Texas Department of Transportation

INTERSTATE 20 ENERGY SECTOR SAFETY PROJECT

The Better Utilizing Investments to Leverage Development (BUILD) Grant Application

MAY 2020

PROJECT INFORMATION	
Sponsoring Organization	Texas Department of Transportation (TxDOT)
DUNS Number	806782553
EIN	74 6000170
Name of Project	Interstate 20 Energy Sector Safety Project
Type of Project	Roadway
Location of Project	Midland County, State of Texas
Congressional District	Mike Conaway, Congressional District 11
BUILD Application Amount Requested	$25,000,000
BUILD Application Agency Match	$13,885,000
BUILD Application Total Project Cost	$38,885,000
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I. PROJECT DESCRIPTION: INTERSTATE 20 ENERGY SECTOR SAFETY PROJECT

The Texas Department of Transportation (TxDOT) is seeking FY2020 BUILD grant funding for the **Interstate 20 Energy Sector Safety Project (Project)** to improve rural connectivity and safety in West Texas and the Permian Basin, one of the most important energy-producing regions in the nation. The Project, part of a portfolio of improvement projects planned along Interstate Highway 20 (I-20) in the Odessa-Midland-Midland area, includes reconstructing the existing interchange at I-20/Cotton Flat Road to prevent recurring bridge strikes and modifying adjacent access ramps and traffic signalization to improve safety and capacity at the frontage road intersections.

The Project has a benefit-cost ratio of 2.0, providing significant safety improvements, reduced operations and maintenance costs, and travel time savings.

The primary benefits from this Project will come from critical safety improvements for rural Texans and the energy, mining, trucking, construction, manufacturing, and agricultural sectors. I-20 is an important east-west connection for travel and trade in West Texas and a designated National Freight Network Corridor, facilitating essential freight movement through the Permian Basin. The combination of continuing bridge strikes and rising traffic and truck counts at the Project location has contributed to increased crashes, traffic congestion, repair costs, and capacity constraints for overheight trucks. Crashes at the I-20/Cotton Flat Road interchange increased by over 250 percent between 2015 and 2019, with Commercial Motor Vehicles (CMVs) making up a growing percentage of crashes.[1] This project would alleviate safety concerns by reconfiguring the existing interchange at I-20/Cotton Flat Road, which would eliminate bridge strikes at this location.

At the same time, the rapid growth of heavy trucks hauling water, sand, equipment, and other products needed to support the region's energy sector have degraded pavements much more quickly than planned. This project would improve the state of good repair (SOGR) status of the corridor, which would not only improve efficiency and safety for heavy trucks, but also quality of life and safety for local residents. In addition, the Project would improve local access between jobs and rural communities along the I-20 corridor, as well as access to healthcare, large employers, and other critical destinations in the region.

The Project is part of a larger portfolio of projects on I-20 and the Permian Basin overall, and has been prioritized for submission based on a TxDOT Energy Sector Improvement Plan, which was developed in partnership with local and regional governments and with input from citizens and private entities. TxDOT is addressing additional projects in the Permian Basin by leveraging State funding sources that originate from energy resource production, including oil and gas severance taxes and general revenue sources, to address the congestion, safety, and SOGR challenges brought on by increased demand in this rural region of national significance. A separate application for the **Reeves County Improvement Project** is also being submitted for

[1] Accessed at: https://cris.dot.state.tx.us/public/Query/#/public/welcome; measured on I-20 and Cotton Flats Road with a quarter-mile buffer from the interchange.

FY2020 BUILD grant funding to address similar challenges at U.S. 285 and RM 652, underscoring the vital importance of continued investment in the Permian Basin region.

ABOUT THE INTERSTATE 20 ENERGY SECTOR SAFETY PROJECT

The Interstate 20 Energy Sector Safety Project BUILD grant application requests funding to reconfigure the existing grade-separated interchange at I-20/Cotton Flat Road by removing the existing I-20 underpass and constructing a new bridge over Cotton Flat Road to allow I-20 traffic to flow without height restrictions. The Project will include:

- Reconfiguration of interchange at Cotton Flat Road including the addition of turnarounds;
- Reconstruction of frontage roads;
- Conversion of ramps from diamond- to X-configuration;
- Pavement design to accommodate current and future truck requirements;
- Constructing sidewalks and wheelchair ramps on Cotton Flat Road;
- Signalizing frontage road intersections on Cotton Flat Road;
- Utility adjustments and culvert installations; and
- Roadway safety lighting and bridge underpass lighting.

The Project is located on a National Freight Highway Network Corridor. **Exhibit 1** identifies the specific area and corridors of the Project. **Table 1** summarizes the Project's benefits.

Exhibit 1. Map of Interstate 20 Energy Sector Safety Project

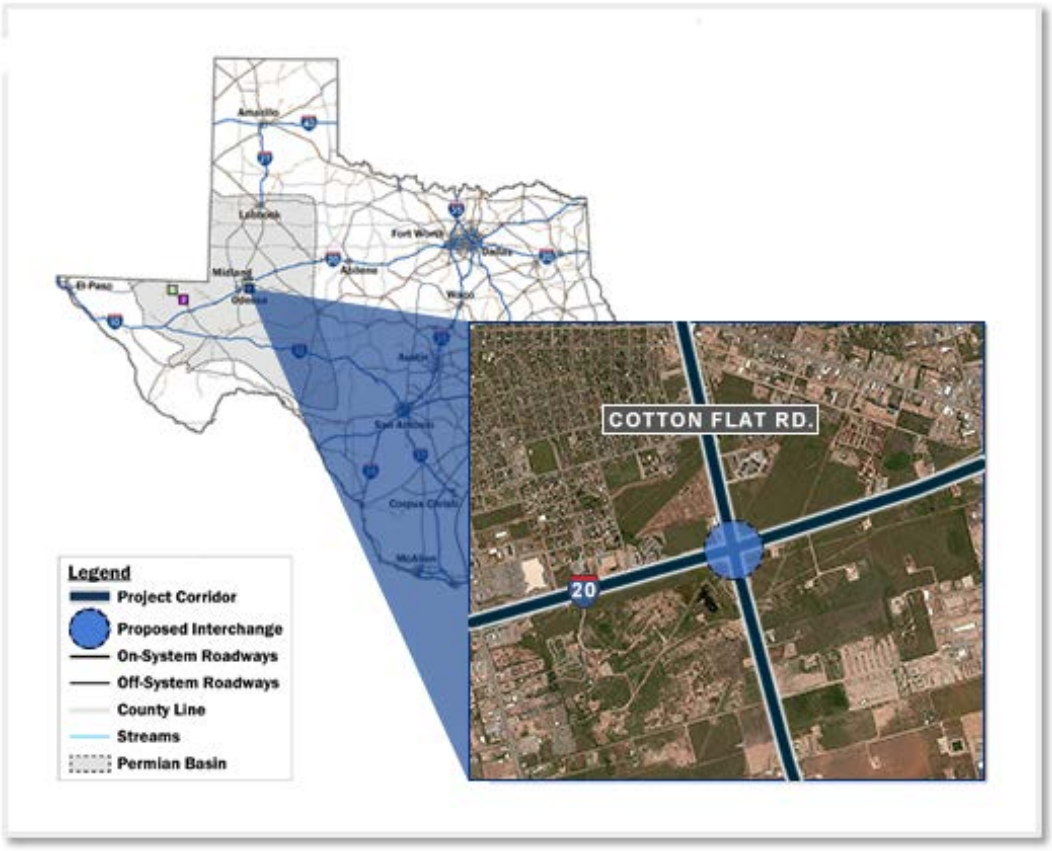


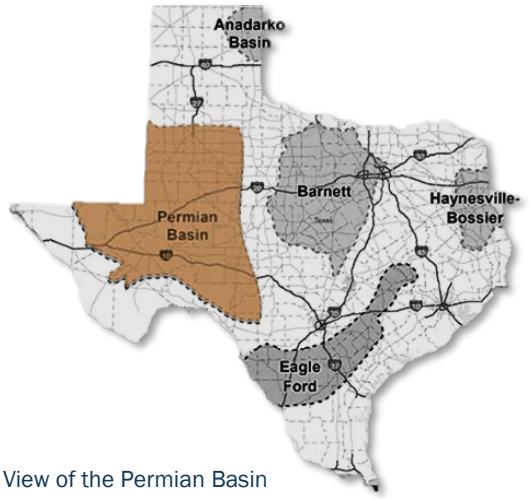
Table 1. Project Benefits at a Glance

Interstate 20 Energy Sector Safety Project at a Glance		
Demand and Economic Vitality	!	Bridge strikes result in hours of delay on I-20 and intersecting arterials.
	!	Overheight trucks will continue to strike the I-20 overpass if the interchange is not redesigned.
	✓	*Project will reduce delay due to bridge strikes at this interchange, which will have a positive impact on the economic vitality of the region resulting in travel time savings and reduced emissions.*
Providing Safe & Reliable Transportation	!	Permian Basin region is only 7% of Texas population but accounts for 13% of State highway fatalities.[2]
	!	Existing infrastructure was not designed for overheight trucks (minimum vertical clearance of 15' 9'' on I-20).
	!	Oversized truck and freight traffic carrying hazardous materials on I-20 pose heightened risk to the public in the event of a crash.
	✓	*Project will eliminate risk of bridge strikes at the I-20/Cotton Flat Road interchange.*
Growth & Livability in Rural Areas	!	There is an existing need for improved infrastructure for residential and transient workforce mobility.
	!	The I-20 underpass at Cotton Flat Road has been struck 9 times between 2015 and 2020, totaling $134,000 in repair costs.
	!	Traffic continues to increase on Cotton Flat Road due to the growing popularity of Midland County Horseshoe Arena, one of West Texas' largest event venues.
	✓	*TxDOT has coordinated with residents and leaders (including a "Livability Workshop"), and project will expand pedestrian access and improve the condition and durability of infrastructure, improving network connectivity and reliability for residents*
Innovative Approach	!	Project area lacks updated roadway design and safety measures.
	✓	*TxDOT is leveraging a new and innovative funding measure, Proposition 1, directing a portion of existing oil and gas production tax to the State Highway Fund (SHF).*
	✓	*TxDOT has already begun environmental review under NEPA assignment, saving time and gaining efficiency in the construction process once funding is in place.*
	✓	*Roadways designed for easy integration of fiber and broadband infrastructure in the future, as needed.*
National Energy Security	✓	*Project supports the energy production and distribution industries in the region deemed vital to national energy security.*

NATIONAL AND REGIONAL SIGNIFICANCE OF TXDOT'S CONNECTIVITY PROJECT

The Permian Basin is of critical importance in achieving U.S. energy independence. Covering approximately 75,000 square miles with more than 7,000 oil and gas fields, the Permian

[2] Accessed at: https://www.txdot.gov/driver/share-road/be-safe-drive-smart/energy-sector.html



View of the Permian Basin

Basin is the 2nd largest oil and gas producer in the world.[3] Oil production in the Permian Basin has more than quadrupled, from 1 million barrels per day in 2011 to nearly 5 million barrels per day in 2020.[4] Each new well in the Permian Basin generates about 1,700 loaded trucks every year, and each existing well generates about 350 loaded trucks every year.[5] This increased energy output puts an even more intense strain on Texas' infrastructure as the rest of the world increasingly depends on the Permian Basin. Furthermore, Texas has led the nation in renewable energy thanks to continued and growing investment in wind energy and solar energy in the Permian Basin.[6] Solar energy also is seeing a surge of investment in the Permian Basin as a renewable energy source.[7] Roads in the energy-producing region have experienced significant damage from trucks hauling water, sand, equipment, pipe, and other products needed to support the exponential increase in oil, gas, and renewable energy production. This type of use was not anticipated when the roads were first designed and constructed.

