

# TEXAS ENERGY SECTOR RURAL IMPROVEMENT PROGRAM

## 3 - Winkler County Improvement Project

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



Project Number: **TBD**

Prepared for: **United States Department of Transportation**

Prepared by: **Texas Department of Transportation**

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

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 TxDOT's 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 Countries<sup>1</sup> and has become the number one producer of renewable energies in the United States.<sup>2</sup> 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. 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 such as the Texas Alliance of Energy Producers, The Texas Oil and Gas Association, Anadarko Petroleum Corporation and Shell Exploration and Production Company.

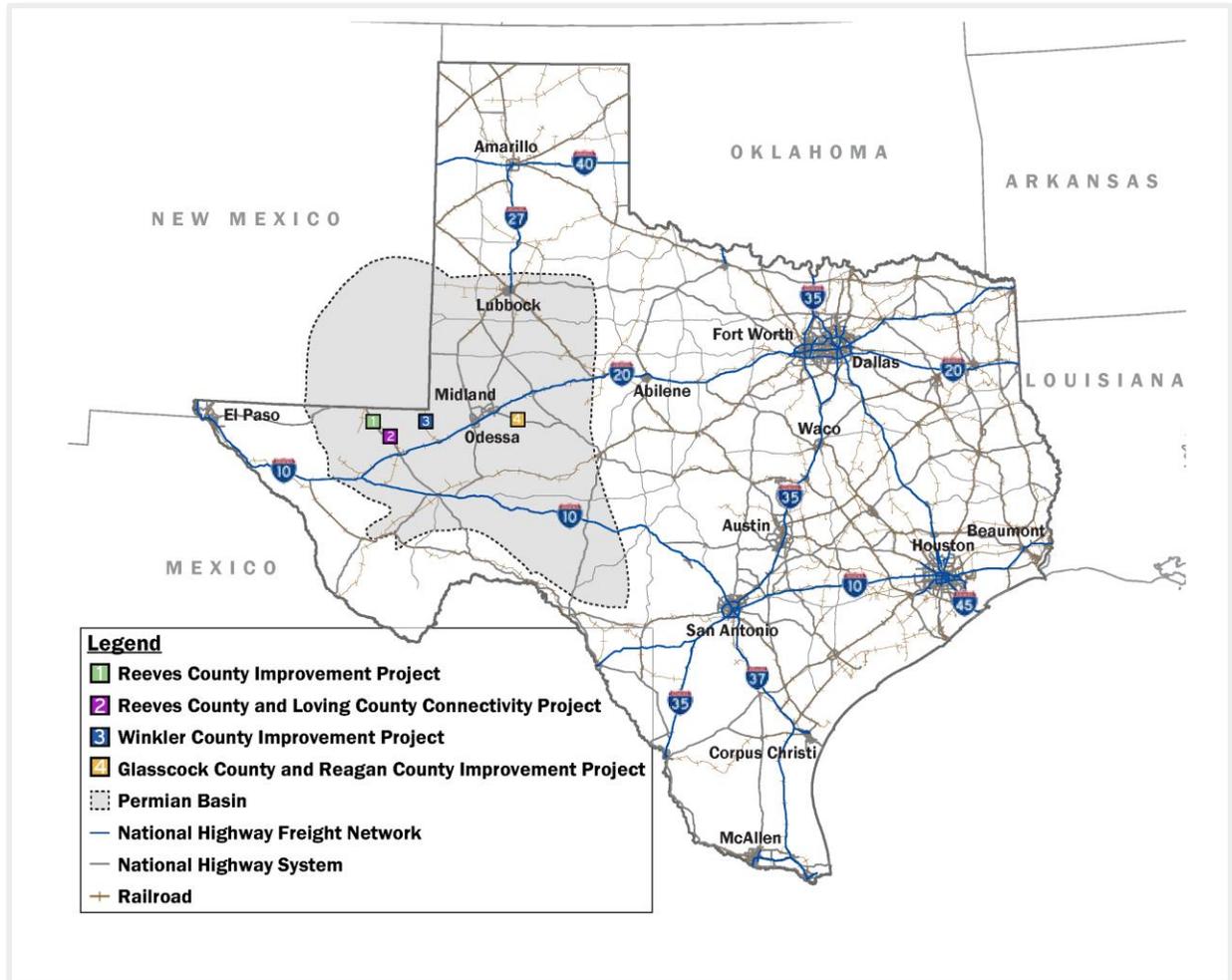
**Exhibit 1** identifies all four Texas Energy Sector Rural Improvement Program of Projects within the Permian Basin area and Reeves, Winkler, Loving, Glasscock, and Reagan Counties.

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

<sup>2</sup> 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 Submittal of Program of Projects**



*Program of Projects*

As part of this Program, TxDOT is seeking BUILD grant funding assistance to make the **Winkler County Improvement Project (Project)** a reality. The Project encompasses a group of improvements along SH 302 and SH 115 and involved reconstructing the existing at-grade roadway geometry to a grade-separated interchange with SH 302 over SH 115. This Project is an important link in the area as SH 302, SH 115, and SH 18 all meet in Kermit, Texas. SH 302 connects SH 18 and US 285, both which provide access to the New Mexico state border to the north west and to Interstate Highway 20 (I-20) to the south east. **Exhibit 2** in the Project Location section identifies specific area and corridors of the Project. A complete project description of the Texas Energy Sector Rural Improvement Program is included in **Appendix A**.

