



**Texas
Department
of Transportation**



REDEFINING REST STOPS:

*A Multimodal Strategy for Truck Parking
in Southeast Texas*

February 27, 2024

**Rebuilding American Infrastructure with
Sustainability and Equity (RAISE) Grant Application**



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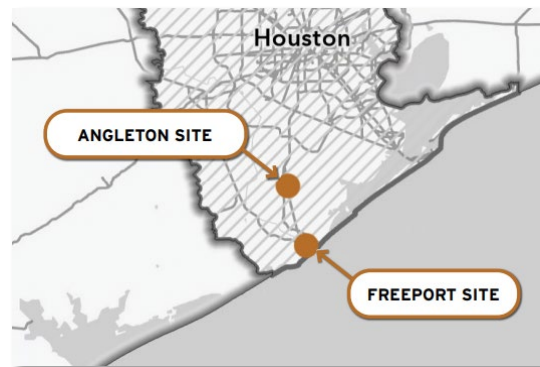
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1. Project Description

The Texas Department of Transportation (TxDOT) is requesting **\$24,312,700** from the **Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program** with the primary objective of funding two intermodal facilities that provide rest stops, freight parking and affordable multimodal options for people movements within a systemwide network in the rural area of Southeast Texas. The two intermodal facilities, in the rural cities of Angleton and Freeport—where freight plays an important role in economic growth and job creation and where single occupancy vehicle is the predominant travel mode—accommodate and promote growth in the Texas economy, increase access to employment centers, improve air quality, better communities’ quality of life, create recreation or tourism opportunities, all while ensuring the safe and efficient movement of people and goods. Both sites, each connected by transit and to adjacent community resources via transit and active transportation, will meet short-term staging truck parking needs in Freeport and off-duty parking needs for truck drivers who reside in Angleton.

Figure 1 Location Map



Both sites, shown in **Figure 1**, were selected through extensive stakeholder engagement and community coordination. The Angleton Site will be constructed on existing TxDOT right-of-way (ROW), repurposing a 10.3-acre area office in the City of Angleton, which is the county seat of Brazoria County, TX. Through an innovative partnership, the Freeport Site will be built on 8.1 acres of Port Freeport property, located along the Texas Gulf Coast in the City of Freeport in a Historically Disadvantaged Community and an Area of Persistent Poverty. Port Freeport is ranked as the sixth fastest growing port in the chemical industry.¹ Both sites are within the systemwide transit network, that with the proposed improvements, will enhance access to jobs through multimodal transportation. Both sites are also part of TxDOT’s freight network and serve to meet truck parking demand in support of the local and regional economy and national movement of freight.

Angleton Site

The Angleton Site, shown in **Figure 2**, will repurpose a 10.3-acre abandoned TxDOT area office to serve as an intermodal facility consistent with TxDOT’s REAL Plan,² a blueprint for building a multimodal regionwide transportation system in the Southeast Texas region. The Angleton Site is an intermodal facility that provides transportation choices (transit, carpool/vanpool, park-and-ride) to six disadvantaged rural areas (Angleton, Brazoria, Lake Jackson, Clute, Richwood and Freeport) to reduce vehicle emissions and support access to jobs. The Angleton Site also helps fill the need for secure overnight truck parking and provides short-term parking in the distribution center for light-duty trucks to increase safety.

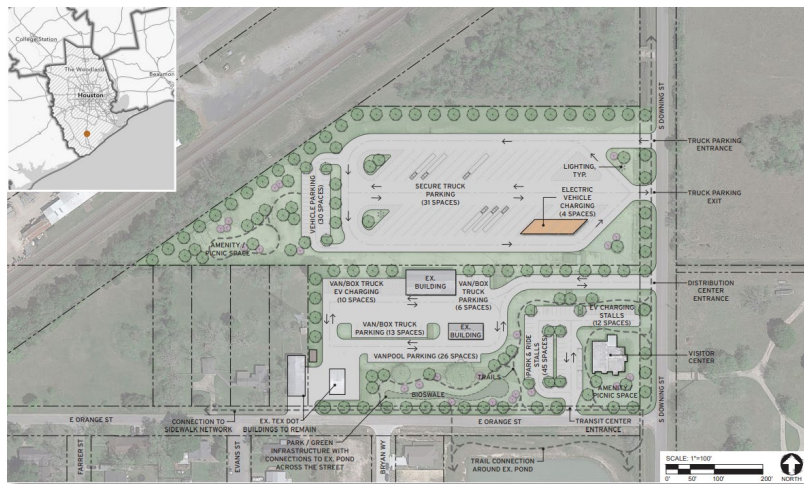
¹ Source: [Port Freeport | Texas Ports | Infrastructure](#), 2024.

² Source: [The Regional Express Access Lanes \(REAL\) Plan \(txdot.gov\)](#).



Construction of the north part of the Angleton Site will include new concrete paving, striping, safety lighting, and a new secure truck parking facility for local owner-operators and over-the-road drivers with 31 truck parking spaces, 4 EV truck charging stations and 30 vehicle spaces. This project will also include a truck parking availability system (TPAS) with radar detection technology that will count trucks entering and exiting to provide real time parking availability information through a data feed/API that will be available through TxDOT's [ConnectSmart](#) and other third-party apps.

Figure 2 Angleton Truck Parking Site



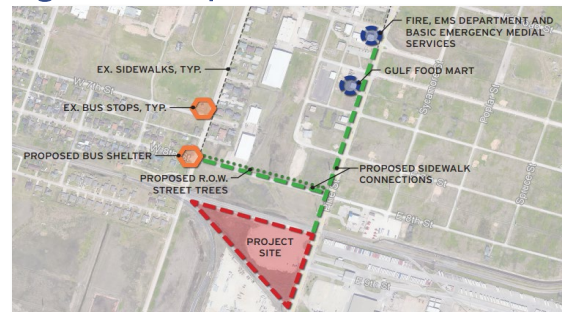
Construction of the south part of the site will include 3,000-square-foot 10-inch reinforced concrete paving, striping, and safety lighting, 19 truck light-duty parking spaces and 10 EV light-duty truck charging stations for local delivery vehicles, as well as 26 vanpool and 45 park-and-ride spaces, with 12 EV charging stations for passenger vehicles. The project will improve existing covered structures for small delivery truck/van package sorting and improvements to the existing building on the southeast corner of the site for a 4,500-square-foot visitor/transfer center.

Other improvements include a bioswale for drainage, 10-foot wide concrete ADA-compliant shared use path (300 feet) and associated subgrade with connections to the adjacent neighborhood, and new 6-foot-wide concrete ADA-compliant sidewalks around the site (1,700 feet). The project will include ADA-curb ramps, high-visibility crosswalks, signage, as well as 114 large trees (30 gallon) and 22 ornamental trees (15 gallon). The Angleton Site is in **Census Tract 6624** designated as a Rural Area and immediately adjacent to, but not within, an Area of Persistent Poverty. The site is rectangular and is boarded by Union Pacific Railroad (UPRR) on the north, S. Downing Street on the east, and E. Orange Street on the south. The intermodal facility will remove trucks currently parking on the street, and given its regional relevance, services a broader population so the neighboring community and the City of Angleton will reap the additional benefits of the proposed multimodal infrastructure planned for the site.

Freeport Site

The Freeport Site will primarily support staging and drayage truck parking needs for 2–4 hours at a time and no more than 24 hours. These truck parking, queueing and staging needs are outlined in the 2022–2023 Texas Port Mission

Figure 3 Freeport Sidewalks





Plan³ and the subsequent 2024–2025 Texas Port Mission Plan.⁴ **Figure 4**, shows the Freeport Site located on an 8.1-acre Port Freeport property. Construction will include paving an existing gravel lot with 121,400-square-foot 12-inch reinforced concrete paving, striping, and safety high mast lighting for 31 truck parking spaces, 4 EV truck charging stations, and 3

Figure 4 Freeport Truck Parking Site



passenger vehicle parking spaces (two of which will be EV charging stations) that will reduce unsafe queuing and parking on local roads and on FM 1495. Construction will also include a new 800-square-foot small office building and restrooms. Port Freeport employees will staff the office and interact with truckers to improve logistics at port facilities. Other site improvements include bioswales and engineered ditches for drainage. The parking site is in a triangular parcel bound by UPRR on the north, Pine Street on the east, and UPRR on the south as shown in **Figure 4**. As shown in **Figure 3**, TxDOT is also proposing a pedestrian railroad crossing and 6-foot concrete sidewalk connections to food, healthcare, transit as well as a bus shelter at E. 8th Street/Cherry. The first sidewalk starts at FM 1495 and runs north to 4th Street. The second starts on FM 1495 and runs west on E. 8th Street to Cherry.

Placing the Project in the Broader Context

The proposed truck parking solutions are a result of valuable input from regional, local and not-for-profit stakeholders, and data-driven analysis in four different plans as follows:

- TxDOT's **REAL Plan**⁵ focuses on person trips in terms of the entire transportation system capacity as a combination of all mode capacities to connect and efficiently move goods and people via managed express lanes and multimodal hubs.
- **Southeast Texas Truck Parking Action Plan**⁶ development (which is ongoing) identified these truck parking opportunity sites.
- The **2020 Texas Statewide Truck Parking Study**⁷ found that truck parking demand in Texas is projected to be 170% over the current capacity.
- The **2018 Texas Freight Mobility Plan**⁸ first identified shortage of safe, authorized truck parking as a high priority need for the State of Texas.

³ Source: [2022–2023 Texas Port Mission Plan \(txdot.gov\)](https://www.txdot.gov/2022-2023-texas-port-mission-plan)

⁴ Source: [2024–2025 Texas Port Mission Plan \(state.tx.us\)](https://www.state.tx.us/2024-2025-texas-port-mission-plan).

⁵ Source: [The REAL Plan \(txdot.gov\)](https://www.txdot.gov/real-plan).

⁶ Source: [Houston/Southeast Texas truck parking \(txdot.gov\)](https://www.txdot.gov/southeast-texas-truck-parking).

⁷ Source: [Texas Statewide Truck Parking Study \(txdot.gov\)](https://www.txdot.gov/texas-statewide-truck-parking-study).

⁸ Source: [2018 Texas Freight Mobility Plan](https://www.txdot.gov/2018-texas-freight-mobility-plan).



Criteria	Transportation Challenges	Angleton Site	Freeport Site
Safety	<ul style="list-style-type: none"> Shortage of truck parking: parking on shoulders, ramps & city streets Truck-related injury crash rate higher than statewide by 23% Truck fatality rate higher than statewide by 16% for all modes Annual 3.9 fatalities and 36.7 serious injury crashes involving parked trucks (2014–2023) 	<ul style="list-style-type: none"> Provides ADA-compliant sidewalks and trails that protect non-motorized users (Improving Safety for Pedestrians and Bicyclists Accessing Transit Report)⁹ Provides lighting—reduces risk 	<ul style="list-style-type: none"> Provides staging area truck parking spaces with a rest area Reduces truck related injuries by 26% caused by fatigue, distraction, inattention, and unsafe parking
		<ul style="list-style-type: none"> Provides truck parking spaces, rest area, visitor center and picnic area Reduces truck-related injuries by 21% caused by fatigue, distraction, inattention, and unsafe parking 	
Environmental Sustainability	<ul style="list-style-type: none"> Long duration of looking for parking. (avg. 56 min/day) High truck demand growth rate of 3.62% Limited travel modes Designated moderate & severe non-attainment area for the 2015 and 2008 8-hour ozone standards Heat island effects 	<ul style="list-style-type: none"> Provides carpooling/ridesharing, park & ride, & transit—mode shift reduces VMT Reduces 543,741 truck VMT (2028–2052)—reduces vehicle emissions & air pollution 	<ul style="list-style-type: none"> Provides ADA-compliant sidewalk to transit network—reduces VMT Reduces 16,678,479 truck VMT (2028–2052)—reduces vehicle emissions & air pollution
		<ul style="list-style-type: none"> Provides EV charging stations for trucks and passenger vehicles—aligns with NEVI Plan Creates green area & tree canopies—reduces CO2 & heat island effect Treats stormwater runoff with bioswales—improves infrastructure resilience 	
Quality of Life	<ul style="list-style-type: none"> Limited affordable travel mode options Limited access for truck drivers to rest areas, safe/legal parking with amenities Heat island effects 	<ul style="list-style-type: none"> Provides carpool/vanpool & transit—increase affordable mode choices Improve access to jobs & community resources (e.g., food) Access to trails & picnic areas, beneficial for public health 	<ul style="list-style-type: none"> Provides ADA-compliant sidewalk to community resources—increases affordable mode choices (transit/vanpool/carpool), improves public health, adds trees—promotes walking
		<ul style="list-style-type: none"> Both sites remove trucks parked on local roads, shoulders, and on/off ramps. 	

⁹ Source: https://safety.fhwa.dot.gov/ped_bike/ped_transit/fhwas21130_PedBike_Access_to_transit.pdf.



Criteria	Transportation Challenges	Angleton Site	Freeport Site
Mobility and Community Connectivity	<ul style="list-style-type: none"> Limited access to transit & other multimodal transportation options Negative impacts from trucks parking on local streets or driving excessively looking for parking No intermodal/multimodal options for truck drivers 	<ul style="list-style-type: none"> Proposed access to carpool/vanpool and transit improves systemwide connectivity, providing affordable transportation options Proposed transit access directly increases intermodal and multimodal people movement 	<ul style="list-style-type: none"> Installs ADA-compliant sidewalk to transit network—improves ped-systemwide connectivity Addresses sidewalk gap, critical connections to transit, Food Mart, medical services Provides streamlined drayage operations to support goods movement
Economic Competitiveness	<ul style="list-style-type: none"> Short of safe & legal freight parking No tourism or recreational opportunities Existing facilities may not accommodate the high growth rate of 3.62% truck traffic demand 	<ul style="list-style-type: none"> Creates green areas, tree canopies, picnic areas, sidewalks connected to trails—tourism/recreational opportunities 	<ul style="list-style-type: none"> Promotes locally inclusive economic development by improving the systemwide connectivity
State of Good Repair	<ul style="list-style-type: none"> Transportation system vulnerability for first/last mile connectivity and vehicle dependence in underserved communities. Improve condition and safety while maintaining the existing footprint 	<ul style="list-style-type: none"> Repurposes TxDOT area office to a multimodal transportation hub Addresses vehicle dependence & connectivity Maintains the condition & safety of infrastructure in existing footprint 	<ul style="list-style-type: none"> Creates freight parking in rural community in an Area of Persistent Poverty census tract Addresses first/last mile connectivity and vehicle dependence via sidewalk
Partners	<ul style="list-style-type: none"> Limited right-of-way No connection among intermodal transportation options 	<ul style="list-style-type: none"> Engages local transit agency and vanpool agency to promote multimodal options 	<ul style="list-style-type: none"> Partners with Port Freeport to develop the truck parking and staging area needed for efficient port operations
Innovation	<ul style="list-style-type: none"> No real-time truck parking/EV charging information available Limited refueling options for low-carbon travel modes 	<ul style="list-style-type: none"> Develops a truck parking availability system (TPAS) to promote nearby truck parking—reduces truck drivers' time looking for parking TPAS connects to ConnectSmart app for real-time parking availability Truck parking spots reserved through the ConnectSmart mobile app 	



2. Project Budget

The Texas Department of Transportation (TxDOT) is requesting \$24,312,700 from the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program to fund two freight truck parking sites identified in or adjacent to Historically Disadvantaged Communities and an Area of Persistent Poverty to meet truck parking demands in a **Rural Area** where freight plays an important role in economic growth and job creation.

These truck parking sites will serve as freight hubs in the rural cities of Freeport and Angleton, encourage growth in the Texas economy, increase access to employment centers, improve air quality, better communities' quality of life, all while ensuring the safe and efficient movement of goods. Both sites, each connected by transit and to adjacent community resources via transit and active transportation, will help meet short-term staging truck parking needs in Freeport and off-duty parking needs for truck drivers in Angleton and will provide charging stations for electrified freight and passenger vehicles.

Sources, Uses, and Availability of Funds

Given that both projects are in a Rural Area and one of the sites (Freeport) is also in an Area of Persistent Poverty and Historically Disadvantaged, TxDOT is seeking a 100% federal share of funding through RAISE as shown in **Table 1** below.

Table 1 Project Budget by Source of Funds

Funding Source	Angleton Site	Freeport Site	Total Funding
RAISE Funds	\$16,921,800.00	\$7,390,900.00	\$24,312,700.00
Other Federal Funds	-	-	-
Non-Federal Funds	-	-	-
Total Cost	\$16,921,800.00	\$7,390,900.00	\$24,312,700.00

As shown in **Table 2**, the Freeport Site is in Census Tract 6644.

Table 2 Project Costs by 2020 Census Tract

2020 Census Tract(s)	Project Costs per Census Tract
Census Tract 6624 – Angleton Site	\$16,921,800.00
Census Tract 6644 ¹ – Freeport Site	\$7,390,900.00
Total Project Cost	\$24,312,700.00

¹ Historically Disadvantaged Community / Area of Persistent Poverty.



Finally, 100% of the project costs will be spent in a Rural Area as designated by the 2020 Census.

Table 3 Project Costs by Urban/Rural Designation

Urban/Rural	Project Costs
Urban (2020 Census-designated urban area with a population greater than 200,000)	\$0.00
Rural (Located outside of a 2020 Census-designated urban area with a population greater than 200,000)	\$24,312,700
Total Project Cost	\$24,312,700

Contingency Amount

The budget for this project includes \$3,871,100 in contingencies in 2024 dollars, which is approximately 16.89% of the total budget (\$4,103,366 in 2026 YOE dollars). TxDOT has determined this amount is sufficient to cover unanticipated cost increases based on the current level of design. In the unlikely event that the project budget evolves to exceed planned expenditures and contingency amounts, TxDOT has developed a Plan to Address Potential Cost Overruns.

Plan to Address Potential Cost Overruns

PHASE 1



VALUE ENGINEERING STUDY

TxDOT includes a Value Engineering (VE) study as a standard part of its project development process. TxDOT policy¹⁰ requires that each VE study include and document seven unique phases:

1. **Information**—Gather project information, commitments, and restraints.
2. **Function Analysis**—Analyze project to understand required functions.
3. **Creative**—Generate ideas to improve performance, enhance quality, and lower project costs.
4. **Evaluation**—Evaluate feasible ideas for development.
5. **Development**—Develop the selected alternatives into fully supported recommendations.
6. **Presentation**—Present VE recommendations to stakeholders.
7. **Resolution**—Evaluate, resolve, document and implement all approved recommendations.

PHASE 2



PRIORITIZE INVESTMENTS

The 2024 Texas Unified Transportation Program¹¹ provides a framework for identifying and allocating funds to address cost overruns for projects ready for letting. Pursuant to a legislative mandate, each TxDOT district receives a minimum of \$2.5 million in discretionary funds to address overruns, with additional funding distributed through an allocation formula. The Texas Transportation Commission may supplement the funds allocated to individual districts on a case-by-case basis to cover project cost overruns.

¹⁰ Source: [TxDOT Manual System, Project Development Process Manual, Section 6: Value Engineering.](#)

¹¹ Source: [2024 Texas Unified Transportation Program.](#)



PHASE 3



**PURSUE
ADDITIONAL
FUNDING**

TxDOT has developed a tested strategy for securing additional funds for major projects. Since 2020, TxDOT has secured 13 discretionary grants totaling \$198 million. The projects, and many more in prior years, have had all additional costs covered by TxDOT. In the event of a major cost overrun for this project, that could not be resolved through Phases 1 and 2, TxDOT would deploy a combination of tools to secure the required funding. TxDOT would entertain all avenues to make the project whole and secure sufficient financing to proceed.

Level of Design and Cost Estimates

Cost estimates were prepared to a 15% design complete milestone as shown in **Table 4**. For this RAISE application, TxDOT is requesting \$24,312,700 in 2026 dollars as shown here and in the Benefit Cost Analysis spreadsheet.

Table 4 Construction Cost Estimates by Site

Cost Category	Angleton	Freeport	Total
Civil-Roadway-Parking	\$5,829,500.00	\$2,618,230.00	\$8,447,730.00
Drainage	\$505,360.00	\$156,914.00	\$662,274.00
Pavement Markings	\$15,360.00	\$10,778.00	\$26,138.00
Landscaping	\$410,390.00	\$76,394.00	\$486,784.00
Illumination	\$150,000.00	\$45,000.00	\$195,000.00
Electric Truck Charging Station	\$706,800.00	\$706,800.00	\$1,413,600.00
Electric Vehicle Charging Station	\$512,600.00	\$46,600.00	\$559,200.00
Structural	\$2,000,000.00	\$422,000.00	\$2,422,000.00
MISC: WIM Sensors, Security Gate, Recreational Amenities, TPAS ITS Equipment	\$647,000.00	\$624,140.00	\$1,271,140.00
Mobilization	\$2,479,000.00	\$1,082,900.00	\$3,561,900.00
Contingency	\$2,694,300.00	\$1,176,800.00	\$3,871,100.00
2024 Total Project Cost	\$15,950,310.00	\$6,966,556.00	\$22,916,866.00
2025 Total Project Cost	\$16,428,900.00	\$7,175,600.00	\$23,604,500.00
2026 Total Project Cost (YOE)	\$16,921,800.00	\$7,390,900.00	\$24,312,700.00
2027 Total Project Cost	\$17,429,500.00	\$7,612,700.00	\$25,042,200.00

Cost Share or Non-Federal Funding Match

Given that both projects are in a Rural Area and one of the sites is also in an Area of Persistent Poverty and Historically Disadvantaged, TxDOT is seeking a 100% federal share of funding through RAISE as shown in **Table 1**. According to 49 U.S.C. 6702, as amended by the Infrastructure Investment and Jobs Act, § 21202, “the federal share can exceed 80% if



the project is carried out in a Rural Area, a Historically Disadvantaged Community, or an Area of Persistent Poverty.”

Financial Completeness

This section includes all required information to demonstrate that TxDOT has presented a complete funding package based on reasonable cost estimates. **Table 5** summarizes the Financial Completeness for the proposed project.

Table 5 Financial Completeness Assessment Summary

Criteria	Details
All Funding Sources for Project Budget Identified	<ul style="list-style-type: none"> ▪ TxDOT is seeking a 100% federal share. Any cost overruns will be covered by TxDOT using funding from any of the following sources: <ul style="list-style-type: none"> – State motor vehicle fuels tax; – State vehicle registration fees; – Oil and gas severance taxes (Proposition 1); and – General sales and use tax, motor vehicle sales, and rental tax (Proposition 7).
Funding Availability and Commitments Documented	<ul style="list-style-type: none"> ▪ TxDOT is seeking 100% federal share in RAISE grant funding and has letters of support from Port Freeport outlining their participation in providing ROW and ongoing maintenance of the Port Freeport Site.
Contingency Amounts Included in Project Budget	<ul style="list-style-type: none"> ▪ The project budget of \$24,312,700 includes \$4,103,366 in 2026 YOE dollars in contingency funds, derived from 15% design cost estimates.
Plan to Address Cost Overruns Described	<ul style="list-style-type: none"> ▪ This application includes a three-phase plan to address potential cost overruns, shown in Plan to Address Potential Cost Overruns.
Cost Estimates No More Than a Year Old	<ul style="list-style-type: none"> ▪ Cost estimates were produced to support 15% designs and finalized in January 2024.



3. Merit Criteria Narrative

TxDOT is seeking **\$24,312,700 million** in RAISE funding to construct two new truck parking locations, each connected by transit and to adjacent community resources via active transportation, which will help meet short-term staging /truck parking needs, overnight truck parking needs for both long-haul and local drivers and provide charging stations for electrified freight and passenger vehicles. As this section shows, this application directly addresses all eight Merit Criteria identified in the 2024 RAISE Program NOFO.

Safety

When truck drivers are tired or reach the limit of how long they can legally drive, they must choose whether to park illegally or drive illegally. Truck drivers face these decisions on a regular basis. “Falling asleep at the wheel” has been identified as a common experience at some point in a truck driver’s career, which was reported by 18% of 569 truck drivers surveyed.¹² Fatigue has been a major contributor to inattentive driving behaviors.

Safety Benefits and Improvements to Reduce Crashes

Access to safe parking allows truck drivers to handle personal or business communications and have meals safely during a long trip. Otherwise, truck drivers may choose to text, talk on the phone, eat, etc. while driving—activities that will distract them from dynamic road situations. Like fatigue, distraction has also been identified as a major risk factor associated with truck crashes.¹³

During the 2014–2022 period, there was an average of 112 crashes involving trucks within a 20-mile radius of the two proposed truck parking locations annually, 33% of which are caused by truck drivers’ inattention, fatigue, distraction, and unsafe parking, resulting in 21% of the total injuries. Trucks parked in unsafe locations contributed to 11 crashes. Truck drivers’ drowsy, distractive, and inattentive driving behaviors have caused 15 serious injuries in the study area. These crashes and injuries could be prevented through the proposed truck parking locations.

Jason’s Law

“Jason’s Law is named in honor of Jason Rivenburg. On March 4, 2009, Jason stopped for a delivery in Virginia and then headed toward a delivery destination in South Carolina. While only 12 miles from the delivery location, he needed to find parking to rest through the night as his arrival location was not yet open to receive deliveries. Jason did not have a safe place to park. Jason learned from truckers familiar with the area that a nearby abandoned gas station was a safe location to park and proceeded to park there for the night. Tragically, he was attacked and murdered at this location while he slept, with his killer taking both his life and just \$7.00 he had in his wallet.”

¹² Source: [Effect of Driver Fatigue on Truck Accident Rates, 1995.](#)

¹³ Source: [Driver Fatigue and Distraction Monitoring and Warning System, Phase I | FMCSA \(dot.gov\).](#)



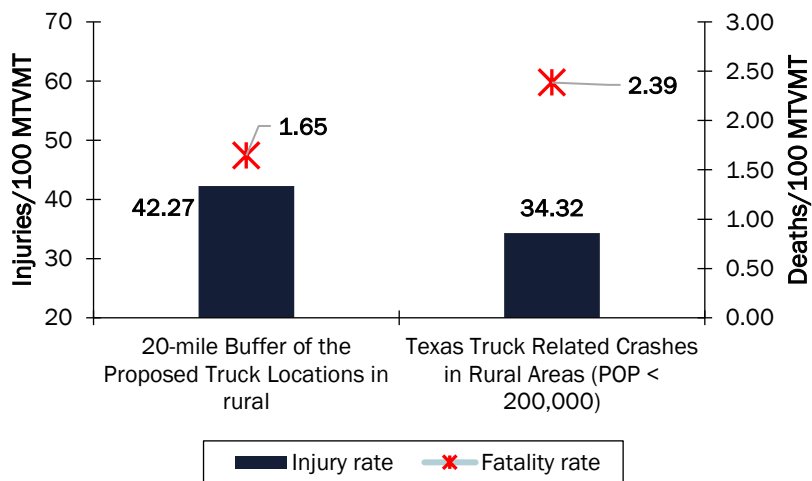
Compared to the statewide level in Texas, truck drivers in this area have been experiencing a higher risk of fatal and injury crashes. As **Figure 5** shows, the injury rate in this area is 42.27 per 100 million Truck Vehicle Miles Traveled (MTVMT), which is 23% higher than the statewide 34.32 per 100 MTVMT.

The truck fatality rate of 1.65 deaths per 100 MTVMT in this area is lower than the statewide 2.39 deaths per 100 MTVMT in rural areas. However, the area's fatality rate is still **15.9%** higher than the statewide fatality rate of 1.42 deaths per 100 million VMT for all vehicles on Texas roads.

Likewise, the injury rate of the individual truck parking location area is significantly higher than the statewide rate of 34.32 injuries per 100 MTVMT by **63%** and **23%**, respectively, as shown in **Figure 6**. The fatality rates of the two-location areas are all lower than the statewide 2.39 deaths per 100 MTVMT.

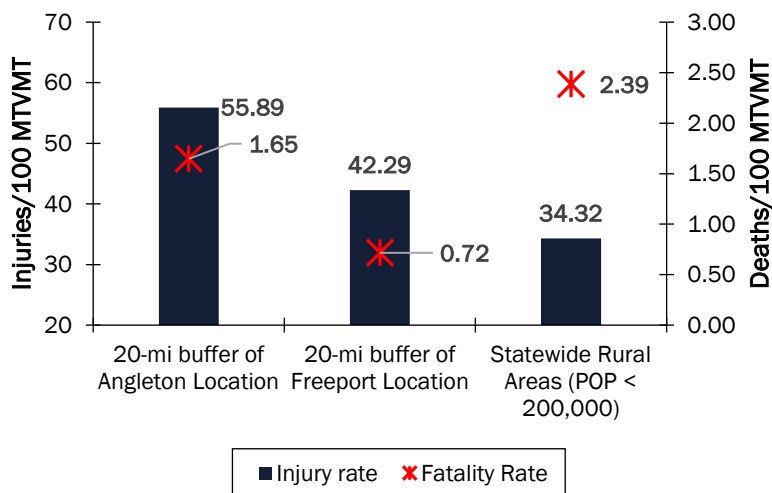
The higher risk of truck-related crashes has been attributed to the rapidly increasing demand for freight movement in the area. From 2014 to 2022, the truck daily vehicle miles traveled (DVMT) in this area has increased annually at an average of 3.62%, which is **23%** higher than the truck DVMT statewide increase of 2.93% in rural areas. The two proposed truck parking locations in this rural area will help reduce crashes involving truck drivers' inattention, fatigue, distraction, and unsafe truck parking, thereby lowering the crash risk for truck drivers as well as improving safety for the traveling public.

