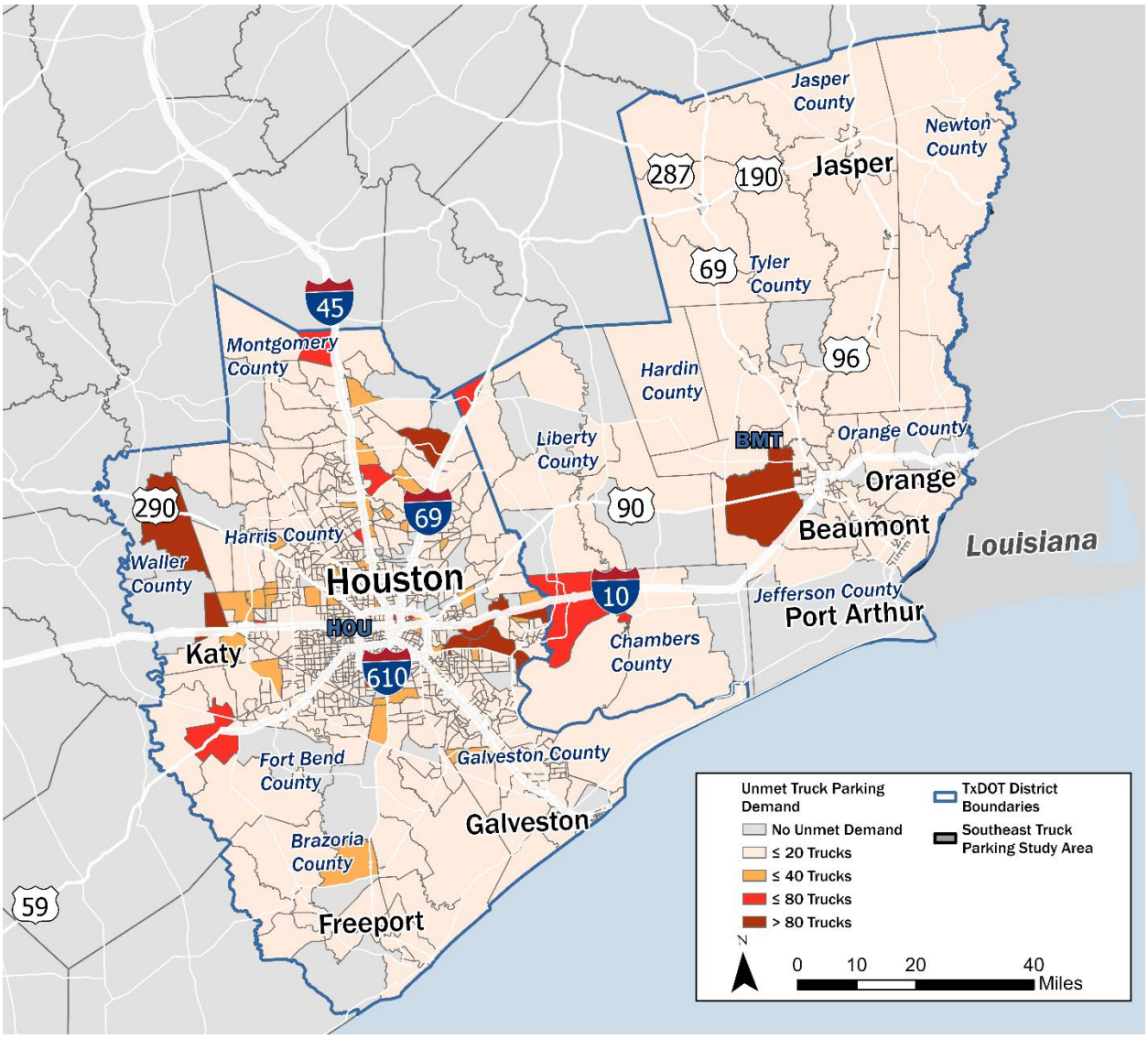
Figure 2-11: Unmet Demand by Corridor



Source: Cambridge Systematics analysis using 2019 INRIX data

Figure 2-12 shows the gap analysis summarized by census tracts.

Figure 2-12: Unmet Demand by Census Tract



Source: Cambridge Systematics analysis using 2019 INRIX data

Gaps in the Houston area reflect the relative lack of parking facilities in certain portions of the city, especially within the downtown area in East Houston (Buffalo Bayou region), and north and west Houston. These gaps represent some of the highest levels of undesignated parking in the. Specific areas with high levels of undesignated parking, and low capacity are listed in Table 2-4.

Table 2-4: Cities and Corresponding Segments with Undesignated Parking and Low Capacity

City	Segment
Houston	SH 249
Houston	SH 225
Houston	SH 3
Houston	I-45
Houston	I-10
Houston	FM 529
Houston	Hempstead Rd
Beaumont	US 90
Beaumont	US 96
Beaumont	US 69
Beaumont	I-10
Port Arthur	SH 347
Port Arthur	SH 73/87
Port Arthur	US 96
Conroe	FM 105
Conroe	I-45
Conroe	Loop 336

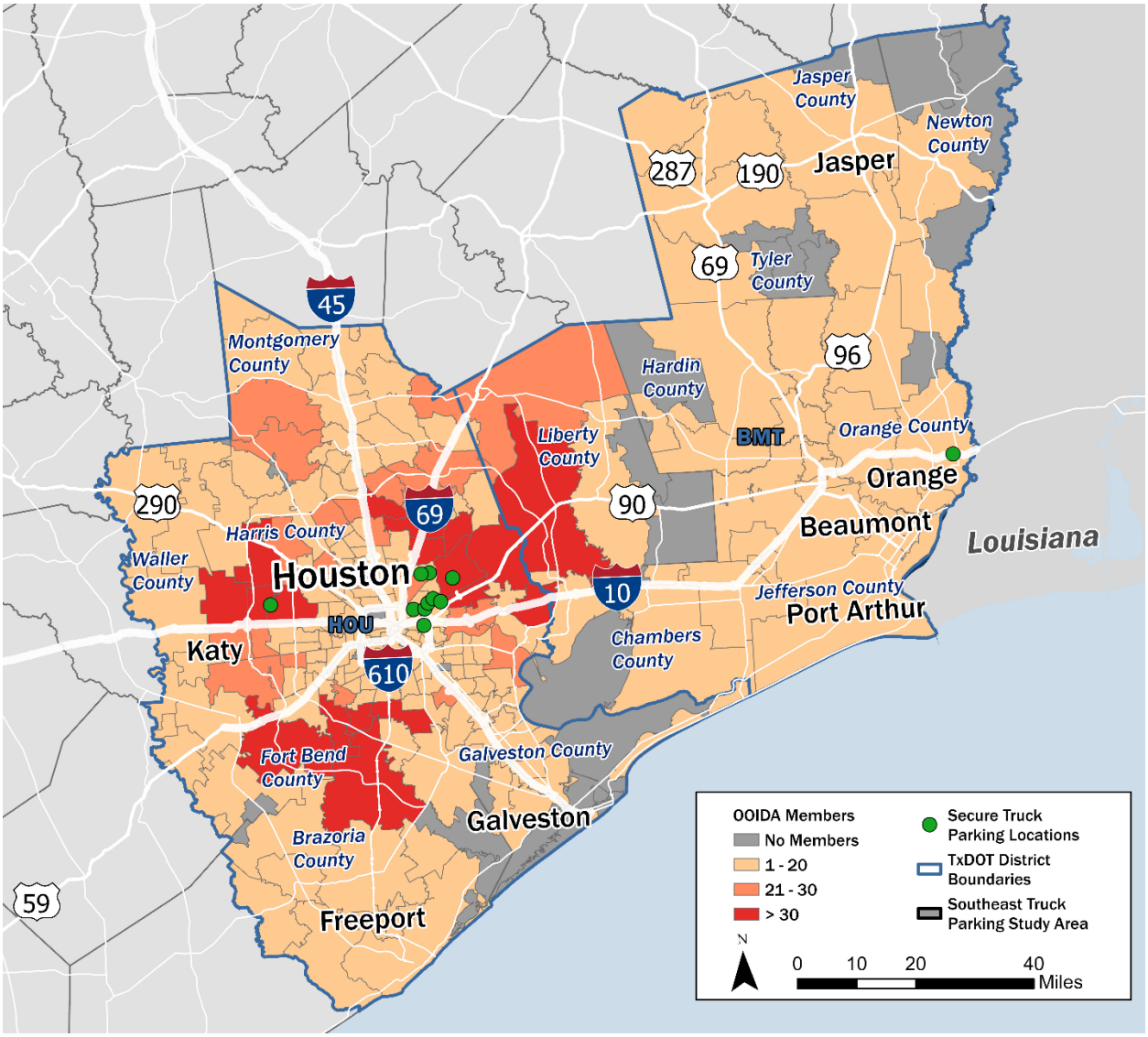
2.5 Owner-Operators

The Owner-Operator Independent Drivers Association (OOIDA) is a trade association that represents independent owner-operators and professional truck drivers. OOIDA engages in regulatory and legislative forums on highway safety and transportation policy, and advocates for a safe, efficient, and equitable business climate for their members.

OOIDA has 3,005 members in the study area, with approximately one-third of members located within the City of Houston. While OOIDA membership is not inclusive of all owner-operators in Texas, their membership reflects a particular type of truck parking need which is secure parking near residential areas. Without a warehouse or truck terminal to park their trucks at when off-duty, drivers often park in residential areas near their homes between trips.

Figure 2-13 overlays secure truck parking locations with the concentrations of OOIDA membership by zip code. While the areas with the highest levels of OOIDA membership (29 or more members) are in the suburban areas of Katy and Humble, secure truck parking sites tend to be located closer to northeast Houston, where fewer OOIDA members reside.

Figure 2-13: OOIDA Members by Zip Code and Secure Parking Locations



Source: Compiled by Cambridge Systematics with data from OOIDA

2.6 Maritime Staging

To maintain Texas' competitiveness and status as a maritime trade leader, vital capital investments in the Southeast Texas multimodal regional port system need to be addressed. Although ports vary substantially, they all depend on strong local roads and highway connections to provide last mile connectivity. There is a significant need to support designated truck parking facilities, particularly queueing and staging areas. These improvements not only benefit the ports and carriers, but may provide communities with enhanced safety improvements, reduced roadway congestion, and greater local economic activity.

The TxDOT 2022-2023 Texas Port Mission Plan and the subsequent 2024-2025 Texas Port Mission Plan describe truck queueing needs in great detail. In the absence of designated accommodations, trucks must often park on state and local roadways before or after accessing ports, which can exacerbate local congestion, endanger carriers, and create bottlenecks that ultimately impact the entire roadway network and supply chain.

Ports have been identified by TxDOT and within the 2024-2025 Texas Port Mission Plan for capital investment, along with accompanying priority strategies to mitigate the intermodal connectivity issues and safety concerns. These include the Ports of Beaumont, Orange, and Port Arthur.

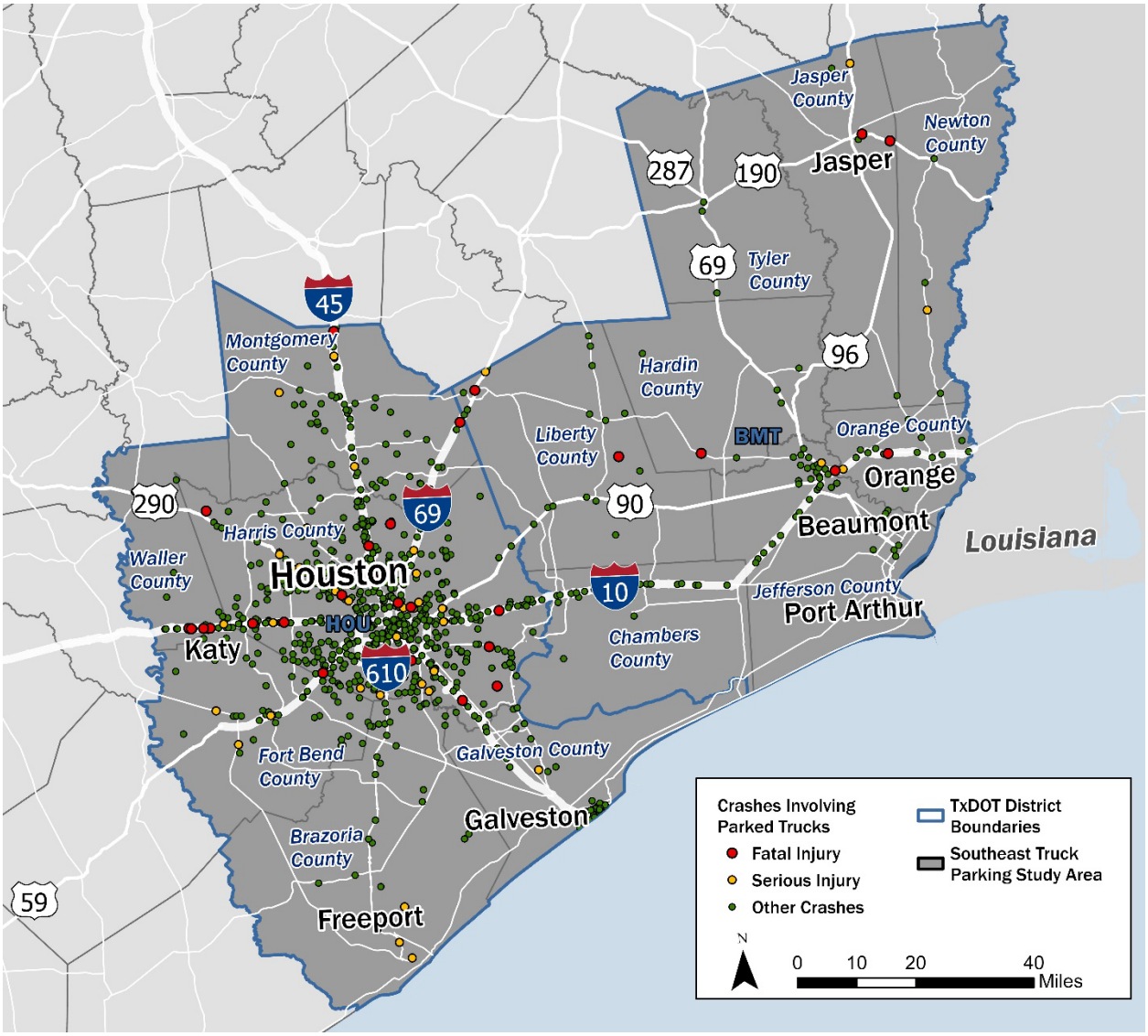
2.7 Crash Analysis

Truck drivers are mandated to rest at regular intervals. Without sufficient parking, drivers often find themselves parking in hazardous locations, such as on the side of roads, highways, or ramps. These potentially hazardous situations can result in crashes that cause serious injury or fatality. The following provides updates to the Statewide TPS safety analysis of crashes involving parked trucks within the Southeast Texas region.

The analysis uses crash data retrieved from TxDOT's Crash Records Information System (CRIS) database and spans the five-year period of 2018 to 2022. During this period, there were 28,344 truck crashes within the study region: 1,814 (0.63%) of those crashes involved parked trucks, resulting in 27 fatalities and 41 serious injuries. Analysis is focused on the crashes involving parked trucks.

Figure 2-14 presents the location of crashes involving a parked truck in the study area. Although there were 1,814 incidents involving parked trucks, only 861 records contained crash coordinates and are mapped below. Over 60% of crashes involving parked trucks occurred in urbanized areas. Crashes involving parked trucks are also skewed towards interstates and state highways. Harris County accounts for at least 60% of parked truck crashes and fatalities. More details can be found in the Southeast Texas Truck Parking Action Plan Needs Assessment.

Figure 2-14: Geographic Location of Crashes Involving Parked Trucks

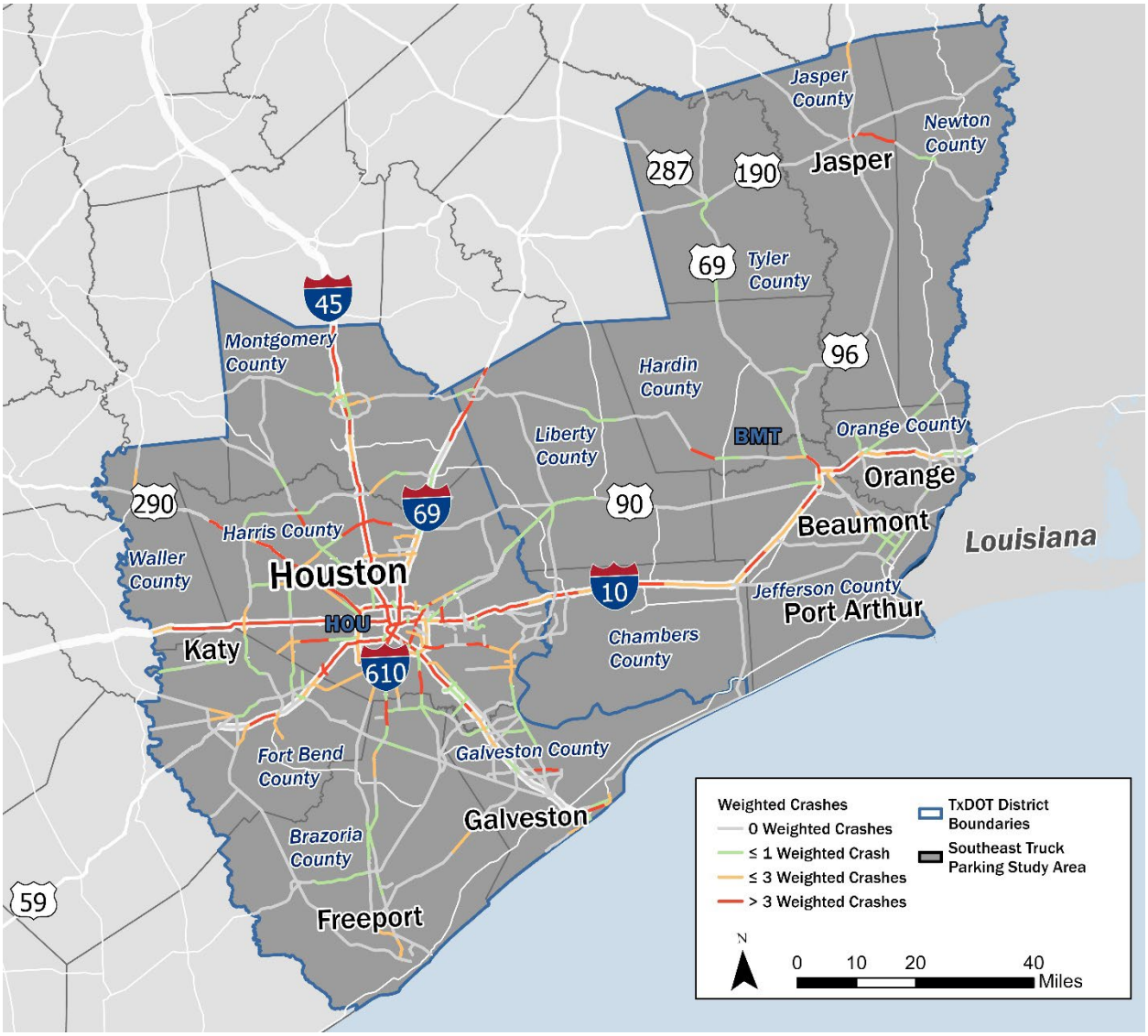


Source: Cambridge Systematics analysis using 2018 to 2022 CRIS data

Truck drivers are legally required to take rest periods. Lack of safe truck parking can cause driver to park in areas that are not only unauthorized, but unsafe.

To understand where high frequency crashes involving parked trucks are occurring, as well as the severity of these crashes, a crash score was calculated along the THFN within the study area. The THFN segments with the highest crash scores are in Harris and Jefferson Counties. In Harris County, I-10, I-45, I-610, and US 290 have the highest crash scores. In Jefferson County, I-10 has a high rate of crashes involving parked trucks.