**WHY SUPPORT THE WINKLER COUNTY IMPROVEMENT PROJECT?**

The Winkler County Improvement Project (Project) is a set of rural projects along SH 302 and SH 115 and involves reconstructing the existing at-grade roadway geometry to a grade-



separated interchange with SH 302 over SH 115. This Project improves an important connector and a high-volume freight node just outside of Kermit, Texas. State Highways 18 and 285 provide access to the New Mexico state line and Interstate Highway 20 respectively, and the combination of SH 302, SH 115, and SH 18 bring a high percentage of freight traffic through the area (more than 50% on SH 302 and more than 70% on SH 115) as shown in **Table 1**. Corridor improvements and a grade separated interchange will greatly reduce congestion at the busy intersection, improve travel times and travel reliability, and improve safety by reducing conflict points and allowing for safer passing and turning movements. Additionally, ROW will be preserved in the roadway and intersection to allow for future fiber installation.

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

Roadway	Direction	% Traffic Increase (2016 to 2017)	% Trucks
SH 302	WB	176%	54%
SH 302	EB	176%	54%
SH 115	NB	398%	73%
SH 115	SB	300%	72%

**Reeves County Improvement Project Overview:**

- A grade separation at SH 302 and SH 115 with a total estimated cost of \$46,038,028, including \$34,281,690 for construction costs and \$1,200,000 in engineering fees.
- TxDOT already has budgeted for funding of 100 percent of the connecting roadway improvements (totaling nearly \$33M exclusive of the grade separation) and the subject BUILD grant is requested to fund 54% percent of the grade separation.
- The grade separation is the final connecting piece of these area improvements.



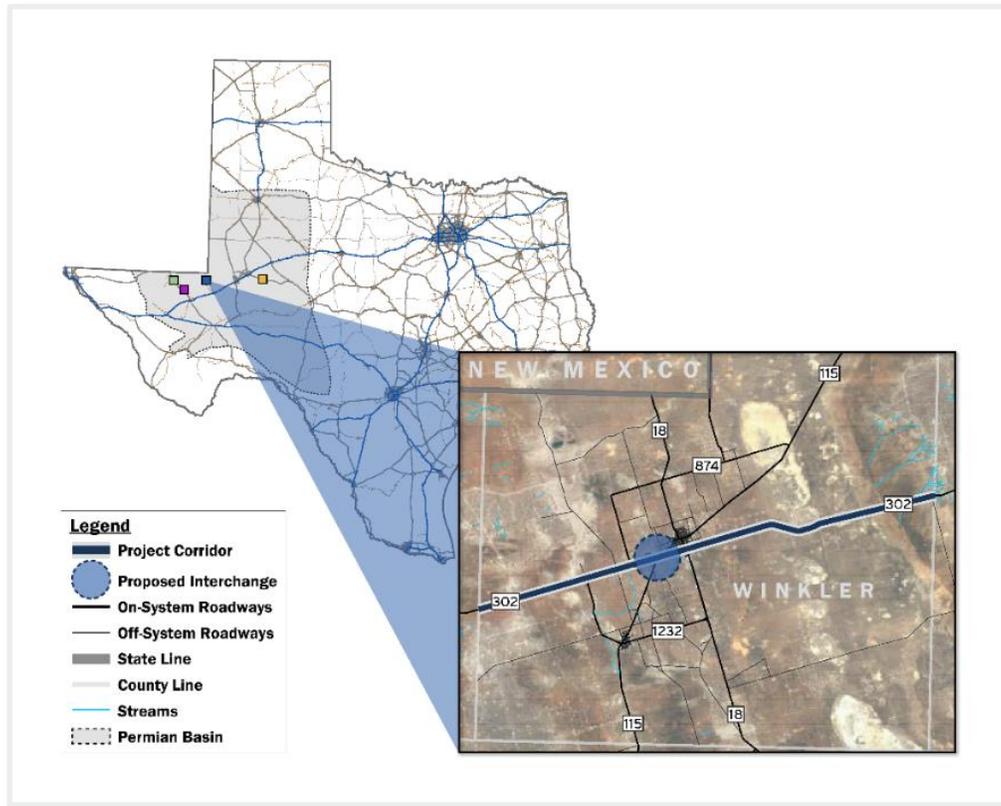
**Table 2. Project Benefits at a Glance**

Winkler County Improvement Project at a Glance	
Demand and Economic Vitality	<ul style="list-style-type: none"> <li>! Existing traffic regularly results in delays of more than 20 minutes</li> <li>! Delays will worsen if the bottleneck at the existing intersection is not resolved</li> <li><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></li> </ul>
Providing Safe & Reliable Transportation	<ul style="list-style-type: none"> <li>! The Permian Basin has 2% of Texas population but accounts for 10% of state highway fatalities</li> <li>! Heavy truck and freight traffic on state highways not designed for freight</li> <li>✓ <i>Project will reduce conflict opportunities between intersecting roadways and improve pavement condition</i></li> </ul>
Growth & Livability in Rural Areas	<ul style="list-style-type: none"> <li>! Existing rural roadways were not designed for high traffic volumes or the level of heavy freight seen today</li> <li>! There is an existing need for improved infrastructure for residential mobility</li> <li>✓ <i>TxDOT community coordination included a “Livability Workshop” and project will improve condition and durability of infrastructure, improving connectivity and reliability for residents</i></li> </ul>
Innovative Approach	<ul style="list-style-type: none"> <li>! Project area lacks updated technology, roadway design, and safety measures</li> <li>✓ <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></li> <li><i>Roadways designed for easy integration of fiber and broadband infrastructure in the future, as needed.</i></li> </ul>