Sustained investment in the Permian Basin is expected to continue despite recent volatility in the oil market. A price war between Saudi Arabia and Russia that began in March 2020, exacerbated by lower demand due to the new coronavirus (COVID-19) pandemic, has resulted in oil prices dropping to record low levels.[8] Though lower prices have led to a recent slowdown in the Permian Basin, substantial activity is expected to continue in the long-term. If prolonged, the downturn may provide an opportunity to complete the Project during a period with lower traffic volumes, limiting the disruption caused by the project construction until typical activity levels resume.

Historically, production capacity in the Permian Basin has been limited by the region's ability to transport oil and gas products to market. Producers had to rely on trucks as opposed to pipelines, which are more efficient and cost-effective. More recently, private investment in and public prioritization of pipeline infrastructure has increased the capacity of the region to deliver products to market. Specifically, in April 2019, President Trump issued two executive orders supporting increased construction of pipelines and other projects which will lead to greater production (and transport) of oil and natural gas within the U.S. and internationally.[6] Specific to the Permian Basin, this has coincided with the opening of the new Gray Oak pipeline that transports crude oil to Corpus Christi.[7] This national focus on energy independence will mean increased traffic at the Project location due to the sand, water, and

[3] Permian Basin Regional Freight Plan, TxDOT.
[4] Accessed at: https://www.eia.gov/petroleum/drilling/pdf/permian.pdf
[5] Permian Basin Regional Freight Plan, TxDOT.
[6] Accessed at: https://news.ihsmarkit.com/press-release/energy/new-ihs-markit-outlook-%E2%80%93-stunning-permian-basin-oil-production-more-double-2017
[7] Accessed at: http://puc.texas.gov/industry/maps/Electricity.aspx
[8] Accessed at: https://www.nytimes.com/2020/03/31/business/energy-environment/crude-oil-companies-coronavirus.html

equipment, personnel, and other transportation requirements for oil and gas production, even as more oil and gas products can be moved off the roadway network.

The region is also a growth area for renewable energy. Texas will continue to lead the U.S. in installed wind capacity thanks to continued and growing investment in wind energy in the Permian Basin.[8] Solar energy also is seeing a surge of investment in the Permian Basin as a renewable energy source.[9] Similar to the road damage caused by oil and gas-related trucks, development of renewable energy production fields similarly strains the highway network due to transport of oversize and overweight components for renewable energy installations in Texas and adjacent areas in New Mexico.

TXDOT'S INVESTMENT IN THE I-20 CORRIDOR

TxDOT's Odessa District has identified approximately $830 million in needs in the Odessa-Midland 40+ mile section of the I-20 corridor (**Exhibit 2**). To date, more than $433 million has been allocated to the five projects identified. That total includes local participation of $2 million from the Midland Economic Development Corporation, $2 million from the Odessa Development Corporation, and $20.16 million from The Permian Basin Metropolitan Planning Organization (MPO). The Permian Basin MPO has also pledged an additional $25 million of future funding. Currently funded projects include an interchange reconfiguration at Midkiff Road (Project 1), a new interchange at County Road 1250 (Project 2), and frontage road projects between FM 1936 in Odessa and FM 1208 in Midland (Projects 3-5). The frontage road projects include interchange improvements and ramp reconfigurations.

Exhibit 2. Map of Odessa-Midland Corridor Projects

TXDOT'S COMMITMENT TO LONG-TERM SUCCESS IN THE PERMIAN BASIN

TxDOT is committed to providing safe and reliable transportation across the state, particularly infrastructure projects that improve the lives of rural residents and increase the efficiency of businesses in the area. The State of Texas has a long history of discovering and producing crude oil to support the nation's energy needs. In recent years, the Permian Basin has become the most important oil and gas producing area in the U.S. and is currently the nation's largest petroleum-producing basin. In addition, a growing renewable energy sector has added to the region's abundant energy resource reserves.

The Project discussed in this application, as well as the Reeves County Improvement Project, continues TxDOT's focus on funding projects of high importance to the regional and national energy sector, and particularly within the Permian Basin. **These projects will complement the rural infrastructure projects funded in previous BUILD funding cycles – including the TxDOT Winkler County Improvement Project (FY2018), TxDOT Glasscock County and Reagan County**

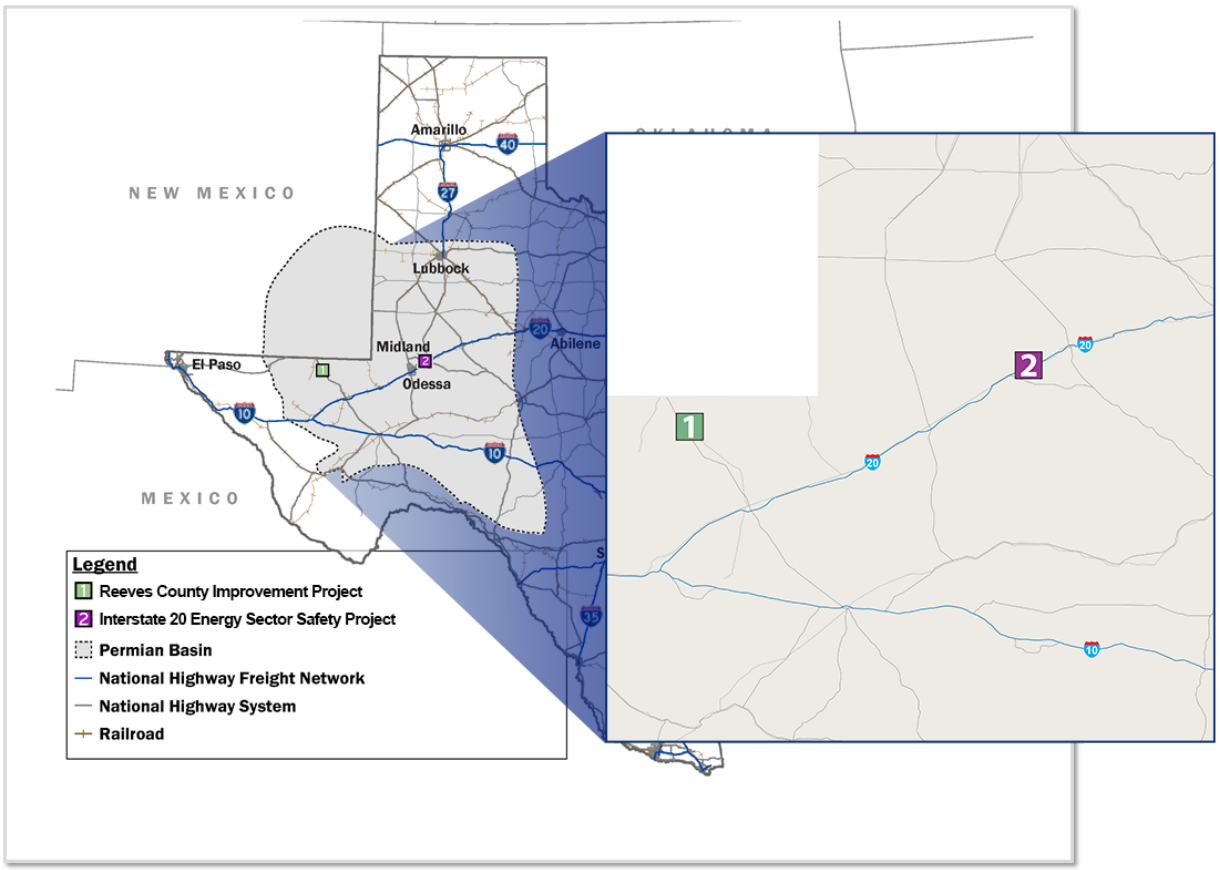
Improvement Project (FY2018), and NMDOT US 285 Safety and Resilient (Project FY2019) – which also addressed critical infrastructure needs within the Permian Basin. These projects, in combination with the $1.1 billion of TxDOT investment already made or planned for the region, collectively impact the region in a synergistic approach to address the transportation infrastructure needs in the Permian Basin. A description of active and planned projects in the Odessa District is included in **Appendix A.**

II. PROJECT LOCATION

Latitude: 31.968450 | Longitude: -102.090875

The Interstate 20 Energy Sector Safety Project addresses movement of vehicles whose origin and destination is within Permian Basin. The proposed grade-separated interchange reconfiguration is located at the intersection of I-20/Cotton Flat Road within Midland County, Texas in Congressional District 11. The Project is on I-20 and serves rural areas of Odessa and Midland, Texas. **Exhibit 3** details the project location as well as the location of the second project within the Permian Basin (the Reeves County Improvement Project) for which TxDOT is applying for funding during this round of the BUILD program.

Exhibit 3. Map of TxDOT's Permian Basin BUILD Project Submittals



I-20 is on the National Highway Freight Network, which emphasizes the need for roadway improvements and safety enhancements due to its location in this energy sector region. Additionally, it is anticipated that it will be part of the Permian Basin Highway Freight Network, which is currently in development as part of the ongoing Permian Basin Regional Freight and Energy Sector Plan being conducted by TxDOT. The Project is located within the Midland Basin, a geologic depositional and structural basin in West Texas, famous for holding large oil fields and for a fossilized reef exposed at the surface. It is part of the larger Permian Basin, itself contained within the Mid-Continent oil province. Energy outputs in this region – which produces oil, natural gas, biodiesel, solar, and wind for the region, state, and nation – are expected to continue.