Figure 2-15: Weighted Crashes by Corridor



Source: Cambridge Systematics analysis using 2018 to 2022 CRIS data

2.8 Areas of Greatest Need

In order to determine which locations have a high need for truck parking, a combination of truck parking demand, collision factors, and freight needs for each road segment were analyzed at the corridor level. These factors were calculated for each corridor on a per mile basis and sorted into low, medium, and high priority bins so that each bin was similar in size and then combined into a prioritization score. The combined prioritization score incorporates the three factors for a comprehensive view of truck parking needs in the study area. For more detailed information regarding the individual factor prioritization score methodology and results, please refer to the *Needs Assessment Technical Memorandum*.

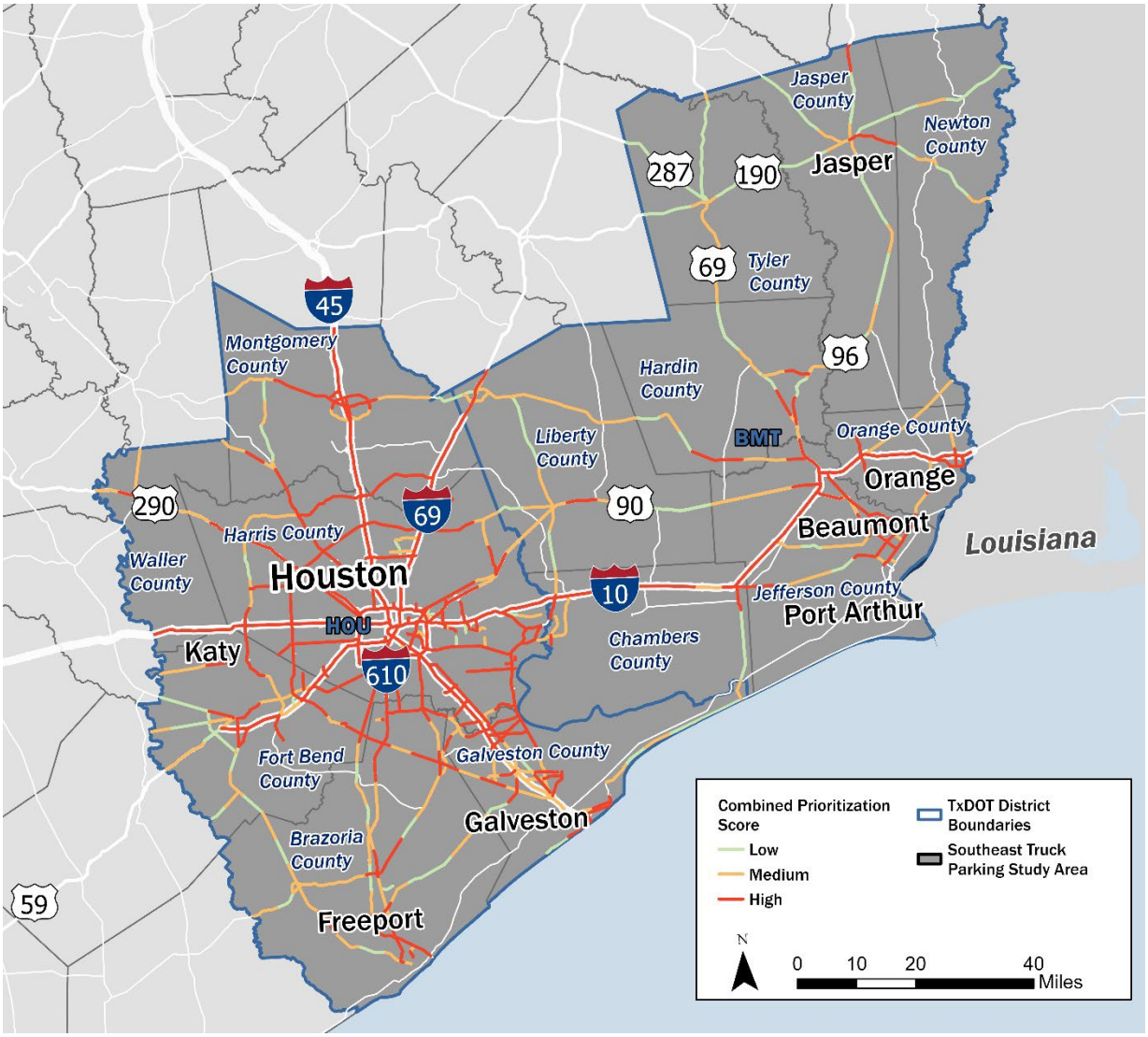
The combined score adds the weighted scores from all three prioritization factors. The Prioritized Demand Factor is considered the most reliable indicator of need, both in terms of truck parking demand and safety. For example, trucks parked on a ramp or roadway shoulder are at risk of being hit even if a crash has not yet occurred at that location. Therefore, the Prioritized Demand Factor is weighted at 50%, and the Prioritized Collision and Freight Need Factors are each weighted at 25%.

$$\boldsymbol{Combined\ Prioritized\ Score} =$$
$$50\% \times Prioritized\ Demand\ Factor + 25\% \times Prioritized\ Collision\ Factor + 25\%\ x\ Freight\ Need\ Factor$$

Figure 2-16 maps the results of these combined scores. Segments of I-10 in Harris, Jefferson, Waller, and Fort Bend Counties score in the highest category, as do segments of I-610, I-45, US 290, US 90 in Harris County among others. Other segments with particularly high needs are listed below.

- **Galveston County**: a segment of SH 87 and 61st street near the coast are high need segments.
- **Brazoria County**: a segment of I-10 as well FM 865 and FM 1495.
- **Chambers County**: a segment of FM 1405 and SH 73.
- **Fort Bend County**: a segment of FM 1876, FM 2218, and IH 10.
- **Orange County**: a segment of SH 73.

Figure 2-16: Combined Prioritization Score



Source: Cambridge Systematics analysis using 2019 INRIX data, 2024 CRIS data, and Texas Delivers 2050

2.9 Equity Analysis

Texas Delivers 2050 includes equity as one of the nine goals within the document. Defined as the "equitable distribution of the positive and negative impacts of freight movement across all Texans,"[13] the Plan delineates the following two specific objectives:

- Minimize, mitigate, or eliminate adverse impacts (e.g., emissions and wildlife habitat loss) from transportation projects on historically disadvantaged communities.
- Work with historically disadvantaged communities to encourage and increase access to economic opportunities within the freight and logistics sectors.

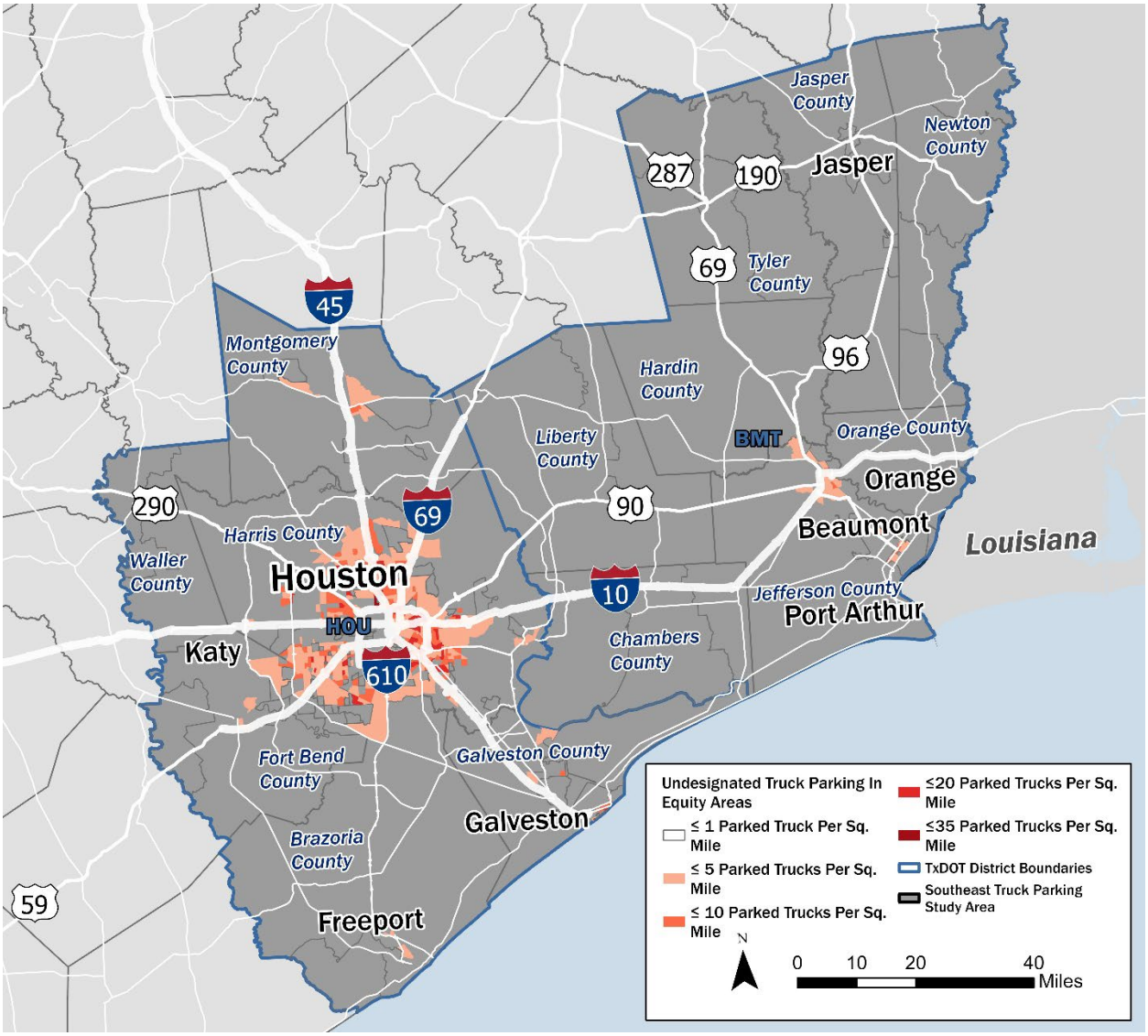
These objectives underscore the need to build equity considerations into all policy, planning, and funding decisions pertaining to freight movement in Texas. Texas Delivers 2050 examined the susceptibility of vulnerable communities to freight transportation impacts and opportunities. This assessment involved identification of equity focus areas based on the concentration of marginalized population groups that were determined using several indicators, including:

- Population under 18 years of age
- Population over 65 years of age
- Population with a disability
- Population who identifies as Non-White
- Population with No High School diploma (over 25 years)
- Population Below Poverty level (between 20 to 64 years)
- Unemployment Rate (between 20 to 64 years)
- Households with Limited English Proficiency (LEP)

A major portion of the freight movement in Texas is facilitated by trucks which require adequate parking facilities to ensure efficient operations. Undesigned truck parking serves as a visible indicator of inadequate parking facilities, often accompanied by significant negative externalities on the environment, quality of life, and public health outcomes of neighboring communities.

[13] TxDOT. Texas Delivers 2050: Texas Freight Mobility Plan. (March 2023). pp. 22. https://ftp.txdot.gov/pub/txdot/move-texas-freight/resources/texas-delivers-2050.pdf

Figure 2-17: Peak Hour Undesignated Truck Parking Density in Equity Areas



Source: Analysis by Cambridge Systematics (2024)

Galveston and Jefferson Counties, like Harris County, display similar levels of undesignated peak hour truck parking density within their equity focus areas, recording 4.02 parked trucks and 3.23 parked trucks per square mile, respectively, as shown in Table 2-5.

Table 2-5: Undesignated Truck Parking Density at the County Level

County Name	Number of tracts in the County	No. of Tracts with 3 or more equity indicators	Percent of tracts with 3 or more equity indicators	Average number of Parked Trucks per square mile	Undesignated Truck Parking in the equity tracts in each County
Galveston	66	3	5%	2.50	4.02
Harris	786	103	13%	4.48	4.99
Fort Bend	76	0	0.0%	2.12	0.00
Waller	6	0	0.0%	0.20	0.00
Jefferson	72	10	14%	2.89	3.23
Brazoria	50	0	0.0%	1.64	0.00
Montgomery	59	0	0.0%	1.10	0.00
Tyler	5	0	0.0%	0.09	0.00
Orange	21	0	0.0%	0.42	0.00
Liberty	14	0	0.0%	0.10	0.00
Chambers	6	0	0.0%	0.11	0.00
Newton	4	2	50.0%	0.01	0.01
Jasper	8	0	0.0%	0.17	0.00
Hardin	11	0	0.0%	0.15	0.00

Additional areas facing unauthorized truck parking challenges include:

- Meadow Glen Lane
- Elmside Drive or Seagler Road
- Westchase District
- Highland Creek Village (near FM 529)
- Areas close to Huntsville
- Portion of north Harris County

While there are no universally established benchmarks to classify truck parking density as high or low, it remains crucial to address concerns associated with undesignated truck parking. Unauthorized parked trucks present challenges of congestion, safety, and air and noise pollution.

In conclusion, the study region witnesses significant negative impacts stemming from peak hour undesignated truck parking, especially in Harris County which serves as a major node in the state's freight network. Moving forward, a concerted effort is required to address truck parking demand and supply strategies with the well-being of the marginalized groups living in the equity focus areas of the Southeast Texas Region.

Chapter 3:
Stakeholder Engagement

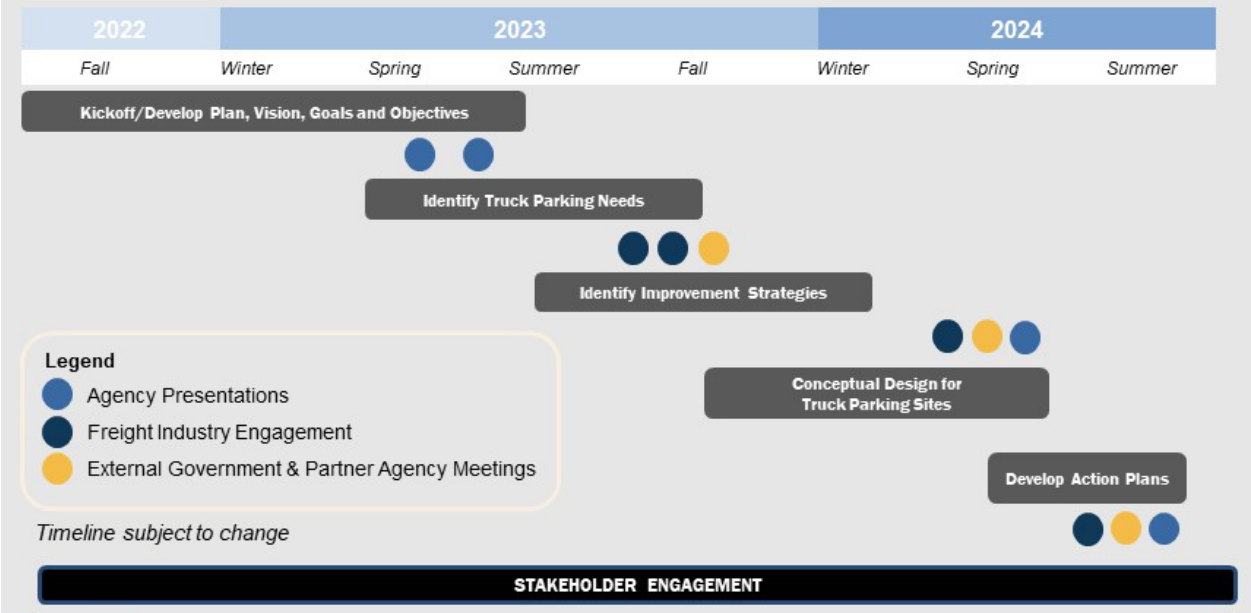
Texas Department of Transportation

3.0 Stakeholder Engagement

Southeast Texas Region Stakeholder Workshop

Building off the data-driven needs assessment highlighted in the previous chapter, a robust stakeholder engagement effort was conducted to solicit input from both public and private partners to capture local insights and help define the regional needs and opportunities that would lead to an implementable Action Plan. A key aspect of the stakeholder engagement process was that it was conducted throughout the life of the project and involved a wide range of meetings, workshops, and other communications methods with internal and external stakeholders at key milestones throughout the development of the Plan. Figure 3-1 provides an overview of the Action Plan planning process, which notably highlights stakeholder engagement activities during each of the major tasks.

Figure 3-1: Southeast Texas Region Truck Parking Action Planning Process and Engagement



The following chapter provides a summary of the stakeholder engagement process and is organized as follows:

- **Stakeholders**. provides an overview of the various public and private stakeholders engaged in this process and areas of requested input and feedback.
- **Engagement Process.** outlines the overall engagement process including the outreach methods used, meeting information, and the number of engaged stakeholders that were engaged.
- **What We Heard.** summarizes the key themes, issues, needs, and opportunities that were identified throughout the engagement process.

3.1 Stakeholders

The Houston District includes Harris County (where Houston is located), Montgomery, Waller, Fort Bend, Galveston, and Brazoria counties. The Beaumont District includes Liberty, Chambers, Hardin, Tyler, Jasper, Newton, Orange, and Jefferson counties. In addition, the maritime ports were key stakeholders. These include Port Houston, Port of Freeport, Cedar Port Industrial, Port of Galveston, and Port of Beaumont. The stakeholder engagement process was designed to vet and support the study visions, goals, and objectives that were identified to develop the Southeast Texas Region Truck Parking Action Plan.

3.1.1 TxDOT

TxDOT staff from both the Houston and Beaumont districts along with representatives from the Maintenance and Maritime divisions were engaged throughout the development of the Plan. This included bi-weekly project team meetings, breakout sessions, and other direct coordination activities. This close collaboration with TxDOT districts and divisions allowed the project team to:

- Keep district and division leadership and key staff up to date on progress.
- Identify local stakeholders and coordinate external outreach activities.
- Solicit input on regional truck parking needs, opportunities, and solutions.
- Review work products and vet proposed opportunity sites and recommendations.

TxDOT districts are responsible for the planning, design, construction, and ongoing maintenance of mobility projects within their defined geographic boundaries and will take the lead in implementing proposed capacity projects. The Houston and Beaumont districts work closely with their local and regional planning partners to implement projects, plans and initiatives that improve the multimodal transportation system, improving safety and mobility for people and freight.

The Houston REAL Plan is the region's comprehensive vision for an interconnected multimodal transportation system and roadmap for how it will evolve over time to move people and goods. A key consideration of the REAL plan involves the identification and development of Mobility Hubs and Freight Centers, which will serve the various types of truck parking needed throughout the region.

The Maintenance Division is responsible for operations, maintenance, and construction activities at SRAs. The Maintenance Division is currently leading an effort, in coordination with TxDOT districts, to add truck parking capacity throughout the state through construction of new SRAs, increasing the number of spaces at existing SRAs, where feasible, conversion of old SRAs to truck parking only facilities, and constructing new truck parking within state-owned ROW.

TxDOT's Maritime Division plays a part in addressing truck parking by collaborating with Texas ports to identify funding for truck parking queuing and staging projects that improve operational efficiency, increase economic competitiveness, and improve safety.

3.1.2 Metropolitan Planning Organizations

Metropolitan Planning Organizations (MPOs) are federally mandated local decision-making bodies required for each urbanized area with a population greater than 50,000 people. MPOs are responsible for overseeing the metropolitan transportation planning process which involves a range of transportation planning activities that include developing long range transportation plans, identifying and prioritizing projects for the transportation improvement program (TIP), public outreach, stakeholder engagement, and other planning efforts to address issues and ensure a multimodal transportation system that meets the needs of residents and businesses alike. Freight transportation planning has increasingly become a core component of many MPO's planning programs, with the truck parking issue continuing to be a polarizing topic at the local and regional levels.