## II. PROJECT LOCATION

The proposed grade separation is located at the intersection of SH 302 and SH 115, just outside of Kermit, Texas city limits. The intersection is located approximately 22 miles north of Exit 73 off I-20.

## Exhibit 2. Winkler County Improvement Project



*Project Location Map*

SH 302 and SH 115 are both TxDOT-designated Energy Sector Corridors, which are prioritized for roadway improvements and safety enhancements due to their location in the Permian Basin energy sector region (one of six energy sectors in the state). The Permian Basin, spread between West Texas and southern New Mexico, is famous its large oil fields and high energy production including oil, natural gas, biodiesel, solar, and wind energy.

Energy production from the Permian Basin is projected to more than double by 2023 at a rate of three million barrels per day (accounting for more than 60 percent of growth in net global output from 2017 to 2023).<sup>3</sup> **It is estimated that over 1,000 trucks are used for the construction of every well, and roughly 350 trucks are required per year during production to keep the wells open, in addition to any petroleum products that may be moved by truck from the wells to trans-loading facilities.**<sup>4</sup> Even with upgraded rail, transmission lines, and other methods for transporting goods, services, and workers to these areas, demand on the State's and Nation's freight network will increase along rural roadways. Along with contributions from the energy sector, TxDOT is construct facility improvements that benefit the movement of people and goods along the local and national transportation networks.

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

<sup>4</sup> Accessed at: <https://static.tti.tamu.edu/tti.tamu.edu/documents/409186/IR-16-03.pdf>



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

TxDOT is requesting \$25,000,000 in BUILD grant funds, 54% percent of the total future project cost, to complete the SH 302/SH 115 interchange. These funds will be used for project design, construction, right-of-way acquisition, and project oversight. The tables below as well as the project information form, 424 form, and 424C form included in **Appendix B** provide detail 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. Total Project Cost**

Winkler County Improvement Project	Total Cost	Federal Funds	State Funds	Private Funds	BUILD Grant
SH 302/SH 115 Grade Separation	\$46,038,028 100%	\$0 0%	\$21,021,778 46%	\$16,250 >1%	\$25,000,000 54%

The entire Winkler County Improvement Plan will be constructed at the same time, including the Project’s grade separation and the roadway improvements listed in **Table 4**. The adjacent roadway improvements have been fully funded using a combination of state and federal funds and are ready to begin construction.

**Table 4. Complete Winkler County Improvement Plan**

Adjacent Improvements	Total Cost	Federal Funds	% Federal Funds	State Funds	% State Funds
SH 302 from Loving Co. Line to SH 115	\$20,600,000	\$16,480,000	80%	\$4,120,000	20%
SH 115 from SH 302 to 5 mi. S of SH 302	\$5,012,910	\$4,010,328	80%	\$1,002,582	20%
SH 302 from SH 18 to Ector Co. Line	\$6,963,829	\$5,571,063	80%	\$1,392,766	20%

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

If BUILD grant funding is awarded, a total of \$75,186,598 in state and federal funds will be invested in rural communities, providing access to new jobs being created in the area. The BUILD program can help make this project a reality and improve the lives of rural residents and increase the efficiency of business in the area. The BUILD program has the financial strength to secure this regionally-significant project.

Rural roadway improvement needs have outpaced Texas roadway infrastructure funding, and while a 2014 statewide ballot measure secured additional revenue for transportation infrastructure in energy sector areas, there is an urgent ongoing need to maintain and improve 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

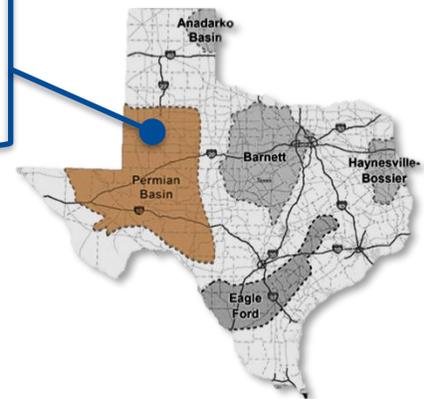
The Project will improve safety through:

- Reducing congestion on SH 302 currently causing back-ups and collisions;
- Reducing conflict points through grade separation of SH 302 and SH 115; and,
- Eliminating the roadway-rail crossing along SH 302 with the Texas-New Mexico rail line and replacing with a grade separation over the railroad.

This Project will greatly improve the safety of motorists by reducing conflict points on state highways and adding a grade-separated interchange that will allow motorists to bypass an existing at-grade railroad crossing. **Improving safety in this area is a primary concern as crashes in the project area increased by 160 percent from 2015 to 2017.**

TxDOT has identified all six of the energy sectors within the state, including the Permian Basin, as areas with high rates of injury, fatalities, and loss of property. In 2016, there were 25,293 fatal and serious injury crashes in Texas' six energy sectors, of which 1,487 included fatalities.

