

TEXAS ENERGY SECTOR RURAL IMPROVEMENT PROGRAM

2 - Reeves County and Loving County Connectivity Project

BUILD Transportation Grants – Application – Rural Western
Texas - Permian Basin, State of Texas



Project Number: **TBD**

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Prepared by: **Texas Department of Transportation**

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I. PROJECT DESCRIPTION: TEXAS ENERGY SECTOR RURAL IMPROVEMENT PROGRAM OF PROJECT

The Texas Department of Transportation (TxDOT) has developed the Texas Energy Sector Rural Improvement Program of Projects (Program) to address critical infrastructure needs arising from the accelerated growth of the energy industry in West Texas, specifically within the Permian Basin. TxDOT has invested over \$200 million in the Program to date and is seeking BUILD Grant funding to deliver four additional projects within the Program. The Program of Projects applications being submitted for FY 2018 funding consideration are:

1. Reeves County Improvement Project
2. Reeves County and Loving County Connectivity Project
3. Winkler County Improvement Project
4. Glasscock County and Reagan County Improvement Project

The projects included in the application have been prioritized based on a TxDOT energy sector improvement plan developed in partnership with local and regional governments and with input from citizens and private entities. TxDOT is addressing additional components of the Program by leveraging state funding sources that originate from energy resource production, including oil and gas severance taxes and general revenue sources. These four projects have a combined benefit-cost ratio of 1.49, providing extensive operator, delay, and environmental savings throughout the region.

The traffic and truck counts at the proposed project locations have risen steeply over the past decade and in some cases, more than doubled between 2016 and 2017 alone. Delivering the projects in TxDOT's applications will provide rural Texans and the energy, mining, trucking, construction, manufacturing, and agricultural industries with critical safety and congestion improvement projects including grade separations, wider roads and stronger pavement that will reduce life-cycle costs.

The Federal Highway Administration's most recent round of Every Day Counts initiatives includes project bundling as a recommended step towards cost and time savings. TxDOT agrees with this recommendation and believes bundling the BUILD projects will result in expedited project delivery, reduced cost and efficiency in procurement and construction time.

TxDOT has a history of identifying and realizing efficiencies in contracting and design, ranging from the implementation of large-scale interstate programs to delivering local construction and maintenance projects. TxDOT proposes this bundle of projects within the overall Texas Energy Sector Rural Improvement Program to utilize BUILD grant funds as effectively as possible by finding cost and time efficiencies. Bundling these projects within the larger Program provides efficiencies within the overall design, bidding, and construction process, including:

- Coordinating and managing the final design of grade separations simultaneously saves costs and resources within TxDOT;
- Letting multiple projects for construction in the same contract allows for better unit prices on larger quantities of materials through economies of scale;

- Identifying common staging areas between projects lowers a single contractor's mobilization costs instead of multiple contractors' staging areas and mobilization of equipment; and,
- Implementing a coordinated effort throughout the program to allow for future placement of broadband and fiber installation.

If the Permian Basin were an independent nation, it would be the fourth-largest member of the Organization of Petroleum Exporting Countries¹ and has become the number one producer of renewable energies in the United States.² Roads in the Permian Basin have experienced significant damage from trucks hauling water, sand, equipment, and products needed to support the exponential increase in oil and gas production. This type of use was not anticipated when the roads were first constructed.

Further compounding the challenge, oil and gas production in the Permian Basin is projected to double by 2023, meaning Texas mining would yield sixty percent of the net global output in this timeframe.

Addressing the infrastructure needs and overall transportation network in the Permian Basin is critical to ensuring that future roadways will be able to support increasing levels of energy production and regional economic productivity.

The high level of coordination and partnership between TxDOT, local governments, and stakeholders in all four applications exemplifies the urgent need to deliver the remaining Program projects. It is further illustrated by letters of support from the Texas Congressional Delegation, local and state elected officials, and a broad range of private industry associations.

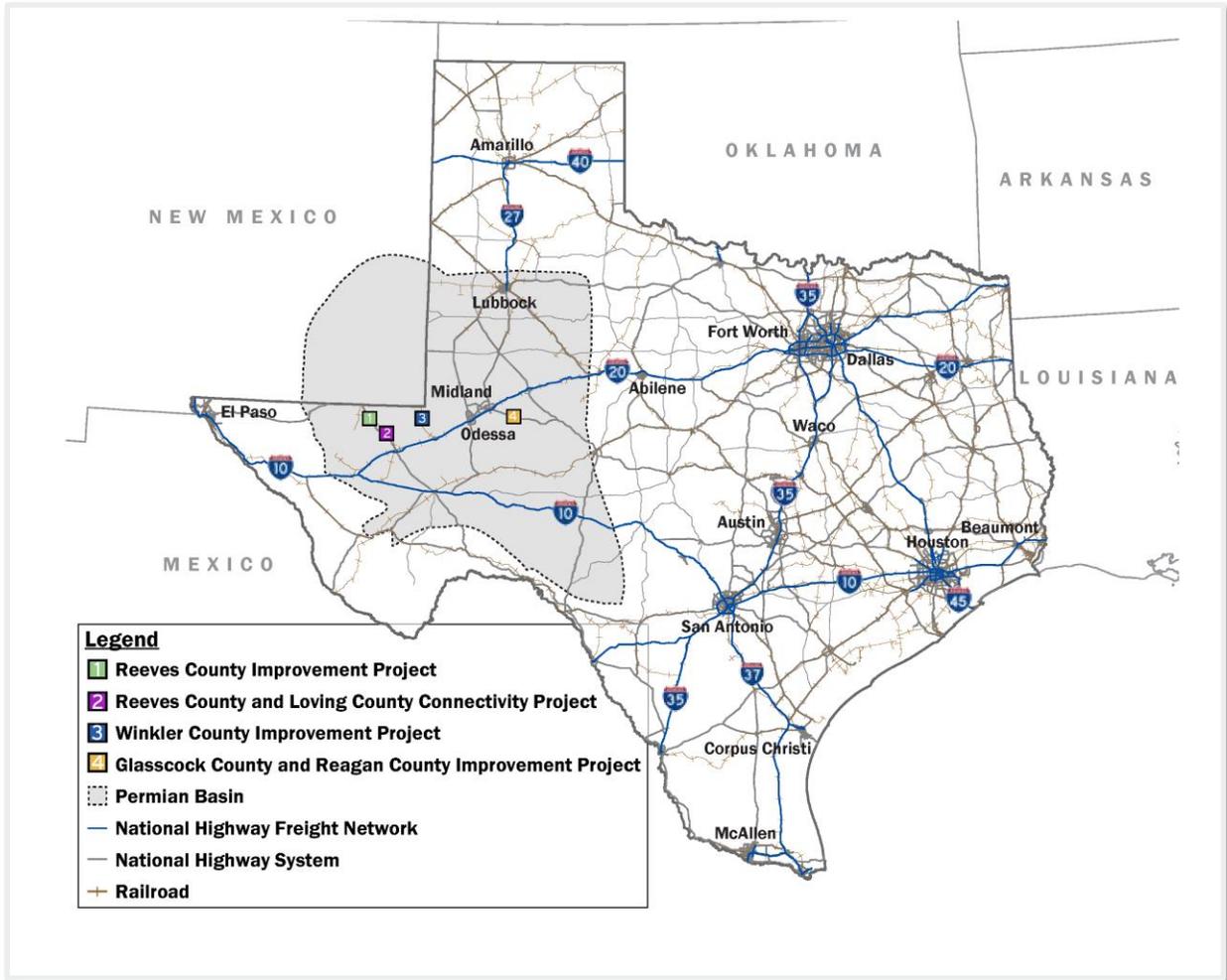
A complete project description of the Texas Energy Sector Rural Improvement Program is included in **Appendix A**.