Figure 5 Combined Safety Performance within a 20-mi Buffer of Proposed Sites



Sources: [CRIS database](#) and [TxDOT Roadway Inventory](#) annual report (2014–2022)

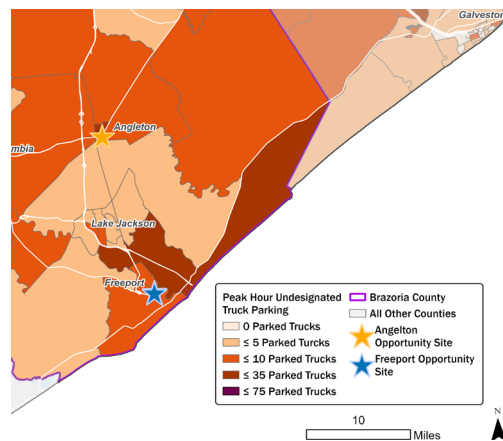
Figure 6 Safety Performance of Each Individual Sites



Sources: [CRIS database](#) and [TxDOT Roadway Inventory](#) annual report (2014–2022)



Figure 7 Southeast Texas Parking Demand



According to the needs assessment truck parking demand phase of the Southeast Texas Regional Truck Parking Action Plan shown in **Figure 7**, both the Angleton and Freeport communities have high peak hour undesignated truck parking. The truck parking sites submitted in this application represent two priority sites out of 16 identified in the action plan.

Additional Safety Measures

Both sites include plans for safety lighting, picnic areas, trails, and public restrooms. The Angleton Site Visitor/Transit Center and Freeport Site security building improve safety by providing additional refuge and ensuring the sites are activated throughout the day. The Angleton Site also includes

an area for overnight parking. This increased perception and reality of personal safety will be enhanced with surveillance cameras at each location. Meanwhile, residents benefit from reduced parking on public streets and in neighborhoods.

Protecting Non-Motorized Travelers

New infrastructure improvements include the addition of high visibility crosswalks, 6-foot sidewalks, and safety lighting. Poor visibility and blind spots make it difficult to spot pedestrians. Increasing visibility with continental crosswalks, which are highly visible retroreflective pavement markings in low light and at night, is important to alert drivers to watch out for pedestrians. New sidewalks at the Freeport Site will enhance safety for pedestrians since they will separate pedestrians from traffic, as well as provide a safer pedestrian crossing of the UPRR tracks. This is particularly important at the Freeport Site, as FM 1495 has a high volume of truck traffic. The sidewalks will complete a gap in the current network and connect to the bus stop at E. 8th St. and Cherry, which will be enhanced with a new bus shelter to protect transit-dependent residents.

Environmental Sustainability

Aligning with Carbon Reduction Strategies

As required by the National Electric Vehicle Infrastructure Formula Program, TxDOT developed the **Texas Electric Vehicle Infrastructure Plan**.¹⁴ One of the key goals of the plan is to “work with rural counties and small urban areas to install DC Fast Charge stations at or near county seats across the state.” The proposed improvements advance several of the strategies outlined in the **U.S. National Blueprint for Transportation Decarbonization**¹⁵ and in TxDOT’s **Texas Statewide Carbon Reduction Strategy**.¹⁶ The strategies are shown in **Table 6** alongside specific measures incorporated in the projects.

¹⁴ Source: [Texas Electric Vehicle Infrastructure Plan](#).

¹⁵ Source: [U.S. National Blueprint for Transportation Decarbonization](#).

¹⁶ Source: [Texas Statewide Carbon Reduction Strategy](#).



Table 6 Carbon Reduction Goal Alignment

TXDOT Carbon Reduction Strategy	National Blueprint Strategy	Both Projects' Components
Employ advanced technologies to improve traffic flow and operations	Promoting travel demand management	<ul style="list-style-type: none"> ConnectSmart app, TPAS technologies to improve traffic flow and operations through real-time system data/user interaction.
Support access, availability, and safety of bicycling and walking	Improving active mobility	<ul style="list-style-type: none"> Each site will include sidewalks and connectivity to adjacent sidewalk infrastructure to improve pedestrian safety and encourage active transportation.
Shifting demand to other transportation mode	Encouraging pool riding	<ul style="list-style-type: none"> 26 vanpool parking spaces are expected to result in 883 average daily passengers: at an annual savings of \$1,269,656.
Park-and-ride facility establishment	Promoting public transportation	<ul style="list-style-type: none"> New park-and-ride is expected to result in 117 average daily transit passengers with an annual savings of \$43,511.
Support electric vehicle adoption: electric vehicle infrastructure installation	Transitioning to zero emission vehicles and fuels	<ul style="list-style-type: none"> 8 EV truck charging stations, 10 EV van/box truck charging stations, and 12 passenger EV charging stations; annual savings of \$260,699 between 2028 and 2035 and \$521,398 between 2036 and 2052.
National Blueprint Strategy		Freeport Project Components
Strategies that reduce CO2 emissions at ports	Optimizing the movement of goods	<ul style="list-style-type: none"> Facilitate staging/drayage needs at Port Freeport—reduces the amount of VHT/VMT truck drivers spend looking for parking. It is expected that over 25 years, the proposed project will reduce VMT by 18,830,541.

The proposed project is expected to have significant emission reductions through the year 2052 as a result of reduced VMT by truck drivers looking for parking. Both sites are fully within the Houston-Galveston-Brazoria County Non-Attainment Area for Ground-Level Ozone (O3). As shown in **Table 7**, the proposed project will result in a 14.5-ton reduction in NOX and a 0.6-ton reduction in VOC which are required for the creation of ground-level O3.

Further, the project will reduce 0.1 tons and 0.1 tons of PM10 and PM2.5, respectively. While PM10 can get deep into people's lungs, PM2.5 is more toxic as it can get into the bloodstream, posing the greatest risk to public health.

Table 7 Air Pollutant Emission Reductions (2028–2052) in Metric Tons

VMT Emissions Reductions from 2028–2052 (tons)							
Site	CO	CO2	NOX	PM10	SOX	VOC	PM2.5
Angleton	0.3	422.6	0.5	0.0	0.0	0.0	0.0
Freeport	6.2	12,962.1	14.0	0.1	0.1	0.6	0.1
TOTAL	6.5	13,384.7	14.5	0.1	0.1	0.6	0.1



Both sites include tree planting. **Table 8** outlines the emission reduction benefits of adding these trees. In Freeport, 24 trees will be planted along the E. 8th Street sidewalk to make access to transit more walkable and convenient with shade. At the Angleton Site, grass will cover 81,000 square feet of the original existing paved area; this green space with sidewalks and trails will be accessible to the community. The increased green area will reduce the impervious cover and help with soil stabilization. Also, both sites will include **bioswales** to concentrate and convey stormwater runoff and remove automotive pollution. This type of biofilter is particularly effective on the edges of parking lots to treat stormwater runoff.

Table 8 Tree Planting Emission Reductions (2029–2052) in Metric Tons

Site	Live Oaks	Crepe Myrtles	CO2	NO2	SO2	PM2.5
Angleton	114	24	762.73	0.14	0.08	0.07
Freeport	37	12	345.50	0.05	0.05	0.05
TOTAL	151	36	1,104.36	0.19	0.13	0.12

Enhancing Resiliency

Both sites, as part of a resilient system during and after extreme weather events, could be used as staging areas by Federal Emergency Management Agency (FEMA) disaster relief personnel, equipment and vehicles immediately preceding and in the aftermath of hurricanes, which are prevalent in this region. These sites are just outside Special Flood Hazard Areas as designated by FEMA, where resources will be safe from the harshest elements, yet close enough to move in quickly after the storm passes.

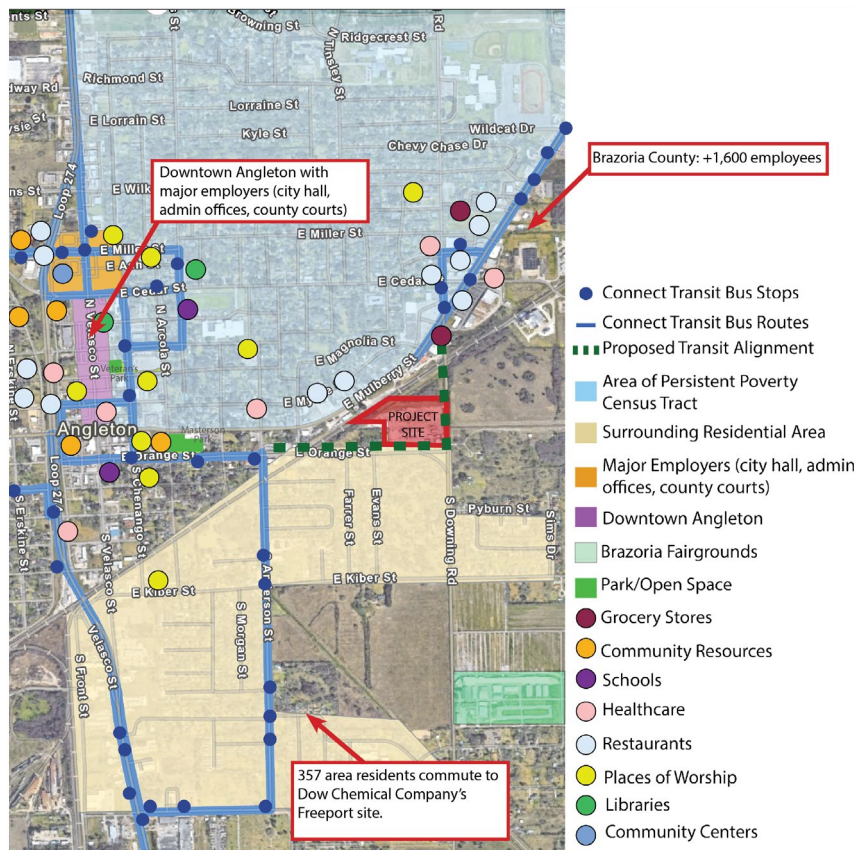
Quality of Life

The Angleton and Freeport Sites will improve quality of life for truck drivers and other community members alike by thoughtfully integrating the region’s significant freight activity with other community needs as shown in **Figure 8** and **Figure 10**. Notably, intermodal facilities like Port Freeport and the Angleton UPRR facility rely significantly on locally based truck drivers for short-haul service who need a place to park their truck for rest breaks or when off-duty at home.

Searching for truck parking adds to the daily stresses faced by truck drivers already managing complex customer and transportation logistics. When designated parking spaces are not available, truck drivers must often park in vacant lots and local roadways, including residential neighborhoods. The site designs included in this application add truck parking supply to reduce the stress of searching for parking. The sites also provide amenities that can be enjoyed by truck drivers as well as the local community. Improved quality of life for truck drivers in the region will echo not only through the trucking industry but through the households and communities drivers inhabit.



Figure 8 Angleton Site Quality of Life and Community Connectivity Map



Multimodal Transportation Infrastructure Supply and Cost

The site designs in this application include features that enhance connectivity and mobility for people walking, biking, using transit, vanpooling, or driving. The Angleton Site provides an array of mobility options to this rural area, linking walking with other modes of transportation, such as transit, park-and-ride, and vanpool/carpool parking. In addition, the Visitor/Transit Center will help target campaigns to grow transit, carpooling/ridesharing and active transportation trips in these rural areas.

The Angleton Site reduces single-occupancy vehicle dependence by increasing, improving, and making transportation choices more convenient for people. The proposed park-and-ride is a significant improvement in access to transit, where people may choose to drive their car to access the regional transit system. The design includes 26 designated vanpool parking spaces to METRO STAR. Today, vans are towed occasionally, and the towing cost is passed on to the vanpool group. The designated vanpool parking will eliminate tows and additional charges to participants reducing overall transportation costs. In addition, vanpool participants receive free emergency rides home via rideshare like Uber and Lyft. The Angleton Site also incorporates trails that the nearby community can utilize daily for recreation and to improve their health.

The Freeport Site includes two critical sidewalk connections. Along E. 8th St., the ADA-compliant sidewalk will connect the community to Connect Transit Bus Stop 53 at E. 8th St and Cherry to improve community access to citywide destinations, such as the elementary and high school campus, library, pharmacy, downtown, and trails for recreation.

Figure 9 Existing Angleton Transit Transfer Site



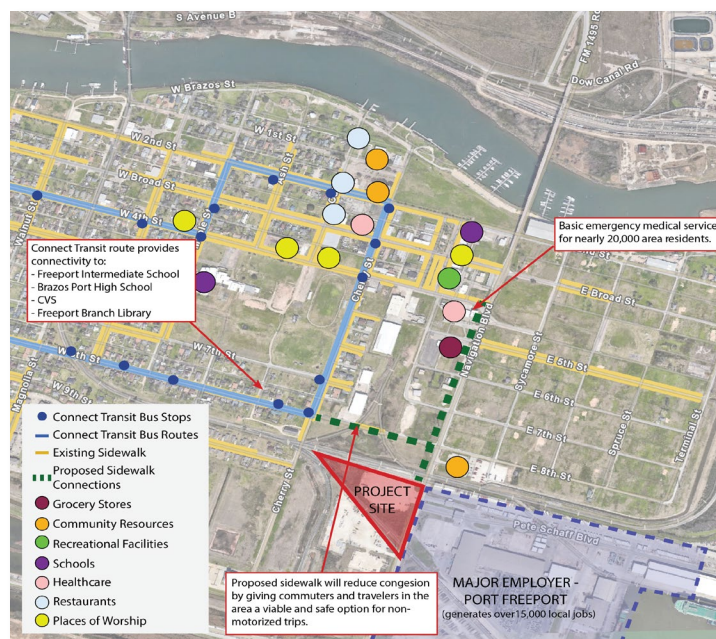


This sidewalk will provide new ADA-compliant pedestrian access to jobs with major employer Port Freeport and promote walking and transit for work-related trips. Tree plantings along this sidewalk will provide shade and comfort during summer months. Also, once the new sidewalks are constructed, surrounding businesses will become accessible to the nearby community including neighborhood convenient stores, a health clinic, retail, among others. In addition, the project will improve the local fixed-route bus stop at E. 8th Street and Cherry by adding a bus shelter where there was none before. By providing better access to lower cost transportation options like walking, transit, and vanpool/carpool, the proposed improvements will help reduce the transportation cost burden for this rural underserved community while increasing multimodal options for people living in the area, as well as reducing single occupancy vehicle trips in the Houston-Galveston-Brazoria County Air Quality Non-Attainment Area.

Figure 10 Freeport Site Quality of Life and Community Connectivity Map

Mitigate Heat Islands

Both sites include tree planting. The Angleton Site will add 114 Live Oak trees and 24 Crepe Myrtles, and the Freeport Site will add 37 Live Oak trees and 12 Crepe Myrtles. After 10 years, the estimated tree canopy for Live Oak and Crepe Myrtles are 60 and 38 square feet, respectively. The trees at both sites would significantly increase tree coverage in these communities with lower tree canopies. Currently, the City of Freeport and Angleton have 2–4% and 23% tree canopy, respectively.



Mobility and Community Connectivity

Improve Systemwide Connectivity to Transit

There are few public transit routes serving suburban and rural cities. Because transit accessibility significantly affects residents' mode choice (GAO et al., 2013), the proposed Angleton Site is critical to allow people to drive to the site, park, and access the transit system. Also, the conveniently located park-and-ride near residential areas will facilitate non-transit users to shift their mode to public transit. The target population are commuters who rely on their own vehicles for daily commuting. With improved safe and convenient access to public transit, vanpool and carpool, residents in the area may favor taking these non-single occupancy vehicle (SOV) modes over driving. Given the percentage of lower income people in these rural communities, additional connections and safety improvements will also help to lower the transportation cost burden for resource-constrained residents. In addition, people movement by transit is usually more affordable for all classes of households.



As part of The REAL Plan¹⁷ People System, Angleton (the county seat) was identified as a Suburban Transfer Hub within the district-wide transportation system. The Angleton Site, with the park-and-ride and vanpool/carpool, promotes non-SOV trips for long-distance commutes between the rural cities of Angleton, Lake Jackson, Clute, Richwood, and Freeport, as well as work commuter trips to major employers such as Dow, Port Freeport, and Brazoria County. For example, 357 people in Census Tract 6623, an Area of Persistent Poverty, currently commute to Dow Chemical Company in Clute, Texas, and another 179 people just south of the Angleton Site also commute to Dow (Source: LEHD Origin-Destination Employment Statistics (LODES) 2002–2020, U.S. Census, summarized by H-GAC). The proposed improvements provide residents with the opportunity to connect to the greater systemwide transit and/or

Figure 11 Sites Connected by Connect Transit

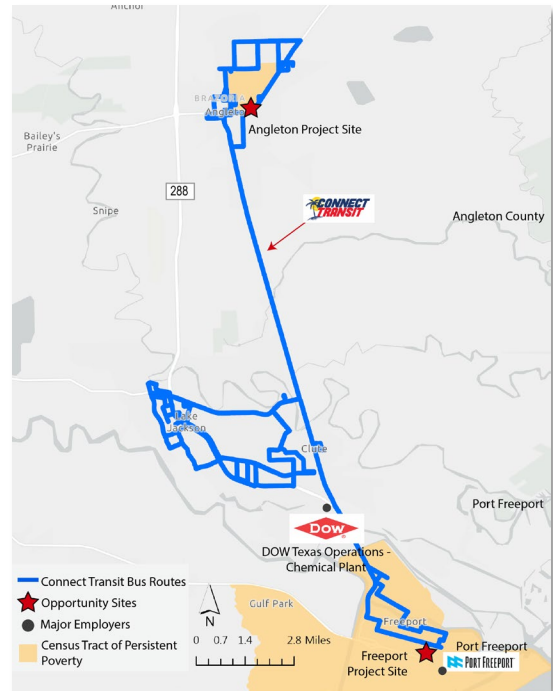


Figure 12 REAL Example Suburban Transfer

Suburban Transfer Hub

A place where people access system-wide connectivity to transit and other modes of transportation to make their trips safe, convenient, and reliable.



carpools/vanpools system. This, in turn, improves systemwide, multimodal connectivity. In addition, the Angleton Site’s Visitor/Transit Center will help target campaigns to grow transit, carpooling/vanpool and active transportation trips in these rural areas. The REAL Goods System focuses on freight movement around the region. Both the Angleton and Freeport Sites are part of a system of freight parking sites identified to increase safety and facilitate the efficient movement of goods and will each play a critical role in this regional system.

Addresses Gaps

The Freeport Site completes the pedestrian transportation network to encourage walking as an alternative to driving for short-distance trips and to accommodate first-last mile connections to transit. The focus is on interconnecting existing segments that may have gaps to create a continuous pedestrian network, connecting where people live to where they work like major employer Port Freeport, where they go shopping at the Gulf Food Mart, to transit via the Cherry

¹⁷ Source: [REAL Plan](#).



at E. 8th Street bus stop, and to other EMS and health related services. Completing gaps in the existing sidewalk system will allow truck drivers and residents to access nearby food, jobs, and medical care by walking.

Remove Physical Barriers

The Freeport Site sidewalk connection will also provide a critical active transportation connection across the UPRR tracks to the north of the Freeport Site. By removing this barrier and providing for a safer crossing, TxDOT will improve the active transportation for residents and truck drivers.

Increase Accessibility Beyond ADA-requirements

The Angleton Site includes a Visitor/Transfer Center with typical safety rest area amenities including restrooms, drinking water, vending machines, telephones, picnic areas, and separate truck and passenger parking but may also include wireless Internet access, an air-conditioned lobby, a playground, handicap access, family/assisted bathrooms, diaper changing stations, etc. Improved accessibility to the Angleton Site includes ADA-compliant sidewalks as well as trails for community use. (These extras are not included in the current budget but could be added in the future with TxDOT funding). To create a more visually pleasing experience, landscaping and pavers will be used to create a more inviting environment. The project promotes increased visitation by commuters, visitors, and the community at-large. The Visitor/Transit Center will include information about the benefits of the mobility options offered at the Angleton Site to expand travel choices to reduce single occupancy vehicle trips in the Houston-Galveston-Brazoria County Air Quality Non-Attainment Area. The Freeport Site includes sidewalks wider than required by the ADA and are set back from the road via a buffer. In addition, the project includes a bus shelter at E. 8th Street and Cherry.

Connectivity

Given truck drivers' need to access food and services while waiting for their assigned times, TxDOT is providing sidewalk connections in Freeport to further increase access to goods and services for truck drivers as they wait.

Economic Competitiveness and Opportunity

During peak hours, trucks often rely on illegal parking on state and local roadways before or after accessing ports. Not providing designated accommodations for trucks exacerbates local congestion, endangers carriers, and creates bottlenecks that impact the entire roadway network and supply chain.

Freight Mobility

Truck parking is a fundamental requirement of freight and logistics operations. The sites in this application will improve supply chain efficiency in the region, reducing costs and increasing economic competitiveness. The site designs in this application recognize the many reasons drivers need to park by accommodating both short-term and overnight parking. Additionally, the sites are located near major intermodal freight generators to support the efficient movement of goods. The Angleton and Freeport Sites impact not only regional businesses relying on trucking, but also the port and rail intermodal facilities served by trucks. The combined impact of improved multimodal efficiency will be more attractive to shippers seeking to expand or relocate operations in the region.



Improve Travel Time Reliability

The addition of these facilities is expected to result in a savings of 2,251,231 vehicle hours traveled (VHT) from 2028 to 2052, valued at a total of \$43,219,331 in discounted 2022 dollars, by reducing excess time truck drivers would have spent looking for parking. This reduction results in decreased congestion and improved mobility for all transportation users. Mobility and connectivity for truck, marine, and rail freight will also be enhanced by improved parking efficiency. The American Transportation Research Institute (ATRI) found that drivers lose an hour of productivity each day from stopping early to ensure they find parking.¹⁸ When drivers are confident they have a safe place to rest, additional trips to and from intermodal facilities can be made each day.

Facilitate Tourism Opportunities

The Angleton Site will increase accessibility to year-round countywide events at the Brazoria County Fairgrounds by providing connections to public transit. Due to the site's proximity to the County Fairgrounds, the site can also be leveraged for event management, encouraging people to use transit to access major events. The park-and-ride can be utilized as off-site parking when County Fairground parking is full. During those major events, the site's freight parking can be utilized for staging needs. Sponsoring major County events like the rodeo and providing a pleasant experience to attendees can attract new visitors and benefit other business in the City of Angleton. The Angleton Site can help reduce a high level of non-recurring congestion on local roads due to major countywide events.

Wealth Building via Job Access

The park-and-ride facility at the Angleton Site will help improve employee access to Dow in Clute via transit and carpools/vanpools. Approximately 357 people in Census Tract 6623, an Area of Persistent Poverty, currently commute to Dow, and another 179 people just south of the proposed site also commute to Dow. By providing better access to lower cost transportation options the Angleton Site will help increase opportunities for residents.

Improving the Movement of Freight

For the Freeport Site, freight parking will also improve the Port Freeport's gate management logistics to address increasing truck demand, which will reduce unsafe queuing and parking on local roads and along FM 1495. The office space at the Freeport Site will be staffed with Port Freeport employees to confirm paperwork and to provide instruction and directions to truck drivers accessing secure port facilities. This will expedite access to and from Port Freeport for nationally relevant import/exporters like Tenaris, Dole, Del Monte, Chiquita, and Volkswagen, among others. The project will positively impact the economy and job creation by improving the reliable movement of goods due to increasing port activity in the Gulf of Mexico. The Freeport Site will also help support increased activity at Port Freeport. In 2024, Volkswagen Group of America is opening a \$114 million import facility in Freeport on 120 acres. At full capacity, the facility will be able to handle as many as 140,000 vehicle imports per year from production hubs in Mexico and Europe. Del Monte Fresh Produce Co. also

¹⁸ Source: <https://truckingresearch.org/2016/12/atri-truck-parking-case-study/>.



announced they are moving their importing operation from the Port of Galveston to Port Freeport. These developments alone will increase freight in the region significantly.

The drayage operations common at port and rail facilities are often served by owner-operators: truck drivers who own and manage their own business rather than serving as a member of a large fleet. The \$13,443,612 vehicle operation cost savings gained due to the development of the Freeport Site will directly lower the cost of business for local truck drivers, allowing individuals to earn more. Additionally, the lower cost of business and higher earning potential makes the profession more attractive within the region, potentially attracting more drivers to alleviate the truck driver shortage.

Long-term Economic Growth

By deploying freight parking, the project will provide enhanced capacity and will reduce delays to promote the efficient movement of goods through Port Freeport, the nation's 6th largest chemical port. Reduced transportation costs will reduce the cost of doing business, encouraging investment and job creation. The Freeport Site will provide the necessary parking capacity to address the anticipated growth in Freeport's economy and support job creation, while reducing unsafe parking on local roads and queuing along FM 1495. The combined impact of this project and other port improvements will increase multimodal efficiency making it more attractive to shippers seeking to expand or relocate operations in the region.

State of Good Repair

Both the Angleton and Freeport Sites will construct new truck parking infrastructure in rural areas that will be maintained in a state of good repair by TxDOT and Port Freeport.

Safety and Roadway Maintenance

When trucks cannot find authorized parking and they reach the end of their shift, they most often park on the shoulders of the roadways and ramps or on local roads. This leads to damage to the infrastructure and safety hazards due to poor visibility. Trucks parking on shoulders cause the pavement to deteriorate and can lead to edge failure and ruts along the road. In turn, pavement damage can lead to unsafe operating conditions for the motoring public. Some TxDOT districts report the need for shoulder reinforcements and repairs on a regular basis, costing in the hundreds of thousands of dollars annually. Money spent on these repairs is taking away from needs in other areas.

Figure 13 Existing Conditions at Angleton Site, May 2022

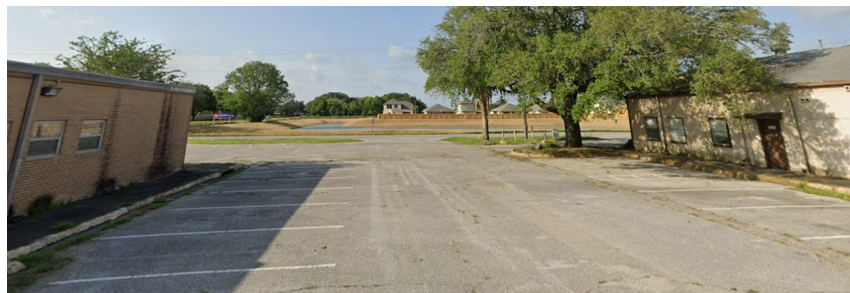


Image Source: Google Maps, May 2022.



Restore and Modernize Infrastructure to Address Transportation Vulnerabilities

The Angleton Site includes the renovation and modernization of an abandoned TxDOT Area Office that had met its useful life, including three buildings currently on the site that will have a new service life of 30 years. The proposed TxDOT-owned parcel will be modernized into a regional intermodal facility to address the lack of multimodal options in underserved rural areas by providing park-and-ride, vanpool/carpool, transit, and truck parking. One of the buildings will be transformed into a Visitor/Transit Center that will replace the existing Connect Transit Transfer Site shown in **Figure 10**.

Figure 10 Existing Transit Stop to Be Replaced by a Visitor/Transit Center



Figure 11 Existing Conditions at Freeport Site, June 2022



Image Source: Google Maps, June 2022.

In Freeport, the local road E. 8th Street from FM 1495 to Cherry Street will be improved through a complete street approach including: 6-foot sidewalks, ADA ramps, 24 trees for shade, and a new bus shelter where there was none. Both the E. 8th Street sidewalk and the proposed sidewalks along FM 1495 address vulnerabilities facing this community.

The existing surface at the Freeport Site does not have existing pavement (**Figure 11**). Restoring and modernizing this site to support freight drayage and staging area needs includes paving an existing gravel lot with new 121,400-square-foot 12-inch reinforced concrete paving for 35 truck parking spaces (4 of which are EV) and three vehicle parking spaces (two of which are EV), striping, and safety high mast lighting, as well as new restrooms and office space to improve access to Port Freeport and reduce unsafe queuing and parking on local roads and on FM 1495. This new infrastructure in a rural area will lead to an improvement in the state of good repair, pedestrian accessibility, and extend the service life to 30 years.

New Infrastructure in Remote Rural Communities

The Angleton Site is a critical new multimodal infrastructure for the rural areas of south Brazoria County that promotes low-cost, convenient multimodal options. TxDOT will also partner with others to deploy a series of campaigns to promote mode shift targeted to these rural cities that, due to their lower densities and remote locations, tend to be missed. The proposed improvements will help remove multimodal transportation disparities by increasing equitable access to rural communities. The Angleton Site, after the improvements, will have a new service life of 30 years and will be maintained in a state of good repair by TxDOT. This is a one-of-a-kind opportunity to provide an intermodal facility within the existing footprint of a repurposed TxDOT-owned area office. If no federal funds



become available, the concept will not move forward, and this parcel will soon be handled as a TxDOT surplus transaction.

Partnership and Collaboration

Strong partnerships and collaborations are in place to ensure the sustainability of the mobility and parking improvements proposed. The local jurisdictions (City of Angleton, City of Freeport, and Brazoria County), Connect Transit, METRO STAR Vanpool and local civic groups are strongly advocating for the proposed multimodal mobility solutions.

RAISE Grant Partners



Connect.
Transit.

TxDOT has met and coordinated with Connect Transit, which is operated by the Gulf Coast Transit District, to discuss the addition of the park-and-ride and new transfer location and they are fully supportive of the proposed Angleton Suburban Transfer Hub. If this project receives RAISE funds, Connect Transit will reroute their transit route to incorporate the Angleton Site as the new transfer center to connect to the regional transit system. The existing Connect Transit Transfer Point is a bus stop with zero amenities to support ridesharing.