Currently, the Permian Basin region accounts for roughly two percent of the overall Texas population but represents a staggering 10 percent of the fatalities on state highways<sup>5</sup>. In 2016, there were 4,212 fatal and serious injury crashes and 289 fatalities within the Permian Basin region.



View of Permian Basin

Frequent stops and slow acceleration/deceleration of trucks on rural roads cause disruptions to traffic flow, impede mobility, and present safety concerns.

Today, SH 302 and SH 115 are both two-lane roadways (one travel lane in each direction) with minimal shoulders that do not allow for passing or emergency stops. The intersection is stop-controlled at SH 115 with signage.

The proposed grade separation removes at the SH 302/SH 115 intersection, in conjunction with the adjacent improvements including dedicated left-turn lanes, passing lanes, and acceleration and deceleration lanes, will minimize potential conflicts in the corridor with trucks and freight. These improvements will also allow through traffic to move more efficiently with fewer impedances and conflict points.

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

The intersection is within one-half mile of an at-grade railroad crossing with the Texas & New Mexico Railway (TXN) line. The TXN operates 111 miles of track in New Mexico and Texas carrying oilfield commodities such as drilling mud, hydrochloric acid, frac sand, pipe, and petroleum products including crude oil in addition to ship iron and steel scrap. Four trains go through the crossing daily, causing delays and introducing conflict points between rail and heavy freight, both of which may carry potentially harmful substances.<sup>6</sup>



View of crossing on SH 302

To date there is simply a common 'crossbuck' sign, the most basic type of warning sign, and flashing lights used to warn motorists of an approaching train. **This Project will replace the SH 302/SH 115 intersection with a grade-separated interchange that will allow residents and freight traffic to bypass train traffic as well as eliminate a roadway-rail crossing to remove possible conflicts, improving the overall safety of SH 302.**

The grade separation at the SH 302/SH 115 intersection also provides a similar positive impact by reducing the number of potential conflicts between heavy trucks and other motorists that often create a bottleneck at this intersection.



TxDOT's safety campaign materials

By separating turning traffic from through traffic, potential conflicts are reduced and safety is improved. The grade separation will also provide congestion relief by eliminating the delay at the intersection by allowing through traffic to have unimpeded movement. Today, vehicles stack at the intersections, causing collision risk for distracted drivers.

TxDOT has crafted and implemented a robust public information campaign to improve safety in the Permian Basin energy sector. This

<sup>6</sup> Accessed at <https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/crossing/XingLocResults.aspx?state=48&countycity=&railroad=&reportinglevel=ALL&radionm=County&street=SH%20302&xingtype=3&xingstatus=1&xingpos=1>

includes educating the public on crash statistics, providing safety tips, and conducting a targeted safety media campaign (including social media, billboards, and video and audio public service announcements (PSAs).

Previous TxDOT efforts include:

- 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 SH 285 to share their input
- Collaborated to create safety video for Permian Basin residents available on governmental sites<sup>7</sup> and YouTube
- Developed Energy Sector Safety Campaign Webpage with print and billboards, Video PSAs, and Audio PSAs



*Permian Basin safety video*

<sup>7</sup> <https://www.txdot.gov/driver/share-road/be-safe-drive-smart/energy-sector.html>

## IV. MERIT CRITERIA

### B. STATE OF GOOD REPAIR

The Project will support state of good repair through:

- Improving pavement conditions at the interchange and approach roadways;
- Upgrading pavement to a level that can withstand heavy freight traffic;
- Improving infrastructure at the existing SH 302 and SH 115 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.

This Project will improve the condition of infrastructure at an intersection and on a corridor that are both long overdue for investment. Pavement on SH 115 is rapidly deteriorating as the corridor was not originally designed for high volumes of heavy freight.

Energy sector development, production, and distribution are taking a toll on the existing transportation infrastructure. Pipe, sand, and water associated with these activities can weigh more than the Empire State Building<sup>8</sup> and, over time, trucks hauling these heavy loads into, out of, and within the region tear up the existing transportation infrastructure, diminishing its capacity to serve 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 growth by reducing or eliminating existing mobility barriers. TxDOT has allocated \$1.2 billion in 2018 towards 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.