Exhibit 1 identifies all four Texas Energy Sector Rural Improvement Program of Projects within the Permian Basin area and Reeves, Winkler, Loving, Glasscock, and Reagan Counties.

¹ Accessed at: <https://www.houstonchronicle.com/business/energy/article/Permian-will-outpace-all-OPEC-nations-except-12995744.php>

² Accessed at: <https://blogs.scientificamerican.com/plugged-in/texas-got-18-percent-of-its-energy-from-wind-and-solar-last-year/>

Exhibit 1. Map of TxDOT’s BUILD Program of Projects Submittal



TxDOT, Program of Projects

As part of this Program, TxDOT is seeking Build grant funding assistance to make the **Reeves County and Loving County Connectivity Project (Project)** a reality. The Project encompasses a portfolio of improvement projects along US 285 and SH 302 and includes reconstructing the existing at-grade roadway geometry at US 285 and SH 302 to a grade-separated interchange. The corridor is a direct north/south highway link between Texas and New Mexico, and provides connections to the nearby Interstate Highway 20 (I-20) portion of a National Freight Network Corridor. **Exhibit 2** identifies specific area and corridors of the Project.



WHY SUPPORT THE REEVES COUNTY AND LOVING COUNTY IMPROVEMENT PROJECT?

The Reeves County and Loving County Connectivity Project BUILD grant application requests funding for a grade separation at US 285 and SH 302. In addition, TxDOT is funding the widening of US 285 and SH 302 to add alternating passing lanes, dedicated left-turn lanes, and acceleration and deceleration lanes. The grade separation would become part of the National Highway System (NHS), and it enhances mobility to vehicles connecting to the State and National Freight Highway Network on I-20, providing connectivity for local industries to the closest interstate facility. The project would also improve local access between jobs and rural communities primarily located along I-20. Additionally, this project supports interstate connectivity as US 285 is the north/south highway connecting Texas to the State of New Mexico and would alleviate safety concerns by grade separating US 285 and SH 302, which would eliminate heavy trucks turning directly into on-coming traffic on these facilities.

Reeves County and Loving County Connectivity Project overview:

- The Project constructs a grade separation at US 285 and SH 302 with a total estimated cost of \$20,914,422, including \$13,345,352 for construction costs and \$1,200,000 in engineering fees.
- TxDOT already has budgeted funding for 100 percent of the connecting roadway improvements (totaling nearly \$87 million, exclusive of the grade separation) and the BUILD grant is requested to fund 99 percent of the grade separation.
- The grade separation is the final connecting piece of these area improvements.

The Reeves County and Loving County Connectivity Project, which is a part of the Texas Energy Sector Rural Improvement Program, addresses movement of vehicles whose origin and destination is the Delaware Basin (within Permian Basin). The Project and its adjacent components run along US 285 and SH 302 and serves rural areas of Pecos, Kermit, Odessa, and Midland, Texas and Carlsbad/Loving, New Mexico. Exponential traffic growth in the area, in particular at the US 285/SH 302 intersection, and large numbers of trucks as detailed in **Table 1** are creating traffic delays and issues with pavement.

Table 1. Traffic Growth and Percentage of Trucks from 2016 to 2017

Roadway	Direction	% Traffic Increase (2016 to 2017)	% Trucks
US 285	NB	200%	57%
US 285	SB	159%	50%
SH 302	WB	217%	59%