Throughout the development of the Plan, the project team coordinated and collaborated with the Houston-Galveston Area Council (H-GAC), South East Texas Regional Planning Commission (SETRPC), as well as the Jasper-Jefferson-Orange-Hardin Regional Transportation Study (JJOHRTS). Briefing updates and presentations were given to each of these planning organizations at key milestones to discuss local truck parking needs and ensure proposed recommendations would meet the needs of public partner agencies and local communities within the region.

3.1.3 Public Agency Partners

Like many communities in urban, suburban, and even rural settings, the Southeast Region's local governments see the impacts of unsafe truck parking but understand the critical importance of safe and available parking to local economic development. Local governments can regulate truck parking within their communities by enacting policies and zoning controls to restrict truck parking in certain areas or specify designated truck parking areas and associated parking requirements.

In coordination with the local TxDOT districts, the project team engaged local public agency partners throughout the Plan development process to effectively communicate progress, highlight key milestones, and ensure constituents were able to provide feedback. Public agency partners included elected officials, municipalities, counties, chambers of commerce, economic development partnerships and organizations, emergency services, transit authorities, and advocacy groups. These public agency partners provided valuable input on local and regional truck parking issues, background on their roles in addressing truck parking, as well as solutions and specific locations that could be used for future truck parking opportunities.

Outreach to port authorities provided valuable information on port operations and needs related to truck parking and staging at or near their facilities. State and local law enforcement agencies were engaged to better understand the safety impacts of unauthorized parking and identify areas of need.

3.1.4 Industry Partners

Engagement with private sector industry partners is a critical success factor in the development of any freight-focused planning study. Any recommendations or proposed solutions should have buy-in from industry stakeholders to increase the likelihood that an implemented project positively impacts the operational and safety conditions for the industry, while minimizing negative impacts. Input and feedback from private sector industry stakeholders was a key component of the overall stakeholder engagement process and provided the project team with critical feedback and unique industry insight to ensure recommendations in the Plan address the industry's specific truck parking issues and needs in the Southeast Region.

The project team leveraged a range of sources and communication methods to actively engage industry partners throughout the project, providing opportunities for direct and indirect input, updates on project progress, and additional feedback in group or one-on-one settings. Industry partners engaged during the development of the Plan included the Texas Trucking Association (TXTA), Owner-Operator Independent Drivers Association (OOIDA), National Association of Truck Stop Operators (NATSO), private truck stop owners and operators, truck parking providers, private developers, transportation and trucking companies, shippers, receivers, manufacturers, insurance companies, among others.

3.2 Engagement Process

The stakeholder engagement process consisted of a series of outreach activities that can generally be broken down into two rounds, with each round consisting of stakeholder engagement to provide updates and solicit feedback from stakeholders listed in Section 3.1. Outreach activities were primarily accomplished through internal TxDOT project team meetings, workshops, and coordination; partner agency presentations, virtual break out meetings, and other correspondence, as well as industry workshops and a truck driver survey which is highlighted in greater detail in the following sections. Information was typically presented and vetted by TxDOT first, then presented to MPOs, commissions, advocacy groups, and other public agency and private industry stakeholders.

The first round of engagement activities focused on providing stakeholders with information on the Plan and gathering input on issues, needs, and opportunity areas. The second round of activities were primarily used by the project team to develop, refine, and finalize the recommendations and solutions proposed for inclusion in the Plan. All stakeholder meeting presentations can be found at www.txdot.gov, search "Truck Parking", and select the Houston/Southeast Texas truck parking webpage.

3.2.1 Industry Workshops

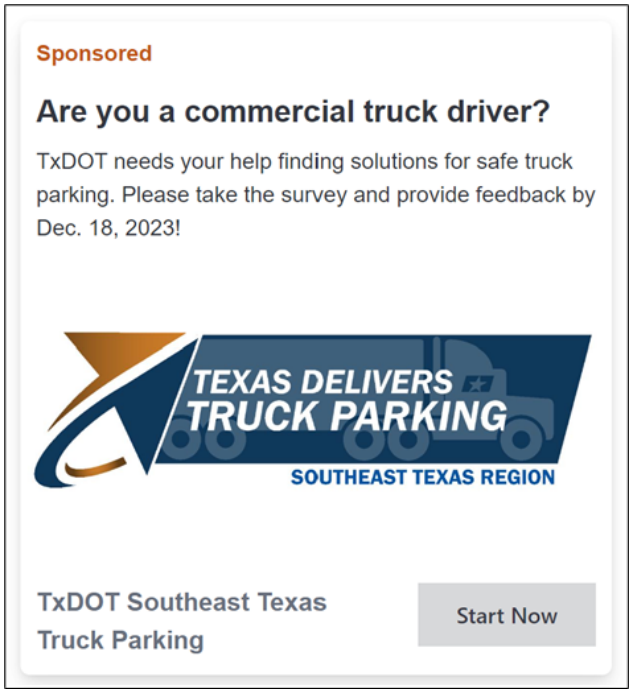
From June 13-15, 2023, TxDOT conducted 12 virtual workshops via Microsoft Teams with key stakeholders to provide an overview of the Plan, truck parking issues and needs, and potential solutions. Workshops were broken down into two categories, with half the meetings focused on participants from the public sector including local governments, planning agencies, advocacy groups, and law enforcement while the other half was focused on engagement with private industry. The workshops allowed the project team to solicit input directly from stakeholders on local and regional truck parking issues, needs, and opportunities. The input was received via Mentimeter, an online polling exercise, and open discussion. An interactive ArcGIS Online map was created for stakeholders to add feedback regarding the inventory of truck parking locations gathered by the team and identify potential opportunity sites for future development that could be assessed by the project team.

From April 23-24, 2024, TxDOT conducted another four virtual workshops via Microsoft Teams with key stakeholders to provide an overview of the Plan, recap what has been heard to date, gather feedback on proposed projects, policies, and programs, and outline the schedule and next steps. The purpose of the workshops was to provide a feedback loop on stakeholder engagement, potential projects, policies, and programs, as well as additional input since the last round of workshops in June 2023.

3.2.2 Commercial Truck Driver Survey

TxDOT solicited targeted commercial truck driver input for the Plan through online surveys. The first survey was targeted at drivers delivering specifically to ports and to warehouses. The survey was available in English and Spanish. Geofencing, or virtual boundaries, were set up around ports and major warehousing districts in the project area. When someone with a mobile device crossed that geofence, a notification of an advertisement to take the survey was sent, as seen in Figure 3-2. The first survey was open and geofenced ads were posted from Nov. 28 to Dec. 31, 2023. These advertisements were active 24/7 and were pushed through various websites, including ABC, NBC, Lifetime, A&E, ESPN, Fox Business, CNN, NFL, Yahoo, The Weather Channel, NextDoor, HGTV, and Travel Network.

Figure 3-2: Survey Outreach Advertisement



In an effort to gather additional input and increase access to a wider range and type of truck drivers, including owner/operators and drivers delivering to warehouses and ports, the project team utilized commercially available software, Survey Monkey, to conduct another round of surveys. The same survey questions were used and it was available in English and Spanish. Survey outreach was conducted through emails sent to the MPOs, industry partners, public agencies, and TxDOT as well as through social media. The project team asked these partners to help promote the survey by distributing it to their existing databases. The survey was open from April 22 to May 20, 2024, and was accessible through the QR code on social media postings and the online survey link as seen in Figure 3-3. For additional information, see the Commercial Truck Driver Survey Results.

Figure 3-3: Survey Outreach Examples

Social media promoting the truck driver survey.

3.2.3 Engagement Summary

The team conducted a total of 32 stakeholder meetings including 31 virtual/hybrid meetings and 1 in-person meeting. A total of 564 stakeholders attended these meetings. Table 3-1 and Table 3-2 show the stakeholder engagement activities by organization, date, and number of participants for Round 1 and Round 2 engagement activities.

Table 3-1: Round 1 Stakeholder Engagement Meetings

Meeting Name (No. of Meetings)	Meeting Date	Approximate number of Attendees w/o consulting team
H-GAC Greater Houston Freight Committee	Feb. 15, 2023	45
SETRPC JJOHRTS Transportation Planning Committee	March 16, 2023	27
REAL 2.0 Brookshire-Katy Implementation Plan – Stakeholder Meeting 1A	May 17, 2023	48
Industry Workshops (6)	June 13-15, 2023	28
Agency Workshops (6)	June 13-15, 2023	74
TxDOT Beaumont and Houston Districts Workshop	Sept. 20, 2023	15
BAYTRAN	Oct. 25, 2023	14
Cedar Port	Nov. 13, 2023	4
Port of Galveston	Nov. 13, 2023	3
Port Freeport	Nov. 14, 2023	13
Beaumont Area Ports	Nov. 28, 2023	16
Port Houston	Nov. 29, 2023	9
Texas Freight Advisory Committee	Nov. 30, 2023	44

Table 3-2: Round 2 Stakeholder Engagement Meetings

Meeting Name (No. of Meetings)	Meeting Date	Approximate number of Attendees w/o consulting team
SETRPC JJOHRTS Transportation Planning Committee	Feb. 29, 2024	10
BAYTRAN	17-Apr-24	7
H-GAC Greater Houston Freight Committee	18-Apr-24	19
Industry Workshops (2)	April 23-24, 2024	8
Public Agency Partner Workshops (2)	April 23-24, 2024	90
Port Authority Advisory Committee	14-May-24	66
SETRPC JJOHRTS Transportation Planning Committee	23-May-24	24
Port Authority Advisory Committee	14-May-24	66
SETRPC JJOHRTS Transportation Planning Committee	23-May-24	24

3.3 What we heard

The input and information gathered during the extensive stakeholder outreach activities highlighted in the previous sections, along with the data-driven needs assessment, directly informed the development of specific recommendations and identification of future opportunity sites for the Southeast Region. The input provided was consistent across most engagement activities and among the various types of public and private stakeholders, reinforcing that a lack of truck parking is an issue throughout the region that affects nearly everyone. The top themes, issues, needs, and other items of note heard from stakeholders include the following:

- The amount of truck parking availability in Texas and the Southeast Region is a major concern. Trucks are seen parking on roadside shoulders, entry and exit ramps, vacant lots, and other unauthorized areas. Although drivers aim to follow the law, at times they must make the difficult choice to park in informal, unsafe, or other areas not typically conducive to supporting truck parking locations.

- SRAs and private truck stops fill up quickly causing trucks to park along access roads or in nearby unauthorized locations. New truck stops are being developed in some areas, but the demand often outpaces the supply as these new facilities are constructed. TxDOT should explore opportunities to build new, SRAs, expand existing facilities, and utilize excess or unused right of way where available to provide more truck parking capacity throughout the region.

- Technology applications and solutions should be leveraged to improve truck parking utilization at existing facilities; inform drivers of local regulations, restrictions, and on-street parking opportunities; and enhance staging and parking operations at major industrial centers, maritime ports, intermodal hubs, and other freight generating facilities.

- Local municipalities and the public often have concerns about truck parking in their communities including in neighborhoods, along local roads, and in other undesired locations. Many of these communities could benefit from a better understanding or education on Federal HOS regulations and the reasons for and types of truck parking to support safe and efficient movement of goods for Texans and the Texas economy.

- Public opposition for truck parking in communities is high but truck drivers live throughout the region, which can make balancing the needs of the community with residential truck drivers challenging. Typically, these resident owner-operators search for parking close to home while they are not actively driving, which can lead them to park on roadways and unauthorized lots in neighborhoods, near schools, or in commercial shopping centers if there are no safe available alternatives.

- Truck routes, restrictions, and local ordinances can be different in every municipality, making it difficult for truckers and freight companies to navigate this complex network of where and when they are allowed to park. Local communities can help mitigate and address some of these issues through local and regional planning activities including transportation and freight plans, land use and comprehensive plans, updates to development review processes, and inclusion of industry in the development of these plans, ordinances, and processes.

- Partnerships and close collaboration between the public and private sectors is needed to overcome many of the challenges that currently inhibit the development of new truck parking facilities throughout the region including a lack of available or non-cost prohibitive land, public opposition, prohibitive land use and other ordinances, liability concerns, and difficulty navigating the project review and development process at the local level.

- The Maritime Ports are supportive of truck parking and staging that help improve their operations and terminal operators. Many ports in the Southeast Region are actively developing truck queuing and staging projects on or near their facilities to improve congestion and queuing at the port gates and minimize unauthorized parking along nearby roadways. At more urban ports, like Port Houston, queuing and staging is important but often not feasible due to land constraints, availability, and cost. Regional truck parking and staging areas on or near major interstates and freight routes, like those identified in the Houston REAL Plan could serve these needs.

- Weather events such as hurricanes and flooding present a major problem for local and regional freight movement, with a single weather event or traffic incident shutting down critical access roads into and out of major freight generators and ports. These incidents can cause major congestion and lead drivers with nowhere to park if they are waiting on an appointment window or approaching their HOS maximum driving limits. New and existing truck parking facilities could serve a dual purpose for emergency management vehicle and supply staging as well as offer affected truck drivers a safe place to park when an incident does occur.

3.3.1 Commercial Truck Drivers Survey Responses

The online survey included 27 questions and gathered feedback from 152 users. Of those users, 82% were commercial truck drivers including owner/operators, drivers making deliveries to industrial parks, intermodal/drayage industry, or both. Of the drivers who chose to answer the demographic questions, 61% were regional and long-haul drivers. The years of commercial driving experience among participants was closely spread between 16% with less than five years of experience and 36% more than 20 years of experience. Ninety percent of the participants were male, and 6% were female (4% not specified).

The following statements summarize findings for owner/operators.

- Owner-operators made up 45% of the respondents.

- When owner-operators are at home, 36% responded that they park the truck and trailer at a paid parking area with fencing/security.

- The optimum distance to drive from home for a secure parking facility was five to ten miles.
- The average monthly parking fee paid was $154.
- Overall feedback from participants included:
  - There is a shortage of truck parking in the Houston area.
  - Secure parking is generally full.
  - Security and amenities are necessities.
  - Parking must be affordable.

The following statements summarize findings for drivers delivering to industrial parks and intermodal/drayage industries.

- Delivery to intermodal/drayage industries have to wait/stage longer before entering customers facilities compared to industrial parks.
- On average, 43% of drivers responded that the wait outside the type of facility gate could be one to two hours.
- While waiting, 60% of drivers are willing to drive less than 5 miles to find a safe parking facility with restrooms.
- Drivers responded that 43% of customers rarely allow drivers to park on site and 39 percent sometimes allow drivers to park on site.
- About 46% of drivers frequently need to park overnight near a customer's facility for a morning pick-up delivery.
- About 61% of drivers give prioritized service to customers who allow parking on site, with amenities.
- Overall feedback from participants included:
  - Industrial parks need more parking to help with hours of service regulations.
- Many municipalities do not provide adequate, safe parking for drivers.
- Truck stops are not the only solution due to high fees and allowing trucks to park too long.
- Rest areas, safety, and security are needed.

The following statements summarize findings for drivers delivering to industrial parks and intermodal/drayage industries including owner/operators.

- Eighty-one percent of drivers responded that they would use parking near a port for their tractor-trailer, trailer, or container.
- Parking a tractor-trailer near a port gate is rarely needed according to 67% of respondents.
- A secure place to stage a container or trailer near a port is rarely needed according to 52% of the drivers.

- Typical time to store a container or trailer was less than a day and one day at 38% each.
- More drivers would use a secure parking or storage facility if it were less than five miles from the port.

The truck driver survey results validated the input received from industry stakeholders from the driver perspective. These results helped shape the recommendations outlined in the following chapter to ensure driver needs were considered.

Chapter 4:
Recommendations

Texas Department of Transportation

4.0 Recommendations

The Plan recommendations will address the significant truck parking demand outlined in the needs assessment. While TxDOT has a vital role to play in maintaining and expanding the state's public truck parking infrastructure, the vast majority of existing truck parking capacity is owned and operated by the private sector while local governments are typically responsible for enacting land use controls and ordinances to regulate truck parking and development in their communities.

Advancing the recommendations identified in this Plan will require a comprehensive approach that leverages continued collaboration between TxDOT, local public agency partners, and private industry. Considering this collaborative environment, the Plan recommendations are organized into two categories: TxDOT-led and TxDOT-supported.

- **TxDOT-Led**: provides a summary overview of the recommendations and solutions identified to address truck parking issues and needs in the Southeast Region with implementation activities led by TxDOT divisions and districts.

- **TxDOT-Supported:** highlights the various recommendations and initiatives that public agencies and the private sector can undertake with support from TxDOT.

- **Toolboxes:** provides an overview of the stakeholder engagement and local planning toolboxes that were developed to aid TxDOT, public agencies, and the private sector in implementing the recommendations identified in this Plan.

4.1 TxDOT-Led Recommendations

TxDOT-led recommendations address truck parking capacity needs along or near the THFN or near major freight generators on TxDOT owned and maintained facilities. These recommendations focus on the deployment of technology applications to improve utilization at existing facilities, outline guidance and best practices related to integrating truck parking into the project development process and review existing and proposed sites for emergency management and Federal Emergency Management Agency (FEMA) staging opportunities. Recommendations also address public awareness needs through educational materials, which includes a Public Awareness Toolkit and Policies and Strategies Toolkit summarized in section 4.3.

4.1.1 New Parking Capacity

TxDOT currently provides truck parking at state-owned and operated SRAs at regular intervals along major interstates and freight routes and TICs at the Texas/Louisiana border which serve as welcome centers. SRAs are managed by the TxDOT Maintenance Division and serve both passenger and freight vehicles, typically with limited amenities that include bathrooms, vending machines, safety lighting, and picnic areas. TICs are located at or near state borders and are managed by the TxDOT Travel Division to serve passenger and freight vehicles but are staffed by professional travel counselors to help with routing, information on points of interest and road conditions. Although these public parking facilities serve a critical need in providing safe and available truck parking, they make up a small number, three, of the overall truck parking facilities and spaces throughout the Southeast Texas region. Currently there are no SRAs in the Houston District, but the Beaumont District does have SRAs in Chambers County and a TIC in Orange at the Louisiana border.

Although there are only two SRAs and one TIC in the region, there are several initiatives and opportunities that are ongoing and planned to add new TxDOT truck parking facilities and increase the amount of public truck parking in the Houston and Beaumont districts. The TxDOT Texas Truck Parking Initiative has identified potential truck parking projects statewide through close coordination

with all 25 TxDOT Districts in various stages of the project development process. The Houston REAL Plan is actively identifying and planning for the development of multimodal hubs and freight villages throughout the Houston region that will serve both people and freight, while providing critical truck parking and staging capacity along major freight corridors like I-10. As part of the extensive stakeholder outreach efforts of this Plan and close coordination with the districts, six opportunity sites were identified throughout the region to increase truck parking which will help to improve the overall movement of goods. Chapter 6 of this Plan provides an overview and detailed summary of the truck parking projects mentioned above.

4.1.2 Technology Applications

TxDOT has invested in technologies designed to support truck parking, collect, and provide advanced traveler information, communicate with commercial motor vehicles, and disseminate information through various means, including truck parking availability systems, mobile applications, and connected infrastructure and automated driving systems.

4.1.2.1 Truck Parking Availability System (TPAS)

The I-10 Truck Parking Availability System (TPAS) project, funded through a Federal Highway Administration (FHWA) Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) grant, is installing a system to detect, monitor, and provide truck parking availability information at public truck parking sites along I-10 including the Chambers County SRA and Orange TIC in Beaumont. TPAS is a multi-state collaboration through the I-10 Corridor Coalition, a voluntary coalition of four state departments of transportation (Texas, New Mexico, Arizona, and California) that are committed to coordination, organized around a common agenda, and facilitated through a cooperative support structure.

TPAS will collect real-time truck parking availability through detection technology sensors which will transfer the parking data to states and third-party processors. Once the data is collected, it will be processed into a public data feed and disseminated to truck drivers and dispatchers through roadside dynamic parking availability signs (DPAS), state traveler information websites (including DriveTexas), third party mobile applications, and in-cab systems. In addition to full deployment along I-10, TxDOT has plans to expand the TPAS system to all SRAs and major publicly owned truck parking facilities.