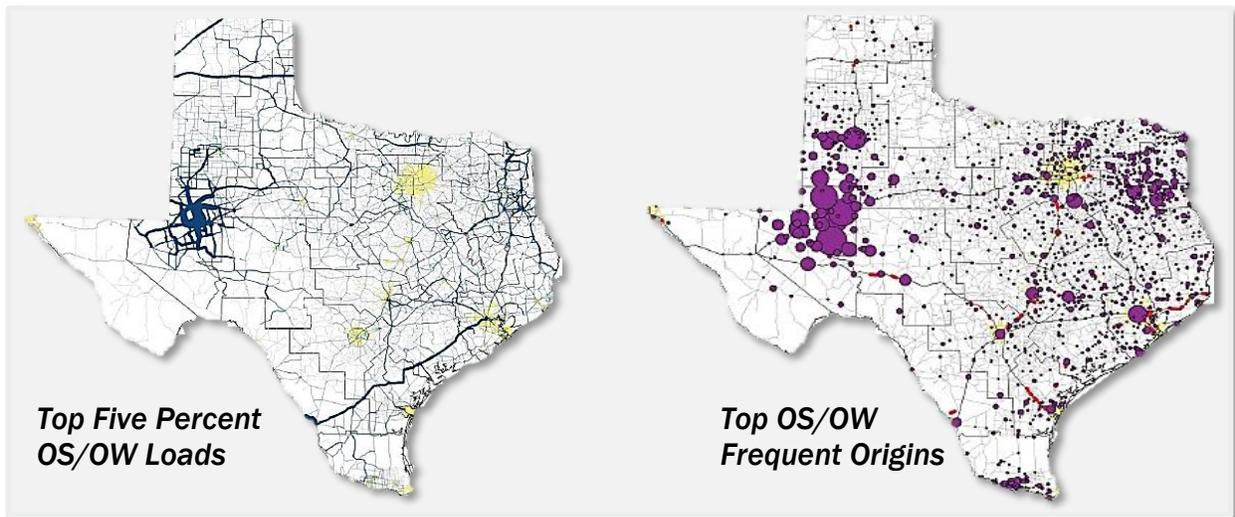
*TTI field visit image highlighting minimal to almost no shoulder and poor lane pavement conditions*

<sup>8</sup> Accessed at <https://www.houstonpublicmedia.org/articles/news/2018/05/04/283575/researcher-points-tolegislative-fixes-for-oilfields-crumbling-roads>)

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 University’s Texas Transportation Institute (TTI) estimates that the total energy-related cost of rebuilding the infrastructure 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.<sup>9</sup>

Oversized and overweight loads experienced throughout the state of Texas are shown in **Exhibit 3**. There is a clear density of oversized and overweight loads in the Permian Basin on roadways such as SH 302 and SH 115.

**Exhibit 3. Oversized and Overweight Load Characteristics in Texas**



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

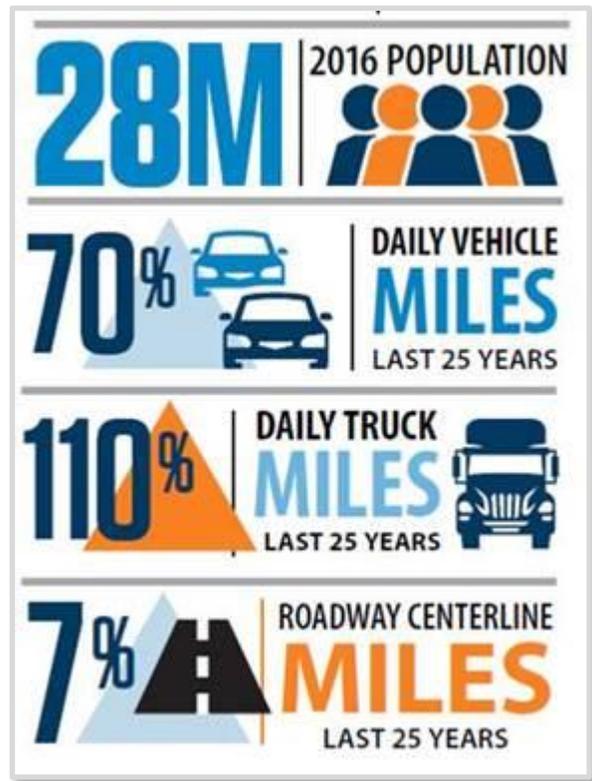
In addition, an agreement is in place between TxDOT and the US Customs and Border Protection (CBP) that allows CBP to install and maintain cellular-enabled, small mobile cameras at various site locations in TxDOT right of way within the Odessa District. These cameras are used by CBP to obtain digital 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 (ROW), which presents challenges for rapidly-changing pavement conditions within certain areas across the state. The population within Texas has grown by more than 50 percent over the last 25 years. During the same period, daily vehicle miles traveled have increased by 70 percent and daily truck miles traveled have increased by 110 percent on TxDOT maintained roadways, while roadway centerline miles have increased by only seven percent. In addition, Texas moved more than two 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.

<sup>9</sup> Accessed at: <https://ftp.dot.state.tx.us/pub/txdot-info/sla/strategic-plan-2015-2019.pdf>

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 Plan<sup>10</sup> 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 procedures 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*

<sup>10</sup> 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 \$37M in truck/passenger vehicle operating cost, \$33M in time savings for all motorists, and \$24M in savings for shipper/logistics costs;<sup>11</sup>
- Improving freight mobility by eliminating a bottleneck at the SH 302/SH 115 intersection through grade separation;
- Improving travel time and reliability by 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.

If the existing constraints at SH 302 and SH 115 are not addressed, bottlenecks will worsen and congestion will increase. This Project improves an important connector and a high-volume freight node as the project area is adjacent to a culmination of three important regional connectors: SH 302, SH 115, and SH 18. These roadways bring a high percentage of freight traffic through the area (more than 50% on SH 302 and more than 70% on SH 115).

As the energy industry 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 TXN rail line.