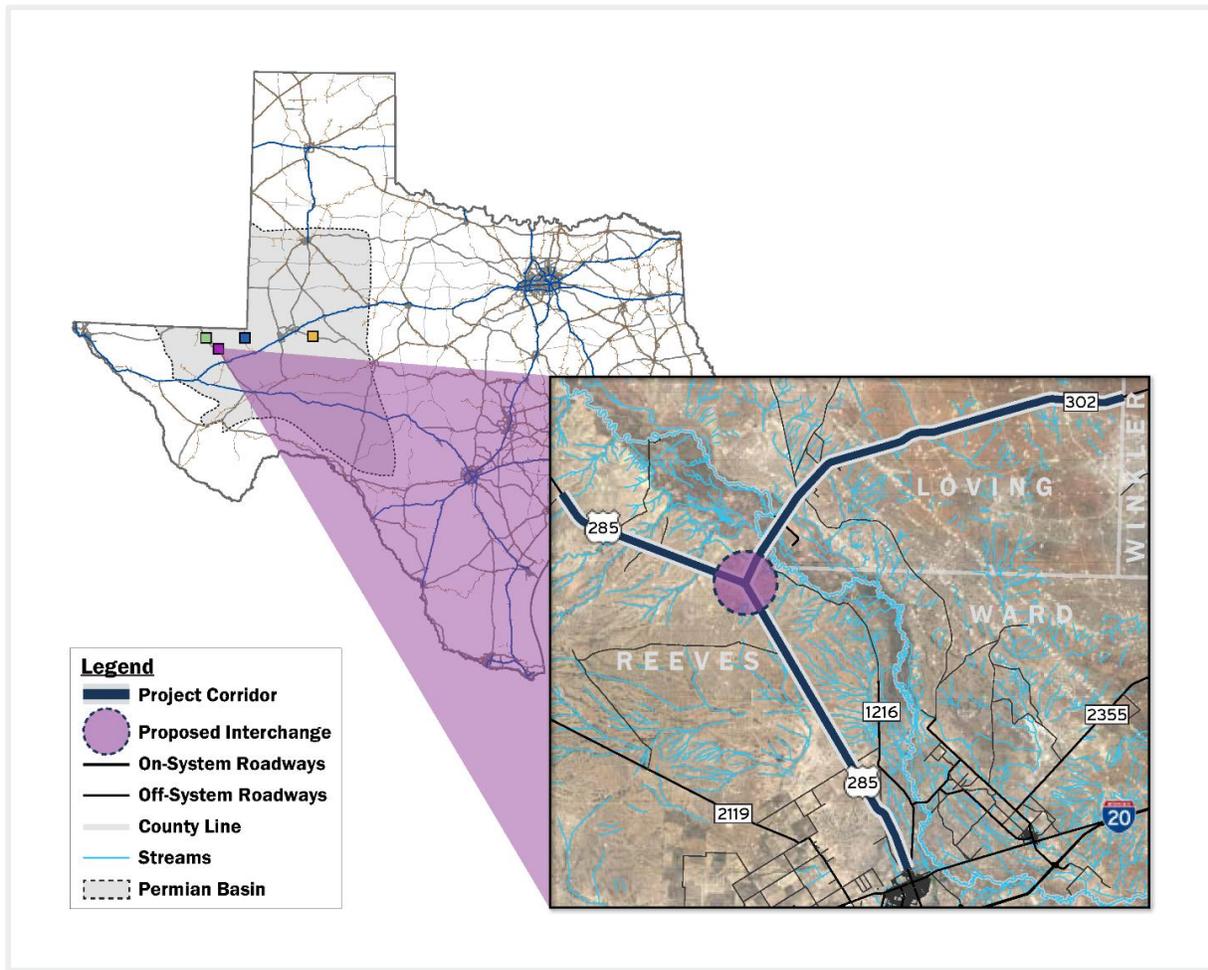
Table 2. Project Benefits at a Glance

Reeves County and Loving County Connectivity Project at a Glance	
Demand and Economic Vitality	<ul style="list-style-type: none"> ! Existing traffic regularly results in delays of more than 20 minutes ! Delays will worsen if the bottleneck at the existing intersection is not resolved ✓ <i>Project will reduce delay and have a positive impact on the economic vitality of the region resulting in travel time savings and reduced emissions</i>
Providing Safe & Reliable Transportation	<ul style="list-style-type: none"> ! Permian Basin region is 2% of Texas population but accounts for 10% of state highway fatalities ! Heavy truck and freight traffic on state highways not designed for freight; slow moving trucks turning out onto 75 mph highway facilities ✓ <i>Project will reduce conflict opportunities between intersecting roadways</i>
Growth & Livability in Rural Areas	<ul style="list-style-type: none"> ! Existing rural roadways were not designed for high traffic volumes or the level of heavy freight seen today (50% freight on US 285; 60% freight on SH 302) ! There is an existing need for improved infrastructure for residential mobility ✓ <i>TxDOT has coordinated with residents and leaders (including a “Livability Workshop”), and project will improve condition and durability of infrastructure, improving network connectivity and reliability for residents</i>
Innovative Approach	<ul style="list-style-type: none"> ! Project area lacks updated technology, roadway design, and safety measures ✓ <i>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).</i> ✓ <i>Roadways designed for easy integration of fiber and broadband infrastructure in the future, as needed.</i>

II. PROJECT LOCATION

The proposed grade separation is located at the intersection of US 285 and SH 302 within Reeves County, Texas. The intersection is located approximately 20 miles north of I-20. The Project and its adjacent components run along US 285 and SH 302 and serves rural areas of Pecos, Kermit, Odessa, and Midland, Texas and Carlsbad/Loving, New Mexico.

Exhibit 2: Map of Reeves County Improvement Project



US 285 is a TxDOT-designated primary Energy Sector Corridor, which prioritizes the facility for roadway improvements and safety enhancements due to its location in this energy sector region. The project is located within the Delaware Basin, a geologic depositional and structural basin in West Texas and southern New Mexico, 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 unabated.

Energy demand in the Permian Basin is projected to more than double production by 2023 at a rate of three million barrels per day, which in total will account for 60% of growth in net



global output from 2017 to 2023³. TxDOT is planning to construct facility improvements that benefit the movement of people and goods along the local and national network which will include contributions from the energy sector. These improvements will ensure roadways meet adequate level-of-service needs while maintaining a state of good repair. The Project will not only provide benefit to freight and energy-related traffic but local communities are also expected to reap benefits from the improvements included in this project through increased safety, fewer delays, and overall improvement of the quality of life in the region.

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

TxDOT is requesting \$20,898,172 in BUILD grant funds for the Reeves and Loving Counties Connectivity Project, (estimates in year of expenditure dollars). These funds will be used for project design, construction, right-of-way acquisition, and project oversight.

TxDOT intends to improve the at-grade intersection at US 285/SH 302 by constructing an overpass for US 285 over SH 302 and detailing an at-grade intersection for the remaining traffic. The tables below as well as the project information form, 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. **Table 3** shows a breakdown of the federal, state, and grant funding.

Table 3. Total Project Cost

Reeves County and Loving County Connectivity Project	Total Cost	Federal Funds	State Funds	Private Funds	BUILD Grant
US 285/SH 302 Grade Separation	\$20,914,422	\$0	\$0	\$16,250	\$20,898,172

The Reeves County and Loving County Connectivity Plan will be let between now and 2021 with construction anticipated on all portions by 2022. The roadway improvements have 100% designated and separated funds currently available to begin construction.

³ Accessed at: <https://www.mrt.com/business/oil/article/Permian-Basin-could-double-oil-production-by-12995254.php>



Table 4. Complete Reeves County and Loving County Connectivity Plan

Adjacent Reeves County and Loving County Improvements	Total Cost	Federal Funds	% Federal Funds	State Funds	% State Funds
US 285 (County Road 232 to SH 302)	\$15,005,109	\$8,324,087	55%	\$6,681,022	45%
SH 302 (US 285 to Pecos River)	\$5,376,769	\$4,301,415	80%	\$1,075,354	20%
SH 302 (Pecos River to East FM 1933)	\$6,914,687	\$5,531,750	80%	\$1,382,937	20%
SH 302 (East FM 1933 to 0.2 mile East of East FM 1933)	\$210,863	\$168,690	80%	\$42,173	20%
SH 302 (East of FM 1933 to Winkler Co Line)	\$27,550,000	\$22,040,000	80%	\$5,510,000	20%
US 285 (SH 302 to FM 1216)	\$31,638,493	\$25,310,794	80%	\$6,327,699	20%

Budget summaries compiled by TxDOT Engineering and State Budget Departments, July 2018

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. The BUILD grant program has the financial strength to secure this regionally-significant project. This Project as part of the larger Program is necessary to ensure the safety and reliability of the identified corridors.

Rural roadway improvement needs have outpaced Texas roadway infrastructure funding, and while Proposition 1 (discussed later in further detail) has recently secured additional funding for transportation infrastructure, specifically in energy sector areas, there is an urgent need to maintain and improve existing rural infrastructure.