METRO STAR Regional Vanpool is an enthusiastic project partner in support of the Angleton Site. Before the site is open to the public, METRO STAR Vanpool will target campaigns to grow vanpool/carpooling in these rural areas. The METRO STAR Account Executive who covers the cities of

Angleton, Jackson, and Clute has had several conversations with major employer Dow in the past and coordination will continue to grow vanpool services as the designated vanpool parking spaces become available. METRO STAR Vanpool also foresees growing vanpool/carpool from this rural area to Pearland to the north to accommodate commuter trips to the Medical Center Area and the cluster of life science companies providing greater access to high-paying jobs.



TxDOT conducted significant engagement with Port Freeport. The strong TxDOT–Port Freeport collaboration and partnership are evident by the Port Freeport property being utilized for the Freeport Site and their commitment to ongoing maintenance and operation of the Freeport Site.

Table 9 RAISE Grant Outreach and Engagement

<i>Workshop</i>	<i>Date (2024)</i>
Port Freeport Meeting	Jan. 11, Jan. 26, Jan. 30, Feb. 2, Feb. 8
Port Freeport Commission	Feb. 8
METRO STAR Vanpool	Jan. 16, Jan. 24, Feb. 6
City of Angleton Meeting	Jan. 18
Connect Transit	Jan. 24
Angleton City Council	Jan. 27
Brazoria County Meeting	Feb. 2
Angleton Rotary Club	Feb. 4
Houston-Galveston Area Council	Feb. 6, Feb. 13



Prior Public Engagement

As shown in **Table 10**, TxDOT conducted significant public engagement to solicit feedback from an extensive list of stakeholders to identify truck parking needs and opportunities across the state as part of three separate plans—The REAL Plan, Southeast Texas Truck Parking Action Plan, and the Texas Statewide Truck Parking Study. The list of stakeholders consulted included long-haul truck drivers (male and female), trucking companies, trucking associations, retailers, truck stop providers, food companies, manufacturers, law enforcement, warehouse suppliers, the energy sector, ports, local and statewide agencies.

Table 10 Public Engagement During Previous Plans

Plan	Outreach	What We Heard
<p>The Regional Express Lanes Plan (REAL) Plan Proposes an intermodal transportation system connected by mobility hubs</p>	<ul style="list-style-type: none"> ▪ 4 Policy Advisory Committee Meetings ▪ 3 Freight Working Group Meetings ▪ 2 Peer Review Committee Meetings 	<ul style="list-style-type: none"> ▪ Establishes an integrated system of freight centers and roadway infrastructure to provide a more efficient, flexible, and seamless multimodal mobility network for the movement of people, freight, and goods
<p>Southeast Texas Truck Parking Action Plan (Ongoing—Expected Completion 2024) Provides strategies for increasing truck parking</p>	<ul style="list-style-type: none"> ▪ Texas Freight Advisory Committee (TXFAC) Meetings ▪ 6 External Agency Workshops ▪ 6 Industry Partners Workshops ▪ 9 Stakeholder Meetings ▪ Outreach to National Association of Truck Stop Operators and the Texas Trucking Association ▪ Targeted Industry Interviews 	<ul style="list-style-type: none"> ▪ Identified 16 opportunities for truck parking lot development ▪ Further defined drayage operation needs through meetings with Houston ports
<p>Texas Statewide Truck Parking Study (Completed 2020) Conducted a statewide analysis of parking supply and demand</p>	<ul style="list-style-type: none"> ▪ TXFAC Meetings ▪ 19 Stakeholder Workshops ▪ 2 Online Surveys ▪ 20 Stakeholder Interviews ▪ 3 Industry Forums ▪ Great American Truck Show Information Booth 	<ul style="list-style-type: none"> ▪ Provided insights on key truck parking amenities and driver needs ▪ Identified truck parking shortages

Innovation

The sites identified for this grant application are in direct alignment with the 2020 Texas Statewide Truck Parking Study plan to execute the vision for creating a network of available and accessible next generation truck parking that integrates smart technologies.



Innovative Technologies

EV Charging Stations—As shown both sites include designated EV charging stations to support the transition to zero emission vehicles in rural areas with proximity to port activities. TxDOT will ensure the EV infrastructure complies with applicable sections of the National Electric Vehicle Infrastructure Standards and Requirements (23 CFR Part 680) as well as the Texas Statewide NEVI guidance.

Table 11 EV Charging Station Types and Totals

Site	Truck EV Spaces	Van/Box Truck EV Spaces	Passenger Vehicle EV Spaces
Angleton	4	10	12
Freeport	4	0	2

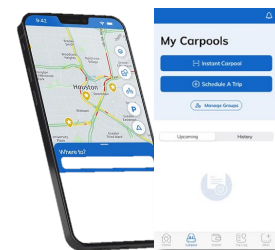
Truck Parking Availability System—A 2002 study on the adequacy of truck parking by FHWA recommended using Intelligent Transportation Systems (ITS) to provide truckers with real-time information on the location and availability of parking spaces. The average over-the-road commercial truck driver spends 56 minutes a day searching for available parking, costing them approximately \$4,600 per year in lost wages. TxDOT currently has a Truck Parking Availability System (TPAS) on I-10 and is looking to expand the system to better support the trucking industry. Using Dynamic Parking Availability Signs (DPAS), smartphone and in-cab applications, websites, and other traveler information sites, TPAS gives truck drivers and dispatchers real-time information, helping them make safe parking decisions (**Figure 12**). To help truck drivers better plan their trips, TxDOT plans to deploy parking availability radar and connect them to the broader TPAS system.

Figure 12 Dynamic Parking Availability Signs



ConnectSmart App—TxDOT already has an award-winning trip planning app for the Houston area called Connect Smart, see **Figure 13**. The purpose of the app is to reduce traffic by connecting all travelers to the best travel options, routes for their trip, and parking availability. ConnectSmart will be leveraged to help truck drivers identify freight routes, existing truck parking locations, amenities, and availability of parking spaces. In addition, the ConnectSmart App will also assist interested people in matching with others going their route for vanpooling/carpooling. Finally, Mobility Wallet, part of the app, is an integrated platform that allows users to purchase transit tickets and provides incentives typically not accessible in rural areas.

Figure 13 ConnectSmart



Innovative Financing

One of the innovative aspects of the project is that TxDOT plans to construct the Freeport Site on Port Freeport property. In exchange for this capital investment, Port Freeport will enter a Memorandum of Understanding (MOU) with TxDOT to provide operations and maintenance (O&M) costs in perpetuity for the Freeport Site. This innovative financing agreement with Port Freeport will save TxDOT substantial funding while still enabling the department to help meet the truck parking demand in the region, increase safety, provide excellent amenities and services, and ensure a State of Good Repair for the truck parking site over time.



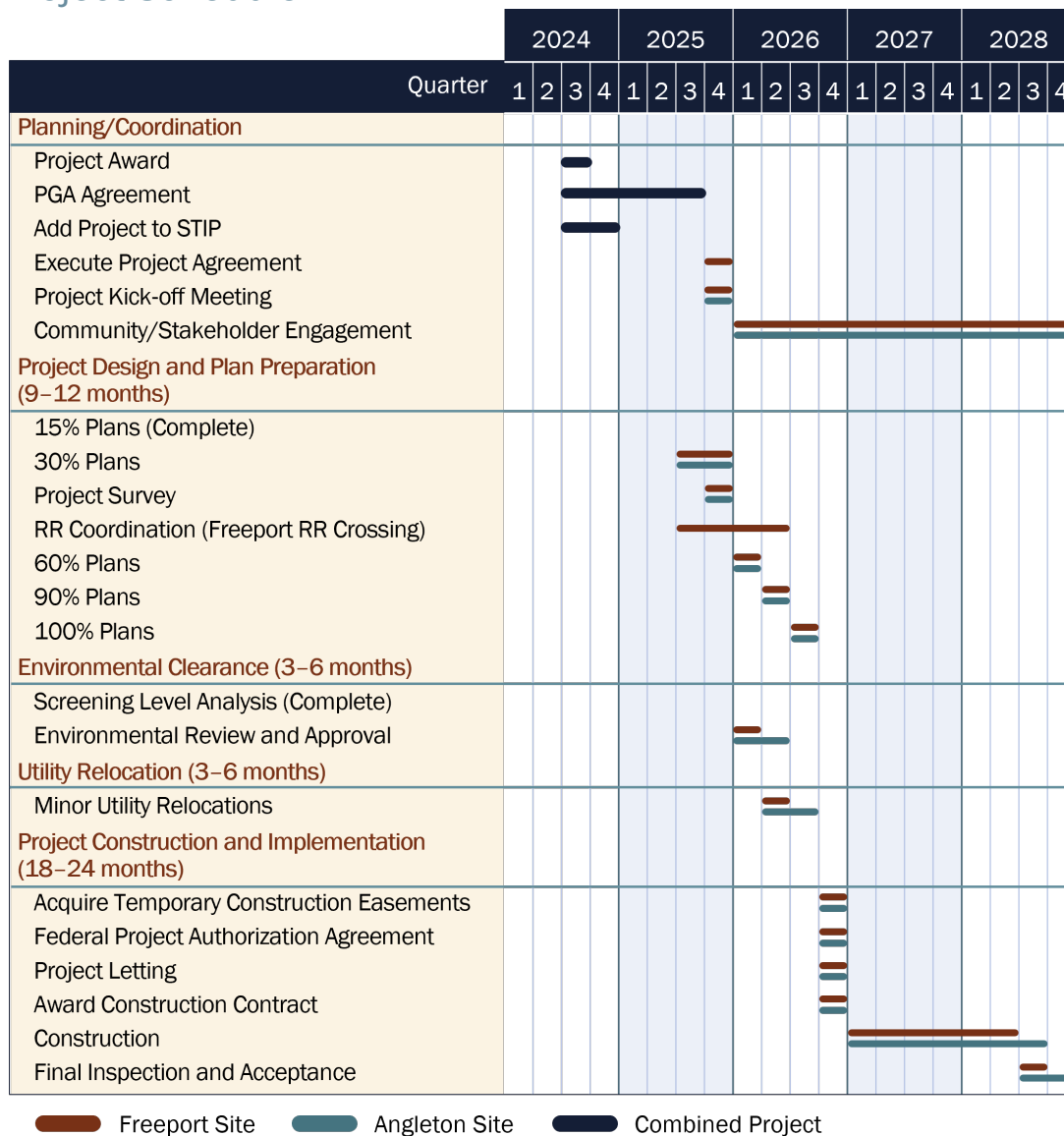
4. Project Readiness

TxDOT is requesting a \$24,312,700 RAISE grant to support trucking operations and provide two secure and connected truck parking sites in Southeast Texas. Each site is connected by transit and to adjacent community resources via active transportation that will help meet short-term/staging truck parking needs, overnight truck parking needs, and provide charging stations for electrified freight and passenger vehicles.

TRUCKING INDUSTRY CALL FOR ACTION

Truck parking is a strategic priority for both the trucking industry and FHWA. Currently, there is one truck parking space for every 11 trucks on the road. If funded, this project would help to meet truck parking demand near several of the nation's critical ports.

Project Schedule





TxDOT has identified appropriate development schedules for the submitted project and commits to meet the project development timelines identified in the application. The design of the Angleton and Freeport Sites could be moved ahead of schedule, pending the 2024 RAISE award grantee announcement. Similarly, METRO STAR Vanpool is waiting on the announcement to start a targeted campaign in this rural area to increase vanpool ridership, well ahead of the vanpool parking construction.

TxDOT has ample experience designing, building, and managing rest areas statewide that include freight parking. An example of delivering a context-sensitive project is the award-winning Brooks County Safety Rest Area that won a state and national AIA Honor Award in 1999.¹⁹

Environmental Risk Assessment

NEPA Status of the Project

TxDOT has determined that this project is most likely to qualify for a Categorical Exclusion (CE) because the project will not have significant individual or cumulative impacts to the interests protected by the National Environmental Policy Act (NEPA). The work included in this project aligns with CE-eligible activities under 23 CFR § 771.117 (c).

Locating the truck parking facility for owner-operator and overnight parking near the railroad tracks, on the north side of the Angleton Site, as well as including several thick rows of trees will build a noise abatement measure to protect residential areas south of Orange Street. Continual outreach and input from the community will ensure that relocating freight parking from local roads to the proposed facilities will improve the quality of the human environment, as well as a notice for opportunity to comment. There are no known controversies in the area and the local jurisdictions, and community groups are strongly advocating for the proposed improvements.

It is anticipated that the project will occur within the operational ROW. TxDOT does not expect this project to negatively impact social, economic, or sensitive environmental resources such as floodplains, wetlands, endangered species, wildlife habitat, historic and archaeological sites, parklands, air quality, noise, right-of-way, historically and/or economically disadvantaged populations, travel patterns, or environmental grounds.

Reviews, Approvals, and Permits by Other Federal and State Agencies

The proposed project does not add capacity and would be exempt from a conformity determination. We **do not** anticipate needing any of the following for the Angleton and Freeport Sites:

- Navigational permits (Sections 9 and 10)
- Section 404 (Waters of U.S.)
- Section 106 clearance (archaeological and historical)
- Protected species

¹⁹ Source: [TxDOT Brooks County Safety Rest Area Receives 2023 Texas Society of Architects 25-Year Award—Texas Architect Magazine \(texasarchitects.org\)](https://www.texasarchitects.org/).



The State is coordinating with local jurisdictions and the Houston-Galveston Area Council (MPO) to add this project to the RTP and STIP. The project will require railroad coordination with UPRR, and TxDOT is prepared to begin that process to ensure the project can be obligated on schedule. Finally, TxDOT will review the project and follow the NEPA process.

Environmental Studies or Other Documents

While formal environmental studies have not begun for the project, TxDOT’s consultants used preliminary environmental data in the development of each site. This included considering adjacent land uses and drainage. As a result of these, TxDOT anticipates no adverse impacts to historic areas, flood zones, wetlands, or critical habitat.

Table 12 Preliminary Environmental Screening

Environmental Screening	Angleton Site	Freeport Site
Historic Areas	No Impacts	No Impacts
Surrounding Historic (within 0.25 miles)	No Impacts	No Impacts
Flood Zone	No Impacts	No Impacts
Soil Type	Entisols	Vertisols
Wetlands	No Impacts	No Impacts
Critical Habitat	No Impacts	No Impacts

Figure 14 Angleton Site Land Use



Figure 15 Freeport Site Land Use



Figure 16 Angleton Site Drainage



Figure 17 Freeport Site Drainage





Discussions with Appropriate DOT Operating Administration Field or Headquarters Office

TxDOT will work with FHWA-TX on the NEPA review process to ensure that the project meets all Federal requirements and proceeds on schedule.

ROW Acquisition Plans

TxDOT owns the ROW needed to construct the Angleton Site. The Freeport Site will be constructed on Port Freeport property through an MOU whereby TxDOT constructs the capital infrastructure improvements and Port Freeport agrees to operate and maintain them in perpetuity.

Sidewalk improvements on FM 1495 will be constructed within TxDOT ROW. Sidewalk improvements on W. 8th Street will be constructed within the City of Freeport’s ROW with their full support. This project does not require ROW acquisition.

Reference Public Engagement

TxDOT has met extensively with the cities of Angleton and Freeport, Brazoria County, and Port Freeport, as well as trucking industry stakeholders. These key stakeholders are all supportive of the plans to add truck parking and other transportation options at the Angleton and Freeport Sites as evidenced by their letters of support. Further, TxDOT plans to conduct additional public involvement for each of the sites in advance of final design. This will consist of a public meeting for each location and a Notice Affording an Opportunity for a Public Hearing. Should a public hearing be requested, TxDOT commits to conduct one at each site according to state and Federal guidelines.

Assessment of Project Risks and Mitigation Strategies

Pursuant to the Risk Management Strategies described in [TxDOT’s 2022 TAMP](#), **Table 13** summarizes the principal risks to this project and strategies to mitigate them.

Table 13 Project Risks and Mitigation Strategies

Risk	Criticality	Mitigation
Change in Cities and Port Staff	Low	<ul style="list-style-type: none"> Request Cities and Port Resolution
Traffic Noise Impact	Low	<ul style="list-style-type: none"> Noise abatement measures, build barrier
Material Cost Escalation	Medium	<ul style="list-style-type: none"> Monitor incoming bids over the next two years to refine cost estimates Deploy Plan to Address Potential Cost Overruns as required TxDOT will cover overruns
Natural Disaster	High	<ul style="list-style-type: none"> Assess evacuation routes accessible to sites
Heavy Truck Traffic	High	<ul style="list-style-type: none"> Track pavement performance over time

TxDOT does not expect to pursue any waivers for any domestic preference laws on this project. TxDOT has remained up to date with all Build America, Buy America requirements and maintains [a public webpage providing guidance to all TxDOT contractors](#).



Technical Capacity Assessment

TxDOT, the lead applicant, is the Texas state agency responsible for construction and maintenance of all roads and associated infrastructure that constitute the state highway system. TxDOT works closely with FHWA on an ongoing basis to deliver a wide range of federally funded projects.

Experience Implementing Federally Funded Transportation Projects

As a state DOT, TxDOT manages billions of Federal dollars ranging from highway programs, public transportation, bridge replacement, etc. TxDOT has extensive experience administering and managing funds awarded under Titles 23 and 49, U.S.C. and other Federal funding sources.

Understanding of Federal Contracts and Procurements

The FHWA Texas Division and TxDOT have partnered together in a Stewardship and Oversight Agreement. Per the most recent annual report on this partnership (fiscal year 2022), TxDOT:

- Let 701 federally funded projects totaling \$7.904 billion;
- Processed 810 construction project preliminary engineering plan sets; and
- Managed approximately 1,722 active construction projects.

TxDOT's successful management of billions of dollars' worth of federally funded projects, as well as successful partnership with the Texas Division of the FHWA is indicative of TxDOT's experience with the receipt and expenditure of Federal-aid Highway Program funds.



REDEFINING REST STOPS:

*A Multimodal Strategy for Truck Parking
in Southeast Texas*

Benefit-Cost Analysis Narrative

**Rebuilding American Infrastructure with
Sustainability and Equity (RAISE) Grant Application**



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5. Benefit-Cost Analysis Narrative

Executive Summary

This benefit-cost analysis (BCA) was conducted for the development of the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project for submission to the U.S. Department of Transportation (USDOT) to request \$24,312,700 (in 2026 dollars) from the FY2024 Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant program. The analysis was conducted in accordance with the benefit-cost methodology as outlined by USDOT in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs, released in December 2023. The Project analysis period corresponds to 28 years and includes 3 years of construction from 2026 to 2028, and 25 years of benefits after operations begin in 2029.

The **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project is designed to tackle critical parking needs, provide charging stations for electrified freight and passenger vehicles, and provide multimodal options in the rural area of Southeast Texas. It is comprised of two sites. The **Angleton Site** will repurpose a 10.3-acre abandoned TxDOT area office to serve as a Suburban Transfer Hub, secure overnight truck parking and provide short-term parking in the distribution center for light-duty trucks. The **Freeport Site**, located on an 8.1-acre Port Freeport property, will primarily support staging and drayage truck parking needs in the region. Both sites, each connected by transit and to adjacent community resources via transit and active transportation, will meet short-term staging truck parking needs in Freeport and off-duty parking needs for truck drivers in Angleton and will provide electric vehicle (EV) charging stations for freight and passenger vehicles. Both sites will also include tree planting.

The capital cost for this Project is expected to be \$16.9 million for the **Angleton Site** and \$7.4 million for the **Freeport Site** in 2026 dollars or \$15.1 million for the **Angleton Site** and \$6.6 million for the **Freeport Site** in undiscounted 2022 dollars. At a 3.1 percent discount rate, the discounted capital costs of the Project are \$13 million for the **Angleton Site** and \$5.7 million for the **Freeport Site** in 2022 dollars. The Project operations and maintenance (O&M) costs are projected to be around \$2.2 million undiscounted or \$1.3 million discounted to 2022 dollars at 3.1 percent.

At the end of 25-year operating period, the Project assets will retain a residual value of \$1.0 million undiscounted and \$0.4 million discounted in 2022 dollars. The residual value is added to the total Project benefits as outlined by USDOT in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs, released in December 2023.

The Project benefits include savings in truck vehicle-operating costs, truck travel time, auto vehicle-operating costs, emission costs, safety, as well as walking amenity and health benefits. In discounted 2022 dollars at 3.1 percent per year discount rate, except in the case of carbon dioxide (CO₂) emissions, where a 2.0 percent per year discount rate is applied, the Project will generate \$101 million in benefits over the 25-year operating period, including \$39 million for the **Angleton Site** and \$62 million for the **Freeport Site** from 2029 to 2052. This leads to an overall Project Net Present Value (which includes the



O&M costs at the Angleton Site) of around \$81 million and a Benefit Cost Ratio (BCR) of 5.4. The overall project benefit matrix can be seen in **Table 1**. The overall Project impacts in **Table 2** shows the magnitude of the various metrics used in this analysis to quantify the Project benefits.

Table 1 Project Impacts and Benefits Summary

Current Status/ Baseline & Problem to be Addressed	Change to Baseline/ Alternatives	Population Affected by Impact	Economic Benefit	Monetized Benefits, 2029–2053 (discounted 2022\$)	Page Reference in BCA
Need of truck operators to find parking locations further out	Greater truck parking availability in Southeast Texas which will reduce truck vehicle-miles traveled.	Truck operators	Savings in truck vehicle-operating costs	\$13.5 M	16
Single occupancy vehicle (SOV) travel	Construction of a park & ride and a transit center and the short-term parking for vanpools served by the Gulf Coast Transit District’s Purple Route will connect the City of Angleton with cities throughout Brazoria and Galveston Counties, providing travelers with access to transit and vanpooling.	Motorists in Southeast Texas	Savings in auto vehicle-operating costs for people shifting from driving to transit and from driving to vanpooling	\$19.4 M	22
		Local Community			
Truck drivers experience lost revenue time due to truck parking scarcity	Greater parking availability in Southeast Texas will reduce truck vehicle-hours traveled.	Truck operators	Saving in truck travel-time costs	\$42 M	26



Current Status/ Baseline & Problem to be Addressed	Change to Baseline/ Alternatives	Population Affected by Impact	Economic Benefit	Monetized Benefits, 2029–2053 (discounted 2022\$)	Page Reference in BCA
Air pollutants and greenhouse gases generated by passenger car and truck travel	Presence of parking facilities, including electric truck and passenger car chargers, an intermodal facility and new trees will reduce fuel consumption, reduce dependency of fossil fuels for transportation, improve access to transit and vanpooling, and improve Texas electric vehicle infrastructure coverage.	General public	Emission cost savings due to (a) reduced truck miles traveled; (b) reduced SOV miles traveled by enhancing access to transit and vanpooling; (c) enhanced air quality by planting trees that absorb air pollutants; and (d) improved air quality because of zero mobile emission rates of electric vehicles.	\$23 M	30
		Local community			
Crashes involving trucks	Reduction in truck-related crashes linked to saved truck VMT	Traveling public	Reduced amount of crashes involving trucks	\$2 M	49
Lack of sidewalks and sidewalk connections	Addition of sidewalks that link the Freeport Site to existing sidewalk infrastructure, improving the quality of walking for active transportation users and inducing people to active transportation modes (walking) from inactive modes.	Freeport community	Improved the quality of journeys made by walk	\$0.2 M	52
			Health benefits associated with increased physical activity	\$0.7	54

Source: Cambridge Systematics Analysis.



Table 2 Select Project Impacts, Cumulative 2029–2053

Metric	Cumulative Impact, 2029–2053
Truck Vehicle-Miles Travel Saved	19.4 Million Miles Saved
Truck Vehicle-Hours Saved	2.3 Million Hours Saved
Increased Transit and Vanpool Users	56,160 New Park & Ride Users Annually
Total CO ₂ Emissions Avoided	665,062 metric tons of CO ₂ Avoided
Traffic Fatalities Avoided	0.14 Traffic Fatalities Avoided
Traffic Injuries Avoided	8.2 Traffic Injuries Avoided

Source: Cambridge Systematics Analysis.



Introduction

This section summarizes the approach used to conduct a Benefit-Cost Analysis (BCA) for submission to the U.S. Department of Transportation (USDOT) as a requirement of a discretionary grant application for the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) 2024 program. The section is structured as follows:

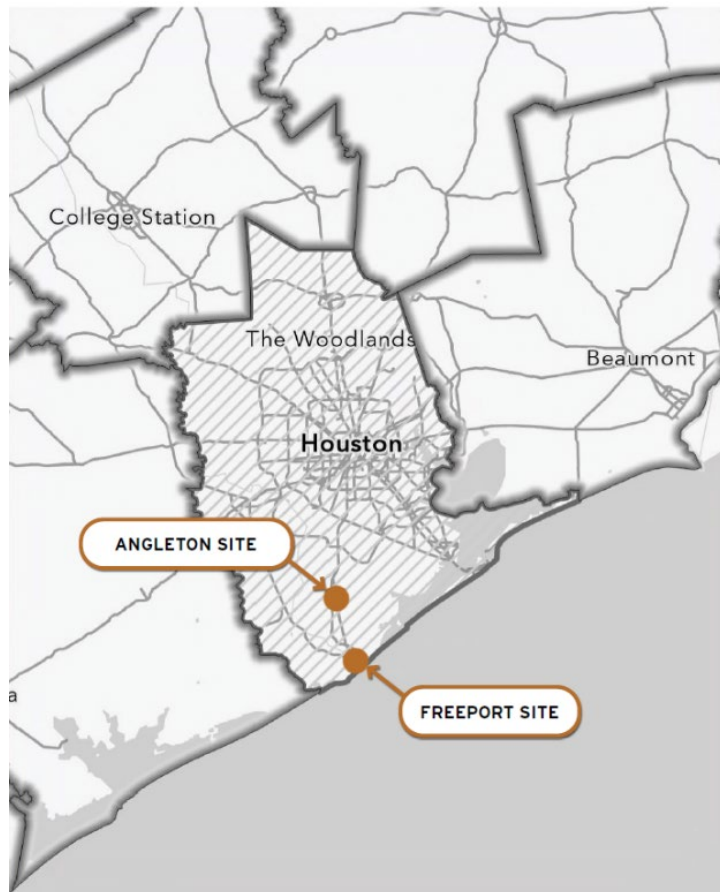
- **Project Overview** contains the background and description of the proposed project *Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas*.
- **BCA Framework** describes the BCA methodology, its components and assumptions, and the study scenarios.
- **Truck Parking Demand and Changes in Travel Patterns** examines the truck parking demand in Southeast Texas and estimates the daily truck parking capacity at the Angleton and Port of Freeport sites for both electric and non-electric trucks.
- **Project Benefits** includes a detailed explanation and calculation of the Project benefits.
- **Project Costs** documents the project capital and operation and maintenance costs and its calculation.
- **Summary of Results** contains the results of the benefit-cost evaluation measures estimated in this BCA.
- **Sensitivity Analysis** documents the results of sensitivity analyses of critical variables' impacts on the BC ratio.

Project Overview

The Texas Department of Transportation (TxDOT) is requesting \$24,312,700 from FY2024 RAISE Grant funding to help meet truck parking demand in the Southeast Texas region (**Figure 1**). In particular, TxDOT seeks funding to provide two new truck parking locations. Both sites were selected through extensive stakeholder engagement as part of the TxDOT Southeast Texas Truck Parking Action Plan, and closely aligned with recommendations from the Federal Highway Administration's (FHWA) National Coalition on Truck Parking which was formed in 2022 to identify solutions to address truck parking shortages as a national safety concern.



Figure 1 Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas Project – Location Map



If awarded a RAISE grant, the proposed truck parking sites will help meet short-term/staging truck parking needs, off-duty parking needs for truck drivers that live in the community, overnight truck parking needs for long-haul drivers, provide charging stations for electrified freight and passenger vehicles, and provide multimodal options in the rural area of Southeast Texas. Below is a description of the proposed parking sites, Angleton and Freeport.