This Project will help eliminate bottlenecks, reduce congestion, reduce travel times, and improve the travel time reliability of the corridors. As such, the Project will enhance the local and regional transportation network and improve connectivity and opportunity for residents. Decreased and more reliable travel times relate to shorter and more reliable commutes for West Texas residents. Shorter travel times also provide opportunity for greater employment access within reach of these rural West Texas communities.

**Over a 30-year timeframe, the total travel time savings for this Project is anticipated to be approximately \$33 million.**

In 2011 TxDOT began identifying the unique challenges posed by heavy-load and high-volume freight in the area. TxDOT found that existing demand regularly results in delays of 20 minutes or more at several grade crossings in the area, including the grade crossing at

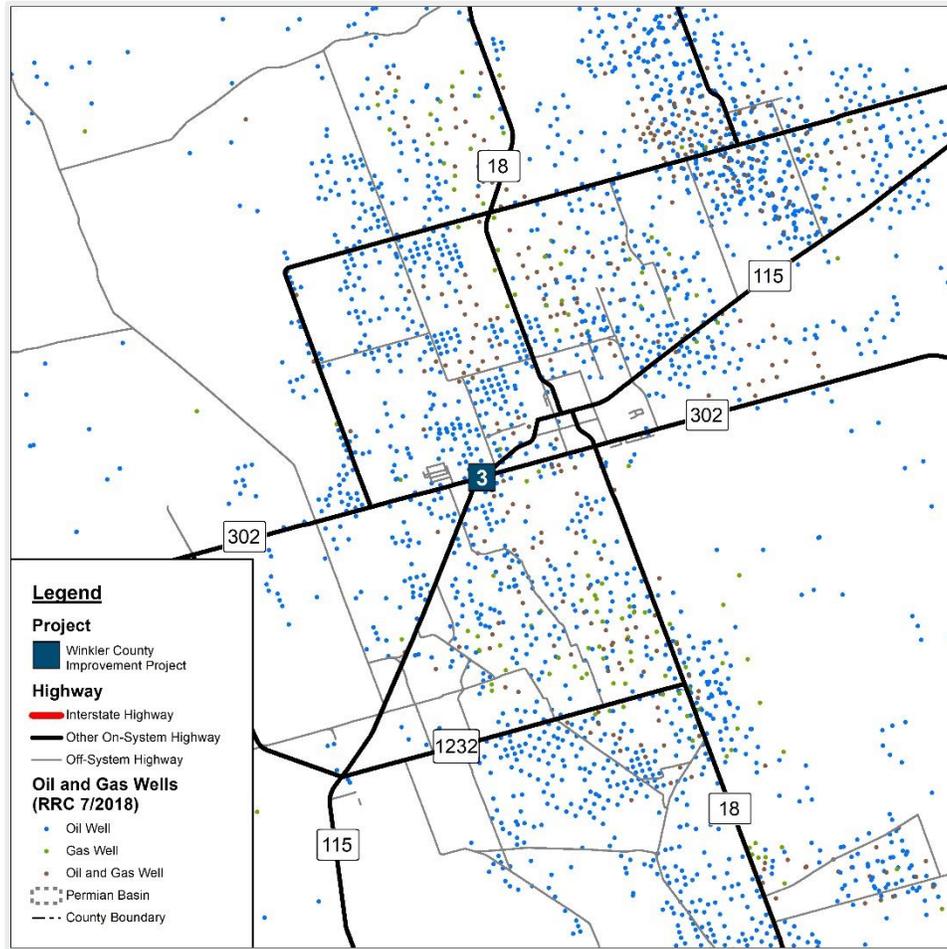
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<sup>11</sup> See BCA calculation spreadsheet

SH 302 and SH 115. Not only does this delay pose safety concerns, but the delays cost money in lost efficiency

**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, placing an even greater strain on the transportation network. Based on a Baker Hughes report<sup>12</sup>, facilities in the Permian Basin totaled 444 in April 2018, up 113 from the same time in 2017.

**Exhibit 4. Active Oil and Gas Wells within Project Area**



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, several of which originate within the Permian Basin and rely on an efficient transportation network to enter the market.

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.<sup>13</sup>

<sup>12</sup> <http://phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-rigcountsoverview>

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

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 percent of the U.S. refining capacity.<sup>14</sup> 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.<sup>15</sup>

While this boom has been tremendous for business and job growth in rural communities, the increased traffic demand takes a toll on the transportation network. The energy industry requires a large number of trucks for production and the high demand is putting strain on the transportation network.

Localized congestion on ranch-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 a basic goods and energy.

*State energy facts at a glance:*



**Five of the nation’s 31 oil basins are in TX**



**Seven of the nation’s 26 natural gas hubs are in TX – two are in the Permian Basin**



**181 of 551 US natural gas refineries are located in TX – 81 are in the Permian Basin**



**Of the 1,043 wind power plants nationwide, 152 are in TX, many of which are in the Permian Basin.**

*“The Odessa District has made great strides in addressing the impacts of an every-increasing activity level of the oil and gas industry in the Permian Basin. New funding under the UTP and cooperation with the Midland Development Corporation and the Odessa Development Corporation has breathed new life in an area that had atrophied in the last twenty years as far as transportation funding is concerned.”*

— Robert R. Donnelly,  
Midland Eastland Resources  
President

Several new locations are in and around the Project area of SH 302 and SH 115. The area also relies heavily on the Texas & New Mexico Railway (TXN) line just one-half mile east on SH 302 of the proposed grade-separated project. Growth in energy production and the associated freight volume are anticipated to continue, likely leading to a busier rail line. This will cause more frequent delays and added congestion to the already slow-moving intersection.