TxDOT is responsible for the construction and maintenance of nearly 80,000 centerline miles of roadway. Primary funding for these activities comes from traditional sources such as gas tax revenues, vehicle registration fees, federal reimbursements, and local participation. TxDOT has also received funding from non-traditional sources, such as bond proceeds and the federal stimulus programs.

TxDOT has been awarded and managed many grants as part of its overall roadway development and oversight. We are familiar with and have complied with USDOT's processes for grant awards and implementation.

IV. MERIT CRITERIA

A. SAFETY

The Project will improve safety through:

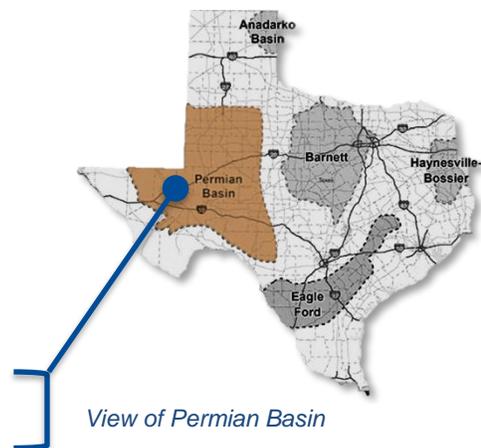
- Reducing congestion on US 285 and SH 302 currently causing back-up and collisions;
- Reducing conflict points through grade separation of US 285 and SH 302;
- Adding ROW to US 285 and SH 302 corridors allowing for safer deceleration and turns by heavy freight; and,
- Adding acceleration and deceleration lanes to separate slow-moving turning traffic and high-speed vehicles.

SH 285 is a two-lane roadway (one travel lane in each direction) with a minimal shoulder that does not allow for safe passing or a safe emergency area. The proposed improvements include dedicated left-turn lanes, passing lanes, and acceleration and deceleration lanes, which together minimize potential conflicts in the corridor between trucks and passenger vehicles. These improvements will allow through traffic to move more efficiently with fewer impedances and conflict points. There were 9 reported accidents at this intersection in 2017, which would be reduced by separating through traffic.

Moreover, the SH 285/SH 302 grade-separated intersection provides a similar positive impact by reducing potential vehicular conflicts. A grade-separated interchange removes the existing conflict points between traffic turning on and off SH 302 at slow speeds and the faster traffic on SH 285. Currently, due to delay and back-up on SH 302 drivers are forced to turn and merge into tight gaps in fast-moving traffic on US 285. Heavy freight trucks carrying potentially-hazardous materials regularly enter and exit these roadway facilities at slow speeds with little acceleration, causing potential conflicts with other motorists and creating the potential for vehicular incidents. While the number of fatal crashes is trending positively, having decreased within the Permian Basin over the past couple of years, the region still accounts for a disproportionate percentage in this area, and need to continue to reduce the number of accidents. This Project will result in improved and safer mobility for all motorists at this intersection.

In 2016, there were approximately 25,293 serious injury crashes in Texas' six energy sectors, and 1,487 crashes including fatalities.⁴

Currently, the Permian Basin region accounts for roughly two percent of the overall Texas population



⁴ <https://www.txdot.gov/driver/share-road/be-safe-drive-smart/energy-sector.html>

but represents a staggering 10 percent of the fatalities on state highways⁵. In 2016, there were 4,212 serious injury crashes and 289 crashes with fatalities occurring within the Permian Basin.

This elevated level of crashes is tied to surge of energy production in the area. The energy boom in the Basin is compounding roadway dangers with increased traffic and large trucks on the road. Frequent stops and slow acceleration/deceleration of trucks on these facilities throughout the region cause disruptions to traffic flow, impede mobility, and present safety concerns for both the delivery of goods and local travelers.

TxDOT has crafted and implemented a robust public information campaign to improve safety in the Permian Basin energy sector. 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 (PSAs), audio PSAs, and utilizing social media. TxDOT continues to coordinate a comprehensive safety program, working with Highway Patrol, safety groups, governments, companies, and subject matter experts in efforts to reduce injuries, fatalities, and economic losses. Specifically, to this Program of Projects, TxDOT has worked with local governments and residents in the Permian Basin area:

- 2016: Participated in ‘Day Without Traffic Fatalities’ after a Road Safety Forum
- 2018: Presented major rehab projects to residents, and encourages all people and companies who travel US 285 to share their input
- Collaborated to created safety video for Permian Basin residents available on governmental sites⁶ and YouTube



TxDOT's safety campaign materials

⁵ Accessed at: <https://www.houstonpublicmedia.org/articles/news/2018/05/04/283575/researcher-points-tolegislative-fixes-for-oilfields-crumbling-roads/>

⁶ Accessed at: <https://www.txdot.gov/driver/share-road/be-safe-drive-smart/energy-sector.html>

- Developed Energy Sector Safety Campaign Webpage with print and billboards, Video PSAs, and Audio PSAs



View of sensitive material transport in mixed traffic conditions.



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 through:

- Upgrading pavement to a level that can withstand heavy freight traffic;
- Improving infrastructure at the existing US 285 and SH 302 intersection; and
- Ensuring pavement is high quality, has a long life cycle, 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. Pipe, sand, and water associated with these activities can weigh more than the Empire State Building⁷ and, over time, trucks hauling these heavy loads into, out of, and within the region have and continue to significantly damage the existing transportation infrastructure, impeding their utility as high-volume transportation corridors.



TTI field visit image highlighting vehicle use of roadways

The TxDOT Odessa District is working to address the road conditions on energy corridor facilities like US 285 in Reeves County through a comprehensive maintenance plan, and ensure residents in Reeves County, and those traveling thru have safely and reliable roadways. In addition to routine maintenance that is performed weekly on US 285, five projects totaling approximately \$100 million are underway or planned over the next few years along US 285 between Pecos and the New Mexico state line. In addition to rehabilitating the road, passing lanes will be added throughout the corridor. Intersection improvements are scheduled to be implemented in key locations, as well as guardrail end treatments, concrete structure repair, crash cushion attenuators, lighting, and small and