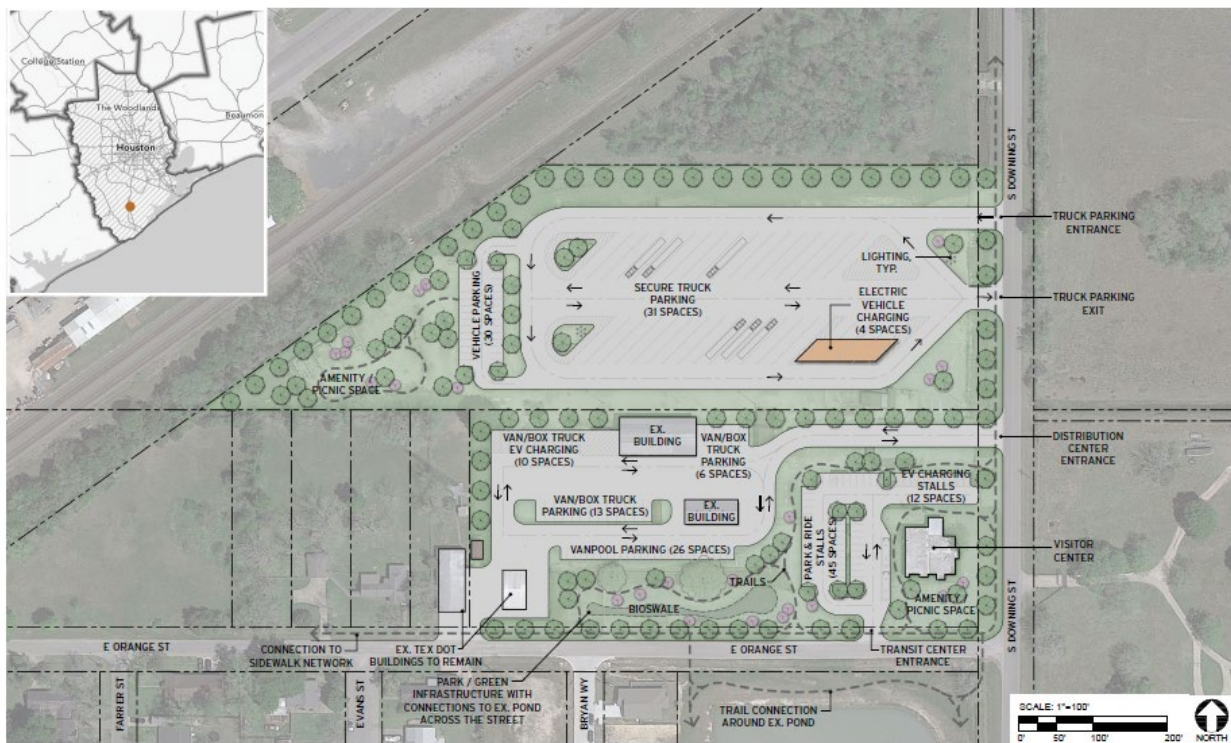
Angleton Site

The Angleton Site (**Figure 2**) will be constructed on existing TxDOT right-of-way (ROW), making use of a previously abandoned area office and is designed to serve as a Suburban Transfer Hub as part of the TxDOT Houston District's REAL Plan, a blueprint for building a multimodal region-wide transportation system. Construction of the north part of the Angleton Site will include new concrete paving, striping, safety lighting, and a new secure truck parking facility for owner-operator and overnight parking with 31 truck parking spaces, 30 park-and-ride spaces vehicle parking spaces, and four electric charging spaces for trucks to help fill the need for secure overnight truck parking. Construction of the south part of the site will include new 3,000-square-foot 10-inch reinforced concrete paving, striping, and safety lighting, 19 truck light-duty parking spaces and 10 EV light-



duty truck charging stations for local delivery vehicles, as well as 26 vanpool and 45 carpool spaces, with 12 EV charging stations for passenger vehicles. The project will improve existing covered structures for small delivery truck/van package sorting and improvements to the existing building on the southeast corner of the site for a 4,500-square-foot visitor/transfer center that will include improved restrooms, waiting room and amenities for park-and-ride and transit users. Other site improvements include a bioswale for drainage, 10-foot-wide concrete ADA-compliant shared use path (300 feet) and associated subgrade with connections to the adjacent neighborhood, and new 6-foot-wide concrete ADA-compliant sidewalks around the site (1,700 feet). The project would include ADA-curb ramps, high-visibility crosswalks, signage, as well as 116 large trees (30 gallon) and 24 ornamental trees (15 gallon).

Figure 2 Angleton Multimodal Facility / Truck Parking Site



All three areas will be connected via a shared use path and will include tree plantings, bioswales, and active transportation connections to the surrounding community. Once constructed, the Angleton Site will not only help meet some of the demand for truck parking, but it will also increase connections to mass transit and vanpools and help reduce single occupancy vehicles in the region. It will also reduce impervious cover, add new trees, and provide active transportation facilities and connections for the community.

Freeport Site

The Freeport Site (**Figure 3**) will be built on Port Freeport property through an innovative partnership agreement. Unlike the Angleton Site, the Freeport Site will primarily serve truck staging and drayage truck parking needs for Port Freeport for two to four hours at a time and no more than 24 hours. It will include 31 truck parking spaces, four electric



charging spaces for trucks, and three passenger vehicle parking spaces (two of which will be electric charging stations), a security building, new sidewalks, tree plantings, and picnic areas.

Besides helping to address the truck parking needs, the Freeport Site will help increase connectivity to goods, services, and community resources. TxDOT is proposing two sidewalk connections to link the site to existing sidewalk infrastructure. The first starts at the north end of the project site on FM 1495 and runs north to 4th Street. The second starts on FM 1495 and runs west on W. 8th Street to Cherry Street. By tying into the existing sidewalk network, TxDOT will increase accessibility to food, healthcare, transit, and other community resources within an Area of Persistent Poverty and Historically Disadvantaged Community.

Figure 3 Freeport Truck Parking Site



Benefit-Cost Analysis (BCA) Framework

The main objective of the BCA summarized here was to compare the expected contributions (benefits) and costs of the proposed parking sites to determine its contribution to the local and regional economic, as well as to the impacted communities. The BCA followed the USDOT’s Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023. As per USDOT’s Guidance, a BCA should define the baseline or “No-Build” scenario and the alternative or “build” scenario. The benefits, disbenefits and additional costs are calculated by comparing the “Build” scenario against the “No-Build” scenario. Since the BCA calculates the anticipated benefits expected to accrue from the “build” scenario over a specified period and compares them to the anticipated



costs of the project, both calculations are discounted into the present to identify their present value.

Methodological Components

Following USDOT guidance, the key methodological elements of this analysis include:¹

- Defining existing and future conditions under both the “No-Build” scenario as well as under the “Build” scenario.
- Assessing the project benefits with respect to selection criteria defined by the USDOT over the 25 years of operations beyond the project completion (2029 in this case) when benefits accrue and using USDOT recommended values to monetize benefits or disbenefits.
- Estimating the project capital costs, during project’s construction, and the project’s operation and maintenance costs over the 25 years of operations beyond the project completion when benefits accrue.
- Establishing 2022 as the base year and presenting all benefits and cost values in 2022 dollars. In instances where certain cost estimates or benefit valuations are expressed in dollar values in other (historical) years prior to 2022, the inflation adjustment factors provided by the USDOT are used to convert these values into 2022 dollars. The purpose of this adjustment is to remove the effects of inflation from nominal values (also called current or year of expenditure dollars) so that their real changes can be compared over time. In instances where certain cost estimates are expressed in dollar values in 2023 or future years, the U.S. Bureau of Labor Statistics’ Consumer Price Index for All Urban Consumers (CPI-U) in 2023² and the CPI-U for future years provided by the Congressional Budget Office³ are used to convert these values into 2022 dollars.
- Discounting project benefits and costs using a real discount rate of 3.1 percent per year, except in the case of carbon dioxide (CO₂) emissions, where a 2.0 percent per year discount rate is applied.

Key Assumptions

To complete the BCA of the *Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas* project, the following assumptions were made:

- **Project Analysis Period**—This period includes the design and engineering and construction of the Project during which capital expenditures are undertaken, plus 25 years of operations beyond the Project completion within which to evaluate the ongoing Project benefits and costs.

¹ U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023.

² U.S. Bureau of Labor Statistics. Consumer Price Index. [CPI Home : U.S. Bureau of Labor Statistics \(bls.gov\)](https://www.bls.gov)

³ Congressional Budget Office, [The Budget and Economic Outlook: 2023 to 2033 | Congressional Budget Office \(cbo.gov\)](https://www.cbo.gov)



- **Project Construction Period**—The project construction is assumed to begin in 2026 and end in 2028 at which point the project will be deemed complete.
- **Project Operating Period**—This period covers the 25-year operating period. The period starts in 2029, the calendar year immediately following the completion of the construction and when the project open to the public, and concludes in 2053.

“Build” and “No-Build” Scenarios

The analysis of the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project considered how the balance of costs and benefits resulting from the construction of the parking facilities, as well as their associated infrastructure elements such as sidewalks, vanpool and transit facilities, trees and EV charging stations, would result in long-term benefits to its users and general society. This is accomplished by comparing the “Build” scenario relative to the “No-Build” scenario.

The “No-Build” scenario assumes that no new parking facilities are built and that trucks continue to be parked on undesignated areas on highway shoulders, ramps, and frontage roads.

The “Build” scenario will build multimodal truck parking facilities in the rural cities of Freeport and Angleton. The “Build” scenario at each new site includes the following:

- **Angleton Site**—This site will serve as a Suburban Transfer Hub and have multimodal integration to the region as part of the TxDOT Houston District’s REAL Plan.⁴ Not only will it help meet some of the demand for truck parking, but it will also increase connections to mass transit and vanpools and help reduce single occupancy vehicles in the region. The site will have the three distinct areas outlined below, all connected via a shared use path with tree plantings, bioswales, and active transportation facilities:
 - **Secure overnight parking**—The first one is a fenced and gated area with 31 truck and 30 passenger parking spaces, as well as four truck electric charging spaces.
 - **Short-term parking**—The second area provides short-term parking for distribution and vanpool vehicles and includes 19 van/box truck parking spaces, 26 vanpool parking spaces, and 10 van/box truck electric charging spaces.
 - **Park & Ride center**— Lastly, the third area will serve as a park & ride and transit center that provides regional connectivity through the Gulf Coast Transit District’s Purple Route.
- **Freeport Site**—The second site will be built at Port Freeport and will primarily serve the truck staging area needs for Port Freeport. It includes 31 truck parking spaces, four truck electric charging spaces, one passenger vehicle parking space, and two electric vehicle charging stations. It will also feature a security building, tree plantings, sidewalks, and picnic areas. Besides helping to address the truck parking needs, the Freeport Site will help increase connectivity to goods, services, and community resources.

⁴ TxDOT. [The REAL Plan \(txdot.gov\)](https://www.txdot.gov).



Truck Parking Demand and Changes in Travel Patterns

Like much of the country, Texas exhibits a shortage in truck parking. The average over-the-road commercial truck driver spends 56 minutes a day searching for available parking.⁵ The distance to the nearest available truck parking facility from the proposed sites is 7.6 miles for Freeport and 2.5 miles for Angleton (**Table 3**). By having access to the new truck parking facilities, truck drivers would therefore save time and miles spent looking for parking.

Table 3 Distance to Nearest Available Truck Parking Facility

Nearest Available Truck Parking Facility	Distance from the Proposed Parking Facilities
Freeport to Sunny's JC Corner Site	7.6 miles from Freeport Site
Angleton to Chevron Site	2.5 miles from Angleton Site

Source: Southeast Texas Truck Parking Action Plan (2024).

Together, the new truck parking facilities will provide 62 truck parking spaces for diesel trucks, and eight for electric trucks, split evenly across the two sites. While Angleton's parking spots will be long-term exclusively, Freeport's spots will be short-term exclusively. To estimate the truck parking demand of the new sites, this analysis uses information on truck parking duration and utilization rates at peak hour in Southeast Texas. **Table 4** shows the truck parking duration share in Southeast Texas. Short-term parking, intended to be occupied for less than four hours at a time, accounts for 65 percent of the parking demand while the overnight parking share is 13 percent.⁶ The Texas Statewide truck parking study completed in 2020 also revealed that the truck parking utilization rate of picnic areas and highway pull-offs is 60 percent, at peak hour.⁷

Table 4 Truck Parking Duration in Southeast Texas

Average Parking Duration	Parking Duration Share
Short Break (< 1 Hour)	31%
Short Staging (1–4 Hours)	34%
Long Staging (4–8 Hours)	8%
10-hour Rest (8–14 Hours)	14%
Long Break (> 14 Hours)	13%

Source: Texas Statewide Truck Parking Study (April 2020).

Then, this analysis estimates the daily truck parking capacity at each site using **Equation 1**.

⁵ Torrey, W.F., & Murray, D. September 2016. *Analysis of the Operational Costs of Trucking: 2016 Update*. American Transportation Research Institute. Arlington, VA.

⁶ Texas Statewide Truck Parking Study (April 2020).

⁷ Texas Statewide Truck Parking Study (April 2020).



$$DTPC = \frac{24}{DPD} \times PS \times TPUR \times TPDS \quad \text{Equation 1}$$

Where:

- DTPC = Daily Truck Parking Capacity
- DPD = Daily Parking Duration
- PS = Number of parking spaces
- TPUR = Truck parking utilization rate
- TPDS = Truck parking duration share

Table 5 presents the daily truck parking capacity for non-electric trucks at each site. Under the “Build” scenario, Freeport’s 31 parking spaces will provide a daily capacity of 188 short-term parking slots. Meanwhile, Angleton’s 31 parking spaces will provide capacity for 20 parking slots on daily basis.

Table 5 Daily Truck Parking Capacity for Non-Electric Trucks at Both Sites

Average Daily Parking Duration (Hours)	Freeport Site	Angleton Site	Daily Truck Parking Capacity
1	138	N/A	138
4	38	N/A	38
8	4	N/A	4
14	4	N/A	4
24	2	19	21
Total	188	19	206

Source: Cambridge Systematics Analysis.

The proposed parking facilities also include charging stations for electric trucks. The daily parking capacity for electric trucks is presented in **Table 6**.

Table 6 Daily Truck Parking Capacity for Electric Trucks at Freeport and Angleton Sites

Average Daily Parking Duration (Hours)	Freeport Site	Angleton Site	Daily Truck Parking Capacity
1	18	N/A	18
4	5	N/A	5
8	1	N/A	1
14	1	N/A	1
24	0	2	3
Total	24	2	27

Source: Cambridge Systematics Analysis.



Significant changes in truck annual vehicle miles traveled (VMT) as well as truck vehicle hours traveled (VHT) will occur under the “Build” scenario. Namely, truck drivers would drive less as a result of not needing to reach parking facilities that are almost an hour away. This leads to decreased miles traveled and shorter driving time for them. Total reductions in Truck VMT and VHT during the 25-year operating period are presented in **Table 7**.

Table 7 Total Reductions in Truck VMT and VHT, 2029–2053

Total Change in Truck VMT	Total Change in Truck VHT
19,444,442	2,251,231

Source: Cambridge Systematics Analysis.

Project Benefits

Vehicle Operating Cost Savings

Vehicle Operating Costs (VOC), in general, include both fuel and non-fuel costs. The non-fuel cost component is comprised of all the necessary replacement items on the vehicle and regular maintenance (e.g., oil and fluid changes, tire rotations, tire replacements, and wiper replacement) as well as truck/trailer lease or purchase payments, permits and licenses, and other related costs to owners of commercial vehicles.

The Project will generate VOC savings by:

- Reducing the detours that truck drivers must make to find an open parking space, reducing the number of truck vehicle miles traveled (or truck VMT).
- Shifting auto users commuting to work to vanpooling and transit.

Vehicle Operating Cost Savings from Reduced Truck VMT

The new truck parking facilities at Angleton and Freeport will increase the availability of truck parking spaces in Southeast Texas. By having access to the new truck parking facilities, truck drivers will save on unproductive miles traveled.

Equation 2 is used to estimate annual truck VMT savings. The daily truck parking capacity for each site is shown in **Table 5** and **Table 6**. The distances between the nearest existing parking sites and the proposed new parking sites are shown in **Table 3**. Daily truck VMT savings are multiplied by 365 to obtain annual truck VMT savings. **Table 8** shows the annual savings in truck VMT in 2029 as a result of the new truck parking facilities.

$$ATVMTS = DTPCS \times 365 \times DNATPF \quad \text{Equation 2}$$

Where:

- ATVMTS = Annual truck VMT savings
- DTPCS = Daily truck parking capacity at each site
- DNATPF = Distance to the nearest available truck parking facility



Table 8 Daily and Annual Truck VMT Savings, 2029

New Truck Parking Sites	Daily Truck VMT Savings	Yearly Truck VMT Savings
Freeport	1,426	520,608
Angleton	47	16,973
Total	1,473	538,675

Source: Cambridge Systematics Analysis.

The Texas Statewide Truck Parking Plan forecasts the TxDOT Houston District’s peak truck parking demand as one of the highest in the state, with an 89 percent increase in 2050.⁸ This represents an increase of 89 percent over the 2018–2050 period (from 2,872 in 2018 to 5,415) or an average annual growth rate of 2 percent (Table 9). This 2 percent compound annual growth rate (CAGR) over the 2018–2050 period is used to forecast truck VMT savings over the 25-year operating period.

Table 9 Truck Parking Demand in TxDOT Houston District, 2018 and 2050

2018	2050	Change, 2018–2050	CAGR, 2018–2050
2,872	5,415	89%	2.0%

Source: Texas Statewide Truck Parking Study (April 2020).

Table 10 shows the monetization rates for VOC for diesel trucks and electric trucks. Since the project includes electric charging stations for trucks at both sites, this analysis estimates the average marginal VOC for electric trucks by examining the average marginal cost per mile of diesel trucks in the Southeast region provided by the American Transportation Research Institute (ATRI).⁹ Since fuel costs represent 49.2 percent of all vehicle-based costs for diesel trucks, the average marginal VOC for electric trucks is estimated by reducing the diesel truck VOC by 49.2 percent.

Table 10 Average Marginal Vehicle Operating Cost for Trucks

Truck Type	Average VOC (2022\$ per Truck VMT)	Source
Diesel Truck	\$1.32	U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023
Electric Truck	\$0.67	Cambridge Systematics Analysis based on the average marginal cost per mile of diesel trucks in the Southeast region provided by ATRI

Then, the annual savings in truck VOC are monetized using Equation 3.

$$ATVOCS = ATVMTS \times AMVOCT \quad \text{Equation 3}$$

⁸ Texas Statewide Truck Parking Study (April 2020).

⁹ ATRI, An Analysis of the Operational Costs of Trucking: 2023 Update (June 2023).



Where:

- ATVOCS = Annual truck vehicle-operating cost savings
- ATVMTS = Annual truck VMT savings
- AMVOCT = Average marginal vehicle-operating cost for trucks

Table 11 and **Table 12** show the monetized VOC savings from reduced diesel-truck VOC for the Freeport and Angleton sites, respectively.

Monetized VOC savings from reduced diesel-truck VMT for the Freeport Site sum up to \$22.0 million undiscounted and around \$12.2 million discounted to 2022 dollars over the 25-year operating period. Monetized VOC savings from reduced diesel-truck VMT for the Angleton Site are estimated to be around \$0.7 million undiscounted and \$0.4 million discounted to 2022 dollars over the 25-year operating period.

Table 11 Port of Freeport Truck Parking Facility—Truck VOC Savings from Reduced Diesel-Truck VMT, 2029–2053

Year	Changes in Truck VMT	Truck VOC Savings (undiscounted 2022\$)	Truck VOC Savings (discounted 2022\$)
2029	520,608	\$687,202	\$554,976
2030	531,028	\$700,957	\$549,063
2031	541,656	\$714,987	\$543,213
2032	552,498	\$729,297	\$537,425
2033	563,556	\$743,894	\$531,699
2034	574,836	\$758,784	\$526,034
2035	586,342	\$773,971	\$520,430
2036	598,077	\$789,462	\$514,885
2037	610,048	\$805,263	\$509,399
2038	622,258	\$821,381	\$503,972
2039	634,713	\$837,821	\$498,602
2040	647,417	\$854,591	\$493,290
2041	660,375	\$871,695	\$488,034
2042	673,593	\$889,143	\$482,834
2043	687,075	\$906,939	\$477,690
2044	700,827	\$925,092	\$472,601
2045	714,854	\$943,608	\$467,565
2046	729,162	\$962,494	\$462,584
2047	743,757	\$981,759	\$457,655
2048	758,643	\$1,001,409	\$452,779
2049	773,828	\$1,021,453	\$447,955
2050	789,316	\$1,041,897	\$443,182



Year	Changes in Truck VMT	Truck VOC Savings (undiscounted 2022\$)	Truck VOC Savings (discounted 2022\$)
2051	805,115	\$1,062,751	\$438,460
2052	821,229	\$1,084,023	\$433,789
2053	837,666	\$1,105,720	\$429,167
Total	16,678,479	\$22,015,593	\$12,237,281

Source: Cambridge Systematics Analysis.

Table 12 Angleton Truck Parking Facility—Truck VOC Savings from Reduced Diesel-Truck VMT, 2029–2053

Year	Changes in Truck VMT	Truck VOC Savings (undiscounted 2022\$)	Truck VOC Savings (discounted 2022\$)
2029	16,973	\$22,404	\$18,093
2030	17,312	\$22,852	\$17,900
2031	17,659	\$23,310	\$17,709
2032	18,012	\$23,776	\$17,521
2033	18,373	\$24,252	\$17,334
2034	18,740	\$24,737	\$17,149
2035	19,116	\$25,232	\$16,967
2036	19,498	\$25,738	\$16,786
2037	19,888	\$26,253	\$16,607
2038	20,286	\$26,778	\$16,430
2039	20,692	\$27,314	\$16,255
2040	21,107	\$27,861	\$16,082
2041	21,529	\$28,418	\$15,911
2042	21,960	\$28,987	\$15,741
2043	22,400	\$29,567	\$15,573
2044	22,848	\$30,159	\$15,407
2045	23,305	\$30,763	\$15,243
2046	23,772	\$31,379	\$15,081
2047	24,247	\$32,007	\$14,920
2048	24,733	\$32,647	\$14,761
2049	25,228	\$33,301	\$14,604
2050	25,733	\$33,967	\$14,448
2051	26,248	\$34,647	\$14,294
2052	26,773	\$35,341	\$14,142
2053	27,309	\$36,048	\$13,991
Total	543,741	\$717,737	\$398,952

Source: Cambridge Systematics Analysis.



Table 13 and **Table 14** show the monetized VOC savings from reduced electric-truck VMT for the Freeport and Angleton sites, respectively.

Monetized VOC savings from reduced electric-truck VMT for the Freeport Site sum up to around \$1.4 million undiscounted and around \$0.8 million discounted to 2022 dollars over the 25-year operating period. Monetized VOC savings from reduced electric-truck VMT for the Angleton Site are estimated to be \$47,045 undiscounted and \$26,150 discounted to 2022 dollars over the 25-year operating period.

Table 13 Port of Freeport Truck Parking Facility—Truck VOC Savings from Reduced Electric-Truck VMT, 2029–2053

Year	Changes in Truck VMT	Truck VOC Savings (undiscounted 2022\$)	Truck VOC Savings (discounted 2022\$)
2029	67,175	\$45,044	\$36,377
2030	68,520	\$45,945	\$35,989
2031	69,891	\$46,865	\$35,606
2032	71,290	\$47,803	\$35,226
2033	72,717	\$48,760	\$34,851
2034	74,172	\$49,736	\$34,480
2035	75,657	\$50,731	\$34,112
2036	77,171	\$51,746	\$33,749
2037	78,716	\$52,782	\$33,389
2038	80,291	\$53,839	\$33,034
2039	81,898	\$54,916	\$32,682
2040	83,538	\$56,015	\$32,333
2041	85,210	\$57,137	\$31,989
2042	86,915	\$58,280	\$31,648
2043	88,655	\$59,447	\$31,311
2044	90,429	\$60,636	\$30,977
2045	92,239	\$61,850	\$30,647
2046	94,085	\$63,088	\$30,321
2047	95,969	\$64,351	\$29,998
2048	97,889	\$65,639	\$29,678
2049	99,849	\$66,953	\$29,362
2050	101,847	\$68,293	\$29,049
2051	103,886	\$69,660	\$28,740
2052	105,965	\$71,054	\$28,433
2053	108,086	\$72,476	\$28,130
Total	2,152,062	\$1,443,043	\$802,110

Source: Cambridge Systematics Analysis.



Table 14 Angleton Truck Parking Facility—Truck VOC Savings from Reduced Electric-Truck VMT, 2029–2053

Year	Changes in Truck VMT	Truck VOC Savings (undiscounted 2022\$)	Truck VOC Savings (discounted 2022\$)
2029	2,190	\$1,468	\$1,186
2030	2,234	\$1,498	\$1,173
2031	2,279	\$1,528	\$1,161
2032	2,324	\$1,558	\$1,148
2033	2,371	\$1,590	\$1,136
2034	2,418	\$1,621	\$1,124
2035	2,467	\$1,654	\$1,112
2036	2,516	\$1,687	\$1,100
2037	2,566	\$1,721	\$1,089
2038	2,618	\$1,755	\$1,077
2039	2,670	\$1,790	\$1,065
2040	2,723	\$1,826	\$1,054
2041	2,778	\$1,863	\$1,043
2042	2,834	\$1,900	\$1,032
2043	2,890	\$1,938	\$1,021
2044	2,948	\$1,977	\$1,010
2045	3,007	\$2,016	\$999
2046	3,067	\$2,057	\$988
2047	3,129	\$2,098	\$978
2048	3,191	\$2,140	\$968
2049	3,255	\$2,183	\$957
2050	3,320	\$2,226	\$947
2051	3,387	\$2,271	\$937
2052	3,455	\$2,316	\$927
2053	3,524	\$2,363	\$917
Total	70,160	\$47,045	\$26,150

Source: Cambridge Systematics Analysis.

The VOC savings driven by reductions in diesel truck and electric truck VMT to be generated by the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project total \$24.2 million undiscounted and \$13.5 million discounted to 2022 dollars over the 25-year operating period.



Vehicle Operating Cost Savings from Mode Shift

The Angleton Site includes 45 passenger vehicle parking spaces for overnight parking, 26 vanpool parking spaces for short term parking, and 12 EV charging stalls spaces as part of the park & ride area and a transit center. The Angleton Site is served by the Gulf Coast Transit District's Purple Route, which connects the City of Angleton to cities throughout Brazoria and Galveston Counties. These facilities will be a significant improvement to regional transit access, providing commuters a safe and convenient place to park their vehicles and shift to non-single vehicle occupancy (SOV) modes over driving.

This analysis obtained information on the number of riders and passenger miles traveled for a vanpool service, the STAR Regional Vanpool Program,¹⁰ and a transit service, the Victory Lakes Park and Ride.¹¹ For the transit service, the passenger miles traveled was divided by the monthly passenger boardings to determine the passenger miles traveled per passenger. With multiple years of data, the average passenger miles traveled per passenger was determined (i.e., 27.1 round trip miles per rider). For the vanpool service, data was acquired on the average one-way trip miles, which was used to calculate the average round-trip miles per passenger (i.e., 58.0 round trip miles per rider).

To calculate the number of average annual passengers that will use the park & ride and transit center at the Angleton Site, a daily parking utilization rate of 82 percent recommended in a peer-reviewed journal¹² was used. An average daily turnover rate, or the number of passengers cars per parking space per day, of 1.1 and an average daily parking duration of 10.6 hours was determined from a TRB's Transit Cooperative Research Program (TCRP) report.¹³ This analysis utilizes the vehicle occupancy rate for weekday peak of 1.48 provided by the USDOT guidance.¹⁴

As shown in **Equation 4**, the average daily passengers was calculated by multiplying each of these values by the number of vehicle parking spaces available for the park & ride and transit center. This calculation yields 1,000 average daily passengers. These passengers were allocated to either the park & ride or transit center based on passenger mode share in Texas provided by the Bureau of Transportation Statistics (BTS).¹⁵ Out of the total mode share, carpooling and public transportation in Texas accounted for 9.8 percent and 1.3 percent, respectively, which when normalized between just these two categories equals 88 percent and 12 percent, respectively. This yields 883 commuters shifting from driving alone to vanpooling and 117 commuters shifting from driving alone to transit daily.

¹⁰ STAR Regional Vanpool Program - Vanpool Activities Reporting Table.

¹¹ Victory Lakes Park and Ride - General Progress Report: Feb 2017.

¹² Stieffenhofer, Krae E., et al. 2016. Assessing Park-and-Ride Efficiency and User Reactions to Parking Management Strategies. *Journal of Public Transportation*, 19 (4): 75-92. DOI: <http://doi.org/10.5038/2375-0901.19.4.5>. Available at: <https://digitalcommons.usf.edu/jpt/vol19/iss4/5>.

¹³ TCRP Report 95, Traveler Response to Transportation System Changes, Chapter 3-Park-and-Ride Pool (2004). https://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c3.pdf.

¹⁴ U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023.

¹⁵ Texas, Transportation by the Numbers. Available at <https://www.bts.dot.gov/sites/bts.dot.gov/files/states2020/Texas.pdf>.



$$ADP = PVPS \times DPUR \times ADT \times ADPD \times AOR \quad \text{Equation 4}$$

Where:

- ADP = Average Daily Passengers Using the Park & Ride and Transit Center at the Angleton Intermodal Facility
- PVPS = Number of Passenger Vehicle Parking Spaces at the Park & Ride and Transit Center
- DPUR = Daily Parking Utilization Rate
- ADT = Average Daily Turnover at the Park & Ride Facility
- ADPD = Average Daily Parking Duration
- AOR = Average Occupancy Rate for Passenger Vehicles during Weekday Peak

The average round trip distances for vanpool and transit riders and the days per week of travel were inputted into the HGAC's Commute Solutions "Make Your Commute Count" calculator.¹⁶ This tool calculates annual savings in auto vehicle-operating costs per commuter shifting from driving to transit and per commuter shifting from driving to vanpooling using data on passenger car vehicle operating costs from the American Automobile Association (AAA). The tool yields \$1,438 (in 2019 dollars) in annual vehicle-operating cost savings per commuter shifting from driving to vanpooling and \$372 (in 2019 dollars) in annual vehicle-operating cost savings per commuter shifting from driving to transit. These VOC savings per commuter are adjusted to 2022 dollars using an inflation adjustment value of 1.13.¹⁷

This analysis takes a conservative approach and assumes that commuter riders would use the park & ride facility once a week for 48 workweeks in a year and that the number of commuters shifting from driving to transit and from driving to vanpooling remain the same over the 25-year operating period.

The auto vehicle-operating cost savings for commuters shifting from driving to vanpooling are calculated using **Equation 5**.

$$AVOCSCSDV = CSDV \times AVOCPCSDV \quad \text{Equation 5}$$

Where:

- AVOCSCSDV = Annual auto vehicle-operating cost savings for commuters shifting from driving to vanpooling
- CSDV = Commuters shifting from driving to vanpooling
- AVOCPCSDV = Annual auto vehicle-operating cost savings per commuter shifting from driving to vanpooling

¹⁶ Commute Solutions, Make Your Commute Count. <https://www.yourcommutesolution.org/make-your-commute-count>.

¹⁷ U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023.