As new truck parking sites are developed in the region, incorporation of TPAS technology should be included during initial planning and design to ensure future facilities can be integrated into the statewide network and provide critical parking availability to drivers and other interested stakeholders.

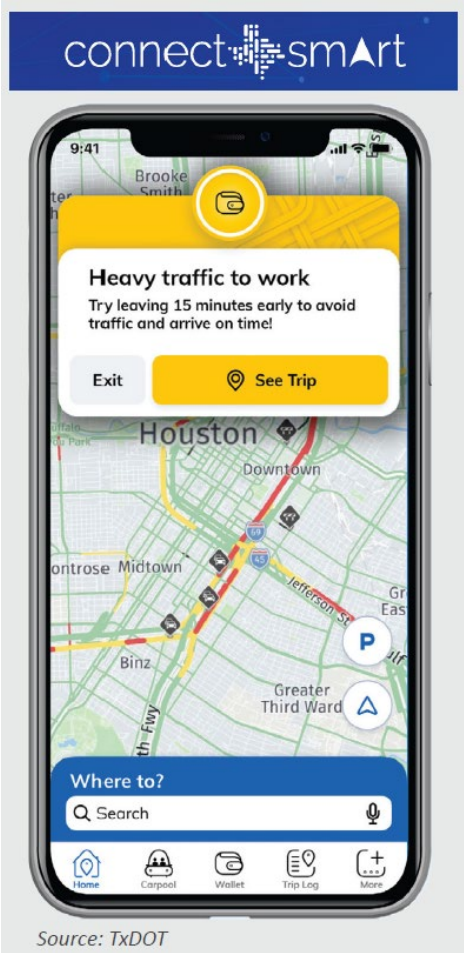
4.1.2.2 ConnectSmart Application

The Houston ConnectSmart application, funded through a federal ATCMTD grant, is an advanced platform that provides seamless trip planning, personalized multimodal travel options, transportation system updates, predictive travel times, travel costs, transit ticket purchases, rideshare arrangements, and more. ConnectSmart finds more ways to improve travel throughout Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Waller, Wharton, and Walker counties. The app allows users to pay for car parking, request tows, purchase transit tickets, and arrange bikeshares, carpools, and vanpools.

Although the current version of the ConnectSmart application is not specifically designed for freight, the application provides valuable travel and incident information that can be useful to truck drivers and was designed with the potential for future expansion.

Freight and trucking modules or functionality that are recommended be incorporated into future updates of the ConnectSmart application include:

- Integration with TPAS to provide real-time parking availability data from regional TxDOT truck parking facilities.
- Function as a regional curbside management or local agency truck parking facility reservation system to allow truckers to check in and out of spaces.



Source: TxDOT

4.1.2.3 Texas Connected Freight Corridors

This project, covering the 865-mile Texas Triangle of I-35, including extension to Laredo, I-45, and I-10 linking Austin, Dallas-Fort Worth, Houston, and San Antonio, is funded in part by a federal ATCMTD grant. The goal of the Connected Fright Corridors project is to utilize a combination of technologies including cellular, 5.9 GHz Connected Vehicles Roadside Units, and smart infrastructure to implement a suite of Vehicle-to-everything (V2X) applications. These technologies are expected to enable a sustainable deployment where TxDOT will acquire a rich set of traffic conditions data and provide better information to its freight partners and the traveling public.

4.1.3 Guidance and Best Practices

During the development of this Plan, extensive outreach and collaboration was conducted with the TxDOT Houston and Beaumont districts to better understand their internal processes related to integrating truck parking considerations into their daily activities, processes, and workflows. The Statewide TPS recommended developing guidelines for integrating truck parking in the TxDOT Project Development Process and consider truck parking needs prior to the purchase or sale of TxDOT ROW. For the Southeast Action Plan, the project team worked with the Houston and Beaumont district staff to discuss integrating truck parking into their processes. Highlights from those discussions are provided below:

- There is no formal process in place to integrate truck parking into the project development process currently, but numerous offices and champions throughout the districts have made truck parking a major priority.

- Typically, planning, and schematic design teams will look to integrate truck parking into an existing project when there is a documented truck parking need or an available TxDOT parcel whose location and surrounding conditions could meet the needs of truckers. These factors could include proximity to an existing truck stop, convenient interstate or highway access, and locations that are in a semi-rural setting to avoid land use conflicts.

- Interim projects that leverage existing construction and maintenance storage sites or unused ROW can be an effective near-term solution to address truck parking by adding gravel and grading a site, which can be easily removed if the location is needed for another use or moves forward as a more formal truck parking site that would require a more formal project development process.

4.1.4 FEMA Staging Areas

During the development of this Plan, several stakeholders and the districts highlighted the need to coordinate truck parking projects with FEMA staging area needs as a strategy to accelerate truck parking developments through collaboration, coordination, and leveraging of resources. This strategy aligns truck parking demands, needs, and selection criteria with FEMA and the Texas Division of Emergency Management (TDEM) staging area needs in Southeast Texas. The Southeast Texas region is prone to flooding events due to tropical storms and hurricanes. As such, FEMA staging areas are often needed to provide critical services to affected areas.

During an emergency, the fast and efficient deployment of supplies requires public and private agencies to coordinate an ad-hoc supply chain that can deliver goods to the emergency-stricken area. An emergency staging area is connected to distribution centers enabling smaller hubs to deliver critical emergency supplies to affected regions. These emergency staging areas require large parking areas and therefore may also serve as truck parking sites when they are not active. This presents an opportunity to develop truck parking sites that can double as emergency staging areas. This can also provide a chance to secure funding for truck parking and emergency staging areas.

4.2 TxDOT-Supported Recommendations

TxDOT currently has a limited role in truck parking at the local level and will need continued support from industry and local partners including the maritime ports, cities, counties, H-GAC and SETRPC, as well as other regional entities. TxDOT-supported recommendations address truck parking needs that support local and regional planning efforts, develop policies and programs that proactively address local truck parking issues, coordinate on innovative partnerships to increase truck parking capacity, and identify potential funding strategies and opportunities to move recommendations.

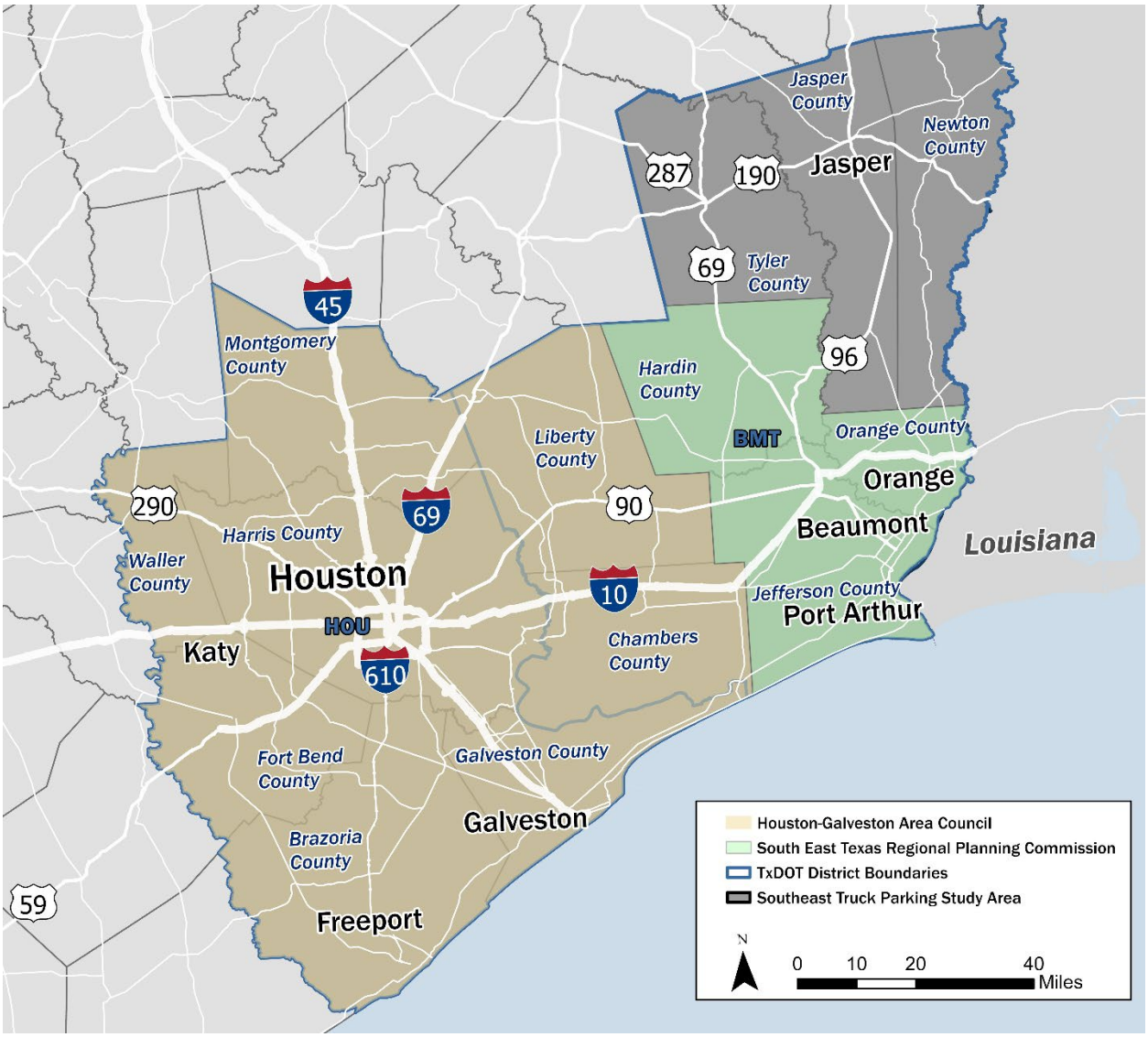
4.2.1 Recommendations

4.2.1.1 Local and Regional Planning

MPOs, regional planning agencies, and local governments are critical to the planning, development, and implementation of truck parking projects in the Southeast Texas region. The two MPOs in the region can leverage their roles in regional coordination, short- and long-range planning, and allocating

federal funding to advance truck parking projects that address the truck parking needs of the region. Figure 4-1 provides an overview of the Southeast Texas Region MPO boundaries.

Figure 4-1: Southeast Texas Region MPO Boundary Areas



4.2.1.2 Regional Coordination

HGAC and SETRPC are uniquely positioned to lead regional coordination efforts given that they already convene public and private stakeholders on freight-specific and larger transportation issues and work with TxDOT to address and facilitate freight planning in the region. The Greater Houston Freight Committee meets three to four times per year to improve dialogue between elected officials and the private sector, which enables MPOs to facilitate discussions, align priorities, and mobilize resources for truck parking expansion projects.

4.2.1.3 Short and Long-Range Planning

MPOs are required to produce two plans that guide the short and long-range transportation system for the region: the TIP, which lists upcoming transportation projects covering a period of at least four

years and the Metropolitan Transportation Plan (MTP), which outlines how the metropolitan area will manage and operate a fiscally constrained multimodal transportation system over a 20+ year horizon. MPOs in the region can include truck parking in these short and long-range planning efforts by conducting truck parking studies that document regional needs and identify solutions; prioritize truck parking projects in their TIP; incorporate truck parking considerations into the long-term vision outlined in the MTP; and develop policies and guidelines that support safe and accessible truck parking.

4.2.1.4 Prioritization and Funding

MPOs are responsible for allocating federal transportation funds within their regions, however the transportation needs, and funding requests often surpass the amount of money available requiring a defined Project Prioritization Process (PPP) to score and rank projects based on how well they meet the community's long-term needs and MTP goals and objectives. MPOs in the region can incorporate truck parking into defined prioritization process to ensure that truck parking capacity projects are competitive when compared to other multimodal projects. Additionally, "set asides" within the Surface Transportation Block Grant (STBG) program can be utilized to fund special regional needs like truck parking.

4.2.2 Policies and Development

Local governments have significant authority related to land use planning, local policies, ordinances, as well as permitting, which can be codified in municipal codes and comprehensive plans that guide when, where, and how commercial motor vehicles park. In coordination with MPOs, TxDOT Districts, and industry stakeholders, local governments in the Southeast Texas Region can work collaboratively to address the current demand for truck parking as well as proactively plan for future demand and needs through various mechanisms currently at their disposal.

4.2.2.1 Comprehensive Planning

Comprehensive planning is the cornerstone of local land use development. Cities and counties adopt and update their comprehensive plans to guide the growth of their communities. These documents are long range, directing the physical development of a place for 15 to 30 years. For a municipality, these plans are referenced the most frequently in their community planning.

Texas is considered a Home Rule State, granting the authority to regulate land uses, building codes, etc. to the state's respective county and city governments, although most of the cities, and all the counties within the Houston and Beaumont TxDOT districts lack comprehensive plans. Cities within the region that do have comprehensive plans have typically highlighted truck parking in relation to the impacts of industrial development on the broader transportation network, designation of truck routes and restrictions, and the need to separate freight and vehicular traffic.

There are examples of communities which have incorporated truck parking and/or freight needs into their comprehensive plans that cities and counties in the Southeast Texas Region could look to as best practices if they decided to pursue the development of comprehensive plans in the future. These communities may recognize the potential that freight has within their communities; they may be localities that have several existing freight facilities and want to prepare for future growth; or these may be communities burdened by freight and aim to set standards for the future. Whether it be encoded as an opportunity or a challenge, these communities are proactively planning for truck goods movement and implementing truck parking.

4.2.2.2 Land Use and Ordinances

The development of truck parking is fundamentally a land use issue, in which local governments can play a pivotal role. In respect to local land use planning, local governments have the greatest expertise, having a keen sense of where and when conflicts in uses may arise and an awareness of which areas may need truck parking.

Land use reflects the desired future development pattern in each area (often established in a Comprehensive Plan) while zoning designations explicitly define and regulate what types of uses are allowed on parcels as well as design and development requirements. Local governments are the ultimate authority in zoning development, writing, and revising ordinances on a fixed, or as-needed, schedule. The City of Houston notably does not have zoning laws, but the City does implement regulations through its Department of Planning and Development. The Department checks subdivision plats for the proper subdivision of land and for adequate street or right-of-way and building lines.

A parking ordinance, when adopted, allows a local government to regulate the parking, standing, or stopping upon public streets or right-of-way. Parking ordinances address where and when truck parking is prohibited. Building and Development Codes specify the minimum standards for building construction within local government. A common application of building codes is to require a set number of parking spaces based on type, quantity of a development (Square Feet), and expected trip generation.

When land use and zoning decisions allow for commercial/industrial development, but do not consider the demand for truck parking, the costs for future mitigation are often passed on to the local government and by extension tax paying residents. This could manifest as construction costs to build future truck parking or time and resources spent on enforcement. Thus, a common response is to pass ordinances restricting truck parking, which shifts the need to another area in the community or a nearby municipality, which is not beneficial to any stakeholders involved.

4.2.2.3 Truck Parking Demand Analysis

Permitting agencies, freight industry professionals, and other individuals in the development or planning fields need to be able to estimate the demand for truck parking that a shipper/receiver facility may generate. This enables professionals to plan for sufficient truck parking on-site or at a shared lot for a new development or estimate how many truck parking spaces should be accommodated for an existing site based on building (in this case, warehouse) typology. As part of the development of this Plan, the project team developed a standardized truck parking generation rate for professionals to estimate and plan for sufficient truck parking on site or at a shared lot for warehouse developments based on the number of truck trips generated by that facility.

For example, a traffic impact study might estimate that a new facility classified as distribution warehousing would generate 1,000 daily truck trips. Approximately 106 trucks (10.6% of the 1,000 truck trips) would need parking; of those, 39 trucks would need parking simultaneously (106 trucks X 0.37). This indicates that the facility should provide about 39 parking spaces to meet the demand that their operations would generate.

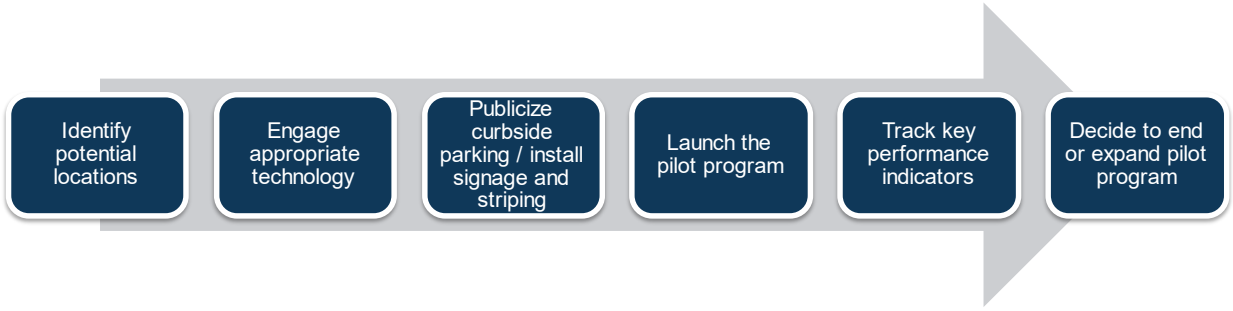
4.2.2.4 Permitting Policies

Many local governments and communities in the Southeast Texas region have a desire to provide truck parking but may be hindered from doing so due to lack of available land, community pushback, or other administrative/operational constraints. The City of Houston (COH) provides a prime example of a local government that is dealing with the issue of how best to balance the competing interests of supporting truck parking at the local level with the need to ensure city streets and local neighborhoods are safe and the impacts of unauthorized truck parking in communities is minimized.

Port Houston, the largest port in the country by tonnage, generates a need for a large amount of warehousing in the region. This along with a lack of safe, convenient truck parking has led to an increase in trucks parking in undesirable areas such as city streets and residential neighborhoods. The COH in the process of implementing a city-wide truck parking ordinance that would limit commercial vehicle and trailer parking on city streets, increase truck parking citation fines, and include provisions for additional no parking signage, especially in areas that have experienced higher levels of illegal truck parking.

During the development of this Plan and throughout the extensive stakeholder engagement process, the project team was able to meet with the COH and other stakeholders to discuss proactive solutions and identified an opportunity to explore the development of a **Curbside Truck Parking Program** that would allow trucks to park along specified curbs for a limited time using an app-based reservation system. If successful, the city would expand the program over time. TxDOT support could include providing access to the ConnectSmart application for the parking availability and tracking system or by participating in the evaluation of the pilot program.

Figure 4-2: Curbside Truck Parking Pilot Program Implementation Steps



4.2.3 Innovative Partnerships

Leveraging partnerships for more truck parking creates a win-win for both the public and private sectors. Developers, municipalities, and stakeholders share risks and benefits when constructing, maintaining, and operating a local facility for regional truck parking needs. While improving safety, congestion and efficiency, these types of facilities also give truck drivers more truck parking options and access to full-service amenities unavailable at most public facilities.

Partnering pushes long-term operations and maintenance costs onto the private sector and allows public agencies to reduce initial private investment as well as public opposition. Local governments can also facilitate connections to freight networks and/or off-site improvements, as well as build truck parking adjacent to existing truck stops. By sharing risks and benefits, truck parking partnerships can provide four key advantages for public and private sector stakeholders:

- Leverage and extend public funding.
- Reduce public sector truck parking facility operation, maintenance, and management costs.
- Increase private sector truck parking investment by mitigating up-front costs and other barriers.
- Provide more amenities available to truck drivers including full-service restrooms with showers as well as multiple food, beverage, and retail options.

This section explores five partnership scenarios that leverage the combined strengths of the public and private sectors to address truck parking challenges. This is not meant to be an exhaustive list. Instead, these are designed to be representative examples of potential partnership concepts that could be implemented by public agencies in the Southeast Texas Region.

4.2.3.1 Long-Term Land Lease

The public sector can use publicly owned land (excess right-of-way or an acquired parcel) to help offset a private sector partner's upfront cost to develop a truck parking facility. Through a low-cost or no-cost lease, the local authority creates an incentive to help justify and induce private sector investment—the public sector benefits by minimizing the long-term O&M costs of investing in traditional public truck parking facilities.