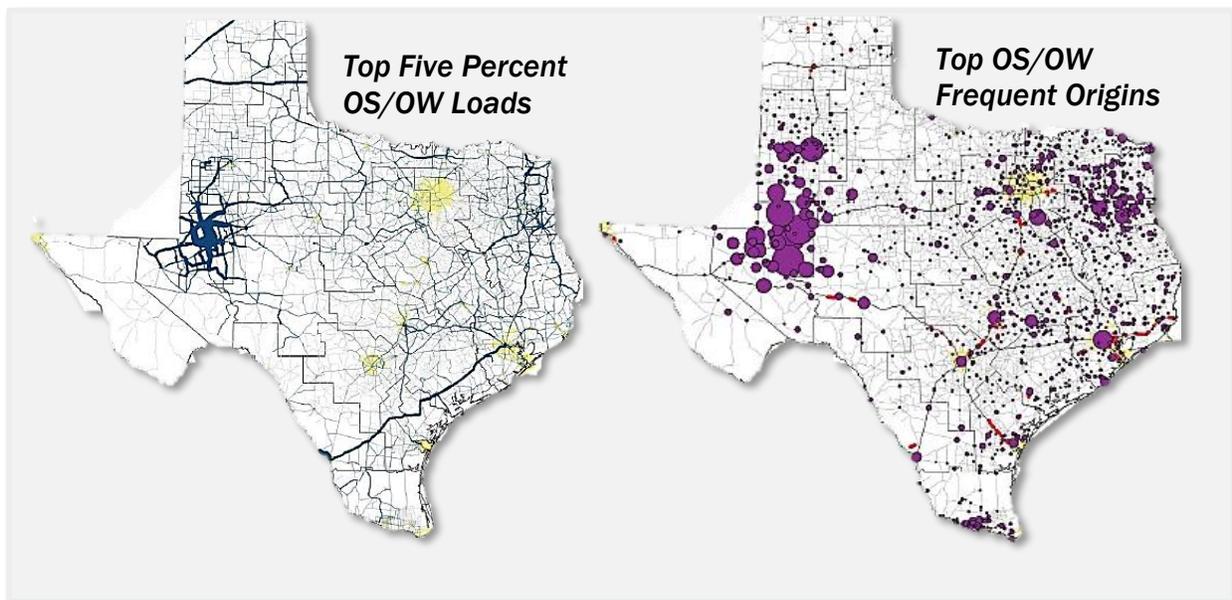
⁷ Accessed at: <https://www.houstonpublicmedia.org/articles/news/2018/05/04/283575/researcher-points-tolegislative-fixes-for-oilfields-crumbling-roads>)

large signs. Similar construction/maintenance activities are also scheduled on nearby segments of RM 652 and SH 302 in Loving County and Reeves County, respectively. All these projects are either already let for construction or are scheduled to let between 2018 and 2020, including the US 285/SH 302 grade-separation project if funded.

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 growth by reducing or eliminating existing mobility barriers.

Oversized and overweight loads experienced throughout the state of Texas are shown in **Exhibit 3**. These maps show the distribution of the top five percent of oversized and overweight vehicles and origins of those same trucks. As shown in these exhibits, there is a clear density of oversize and overweight loads on roadways in the Permian Basin, including along the US 285 and SH 302 facilities.

Exhibit 3. Texas Oversized and Overweight Loads



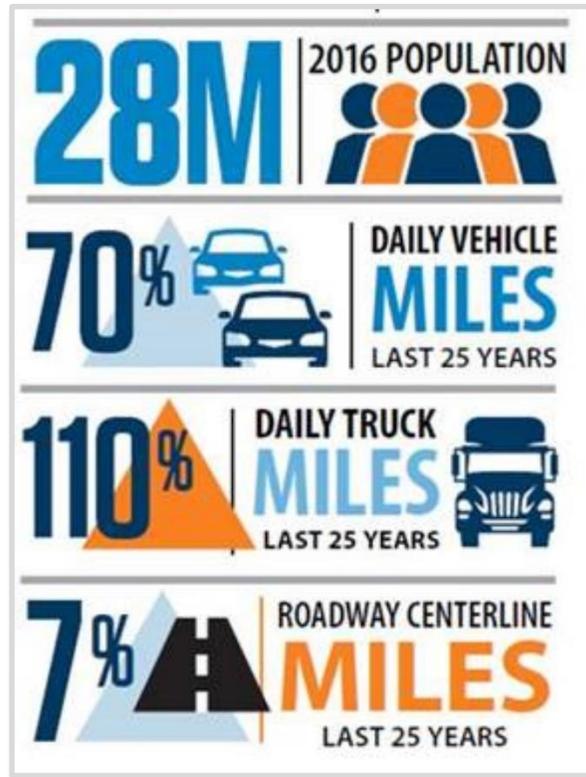
TxDOT's 2017 Freight Plan detailing needs to accommodate oversize and overweight loads

In addition, an agreement is in place between TxDOT and the US Customs and Border Protection (CBP) that allows CBP to install and maintain cellular-enabled, small mobile cameras at various site locations in TxDOT right of way within the Odessa District. These cameras are used by CBP to obtain digital photographs of vehicles on state highways to enhance border security and law enforcement measures. The Odessa District is coordinating the location of these security devices, which may be installed within the project limits at some point in the future.

TxDOT maintains over 197,000 miles of Texas highways and right of way, which presents challenges for rapidly-changing pavement conditions within certain areas across the state. The population within Texas has grown more than 50 percent over the last 25 years. During the same period, daily vehicle miles traveled have increased 70 percent and daily truck miles traveled have increased 110 percent on TxDOT maintained roadways, while roadway centerline miles have increased only 7 percent. In addition, Texas moved more than 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.

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. It is estimated that the trucking industry in Texas incurred \$5.1 billion in congestion costs in 2016.

The Texas Transportation Asset Management Plan⁸ details the processes in which the state 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. TxDOT has allocated \$1.2 billion in 2018 toward asset preservation activities through its Category 1 (Preventive Maintenance and Rehabilitation) funds, including \$35 million for the Odessa District with a ten-year budget for the District of \$413 million.



Changes in Texas Demographics and Transportation System

⁸ Accessed at: The Texas Transportation Asset Management Plan was submitted to FHWA in April 2018

IV. MERIT CRITERIA

C. ECONOMIC COMPETITIVENESS

The Project will advance economic competitiveness by:

- Reducing delays and improving travel time reliability anticipated to result in \$25M in truck/passenger vehicle operating costs, \$24M in time savings for all motorists, and \$16M in shipper/logistics costs;⁹
- Eliminating a freight bottleneck at the US 285/SH 302 intersection through grade separation;
- Reducing congestion for freight and transport in the energy industry;
- Improving travel time reliability for residents commuting to work; and,
- Generally improving traffic flow and reducing delays for an efficient movement of goods in the region.