The auto vehicle-operating cost savings for commuters shifting from driving to transit are calculated using **Equation 6**.

$$AVOCSCSDT = CSDT \times AVOCPCSDT \quad \text{Equation 6}$$

Where:

- AVOCSCSDT = Annual auto vehicle-operating cost savings for commuters shifting from driving to transit
- CSDT = Commuters shifting from driving to transit
- AVOCPCSDT = Average auto vehicle-operating cost savings per commuter shifting from driving to transit

This analysis was conducted twice, for the total of 71 combined vanpool and passenger vehicle parking spaces and then for the 12-passenger vehicle electric charging spaces. For the first analysis, there were no changes to the methodology. However, for the 12-passenger vehicle electric charging spaces, the final vehicle operating cost savings results were adjusted based on forecasted market penetration rates for electric passenger vehicles. For each year, the results were multiplied by the corresponding market penetration rate shown in **Table 15**. These rates come from Resources for the Future,¹⁸ an independent, nonprofit research institution in Washington, DC.

Table 15 U.S. EV Light Duty Fleet Sales—Medium Market Penetration Scenario

Year	Market Penetration Scenario
2020–2030	5%
2031–2040	15%
2041–2052	30%

Source: Resources for the Future. Progress and Potential for Electric Vehicles to Reduce Carbon Emissions. Report 20-24. December 2020

Table 16 shows the combined total VOC savings to be realized by commuters who shift from driving to vanpooling and from driving to transit, combining the results for vanpool and passenger vehicle parking spaces and electric vehicle charging spaces. Over the 25-year operating period, undiscounted VOC savings total nearly \$38.4 million and discounted VOC savings total \$19.4 million.

¹⁸ Resources for the Future. Progress and Potential for Electric Vehicles to Reduce Carbon Emissions. Report 20-24. December 2020. <https://www.rff.org/publications/reports/potential-role-and-impact-evs-us-decarbonization-strategies/>



Table 16 Angleton Intermodal Facility—Combined VOC Savings to be Realized by Commuters Shifting to Transit and Vanpooling, 2029–2053

Year	Auto VOC Savings (undiscounted 2019\$)	Auto VOC Savings (undiscounted 2022\$)	Auto VOC Savings (discounted 2022\$)
2029	\$1,324,329	\$1,496,492	\$1,069,511
2030	\$1,324,329	\$1,496,492	\$1,037,353
2031	\$1,324,329	\$1,496,492	\$1,006,162
2032	\$1,346,653	\$1,521,718	\$992,360
2033	\$1,346,653	\$1,521,718	\$962,522
2034	\$1,346,653	\$1,521,718	\$933,581
2035	\$1,346,653	\$1,521,718	\$905,510
2036	\$1,346,653	\$1,521,718	\$878,283
2037	\$1,346,653	\$1,521,718	\$851,875
2038	\$1,346,653	\$1,521,718	\$826,261
2039	\$1,346,653	\$1,521,718	\$801,417
2040	\$1,346,653	\$1,521,718	\$777,320
2041	\$1,346,653	\$1,521,718	\$753,948
2042	\$1,380,139	\$1,559,557	\$749,462
2043	\$1,380,139	\$1,559,557	\$726,927
2044	\$1,380,139	\$1,559,557	\$705,070
2045	\$1,380,139	\$1,559,557	\$683,870
2046	\$1,380,139	\$1,559,557	\$663,307
2047	\$1,380,139	\$1,559,557	\$643,363
2048	\$1,380,139	\$1,559,557	\$624,019
2049	\$1,380,139	\$1,559,557	\$605,256
2050	\$1,380,139	\$1,559,557	\$587,057
2051	\$1,380,139	\$1,559,557	\$569,405
2052	\$1,380,139	\$1,559,557	\$552,285
2053	\$1,380,139	\$1,559,557	\$535,679
Total	\$34,001,191	\$38,421,346	\$19,441,802

Source: Cambridge Systematics Analysis.

The VOC savings to be generated by the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project are driven by VMT reductions in trucks VMT, as well as from auto users shifting to vanpooling and transit to get to work. The project’s VOC savings total \$62.6 million undiscounted and \$32.9 million discounted to 2022 dollars over the 25-year operating period.



Travel Time Savings

Benefits associated with travel time savings include in-vehicle travel time saved by truck drivers. According to the American Transportation Institute (ATRI), “drivers lose an average of 56 minutes of available drive time per day due to having to park early to avoid the risk of limited parking closer to their destination.”¹⁹ **The Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** will significantly reduce the amount of lost revenue time that drivers experience due to truck parking scarcity. Thus, these benefits are assessed by estimating the vehicle hours traveled (VHT) saved by truck drivers from not having to park early due to limited parking.

Under the “Build” scenario, daily truck VHT savings are calculated as the product of the average time that truck drivers will not lose parking early (i.e., 56 minutes per truck diver) and the parking capacity of each site. Daily truck VHT savings are multiplied by 365 to obtain annual truck VHT savings. **Equation 7** shows these computations.

$$ATVHTS = ATTP \times DTPCS \times 365 \quad \text{Equation 7}$$

Where:

- ATVHTS = Annual truck VHT savings
- ATTP = Average Time to Park Early (i.e., 56 minutes per truck)
- DTPCS = Daily truck parking capacity at each site

Table 17 shows the daily and annual truck VHT savings for both sites in 2029 and **Table 18** shows the truck travel time savings for both sites over the 25-year operating period.

Table 17 Daily and Annual Truck VHT Savings, 2029

New Truck Parking Sites	Daily VHT Savings (in hours)	Yearly Truck VHT Savings (in hours)
Freeport	175	63,934
Angleton	17	6,336
Total	193	70,271

Source: Cambridge Systematics Analysis.

¹⁹ Torrey, W.F., & Murray, D. September 2016. Analysis of the Operational Costs of Trucking: 2016 Update. American Transportation Research Institute. Arlington, VA.



Table 18 Port of Freeport and Angleton Truck Parking Facilities—Truck VHT Savings, 2029–2053

Year	Freeport Site Truck VHT Savings (in hours)	Angleton Site Truck VHT Savings (in hours)
2029	63,934	6,336
2030	65,214	6,463
2031	66,519	6,593
2032	67,851	6,725
2033	69,209	6,859
2034	70,594	6,996
2035	72,007	7,136
2036	73,448	7,279
2037	74,918	7,425
2038	76,418	7,574
2039	77,947	7,725
2040	79,507	7,880
2041	81,099	8,038
2042	82,722	8,198
2043	84,378	8,363
2044	86,066	8,530
2045	87,789	8,701
2046	89,546	8,875
2047	91,339	9,052
2048	93,167	9,234
2049	95,031	9,418
2050	96,934	9,607
2051	98,874	9,799
2052	100,853	9,995
2053	102,871	10,195
Total	2,048,234	202,996

Source: Cambridge Systematics Analysis.

To monetize the savings in travel time be generated by the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project, this analysis uses the value of travel time by truck operator and the number of crew members per truck shown in **Table 19**.



Table 19 Commercial Trucks—Value of Travel Time Savings and Average Vehicle Occupancy Rate

Item	Value	Source
Value of travel time savings for truck drivers (2022\$ per person-hours)	\$33.5	U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023
Average vehicle occupancy rate (number of persons per truck)	1.0	Report No. FHWA/TX-11/0-6235-1. Comprehensive Evaluation of Transportation Projects: A Toolkit for Sketch Planning, October 2010

Then, the annual savings in truck VHT are monetized using **Equation 8**.

$$ATTCS = ATVHTS \times VOTTTD \times AVORT \quad \text{Equation 8}$$

Where:

- ATTCS = Annual truck travel-time cost savings
- ATVHTS = Annual truck VHT savings
- VOTTTD = Value of travel time savings for truck drivers (\$ per person-hour)
- AVORT = Average vehicle occupancy rate for trucks (number of persons per truck)

Truck travel-time cost savings to be generated by the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project are presented in Table 20. The monetary value of reduced travel time costs is reported in 2022 dollars and discounted, using a 3.1 percent discount rate. The savings to be generated by the Freeport Site total \$68.6 million undiscounted and \$39.1 million discounted to 2022 dollars over the 25-year operating period. The proposed project is expected to bring significant travel time saving benefits from Angleton too. Travel time benefits total \$6.8 million undiscounted and \$3.8 million discounted to 2022 dollars for the Angleton Site over the 25-year operating period.

Table 20 Port of Freeport and Angleton Truck Parking Facilities—Truck VHT Cost Savings, 2029–2053

Year	Freeport Site, Truck VHT Cost Savings (undiscounted 2022\$)	Freeport Site, Truck VHT Cost Savings (discounted 2022\$)	Angleton Site, Truck VHT Cost Savings (undiscounted 2022\$)	Angleton Site, Truck VHT Cost Savings (discounted 2022\$)
2029	\$2,141,798	\$1,729,689	\$212,269	\$171,426
2030	\$2,184,667	\$1,711,260	\$216,518	\$169,600
2031	\$2,228,394	\$1,693,027	\$220,852	\$167,793
2032	\$2,272,996	\$1,674,989	\$225,272	\$166,005



Year	Freeport Site, Truck VHT Cost Savings (undiscounted 2022\$)	Freeport Site, Truck VHT Cost Savings (discounted 2022\$)	Angleton Site, Truck VHT Cost Savings (undiscounted 2022\$)	Angleton Site, Truck VHT Cost Savings (discounted 2022\$)
2033	\$2,318,490	\$1,657,143	\$229,781	\$164,236
2034	\$2,364,896	\$1,639,487	\$234,380	\$162,486
2035	\$2,412,230	\$1,622,019	\$239,071	\$160,755
2036	\$2,460,511	\$1,604,738	\$243,856	\$159,042
2037	\$2,509,759	\$1,587,640	\$248,737	\$157,348
2038	\$2,559,993	\$1,570,725	\$253,716	\$155,671
2039	\$2,611,232	\$1,553,990	\$258,794	\$154,013
2040	\$2,663,496	\$1,537,433	\$263,974	\$152,372
2041	\$2,716,807	\$1,521,052	\$269,257	\$150,749
2042	\$2,771,185	\$1,504,846	\$274,647	\$149,142
2043	\$2,826,651	\$1,488,813	\$280,144	\$147,553
2044	\$2,883,227	\$1,472,951	\$285,751	\$145,981
2045	\$2,940,936	\$1,457,257	\$291,470	\$144,426
2046	\$2,999,800	\$1,441,731	\$297,304	\$142,887
2047	\$3,059,842	\$1,426,370	\$303,255	\$141,365
2048	\$3,121,085	\$1,411,173	\$309,325	\$139,859
2049	\$3,183,555	\$1,396,138	\$315,516	\$138,368
2050	\$3,247,275	\$1,381,263	\$321,831	\$136,894
2051	\$3,312,270	\$1,366,546	\$328,273	\$135,436
2052	\$3,378,566	\$1,351,987	\$334,843	\$133,993
2053	\$3,446,189	\$1,337,582	\$341,545	\$132,565
Total	\$68,615,850	\$38,139,851	\$6,800,382	\$3,779,965

Source: Cambridge Systematics Analysis.

Travel time savings from the proposed **Multimodal Strategy for Truck Parking in Southeast Texas** project total around \$75.4 million undiscounted and \$41.9 million discounted to 2022 dollars over the 25-year operating period.

Emissions Cost Savings

Emissions cost savings to be generated by the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project are driven by multi-faceted sources, including savings from:



- Reduced diesel-truck VMT.
- Reduced electric-truck VMT.
- Auto users shifting to vanpooling and transit to get to work.
- Trees' emission sequestration.

Emissions Savings from Reduced Diesel-Truck VMT

Pollutant emissions represent cost to the environment. By having access to the new truck parking facilities, truck drivers would save both time driven and miles traveled. The reductions in truck VMT translate to savings in emissions costs. Thus, this portion of the analysis captures the avoided diesel-truck emissions due to reduced diesel-truck VMT.

Vehicular major pollutants include Carbon Dioxide (CO₂), Nitrogen Oxides (NO_x), Sulfur Dioxide (SO_x) and fine Particulate Matter (PM_{2.5}). Emission rates for these major pollutants are a function of vehicle type and average travel speed. This analysis assumes that trucks travel, on average, at a speed of 20 mph when looking for parking. This analysis uses the highway emission rates (in grams per mile) for trucks traveling at an average speed of 20 miles in 2024 and 2044 provided by the California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C).²⁰ Using the emissions rates in 2025 to 2044, this analysis estimates the CAGR over this timeframe. This CAGR is used to estimate the annual emission rates over the 2029–2053 period. This analysis takes a conservative approach and assumes that the emission rates in 2044 represents the emission rates for the 2045-2053 period.

Equation 9 is used to estimate annual reductions in emissions costs due to diesel-truck VMT savings. The annual savings are calculated as the product of the corresponding pollutant emission rate for each of the major pollutants (CO₂, NO_x, SO_x and PM_{2.5}) and the reduction in truck VMT, then divided by a conversion factor to convert grams to metric tons.

$$AEMPDT = \frac{ERMPDT \times ADTVMTS}{CFGMT} \quad \text{Equation 9}$$

Where:

- AEMPDT = Annual emissions for each of the major pollutants (in metric tons) associated with diesel-truck travel
- ERMPDT = Emission rate for each of the major pollutants (in grams per truck VMT) associated with diesel-trucks traveling at 20 mph
- ADTVMTS = Annual diesel-truck VMT savings
- CFGMT = 1,000,000 grams per metric ton

Emission cost savings (in metric tons) due to reduced diesel-truck VMT are monetized using the damage cost for emissions recommended by the USDOT shown in **Table 21**.

²⁰ California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C). Caltrans's Transportation Economics Branch. Available at [Transportation Economics | Caltrans](#).



Table 21 Damage Costs for Emissions per Metric Ton, 2029–2053

Year	NO _x	SO _x	PM _{2.5}	CO ₂
2029	\$21,700	\$60,100	\$1,049,600	\$253
2030	\$22,000	\$61,500	\$1,069,000	\$257
2031	\$22,000	\$61,500	\$1,069,000	\$262
2032	\$22,000	\$61,500	\$1,069,000	\$265
2033	\$22,000	\$61,500	\$1,069,000	\$270
2034	\$22,000	\$61,500	\$1,069,000	\$274
2035	\$22,000	\$61,500	\$1,069,000	\$278
2036	\$22,000	\$61,500	\$1,069,000	\$282
2037	\$22,000	\$61,500	\$1,069,000	\$287
2038	\$22,000	\$61,500	\$1,069,000	\$290
2039	\$22,000	\$61,500	\$1,069,000	\$294
2040	\$22,000	\$61,500	\$1,069,000	\$299
2041	\$22,000	\$61,500	\$1,069,000	\$303
2042	\$22,000	\$61,500	\$1,069,000	\$308
2043	\$22,000	\$61,500	\$1,069,000	\$312
2044	\$22,000	\$61,500	\$1,069,000	\$317
2045	\$22,000	\$61,500	\$1,069,000	\$321
2046	\$22,000	\$61,500	\$1,069,000	\$326
2047	\$22,000	\$61,500	\$1,069,000	\$331
2048	\$22,000	\$61,500	\$1,069,000	\$336
2049	\$22,000	\$61,500	\$1,069,000	\$340
2050	\$22,000	\$61,500	\$1,069,000	\$345
2051	\$22,000	\$61,500	\$1,069,000	\$349
2052	\$22,000	\$61,500	\$1,069,000	\$353
2053	\$22,000	\$61,500	\$1,069,000	\$357

Source: U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023.

Then, the annual emission cost savings associated with each of the major pollutants are added up to estimate the total savings under the “Build” scenario. Following the USDOT guidance,²¹ NO_x, SO_x and PM_{2.5} are discounted at a real discount rate of 3.1 percent per year while CO₂ emissions are discounted at a lower real discount rate of 2.0 percent per year. The undiscounted and discounted emission cost savings from reduced diesel-truck VMT for the Freeport Site total around \$4.3 million and close to \$3.0 million in 2022

²¹ U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023.



dollars, respectively, over the 25-year operating period (**Table 22**). The undiscounted and discounted emission cost savings for the Angleton Site total over \$141,000 and \$95,000 in 2022 dollars, respectively, over the 25-year operating period (**Table 23**).

Table 22 Port of Freeport Truck Parking Facility—Emission Cost Savings due to Reduced Diesel-Truck VMT, 2029–2053

Year	CO2 Emission Cost Savings (undiscounted 2022\$)	NOx, SOX and PM2.5 Emission Cost Savings (undiscounted 2022\$)	Total Emission Cost Savings (undiscounted 2022\$)	Total Emission Cost Savings (discounted 2022\$)
2029	\$135,099	\$22,489	\$157,588	\$135,773
2030	\$136,108	\$22,136	\$158,244	\$133,506
2031	\$137,618	\$21,457	\$159,075	\$131,455
2032	\$138,052	\$20,802	\$158,854	\$128,580
2033	\$139,502	\$20,170	\$159,672	\$126,613
2034	\$140,408	\$19,559	\$159,967	\$124,270
2035	\$141,289	\$18,970	\$160,259	\$121,977
2036	\$142,146	\$18,402	\$160,547	\$119,730
2037	\$143,479	\$17,853	\$161,332	\$117,900
2038	\$143,789	\$17,322	\$161,111	\$115,371
2039	\$144,576	\$16,810	\$161,386	\$113,255
2040	\$145,829	\$16,315	\$162,144	\$111,521
2041	\$146,567	\$15,837	\$162,404	\$109,475
2042	\$147,763	\$15,375	\$163,138	\$107,789
2043	\$148,454	\$14,928	\$163,382	\$105,809
2044	\$149,596	\$14,496	\$164,092	\$104,170
2045	\$154,516	\$14,786	\$169,302	\$105,314
2046	\$160,063	\$15,082	\$175,145	\$106,763
2047	\$165,771	\$15,384	\$181,155	\$108,214
2048	\$171,643	\$15,692	\$187,335	\$109,665
2049	\$177,163	\$16,006	\$193,169	\$110,812
2050	\$183,366	\$16,326	\$199,693	\$112,266
2051	\$189,205	\$16,653	\$205,858	\$113,414
2052	\$195,204	\$16,986	\$212,190	\$114,564
2053	\$201,367	\$17,326	\$218,694	\$115,714
Total	\$3,878,574	\$437,162	\$4,315,736	\$2,903,921

Source: Cambridge Systematics Analysis.



Table 23 Angleton Truck Parking Facility—Emission Cost Savings due to Reduced Diesel-Truck VMT, 2029–2053

Year	CO2 Emission Cost Savings (undiscounted 2022\$)	NOx, SOX and PM2.5 Emission Cost Savings (undiscounted 2022\$)	Total Emission Cost Savings (undiscounted 2022\$)	Total Emission Cost Savings (discounted 2022\$)
2029	\$4,404	\$733	\$5,138	\$4,426
2030	\$4,437	\$722	\$5,159	\$4,352
2031	\$4,487	\$700	\$5,186	\$4,286
2032	\$4,501	\$678	\$5,179	\$4,192
2033	\$4,548	\$658	\$5,206	\$4,128
2034	\$4,577	\$638	\$5,215	\$4,051
2035	\$4,606	\$618	\$5,225	\$3,977
2036	\$4,634	\$600	\$5,234	\$3,903
2037	\$4,678	\$582	\$5,260	\$3,844
2038	\$4,688	\$565	\$5,252	\$3,761
2039	\$4,713	\$548	\$5,261	\$3,692
2040	\$4,754	\$532	\$5,286	\$3,636
2041	\$4,778	\$516	\$5,295	\$3,569
2042	\$4,817	\$501	\$5,319	\$3,514
2043	\$4,840	\$487	\$5,326	\$3,450
2044	\$4,877	\$473	\$5,350	\$3,396
2045	\$5,037	\$482	\$5,519	\$3,433
2046	\$5,218	\$492	\$5,710	\$3,481
2047	\$5,404	\$502	\$5,906	\$3,528
2048	\$5,596	\$512	\$6,107	\$3,575
2049	\$5,776	\$522	\$6,298	\$3,613
2050	\$5,978	\$532	\$6,510	\$3,660
2051	\$6,168	\$543	\$6,711	\$3,697
2052	\$6,364	\$554	\$6,918	\$3,735
2053	\$6,565	\$565	\$7,130	\$3,772
Total	\$126,447	\$14,252	\$140,699	\$94,672

Source: Cambridge Systematics Analysis.



Emissions Savings from Reduced Electric-Truck VMT

According to the International Council on Clean Transportation²², battery electric trucks emit 63 percent less greenhouse gas (GHG) emissions than diesel trucks. Since electric vehicles do not produce tailpipe emissions²³, emission cost savings associated with electric truck travel are monetized using only CO₂ emissions rates and the corresponding monetization rates for CO₂ recommended by the USDOT shown in **Table 21**.

Equation 10 is used to estimate the annual reductions in emissions costs due to electric-truck VMT savings. The annual savings are calculated as the product of the emission rate for CO₂ and the reduction in electric-truck VMT, then divided by a conversion factor to convert grams into metric tons.

$$AEETT = \frac{ERCO \times AETVMTS}{CFGMT} \quad \text{Equation 10}$$

Where:

- AEETT = Annual emissions for CO₂ (in metric tons) associated with electric-truck travel
- ERCO = Emission rate for CO₂ (in grams per truck VMT) associated with electric trucks traveling at 20 mph
- AETVMTS = Annual electric-truck VMT savings
- CFGMT = 1,000,000 grams per metric ton

Table 24 and **Table 25** present the emission cost savings due to reduced electric-truck VMT for Freeport and Angleton sites, respectively. The savings in CO₂ damage cost at the Freeport Site total over \$315,000 undiscounted and \$215,000 discounted to 2022 dollars over the 25-year operating period. Similarly, the savings in CO₂ damage cost at the Angleton Site total over \$10,000 undiscounted and \$7,000 discounted to 2022 dollars over the 25-year operating period. Overall, the savings in CO₂ damage cost to be generated by the sites total over \$325,000 undiscounted and \$222,000 discounted to 2022 dollars over the 25-year operating period.

²² International Council on Clean Transportation. *Battery Electric Trucks Emit 63% Less GHG Emissions than Diesel* (February 6, 2023).

²³ U.S. Environmental Protection Agency (EPA). Green Vehicle Guide. Available at [Green Vehicle Guide | US EPA](#).



Table 24 Port of Freeport Truck Parking Facility—Emission Cost Savings due to Reduced Electric-Truck VMT, 2029–2053

Year	CO ₂ Emission Cost Savings (undiscounted 2022\$)	CO ₂ Emission Cost Savings (discounted 2022\$)
2029	\$10,982	\$9,561
2030	\$11,064	\$9,443
2031	\$11,187	\$9,361
2032	\$11,222	\$9,206
2033	\$11,340	\$9,121
2034	\$11,414	\$9,000
2035	\$11,485	\$8,879
2036	\$11,555	\$8,757
2037	\$11,663	\$8,666
2038	\$11,689	\$8,515
2039	\$11,753	\$8,393
2040	\$11,854	\$8,300
2041	\$11,915	\$8,178
2042	\$12,012	\$8,084
2043	\$12,068	\$7,962
2044	\$12,161	\$7,866
2045	\$12,561	\$7,965
2046	\$13,012	\$8,090
2047	\$13,476	\$8,214
2048	\$13,953	\$8,338
2049	\$14,402	\$8,437
2050	\$14,906	\$8,562
2051	\$15,381	\$8,661
2052	\$15,868	\$8,760
2053	\$16,369	\$8,860
Total	\$315,291	\$215,178

Source: Cambridge Systematics Analysis.



Table 25 Angleton Truck Parking Facility—Emission Cost Savings due to Reduced Electric-Truck VMT, 2029–2053

Year	CO ₂ Emission Cost Savings (undiscounted 2022\$)	CO ₂ Emission Cost Savings (discounted 2022\$)
2029	\$358	\$312
2030	\$361	\$308
2031	\$365	\$305
2032	\$366	\$300
2033	\$370	\$297
2034	\$372	\$293
2035	\$374	\$289
2036	\$377	\$285
2037	\$380	\$283
2038	\$381	\$278
2039	\$383	\$274
2040	\$386	\$271
2041	\$388	\$267
2042	\$392	\$264
2043	\$393	\$260
2044	\$396	\$256
2045	\$409	\$260
2046	\$424	\$264
2047	\$439	\$268
2048	\$455	\$272
2049	\$470	\$275
2050	\$486	\$279
2051	\$501	\$282
2052	\$517	\$286
2053	\$534	\$289
Total	\$10,279	\$7,015

Source: Cambridge Systematics Analysis.



Emissions Savings from Truck Charging Stations

The Freeport and Angleton sites each contain four electric truck charging stations and associated parking spaces. Each charging session provides trucks with a range of mileage that the electric battery can cover before the charge runs out. The benefits discussed in this section are CO₂ reduction as a result of these additional miles provided through electric charging, as opposed to driven by diesel trucks.

For this analysis, a tool from the TxDOT NEVI program was used to determine the total CO₂ reductions. The inputs required by the tool include the number of charging ports or dispensers, daily charging sessions, and miles added per session. A source from the Environmental and Energy Study Institute²⁴ was used to determine the required charging time and range for electric trucks. A conservative approach was taken by using metrics for the truck that requires the longest charging time. This was specifically the “Nikola Tre BEV” truck model which has a charging time of 160 minutes and a range of 330 miles.

Using the same Average Daily Parking Durations (in hours) and the Daily Truck Parking Capacities for electric trucks at the Freeport and Angleton sites documented in **Table 6**, the first step was to calculate the number of full charger completed for each daily parking duration. As shown in **Equation 11** this was done by dividing each daily parking duration time (in hours) but the charging time (in hours).

$$FCCC = DPD/CT \quad \text{Equation 11}$$

Where:

- FCCC = Full Charge Cycles Completed for Each Daily Parking Duration
- DPD = Daily Parking Duration (in hours)
- CT = Charging Time (in hours)

The number of full charge cycles completed for each daily parking duration was then used to calculate the daily charges completed for each site. **Equation 12** shows how the daily charges completed was calculated for each of the daily parking durations. The total charges completed is the sum of the results for each of the parking durations, for each of the two sites. The results of this analysis are shown in **Table 26**.

$$DCC = DTPC \times FCCC \quad \text{Equation 12}$$

Where:

- DCC = Daily Charges Completed for the Daily Parking Duration
- DTPC = Daily Truck Parking Capacity for the Daily Parking Duration
- FCCC = Full Charge Cycles Completed for the Daily Parking Duration

²⁴ Environmental and Energy Study Institute (EESI). Available at <https://www.eesi.org/papers/view/fact-sheet-the-future-of-the-trucking-industry-electric-semi-trucks-2023>.



Table 26 Results of Emissions Savings from Charging Stations Analysis

Average Daily Parking Duration (Hours)	Freeport Site, Daily Truck Parking Capacity	Angleton Site, Daily Truck Parking Capacity	Full Charge Cycles Completed for Each Daily Parking Duration	Freeport Site, Daily Charges Completed	Angleton Site, Daily Charges Completed
1	18	N/A	0.5	8.9	N/A
4	5	N/A	2.0	9.8	N/A
8	1	N/A	4.0	2.3	N/A
14	1	N/A	7.0	4.0	N/A
24	0	2.4	12.0	3.7	28.8
Total	24	2.4	N/A	28.8	28.8

Source: Cambridge Systematics Analysis.

The number of electric charger ports for each site, total daily charging sessions, and miles added per session were inputted into the TxDOT NEVI program tool. The tool multiplies these three values by an assumed value of 3.62 pounds per VMT of diesel trucks and divides the final value by a conversion value for pounds to metric tons. The result was 47.68 metric tons of CO₂ reductions per day, for both sites. When annualized using a value of 365 days, this results in 10,428 metrics tons of CO₂ reduction per year for each of the sites.

With these results, the last step was to account for the market penetration rate of electric trucks. Using a source from the Center on Global Energy Policy²⁵, market penetration rates for electric trucks were estimated between 2025 and 2050. Assuming that all trucks will be heavy-duty, a value of 5 percent was used for the years 2029–2035 and 10 percent for the years 2036–2053. For each year of the project operating period, the 10,428 metrics tons of CO₂ reduction per year was multiplied by the corresponding market penetration rate.

These reductions were monetized using the damage cost for CO₂ emissions presented in **Table 21**. The resulting benefits, discounted at the CO₂ emissions discount rate of 2.0 percent per year, are shown in **Table 27**. Overall, the savings in CO₂ damage cost to be generated by the truck charging stations at the two parking sites total \$13.9 million undiscounted and \$9.3 million discounted to 2022 dollars over the 25-year operating period.