III. GRANT FUNDS, SOURCES, AND USES OF PROJECT FUNDS

The I-20 Energy Sector Safety Project reconfigures a grade-separated interchange at I-20/Cotton Flat Road with a total estimated cost of $38,885,000, including $32,200,000 for construction costs and $6,685,000 in engineering fees, utility adjustment, contingency, etc. TxDOT is requesting $25,000,000 in FY2020 BUILD grant funds for the Project (estimates in year of expenditure dollars). These funds will be used for construction only.

The remaining $13,885,000 in costs will be funded under TxDOT's 2020 Unified Transportation Program (adopted August 2019) via:

- Gas tax revenues;
- Vehicle registration fees;
- Federal reimbursements;
- Bonds; and
- Proposition 1 funding[9].

Table 2 below, as well as the project information form, the 424 form, and 424C form included in **Appendix B,** provide details on the cost, committed and expected funding, Federal funding overview, project budget, BUILD funding allocation, and TxDOT's financial condition and grant management capabilities. In managing this project, TxDOT uses their procurement standard with the latest provisions of Buy America as listed at 23 CFR 635.410.

Table 2. Total Project Cost and Funding Sources

Interstate 20 Energy Sector Safety Project	Total Cost	Federal Funds	State Funds	Private Funds	BUILD Grant
I-20/Cotton Flat Road Interchange Reconfiguration	$38,885,000	$0	$13,885,000	$0	$25,000,000

[9] In November 2014, 80 percent of Texas voters approved Proposition 1, which authorized a constitutional amendment for transportation funding, guaranteeing half of the existing oil and natural gas production taxes to the State Highway Fund. The funds may be used for "constructing, maintaining, and acquiring rights-of-way for public roadways other than toll roads."

The BUILD grant program can help make this project a reality and improve the lives of rural residents and increase the efficiency of businesses in the area. This Project is necessary to ensure the safety and reliability of the identified corridors, and BUILD Program funds are necessary to its construction.

IV. MERIT CRITERIA

A. SAFETY

The Project will improve safety through:

- Improving safety conditions with an anticipated result in a **$43.7 M** savings in safety costs over the course of the Project's lifecycle. [10]
- Eliminating the risk of overhead strikes by trucks by removing the Cotton Flat Road overpass at I-20.
- Reducing congestion on I-20 caused by bridge strikes by overheight trucks.
- Preventing backup of exiting vehicles onto I-20 mainlanes by converting access ramps from diamond configuration to X-configuration.
- Signalizing the frontage road intersections at Cotton Flat Road and constructing sidewalks and wheelchair ramps for visitors to the Midland County Horseshoe Arena.

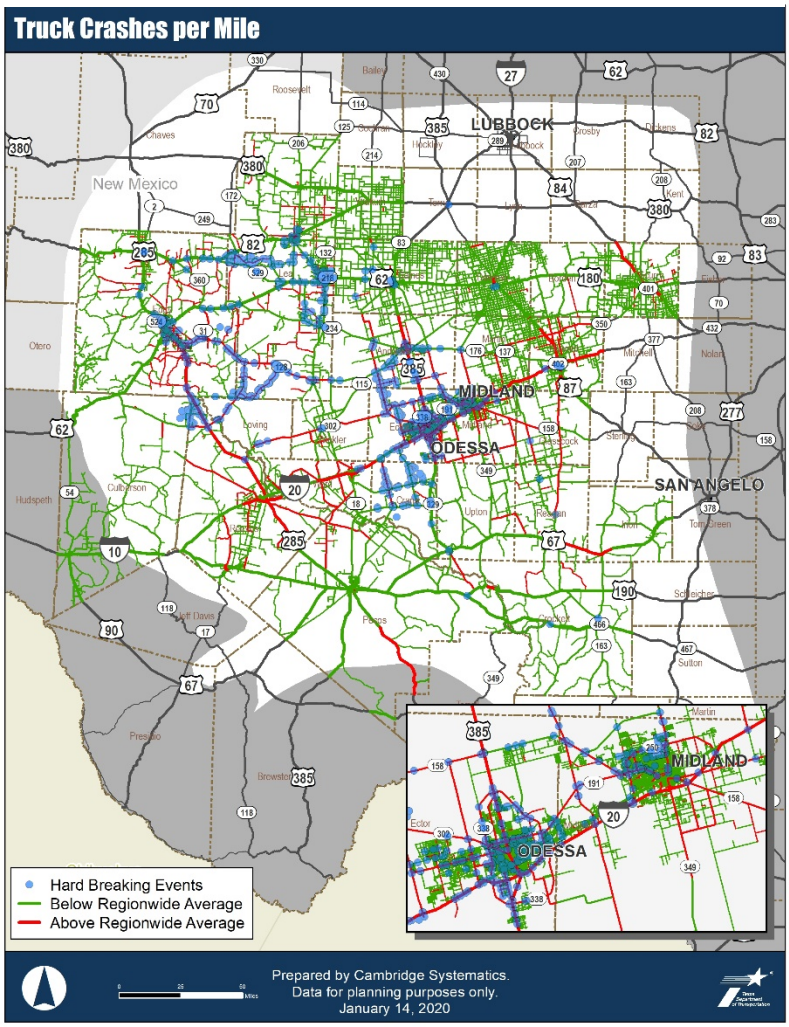
I-20 underpass at Cotton Flat Road. Source: James Durbin/Reporter-Telegram[10]

The I-20 underpass at Cotton Flat Road has a signed vertical clearance of 15'9'' for the interstate roads and up to 20'6'' for the frontage roads. The proposed improvements will eliminate vertical clearance limitations on I-20, which removes the possibility of bridge strikes by trucks. Overhead strikes by trucks pose a serious safety risk to the public, causing significant damage to trucks, lengthy traffic delays, and costly and serious damage to roadway infrastructure. Furthermore, bridge strikes can also result in injuries and fatalities for truck drivers and other motorists. For heavy freight trucks carrying potentially hazardous materials, the risk to the public is even greater. **There were 9 reported bridge strikes on I-20 at the Project location between late 2016 and 2020 (through April), which would be reduced to zero and no longer pose a threat to the public after reconfiguring the interchange to remove the I-20 overpass at Cotton Flat Road.**

[10] See BCA Calculation Spreadsheet.

Crashes at the I-20/Cotton Flat Road interchange have risen significantly in recent years.[11] Between 2015 and 2019, crashes have risen from 38 to 96 – an increase of more than 250 percent. Crashes involving CMVs have also risen, from two crashes (5 percent of total crashes) in 2015 to 19 crashes (20 percent of total crashes) in 2019. Additionally, crashes on I-20 have increased from 20 in 2015 to 67 in 2019. There have been four crash fatalities during this time period. Additionally, as of April 17, 2020, there have already been 15 crashes at this interchange in 2020, six of which have involved CMVs and 11 of which have been on I-20. These crash incidents are underscored by the number of "hard braking" events near the Project location, which indicates places where a driver has to stop suddenly. This data comes from the fleet vehicles of various energy service companies operating in the Permian Basin that are outfitted with in-vehicle monitoring systems. As shown in **Exhibit 4**, there is a strong correlation between hard braking events and high crash rates, particularly on I-20 near the Project location.

Exhibit 4. Truck Crashes per Mile and Hard Braking Events in the Permian Basin



Source: Texas Department of Transportation, Crash Record Information System; New Mexico Department of Transportation, 2014-2018; Permian Road Safety Coalition; Cambridge Systematics Inc. Analysis

Exponential traffic growth in the area, in particular at the I-20/Cotton Flat Road interchange, and large numbers of trucks as detailed in **Table 3** may exacerbate existing safety concerns if unaddressed.

[11] Accessed at: https://cris.dot.state.tx.us/public/Query/#/public/welcome; measured on I-20 and Cotton Flats Road with a quarter-mile buffer from the interchange.

Table 3. Traffic Growth and Percentage of Trucks from 2015 to 2018

Roadway	Volume Increase (2015 to 2018)[12]	% Traffic Increase (2015 to 2018)	Truck Volume (2017)[13]	% Trucks
I-20 at the Cotton Flat Road Interchange	7,130	15%	13,467	27%
Cotton Flat Road North of I-20	6,556	16%	2,269	12.5%

Safety is a major concern throughout energy-producing regions of Texas, and these regions comprise a disproportionate number of fatalities in the State of Texas. Between 2010 and 2018, the number of roadway crashes and fatalities in the Permian Basin increased by 47 percent and 64 percent, respectively, accounting for 49,410 crashes and 485 traffic fatalities in 2018.[14] **Currently, the Permian Basin region accounts for roughly 7 percent of the overall Texas population but represents a staggering 13 percent of the fatalities on Texas roadways.**[15] Midland County specifically has a disproportionate amount of crashes compared to the rest of the state (**Table 4**). Frequent stops and slow acceleration/deceleration of trucks on local roads cause disruptions to traffic flow, impede mobility, and present safety concerns for both the delivery of goods and local travelers. This Project will result in improved and safer mobility for all motorists at the I-20/Cotton Flat Road interchange.

Table 4. Crashes per 10,000 Residents, 2018

Area	2018 Population Estimate	2018 Crashes per 10,000 Residents	2018 Commercial Motor Vehicle Crashes per 10,000 Residents
Texas	28,701,845	219	15
Midland County	172,578	326	33

Source: U.S. Census Bureau, TxDOT Crash Record Information System.

Converting access ramps from diamond to X-ramp configuration will result in a number of safety benefits at the I-20/Cotton Flat Road interchange. Compared to the Project's current diamond ramp configuration, X-ramps have been shown to effectively reduce through demand on frontage road approaches to intersection, increase storage area for cross-street intersection queuing, and move the weaving area to the frontage road, where speeds and volumes are lower.

TxDOT's long-term goal for the I-20 Odessa-Midland Corridor is to convert all frontage roads from two-way to one-way to maximize the safety benefits of I-20 through the Permian Basin. On January 23, 2017, the Permian Basin Metropolitan Planning Organization (MPO) approved a resolution supporting the conversion to one-way frontage roads on I-20 in the MPO boundary. Converting to one-way frontage roads has been shown to reduce serious head-on and angle crashes by up to 94 percent, rear-end crashes by 73 percent, intersection crashes

[12] Accessed at: http://txdot.maps.arcgis.com/apps/webappviewer/index.html?id=75e148d784554d99bea6e8602986bfd2
[13] Accessed at: https://www.fhwa.dot.gov/policyinformation/hpms/shapefiles.cfm
[14] Permian Basin Regional Freight Plan, TxDOT.
[15] Accessed at: https://www.txdot.gov/driver/share-road/be-safe-drive-smart/energy-sector.html

by up to 85 percent, and fatal and injury crashes by 57 percent. Other benefits of one-way frontage roads include improved safety and entrance and exit ramps, improved intersection safety and efficiency, smoother traffic flow, and improved air quality.