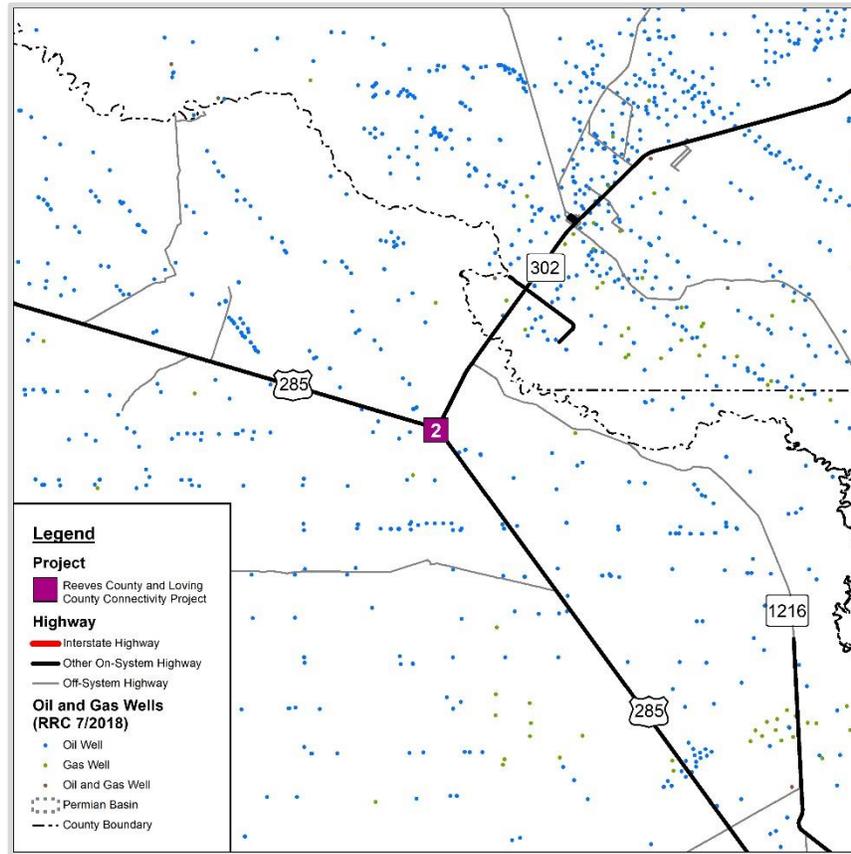
Enhancing economic competitiveness in the Permian Basin is a major driving force behind the Reeves County and Loving County Improvement Project and associated projects. Without these roadway infrastructure improvements, economic growth in the Permian Basin will be stifled due to existing capacity constraints. **Exhibit 4** shows the concentration of new wells in the Permian Basin between 2012 and 2015. The energy industry anticipates a continued growth in the region, putting an even greater strain on the transportation network. Based on a Baker Hughes report¹⁰, wells in the Permian Basin totaled 444 in April 2018, up 113 from the same time in 2017.

If constraints at the US 285 and SH 302 intersection are not addressed, bottlenecks will worsen and congestion 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. Energy production in the area depends on efficient truck and freight movements throughout the Permian Basin, and particularly to the nearby I-20 corridor and Union Pacific rail line.

⁹ See BCA Calculation Spreadsheet

¹⁰ <http://phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-rigcountsoverview>

Exhibit 4. Active Oil and Gas Wells within Project Area¹¹



Google, 2018

The grade separation at the US 285 and SH 302 intersection, 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.

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.

This Project and the associated Program have the opportunity to alleviate bottlenecks throughout the region which are causing delays on primary energy sector corridors. **Over a 30-year timeframe, savings from operator**

¹¹ <http://www.rrc.state.tx.us/about-us/resource-center/research/data-sets-available-for-purchase/digital-map-data/>

costs and travel time with implementation of the Project amount to over \$48 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 over \$264 billion in exports in 2017. 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. An efficient, well-connected, and safe roadway network is necessary not only for the success of the local rural economy in Reeves County, but also for the State of Texas and United States economy.

TxDOT has engaged in a series of studies and surveys to ensure the state remains 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 eleven of the top 26 site selection factors were related to transportation.¹² Furthermore, highway accessibility has ranked first or second in importance over the life of this study.

Texas feeds the national economy and leads the nation in energy production, primarily from crude oil and natural gas, providing more than one-fifth of domestically-produced energy.¹³ As of January 2017, the 29 refineries in Texas process more than 5.6 million barrels of crude oil per day and account for 30% of the U.S. refining capacity.¹⁴ 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 21,450 megawatts since 2014.¹⁵

State 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.

¹² Accessed at: <https://ftp.dot.state.tx.us/pub/txdot-info/freight/one-pagers/freight-and-economic-development.pdf>

¹³ Accessed at: <https://www.eia.gov/state/analysis.php?sid=TX>

¹⁴ Accessed at: <https://www.eia.gov/state/?sid=TX>

¹⁵ Accessed at: <https://www.eia.gov/state/?sid=TX>

It is imperative that the resources within the state of Texas are mobilized and distributed throughout the US. 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 and congestion throughout the Permian Basin. These are real concerns for people relying on the movement of basic goods and energy products.

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 world-wide 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.

IV. MERIT CRITERIA

D. ENVIRONMENTAL PROTECTION

The Project will support environmental protection by:

- 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; and
- Reducing congestion and congestion-related vehicle emissions anticipated to result in a savings of approximately \$286,000 in environmental costs.¹⁶

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

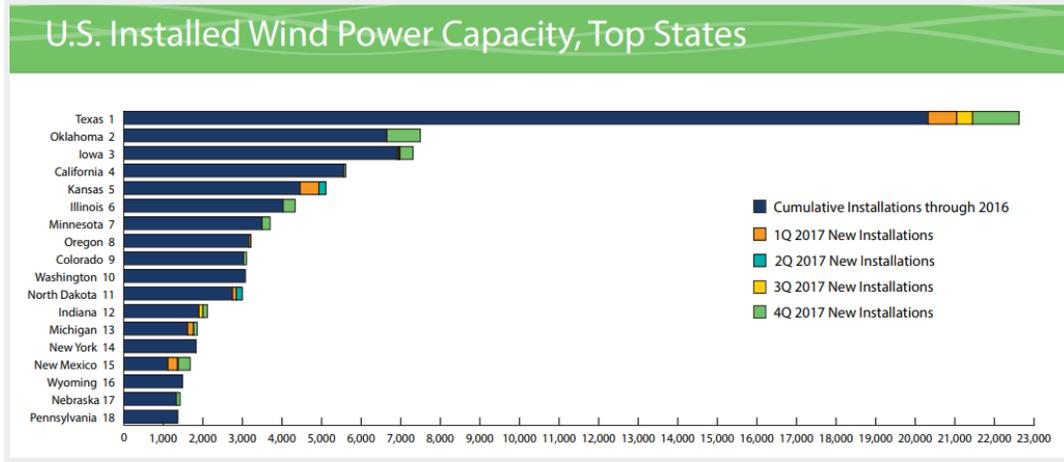
Texas produces energy from a broad range of sources including wind energy. Based on the American Wind Energy Association (AWEA) most recent market report in Q4 of 2017, Texas greatly surpassed all other states for total wind capacity and new 2017 installations as shown in Exhibit 5.¹⁷ Many of these wind farms are located in the Permian Basin, utilizing the 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 grade separated US 285 and SH 302 will help to ensure the safety of other motorists and adequate facility needs for wind turbine transportation.