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

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

## 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 \$444,000 in environmental costs.<sup>16</sup>

The Project and adjacent roadway improvements 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.

In addition to reducing emissions and improving air quality, improved transportation infrastructure and connectivity is good for the large amount of renewable energy in the area. Based on American Wind Energy Association's AWEA's 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**.<sup>17</sup>

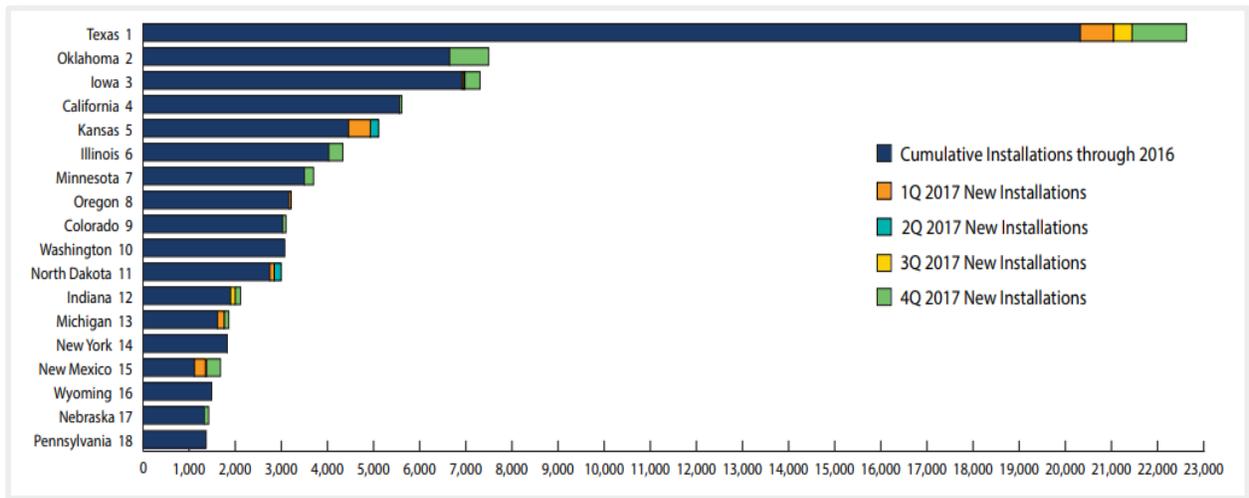
Like the heavy and oversized loads in other energy sectors, freight traffic for wind farms causes great strain to the infrastructure and network from heavy loads, slow and oversized loads, congestion, and additional traffic. Corridor improvements and a grade separation will help ensure the safety of other motorists and adequate facility needs for wind turbine transportation.

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<sup>16</sup> See BCA calculation spreadsheet

<sup>17</sup> 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 CO<sub>2</sub> from power generation are at their lowest point in nearly 30 years. The environmental benefits associated with natural gas go well beyond CO<sub>2</sub> reductions and include reductions in NO<sub>x</sub>, SO<sub>2</sub>, and other emissions.<sup>18</sup>

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.

These processes include:

- 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.

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

## IV. MERIT CRITERIA

### E. QUALITY OF LIFE

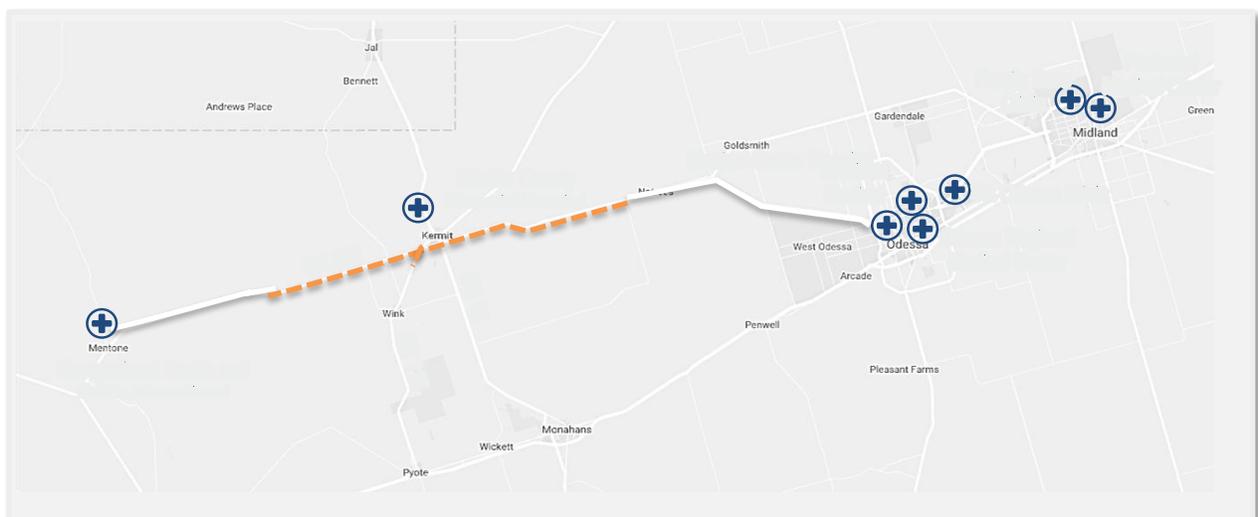
The Project will improve quality of life by:

- 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 \$37M in truck/passenger vehicle operating costs, \$33M in time savings for all motorists, and a savings of \$24M in shipper/logistics costs;
- Improving safety conditions are anticipated to result in a \$52M savings in safety costs; and,
- Designing to preserve right of way for fiber network.