TxDOT has committed to a goal of achieving zero highway fatalities by 2050. To this end, TxDOT has crafted and implemented a robust public information campaign to improve safety in the Permian Basin. This includes educating the public on crash statistics in the area, providing safety tips, and conducting a targeted safety media campaign that includes print materials, billboards, video public service announcements (PSA), audio PSAs, and utilizing social media. TxDOT continues to coordinate a comprehensive safety program, working with Department of Public Safety, safety groups, governments, companies, and subject matter experts in efforts to reduce injuries, fatalities, and economic loses. Specific to this Project, TxDOT has worked with local governments and residents in the Permian Basin area in the following ways:

- 2016- 2019: Participated in 'Day Without Traffic Fatalities' after a Road Safety Forum. TxDOT waged a broad social media and word-of-mouth effort throughout the year, carrying the hashtag #EndTheStreakTX, that encouraged drivers to make safer choices while behind the wheel.
- 2019: Participated in several safety campaigns ("Be Safe. Drive Smart.", "Click It Or Ticket", "Teen Click It or Ticket", "Share the Road: Look Twice for Motorcycles", "Heads Up, Texas," "End the Streak") in coordination with the Odessa District.
- 2019: TxDOT's Statewide Impaired Driving campaign spread the safety message at three consecutive Midland RockHounds baseball games. The goal was to urge motorists to develop a safe transportation plan before they go out on the town.
- 2019: The Texas Transportation Commission set the goal of cutting fatal crashes in half by 2035 and to end all fatalities on Texas roads by 2050.[16]
- Created a safety video for Permian Basin residents available on governmental sites and YouTube.[17]
- Developed Energy Sector Safety Campaign Webpage with print and billboards, Video PSAs, and Audio PSAs.
- Participates in the annual National Work Zone Awareness Week every April, which focuses on reminding people of the dangers found in road construction work zones.

[16] Accessed at: https://www.txdot.gov/inside-txdot/media-center/statewide-news/012-2019.html
[17] Accessed at: https://www.txdot.gov/driver/share-road/be-safe-drive-smart/energy-sector.html

While the TxDOT safety campaigns are helping, influencing driver behavior can only reduce crashes so much. The geometric changes being undertaken by this Project are necessary to maximize efforts to increase roadway safety in the Permian Basin.

Permian Basin safety video available online

Permian Basin safety video available online

IV. MERIT CRITERIA

B. STATE OF GOOD REPAIR

The Project will ensure state of good repair by:

- Upgrading pavement to a level that can withstand heavy freight traffic.
- Improving infrastructure at the existing I-20/Cotton Flat Road interchange.
- Anticipated maintenance, operation, and repair cost savings of **$7.1 M** from eliminating strikes of the I-20 overpass by overheight trucks and other commercial vehicles.
- Ensuring pavement is high quality, has a long lifecycle, and reduces overall maintenance costs on the roadways to comply with the Texas Transportation Asset Management Plan.

Activity associated with energy sector development, production, and distribution is taking a toll on the existing transportation infrastructure along I-20. Pipe, sand, and water associated with these activities can weigh more than the Empire State Building[18] and, over time, trucks hauling these heavy loads into, out of, and within the region cause significant damage to the existing transportation infrastructure, impeding their utility as high-volume transportation corridors.

This Project is part of a larger overall asset management effort by TxDOT to maintain and improve rural corridors. More than 1,700 miles of improvements are currently planned by TxDOT which include pavement strengthening, addition of shoulders, and the addition of passing and travel lanes. Upgrading and rehabilitating the existing infrastructure on this corridor will contribute to a state of good repair while strategically planning for economic

[18] Accessed at: https://www.houstonpublicmedia.org/articles/news/2018/05/04/283575/researcher-points-tolegislative-fixes-for-oilfields-crumbling-roads).

growth by reducing or eliminating existing mobility barriers. TxDOT has allocated $1.37 billion in 2020 toward asset preservation activities through its Category 1 (Preventive Maintenance and Rehabilitation) funds, including $62.9 million for the Odessa District in 2020 ($640 million over 10 years).[19]

Extremely heavy loads across the region have begun to take their toll and impede the network's utility for high-volume transportation. Texas A&M Texas Transportation Institute (TTI) estimates that the total cost of rebuilding the infrastructure as a result of increased energy-related activities is approximately $1 billion annually to the roadways under TxDOT's jurisdiction. TTI estimates approximately another $1 billion annually is necessary for roadways under local jurisdiction.[20]

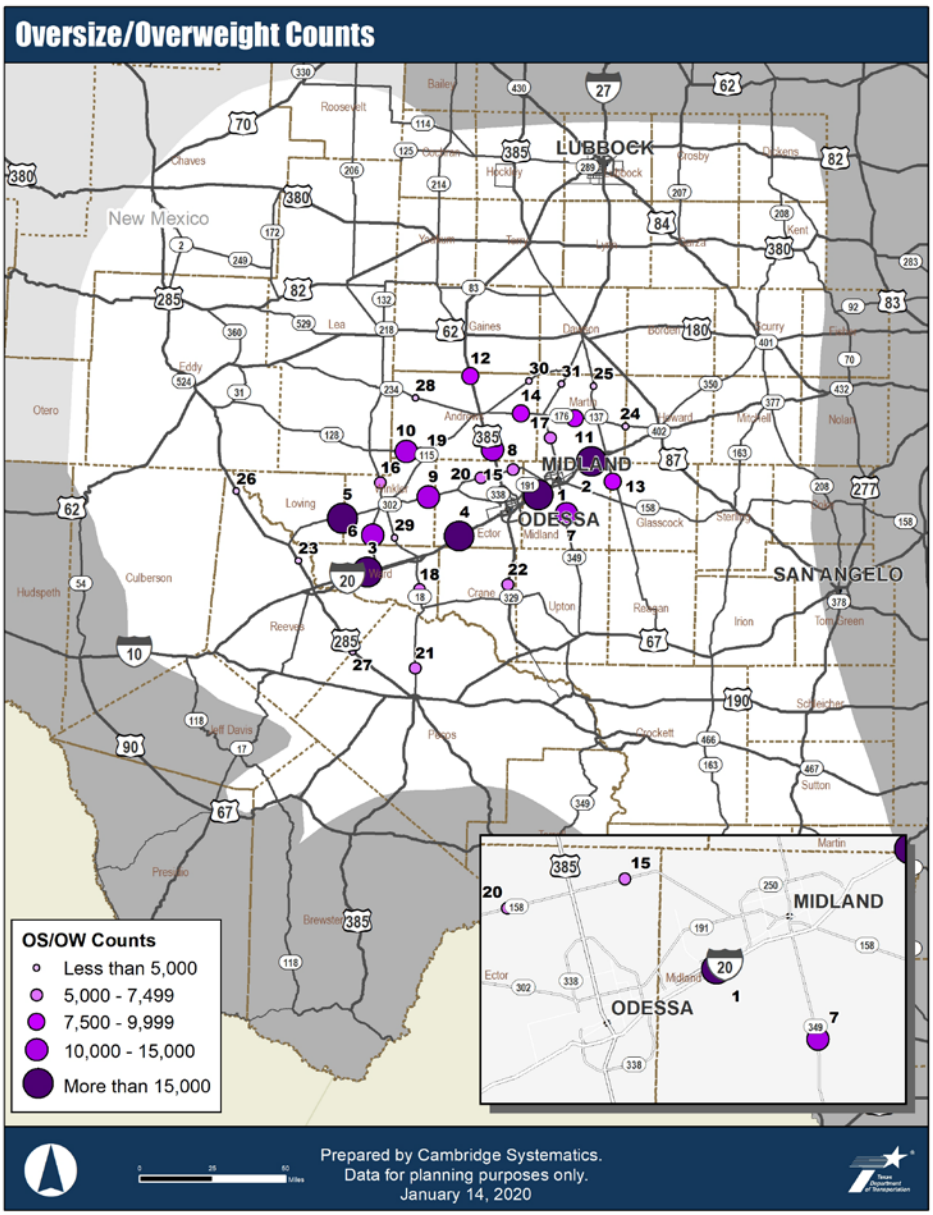
Source: James Durbin/Reporter-Telegram. Accessed at: https://www.mrt.com/news/article/Cotton-Flat-overpass-was-hit-for-the-third-time-12563615.php#photo-15016565

In the Permian Basin, heavy truck trips transporting three key oilfield commodities – sand, fresh water that is injected into wells, and produced water which is generated as a byproduct of petroleum production – comprise a significant share of the region's freight traffic. A new development site can generate between 3,000 and 9,000 heavy truck trips over a 45 to75 day period as the site is being prepared for oil and/or gas production. Although truck trips drop off after the site is in full operation, the intensity of freight activity generated as a result of new drilling activity results in enormous wear and tear on the region's roadways. **In Midland County alone, 33.6 million tons of sand, fresh water, and produced water resulted in an additional 1.6 million loaded truck trips transported to, from, and within the County in 2018, which translates into an additional 8,650 loaded and empty truck trips per day.**

Oversized and overweight loads (OS/OW) experienced throughout the Permian Basin are shown in **Exhibit 5**. This map shows data for "routed" OS/OW vehicle activity as collected by the Texas Department of Motor Vehicles during the period of October 2018 to September 2019. These represent loads that are so overweight and/or over-dimensioned that they must be routed using the State's OS/OW routing system – the Texas Permitting and Routing Optimization System (TxPROS) – to ensure safe passage. As shown, there is a clear density of OS/OW loads on roadways in the Permian Basin, especially along I-20. Analysis from the Permian Basin Regional Freight and Energy Sector Plan found that during this period there were over 35,000 OS/OW trucks routed through the Project location, the most frequently used highway for routed OS/OW vehicles out of all studied locations.

[19] Accessed at: http://ftp.dot.state.tx.us/pub/txdot/tpp/utp/2020-utp.pdf
[20] Accessed at: https://ftp.dot.state.tx.us/pub/txdot-info/sla/strategic-plan-2015-2019.pdf

Exhibit 5. Oversize/Overweight Vehicle Counts in the Permian Basin



Source: Texas Department of Motor Vehicles, Oversize/Overweight Permits Database, October 2018-Septermber 2019; Cambridge Systematics, Inc. analysis.