²⁵Center on Global Energy Policy, *Forecasts of Electric Vehicle Penetration and its Impact on Global Oil Demand*. <https://www.energy.columbia.edu/publications/forecasts-electric-vehicle-penetration-and-its-impact-global-oil-demand/>



Table 27 Freeport and Angleton Sites—Monetized Emissions Savings from Charging Stations, 2029–2053

Year	Freeport Site, CO ₂ Emission Cost Savings (undiscounted 2022\$)	Freeport Site, CO ₂ Emission Cost Savings (discounted 2022\$)	Angleton Site, CO ₂ Emission Cost Savings (undiscounted 2022\$)	Angleton Site, CO ₂ Emission Cost Savings (discounted 2022\$)
2029	\$131,914	\$114,839	\$131,914	\$114,839
2030	\$133,999	\$114,367	\$133,999	\$114,367
2031	\$136,606	\$114,306	\$136,606	\$114,306
2032	\$138,170	\$113,348	\$138,170	\$113,348
2033	\$140,777	\$113,222	\$140,777	\$113,222
2034	\$142,863	\$112,646	\$142,863	\$112,646
2035	\$144,949	\$112,050	\$144,949	\$112,050
2036	\$294,068	\$222,867	\$294,068	\$222,867
2037	\$299,282	\$222,371	\$299,282	\$222,371
2038	\$302,411	\$220,290	\$302,411	\$220,290
2039	\$306,582	\$218,949	\$306,582	\$218,949
2040	\$311,796	\$218,307	\$311,796	\$218,307
2041	\$315,967	\$216,889	\$315,967	\$216,889
2042	\$321,181	\$216,146	\$321,181	\$216,146
2043	\$325,352	\$214,659	\$325,352	\$214,659
2044	\$330,566	\$213,823	\$330,566	\$213,823
2045	\$334,737	\$212,276	\$334,737	\$212,276
2046	\$339,951	\$211,355	\$339,951	\$211,355
2047	\$345,165	\$210,389	\$345,165	\$210,389
2048	\$350,379	\$209,379	\$350,379	\$209,379
2049	\$354,550	\$207,718	\$354,550	\$207,718
2050	\$359,764	\$206,639	\$359,764	\$206,639
2051	\$363,935	\$204,937	\$363,935	\$204,937
2052	\$368,107	\$203,221	\$368,107	\$203,221
2053	\$372,278	\$201,494	\$372,278	\$201,494
Total	\$6,965,349	\$4,626,486	\$6,965,349	\$4,626,486

Source: Cambridge Systematics Analysis.



Emissions Savings from Passenger Vehicle Charging Stations

The Angleton site's park & ride and transit center contains 12 passenger vehicle electric charging stations, and the Freeport Site contains 2 passenger vehicle electric charging stations. In order to include the Freeport charging stations, this analysis assumes that the EV passenger car charging spaces at this site have the same parking utilization rate and the same average daily parking duration than the Angleton Site.

Similar to the truck charging station benefits, each charging session provides passenger vehicles with a mileage, or range, that can be traveled. The benefits discussed in this section are CO₂ reduction as a result of these additional miles provided through electric charging, as opposed to driven by gasoline vehicles.

This analysis also utilized a tool from the TxDOT NEVI program to determine the total CO₂ reductions. The inputs required by the tool include the number of charging ports or dispensers, daily charging sessions, and miles added per session.

A source from the Kelley Blue Book²⁶ was used to determine the required charging time for passenger vehicles, equivalent to one hour when assuming the higher end charging time of a DC Fast—Level 3 charger. In order to determine the range of electric passenger vehicles, a source from Investopedia²⁷ was used. This source cited that many EVs have a range of more than 200 miles per charge. In order to take a more conservative approach, 200 miles was assumed as the range.

Using several of the values from the vehicle operating cost savings from mode shift analysis, the number of total daily charging sessions was calculated using **Equation 13**.

$$TDCS = PVECS \times DPUR \times ADPD \quad \text{Equation 13}$$

Where:

- TDCS = Total Daily Charging Sessions
- PVECS = Number of Passenger Vehicle Electric Charging Stations
- DPUR = Daily Parking Utilization Rate
- ADPD = Average Daily Parking Duration (Hours per Passenger Car per Day)

As a result, it was found that 123.6 total daily charging sessions were occurring. By using an average daily parking duration of 10.6 hours per passenger car per day, each passenger vehicle's parking duration is exceeding the time required for a full charge. Therefore, the miles added during each charging session is 200 miles, or the assumed maximum range of a passenger vehicle in this analysis.

The number of electric charger ports for each site, total daily charging sessions, and miles added per session were inputted into the TxDOT NEVI program tool. The tool multiplies these three values by an assumed value of 0.8593 pounds per VMT of gasoline vehicles

²⁶ Kelley Blue Book. <https://www.kbb.com/car-advice/how-long-does-it-take-to-charge-an-electric-car/>.

²⁷ Investopedia. <https://www.investopedia.com/cost-to-charge-ev-road-trip-5219817>.



and divides the final value by a conversion value for pounds to metric tons. The result was 13.78 metric tons of CO₂ reductions per day. When annualized using a value of 365 days, this results in 5,033 metrics tons of CO₂ reduction per year.

With these results, the final step was to account for the market penetration rate of passenger vehicles. This was done with the same values used in the vehicle operating cost savings from mode shift, presented in **Table 15**. For each year of the project analysis period, the final result of 5,033 was multiplied by the corresponding market penetration rate.

These reductions were monetized using the damage cost for CO₂ emissions presented in **Table 21**. The resulting benefits, discounted at the CO₂ emissions discount rate of 2.0 percent per year, are shown in **Table 28**. Overall, the savings in CO₂ damage cost to be generated by the passenger car charging stations at the Angleton and Freeport sites total \$8.7 million undiscounted and \$5.7 million discounted to 2022 dollars over the 25-year operating period.

Table 28 Angleton and Freeport Sites—Monetized Emissions Savings from Passenger Vehicle Charging Stations, 2029–2053

Year	Angleton Site, CO ₂ Emission Cost Savings (undiscounted 2022\$)	Angleton Site, CO ₂ Emission Cost Savings (discounted 2022\$)
2029	\$63,679	\$55,436
2030	\$64,686	\$55,208
2031	\$197,832	\$165,537
2032	\$200,097	\$164,149
2033	\$203,873	\$163,967
2034	\$206,893	\$163,134
2035	\$209,913	\$162,270
2036	\$212,934	\$161,377
2037	\$216,709	\$161,018
2038	\$218,974	\$159,511
2039	\$221,995	\$158,540
2040	\$225,770	\$158,075
2041	\$457,581	\$314,098
2042	\$465,132	\$313,020
2043	\$471,172	\$310,868
2044	\$478,723	\$309,657
2045	\$484,764	\$307,416
2046	\$492,315	\$306,083
2047	\$499,866	\$304,684
2048	\$507,416	\$303,222
2049	\$513,457	\$300,815



Year	Angleton Site, CO ₂ Emission Cost Savings (undiscounted 2022\$)	Angleton Site, CO ₂ Emission Cost Savings (discounted 2022\$)
2050	\$521,008	\$299,254
2051	\$527,049	\$296,788
2052	\$533,089	\$294,303
2053	\$539,130	\$291,802
Total	\$8,734,057	\$5,680,231

Source: Cambridge Systematics Analysis.

Emissions Savings from Mode Shift

The Angleton Site includes 45 passenger vehicle parking spaces for overnight parking, 26 vanpool parking spaces for short term parking, and 12 EV charging stalls spaces as part of the park & ride area and a transit center. The hub is served by the Gulf Coast Transit District’s Purple Route, which connects the City of Angleton to cities throughout Brazoria and Galveston Counties. By providing commuters a safe and convenient place to park their vehicles, the hub will improve access to public and shared transportation modes.

The hub will offer a low emission alternative to driving by shifting SOV commuter trips to transit and carpooling. The emission cost savings from mode shift are estimated using the HGAC’s Commute Solutions “Make Your Commute Count” tool.²⁸ The tool inputs include the average round trip distances for vanpool and transit riders and the days per week of travel, also used for the analysis of vehicle operating cost savings from mode shift. These inputs are used to calculate the annual savings in CO₂ emissions per commuter diverted to transit and vanpool based on average emission rates for sedans and vans, adjustments to vehicle occupancy rates, and transit emissions data from the U.S. Department of Energy (DEO) data.²⁹ The tool yields 2,060 pounds of CO₂ emissions saved per year per commuter shifting from driving to vanpooling and 75 pounds of CO₂ emissions saved per year per commuter shifting from driving to transit.

The annual CO₂ emission cost saved by all commuters shifting from driving to vanpooling are estimated using **Equation 14**.

$$ACOSCSDV = CSDV \times ACOSCSDV \times CFPMT \times DCCO \quad \text{Equation 14}$$

Where:

- ACOSCSDV = Annual CO₂ emissions cost saved by all commuters shifting from driving to vanpooling
- CSDV = Commuters shifting from driving to vanpooling

²⁸ Commute Solutions, Make Your Commute Count. <https://www.yourcommutesolution.org/make-your-commute-count>.

²⁹ Commute Solutions, Make Your Commute Count. <https://www.yourcommutesolution.org/make-your-commute-count>.



- ACOSCSDV = Annual CO₂ emissions saved (in pounds) per commuter shifting from driving to vanpooling
- CFPMT = 2,204.62 pounds per metric ton
- DCCO = Damage cost for CO₂ (\$ per metric tons) recommended by the USDOT

The annual CO₂ emission cost saved by all commuters shifting from driving to transit are estimated using **Equation 15**.

$$ACOSCSDT = CSDT \times ACOSCSDV \times CFPMT \times DCCO \quad \text{Equation 15}$$

Where:

- ACOSCSDT = Annual CO₂ emissions cost saved by all commuters shifting from driving to transit
- CSDT = Commuters shifting from driving to transit
- ACOSCSDV = Annual CO₂ emissions saved (in pounds) per commuter shifting from driving to transit
- CFPMT = 2,204.62 pounds per metric ton
- DCCO = Damage cost for CO₂ (\$ per metric tons)

Similar to the vehicle operating cost savings from mode shift, this analysis was conducted twice, for the total of 71 combined vanpool and passenger vehicle parking spaces and then for the 12-passenger vehicle electric charging spaces. For the first analysis, there were no changes to the methodology. However, for the 12-passenger vehicle electric charging spaces, the final emissions savings results were adjusted based on forecasted market penetration rates for electric passenger vehicles. For each year, the results were multiplied by the corresponding market penetration rate, presented earlier in Table 15.

Table 29 shows the monetized CO₂ emissions reduction benefits produced by the mode shift generated by park & ride and transit center at the Angleton Site, combining the results for vanpool and passenger vehicle parking spaces and electric vehicle charging spaces. These benefits add up to around \$6.6 million undiscounted and \$4.5 million discounted to 2022 dollars over the 25-year operating period.

Table 29 Angleton Intermodal Facility—Emissions Savings due to Commuters Shifting from Driving to Transit and from Driving to Vanpooling, 2029–2053

Year	CO ₂ Emission Cost Savings (undiscounted 2022\$)	CO ₂ Emission Cost Savings (discounted 2022\$)
2029	\$211,507	\$184,130
2030	\$214,851	\$183,374
2031	\$222,723	\$186,365
2032	\$225,274	\$184,803
2033	\$229,524	\$184,598
2034	\$232,925	\$183,659



Year	CO ₂ Emission Cost Savings (undiscounted 2022\$)	CO ₂ Emission Cost Savings (discounted 2022\$)
2035	\$236,325	\$182,687
2036	\$239,725	\$181,682
2037	\$243,976	\$181,278
2038	\$246,526	\$179,581
2039	\$249,926	\$178,488
2040	\$254,177	\$177,964
2041	\$263,982	\$181,205
2042	\$268,338	\$180,584
2043	\$271,823	\$179,342
2044	\$276,179	\$178,643
2045	\$279,664	\$177,351
2046	\$284,020	\$176,581
2047	\$288,376	\$175,774
2048	\$292,733	\$174,931
2049	\$296,217	\$173,543
2050	\$300,574	\$172,642
2051	\$304,058	\$171,219
2052	\$307,543	\$169,786
2053	\$311,028	\$168,343
Total	\$6,551,996	\$4,468,552

Source: Cambridge Systematics Analysis.

Tree Emissions Savings

Tree emissions savings come from the long-term environmental benefits from tree planting as part of the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project. The Angleton Site will include 114 live oak trees and 24 ornamental trees, and Freeport will have 13 live oak trees and 12 ornamental trees within the site, plus 24 more on 8th Street.

This analysis uses the *i*-Tree Planting Calculator³⁰, a tool developed by the USDA Forest Service and numerous cooperators, to estimate the annual avoided, sequestered or removed pounds of CO₂, NO₂, SO₂, and PM_{2.5} emissions from planting these trees at the Angleton and Freeport sites (**Table 30**). The amount of emissions is converted from pounds to metric tons and monetized using the damage cost for emissions recommended by the USDOT shown in **Table 21**.

³⁰ USDA, Forest Service. *i*-Tree Planting Calculator. Available at <https://planting.itreetools.org/>.



Table 30 Emissions Savings from Tree Planting at the Angleton and Freeport Sites, 2029–2053

Sites	CO ₂ (metric tons)	NO ₂ (metric tons)	SO ₂ (metric tons)	PM _{2.5} (metric tons)
Angleton	758.86	0.14	0.13	0.05
Freeport	345.50	0.05	0.05	0.05
Total	1,108.23	0.19	0.13	0.12

Source: Cambridge Systematics Analysis.

The emissions cost savings benefits from tree planting at the Freeport and Angleton sites are presented in **Table 31** and **Table 32**, respectively. Following the USDOT guidance,³¹ NO_x, SO_x and PM_{2.5} are discounted at a real discount rate of 3.1 percent per year while CO₂ emissions are discounted at a lower real discount rate of 2.0 percent per year.

The emissions cost saved by the trees planted at the Freeport Site totals nearly \$165,000 undiscounted and \$106,000 discounted to 2022 dollars over the 25-year operating period. The emissions cost saved by the trees planted at the Angleton Site totals over \$319,000 undiscounted and over \$208,000 discounted to 2022 dollars over the 25-year operating period. Overall, the savings in CO₂ damage cost from tree planting at the two sites total over \$485,000 undiscounted and \$315,000 discounted to 2022 dollars over the 25-year operating period.

Table 31 Freeport Intermodal Facility—Monetized Emission Benefits from Tree Planting, 2029–2053

Year	CO ₂ Emission Cost Savings (undiscounted 2022\$)	CO ₂ Emission Cost Savings (discounted 2022\$)	Emission Cost Savings from all other Pollutants (undiscounted 2022\$)	Emission Cost Savings from all other Pollutants (discounted 2022\$)	Total Emission Cost Savings (undiscounted 2022\$)	Total Emission Cost Savings (discounted 2022\$)
2029	\$3,496	\$3,044	\$2,364	\$1,909	\$5,861	\$4,953
2030	\$3,552	\$3,031	\$2,409	\$1,887	\$5,961	\$4,919
2031	\$3,621	\$3,030	\$2,409	\$1,831	\$6,030	\$4,860
2032	\$3,662	\$3,004	\$2,409	\$1,776	\$6,072	\$4,780
2033	\$3,731	\$3,001	\$2,409	\$1,722	\$6,141	\$4,723
2034	\$3,787	\$2,986	\$2,409	\$1,670	\$6,196	\$4,656
2035	\$3,842	\$2,970	\$2,409	\$1,620	\$6,251	\$4,590
2036	\$3,897	\$2,954	\$2,409	\$1,571	\$6,307	\$4,525
2037	\$3,966	\$2,947	\$2,409	\$1,524	\$6,376	\$4,471

³¹ U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023.



Year	CO ₂ Emission Cost Savings (undiscounted 2022\$)	CO ₂ Emission Cost Savings (discounted 2022\$)	Emission Cost Savings from all other Pollutants (undiscounted 2022\$)	Emission Cost Savings from all other Pollutants (discounted 2022\$)	Total Emission Cost Savings (undiscounted 2022\$)	Total Emission Cost Savings (discounted 2022\$)
2038	\$4,008	\$2,919	\$2,409	\$1,478	\$6,417	\$4,398
2039	\$4,063	\$2,902	\$2,409	\$1,434	\$6,473	\$4,336
2040	\$4,132	\$2,893	\$2,409	\$1,391	\$6,542	\$4,284
2041	\$4,187	\$2,874	\$2,409	\$1,349	\$6,597	\$4,223
2042	\$4,257	\$2,865	\$2,409	\$1,308	\$6,666	\$4,173
2043	\$4,312	\$2,845	\$2,409	\$1,269	\$6,721	\$4,114
2044	\$4,381	\$2,834	\$2,409	\$1,231	\$6,790	\$4,065
2045	\$4,436	\$2,813	\$2,409	\$1,194	\$6,846	\$4,007
2046	\$4,505	\$2,801	\$2,409	\$1,158	\$6,915	\$3,959
2047	\$4,574	\$2,788	\$2,409	\$1,123	\$6,984	\$3,911
2048	\$4,644	\$2,775	\$2,409	\$1,089	\$7,053	\$3,864
2049	\$4,699	\$2,753	\$2,409	\$1,057	\$7,108	\$3,809
2050	\$4,768	\$2,739	\$2,409	\$1,025	\$7,177	\$3,763
2051	\$4,823	\$2,716	\$2,409	\$994	\$7,233	\$3,710
2052	\$4,878	\$2,693	\$2,409	\$964	\$7,288	\$3,657
2053	\$4,934	\$2,670	\$2,409	\$935	\$7,343	\$3,606
Total	\$105,156	\$71,847	\$60,191	\$34,511	\$165,347	\$106,358

Source: Cambridge Systematics Analysis.

Table 32 Angleton Intermodal Facility—Monetized Emission Benefits from Tree Planting, 2029–2053

Year	CO ₂ Emission Cost Savings (undiscounted 2022\$)	CO ₂ Emission Cost Savings (discounted 2022\$)	Emission Cost Savings from all other Pollutants (undiscounted 2022\$)	Emission Cost Savings from all other Pollutants (discounted 2022\$)	Total Emission Cost Savings (undiscounted 2022\$)	Total Emission Cost Savings (discounted 2022\$)
2029	\$7,719	\$6,720	\$3,448	\$2,785	\$11,167	\$9,504
2030	\$7,841	\$6,692	\$3,459	\$2,709	\$11,300	\$9,402
2031	\$7,993	\$6,689	\$3,512	\$2,668	\$11,505	\$9,357
2032	\$8,085	\$6,632	\$3,512	\$2,588	\$11,597	\$9,221
2033	\$8,237	\$6,625	\$3,512	\$2,510	\$11,750	\$9,135



Year	CO ₂ Emission Cost Savings (undiscounted 2022\$)	CO ₂ Emission Cost Savings (discounted 2022\$)	Emission Cost Savings from all other Pollutants (undiscounted 2022\$)	Emission Cost Savings from all other Pollutants (discounted 2022\$)	Total Emission Cost Savings (undiscounted 2022\$)	Total Emission Cost Savings (discounted 2022\$)
2034	\$8,360	\$6,591	\$3,512	\$2,435	\$11,872	\$9,026
2035	\$8,482	\$6,557	\$3,512	\$2,362	\$11,994	\$8,918
2036	\$8,604	\$6,520	\$3,512	\$2,291	\$12,116	\$8,811
2037	\$8,756	\$6,506	\$3,512	\$2,222	\$12,268	\$8,728
2038	\$8,848	\$6,445	\$3,512	\$2,155	\$12,360	\$8,600
2039	\$8,970	\$6,406	\$3,512	\$2,090	\$12,482	\$8,496
2040	\$9,122	\$6,387	\$3,512	\$2,027	\$12,634	\$8,414
2041	\$9,244	\$6,346	\$3,512	\$1,966	\$12,756	\$8,312
2042	\$9,397	\$6,324	\$3,512	\$1,907	\$12,909	\$8,231
2043	\$9,519	\$6,280	\$3,512	\$1,850	\$13,031	\$8,130
2044	\$9,671	\$6,256	\$3,512	\$1,794	\$13,183	\$8,050
2045	\$9,793	\$6,211	\$3,512	\$1,740	\$13,306	\$7,951
2046	\$9,946	\$6,184	\$3,512	\$1,688	\$13,458	\$7,872
2047	\$10,099	\$6,155	\$3,512	\$1,637	\$13,611	\$7,793
2048	\$10,251	\$6,126	\$3,512	\$1,588	\$13,763	\$7,714
2049	\$10,373	\$6,077	\$3,512	\$1,540	\$13,885	\$7,617
2050	\$10,526	\$6,046	\$3,512	\$1,494	\$14,038	\$7,540
2051	\$10,648	\$5,996	\$3,512	\$1,449	\$14,160	\$7,445
2052	\$10,770	\$5,946	\$3,512	\$1,405	\$14,282	\$7,351
2053	\$10,892	\$5,895	\$3,512	\$1,363	\$14,404	\$7,258
Total	\$232,145	\$158,611	\$87,684	\$50,264	\$319,829	\$208,874

Source: Cambridge Systematics Analysis.

The **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project is expected to reduce air pollutants from reduced truck VMT, reduced SOV trips by shifting auto users to vanpooling and transit, new electric charging stations and tree planting. The project's emission cost savings total around \$34.5 million undiscounted and \$22.9 million discounted to 2022 dollars over the 25-year operating period.



Safety Benefits

Safety benefits stem from the potential reduction in truck-related crashes linked to saved truck VMT. TxDOT Crash Records Information System's (CRIS, 2014-2023)³² from Brazoria County were analyzed to estimate the average number of annual crashes involving trucks. Crashes included the number of injuries and fatalities and were filtered to include those within a 20-mile buffer of each of the two sites. The 20-mile buffer was estimated based on the 56 minutes of time lost by truck drivers searching for available parking³³ and the assumption that trucks travel, on average, at a speed of 20 mph when looking for parking.

The estimation of the safety benefits involved estimating the VMT associated with the two truck parking sites. Since the sites are located in a rural area of Brazoria county, the county urban areas were removed from the analysis. Using TxDOT's Roadway Inventory data,³⁴ historical data on truck VMT was collected within a 20-mile buffer of each site, capturing only the rural VMT.

With annual data on crashes that involved trucks and truck VMT for both sites, **Equation 16** and **Equation 17** were used to calculate the injury and fatality rates per 100 million VMT associated with crashes that involved trucks and occurred within the 20-mile buffer. These rates were calculated for each site and for each of the years between 2014 and 2022, with an average calculated using the results of each year.

$$FR = \frac{(ANF \times VMTCF)}{(ACF \times DVMT)} \quad \text{Equation 16 17}$$

Where:

- FR = Fatality rate within the 20-mile buffer of each site associated with crashes involving trucks (number of fatalities per 100 million truck VMT)
- ANF = Average annual number of fatalities within the 20-mile buffer of each site associated with crashes involving trucks during the 2014-2022 period
- VMTCF = 100 million truck VMT
- ACF = 365 days per year
- DVMT = Daily truck VMT within the 20-mile buffer of each site

$$IR = \frac{(ANI \times VMTCF)}{(AF \times DVMT)} \quad \text{Equation 17 18 19}$$

³² Texas Department of Transportation. Crash reports and records. Available at [Crash reports and records \(txdot.gov\)](https://www.txdot.gov/crash-reports-and-records).

³³ Torrey, W.F., & Murray, D. September 2016. *Analysis of the Operational Costs of Trucking: 2016 Update*. American Transportation Research Institute. Arlington, VA.

³⁴ Texas Department of Transportation. Roadway Inventory. Available at [Roadway inventory \(txdot.gov\)](https://www.txdot.gov/roadway-inventory).



Where:

- IR = Injury rate within the 20-mile buffer of each site associated with crashes involving trucks (number of injured people per 100 million truck VMT)
- ANI = Average annual number of injuries within the 20-mile buffer of each site associated with crashes involving trucks during the 2014-2022 period
- VMTCF = 100 million truck VMT
- AFT = Annualization factor for truck travel (i.e., 365 days per year)
- DVMT = Daily VMT within the 20-mile buffer of each site

The VMT savings to be realized by truck drivers because the availability of the two new truck parking facilities is used to calculate the avoided number of fatalities and injuries from VMT savings. As shown in **Equation 18** and **Equation 19**, below, the yearly truck VMT savings from each site were multiplied by the corresponding injury and fatality rates per 100 million VMT for each site.

$$AAF = FR \times ATVMTS \quad \text{Equation 18 2021}$$

Where:

- AAF = Annual avoided fatalities due to reduced truck VMT
- FR = Fatality rate within the 20-mile buffer of each site associated with crashes involving trucks (number of fatalities per 100 million truck VMT)
- ATVMTS = Annual truck VMT savings associated with the site

$$AAI = IR \times ATVMTS \quad \text{Equation 19 2022}$$

Where:

- AI = Annual avoided injuries due to reduced truck VMT
- IR = Injury rate within the 20-mile buffer of each site associated with crashes involving trucks (number of injured people per 100 million truck VMT)
- ATVMTS = Annual truck VMT savings associated with the site

To monetize these benefits, the avoided number of fatalities and injuries due to reduced truck VMT associated with each site are multiplied by the corresponding economic value of reduced fatalities and injuries provided by the USDOT, that is, \$12.5 million per person killed and \$217,600 per person injured (severity unknown), respectively.³⁵

Table 33 shows the monetized value of avoided fatalities and injures. Under the “Build” scenario, the Freeport and Angleton sites are expected to deliver significant benefits of around \$3.6 million undiscounted and \$2 million discounted to 2022 dollars over the 25-year operating period.

³⁵ U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023.



Table 33 Freeport and Angleton Sites—Monetized Crash Reduction Benefits from Reduced Truck VMT, 2029–2053

Year	Angleton Site, Avoided Fatalities and Injures (undiscounted 2022\$)	Angleton Site, Avoided Fatalities and Injures (discounted 2022\$)	Freeport Site, Avoided Fatalities and Injures (undiscounted 2022\$)	Freeport Site, Avoided Fatalities and Injures (discounted 2022\$)
2029	\$5,701	\$4,604	\$106,705	\$86,174
2030	\$5,815	\$4,555	\$108,841	\$85,255
2031	\$5,931	\$4,506	\$111,019	\$84,347
2032	\$6,050	\$4,458	\$113,241	\$83,448
2033	\$6,171	\$4,411	\$115,508	\$82,559
2034	\$6,294	\$4,364	\$117,820	\$81,680
2035	\$6,420	\$4,317	\$120,178	\$80,809
2036	\$6,549	\$4,271	\$122,583	\$79,948
2037	\$6,680	\$4,226	\$125,037	\$79,097
2038	\$6,814	\$4,181	\$127,540	\$78,254
2039	\$6,950	\$4,136	\$130,092	\$77,420
2040	\$7,089	\$4,092	\$132,696	\$76,595
2041	\$7,231	\$4,048	\$135,352	\$75,779
2042	\$7,376	\$4,005	\$138,061	\$74,972
2043	\$7,524	\$3,963	\$140,825	\$74,173
2044	\$7,674	\$3,920	\$143,643	\$73,383
2045	\$7,828	\$3,879	\$146,518	\$72,601
2046	\$7,984	\$3,837	\$149,451	\$71,827
2047	\$8,144	\$3,796	\$152,442	\$71,062
2048	\$8,307	\$3,756	\$155,493	\$70,305
2049	\$8,473	\$3,716	\$158,606	\$69,556
2050	\$8,643	\$3,676	\$161,780	\$68,815
2051	\$8,816	\$3,637	\$165,018	\$68,082
2052	\$8,993	\$3,598	\$168,321	\$67,356
2053	\$9,173	\$3,560	\$171,690	\$66,639
Total	\$182,631	\$101,514	\$3,418,461	\$1,900,138

Source: Cambridge Systematics Analysis.



The **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project is expected to reduce traffic fatalities and injuries from reduced truck VMT. The project safety benefits total \$3.6 million undiscounted and \$2 million discounted to 2022 dollars over the 25-year operating period.

Walking Amenity Benefits

The walking amenity benefits measure the improvements in the quality or comfort of journeys to be enjoyed by active transportation and public transportation users using the new sidewalks to be built as part of **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project. These sidewalks will also increase accessibility to food, healthcare, transit, and other community resources.

The Freeport Site will add new sidewalk connections of 6-foot width and 1,016.02-foot length on W. 8th Street and 6-foot width and 2,309.50-foot length on Pine Street. Using the sidewalk value per foot provided by the USDOT (i.e., \$0.11 per foot of added sidewalk width)³⁶, this analysis estimates that the new sidewalk will generate \$0.66 per person-mile walked in benefits.

To estimate the number of pedestrians using the new sidewalks, daily modeled pedestrian volumes in Fall of 2019 and Spring of 2023 provided by REPLICA³⁷ are used. The daily pedestrian volumes are then annualized by assuming that the modeled pedestrians are commuting to work. Thus, the annualization factor is the product of the number of weekdays multiple by 48 workweeks per year. This analysis also assumes that the total length of the new sidewalks (i.e., 0.2 miles on W. 8th Street and 0.4 miles on Pine Street.) represents the average length of a pedestrian trip. This is a conservative assumption since the projected pedestrian trip on a new facility should not exceed 0.86 miles, which is the average length of a walking trip in the 2017 National Household Travel Survey.³⁸ Then, the annual benefit of improved walking comfort on both streets at the Freeport Site is estimated using **Equation 20**.

$$ASAB = DVP \times AFPC \times ALWT \times BMV \quad \text{Equation 2024}$$

Where:

- ASAB = Annual walking amenity benefits
- YVP = Daily volume of pedestrians enjoying the new sidewalks
- AFPC = Annualization factor (i.e., 240 workdays per year)
- ALWT = Average length of the walking trip (in miles)
- BMW = Benefit per mile walked (i.e., \$0.66 per person-mile walked)

³⁶ U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023.

³⁷ REPLICA. <https://www.replicahq.com/>

³⁸ U.S. DOT, Federal Highway Administration, 2017 National Household Travel Survey.



Table 34 shows the monetized value of the walking amenity benefits on both streets at the Freeport Site. These benefits total around \$422,000 undiscounted and \$242,000 discounted to 2022 dollars over the 25-year operating period.