This strategy is often employed near major freight facilities. Available parcels identified for this use must be large enough to handle the specific parameters and design criteria needed to accommodate trucks of varying sizes. The surrounding transportation network must also be able to support increased truck traffic.

4.2.3.2 Lease Underutilized Public Parking Lots

Most major entertainment venues feature large parking lots that are underutilized assets outside of scheduled events. These venues have easy access to major highways and are located near major freight destinations.

The site owner can lease a portion of an underutilized parking lot to a private company to set up temporary, secured truck parking and offer it for a fee to truck drivers. Similarly, a public agency with excess parking could execute a similar arrangement. Municipalities can form partnerships to lease an underutilized parking lot and generate public tax revenues outside of scheduled events and when the parking lot is vacant, all while addressing truck parking needs.

4.2.3.3 Public Private Partnership (P3)

TxDOT and local government agencies can partner with private entities to construct truck parking facilities that are operated and managed by the local authority or private entity over the long term. This is typically accomplished through a Memorandum of Understanding (MOU) or a Comprehensive Development Agreement (CDA).

4.2.3.4 Construct Parking Near Existing Facilities

Truck drivers prefer to park at truck stops because they get access to fuel, food, restrooms, and showers, some of which public agencies cannot provide.[14] Recognizing this, the public sector could construct minimal truck parking facilities with ample lighting and secured parking but no full-service restrooms or other amenities next to existing private-sector truck stops to allow more truck drivers access to basic services. In this scenario, the public sector could reach an agreement with the adjacent truck stop operator to operate and maintain the publicly constructed facility.

4.2.3.5 Shipper of Choice

Today, few companies provide designated parking for the trucks that service them. Recognizing those who do, through a Shipper of Choice[15] award will encourage others to do the same. Shippers of Choice are businesses that strategically work with drivers to build partnerships. It is an industry-wide designation that distinguishes shippers (and receivers) that value and respect the services truck

[14] Page 17. Texas Statewide Truck Parking Study. 2020. https://ftp.txdot.gov/pub/txdot/move-texas-freight/studies/truck-parking/final-report.pdf.

[15] FreightWaves. 2024. https://www.freightwaves.com/awards/2024-shipper-of-choice-award

drivers provide, and in turn, the designation provides a leg up in challenging markets when drivers can choose who to service. The award should be based on providing parking, short dwell times, amenities (e.g., restrooms and lounges), and respectful engagement and proactive communication. Offering parking embodies what it means to be a Shipper of Choice and is a critical item for any future Texas Shipper of Choice program.

Being a Shipper of Choice means drivers want to work with the shipper because of the value and respect the partnership offers to the drivers. A Shipper of Choice designation communicates with the industry that the awardee's business values and respects their partnership with drivers—this type of program rewards shippers for providing amenities (like truck parking) and good business practices.

For cities like Laredo, Texas, which had companies receive seven wins of the Shipper of Choice award in 2023, it is imperative that TxDOT recognize the rising truckload demand in the region to prepare for the developmental boom and the need for safe parking facilities.

4.2.4 Funding Opportunities

Partnerships with the private sector can help eliminate one of the impediments to public sector truck parking investment: long-term O&M costs. The private sector benefits by reducing its major impediment: upfront investment because it is leveraging a public asset, funding, or both. Conceptually, this is a win for both sectors. However, agencies often have competing interests for limited public funding. Likewise, it can be challenging to have public funding—that can be dedicated to truck parking—available the moment a partnership opportunity arises.

Truck parking projects and partnership opportunities can be funded by multiple funding sources including local government budgets (which may include revenue from vehicle registration fees and other local sources dedicated to transportation infrastructure improvements), state funding programs, P3s, impact fees or special assessments. Federal funding, which is allocated by MPOs and discussed in greater detail earlier in this chapter, is also a key source for truck parking projects. Additional state and federal funding sources including formula funding programs and discretionary grants are discussed further in Chapter 6 of this Plan.

4.3 Toolkits and Supporting Material

Consistent messaging and useful resources are critical components to TxDOT's efforts to implement truck parking projects and recommendations in the Southeast Region and throughout the state. Toolkits with individual and in some cases customizable resources allow TxDOT and its partners to create public awareness and provide consistent strategies for local governments and other interested stakeholder to address the unique truck parking needs in their communities. Two toolkits were developed for this Plan: the Public Awareness Toolkit and the Policies and Strategies Toolkit which are summarized in the following sections.

4.3.1 Public Awareness Toolkit

The Southeast Texas Truck Parking Action Plan Public Awareness Toolkit provides various outreach tools for public agencies, local communities, and industry partners to use when communicating the importance of addressing local and regional truck parking issues and needs and should be used to help raise awareness about why truck parking matters. The materials are ready-to-go and easy for stakeholder partners to share the importance of truck parking with their communities through multiple communication channels. The Public Awareness Toolkit includes the following resources:

- **Fact Sheet:** provides an overview of the Plan, truck parking facts, where to get more information, and a call to action.

- **Posters:** provide a visual way to inform the public of the need for additional truck parking and why it matters to the local community.
- **Rack Cards:** are an educational tool to provide at safety rest areas or a "leave-behind" for any targeted audience that highlight various truck parking information and statistics.
- **Social Media Kit**: provides easily customizable posts focused on the importance of truck parking, safety information, and economic impacts to share information with your followers who live, work, and travel in the Southeast Region.
- **Story Map**: provides educational awareness material and the need for truck parking in an online map-based visual story format.

4.3.2 Policies and Strategies Toolkit

The Southeast Texas Truck Parking Action Plan Policies and Strategies Toolkit provides local governments and other interested stakeholders with a series of technical white papers, fact sheets, and presentations that provide additional detail, case studies, and implementation steps associated with each of the TxDOT-Supported recommendations outlined previously in this chapter. The Policies and Strategies Toolkit includes the following resources:

- Integrating Truck Parking into Local and Regional Transportation and Land Use Plans
- Public/Private Partnerships
- Estimating Site-Specific Parking Demand
- Curbside Parking in Industrial Areas
- Dual Use Truck Parking and Emergency Staging Areas
- Shipper of Choice Program
- Freight Villages (fact sheet only)

Both the Public Awareness Toolkit and the Policies and Strategies Toolkit are available on the TxDOT website. To access the toolkit materials, visit https://www.txdot.gov/projects/planning/freight-planning/truck-parking.html.

Chapter 5:

Opportunity Sites

Texas Department of Transportation

5.0 Opportunity Sites

The project team identified potential locations for new truck parking facilities in the Southeast Region leveraging the data-driven needs assessment and extensive stakeholder engagement process. The project team refined these locations working closely with key Houston and Beaumont district staff during in-person workshops and focused meetings. This coordination also brought forward several plans and opportunities that the districts were currently developing or had previously considered that could be included in the site identification and screening process. Through this iterative and collaborative process, six specific opportunity sites were prioritized to move forward with conceptual design support. The following chapter provides an overview of the results of this process and is organized as follows:

- **Site Identification and Screening:** provides an overview of the site identification process that included extensive stakeholder and district input, site screening process, and opportunity site selection determination that was conducted in close coordination with key staff from the Houston and Beaumont districts.

- **Site Amenities:** highlights the various site amenities and features that were included in the opportunity site conceptual designs to ensure that proposed facilities meet the needs of local communities, drivers, and other stakeholders that could potentially use these multimodal facilities.

- **Design Considerations:** documents the key design manuals, standards, and specifications that were utilized during conceptual design and cost estimate development including geometry, pavement, and drainage for parking facilities, roadway structures, and multimodal connections.

- **Opportunity Sites:** presents an overview of each of the six opportunity sites identified in the site assessment including a description of the features and amenities at each facility, conceptual design exhibits, and planning-level cost estimates.

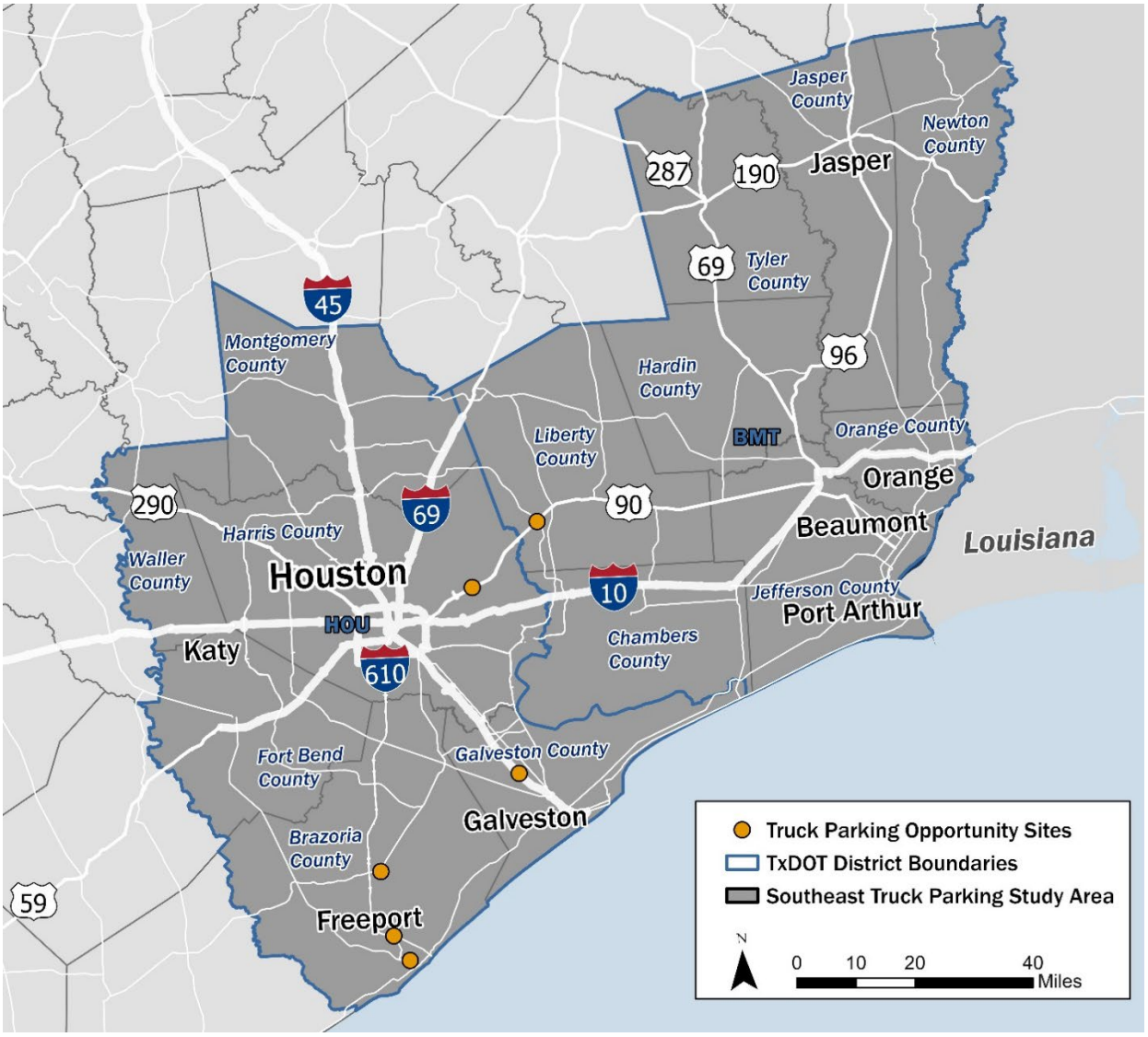
- **Additional Sites:** includes an overview of additional public truck parking sites including low-cost maintenance improvements and projects that the districts are currently advancing and port-initiated truck staging and queuing projects.

5.1 Site Identification and Screening

The Southeast Texas region truck parking site identification and screening analysis considered a number of factors including stakeholder input, local and regional needs, existing plans and projects, safety and equity impacts, site feasibility, and other factors to effectively identify, screen, and prioritize opportunity sites for conceptual design and engineering. Through initial stakeholder engagement, a review of the needs assessment, and district input, over 30 individual sites were identified for review and analysis in the district workshop held in October 2023. During this workshop, key staff provided critical input on each site related to documented issues and needs, demand from nearby freight generators, access management and connectivity to the THFN, as well as providing invaluable local knowledge on existing operating conditions, future projects, and other factors that might not otherwise have been easily identified. Out of these discussions the list of over 30 potential sites was further narrowed down to about 15 sites that could be feasible, but would require additional analysis and screening.

The six opportunity sites ultimately identified for further conceptual and schematic design activities are highlighted in Figure 5-1 and discussed in greater detail in Section 5.4.

Figure 5-1: Southeast Texas Region Opportunity Sites



5.1.1 Screening Process

The initial opportunity site screening process was developed with input from district staff to identify key site prioritization factors and review of the TxDOT National Environmental Policy Act (NEPA) and Project Development Toolkit to ensure that proposed sites would reasonably meet federal and state environmental compliance; considers impacts to cultural, natural, social, and physical resources; and provide supporting information for future environmental assessments. It is important to note that this analysis was not meant to meet the requirements for an Environmental Impact Statement (EIS), Categorical Exclusion (CE), or Environmental Assessment (EA) under NEPA and any associated federal or state laws and regulations.

In future project development phases, if an opportunity site project meets the criteria for a CE under, NEPA, clearance would be obtained following district approval and coordination with the TxDOT ENV Project Delivery Section. If the project cannot be classified as a CE, and it is not known whether the project would have significant environmental impacts, then an EA would be required.

Figure 5-2 and Figure 5-3 highlight the screening results for an opportunity site outside of Port Freeport, but similar maps and checklists were developed for the six opportunity sites highlighted later in this chapter and can be found in the *Opportunity Site Conceptual Feasibility Studies*.

Figure 5-2: Port Freeport Opportunity Site Screening Maps Example

Figure 5-3: Port Freeport Opportunity Site Screening Checklist Example

Site Information	Site	/
	Location	FM 1495 - Freeport
	District	Houston
	County	Brazoria
	City	Freeport
	Acreage	6.1
Env. Justice	APP	YES
	HDC	YES
	Census Tract Number	48039664200
Land Use	Current Land Use	Commercial
	Future Land Use (2045)	Commercial
	Surrounding Land Use (Within 0.25 miles)	Vacant Developable, Residential, Government, Commercial, Industrial, Multiple, Undevelopable, Other
	Future Surrounding Land Use (Within 0.25 miles)	Residential, Government, Commercial, Industrial, Multiple, Undevelopable, Other, Unkown
Performance	Ownership	Public
	Owner	PORT FREEPORT
	Texas Congestion Index	null
	Truck Stops Available within 1 mile	0
	Description of amenities	N/A
Environmental	Historic Areas	No impacts
	Surrounding Historic (Within 0.25 miles)	No impacts
	Flood Zone	No impacts
	Soil type	Vertisols
	Wetlands	No impacts
	Critical habitat	No impacts

Utilizing the results of the detailed screening analysis, the project team, in coordination with the Houston and Beaumont Districts, were able to prioritize sites based on key factors that included:

- **Parcel Ownership:** sites that are owned by TxDOT or a local agency willing to partner with TxDOT to advance a truck parking project.

- **Parcel Size:** although there were no minimum size requirements, sites were analyzed for their ability to accommodate a range of truck parking needs, multimodal connections, and amenities to ensure an appropriate return on investment for TxDOT and its partner agencies.

- **Defined Need:** sites were further screen utilizing the results of the needs assessment and their ability to address a defined truck parking need including HOS rest breaks, overnight parking, staging and queuing, owner-operator parking, and FEMA staging capacity.

5.2 Site Amenities

Based on stakeholder input, district guidance, and the desire to accommodate context sensitive solutions within the design of the opportunity sites, a variety of amenities were incorporated into the conceptual design to ensure all proposed multimodal truck parking projects meet the needs of local communities. These proposed amenities will serve to improve the operations, safety, recreation, and environmental needs of the truck parking sites and include:

- **Restroom, Amenity, and Security Buildings:** provide safe and secure restrooms for overnight drivers, covered areas for facility users and pedestrians, security rooms for facilities serving staging and queuing at ports and provide for vending machines and other services that might improve the user experience.

- **High-Mast Safety Lighting:** ensures that parking facilities are well lit, providing a safe and accessible environment for truck drivers, multimodal users, maintenance staff, and enforcement personnel that may operate at the site.

- **Innovative Drainage Features:** include stormwater detention facilities with pedestrian amenities like sidewalks and shared-use paths (SUPs) located around them to maximize recreational space as well as bioswales, which are like detention facilities but feature vegetation or other landscaped features to convey stormwater runoff and improve aesthetics.

- **Electric Vehicle Charging:** at some multimodal facilities, electric vehicle (EV) charging was included for both trucks and passenger vehicles where feasible to accommodate a growing number of EV trucks that serve local drayage and delivery movements, as well as to accommodate implementation adoption of heavy EV trucks that may utilize these facilities in the future.

- **Shared Use Paths, Sidewalks, and Trails:** pedestrian and bicycle infrastructure was considered in all opportunity site designs to provide connections to the wider transportation network including transit stops and facilities connecting to major employment and commercial centers.

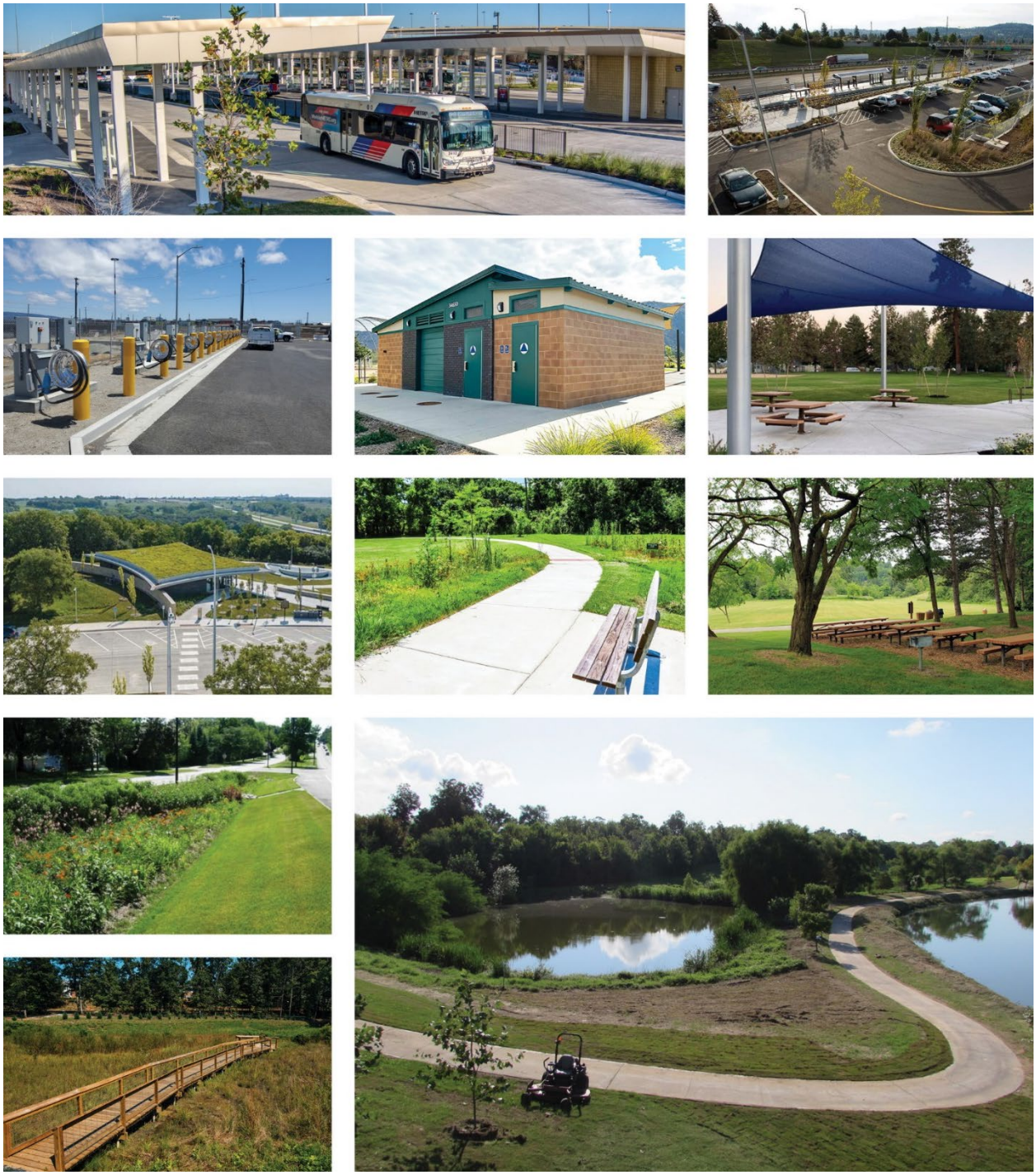
- **Flexible Transportation Facilities:** were included at some multimodal facilities where there was an existing park-and-ride lot or transit stop to all for potential support of regional transit connectivity and ensure community members along with truck drivers could experience the benefits of these proposed parking facilities.