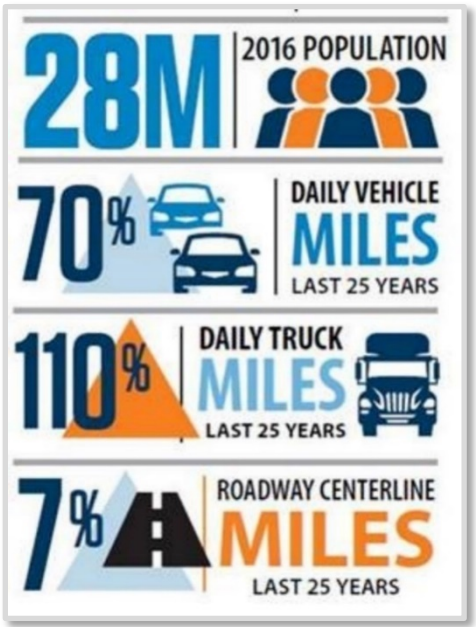
The TxDOT Odessa District is working to address the road conditions on energy corridor facilities such as I-20 in Midland County through a comprehensive maintenance plan, and ensure residents in Midland County, as well as those traveling through, have safe and reliable roadways. In addition to routine maintenance that is performed on I-20, five projects totaling $830.1 million are proposed during the next several years along I-20 in Ector and Midland Counties along the I-20 Odessa-Midland Corridor. In addition to rehabilitating the road and widening the mainline to add a travel lane in each direction, frontage roads will be reconstructed and converted to one-way throughout the corridor. Interchange improvements are scheduled to be implemented in key locations, including additional U-turns and cross-

overs, updated design standards, and increased bridge clearance. Three projects are scheduled to let between 2020 and 2022, including the I-20/Cotton Flat Road interchange reconfiguration project if funded.

TxDOT maintains more than 80,000 centerline miles and 196,000 lane-miles of highways, which presents challenges for rapidly changing pavement conditions within certain areas across the state. The population within Texas has grown more than 70 percent during the last 30 years.[21] Texas' daily vehicle miles traveled increased from 586 million in 2000 to more than 772 million in 2018 and is projected to reach 800 million by 2040. [22,23] In addition, Texas moved more than 2.2 billion tons of freight in 2016 with more than half of the freight moved by trucks on the state's highways; freight movement is expected to double by 2045.[24] TxDOT is currently conducting a Permian Basin Regional Freight and Energy Sector Plan to further quantify and address the challenges posed by freight movement in the region.

One of the overarching goals assigned to TxDOT is the preservation of transportation assets. It is important that the State continues to develop and maintain its system of highways to support the population, vehicle, and freight movement demand on its highways. Highways that are not maintained in a state of good repair increase transportation costs for people and goods. With increased congestion, the cost of travel and goods will increase as well. According to recent estimates, the trucking industry incurred $6.3 billion in congestion costs in Texas, the highest cost of any state.[25]

The Texas Transportation Asset Management Plan details the processes in which TxDOT utilizes life-cycle planning to forecast network-level funding needs to sustain performance of the existing assets and recommend the most cost-effective way to optimize its long-term condition. These methods include using semi-automated methods for obtaining pavement condition information, forecasting future pavement conditions to recommend optimized pavement work plans and implementing four-year pavement management plans, and standardized and regularly scheduled bridge inspections to assist in prioritization of structure rehabilitation and replacement.



Changes in Texas Demographics and Transportation System

[21] Accessed at: https://tshaonline.org/handbook/online/articles/ulc01 and http://worldpopulationreview.com/states/texas-population/.
[22] Accessed at: http://ftp.dot.state.tx.us/pub/txdot-info/tpp/roadway-inventory/2018.pdf
[23] Accessed at: https://comptroller.texas.gov/economy/fiscal-notes/2016/may/road-finance.php.
[24] Accessed at: http://ftp.dot.state.tx.us/pub/txdot/move-texas-freight/studies/freight-mobility/2017/summary.pdf.
[25] Accessed at: https://atri-online.org/wp-content/uploads/2018/10/ATRI-Cost-of-Congestion-to-the-Trucking-Industry-2018-Update-10-2018.pdf

IV. MERIT CRITERIA

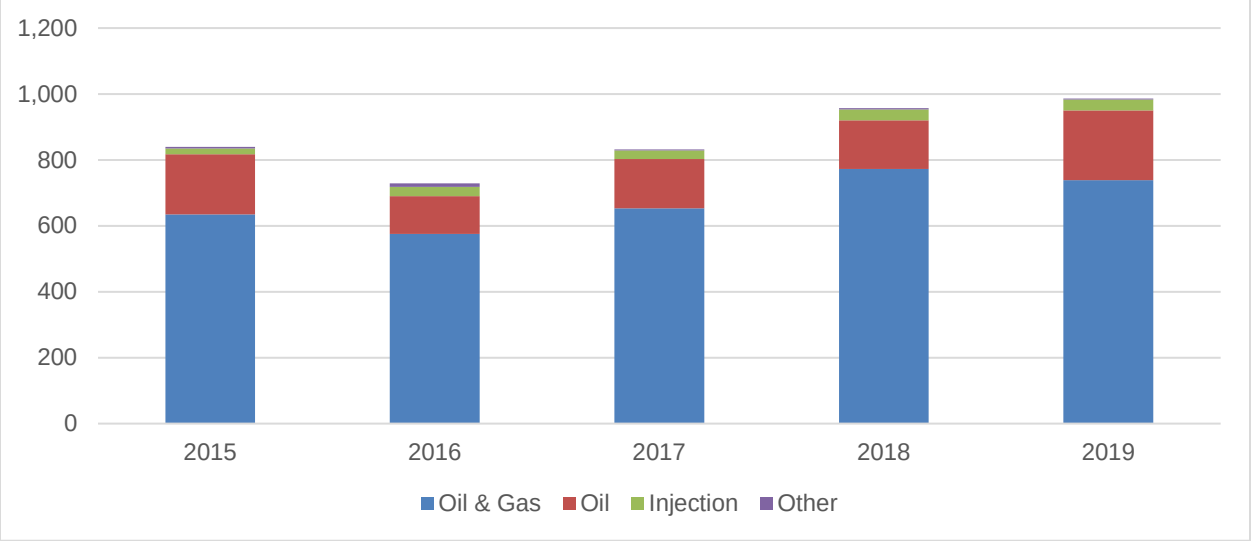
C. ECONOMIC COMPETITIVENESS

The Project will advance economic competitiveness by:

- Reducing delays and improving travel time reliability anticipated to result in **$0.1 M** in truck/passenger vehicle operating costs, **$4.8 M** in time savings for all motorists, and **$1.7 M** in shipper/logistics costs over the course of the Project's lifecycle.[26]
- Reducing congestion for freight and transport in the energy industry.
- Improving travel time reliability for residents commuting to work.
- Generally improving traffic flow and reducing delays for an efficient movement of goods in the region.

Enhancing economic competitiveness in the Permian Basin is a major driving force behind the Interstate 20 Energy Sector Safety Project and associated projects. Without these roadway infrastructure improvements, economic growth in the Permian Basin will be stifled due to existing infrastructure constraints. The energy industry anticipates a continued growth in the region, putting an even greater strain on the transportation network. In 2019, there were 986 new drilling permits filed for oil and gas in Midland and Ector Counties, as shown in **Exhibit 6**. As of April 2020, there were 356 active drilling permits in Ector County and 1,954 active permits in Midland County.[27] **Exhibit 7** shows the concentration of new wells in the Permian Basin as of January 2020.

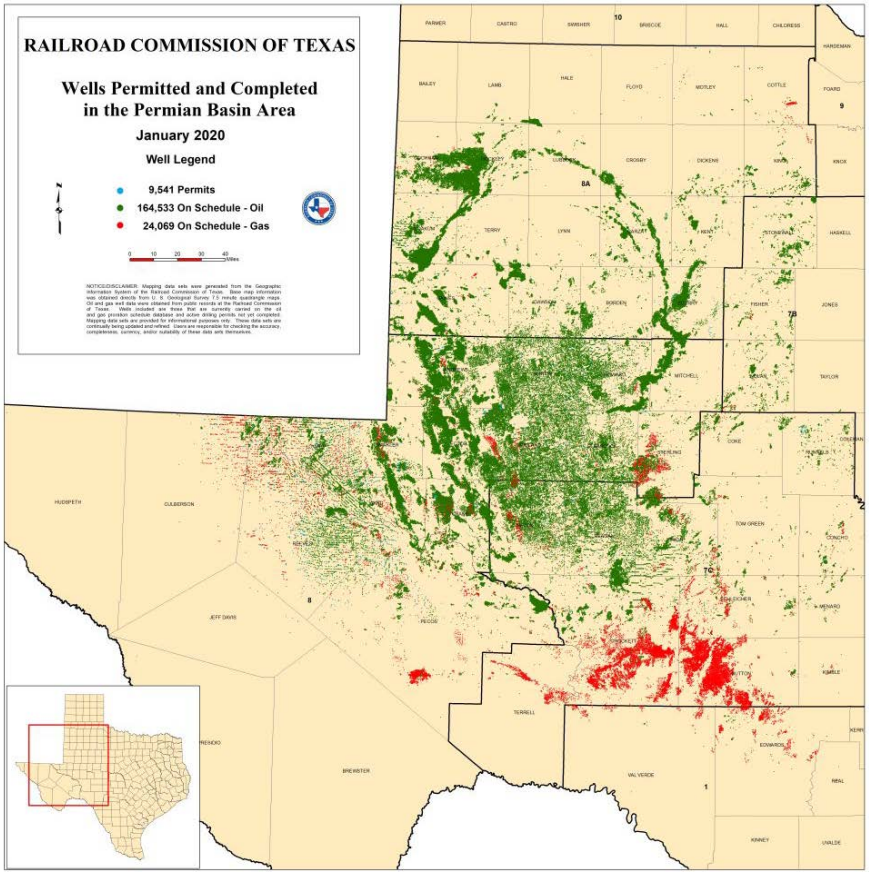
Exhibit 6. Oil and Gas Drilling Permits Filed in Midland and Ector Counties, 2015-2019



[26] See BCA Calculation Spreadsheet.
[27] Enverus Drillinginfo database; TxDOT (2020).

If constraints at the I-20/Cotton Flat Road interchange are not addressed, overheight trucks will continue to strike the I-20 overpass, and congestion and bottlenecks will increase. Since the energy sector is reliant on efficient transportation of goods, increased delay has a direct impact on the economic vitality of the region. **Since 2015, the 10 bridge strikes at I-20/Cotton Flat Road have amounted to at least $134,000 in repair costs to TxDOT. During that same period, the State's 53,000+ bridges had a total of 310 reported strikes, indicating that a disproportionate number of strikes are occurring at I-20/Cotton Flat Road.** Depending on the severity of the bridge strike, traffic can be delayed for several hours while the overheight vehicle is removed and debris is cleared, but delays can be even longer when the structure itself is compromised and deemed unsafe for use. Although offending drivers are responsible for the cost of damaged infrastructure, the incident may lead to increased insurance premiums, direct compensation claims, and legal fees associated with the strike, causing revenue losses to trucking carriers and increasing the cost of doing business.[28] Energy production in the area depends on efficient truck and freight movements throughout the Permian Basin, especially along the I-20 corridor.