¹⁶ See BCA calculation spreadsheet

¹⁷ Accessed at: <http://awea.files.cms-plus.com/FileDownloads/pdfs/4Q%202017%20AWEA%20Market%20Report%20Public%20Version.pdf>

Exhibit 5. Top Wind Power Capacity States, 2017



Additionally, natural gas is an important product collected from the Permian Basin region. Thanks to the increased use of natural gas, US energy-related emissions of CO₂ from power generation are at their lowest point in nearly 30 years. The environmental benefits associated with natural gas go well beyond CO₂ reductions and include reductions in NO_x, SO₂, and other emissions.¹⁸ This type of fuel supports developing technology that supports 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 EMS program is built on the continuous improvement model of Plan, Do, Check, and Act.

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.

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

- Compliance 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; and,
- 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.

¹⁸ <http://www.hydraulicfracturing.com/#/?section=air-emissions>

V. MERIT CRITERIA

E. QUALITY OF LIFE

The Project will improve quality of life by:

- Reducing congestion and improving travel time reliability;
- Improving mobility for rural residents;
- Improving safety of motorists, including truck drivers and residents;
- Reducing congestion anticipated to result in a savings of \$25M in truck/passenger vehicle operating costs, \$24M in time savings for all motorists, and a \$16M savings in shipper/logistics costs;
- Improving safety conditions with an anticipated result in a \$16M savings in safety costs; and,
- Designing to preserve right of way for fiber network.

Improving quality of life for area citizens 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 as a result of growing energy sector activity in the region. These delays result in negative impacts not only to commute times but also negative impacts to access to healthcare and other critical destinations in the region. Four medical facilities are located within the area along US 285 and SH 302, including:

- Occupational Health and Safety International (TX 302 in Mentone)
- Winkler County Memorial Hospital (Kermit)
- Reeves County Hospital (Pecos)
- Pecos Valley Rural Health Clinic (Pecos)



Medical services in project area, source wcmh.net

Existing congestion along the US 285 and SH 302 corridors results in barriers to access to these facilities in emergency situations. **Reducing congestion in the area through these roadway improvement projects, including the US 285/SH 302 grade separation, would**

improve access to these critical medical facilities and provide more reliable response times from emergency personnel.

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 everyday motorists. Fewer conflict points provide an increase in safety along these corridors as well as reliable access and transportation connectivity to jobs.

For the mobility, access, and safety improvements afforded to the region through the Project and the overall Program, TxDOT and the Permian Basin Metropolitan Planning Organization (MPO) have solicited ideas and feedback from residents by hosting events such as a “Livability Workshop”, where 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 Reeves County and Loving County Connectivity Project will be designed to provide ROW for anticipated future installation of broadband and fiber optic networks, as demand necessitates. Designing the project with anticipation for future broadband and fiber will make the future installation of these networks easier and more cost-effective.

IV. MERIT CRITERIA

F. INNOVATION

The Project will deploy an innovative approach by:

- Utilizing an innovative funding tool, one that provide incremental financing from the energy sector;
- Relying on TxDOT's successful deployment of several innovative technologies and initiatives across the state;
- Designed to preserve right-of-way for fiber network; and,
- Allowing for installation of cellular-enabled, small mobile cameras at various site locations to track freight into/from United States and Mexico border.

The Project will be designed to preserve ROW for anticipated future fiber in the US 285/SH 302 grade separation. The 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, and there is a nation-wide effort to bridge the 'digital divide' in rural communities. 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 has contacted broadband service providers in the area (AT&T, Windstream Communications, Dell Telephone, and Fiberlight) on partnering in this installation.

TxDOT also 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 ten 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.

Additionally, TxDOT is at the forefront of innovative technologies to ensure border security protection. It is working with CBP to allow for installation of cellular-enabled, small mobile cameras at various site locations in TxDOT right of way within the Odessa District to enhance national security and law enforcement measures. The cameras will be used in obtaining digital photographs of vehicles on state highways in order to improve the detection, mitigation, and documentation of safety risks. The Odessa District is currently coordinating possible locations of these cameras within the project area in the future.

TxDOT is a 21st century organization and continually looks to enter innovative funding arrangements and implement innovative transportation technologies to improve the mobility of Texas residents and those traveling throughout the state.

Proposition 1 funding is an innovative funding tool that provides incremental financing from the energy sector to fund additional roadway improvements or provide maintenance to keep

the State's roadway in a state of good repair. Proposition 1 funding is used throughout the region as an ongoing renewal of the regions that have challenges due to the economic drivers that create those very challenges. Other sections within this application detail the effectiveness of the Proposition 1 funding.

TxDOT has an overall innovative holistic program approach to the implementation of improvements and maintenance within the Energy Sector areas. In 2012, TxDOT formed the Task Force on Texas' Energy Sector Roadway Needs to develop 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.

Ultimately, the design of the improvements will guide how effective the Project and larger Program are at achieving TxDOT's goals of safety, economic competitiveness, community livability, and state of good repair. TxDOT will consider additional innovative options within the design that may increase safety and maintain the state of good repair while providing the competitiveness that the region needs in order to thrive.

IV. MERIT CRITERIA

G. PARTNERSHIP

The Project and Program have 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; and
- Public support through the passage of Proposition 1 funding for allocation into the overall Program.

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 the overall Program and the Project.

In March 2012, TxDOT formed the Task Force on Texas' Energy Sector Roadway Needs (Task Force) to develop recommendations for addressing the state's energy-related infrastructure issues. 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.

Over the course of a year, the task force gathered data from transportation partners around the state and held numerous meetings to assess the options. 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.

The task force was comprised of representatives from state agencies, local governments and the energy industry:

- Texas Department of Transportation (TxDOT)
- Texas Department of Public Safety (DPS)
- Texas Commission on Environmental Quality (TCEQ)
- Railroad Commission of Texas (RRC)
- Texas Department of Motor Vehicles (TxDMV)
- Texas Association of Counties (TAC)
- America's Natural Gas Alliance (ANGA)
- Association of Energy Service Companies (AESC)
- Midland-Odessa Transportation Alliance (MOTRAN)
- Texas Alliance of Energy Producers
- Texas Competitive Power Advocates (TCPA)
- Texas Farm Bureau (TxFB)

- Texas Independent Producers and Royalty Owners Association (TIPRO)
- Texas Trucking Association (TxTA)
- Texas Oil and Gas Association (TxOGA)
- Texas Pipeline Association (TPA)
- The Wind Coalition

Demonstrating strong statewide support for awarding BUILD Grant funds to the Program is a letter signed by 21 members of the Texas Congressional Delegation, including all five House Committee Chairmen from Texas. Recognizing the importance of this funding opportunity to Texas, U.S. Senate Majority Whip John Cornyn, the Chairman of the Texas Railroad Commission and the Chairman of the Texas Freight Advisory Committee have also provided letters of support. Additional letters are included from eight local and state elected officials and 14 industry associations and private companies.