Table 34 Freeport Site—Walking Amenity Benefits, 2029–2053

Year	Pine St.		W. 8 th St.		Combined	
	Walking Amenity Savings (undiscounted 2022\$)	Walking Amenity Savings (discounted 2022\$)	Walking Amenity Savings (undiscounted 2022\$)	Walking Amenity Savings (discounted 2022\$)	Walking Amenity Savings (undiscounted 2022\$)	Walking Amenity Savings (discounted 2022\$)
2029	\$11,709	\$9,456	\$5,151	\$4,160	\$16,860	\$13,616
2030	\$11,709	\$9,172	\$5,151	\$4,035	\$16,860	\$13,207
2031	\$11,709	\$8,896	\$5,151	\$3,914	\$16,860	\$12,810
2032	\$11,709	\$8,629	\$5,151	\$3,796	\$16,860	\$12,425
2033	\$11,709	\$8,369	\$5,151	\$3,682	\$16,860	\$12,051
2034	\$11,709	\$8,117	\$5,151	\$3,571	\$16,860	\$11,689
2035	\$11,709	\$7,873	\$5,151	\$3,464	\$16,860	\$11,337
2036	\$11,709	\$7,637	\$5,151	\$3,360	\$16,860	\$10,996
2037	\$11,709	\$7,407	\$5,151	\$3,259	\$16,860	\$10,666
2038	\$11,709	\$7,184	\$5,151	\$3,161	\$16,860	\$10,345
2039	\$11,709	\$6,968	\$5,151	\$3,066	\$16,860	\$10,034
2040	\$11,709	\$6,759	\$5,151	\$2,973	\$16,860	\$9,732
2041	\$11,709	\$6,556	\$5,151	\$2,884	\$16,860	\$9,440
2042	\$11,709	\$6,358	\$5,151	\$2,797	\$16,860	\$9,156
2043	\$11,709	\$6,167	\$5,151	\$2,713	\$16,860	\$8,880
2044	\$11,709	\$5,982	\$5,151	\$2,632	\$16,860	\$8,613
2045	\$11,709	\$5,802	\$5,151	\$2,552	\$16,860	\$8,354
2046	\$11,709	\$5,628	\$5,151	\$2,476	\$16,860	\$8,103
2047	\$11,709	\$5,458	\$5,151	\$2,401	\$16,860	\$7,860
2048	\$11,709	\$5,294	\$5,151	\$2,329	\$16,860	\$7,623
2049	\$11,709	\$5,135	\$5,151	\$2,259	\$16,860	\$7,394
2050	\$11,709	\$4,981	\$5,151	\$2,191	\$16,860	\$7,172
2051	\$11,709	\$4,831	\$5,151	\$2,125	\$16,860	\$6,956
2052	\$11,709	\$4,686	\$5,151	\$2,061	\$16,860	\$6,747
2053	\$11,709	\$4,545	\$5,151	\$1,999	\$16,860	\$6,544
Total	\$292,729	\$167,890	\$128,781	\$73,860	\$421,510	\$241,750

Source: Cambridge Systematics Analysis.



Health Benefits

The new sidewalk connections linking the Freeport Site to existing sidewalk infrastructure can significantly increase walking and bring about the health benefits associated with it. The Freeport Site will add new sidewalks connections on W. 8th Street. and Pine Street., serving Historically Disadvantaged Communities and an Area of Persistent Poverty. Ninety-four (94) percent of this community’s labor force uses non-active transportation modes to commute to work.³⁹ The new sidewalk will also increase accessibility to food, healthcare, transit, and other community resources for residents in the area.

A statewide survey, which measured and tracked pedestrian and bicycle safety in Texas in 2023, indicated that 51.8⁴⁰ percent of the respondents would walk more if new sidewalks were built. Therefore, this analysis assumes that the new sidewalks connections at the Freeport Site will lead to 51.8 percent induced walking trips. Using the annualized pedestrian volumes, estimated based on daily modeled pedestrian volumes provided by REPLICA⁴¹, the additional walking trips are calculated using **Equation 21**.

$$IWT = YVP \times PLD \quad \text{Equation 21}$$

Where:

- IWT = Induced walking trips lead by the new sidewalks
- YPD = Annualized volume of pedestrians enjoying the new sidewalks
- PLD = Pedestrian latent demand (51.8% based on Texas pedestrian survey)

According to the USDOT BCA Guidance, not all additional walking trips are subject to the health benefits. The recommended values for monetizing reduced mortality risks only apply to the number of users switching from non-active transportation modes within the age range between 20 and 74 old. Therefore, this analysis uses the percentage of employed population from Freeport City (i.e., 53.4 percent)⁴² that commutes to work by non-active transportation modes (i.e., 93.8 percent), and that are between the eligible age range (i.e., 63.9 percent)⁴³ to estimate the eligible walking trips from the induced walking trips. These computations are shown in **Equation 22**.

$$EWT = IWT \times EP \times PAR \times NATMC \quad \text{Equation 22}$$

³⁹ U.S. Census Bureau. "ACS Demographic and Housing Estimates." American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05, 2022, <https://data.census.gov/table/ACSDP5Y2022.DP05?g=160XX00US4827420>. Accessed on February 11, 2024.

⁴⁰ Neal Johnson et al., "2023 Survey of Texans on Pedestrian and Bicycle Safety Identifying Barriers to Understanding Pedestrian and Bicycle Safety Laws (2023-TTI-G-1YG-0043)" TEXAS A&M TRANSPORTATION INSTITUTE, April 2023), https://www.walkbikesafetexas.org/wp-content/uploads/2023/05/Survey-Results-Report_FINAL.pdf. Accessed on February 11, 2024

⁴¹ REPLICA. <https://www.replicahq.com/>

⁴² U.S. DOT, Federal Highway Administration, 2017 National Household Travel Survey.

⁴³ U.S. DOT, Federal Highway Administration, 2017 National Household Travel Survey.



Where:

- EWT = Eligible walking trips
- IWT = Induced walking trips lead by new sidewalks
- EP = City of Freeport’s employed population
- PAR = Percent of City of Freeport’s employed population between 20 and 74 years old
- NATMC = Percent of City of Freeport’s employed population that commutes to work by non-active transportation modes

Finally, the health benefits from reduced mortality risk resulting from adding new sidewalks on 8th Street and Pine Street at the Freeport Site are calculated using **Equation 23**.

$$HB = EWT \times MVRMR \quad \text{Equation 23}$$

Where:

- HB = Health benefits from reduced mortality
- EWT = Eligible walking trips
- MVRMR = Monetization value for reduced mortality risk associated with increased walking per trip recommended by the USDOT (\$7.63 per trip)

Table 35 presents the monetary benefits of mortality reduction of induced walking trips over the 25-year operating period. The new sidewalks adjacent to the Freeport parking site are expected to add around \$1.3 million undiscounted and \$0.7 million discounted in 2022 dollars in health benefits over the 25-year operating period.

Table 35 Freeport Site—Health Benefits from Mortality Reduction of Induced Walking Trips, 2029–2053

Year	Mortality Reduction Benefits (undiscounted 2022\$)	Mortality Reduction Benefits (discounted 2022\$)
2029	\$51,309	\$41,437
2030	\$51,309	\$40,191
2031	\$51,309	\$38,982
2032	\$51,309	\$37,810
2033	\$51,309	\$36,673
2034	\$51,309	\$35,571
2035	\$51,309	\$34,501
2036	\$51,309	\$33,464
2037	\$51,309	\$32,458
2038	\$51,309	\$31,482
2039	\$51,309	\$30,535



Year	Mortality Reduction Benefits (undiscounted 2022\$)	Mortality Reduction Benefits (discounted 2022\$)
2040	\$51,309	\$29,617
2041	\$51,309	\$28,726
2042	\$51,309	\$27,863
2043	\$51,309	\$27,025
2044	\$51,309	\$26,212
2045	\$51,309	\$25,424
2046	\$51,309	\$24,660
2047	\$51,309	\$23,918
2048	\$51,309	\$23,199
2049	\$51,309	\$22,502
2050	\$51,309	\$21,825
2051	\$51,309	\$21,169
2052	\$51,309	\$20,532
2053	\$51,309	\$19,915
Total	\$1,282,736	\$735,692

Source: Cambridge Systematics Analysis.

Residual Value of Assets

Some of the assets built under this project will have a useful service life that exceed the 25-year project operating period. Therefore, per USDOT guidance, assets with useful lives beyond the operating period are valued for the remaining useful life and discounted at the 25-year discount value.

According to TxDOT, the concrete parking lots at both the Freeport and Angleton sites are expected to have a service life of 30 years. According to estimates from the Houston-Galveston Area Council MPO, park & ride and transit centers have a service life of 30 years.

Based on TxDOT cost estimates for this project shown in **Table 36**, the project components that exceed the 25-year project operating period in the Freeport Site (i.e., the concrete parking lots) total approximately \$2 million in 2026 dollars. The Angleton site's concrete parking lots and park & ride and transit center total approximately \$4.1 million and \$458,000, respectively, in 2026 dollars. When these costs are combined, the residual value totals approximately \$1 million in undiscounted 2022 dollars and \$380,000 in discounted 2022 dollars.



Table 36 Construction Cost and Residual Value of the Project Components that Exceed the 25-Year Operating Period

Project Component	Construction Cost Estimates (2026\$)
Freeport Site—Concrete Parking Lots	\$2,079,810
Angleton Site—Concrete Parking Lots	\$4,106,850
Angleton Site—Park & Ride and Transit Center	\$458,350
Total Construction Cost	\$6,645,010
Project Component	Residual Value (2022\$)
Freeport Site (undiscounted)	\$309,770
Freeport Site (discounted)	\$120,232
Angleton Site (undiscounted)	\$679,947
Angleton Site (discounted)	\$263,911
Total Residual Value (undiscounted)	\$989,717
Total Residual Value (discounted)	\$384,143

Source: TxDOT and Cambridge Systematics Analysis.

Project Benefits Summary

The benefits of the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project include the reduction of existing costs, or the prevention of future costs related to the “No-Build” scenario.

Total benefits to be generated by the proposed Freeport Site are estimated at around \$109.3 million undiscounted and \$62 million discounted to 2022 dollars over the 25-year operating period. **Table 37** shows the facility’s long-term benefits aligning the benefit categories with the merit criteria of the RAISE Grant program.

Total benefits to be generated by the proposed Angleton Site are estimated at around \$69.6 million undiscounted and \$39.1 million discounted to 2022 dollars over the 25-year operating period. **Table 38** shows the facility’s long-term benefits aligning the benefit categories with the merit criteria of the RAISE Grant program.

Total benefits to be generated by the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project (or the combined Freeport and Angleton Sites) are estimated at around \$178.8 million undiscounted and \$101.1 million discounted to 2022 dollars over the 25-year operating period. **Table 39** shows the project’s long-term benefits aligning the benefit categories with the merit criteria of the RAISE Grant program.



Table 37 Freeport Site—Long-Term Benefits

Long -Term Outcome	Benefit Category	Benefit (undiscounted 2022\$)	Benefit (discounted 2022\$)
Economic Competitiveness	Travel Time Savings – Reduced Truck VHT	\$68,615,850	\$38,139,851
Economic Competitiveness	Vehicle Operating Cost Savings – Reduced Truck VMT	\$23,458,636	\$13,039,391
Economic Competitiveness	Vehicle Operating Cost Savings – Mode Shift from Passenger Vehicles to Transit and Carpooling	\$0	\$0
Environmental Sustainability	Emissions Cost Savings – Reduced Truck VMT	\$4,315,736	\$2,903,921
Environmental Sustainability	Emissions Cost Savings – Reduced EV Truck VMT	\$315,291	\$215,178
Environmental Sustainability	Emissions Cost Savings – Charging Stations	\$6,965,349	\$4,626,486
Environmental Sustainability	Emissions Cost Savings – Passenger Vehicle Charging Stations	\$0	\$0
Environmental Sustainability	Emission Cost Savings - Mode Shift from Passenger Vehicles to Transit and Carpooling	\$0	\$0
Environmental Sustainability	Emission Cost Savings – Tree Emissions Savings	\$165,347	\$106,358
Safety	Crash Cost Safety – Reduced Truck VMT	\$3,418,461	\$1,900,138
Quality of Life	Walking Amenity Benefits – New Sidewalks	\$421,510	\$241,750
Quality of Life	Health Benefits – Reduced Mortality Risk Associated with Increased Walking	\$1,282,736	\$735,692
Residual Value	Useful service life that exceed the 25-year project analysis period	\$309,770	\$120,232
Total Benefits		\$109,268,685	\$62,028,996

Source: Cambridge Systematics Analysis.



Table 38 Angleton Site—Long-Term Benefits

Long -Term Outcome	Benefit Category	Benefit (undiscounted 2022\$)	Benefit (discounted 2022\$)
Economic Competitiveness	Travel Time Savings - Reduced Truck VHT	\$6,800,382	\$3,779,965
Economic Competitiveness	Vehicle Operating Cost Savings - Reduced Truck VMT	\$764,783	\$425,101
Economic Competitiveness	Vehicle Operating Cost Savings - Mode Shift from Passenger Vehicles to Transit and Carpooling	\$38,421,346	\$19,441,802
Environmental Sustainability	Emissions Cost Savings - Reduced Truck VMT	\$140,699	\$94,672
Environmental Sustainability	Emissions Cost Savings - Reduced EV Truck VMT	\$10,279	\$7,015
Environmental Sustainability	Emissions Cost Savings - Charging Stations	\$6,965,349	\$4,626,486
Environmental Sustainability	Emissions Cost Savings - Passenger Vehicle Charging Stations	\$8,734,057	\$5,680,231
Environmental Sustainability	Emission Cost Savings - Mode Shift from Passenger Vehicles to Transit and Carpooling	\$6,551,996	\$4,468,552
Environmental Sustainability	Emission Cost Savings - Tree Emissions Savings	\$319,829	\$208,874
Safety	Crash Cost Safety - Reduced Truck VMT	\$182,631	\$101,514
Quality of Life	Walking Amenity Benefits - New Sidewalks	\$0	\$0
Quality of Life	Health Benefits - Reduced Mortality Risk Associated with Increased Walking	\$0	\$0
Residual Value	Useful service life that exceed the 25-year project analysis period	\$679,947	\$263,911
Total Benefits		\$69,571,297	\$39,098,124

Source: Cambridge Systematics Analysis.



Table 39 Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas Project—Long-Term Benefits

Long -Term Outcome	Benefit Category	Benefit (undiscounted 2022\$)	Benefit (discounted 2022\$)
Economic Competitiveness	Travel Time Savings - Reduced Truck VHT	\$75,416,231	\$41,919,816
Economic Competitiveness	Vehicle Operating Cost Savings - Reduced Truck VMT	\$24,223,419	\$13,464,492
Economic Competitiveness	Vehicle Operating Cost Savings - Mode Shift from Passenger Vehicles to Transit and Carpooling	\$38,421,346	\$19,441,802
Environmental Sustainability	Emissions Cost Savings - Reduced Truck VMT	\$4,456,434	\$2,998,592
Environmental Sustainability	Emissions Cost Savings - Reduced EV Truck VMT	\$325,569	\$222,193
Environmental Sustainability	Emissions Cost Savings - Charging Stations	\$13,930,699	\$9,252,971
Environmental Sustainability	Emissions Cost Savings - Passenger Vehicle Charging Stations	\$8,734,057	\$5,680,231
Environmental Sustainability	Emission Cost Savings - Mode Shift from Passenger Vehicles to Transit and Carpooling	\$6,551,996	\$4,468,552
Environmental Sustainability	Emission Cost Savings - Tree Emissions Savings	\$485,176	\$315,233
Safety	Crash Cost Safety - Reduced Truck VMT	\$3,601,091	\$2,001,653
Quality of Life	Walking Amenity Benefits - New Sidewalks	\$421,510	\$241,750
Quality of Life	Health Benefits - Reduced Mortality Risk Associated with Increased Walking	\$1,282,736	\$735,692
Residual Value	Useful service life that exceed the 25-year project analysis period	\$989,717	\$384,143
Total Benefits		\$178,839,982	\$101,127,121

Source: Cambridge Systematics Analysis.



Project Costs

Project Capital Costs

The capital cost associated with the proposed **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project are primarily related to construction costs. These costs were derived from construction cost estimates provided by TxDOT Houston District. As shown in **Table 40**, construction of the project will occur between 2026 and 2028, with the project opening in 2029. Project capital expenditures will total nearly \$24.3 million in year of expenditure (YOE) dollars or \$18.7 million in discounted 2022 dollars. This analysis uses the 2022 CPI-U⁴⁴ and the forecast CPI-U for years 2026, 2027 and 2028⁴⁵ to convert future construction costs (expressed in YOE dollars) into 2022 dollars.

The annual capital cost breakdown for the Port of Freeport Parking Facility and the Angleton Intermodal Facility / Truck Parking Facility over the 2026-2028 construction period is shown in **Table 41**. The construction costs were allocated between these three years, as provided by TxDOT, and a 3.1 percent discount rate was applied. The final discounted cost in 2022 dollars totals approximately \$5.7 million for the Freeport Site and \$13 million for the Angleton Site. A detailed capital cost breakdown for each of the two sites, including individual components, costs, and quantities, is provided within the spreadsheet BCA model.

Table 40 Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas Project—Project Schedule and Capital Cost

Project Schedule	Value	Unit
Construction Start	2026	year
Construction End	2028	year
Construction Duration	3	years
Project Opening	2029	year
Project Capital Cost	Value	Unit
Total Project Cost	\$24,312,700	in 2026\$
	\$21,727,010	Undiscounted 2022\$
	\$18,656,989	Discounted 2022\$

Source: Texas Department of Transportation (TxDOT) Houston District.

⁴⁴ U.S. Bureau of Labor Statistics. Consumer Price Index. [CPI Home : U.S. Bureau of Labor Statistics \(bls.gov\)](https://www.bls.gov)

⁴⁵ Congressional Budget Office, [The Budget and Economic Outlook: 2023 to 2033 | Congressional Budget Office \(cbo.gov\)](https://www.cbo.gov)



Table 41 Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas Project—Annual Capital Costs by Site

Year	Freeport Site, (2026\$)	Freeport Site (undiscounted 2022\$)	Freeport Site (discounted 2022\$)	Angleton Site, (2026\$)	Angleton Site (undiscounted 2022\$)	Angleton Site (discounted 2022\$)
2026	\$2,463,633	\$2,201,622	\$1,948,535	\$5,640,600	\$5,040,714	\$4,461,259
2027	\$2,463,633	\$2,201,622	\$1,889,947	\$5,640,600	\$5,040,714	\$4,327,118
2028	\$2,463,633	\$2,201,622	\$1,833,120	\$5,640,600	\$5,040,714	\$4,197,011
Total	\$7,390,900	\$6,604,867	\$5,671,601	\$16,921,800	\$15,122,143	\$12,985,388

Source: Cambridge Systematics Analysis.

Project Operations and Maintenance (O&M) Costs

The **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project’s operations and maintenance (O&M) costs are solely associated with the Angleton Intermodal Facility / Truck Parking Facility, as the city of Freeport will assume yearly O&M costs for the Port of Freeport Truck parking Facility.

Since the Angleton Site is currently vacant, there are no O&M costs under the “No-Build” scenario. TxDOT Houston District has estimated that the site’s O&M cost under the “Build” scenario will be \$8,000 per month in 2024 dollars. This analysis uses the 2022 CPI-U⁴⁶ and the 2024 CPI-U forecast⁴⁷ to convert O&M cost (expressed in 2024 dollars) into 2022 dollars. As shown in **Table 42**, when annualized and adjust to 2022 dollars, annually O&M for the Angleton Site equals \$89,519. By summing the annual O&M cost throughout the 25-year operating period and applying a 3.1 percent discount rate, the total O&M cost for the Angleton Site, and the entire project, equals \$1,283,552 in discounted 2022 dollars.

Table 42 Angleton Site - Project Operations and Maintenance (O&M) Costs

Year	Angleton Site O&M Costs (2024\$)	Angleton Site O&M Costs (Undiscounted 2022\$)	Angleton Site O&M Costs (Discounted 2022\$)
2029	(\$96,000)	(\$89,519)	(\$72,294)
2030	(\$96,000)	(\$89,519)	(\$70,121)
2031	(\$96,000)	(\$89,519)	(\$68,012)
2032	(\$96,000)	(\$89,519)	(\$65,967)
2033	(\$96,000)	(\$89,519)	(\$63,984)
2034	(\$96,000)	(\$89,519)	(\$62,060)
2035	(\$96,000)	(\$89,519)	(\$60,194)

⁴⁶ U.S. Bureau of Labor Statistics. Consumer Price Index. [CPI Home : U.S. Bureau of Labor Statistics \(bls.gov\)](https://www.bls.gov)

⁴⁷ Congressional Budget Office, [The Budget and Economic Outlook: 2023 to 2033 | Congressional Budget Office \(cbo.gov\)](https://www.cbo.gov)



Year	Angleton Site O&M Costs (2024\$)	Angleton Site O&M Costs (Undiscounted 2022\$)	Angleton Site O&M Costs (Discounted 2022\$)
2036	(\$96,000)	(\$89,519)	(\$58,384)
2037	(\$96,000)	(\$89,519)	(\$56,628)
2038	(\$96,000)	(\$89,519)	(\$54,926)
2039	(\$96,000)	(\$89,519)	(\$53,274)
2040	(\$96,000)	(\$89,519)	(\$51,672)
2041	(\$96,000)	(\$89,519)	(\$50,119)
2042	(\$96,000)	(\$89,519)	(\$48,612)
2043	(\$96,000)	(\$89,519)	(\$47,150)
2044	(\$96,000)	(\$89,519)	(\$45,732)
2045	(\$96,000)	(\$89,519)	(\$44,357)
2046	(\$96,000)	(\$89,519)	(\$43,024)
2047	(\$96,000)	(\$89,519)	(\$41,730)
2048	(\$96,000)	(\$89,519)	(\$40,475)
2049	(\$96,000)	(\$89,519)	(\$39,258)
2050	(\$96,000)	(\$89,519)	(\$38,078)
2051	(\$96,000)	(\$89,519)	(\$36,933)
2052	(\$96,000)	(\$89,519)	(\$35,822)
2053	(\$96,000)	(\$89,519)	(\$34,745)
Total	(\$2,400,000)	(\$2,237,972)	(\$1,283,552)

Source: Cambridge Systematics Analysis.

Note: Negative dollar figures indicate additional costs.

Summary of Results

The BCA converts potential gains (benefits) and losses (costs) from the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project into monetary units and compares them. The following common benefit-cost evaluation measures are included in this BCA:

- Net Present Value (NPV): NPV compares the net benefits (benefits minus costs) after being discounted to present values using the real discount rate assumption. The NPV provides a perspective on the overall dollar magnitude of cash flows over time in today's dollar terms.
- Benefit Cost Ratio (BCR): The present value of incremental benefits is divided by the present value of incremental costs to yield the BCR. The BCR expresses the relation of discounted benefits to discounted costs as a measure of the extent to which a project's benefits either exceed or fall short of the costs.



- Payback Period: The payback period refers to the period required to recover the funds expended on a Project. When calculating the payback period, the time value of money (discounting) is not considered.

Table 43 and Table 44 present the evaluation results for the Freeport and Angleton Sites, respectively. The evaluation results for the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project (or the combined two sites) are presented in Table 45. Benefits and costs are presented in undiscounted and discounted at 3.1 percent per year, except in the case of savings in CO₂ emission costs, where a 2.0 percent per year discount rate is applied. All project benefits and costs were estimated over the analysis period which includes the design and engineering and construction of the Project during which capital expenditures are undertaken, plus 25 years of operations beyond the Project completion within which to evaluate the ongoing Project benefits and costs.

The total net benefits from the **Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas** project within the analysis period are **\$99.8 million** (including the project O&M costs and asset residual value) in discounted 2022 dollars. The total project capital costs, including engineering and construction, are calculated to be **\$18.7 million** in discounted 2022 dollars. The difference of the discounted project benefits and costs equal a NPV of **\$81.2 million**, resulting in a BCR of **5.4**.

Table 43 Freeport Site—Evaluation Measures

Evaluation Measures	Value (undiscounted 2022\$)	Value (discounted 2022\$)
Project Benefits = PB	\$109,268,685	\$62,028,996
Project O&M Costs = OMC	\$0	\$0
Total Project Benefits = PB - OMC = PB	\$109,268,685	\$62,028,996
Total Project Costs = PC	\$7,390,900	\$5,671,601
Net Present Value = PB - PC = NPV	\$101,877,785	\$56,357,395
Benefit Cost Ratio = BCR = PB / PC	14.8	10.9

Source: Cambridge Systematics Analysis.

Table 44 Angleton Site—Evaluation Measures

Evaluation Measures	Value (undiscounted 2022\$)	Value (discounted 2022\$)
Project Benefits = PB	\$69,571,297	\$39,098,124
Project O&M Costs = OMC	(\$2,237,972)	(\$1,283,552)
Total Project Benefits = PB - OMC = PB	\$67,333,325	\$37,814,572
Total Project Costs = PC	\$16,921,800	\$12,985,388
Net Present Value = PB - PC = NPV	\$50,411,525	\$24,829,184
Benefit Cost Ratio = BCR = PB / PC	4.0	2.9

Source: Cambridge Systematics Analysis.



Table 45 Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas Project—Evaluation Measures

Evaluation Measures	Value (undiscounted 2022\$)	Value (discounted 2022\$)
Project Benefits = PB	\$178,839,982	\$101,127,121
Project O&M Costs = OMC	(\$2,237,972)	(\$1,283,552)
Total Project Benefits = PB - OMC = PB	\$176,602,010	\$99,843,568
Total Project Costs = PC	\$24,312,700	\$18,656,989
Net Present Value = PB - PC = NPV	\$152,289,310	\$81,186,579
Benefit Cost Ratio = BCR = PB / PC	7.3	5.4

Source: Cambridge Systematics Analysis.

Sensitivity Analysis

A sensitivity analysis is used to help identify which variables have the greatest impact on the BCA results. This analysis can be used to estimate how changes to key variables from their preferred value affect the results and how sensitive the results are to these changes. This allows for the assessment of the strength of the BCA, including whether the results reached using the preferred set of input variables are significantly different by reasonable departures from those values. **Table 46** summarizes the key variables which have been evaluated for sensitivity.

Table 46 Sensitivity Tests—Alternative Values for Key Parameters

Test No.	Parameter	Original Value	Original Source	Alternative Value
1	Truck Parking Demand in Houston District over the 2018–2050 period	CAGR of Truck Parking Demand in each site = 2.0%	Texas Statewide Truck Parking Study (April 2020)	CAGR of Truck Parking Demand in each site = 3.62% recommended by TxDOT
2	Number of times per week a commuter rider uses the park & ride facility at the Angleton Site to commute to work by transit or vanpool.	One time per week or 48 times per year	Conservative assumption made in the original analysis	Twice per week or 96 times per year
3	Project Capital Cost	Project Capital Cost = \$18.7 million (discounted 2022\$)	TxDOT Houston District	Project Capital Cost increased by 100%
	Project Annual O&M Cost	Annual O&M Cost = \$96,000 (2024\$)		Annual Project O&M Cost increased by 100%

Source: Cambridge Systematics Analysis.



Table 47 presents the benefits generated by the Redefining Rest Stops: A Multimodal Strategy for Truck Parking in Southeast Texas project and the corresponding benefit-cost ratio using the alternative values for key variables. The results of the sensitivity analysis indicates the following:

- **Test 1**—The annual increase in the truck parking demand in the Houston District from 2 percent to 3.62 percent yields a benefit-cost ratio of 6.0, with a NPV of \$93.5 million in 2022 dollars.
- **Test 2**—The increase in the number of times per week a commuter rider uses the park & ride facility at the Angleton Site to commute to work by transit or vanpool from one time per week to twice per week yields a benefit-cost ratio of 6.5, with a NPV of \$103.3 million in 2022 dollars.
- **Test 3**—The increase in the project capital and O&M costs by 100 percent (i.e., the project capital and O&M cost expenditures has doubled) yields a benefit-cost ratio of 2.6, with a NPV of \$61.2 million in 2022 dollars.

Table 47 Results of the Sensitivity Analysis

Evaluation Measures	Test 1 (discounted 2022\$)	Test 2 (discounted 2022\$)	Test 3 (discounted 2022\$)
Total Project Benefits = PB	\$112,112,515	\$121,931,094	\$98,560,016
Total Project Costs = PC	\$18,656,989	\$18,656,989	\$37,313,978
Net Present Value = PB - PC = NPV	\$93,455,526	\$103,274,104	\$61,246,038
Benefit-Cost Ratio = BCR = PB / PC	6.0	6.5	2.6

Source: Cambridge Systematics Analysis.



**Texas
Department
of Transportation**



REDEFINING REST STOPS:

*A Multimodal Strategy for Truck Parking
in Southeast Texas*

Letters of Support

**Rebuilding American Infrastructure with
Sustainability and Equity (RAISE) Grant Application**



Appendix B: Letters of Support

TxDOT received support from a variety of elected officials, project stakeholders, and other public and private partners in support of ***REDEFINING REST STOPS: A Multimodal Strategy for Truck Parking in Southeast Texas***. The list below provides a summary of the supporting parties committed as of the application deadline of February 28, 2024.

- Brazosport Area Chamber of Commerce
- City of Freeport
- Brazoria County Engineering
- Brazoria County Commissioners Court
- Brazoria County Hispanic Chamber of Commerce
- Gulf Coast Transit District
- City of Angleton
- David Heinicke – City of Angleton – Hike and Bike Subcommittee
- Houston-Galveston Area Council
- Texas Port Ministry
- Port Freeport

**2024 BOARD
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Brazoria County Commissioner
Chairman of the Board

Heather Rimato
Rimato Insurance
Chairman-Elect
V.C. Org. Div.