Exhibit 7. Oil and Gas Wells within Permian Basin, January 2020



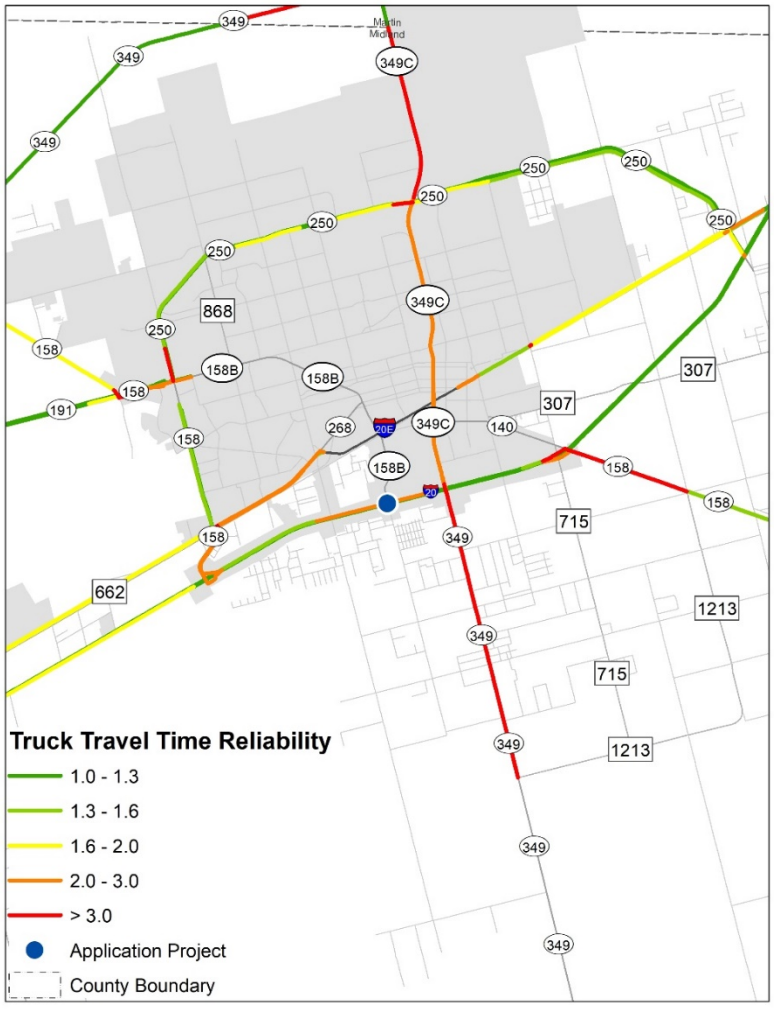
Source: https://www.rrc.state.tx.us/media/55965/pb-area-202001-lg.jpg

[28] Accessed at: https://www.researchgate.net/publication/304542486_Understanding_the_Problem_of_Bridge_and_Tunnel_Strikes_Caused_by_Over-height_Vehicles

The grade-separated interchange reconfiguration at I-20/Cotton Flat Road, in conjunction with associated roadway improvements, will increase the efficiency of the movement of goods and people through the region by eliminating the risk of overheight trucks striking the I-20 overpass bridge and reducing associated congestion and bottlenecks along the interstate corridor.

The existing configuration is underperforming and posing a threat to safety and the movement of goods in the region. The existing delays result in an increased cost of doing business in the Permian Basin and poses an impediment to national security and energy independence. **Exhibit 8** displays the Truck Travel Time Reliability (TTTR) Index at the Project location. A TTTR Index of 3.0 indicates that drivers must plan for three times the typical travel time in order to arrive on time 95 percent of the time. The existing delays result in an increased cost of doing business in the Permian Basin and poses an impediment to national security and energy independence. The grade-separated interchange reconfiguration at I-20/Cotton Flat Road, in conjunction with the associated roadway improvements, will increase the efficiency of the movement of goods and people through the region by removing conflicts between heavy trucks entering and exiting these facilities and reducing associated congestion and bottlenecks along the corridors.

Exhibit 8. Truck Travel Time Reliability at the Project Location



Source: NPMRDS, February 2019, Analyzed by Cambridge Systematics

This Project can alleviate bottlenecks throughout the region which are causing delays on primary energy sector corridors. **Over a 30-year timeframe, savings from operator costs and travel time with implementation of the Project amount to over $12.5 million.** These savings are realized by the business community as well as residents, as transportation costs are reduced for industry and commuters.

Texas has been recognized as the top exporting state in the nation for 16 consecutive years with more than $330 billion in exports in 2019.[29] Texas exports some of the world's top commodities, including petroleum and coal products, chemicals, electronic and machinery products, and transportation equipment – many of which originate within the Permian Basin and are reliant on an efficient transportation network to enter the market. Due to the recent Federal focus and increased allowance to build out oil pipelines, energy production in the Permian Basin is projected to double production over the next four years, to 5.4 million barrels a day.[32] An efficient, well-connected, and safe roadway network is necessary not only for the success of the local rural economy in Midland County, but also for the State of Texas and United States economy.

TxDOT has engaged in a series of studies and surveys to support the State's initiative to remain competitive in local, national, and international markets, and the results from those efforts have further illustrated the need for an efficient network. In 2013, the Corporate Site Survey (an annual research effort to identify the key factors influencing business site location decisions) concluded that 11 of the top 26 site selection factors were related to transportation.[30] Furthermore, highway accessibility has ranked first or second in importance over the life of this study.

This Project can alleviate bottlenecks throughout the region which are causing delays on primary energy sector corridors. **Over a 30-year timeframe, savings from travel time, vehicle operator costs, and logistics and freight costs with implementation of the Project amount to $6.6 million.** These savings are realized by the business community as well as residents, as transportation costs are reduced for industry and commuters.

Texas feeds the national economy and leads the nation in energy production, 37 percent of the nation's crude oil production and 24 percent of its marketed natural gas production. As of January 2018, the 29 petroleum refineries in Texas process more than 5.7 million barrels of crude oil per day, accounting for 37 percent of the U.S. refining capacity. Texas also has abundant renewable energy resources and has rapidly developed its wind production, leading the nation in wind-powered generation capacity with more than 23,300 megawatts in 2018.[31,32]

It is imperative that the energy resources within the State of Texas are mobilized and distributed throughout the U.S. The energy sector relies on the transportation network to provide the link between the place of origin and the end user. To do so, the transportation network must be well-connected and reliable. Localized congestion on farm-to-market roads and state highways impedes the flow of the state's resources and slows the necessary freight movement. While the energy sector is planning to significantly increase output, the industry is concerned about capacity, congestion, and safety throughout the Permian Basin. These are real concerns for people relying on the movement of basic goods and energy products.

[29] Accessed at: https://www.census.gov/foreign-trade/statistics/state/data/tx.html
[30] Accessed at: https://ftp.dot.state.tx.us/pub/txdot-info/freight/one-pagers/freight-and-economic-development.pdf
[31] Accessed at: https://www.eia.gov/state/?sid=TX
[32] Accessed at: https://www.eia.gov/state/analysis.php?sid=TX

Whether it is fossil fuels, clean energy, electric power, hydrogen or fuel cells, these energy sources heat and cool homes, assist with the production of food and goods, fuel cars, power buses, and support the nation's requirements to maintain a thriving economy. Instability in the energy market worldwide can impact the supply, demand, and price point of energy, which impacts a thriving economy and quality of life. As such, supporting the economic development of sustainable energy delivery and the economic development associated with internal energy production, is important to national stability and national security. This same energy production can also increase cooperation with trade partners and contribute to a stable economy.

State and Permian Basin Energy Facts at a Glance

- **Five of the Nation's 31 oil basins are in Texas.**
- **Seven of the Nation's 26 natural gas hubs are in Texas, two of which are in the Permian Basin.**
- **In total, 181 of 551 natural gas processing plants are in Texas with 81 of those located in the Permian Basin.**
- **Of the 1,043 wind power plants nationwide, 152 are in Texas, many of which are in the Permian Basin.**

IV. MERIT CRITERIA

D. SUSTAINABILITY

The Project will support sustainability by:

- Reducing congestion and congestion-related vehicle emissions anticipated to result in a savings of approximately $20,000 in environmental costs over the course of the Project's lifecycle.[33]
- Reducing congestion and congestion-related vehicle emissions, thus improving air quality.
- Supporting the advancement of renewable energy, particularly wind energy production.
- Investing in rural infrastructure to ensure all residents have equitable mobility.

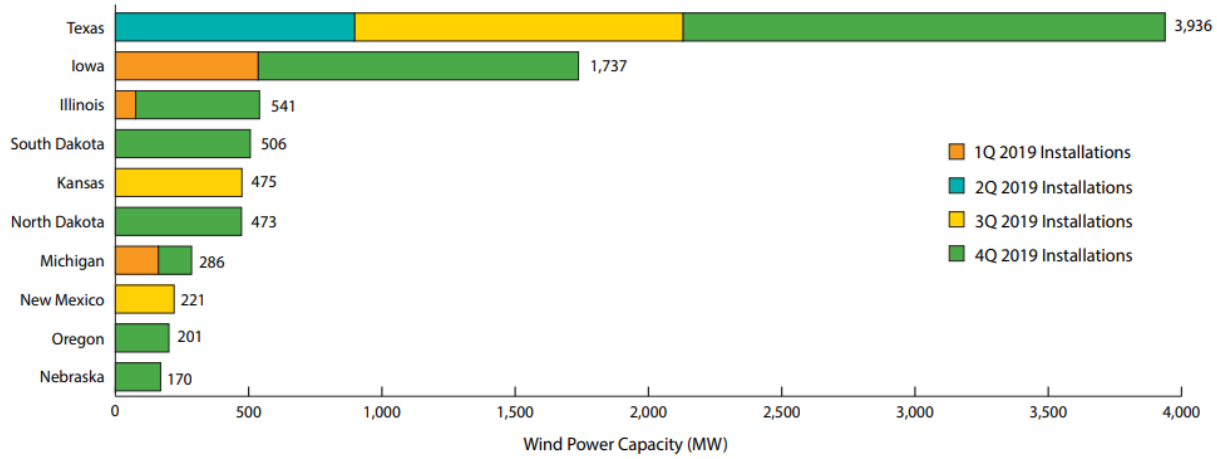
The Project would result in environmental benefits by reducing congestion and congestion-related emissions associated with heavy trucks idling during regular traffic delays or bridge strike incidents. By improving mobility within the region, air quality will improve as congestion is reduced or eliminated through the grade-separation and roadway improvement projects.