Figure 5-4 provides visual examples of the proposed amenities outlined above. Table 5-1 provides information on the amenity and the source of each picture.

Table 5-1: Proposed Amenity Example Descriptions and Sources

Amenity	Source
Security / restroom facility	Public Restroom Company
Parallel parking EV truck charging stations	Port of Oakland
Amenity building	Finance & Commerce
Walking path	BREC
Bioswale	WRI India
Shaded picnic area	Bend Park & Recreation District
High visibility crosswalk	WKYC Studios
Small detention pond with walking path	Houston Public Media
Park-and-ride facility	TriMet
Stormwater detention facility with pedestrian bridge	Greenville Journal
Transit center	HNTB

Figure 5-4: Proposed Amenity Visual Examples



5.3 Design Considerations

TXDOT provides a number of manuals, standards and specifications for planning, design, and construction activities, that the project team utilized in the development of the Southeast Texas Region opportunity sites highlighted in the next section of this document. A review of existing

TxDOT-approved design guidance documents was performed to identify applicable current design standards for truck parking. This review included the following documents:

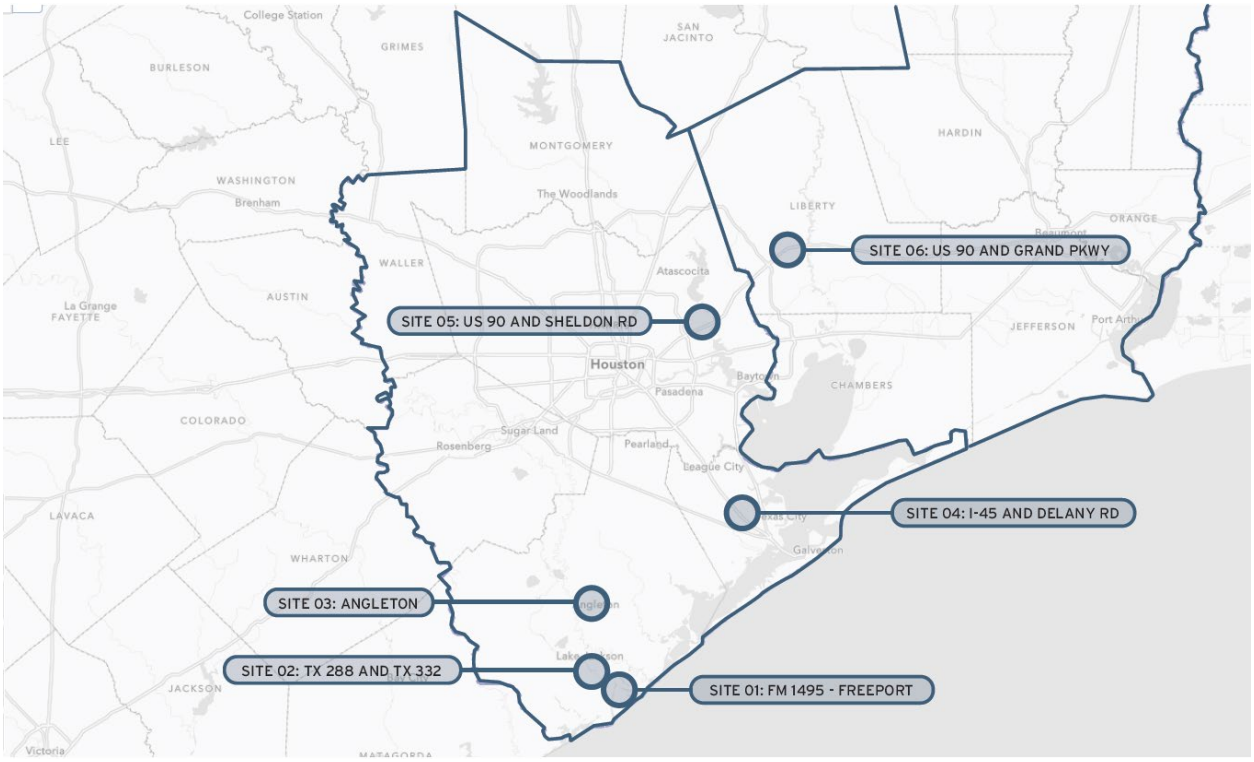
- TxDOT Facility Design Standards and Production Guidelines (2009)
- TxDOT Transportation Planning & Programming Manual (2022)
- TXDOT Roadway Design Manual (RDM) (2022)
- TxDOT Bicycle Accommodation Design Guidance (2021)
- TxDOT Hydraulic Design Manual (2019)
- TxDOT Standard Specifications for Construction & Maintenance of Highways, Streets, and Bridges (2024)
- FHWA Truck Parking Development Handbook (2022)

5.4 Opportunity Sites

As discussed throughout this chapter, the development of the Southeast Texas Region truck parking opportunity sites was a collaborative effort that included input from numerous stakeholders including extensive coordination and collaboration with the TxDOT Houston district to ensure each site met the unique truck parking and multimodal needs of its surrounding community. Each opportunity site concept was designed with a context sensitive approach and may serve a wide range of applications and users. The Houston REAL Plan was also used as a resource when identifying site locations and developing proposed concepts that were consistent with the freight village and mobility hub concepts proposed in the REAL Good and People Systems. It is important to note that TxDOT is not a transit provided but may provide park and ride facilities at strategic locations along major interstates and transit routes. For opportunity site concepts where non-freight multimodal facilities were identified, local governments and the Houston district local area office were consulted.

The section presents an overview of each of the six opportunity sites identified in the site assessment including a description of the features and amenities at each facility, conceptual design exhibits, and planning-level cost estimates. Figure 5-5 provides a graphical map that outlines the name and location of each Southeast Texas Region truck parking opportunity site.

Figure 5-5: Southeast Texas Region Opportunity Site Locations



5.4.1 Site #1: FM 1495 – Freeport

The Freeport freight intermodal facility is located on 4.7 acres of Port Freeport property on Navigation Road, directly adjacent to the Port Freeport entrance gate. This facility, located next to the sixth fastest growing port in the chemical industry, will primarily support staging and drayage truck parking needs for Port Freeport and serve as a first stop to improve logistics and access for trucks heading to the port. Trucks will be able to park for 2 to 4 hours at a time and no more than 24 hours.

The Freeport facility concept plan proposes a 121,400 square-foot reinforced concrete lot complete with striping and safety high mast lighting. The facility will include 31 total truck parking spaces and four EV truck stalls/charging stations. Of those 31 spaces, 28 are pull-in stalls and three are parallel parking spaces. The site includes three vehicle parking stalls, two of which provide electric charging stations. Located at the northeast corner of the site, an 800 square-foot security and bathroom facility is positioned to serve the entire Freeport intermodal site. Port Freeport will staff the office and interact with truckers to improve freight logistics at port facilities. Landscaping will be featured at the corners of the site as well as bioswales at two of the corners to provide environmental and aesthetic benefits. Figure 5-6 highlights the Freeport opportunity site conceptual design.

Preliminary cost estimates for the Port Freeport Intermodal Freight Facility Concept are:

- Truck Parking: $4,986,560
- Mobilization and Contingencies: $2,393,700
- Total Estimate: **$7,380,260**

Figure 5-6: Opportunity Site #1: Freeport Concept

5.4.2 Site #2: TX 288 and TX 332 – Clute

The Clute truck parking site is in the northeast corner of the interchange at Texas Route 288 and Highway 332 primarily between the 332 Frontage Road and the ramp from 332 westbound to 288 southbound. A portion of the truck parking associated with this site is in a triangular parcel bounded by Commerce Street, Copper Road, and the 332 Frontage Road. The site is southwest of the residential area in Clute and across Texas Route 288 from an expansive petrochemical and LNG cluster.

The Clute truck parking site is 5.48 acres and is comprised of two main components: a park-and-ride facility and flex truck parking. The 13,000 square foot park-and-ride facility is located in the northeast portion of the site and includes 20 vehicle parking spaces and an amenity building. The facility would connect to an existing bus route that connects Freeport, Clute, and Angleton. Large and ornamental trees and small detention features will contribute to the environmental and aesthetic qualities of the site.

At the western end of the site, two large flex truck parking lots will accommodate flex movement for trucks. The flex truck parking on the south side of the 332 Frontage Road is 56,000 square feet and accessible via Frontage Road and the lot north of Frontage Road is 48,000 square feet and accessible from Commerce Street. A 6-foot sidewalk along the northside of Frontage Road provides pedestrian connections to the existing sidewalk network. The sidewalk network consists of a total of 6500 feet in length. Figure 5-7 highlights the Clute opportunity site conceptual design.

Preliminary cost estimates for the Clute opportunity site are:

- Truck Parking and Multimodal: $7,544,625
- Mobilization and Contingencies: $3,621,600
- Total Estimate: **$11,166,225**

Figure 5-7: Opportunity Site #2: Clute Concept

5.4.3 Site #3: TX 35 – Angleton

The Angleton intermodal hub will be constructed on existing TxDOT right-of-way (ROW), at the northeast corner of East Orange Street and South Downing Road alongside the Union Pacific rail corridor. The development of this hub will involve the restoration and modernization of an existing 11.6-acre office area and will provide secure overnight truck parking and short-term parking for light-duty trucks, fulfilling a need in the Southeast Region. The Angleton hub concept was designed to support a range of multimodal operations that could include freight, carpool/vanpool, park-and-ride, and transit with the goals of improving the movement of freight, reducing vehicle and freight emissions, and supporting access to jobs.

The Angleton hub is organized into a northern section and southern section, each are programmed for different uses and have separate access points. The northern section contains 35 total secure truck parking spaces with four of those spaces accommodating EV charging stations. The truck parking area will include new concrete paving, striping, and safety lighting. The northern section also features 30 vehicle parking spaces, allowing truck drivers to keep their personal vehicle they used to access the site for extended periods of time while operating their truck off site. Directly adjacent to the vehicle parking spaces, an amenity space is provided for truck operators to enjoy walking trails, tree cover, and picnic spaces.

The southern section utilizes many existing structures into the operations of the site and is programmed to accommodate a greater variety of vehicles. Parking is included for 19 light-duty trucks, ten EV light-duty trucks, 26 vanpools, and 12 EV passenger vehicles. Four of the existing structures will be reprogrammed for distribution purposes. This area of the site will accommodate small delivery truck/van package sorting and be accessed from South Downing Street.

The southern section will include 45 park-and-ride spaces to accommodate multimodal operations. The previously mentioned 12 EV passenger vehicle parking stalls are located adjacent to the park-and-ride spaces, thereby promoting multimodal transportation to a greater source of potential users by building in this increasingly common EV charging technology. The park-and-ride and EV passenger vehicle

stalls encircle the 4,500 square-foot visitor center/transfer center and amenity/picnic space with 6-foot-wide concrete walking trails connecting this area in the southeast corner of the site to other on-site recreational amenities, the existing sidewalk network, and to an existing pond located on the southern side of East Orange Street.

The walking trails will incorporate universal design and will protect non-motorized users from safety risks. A total of 2,040 feet of sidewalk and 3,000 feet of shared use paths. An on-site bioswale will collect runoff from parking and driving surfaces, providing an environmentally friendly feature while also adding to the aesthetic quality of the site. Other pedestrian-oriented features include ADA curb ramps, high-visibility crosswalks, a pedestrian High intensity Activated crossWalK (HAWK) signal, and pedestrian signage. The site will contain 114 large trees and 24 ornamental trees overall, providing shade and other aesthetic benefits for all users. Figure 5-8 highlights the Angleton opportunity site conceptual design.

Preliminary cost estimates for the Angleton opportunity site are:

- Truck Parking and Multimodal: $12,071,610
- Mobilization and Contingencies: $5,794,700
- Total Estimate: **$17,866,310**

Figure 5-8: Opportunity Site #3: Angleton Concept

5.4.4 Site #4: I-45 and Delaney Rd – Texas City

The I-45 truck parking/mobility hub is proposed for the interchange of Interstate 45 and Delaney Road in Texas City. Along this busy corridor, there are several key destinations including several large commercial shopping centers, a large concert venue, an Amazon distribution center, residential neighborhoods, several schools, and a large recreational park. The concept plan proposes truck parking on both the east and west sides of Delaney Road, north of I-45. The truck parking on the west side is 134,000 square feet and is accessed directly from Delaney Road at the intersection with Monticello Drive and contains 23 truck parking spaces and four EV truck parking spaces. Adjacent to

the parking area is a restroom facility, detention pond, and a shared use path. The paths connect to paths on the east side of Delaney Road via high visibility crosswalks and to walking facilities south of I-45.

The truck parking on the east side of Delaney Road is accessed directly from Monticello Drive and has two main components: a park-and-ride facility and an owner-operator and flex truck parking area. The 19,500 square foot park-and-ride facility contains 35 stalls and 9 EV charging stalls and is in close proximity to the Monticello Drive entrance, allowing for easy transit service access. The park-and-ride facility includes a restroom facility, walking paths, and a detention pond. The detention pond collects water from parking and driving surfaces and adds to the environmental and aesthetic benefits of the site. The 129,000 square foot owner-operator and flex truck parking contains 22 spaces and 22 vehicle spaces. These spaces allow truck drivers to keep their personal vehicle on-site for extended periods of time while operating their truck off site.

A sidewalk on the west side of Delaney Road extends under I-45 and connects to a larger recreational area that includes a significant detention pond and a variety of shade and ornamental trees. Walking trails extend around the periphery of the detention pond and connect to the existing sidewalk network. Another large detention pond is proposed on the east side of Delaney Road and can be accessed by the proposed sidewalk network. In total, there is 5,940 linear feet of walking paths across this site, providing ample passive recreational opportunities for all users. Figure 5-9 highlights the Texas City opportunity site conceptual design.

Preliminary cost estimates for the Texas City opportunity site are:

- Truck Parking and Multimodal: $12,264,710
- Mobilization and Contingencies: $5,887,300
- Total Estimate: **$18,152,010**

Figure 5-9: Opportunity Site #4: Texas City Concept

5.4.5 Site #5: US 90 and Sheldon Rd – Sheldon

The Sheldon truck parking facility is located on the northern side of the US-90 and Sheldon Road interchange between the on/off ramps of US-90 and adjacent industrial land uses. The concept plan proposes a parking facility with two main components: a park-and-ride facility and a designated truck parking lot. The park-and-ride facility, located on the east side of Sheldon Road, is 27,700 square feet and contains 60 parking stalls and a restroom facility. This location provides easy access for transit operations. On the west side of Sheldon Road, the designated truck parking is 86,600 square feet and accommodates 16 trucks in total and is designed for easy pull-in access. This lot is accessed from Crosby Freeway.

The proposed concept utilizes land where an engineered draining channel currently exists. To accommodate the truck parking with this condition, the site plan proposes extensive water detention facilities connected by a system of drainage swales and culverts. While this approach is necessary to manage the hydrology of the site, these draining facilities also provide the opportunities for passive recreational opportunities. The concept plan illustrates an extensive trail network, 10,300 linear feet in total, that connects the park-and-ride facility with the truck parking lot via a high visibility crosswalks across Sheldon Road and Crosby Freeway. The detention ponds also provide the opportunity for interaction with the water itself whether it be a pedestrian bridge or along the water's edge. Figure 5-10 highlights the Sheldon opportunity site conceptual design.

Preliminary cost estimates for the Sheldon opportunity site are:

- Truck Parking and Multimodal: $14,495,702
- Mobilization and Contingencies: $6,419,600
- Total Estimate: **$20,915,302**

Figure 5-10: Opportunity Site #5: Sheldon Concept

5.4.6 Site #6: US 90 and Grand Parkway - Dayton

The US and Grand Parkway intermodal hub is located at the western interchange of US 90 and HS 99/Grand Parkway. Specifically, the hub is positioned between the on/off ramps of US- 99 northbound. The site is within a rural agricultural landscape however future commercial development is likely immediately to the northeast. Further to the east from this site is the BNSF and Union Pacific Railroad Yard, a major freight facility. A significant warehousing development is proposed west of the railroad yard and would occupy the majority of the land between the railroad yard and the proposed multimodal hub. The proposed mobility hub is in a strategic location and will benefit from this future economic growth.

As the concept plan illustrates, the multimodal hub would be accessed directly from US 90 and have three main areas: a transit center, truck parking, and secure truck parking. A central access drive provides connections to each of these main areas. The 25,000 square foot transit center is located closest to US 90, making the access for transit operations fast and efficient. The transit center would include 46 parking spaces and restroom facilities.

The central truck parking area is 362,000 square feet and has two components: 19 overnight occupied truck parking spaces and 57 24-hour truck staging spaces. The respective quantities of specific truck parking types is indicative of the anticipated demand for these types of truck parking operations.

The furthest area from the main entrance of the site is a secure truck parking lot (194,000 square feet). This area contains 39 spaces for trucks and 40 spaces for cars. Truck operators would be able to leave their personal vehicle in the car parking spaces while operating the truck off site. Similarly, when trucks are not being operated, they can be parked at this secure location for an extended period of time. This area would be fenced off and have a controlled access point. Additionally, a security/bathroom facility is located adjacent to the car parking area to serve this portion of the multimodal facility.

Throughout the site, 4,370 linear feet of shared use paths are incorporated to provide passive recreational opportunities for all users of the site. A detention pond at the western end of the site will collect water from the parking and driving surfaces and provide aesthetic benefits as well. An existing site drainage feature at the western end of the site would remain and accommodate excess water from the detention pond when necessary. Figure 5-11 highlights the Dayton opportunity site conceptual design.

Preliminary cost estimates for the Dayton opportunity site are:

- Truck Parking and Multimodal: $14,803,800
- Mobilization and Contingencies: $7,106,100
- Total Estimate: **$21,909,900**

Figure 5-11: Opportunity Site #6: Dayton Concept

5.4.7 Freight Villages

As mentioned in the previous sections of this chapter, the robust stakeholder engagement process resulted in over 30 individual opportunity sites or zones that were screened and prioritized down to the six opportunity sites described in the previous section. Although these sites and zones that did not move forward for conceptual design, they are no less important to addressing the truck parking needs of the Southeast Texas Region. In coordination with the Houston District, the project team decided to explore the development of typical concepts for large and small freight villages that would serve regional truck parking needs and be consistent with the Mobility Hub recommendations outlined in the Houston REAL Plan.

Freight villages, also known as logistics centers or inland ports, are comprised of a localized cluster of transportation and logistics facilities co-located and coordinated to capitalize on freight movement synergies. Through active, coordinated facilities management, freight villages provide truck drivers improved amenities, reduced wait times and fuel use, enhanced safety, and maximize the use of available truck parking spaces. Figure 5-12 highlights a typical large scale freight village concept while Figure 5-13 shows a typical small to medium scale freight village concept that could be used at future sites to serve major regional freight traffic. The Houston District is currently working on advancing a Freight Village concept in the Katy-Brookshire area as part of the REAL Plan 2.0 Implementation.