- Anadarko Petroleum Corporation
- Association of General Contractors-Texas
- MOTRAN Alliance
- Permian Basin Petroleum Association
- Permian Basin Road Safety Coalition
- Shell Exploration and Production Company
- Texas Alliance of Energy Producers
- Texas Association of Counties
- Texas Association of Manufacturers
- Texas Association of Realtors
- Texas Farm Bureau
- Texas Oil and Gas Association
- Texas Pipeline Association
- Texas Sheep and Goat Raisers Association
- Royal Dutch Shell

These letters of support are included as **Appendix C** to this application. In addition to simply lending support for the project, an energy sector business as well as another partner are participating directly by allocating a monetary contribution to the overall Program. In addition, monetary contributions have also been provided to the overall Program totaling \$21.3 million from the local sand mines providing necessary frac sand for energy efforts in the Odessa District.



On November 4, 2014, 80% 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). Pursuant to Section 49-g(c), Article III, Texas Constitution, the funds may only be used for "constructing, maintaining, and acquiring rights-of-way for public roadways other than toll roads." Thus, the project facilities met the qualification threshold and were allocated funds accordingly. Between 2015 and 2018, TxDOT has allocated over \$77 million of Proposition 1 funds towards the various roadway improvements in the Odessa District with a proposed \$15 million in additional Proposition 1 funds planned for allocation in 2019.

The funds received from the energy sector, through both Proposition 1 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 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.

LEVERAGING NON-FEDERAL REVENUE FOR THE TEXAS ENERGY SECTOR RURAL IMPROVEMENT PROGRAM PROJECTS

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.

More than \$4 million of Proposition 1 funds will be used for projects associated with the Reeves County and Loving County Connectivity Project. Between 2015 and 2018, TxDOT has allocated over \$77 million of Proposition 1 funds towards the various roadway improvements in the Odessa District with a proposed \$15 million in additional Proposition 1 funds planned for allocation in 2019.



TxDOT's metrics used when budgeting the statewide transportation improvements projects, ensuring revenues are used on projects for the best return on investment, and have the greatest impact on rural and urban residents

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, as long as overall sales tax receipts reach a certain benchmark. Additionally, a percentage of revenue growth from taxes on

motor vehicle sales and rentals will be allocated for transportation projects beginning in 2020.

Both Proposition 1 and Proposition 7 qualify under the BUILD program as newly secured sources of revenue and help to leverage state funds against federal funds.

“Approving Proposition 1 not only will help fund highways and roads but will help maintain Texas’ economic competitiveness and save and add jobs.” – Austin American-Statesman¹⁹

V. PROJECT READINESS

TxDOT is ready to advance the design of the project and with the help of BUILD funding, the Reeves County and Loving County Connectivity Project is expected to obligate funds in May 2020, well in advance of the grant obligation deadline, and will be fully constructed in 2022.

Technical Feasibility

TxDOT intends to improve the at-grade intersection at US 285/SH 302 by constructing an overpass for US 285 over SH 302 and detailing an at-grade intersection for the remaining traffic. The Project shall include:

- 12-foot lanes with shoulders for US 285;
- 12-foot lanes for intersection at US 285/SH 302;
- Signalized intersection with turnarounds;
- Pavement design to accommodate current and future vehicle and truck requirements;
- Utility adjustments and culvert installations;
- Roadway safety lighting and bridge underpass lighting;
- Driveway installations; and,
- ROW acquisition as required for improvements.

Improvements for the Project shall adhere to TxDOT’s Roadway Design Manual, Bridge Design Manual, Hydraulic Design Manual, and ROW Utility Manual as design progresses and will follow processes set in the TxDOT PS&E Preparation Manual.

Appropriate levels of design and associated quantities were determined to adequately determine construction costs for the Project. Current cost estimates have been detailed using available information on current pricing from average low bid unit prices for determined unit quantities. A contingency level of 20% has been provided for the Project as appropriate for the level of design.

Project Schedule

The project schedule shown below in **Exhibit 6** includes the major project milestones for engineering and design completion, right-of-way (ROW) acquisition and permitting, and

¹⁹ Accessed at: https://www.mystatesman.com/news/opinion/support-road-funding-proposition/mYIE12RkAqUn1gXubN308K/?icmp=statesman_internallink_invitationbox_apr2013_statesmanstbtomystatesmanpremium#66175da1.3569926.735483



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 and associated noted improvements within Reeves and Loving Counties will be fully constructed in 2022.

Exhibit 6. Reeves County and Loving County Connectivity Project Schedule

Work Phase	2019	2020	2021	2022
Draft Environmental Documentation	■			
Public Involvement	■			
Anticipated NEPA Clearance	◆			
Right-of-Way Acquisition Process	■			
Right-of-Way Acquisition Complete (Milestone)		◆		
Right-of-Way Design	■			
Final Design (Milestone)		◆		
Construction Begins			■	
Project Completion (Milestone)				◆

Required Approvals – Environmental Approvals

TxDOT will adhere to the National Environmental Policy Act (NEPA) and complete all necessary documentation when the environmental process is ultimately conducted in 2019. A Categorical Exclusion is anticipated for clearance of the Project. The associated Reeves County and Loving County projects that have gone through the NEPA process were found to have no significant environmental impacts; five of those six roadway projects have received a Categorical Exclusion. Environmental documentation completed to date is available upon request.

The grade separation at US 285/SH 302 is planned to go through the environmental process in 2019 and is anticipated to be a CE. 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.

- ROW: All needed ROW for the construction of the Project has not been acquired. This is considered a medium risk considering the length of the ROW acquisition process.
- NEPA: The corridor has not received NEPA clearance. Anticipated Finding of No Significant Impact is in August 2019. This is a low-level risk since other adjacent projects have been cleared in similar timeframes.

Design effort: The design is not completed and is anticipated to be complete in May 2020. This is considered a low-level risk with TxDOT's familiarity with these types of design efforts and few known challenging design elements.

VI. BENEFIT COST ANALYSIS

A Benefit-Cost Analysis (BCA) was conducted for the Reeves County and Loving County Connectivity Project in accordance with 2018 USDOT BCA Guidance. The project includes grade separation at US 285 and SH 302, as well as widening of SH 302.

Based on input data, 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).

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. Based on input data, the Reeves County and Loving County Connectivity Project has a B/C ratio of 1.69. See **Appendix D** for details on the B/C ratio.