[33] See BCA calculation spreadsheet.

Texas produces energy from a broad range of sources, including alternative energy sources. Based on the American Wind Energy Association (AWEA) most recent market report in Q4 of 2019, Texas greatly surpassed all other states for total wind capacity. When accounting for new 2019 installations as shown in **Exhibit 9,** Texas almost triples the second-highest producer of wind energy (Iowa) with almost 29 GW of cumulative installed capacity.[34] Many of these wind farms are in the Permian Basin, utilizing state and rural transportation infrastructure.

Similar to the heavy and oversized loads in other energy sectors, freight traffic for wind farms causes great strain to the infrastructure and network from heavy loads, slow and oversized loads, congestion, and additional traffic. Corridor improvements and a reconfigured grade-separated interchange at I-20/Cotton Flat Road will help to ensure the safety of other motorists and adequate facility needs for wind turbine transportation.

Exhibit 9. Top Wind Power Capacity States, Q4 2019[35]



Additionally, natural gas is an important product collected from the Permian Basin region. The environmental benefits associated with natural gas compared to other fuel sources include reductions in CO_2, NO_x, SO_2, and other emissions.[36] This type of fuel supports developing technology that align the FHWA's and FTA's goals of transitioning vehicle fleets, including intercity buses, across the country to zero emission vehicles.

TxDOT implements an Environmental Management System (EMS) as part of its core business processes used to manage environmental considerations during all phases of road construction from concept through final construction. The objective of the EMS is to develop and implement processes that focus on improving environmental compliance and performance so that TxDOT can be and remain fully compliant with the environmental legal requirements.

[34] Accessed at: https://www.awea.org/Awea/media/Resources/Publications%20and%20Reports/Market%20Reports/1Q-2019-AWEA-Market-Report-Public-Version.pdf
[35] Accessed at: https://engage.awea.org/Shop/Product-Catalog-83/Product-Details?productid=%7B9FBF0A1D-2742-EA11-8101-000D3A03FAAF%7D
[36] Accessed at: http://www.hydraulicfracturing.com/#/?section=air-emissions

TxDOT will fully integrate environmental considerations into road construction operations through the EMS for the Project. TxDOT commits to:

- Comply with all applicable environmental laws and regulations, minimizing pollution and associated risks to the environment, and supporting an ongoing process for continual improvement in TxDOT environmental performance.
- Communicate environmental management practices and compliance requirements to all affected TxDOT personnel, consultants, contractors, and other participants in TxDOT's road construction operations.

TxDOT's management is fully committed to support all aspects of the EMS, including personnel and resources for development, implementation, maintenance, and improvement. In turn, each employee is expected to exercise his or her responsibility on behalf of TxDOT to ensure that the commitments and goals of the EMS are diligently carried out.

IV. MERIT CRITERIA

E. QUALITY OF LIFE

The Project will improve quality of life by:

- Reducing congestion anticipated to result in a savings of **$4.8 M** in time savings for all motorists, and a **$1.7 M** savings in shipper/logistics costs over the course of the Project's lifecycle.[37]
- Improving safety conditions with an anticipated result in a **$43.7 M** savings in safety costs. [38]
- Reducing congestion and improving travel time reliability.
- Improving mobility for rural residents.
- Improving safety of motorists, including truck drivers and residents.
- Designing to preserve right of way for fiber network.

Improving quality of life for area residents is a major driving force behind the implementation of the Project. Due to the rural nature of the region, area residents have limited roadway facility options for traveling within and around the region, and they currently experience significant travel delays on these limited facilities because of growing energy sector activity in the area. These delays result in negative impacts not only to commute times but also negative impacts to access to healthcare, large employers, and other destinations in the region. For example, the Project will provide West Texas residents with easier access in and out of Midland County Horseshoe Arena, one of the largest and most popular event venues in West Texas and a major generator of local traffic.

[37] See BCA calculation spreadsheet.
[38] See BCA Calculation Spreadsheet.

Existing congestion along the I-20 corridor results in barriers to access these facilities in emergency situations. **Reducing congestion in the area through the I-20/Cotton Flat Road interchange reconfiguration would improve access to critical medical facilities and important community event centers, and provide more reliable response times from emergency personnel.**

As previously discussed, the Permian Basin is home to a productive economy, with many companies in the Project area acting as important contributors to this economic output. The large employers in the area consisting of energy companies, electricity and construction conglomerates, universities and school systems, and local and statewide government in nearby Odessa and Midland all depend on the reliability, safety, and efficiency of Texas' highway system.

Safety is another major quality-of-life indicator and, as discussed in the safety section of this application, the Project and associated roadway improvement projects would result in fewer opportunities for conflict between heavy freight trucks and passenger vehicles. The addition of sidewalks, wheelchair ramps, and signalization of all frontage road intersections will provide an increase in safety along these corridors as well as reliable access and multimodal transportation connectivity to jobs.

For the mobility, access, and safety improvements afforded to the region through proposed roadway projects, TxDOT and the Permian Basin MPO have solicited ideas and feedback from residents by hosting events such as a "Livability Workshop." At these events, best practices were discussed with area residents for integration of livability and sustainability goals and objectives in the transportation planning process. While these workshops are not project-specific, the feedback received from these workshops is invaluable to TxDOT and area planners as they continue to identify ways to improve livability and quality of life through area transportation projects.

Additionally, the Project will be designed to provide ROW for anticipated future installation of broadband and fiber optic networks, as demand necessitates. This helps to bridge the 'digital divide' that many rural communities experience throughout the nation. The Project will be designed to optimize ROW for anticipated future fiber in the I-20/Cotton Flat Road interchange reconfiguration. Planning for the future installation of fiber at the time of construction will save costs through coordination with other utilities in the area and identification of the potential route to avoid conflicts. Broadband access has transitioned from a luxury to a necessity for full participation in the economy and society. Cooperatives Connect Rural America, a co-op, has seen great success in partnering with government organizations to bring fiber Internet services to several rural communities in Texas. TxDOT is actively engaged with the telecom industry in TxDOT's Small Cell Node Telecom Program and is pursuing opportunities for fiber collaboration with interested industry parties for this Project.

IV. MERIT CRITERIA

F. SECONDARY CRITERIA - INNOVATION

The Project will deploy an innovative approach by:

- Following innovative design guidelines that address freight-specific needs and prepare for future transportation needs.
- Streamlining environmental review and approval through the State's NEPA assignment.
- Leveraging a unique funding approach that will provide incremental and strategic investments from the energy sector.

TxDOT is a 21st century organization and continually looks to enter innovative transportation technologies, project delivery methods, and funding arrangements to improve the mobility of Texas residents and those traveling throughout the state. Though, ultimately, the design of the improvements will be guided by how effective the Project and larger initiatives will be at achieving TxDOT's key performance objectives, TxDOT will consider additional innovative options within the design.

Innovative Design and Technologies: Prepared for the Future

TxDOT is currently increasing its capacity to design projects to meet the transportation needs of today and the future. Two freight-specific efforts are currently underway that will influence this project: The Permian Basin Regional Freight and Energy Sector Plan and the Freight Infrastructure Design Considerations (Design Considerations). The Design Considerations project is examining best practices throughout the nation for building infrastructure to withstand the physical and technological demands of freight movement. Elements such as pavement design, land width, stripping, signage, shoulder design, turn radius, and vertical clearance are being assessed to ensure that new projects in the freight-producing areas not only meet the demands of current freight movement but also that of the future. This may also include other technologies such as dynamic messaging signs that can provide information about traffic conditions or truck parking availability and can be deployed to support transportation safety and mobility in the region.

In addition to physical infrastructure, TxDOT is preparing for expanded deployment of automated and connected vehicles throughout the state. TxDOT leads 32 municipal and regional partners in a shared interest in mobility and safety challenges related to automated and connected vehicles on public roadways. The Texas Automated Vehicle Proving Ground Partnership was one of 10 nationally designated sites and the only statewide consortium to offer controlled environments for the automated vehicles to be assessed. Research is in progress throughout the state for future use of automated vehicles, which may one day use this project's infrastructure.

Innovative Project Delivery: NEPA Assignment

NEPA assignment streamlines the Federal environmental review process by eliminating Federal Highway Administration (FHWA) project-specific review and approval, and provides a participating State-specific review and approval authority. TxDOT was approved and entered into NEPA assignment program in late 2014. In December 2019, in agreement with the FHWA, TxDOT extended their NEPA assignment for five more years. TxDOT renewed this program after meeting the performance measures established in the original program assignment, showing that TxDOT had successfully implemented this innovative project delivery strategy.[39]

Since receiving NEPA assignment, TxDOT has seen specific project development improvements, including:

- Faster environmental review and approval times;
- Improved program guidance, policies and procedures;
- Improved understanding of the process for agencies, local governments and the public;
- Improved training program;
- Improved program efficiencies; and
- Greater accountability through internal monitoring and FHWA program audits.

The Project will benefit from TxDOT's NEPA assignment by streamlined environmental reviews and enhanced project delivery. Since receiving NEPA assignment, TxDOT has saved 34 percent of the time needed to obtain categorical exemptions.

Innovative Funding: Proposition 1 and Proposition 7

On November 4, 2014, 80 percent of Texas voters approved a ballot measure known as Proposition 1, which authorized a constitutional amendment for transportation funding. Under the amendment, a portion of existing oil and natural gas production taxes (also known as severance taxes) would be divided evenly between the Economic Stabilization Fund (ESF) and the State Highway Fund (SHF) and used to construct, maintain and acquire right of way for public roads. As of 2020 over $7 billion has been deposited in the SHF statewide[40] and between 2015 and 2018, TxDOT allocated over $77 million of Proposition 1 funds toward the various roadway improvements in the Odessa District.

In November 2015, Texas voters approved a second ballot measure, Proposition 7, adding an additional non-Federal revenue stream to TxDOT's funding. Proposition 7 sets aside a portion of the State sales and use tax for transportation, if overall sales tax receipts reach a certain benchmark. Additionally, a percentage of revenue growth from taxes on motor vehicle sales and rentals is being allocated for transportation projects starting in 2020.

The funds received from the energy sector, through Propositions 1 and 7, and the additional project-specific funds, as well as the broad stakeholder support, show a strong partnership and collaboration between the energy sector and TxDOT. The energy sector understands the impact it has on the region, both positively and negatively, and has partnered with TxDOT to

[39] Accessed at: http://ftp.dot.state.tx.us/pub/txdot-info/env/nepa-assignment/renewal%20letter.pdf
[40] Accessed at: https://www.txdot.gov/inside-txdot/division/state-affairs/ballot-proposition.html

identify ways that regional transportation infrastructure is not only maintained properly and upgraded appropriately through participating in funding programs and coordinating efforts with the Permian Road Safety Coalition.