Figure 5-12: Typical Large Freight Village Site Concept

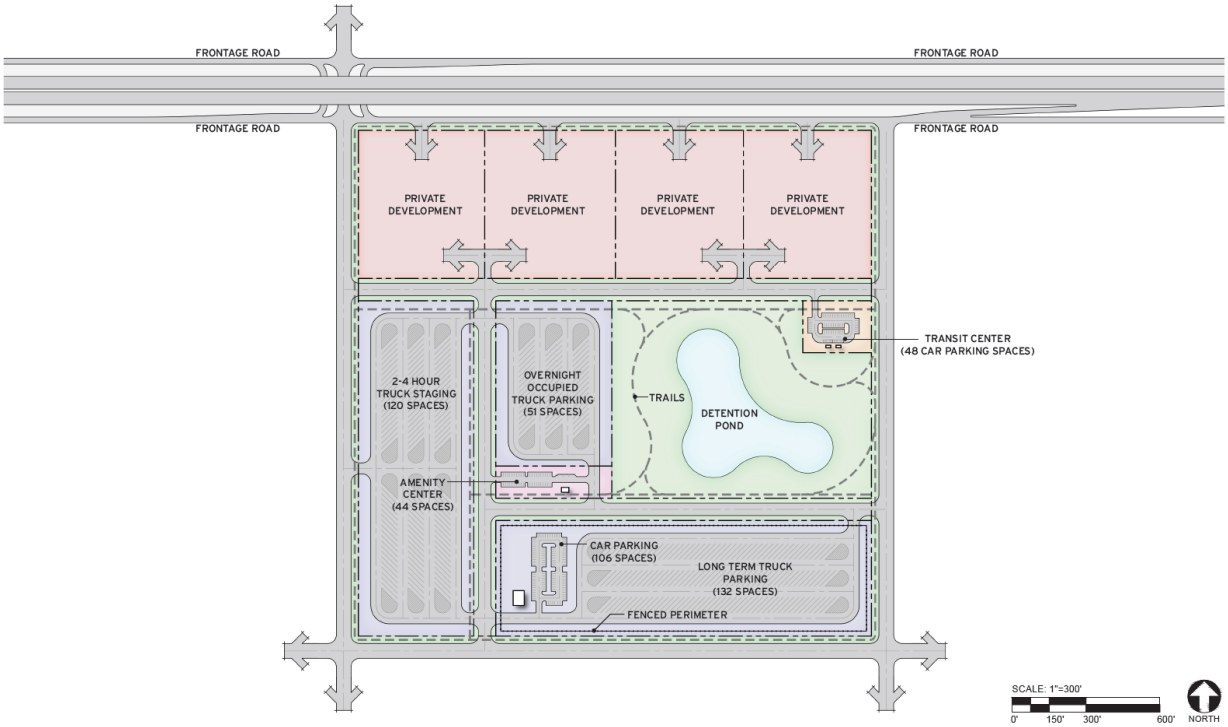
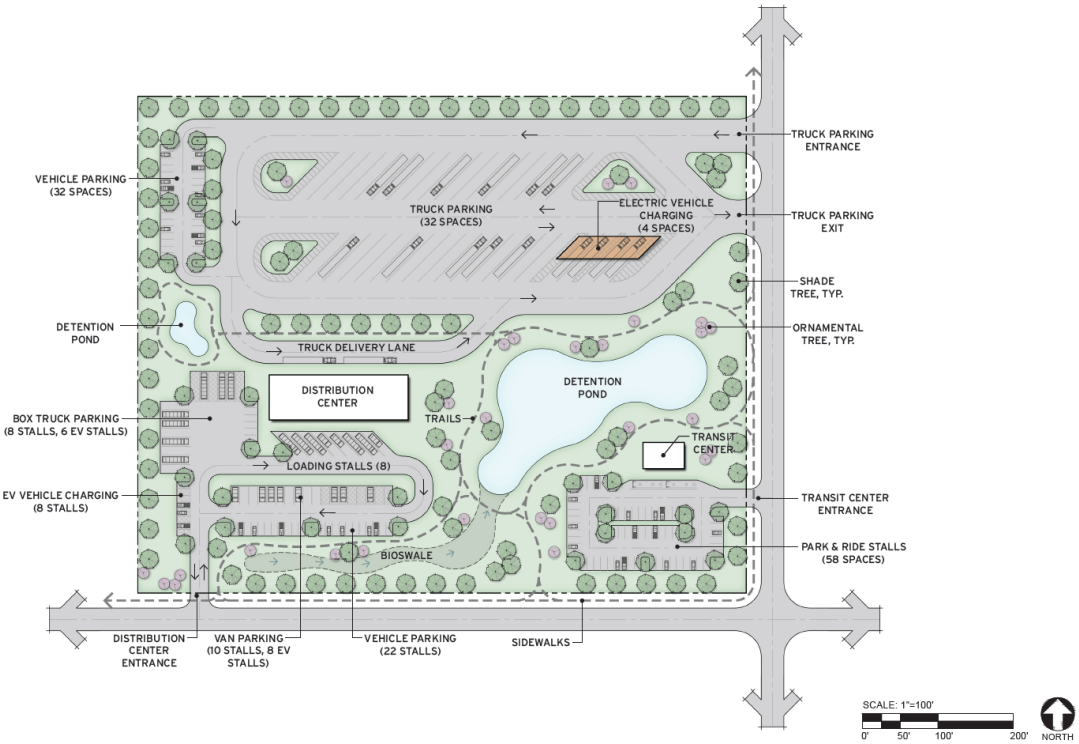


Figure 5-13: Typical Small Freight Village Site Concept



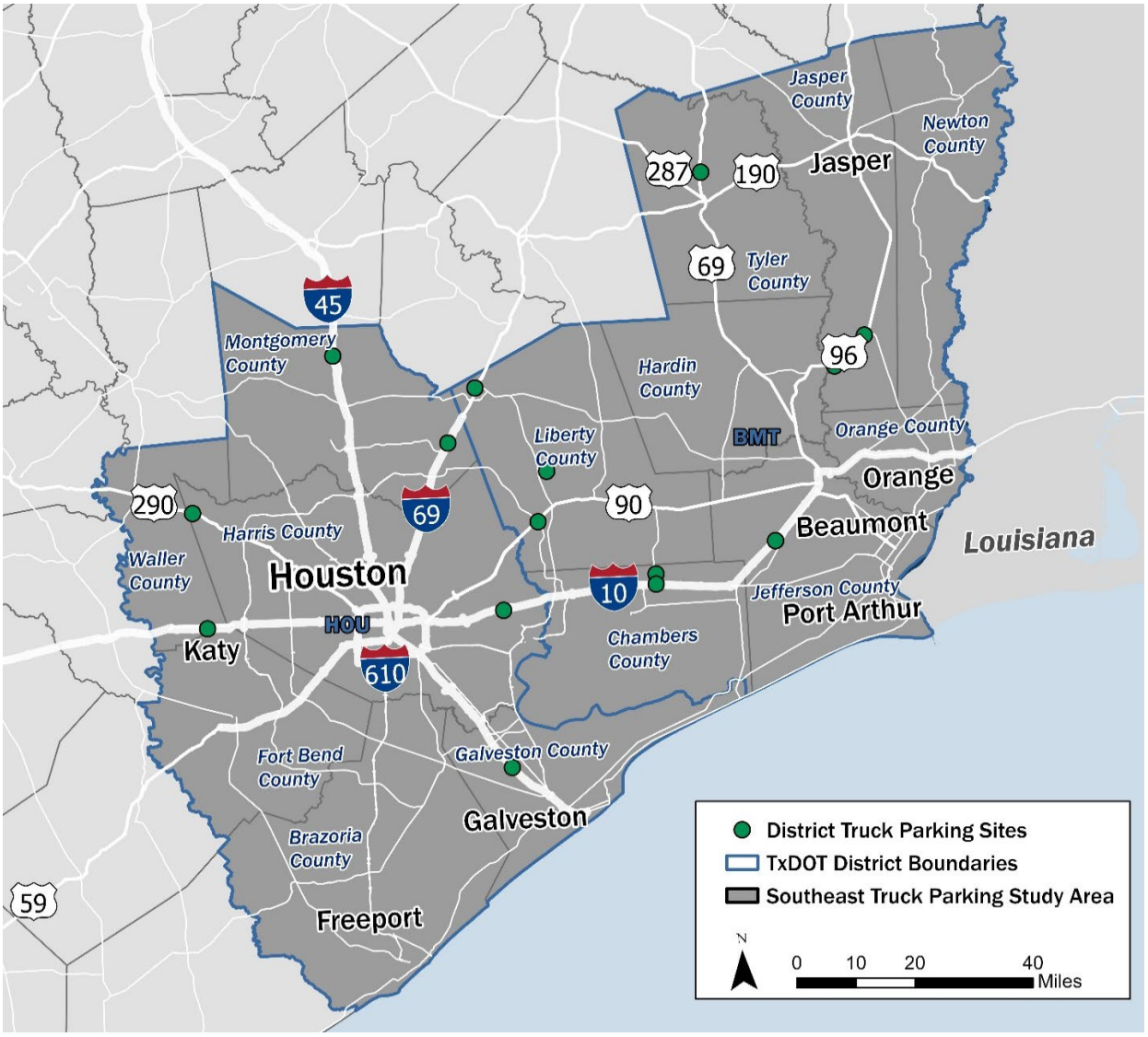
5.5 Additional Sites

In addition to the six Southeast Texas Region opportunity sites developed for this Plan, several other initiatives are underway in the region to increase the amount of safe and available public truck parking and meet unique regional needs like truck staging and queueing at ports and major freight generators. The following section includes an overview of these additional public truck parking sites including low-cost maintenance improvements and projects that the TxDOT districts are currently advancing and port initiated truck staging and queuing projects.

5.5.1 Maintenance Sites

Through the Texas Truck Parking Initiative, the TxDOT Maintenance Division is coordinating with the Houston and Beaumont District staff to identify TxDOT-owned property and ROW in high-need locations where truck parking can be quickly and efficiently implemented through cost-effective improvements. Some of these locations may have simple improvements such as adding pavement or gravel, along with needed access improvements, while others could include more formal striping, and lighting. These locations tend to have few amenities (i.e., no restrooms) with lower cost maintenance compared to the other opportunity sites identified in this Plan. As shown in Figure 5-14, currently there are 13 truck parking maintenance projects identified for the Southeast Region. These sites will primarily serve short-term staging needs and rest breaks.

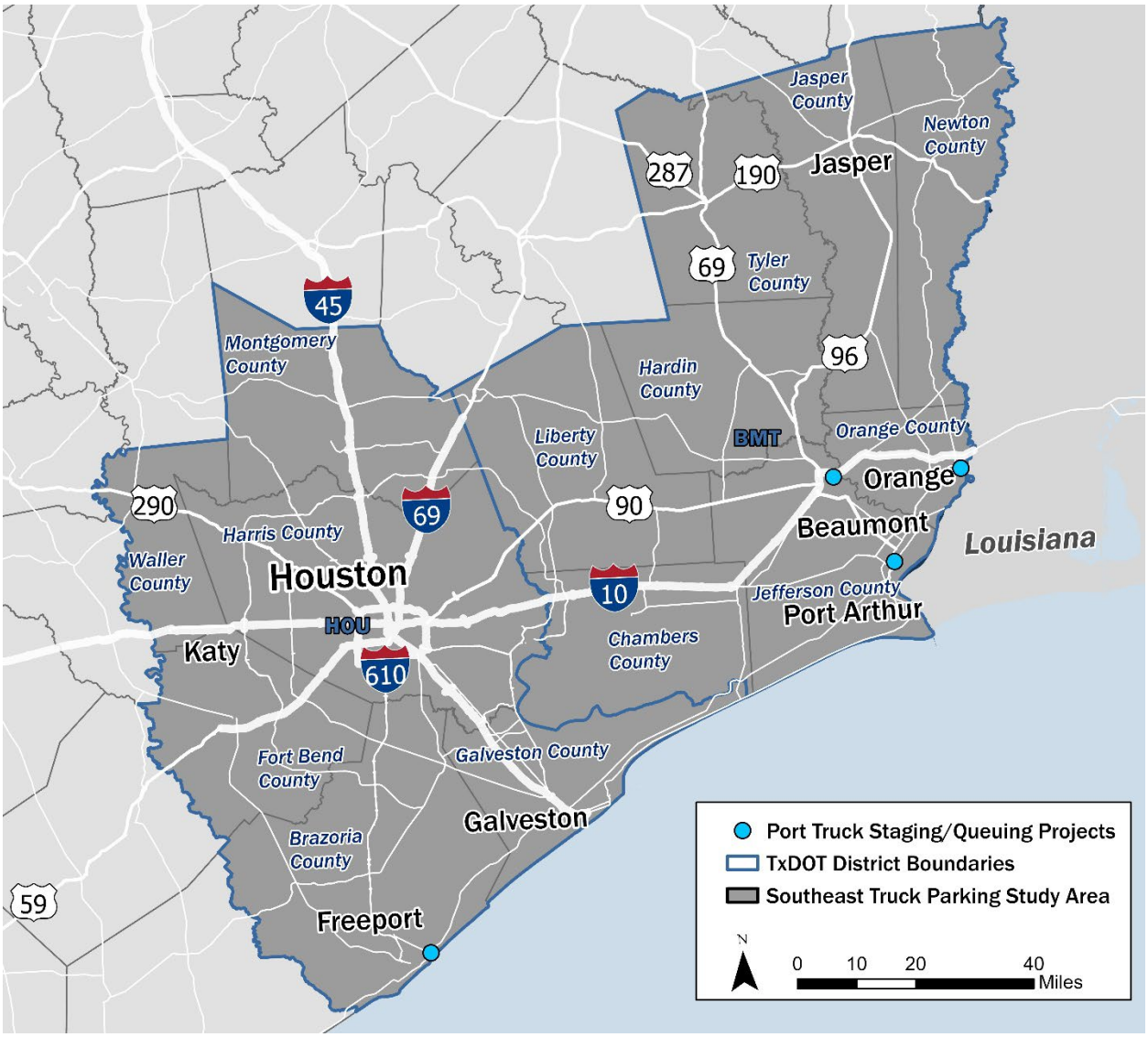
Figure 5-14: Southeast Texas Region District Maintenance Sites



5.5.2 Port Sites

As noted in Chapter 3, the Southeast Region ports are supportive of truck parking improvements to address safety and improve operations. As shown in Figure 5-15, many ports in the Southeast Region are actively developing queuing and staging projects on or near their facilities to improve congestion and queuing at the port gates and minimize unauthorized parking along nearby roadways. In all, the Southeast Region ports will construct 16 truck parking improvement projects at four ports. See Section 6.1.2 for more information about port projects.

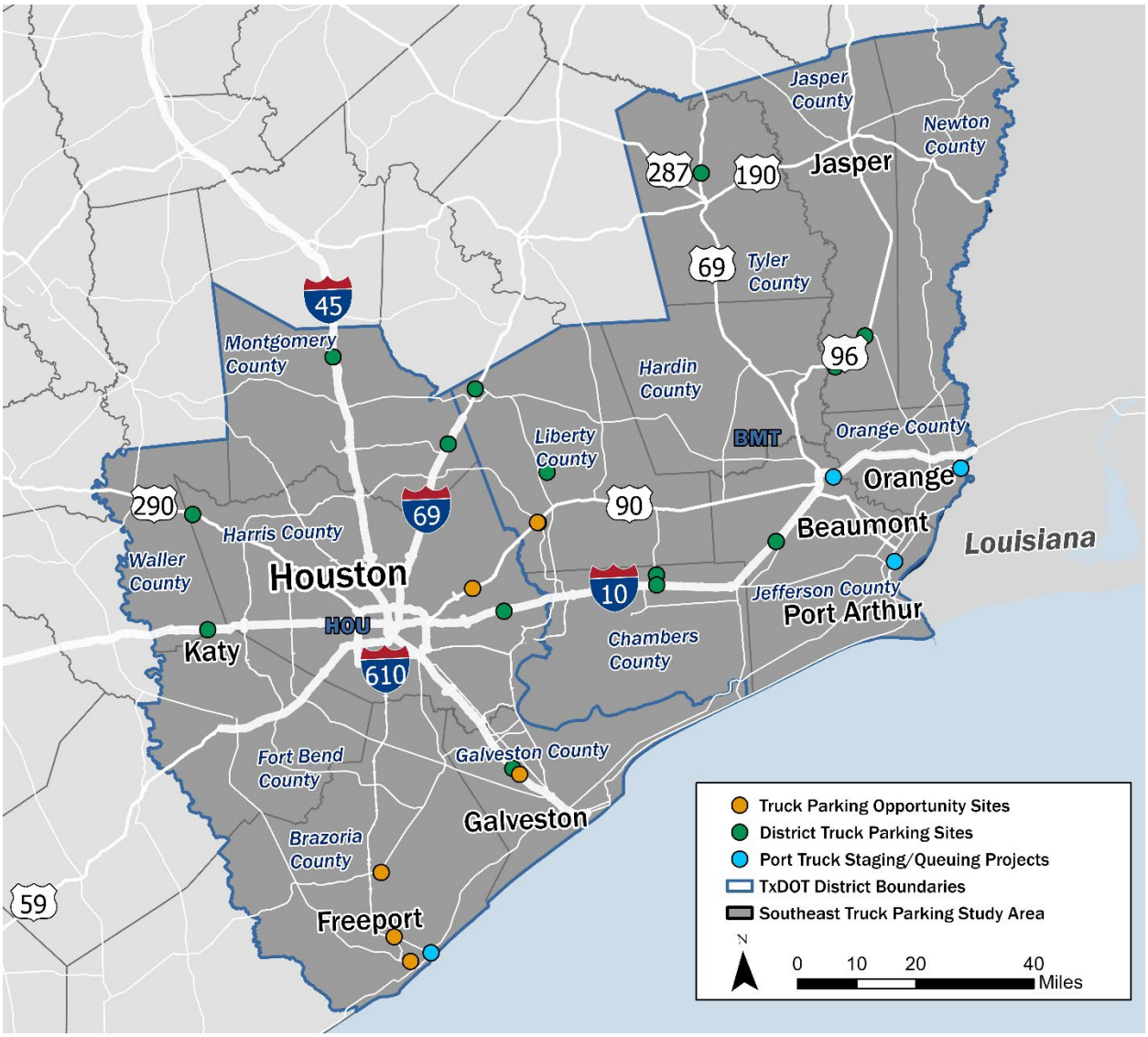
Figure 5-15: Southeast Texas Region Port Sites



5.5.3 All Regional Sites

As documented throughout this chapter, there are numerous initiatives underway by the TxDOT Houston and Beaumont districts and area ports to plan, design, and implement truck parking projects throughout the Southeast Texas Region to address unique truck parking needs. In total, 35 separate projects were identified in various stages of the project development process that will provide this critical truck parking capacity in the region when implemented. Figure 5-16 provides a comprehensive map of all planned or implemented truck parking projects in the Southeast Texas Region.

Figure 5-16: Southeast Texas Region Truck Parking Sites



Chapter 6:
Implementation

Texas Department of Transportation

6.0 Implementation

As documented in this Plan, the shortage of truck parking throughout the Southeast Texas Region is exacerbated by several factors: few public truck parking options (limited to one SRA and one TIC; both in the Beaumont District), restrictive local ordinances and development codes, incompatible land uses, public opposition, and high land acquisition costs. These challenges make it difficult to effectively implement programs, policies, and projects aimed at addressing the issue and increasing the availability of safe truck parking. However, during the development of this Action Plan, the robust stakeholder engagement process and data driven needs assessment provided the opportunity to raise awareness and advance early implementation activities.

This commitment to improving safety and solving regional challenges led to early project development activities, coordination with existing construction projects, submission of federal grant applications, and the planning of a pilot project to evaluate curbside truck parking. With early implementation activities already underway, TxDOT, local public agencies and regional stakeholders are planning a promising path forward to enhancing safety, reducing congestion, and increasing efficiency throughout the region.