Preston Phillips
Third Coast Bank
Secretary/Treasurer

David Winder
BASF Corp.
V.C. Community Issues Division

Nancy Wollam
Representative Cody Vasut's Office
V.C. Convention & Tourism

Joe Ripple
Br. Cty. Flood Plain Director
V.C. Economic Development

Jeff Fischels
H-E-B
V.C. Membership Division

Jason Cordoba
Cordoba Law Firm, PLLC
V.C. Public Affairs Division

Scott Dalgle
MEGlobal
Past Chairman of the Board

Directors:
Terms Expire 12/31/24
Brent Bowles
iAD Architects

Nitin Patel
Candlewood/Staybridge Suites

Josh Brian
TDECU - Your Credit Union

Gabriella Cone
The Dow Chemical Company

Judge Jack Brown
Pct. 1, Place 1

Terms Expire 12/31/25
Tammy Bell
TBT Real Estate

Danny Massey
Brazosport I.S.D.

Stacy Stanley
Offshore Oil Services

Neidia Ahlquist
Neldal Insurance

Dr. Vincent Solis
Brazosport College

Terms Expire 12/31/26
Julie Edwards
Coastal Machine/Elaine's Fashions

Mark Hollan
Gulf Coast Auto

Kenneth K. Vernor
Vernor Materials

Pual Spinks
Shintech

Jordan Strother
First State Bank

CHAMBER STAFF
Sandra Shaw
President & CEO

Donna Moran
Executive Vice-President

Kristy Cours
Administrative Secretary

Edith Fischer
Director of Tourism

February 7, 2024

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Buttigieg:

The Brazosport Area Chamber of Commerce Board of Directors are pleased to support the Texas Department of Transportation's (TXDOT) application to the U.S. Department of Transportation for a RAISE (Rebuilding American Infrastructure with Sustainability and Equity) discretionary grant. This grant includes the TXDOT FM 1495 Parking Project which will provide critical freight infrastructure by providing staging and a pre-clearance area for truckers accessing Port Freeport.

Port Freeport is a diverse port and leading economic and jobs catalyst for the Texas Gulf Coast. Port Freeport currently ranks 13th among U.S. ports in total foreign waterborne tonnage handled. Approximately 30 million tons of cargo is transported annually port-wide. According to the 2022 Economic Impact Study completed by Texas A&M Transportation Institute, Port Freeport and the Freeport Harbor Channel support 266,300 jobs nationally, generating \$22.5 billion in labor income with a total national economic impact of \$157.3 billion.

The FM 1495 Parking Project will reduce truck congestion on the state roadway, truck idling and related emissions and improve access gate and roadway safety. The electric charging stations for trucks will support the transition to cleaner alternative fuels. The sidewalks, ADA ramps and other intersection improvements will provide a safe alternate mode of transportation to truck drivers when accessing food and retail. The proposed pedestrian improvements will also provide the underserved adjacent community with an ADA accessible first-last mile connection from transit to Port Freeport. Up to 1,000 people can be working at Port Freeport public facilities on any given day not including the over-the-road truck drivers.

Port Freeport continues to strategically invest in its container handling terminal, expanded gate facilities, multi-modal access and the Freeport Harbor Channel. This past year a \$140 million berth extensions project was completed adding, 1,000 linear feet of berth to the Port's container terminal and two electric super post-Panamax ship-to-shore cranes are on order. In a joint venture with the U.S. Army Corps of Engineers, the Port is deepening the Freeport Harbor Channel to depths ranging between 51 feet and 56 feet. The final contract on this \$295 million project was awarded in 2023 and is scheduled for completion by the end of 2025. These investments are attracting new business, investment and jobs to the Port and our community.

**2024 BOARD
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Representative Cody Vasut's Office
V.C. Convention & Tourism

Joe Ripple
Br. Cty. Flood Plain Director
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V.C. Membership Division

Jason Cordoba
Cordoba Law Firm, PLLC
V.C. Public Affairs Division

Scott Daigle
MEGlobal
Past Chairman of the Board

Directors:
Terms Expire 12/31/24
Brent Bowles
IAD Architects

Nitin Patel
Candlewood/Staybridge Suites

Josh Brian
TDECU – Your Credit Union

Gabriella Cone
The Dow Chemical Company

Judge Jack Brown
Pct. 1, Place 1

Terms Expire 12/31/25
Tammy Bell
TBT Real Estate

Danny Massey
Brazosport I.S.D.

Stacy Stanley
Offshore Oil Services

Neldia Ahlquist
Neldai Insurance

Dr. Vincent Solis
Brazosport College

Terms Expire 12/31/26
Julie Edwards
Coastal Machine/Elaine's Fashions

Mark Hollan
Gulf Coast Auto

Kenneth K. Vernor
Vernor Materials

Pual Spinks
Shintech

Jordan Strother
First State Bank

CHAMBER STAFF
Sandra Shaw
President & CEO

Donna Moran
Executive Vice-President

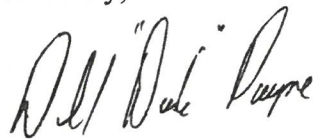
Kristy Cours
Administrative Secretary

Edrh Fischer
Director of Tourism

In 2024, Volkswagen Group of Americas will open a 120-acre vehicle processing and distribution facility that will handle 140,000 vehicle imports per year from Mexico and Europe to serve 300 dealers in the United States creating 300 new jobs. Also, Fresh Del Monte Produce, Inc., is relocating their operations to Port Freeport with operations beginning in 2024. To support the Del Monte Operation, an 80,000 square foot chilled cross-dock facility with 80 cargo doors is being built, bringing 80-100 new jobs to the area.

We appreciate your consideration of TXDOT's RAISE grant application which includes the TXDOT FM 1495 Parking Project which will greatly enhance safety and promote economic development including jobs in our region.

Sincerely,



Donald Payne,
2024 Chairman of the Board



rooks Bass
Mayor

Lance Petty
City Manager

February 5, 2024

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Buttigieg:

The City of Freeport is pleased to support TxDOT’s application to the 2024 RAISE Grant program for its Project “Redefining Rest Stops: A Multimodal Strategy for Sustainable Truck Parking in Southeast Texas”. Freight parking is needed and critical to sustaining economic growth in Freeport and meeting current demand with Port Freeport expansion, and Volkswagen slated to open in 2024. Reduce number of trucks parked on shoulders and local roads, due to designated freight parking, will translate to safety for the community and truckers.

The proposed sidewalk along E 8th Street will improve quality for life all people in Freeport as well as for truckers utilizing the freight parking. These sidewalks will connect to existing sidewalks, to provide continuous pedestrian facilities for the community and connect people to transit. City of Freeport agrees to have City of Freeport Right of Way along E 8th Street utilized to build the 5-to-6-foot sidewalks proposed by TxDOT in the application.

If selected for funding, the City of Freeport agrees to continue to coordinate and enter into an agreement with TxDOT for the construction of the E 8th Street sidewalks. This project will help fund needed infrastructure in the City of Freeport. Thank you for your consideration of this application. If you have any questions, you can contact me at 979-233-3526.

Sincerely,

Lance Petty

City of Freeport
City Manager



Matt Hanks, P.E.
COUNTY ENGINEER



Karen McKinnon, P.E.
ASST. COUNTY ENGINEER

Wael Tabara, P.E., CFM
ASST. COUNTY ENGINEER

(979) 864-1265
ANGLETON

(979) 388-1265
CLUTE

(281) 756-1265
HOUSTON

(979) 864-1270
FAX

BRAZORIA COUNTY ENGINEERING

451 N VELASCO, SUITE 230
ANGLETON, TEXAS 77515

February 8, 2024

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Letter of Support

Dear Secretary Buttigieg:

Brazoria County is pleased to provide a letter of support for TxDOT's project "Redefining Rest Stops: A Multimodal Strategy for Sustainable Truck Parking in Southeast Texas" submitted to the 2024 RAISE Grant. The TxDOT project addresses freight parking and provides multimodal transportation options needed in Brazoria County.

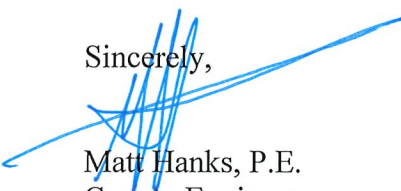
In Brazoria County, trucks park along the shoulders of roads. This is a frequent occurrence that creates a safety hazard for both the travelling public both pedestrians and vehicles. Owner-operators when at home need safe available places to park their trucks. The Angleton freight parking addresses that need.

Port Freeport's growth, including the new Volkswagen Plant, will continue to increase freight movement in Brazoria County. The need for Freight Parking in Brazoria County cannot be overstated, this is critical to ensure continued growth and economic development for this rural community.

The City of Angleton is the county seat of Brazoria County. Many of the County's current employees reside in other cities within the County. The TxDOT project in Angleton, incorporates a new park and ride, transit, and vanpool as options for long-distance commuting as a way for the community to access jobs.

On behalf of Brazoria County, we request support for implementation funding as this project is crucial to the current and future needs and demands of the County. Thank you for your consideration.

Sincerely,


Matt Hanks, P.E.
County Engineer
Brazoria County

L.M. "Matt" Sebesta, Jr.
County Judge



Lacey Powell
Chief of Staff

Brazoria County

February 13, 2024

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Buttigieg:

Brazoria County is pleased to provide a letter of support for the Texas Department of Transportation's (TXDOT) application to U.S. Department of Transportation for a RAISE (Rebuilding American Infrastructure with Sustainability and Equity) discretionary grant that includes the TXDOT FM 1495 Parking Project. The proposed parking will provide critical freight infrastructure by providing staging and pre-clearance area for truckers accessing Port Freeport.

Port Freeport is a diverse port and a leading economic and jobs catalyst for the Texas Gulf Coast. Port Freeport currently ranks 13th among U.S. ports in total foreign waterborne tonnage handled. Approximately 30 million tons of cargo is transported annually port-wide. According to the 2022 Economic Impact Study completed by the Texas A&M Transportation Institute (TTI), Port Freeport and the Freeport Harbor Channel support 266,300 jobs nationally, generating \$22.5 billion in labor income, with a total national economic impact of \$157.3 billion.

The FM 1495 Parking Project will reduce truck congestion on the state roadway, reduce truck idling and related emissions, and improve access gate and roadway safety. The electric charging stations for trucks will support the transition to cleaner alternative fuels. The sidewalks, ADA ramps and other intersection improvements will provide a safe alternate mode of transportation to trucker drivers when accessing food and retail. At the same time, the proposed pedestrian improvements will provide the underserved adjacent community with an ADA accessible first-last mile connection from transit to Port Freeport. As many as 1,000 people can be working at the Port Freeport public facilities on any given day not including the over-the-road truck drivers.

Port Freeport has been and continues to strategically invest in its container handling terminal, expanded gate facilities, multi-modal access, and the Freeport Harbor Channel. This past year a \$140 million berth extension project was completed adding 1,000 linear feet of berth to the Port's container terminal and two electric super post-Panamax ship-to-shore cranes are on order. In a joint venture with the U.S. Army Corps of Engineers, the Port is deepening the Freeport Harbor Channel to depths ranging between 51 feet and 56 feet. The final contract on this \$295 million project was awarded in 2023 and is scheduled for completion by the end of 2025. These investments are attracting new business, investment and jobs to the Port and our community.

L.M. "Matt" Sebesta, Jr.
County Judge



Lacey Powell
Chief of Staff

Brazoria County

In 2024, Volkswagen Group of Americas will open a 120-ac vehicle processing and distribution facility that will handle 140,000 vehicle imports per year from Mexico and Europe to serve 300 dealers in the United States creating 300 new jobs. In addition, Fresh Del Monte Produce, Inc. is relocating their operations to Port Freeport and will begin operations in 2024. To support the Del Monte operation, an 80,000 square foot chilled cross-dock facility with 80 cargo doors is also being built. Their operation will bring 80 to 100 new jobs to the area.

Thank you for your consideration of TXDOT's RAISE grant application that includes the TXDOT FM 1495 Parking Project. The proposed project will greatly enhance safety and promote economic development and jobs in our region.

Sincerely the members of Brazoria County Commissioners Court,

A blue ink signature of L.M. "Matt" Sebesta Jr. written in a cursive style.

L.M. "Matt" Sebesta Jr.
Brazoria County Judge

A blue ink signature of Donald "Dude" Payne written in a cursive style.

Donald "Dude" Payne
Commissioner, Precinct 1

A blue ink signature of Ryan Cade written in a cursive style.

Ryan Cade
Commissioner, Precinct 2

A blue ink signature of Stacy Adams written in a cursive style.

Stacy Adams
Commissioner, Precinct 3

A blue ink signature of David Linder written in a cursive style.

David Linder
Commissioner, Precinct 4



Connect.
Transit.

gulfcoasttransitdistrict.com

February 5, 2024

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Buttigieg:

The Gulf Coast Transit District (GCTD) is pleased to provide a letter of support for TxDOT's project "Redefining Rest Stops: A Multimodal Strategy for Sustainable Truck Parking in Southeast Texas" submitted to the 2024 RAISE Grant. The TxDOT project addresses an unmet transportation need to provide rural areas with greater access to multimodal options, in particular Transit.

For a rural City, Angleton has a healthy transit ridership. The new proposed park and ride at the Angleton hub, is the single most significant cost-effective short-term strategy to increase transit mode share within the City of Angleton and between nearby Lake Jackson, Clute, and Freeport – where major employers are located. GCTD fully supports the proposed infrastructure and believes this project will better serve inter-rural city long-distance transit commuters' trips in this rural region.

This project addresses, in the City of Freeport the need for a safe transportation alternative for first/last mile connection to transit by employees of Freeport and the Freeport community-at-large to access other destinations including Freeport's downtown, schools, recreation, and food. The project will also address sidewalks to access bus stops as well as the bus shelter at E 8th Street and will encourage more transit-related trips in this disadvantaged rural community.

Thank you for your consideration of this application. If you have any questions, you can contact me at smiddleton@gulfcoasttransitdistrict.com or by phone at (409) 500-2773.

Sincerely,

Sean Middleton, MPA, MA
Executive Director
Gulf Coast Transit District



Mayor John Wright

January 24, 2024

Travis Townsend
Mayor Pro Tem
Position 2

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Christiene Daniel
Council Member
Position 1

Dear Secretary Buttigieg:

Terry Roberts
Council Member
Position 3

The City of Angleton is pleased to support TxDOT's application to the 2024 RAISE Grant program for its Truck Parking Project. In addition to promoting safety benefits, improved quality of life for truckers, and reducing emissions, the project will improve the multimodal options for rural communities in Brazoria County.

Cecil Booth
Council Member
Position 4

The project also represents the first-of-its-kind signature effort to provide under-connected rural communities with multimodal transportation options. The proposed Angleton hub will improve access to Transit Connect by providing a park and ride facility. It will also provide vanpool, carpool, bike, and freight infrastructure and promote access to trails, picnic areas, among other amenities for the surrounding neighborhood.

Tanner Sartin
Council Member
Position 5

This project will help promote a network and a rural transfer center that will facilitate enhanced community connectivity and economic growth for this area, addressing both immediate and long-term mobility needs in the City of Angleton. Thank you for your consideration of this application. If you have any questions, you can contact me at the email address and phone number below.

Chris Whittaker
City Manager

Sincerely,

Michelle Perez
City Secretary

Chris Whittaker
City Manager
979-849-4364 ext. 2112
www.angleton.tx.us
City of Angleton
121 S. Velasco
Angleton, TX 77515

February 8, 2024

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

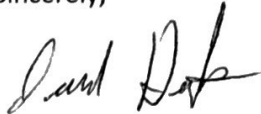
Dear Secretary Buttigieg:

As a longtime resident of the City of Angleton and a member of its Hike & Bike Subcommittee I am excited to support TxDOT's application to the 2024 RAISE Grant program for its Angleton Site improvements, which include trails, sidewalks, new park and ride and vanpool parking as well as truck parking. With the landscaping and trails this 10-acre facility will be an asset to the Angleton community that can use it for commuting purposes.

As Angleton's population grows, the need for a neighborhood transit and distribution center will grow as well. This facility will also allow local residents excess to trails and green spaces in a suburban park setting, encouraging an active lifestyle of walking and biking. The site is currently not being used so this enhancement would be very welcome and serve as a community beatification project with its many trees and landscaping.

Thank you for your consideration of this application. If you have any questions, you can contact me at 979-313-0725 or Heinicke07@gmail.com

Sincerely,

A handwritten signature in black ink, appearing to read "David Heinicke". The signature is fluid and cursive, with a prominent loop at the end.

David Heinicke
Resident of the City of Angleton
Member of the Angleton Hike and Bike subcommittee



February 5, 2024

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Buttigieg:

Greetings from Texas Port Ministry. Texas Port Ministry is a welfare organization in Freeport, TX that exists to help meet the spiritual, social and physical needs of seafarers, truck drivers and port workers that come to the Port of Freeport. One of the things we have recognized over the years, along with our colleagues in ports throughout America, is that port welfare organizations serve as a front door to people who come to the port from all over the world. Because of this fact and the opportunity we have to connect with these people on a daily basis, we are pleased to provide a letter of support for the Texas Department of Transportation's (TXDOT) application to U.S. Department of Transportation for a RAISE (Rebuilding American Infrastructure with Sustainability and Equity) discretionary grant that includes the TXDOT FM 1495 Parking Project. The proposed parking will provide critical freight infrastructure by providing staging and pre-clearance area for truckers accessing Port Freeport. If approved, we believe this grant will help tremendously in the ports effort to enhance safety and services to those people who call on Port Freeport.

Port Freeport is a diverse port and a leading economic and jobs catalyst for the Texas Gulf Coast. Port Freeport currently ranks 13th among U.S. ports in total foreign waterborne tonnage handled. Approximately 30 million tons of cargo is transported annually port-wide. according to the 2022 Economic Impact Study completed by the Texas A&M Transportation Institute (TTI), Port Freeport and the Freeport Harbor Channel support 266,300 jobs nationally, generating \$22.5 billion in labor income, with a total national economic impact of \$157.3 billion.

The FM 1495 Parking Project will reduce truck congestion on the state roadway, reduce truck idling and related emissions, and improve access gate and roadway safety. The electric charging stations for trucks will support the transition to cleaner alternative fuels. The sidewalks, ADA ramps and other intersection improvements will provide a safe alternate mode of transportation to trucker drivers when accessing food and retail. At the same time, the proposed pedestrian improvements will provide the underserved adjacent community with an ADA accessible first-last mile connection from transit to Port Freeport. As many as 1,000 people can be working at the Port Freeport public facilities on any given day not including the over-the-road truck drivers.



Port Freeport has been and continues to strategically invest in its container handling terminal, expanded gate facilities, multi-modal access, and the Freeport Harbor Channel. This past year a \$140 million berth extension project was completed adding 1,000 linear feet of berth to the Port's container terminal and two electric super post-Panamax ship-to-shore cranes are on order. In a joint venture with the U.S. Army Corps of Engineers, the Port is deepening the Freeport Harbor Channel to depths ranging between 51 feet and 56 feet. The final contract on this \$295 million project was awarded in 2023 and is scheduled for completion by the end of 2025. These investments are attracting new business, investment and jobs to the Port and our community.

In 2024, Volkswagen Group of Americas will open a 120-ac vehicle processing and distribution facility that will handle 140,000 vehicle imports per year from Mexico and Europe to serve 300 dealers in the United States creating 300 new jobs. In addition, Fresh Del Monte Produce, Inc. is relocating their operations to Port Freeport and will begin operations in 2024. To support the Del Monte operation, an 80,000 square foot chilled cross-dock facility with 80 cargo doors is also being built. Their operation will bring 80 to 100 new jobs to the area.

Thank you for your consideration of TXDOT's RAISE grant application that includes the TXDOT FM 1495 Parking Project. The proposed project will greatly enhance safety and promote economic development and jobs in our region.

Sincerely,

A handwritten signature in black ink that reads "R. Chris Moore".

R. Chris Moore
Texas Port Ministry, Director

**RESOLUTION IN SUPPORT OF THE TEXAS DEPARTMENT OF TRANSPORTATION
FM1495 PROJECT RAISE GRANT APPLICATION**

At a regular meeting of the Port Commission of Port Freeport of Brazoria County, Texas ("Port") held at the office of the Port at 1100 Cherry Street, Freeport, Texas, on the 8th day of February 2024, among other business, on motion duly made and seconded, the following Resolution was passed and adopted:

FINDINGS

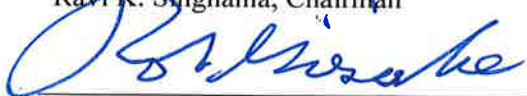
1. WHEREAS, the Texas Department of Transportation (TXDOT) has studied freight movement in Southeast Texas and is applying for a U.S. Department of Transportation RAISE (Rebuilding American Infrastructure with Sustainability and Equity) grant for Redefining Rest Stops: A Multimodal Strategy for Sustainable Truck Parking in Southeast Texas that includes the TXDOT FM 1495 Parking Project.
2. WHEREAS, Port Freeport is a diverse port and a leading economic and jobs catalyst for the Texas Gulf Coast. Port Freeport currently ranks 13th among U.S. ports in total foreign waterborne tonnage handled. Approximately 30 million tons of cargo is transported annually port wide.
3. WHEREAS, according to the 2022 Economic Impact Study completed by the Texas A&M Transportation Institute (TTI), Port Freeport and the Freeport Harbor Channel support 266,300 jobs nationally, generating \$22.5 billion in labor income, with a total national economic impact of \$157.3 billion.
4. WHEREAS, according to the 2022 Economic Impact Study completed by TTI, Port Freeport and the Freeport Harbor Channel support 10,000 direct Brazoria County jobs, generating \$1.7 billion in labor income, with a total annual Brazoria County economic impact of \$52.6 billion.
5. WHEREAS, as many as 1,000 people can be working at the Port Freeport public facilities on any given day. This does not include over-the-road truck drivers.
6. WHEREAS, locally, union employment of men and women from nearby underserved communities is fast growing. Longshoreman hours and wages have been steadily growing and will increase substantially with new business operations commencing in 2024.
7. WHEREAS, Port Freeport public facilities are in the City of Freeport, an underserved community.
8. WHEREAS, FM 1495 provides direct connection to all Port Freeport gates of entry and exit and is critical to maintaining safe and efficient commodity flows to and from Port Freeport.
9. WHEREAS, the TXDOT FM 1495 Parking Project will provide critical freight infrastructure by providing staging and pre-clearance area for truckers accessing Port Freeport.
10. WHEREAS, the TXDOT FM 1495 Parking Project will reduce truck congestion on the state roadway, reduce truck idling and related emissions, and improve access gate and roadway safety.
11. WHEREAS, the TXDOT FM 1495 Parking Project includes electric charging stations for trucks which will support the transition to cleaner alternative fuels.
12. WHEREAS, the TXDOT FM 1495 Parking Project includes sidewalks, ADA ramps and other intersection improvements that will provide a safe alternate mode of transportation to trucker drivers when accessing food and retail.

13. WHEREAS, the TXDOT FM 1495 Parking Project includes pedestrian improvements that will provide the Freeport community with an ADA accessible first-last mile connection from transit to Port Freeport.
14. WHEREAS, Port Freeport has been and continues to strategically invest in its container handling terminal, expanded gate facilities, multi-modal access, and the Freeport Harbor Channel. These investments are attracting new business, investment and jobs to the Port and our community.
15. WHEREAS, a \$140 million berth extension project was completed in 2023 adding 1,000 linear feet of berth to the Port's container terminal and two electric super post-Panamax ship-to-shore cranes are on order.
16. WHEREAS, in a joint venture with the U.S. Army Corps of Engineers, the Freeport Harbor Channel is being deepened to depths ranging between 51 feet and 56 feet. The final contract on this \$295 million project was awarded in 2023, and the project is scheduled for completion by the end of 2025.
17. WHEREAS, in 2024, Volkswagen Group of Americas will open a 120-ac vehicle processing and distribution facility that will handle 140,000 vehicle imports per year from Mexico and Europe to serve 300 dealers in the United States creating 300 new jobs in the community.
18. WHEREAS, Fresh Del Monte Produce, Inc. is relocating their operations to Port Freeport and will begin operations in 2024. To support the Del Monte operation, an 80,000 square foot chilled cross-dock facility with 80 cargo doors is also being built. Their operation will bring 80 to 100 new jobs to the area.
19. WHEREAS, given the greater freight movement, the proposed freight parking project will address spill-over cueing along FM 1495 as well as support efficient operations at Port Freeport.
20. WHEREAS, Port Freeport, as a project partner, is willing to commit the land, known as Parcel 42 located on FM 1495, for freight parking and is willing and able to enter into an agreement with TXDOT by resolution, should the project get selected for funding.
21. WHEREAS, Port Freeport, as a project partner, is willing and able to provide ongoing maintenance for the project.

NOW, THEREFORE, be it RESOLVED, the Port Commission of Port Freeport does hereby support TXDOT's application to the U.S. Department of Transportation for a RAISE grant that includes the TXDOT FM 1495 Parking Project and is committed to work with the State to implement the proposed project that will greatly enhance safety and promote economic development and jobs in our region.



Ravi K. Singhania, Chairman



Rob Giesecke, Vice Chairman



Barbara Fratila, Secretary



Kim Kincannon, Asst. Secretary



Rudy Santos, Commissioner



Dan Croft, Commissioner



February 5, 2024

The Honorable Pete Buttigieg
Secretary of Transportation
United States Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Secretary Buttigieg:

The Brazoria County Hispanic Chamber of Commerce is pleased to provide a letter of support for the Texas Department of Transportation's (TXDOT) application to U.S. Department of Transportation for a RAISE (Rebuilding American Infrastructure with Sustainability and Equity) discretionary grant that includes the TXDOT FM 1495 Parking Project. The proposed parking will provide critical freight infrastructure by providing staging and pre-clearance area for truckers accessing Port Freeport.

Port Freeport is a diverse port and a leading economic and jobs catalyst for the Texas Gulf Coast. Port Freeport currently ranks 13th among U.S. ports in total foreign waterborne tonnage handled. Approximately 30 million tons of cargo is transported annually port-wide. according to the 2022 Economic Impact Study completed by the Texas A&M Transportation Institute (TTI), Port Freeport and the Freeport Harbor Channel support 266,300 jobs nationally, generating \$22.5 billion in labor income, with a total national economic impact of \$157.3 billion.

The FM 1495 Parking Project will reduce truck congestion on the state roadway, reduce truck idling and related emissions, and improve access gate and roadway safety. The electric charging stations for trucks will support the transition to cleaner alternative fuels. The sidewalks, ADA ramps and other intersection improvements will provide a safe alternate mode of transportation to trucker drivers when accessing food and retail. At the same time, the proposed pedestrian improvements will provide the underserved adjacent community with an ADA accessible first-last mile connection from transit to Port Freeport. As many as 1,000 people can be working at the Port Freeport public facilities on any given day not including the over-the-road truck drivers.

Port Freeport has been and continues to strategically invest in its container handling terminal, expanded gate facilities, multi-modal access, and the Freeport Harbor Channel. This past year a \$140 million berth extension project was completed adding 1,000 linear feet of berth to the Port's container terminal and two electric super post-Panamax ship-to-shore cranes are on order. In a joint venture with the U.S. Army Corps of Engineers, the Port is deepening the Freeport Harbor Channel to depths ranging between 51 feet and 56 feet. The final contract on this \$295



million project was awarded in 2023 and is scheduled for completion by the end of 2025. These investments are attracting new business, investment and jobs to the Port and our community.

In 2024, Volkswagen Group of Americas will open a 120-ac vehicle processing and distribution facility that will handle 140,000 vehicle imports per year from Mexico and Europe to serve 300 dealers in the United States creating 300 new jobs. In addition, Fresh Del Monte Produce, Inc. is relocating their operations to Port Freeport and will begin operations in 2024. To support the Del Monte operation, an 80,000 square foot chilled cross-dock facility with 80 cargo doors is also being built. Their operation will bring 80 to 100 new jobs to the area.

Thank you for your consideration of TXDOT's RAISE grant application that includes the TXDOT FM 1495 Parking Project. The proposed project that will greatly enhance safety and promote economic development and jobs in our region.

Sincerely,

Gina Aguirre Adams

Gina Aguirre-Adams

Brazoria County Hispanic Chamber of Commerce

President/CEO



The Honorable Pete Buttigieg
Secretary of Transportation
U.S. Department of Transportation
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Redefining Rest Stops: A Multimodal Strategy for Sustainable Truck Parking in Southeast Texas

Dear Secretary Buttigieg:

On behalf of the Metropolitan Planning Organization for the Houston-Galveston region, I am pleased to submit this letter of support for the Texas Department of Transportation (TXDOT) application for funding to support the Redefining Rest Stops Project under the RAISE Grant Program. Our MPO has already established FM 1495 in Freeport as a Critical Freight Corridor and a priority for the Houston-Galveston region by selecting and funding improvements in the area. The requested funding would further enhance this critical corridor by providing essential freight parking through an innovative multi-modal mobility hub that would better facilitate not only freight movement, but also active and shared transportation for people in the surrounding community.

The additional project in Angleton, a city which is at the nexus of FM 288 (one of the most congested roadways in Brazoria County for freight traffic) and FM 35 (on which we have programmed improvements) is another ideal location for this type of mobility hub that combines the needs of goods movement with people movement in rural and suburban environments.

This project's improvements are consistent with the RAISE program's goals and grant criteria, including mobility and community connectivity and partnership and collaboration. In addition, these improvements support environmental sustainability and improved quality of life in these communities and the region.

Thank you for your favorable consideration of TXDOT's application; Redefining Rest Stops would be a significant project for our dynamic and growing community. The proposed project is consistent with our region's transportation goals from our 2045 Regional Transportation Plan. If this project is selected for a RAISE grant award, H-GAC will collaborate with TXDOT and other stakeholders to complete the process for including this project in our Transportation Improvement Program and move this project forward as rapidly as possible.

Sincerely,

A handwritten signature in blue ink, appearing to read 'CR', is placed over the typed name.

Craig Raborn, AICP
MPO Director