IV. MERIT CRITERIA

G. PARTNERSHIP

The Project has received an overwhelming level of support including:

- Letters of support from a broad, statewide range of local, State, and Federal elected officials.
- Letters of support from major industry associations and private corporations.

Collaboration between TxDOT and local, regional, and statewide stakeholders within the Permian Basin region has been ongoing for many years. Because of this collaboration, a broad range of partners and stakeholders have offered their support for overall investment in the Permian Basin region and this Project in particular.

In 2012, TxDOT formed the Task Force on Texas' Energy Sector Roadway Needs (Task Force), which developed recommendations for addressing the state's energy-related infrastructure issues. The Task Force was comprised of representatives from State agencies, local governments and the energy industry. One of the task force's primary challenges was to identify innovative funding strategies for the unique road maintenance and repair needs of the energy sector regions. Additionally, the group focused on ways to raise public awareness around driver safety in these regions. As a result of the Task Force's collaboration, TxDOT has repaired and rehabilitated many segments of key energy corridors throughout the state and is leading ongoing efforts to strengthen pavements and provide safety enhancements on key roadways in energy sector regions.

TxDOT has also established an ongoing, collaborative relationship with freight stakeholders statewide through the Texas Freight Advisory Committee (TxFAC). This body includes public and private sector partners impacted by freight movement. The TxFAC meets quarterly and has recently advised TxDOT on several efforts impacting the Permian Basin and beyond, including the Statewide Truck Parking Study, Freight Infrastructure Design Considerations, Permian Basin Regional Freight and Energy Sector Plan, Freight Technology and Network Operations Plan, Rio Grande Valley Freight and Trade Transportation Plan, and Economic Role of Freight in Texas. Through this body, TxDOT has been able to create a meaningful dialogue between public and private entities and establish connections between geographically separate regions, such as between the Permian Basin and the Gulf Coast maritime ports.

Specific to the Project region, TxDOT has also established a Permian Basin Freight Study Steering Committee to advise the current Permian Basin Regional Freight and Energy Sector Plan. This body is chaired by the Ector County Judge (the county executive) and includes members of regional planning organizations and commissions and representative from the energy sector, water haulers, sand mind companies, utility districts, and school districts.[41] The Permian Strategic Partnership, a collection of 19 energy sector companies focused on quality of life issues in the region, has also participated in this planning effort. The Steering Committee meets approximately quarterly to establish project direction at major milestones and provide critical insight to the causes and impacts of transportation challenges in the region.

Letters of Support from Industry Associations and Private Companies

- Association of General Contractors-Texas
- Concho
- ConocoPhillips
- Midland Chamber of Commerce
- Midland Metropolitan Planning Organization
- MOTRAN Alliance
- Odessa Chamber of Commerce
- Odessa Chamber of Commerce Transportation Committee
- Permian Basin Petroleum Association
- Pecos Economic Development Corporation
- Permian Strategic Partnership
- Sprawls
- Texas Association of Manufacturers

Private sector support of the project is evidenced by letters of support received from 12 industry associations and private companies. Additionally, TxDOT has received 14 letters of support from public entities, including US Senator John Cornyn, two U.S. Congressmen, four State Representatives and Senators, the metropolitan planning organization for the region, and six local government entities. These letters of support are included as **Appendix C** to this application.

V. PROJECT READINESS

TxDOT is ready to advance the design of the project and with the help of BUILD funding, the Interstate 20 Energy Sector Safety Project is expected to obligate funds in May 2022, well in advance of the grant obligation deadline, and will be fully constructed in 2024.

TECHNICAL FEASIBILITY

TxDOT has ample experience implementing projects similar to the I-20 Energy Sector Safety Project Improvement Project. Improvements for the Project shall adhere to TxDOT's Roadway Design Manual, Bridge Design Manual, Hydraulic Design Manual, Freight-Centric Design Considerations, and ROW Utility Manual as design progresses and will follow processes set in the TxDOT Plan, Specifications and Estimate (PS&E) Preparation Manual.

All needed right of way (ROW) for the construction of the Project has already been acquired, which reduces the construction timeline significantly.

[41] Accessed at: https://pboilandgasmagazine.com/sphere-of-influence/

Appropriate levels of design and associated quantities were determined to adequately determine construction costs for the Project. Current cost estimates have been detailed using a 30 percent schematic-level estimate from average low bid unit prices for determined unit quantities. A contingency level of 10 percent has been provided for the Project as appropriate for the level of design.

TxDOT has been awarded and managed many grants as part of its overall roadway development and oversight. TxDOT is familiar with and has complied with U.S. DOT's processes for grant awards and implementation. A listing of recent Federal awards is shown in **Table 5**.

Table 5. TxDOT Federal Grant Awards

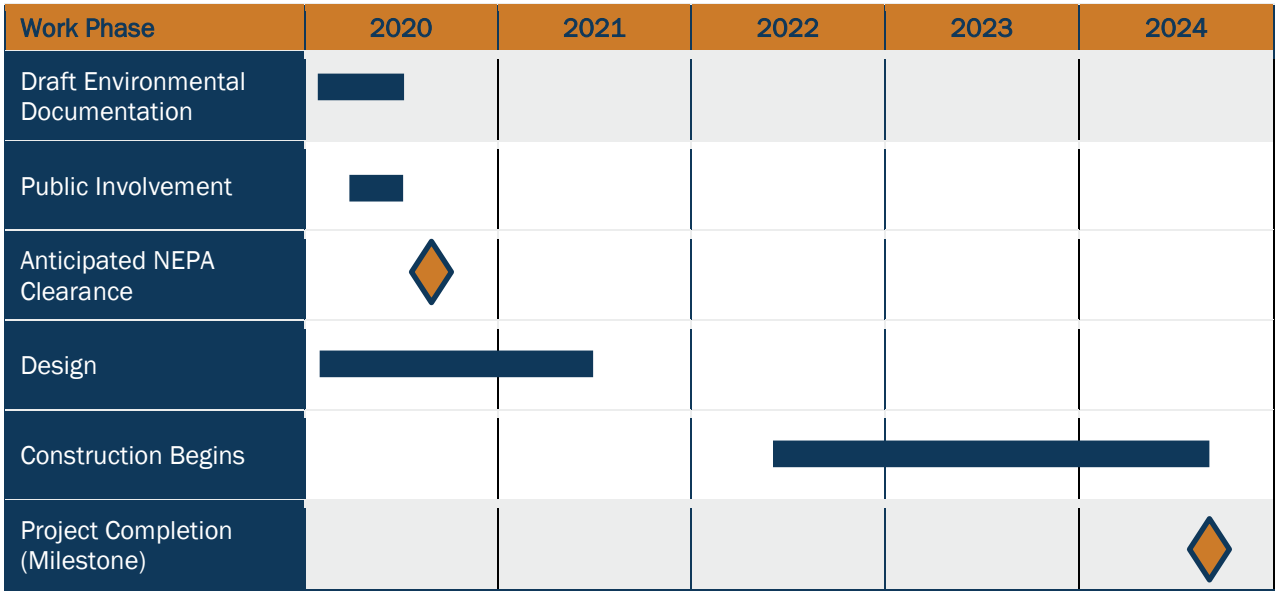
Year	Grant	Project	Amount Awarded
2010	TIGER	Tower 55	$34 million
2015	TIGER	Texas Rural Transit Asset Replacement Project	$20.8 million
2016	ATCMTD Grants	ConnectSmart: Connecting TSMO and Active Demand Management	$8.9 million
2017	FASTLANE	SORR Rehabilitation and Presidio Rail Bridge Reconstruction	$7 million
2017	ATCMTD Grants	The Texas Connected Freight Corridors Project	$6.1 million
2018	BUILD	Glascock County Improvement	$25 million
2018	BUILD	Winkler County Improvement	$25 million
2018	INFRA	I-35 North Tarrant Express "Accelerated Elements" Project	$65 million
2018	ATCMTD Grants	I-10 Corridor Coalition Truck Parking Availability System (I-10 Corridor Coalition TPAS)	$6.9 million

Source: TxDOT, June 2019.

PROJECT SCHEDULE

The project schedule shown below in **Exhibit 10** includes the major project milestones for engineering and design completion and construction. The schedule demonstrated that the project stratifies funding obligation and construction deadlines required by the BUILD grant program. The schedule allows adequate time for procurement, reviews, and contingency. With BUILD grant funding, the Project will be fully constructed in 2024.

Exhibit 10. Interstate 20 Energy Sector Safety Project Schedule



REQUIRED APPROVALS

TxDOT will adhere to the National Environmental Policy Act (NEPA) and complete all necessary documentation. Environmental documentation completed to date is available upon request.

The Interstate 20 Energy Sector Safety Project is currently going through the environmental process and is anticipated to be a Categorical Exclusion (CE) approval by September of 2020. All required state and local approvals as well as associated public engagement will be completed in advance of Project clearance.

ASSESSMENT OF PROJECT RISKS AND MITIGATION STRATEGIES

The Project has several risks that are typical of any project of this type and magnitude. TxDOT has been very successful in mitigating project risks, and one of the key factors contributing to that success is the implementation of a risk management process that identifies potential risks to the project at a very early planning stage and identifies mitigation strategies to manage each risk element. The process tracks each risk element as the project moves along its development phases. Potential risks and mitigation strategies for the project are outlined below.

- NEPA: The corridor has not received NEPA clearance. Anticipated CE approval is September 2020. This is a low-level risk since other adjacent projects have been cleared in similar timeframes and have had few environmental issues.
    - Mitigation: Preliminary environmental studies have begun on the projects.
- Design effort: The design is not yet completed and is anticipated to be completed in May 2021. This is considered a low-level risk with TxDOT's familiarity with these types of design efforts and few known challenging design elements.

- Mitigation: Although the detailed design for PS&E has not started, the project is currently in the preliminary design phase with the development of geometric schematics.

VI. BENEFIT COST ANALYSIS

A Benefit-Cost Analysis (BCA) was conducted for the Interstate 20 Energy Sector Safety Project in accordance with 2020 U.S. DOT BCA Guidance. **Based on input data, the Interstate 20 Energy Sector Safety Project has a B/C ratio of 2.0 at the 7 percent discount rate.** A Benefit/Cost (B/C) ratio above 1.0 is considered favorable, meaning that the life-cycle benefits of a project exceeds the estimated costs over the same period. See **Appendix D** for details on the B/C ratio.

Project benefits and costs were calculated for the Project. Costs include construction and non-construction costs such as operating/maintenance expenses and residual value. Project benefits classes include operating cost savings, value of time savings, crash cost reductions, logistics cost savings, and emission reductions (environmental benefits).