For many truck parking projects, funding availability can be a major roadblock to implementation, however, recent significant federal and state investments in truck parking across the country have reinforced the critical importance of addressing the truck parking shortage. State and federal funding programs, including competitive grants, can be leveraged to advance the recommendations and projects identified in this Action Plan. The following chapter provides an overview of these opportunities and is organized as follows:

- **State Funding Opportunities** – provides a summary of TxDOT funding sources and existing programs that can be used to program district truck parking projects in the 10-year Unified Transportation Program (UTP)
- **Federal Funding Opportunities** – highlights discretionary and competitive grant programs that public agencies can pursue to implement truck parking projects
- **Next Steps** – outlines a series of actions that the TxDOT, local public agencies, and private industry can take to implement the recommendations outlined in this Plan

6.1 State Funding

Project funding is planned and updated through TxDOT's ten-year plan, the UTP, which is updated annually. Projects compete for regional and statewide funding programs that are defined by the UTP categories. To evaluate projects and prioritize awarding funding through the UTP, TxDOT assesses the candidate project's alignment with TxDOT's goals for ensuring safety, mobility, connectivity, and system preservation. Some projects may also compete for discretionary funding opportunities, such as Federal grants.

The UTP consists of 12 funding categories with varying purposes, decision-makers, and project requirements. For example, the Houston and Beaumont districts are developing truck parking as a component of larger highway projects under Categories 2, 4, and 12, programs prioritizing mobility and connectivity. Additional truck parking solutions may be programmed with more targeted programs within Category 10, such as the Carbon Reduction Program and Texas Truck Parking Initiative. Figure 6-1 highlights the 12 UTP Funding Distribution Categories:

Figure 6-1: UTP Funding Distribution Categories

Source 6-1: https://www.txdot.gov/projects/planning/utp.html

In addition to these project development efforts, the Houston and Beaumont Districts are also developing near-term solutions through district maintenance efforts. These strategic efforts are targeted at appropriate locations, where TxDOT-owned property can quickly and efficiently accommodate truck parking by adding pavement or gravel, along with needed access improvements.

6.1.1 Texas Truck Parking Initiative

Due to a lack of available spaces in Texas and Federal HOS requirements for rest breaks, truck drivers are often forced to park along shoulders or exit ramps. This creates a safety hazard for truck drivers and other roadway users. To help address the need for safe truck parking locations, TxDOT has committed $300 million to the statewide Texas Truck Parking Initiative within the 2024 UTP.

Roughly $30 million of truck parking improvement projects will be funded per year from 2024 through 2033 and includes new truck parking construction, expansion of existing parking, and access and operational improvements. TxDOT's Maintenance Division is leading this effort in coordination with all

25 TxDOT Districts to deliver these solutions across Texas. Currently, 16 projects are planned for funding through the Statewide Truck Parking Initiative. This includes five projects within the Houston district and 11 in the Beaumont District.

Figure 6-2: Statewide Truck Parking Initiative Projects

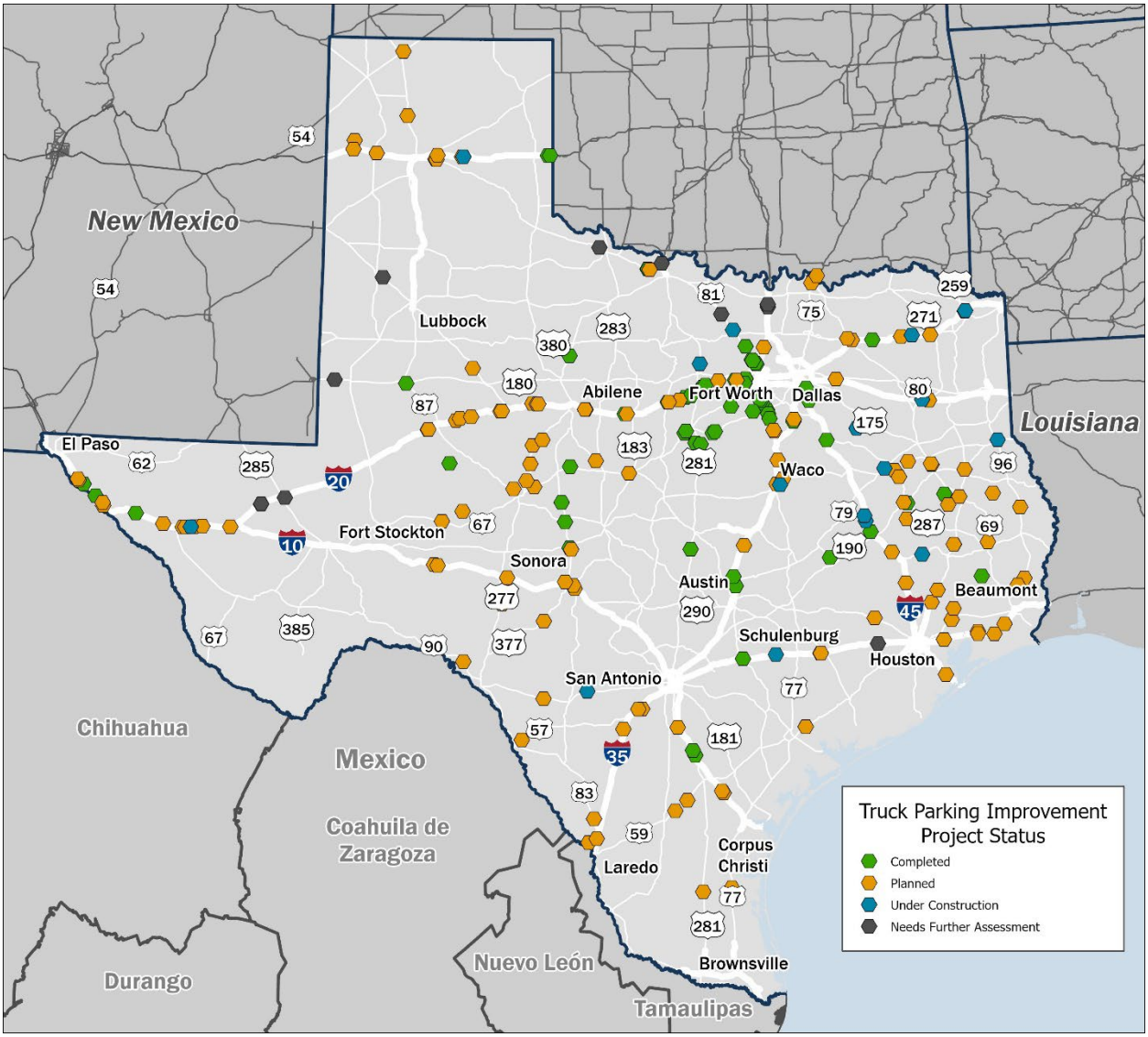


Figure 6-2 highlights the list of Statewide Truck Parking Initiative projects categorized by their current project status.

6.1.2 Maritime Division Funding

The Port Authority Advisory Committee (PAAC) and TxDOT Maritime Division develop the Texas Port Mission Plan (PMP), the strategic planning document for port and infrastructure improvements, as Chapter 55 of the Texas Transportation Code requires. The plan identifies high-priority and strategic port projects, makes recommendations for investment, and incorporates those plans in TxDOT planning activities to support intermodal needs. The planning process also identifies funding opportunities for maritime and inland connectivity investments.

The 2024-2025 PMP highlights the importance of investing in the port system to meet the growth potential of global trade opportunities and provides $9.67 billion in port improvement recommendations. Inland connectivity needs account for $4.34 billion of those recommendations,

including infrastructure improvements, truck parking queuing projects, and access management improvements. Relative to the Southeast Texas Region stakeholders, the PMP involves collaboration and considerations for Port Freeport, Port of Galveston, Port of Texas City, Port Houston, Cedar Bayou Navigation District, Port Anahuac, Port of Port Arthur, Sabine Pass Port Authority, Port of Beaumont, and Port of Orange.

The PMP also includes a Port Connectivity Report summarizing the current state of inland connectivity at 18 public ports and navigation districts along the Texas Gulf Coast. It focuses on roadway connections between the port gates and major freight corridors and identifies the major challenges facing intermodal connectivity. The freight congestion, road safety, truck queuing, and traffic operations challenges particularly align with truck parking challenges.

The Seaport Connectivity Program (formerly the Port Access Improvement Program) and Maritime Infrastructure Program (MIP) provided by the Texas legislature are two funding program examples that highlight the continued commitment of TxDOT's collaboration with Port Authorities to address port-related challenges including truck staging and queuing. Eight truck parking, staging, or queuing projects have been funded at ports in the Southeast Texas Region through these programs totaling nearly $35 million in funding from TxDOT. An additional eight projects were submitted for funding in the 2026-2027 Port Mission Plan with total project costs of $60.5 million by ports in the region to address truck parking, staging, and queuing needs.

One example of a Southeast Texas Region port successfully leveraging TxDOT Maritime Division funding is the Port of Beaumont's recently completed Truck Queuing project at Emmett Avenue that addressed congestion caused by trucks staging on city streets as they waited to enter the Port, causing operational delays and safety concerns for the surrounding area. The project implemented a designed truck queuing area with asphalt pavement, perimeter fencing, and lighting infrastructure. Benefits of the project include:

- **Improved Operational Efficiency** – improved congestion, reduced wait times, and improved safety and security
- **Economic and Environmental** – supports local businesses, decreased emissions from idle trucks, and reduced truck traffic on city streets

6.2 Federal Funding Support

Local and state funds will not be sufficient to construct all truck parking opportunity sites identified in this Plan. TxDOT and its partners must leverage federal funding opportunities and encourage local agencies and industries to support these efforts. The trucking industry backs the H.R. 2367 Truck Parking Safety Improvement Act, which proposes up to $755 million in dedicated funding over three years for creating safe and secure truck parking. Although the bill was approved by the House Committee on Transportation and Infrastructure with a strong majority in 2023, it is now awaiting further action.

In June 2024, the U.S. House Appropriations Committee unveiled its fiscal year (FY) 2025 funding bill for Transportation, Housing, and Urban Development. This bill proposes $200 million to enhance truck parking availability. The bill is now pending approval by the full House later this year, and it remains uncertain whether the Senate will include similar provisions in its version.

In the near term, there are numerous existing federal formula funding programs and competitive grant funds through the Infrastructure Investment and Jobs Act (IIJA) that provide competitive opportunities for TxDOT and its partners, including MPOs, cities, and counties, to secure additional federal funds for truck parking projects. In 2023, the U.S. Department of Transportation (USDOT) provided more than $80 million in grant awards to support truck parking improvements, which is a 65% increase over the previous year. In early 2024, USDOT announced $292 million in truck parking related federal grant awards, the largest of which was a $180 million grant for the Florida Department

of Transportation (FDOT) to build over 900 new truck parking spaces along the I-4 corridor in Central Florida.

Table 6-1 highlights federal formula funding programs and discretionary grant programs that have the greatest potential to fund truck parking capacity projects or components of truck parking projects.

Table 6-1: Federal Discretionary Grant and Formula Funding Programs for Truck Parking

Discretionary Grant Programs	Formula Funding Programs
Nationally Significant Multimodal Freight & Highway Projects (INFRA)	Surface Transportation Block Grant (STBG)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE)	National Highway Freight Program (NHFP)
Rural Surface Transportation Grants	Highway Safety Improvement Program (HSIP)
National Infrastructure Project Assistance (MEGA Grant Program)	National Highway Performance Program (NHPP)
Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT)	Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT)
Advanced Transportation Technologies and Innovative Mobility Deployment (ATTIMD)	Congestion Mitigation and Air Quality Improvement Program (CMAQ)
Reduction of Truck Emissions at Port Facilities	
FMCSA High Priority Innovative Technology Deployment (HP-ITD)	

Source: FHWA Memorandum on Funding Eligibility for Truck Parking Projects

Federal Discretionary Grant Programs that have typically been successful in funding regionally significant truck parking projects are highlighted below:

- **National Infrastructure Project Assistance (MEGA):** Funds large, complex projects that may be difficult to fund by other means and demonstrate significant benefits to the U.S. economy, mobility, or safety located on the National Multimodal Freight Network (NMFN), the NHFN, or NHS.
- **Nationally Significant Multimodal Freight and Highway Projects (INFRA):** Funds freight, highway, and other intermodal projects of national or regional significance located on or connected to the National Highway Freight Network (NHFN) or National Highway System (NHS).
- **Rural Surface Transportation Grant Program (RURAL):** Funds highway, freight, and other projects that improve transportation infrastructure connectivity to rural regions while improving the safety, reliability, and mobility of people and freight.
- **Rebuilding American Infrastructure with Sustainability and Equity (RAISE):** Funds multimodal transportation infrastructure projects that have significant local or regional impact and achieve national objectives.

Additional Federal grant programs that could be used to support truck parking projects, especially technology components like TPAS, curbside management, and reservation systems include:

- **FMCSA High Priority Innovative Technology Deployment (HP-ITD): Funds** innovative technology deployment projects that enhance commercial motor vehicle safety.

- **Advanced Transportation Technologies and Innovative Mobility Deployment (ATTIMD**): Funds advanced technology deployment projects that improve safety, mobility, connectivity, and system performance.

- **Strengthening Mobility and Revolutionizing Transportation (SMART):** Funds demonstration projects focused on advanced smart community technologies and systems that will improve transportation efficiency and safety.

This is not an exhaustive list of every available grant opportunity that could be used to support a truck parking project. TxDOT encourages potential applicants to visit the TxDOT Grants website for more information on available grants, project requirements, and funding limits and matches before beginning development of a grant application.

TxDOT encourages collaboration and communication with us on each grant application, especially if the project is in TxDOT right of way. We strive to be good partners on these applications, but we need to know early what applications are being developed. There is a letter of support request form on TxDOT's grant website. Having a TxDOT letter of support will help USDOT know that the project is supported by TxDOT and is our commitment to assist in delivering the project should grant funds be awarded.

6.2.1 Grant Partnership Spotlight

Leveraging the extensive stakeholder engagement and collaboration between TxDOT and regional partners, the project team was able to support the development of project concepts that were used by TxDOT in collaboration with regional partners to pursue grants and alternative funding sources to support implementation. For example, the TxDOT Houston District and Port Freeport partnered to develop a federal grant application that submitted a package of two regional truck parking and staging projects. The first project involved converting an existing gravel parking lot just outside the Port Freeport terminal gates to provide critical short-term truck parking, queuing, and staging to reduce gate congestion and facilitate more efficient port operations.

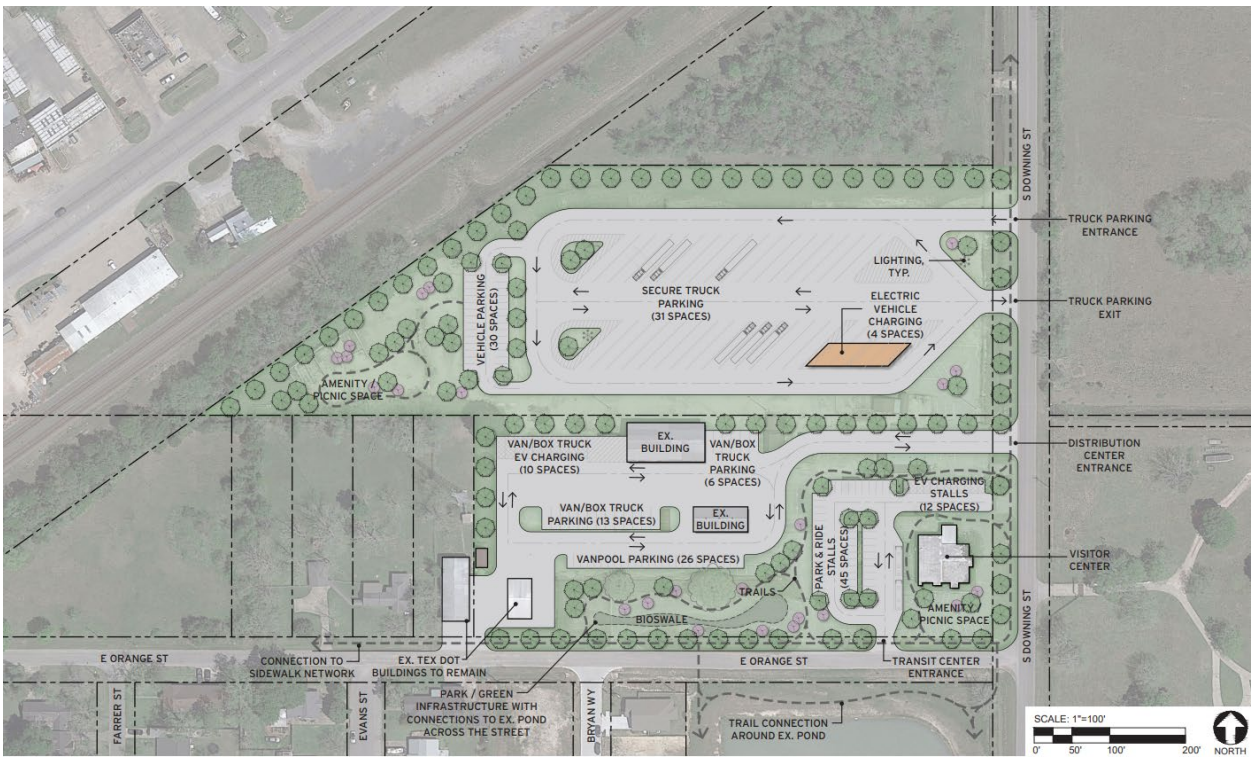
Truck parking grant project locations.

In Angleton, the Houston District collaborated with local stakeholders to develop a concept that would convert an unused TxDOT facility into a multimodal transportation hub with dedicated truck parking to serve local owner-operators, regional transit connections including van pool and park-and-ride opportunities, as well as sidewalk and trail connections to the neighboring community. These two truck parking sites both scored well in benefit-cost analysis due to their safety and mobility benefits. Additionally, proposed drainage, landscaping, and EV charging at the sites deliver environmental benefits and improve the quality of life for drivers and local communities.

Although each site serves a different purpose, both are critical to meeting truck parking demand in the Southeast Texas Region and will: add parking in areas with high truck traffic, promote freight economic development, improve safety by removing trucks parked on local roads, treat stormwater with bioswales, incorporate landscaping and tree-planting, provide safety lighting, and improve the overall quality of life for truck drivers and local communities impacted by unauthorized truck parking. Figure 6-3 and Figure 6-4 highlight three-dimensional renderings of the proposed truck parking facility concepts at Port Freeport and Angleton.

Figure 6-3: Port Freeport Freight Intermodal Facility Concept

Figure 6-4: Angleton Multimodal Facility Concept



6.3 Next Steps

TxDOT will continue to support Action Plan implementation through the Texas Truck Parking Initiative and coordination with regional partners. Funding support through state and federal programs can help move regional truck parking projects through the project development process into construction and operations. However, as noted in Chapter 4, advancing the Action Plan recommendations will require continued collaboration between TxDOT and local public and private sector partners in the region.

This Plan provides the resources to continue the dialogue with local partners to raise public awareness and the program and policy tools to implement solutions beyond the THFN. H-GAC, SETRPC, and local governments in the Southeast Region are encouraged to use these resources and integrate truck parking considerations into their planning processes, support messaging and information sharing with decision-makers and the public regarding the critical need for freight and the supporting infrastructure including truck parking facilities to improve safety, increase economic competitiveness, and enhance the quality of life for residents, businesses, and local communities.

Additionally, private sectors can leverage the Plan to collaborate with fellow stakeholders to navigate the process for initiating the discussion for the need to create safe spaces for truck drivers. By addressing the truck parking challenges in Texas, the private sector in tandem with TxDOT, can explain the need for truck parking and examine how negative impacts can be ameliorated. These resources can be found at TxDOT.gov. Search "Truck Parking" and review the Houston/Southeast Texas Truck Parking webpage.