Increased access and mobility is not only important for business and the energy industry, but access and reliable travel times are also extremely important for residents of West Texas. Area residents have limited roadway facility options for traveling within and around the region, and they currently experience significant travel delays on these facilities as a result of growing energy industry activity and a constrained roadway network with few primary connectors.

Network delays at the SH 302/SH 115 intersection and at-grade railroad crossing on SH 302 also impede access to health care and emergency services. West Texas is a rural area with limited healthcare options and facilities. Reliable access becomes extremely important and SH 302 is the primary connector between several medical facilities in the region.

#### Exhibit 6. Medical Facilities Near Project Area



*Medical facilities near the Project area*

Safety is another major quality of life indicator and, as discussed in the safety section of this application, the Project results in fewer opportunities for conflict among heavy freight trucks, traditional motorists, and trains at the existing at-grade rail crossing. These improvements will increase safety and provide more reliable transportation connectivity to jobs.

TxDOT and the Permian Basin Metropolitan Planning Organization (MPO) have solicited ideas and feedback from residents by hosting events such as a “Livability Workshop”. These events allowed TxDOT to discuss best practices and have a conversation about livability and sustainability goals and objectives for the region. 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 including the implementation of this Project.

Furthermore, the Project will be designed to provide for the 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.

## IV. MERIT CRITERIA

### F. INNOVATION

The Project will deploy an innovative approach by:

- Utilizing an innovative funding tool, one that provides incremental financing from the energy sector;
- Relying on TxDOT's successful deployment of several innovative technologies and initiatives across the state;
- Preserving 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 SH 302/SH 115 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 coordinated with broadband service providers in the area (AT&T, Windstream Communications, Dell Telephone, and Fiberlight) on partnering in this installation.

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 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.

**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 border 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 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. In

addition, TxDOT in coordination with the local MPO, held events such as a “Livability Workshop” with local community members to solicit feedback on challenges and possible solutions to transportation-related issues within the region. This public and private commingling allows for ideas on both sides to work towards common goals.

Ultimately, the design of the improvements will guide how effective the Project and other adjacent improvements within Winkler County are at achieving TxDOT’s goals of safety, economic competitiveness, community livability, and state of good repair. TxDOT will consider innovative options within the design that may increase safety, such as smart signals, and maintain the state of good repair while providing the competitiveness that the region needs 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.

- Association of General Contractors-Texas
- Anadarko Petroleum Corporation
- 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 in **Appendix C** to this application. In addition to simply lending support for the project, an energy sector business and the Permian Basin Road Safety Coalition 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.



**Researcher Points to Legislative Fixes for Oilfield's Crumbling Roads**

Houston Public Media

**The Permian Basin Still Has an Awful Lot of Oil**

Bloomberg

**Permian Basin Pipeline Bottleneck is Costing Wall Street Investors a Ton of Money**

Dallas Morning News

**McCamey, Texas Largest Solar Project is a Marriage Made Under the Sun**

Midland Reporter Telegram

**Hot Commodity in the Shale Boom: Truckers Pipelines Filled to the Brim Drive Up Demand for Permian Basin Drivers; Signing Bonuses and Six-Figure Salaries**

Wall Street Journal

*TxDOT works with market experts to ensure impacts of economic development are mitigated for and focus efforts on transporting resident to jobs generated by economic growth*

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 nearly \$78 million of Proposition 1 funds towards the various roadway improvements in the Odessa District with a proposed \$15M 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.

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.

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.



*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*

**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-Statesman<sup>19</sup>*

<sup>19</sup> Accessed at: [https://www.mystatesman.com/news/opinion/support-road-funding-proposition/mYIE12RkAqUn1gXubN308K/?icmp=statesman\\_internallink\\_invitationbox\\_apr2013\\_statesmanstbtomystatesmanpremium#66175da1.3569926.735483](https://www.mystatesman.com/news/opinion/support-road-funding-proposition/mYIE12RkAqUn1gXubN308K/?icmp=statesman_internallink_invitationbox_apr2013_statesmanstbtomystatesmanpremium#66175da1.3569926.735483)

## V. PROJECT READINESS

With the help of BUILD funding, the Winkler County Improvement Project is expected to obligate funds in May 2020, and will be fully constructed in 2022.

### Technical Feasibility

TxDOT intends to improve the at-grade intersection at SH 302/SH 115 by constructing an overpass for SH 302 over SH 115 and detailing a signalized at-grade intersection for the remaining traffic. The Project shall include:

- 12-foot lanes shoulders for SH 302,
- 12-foot lanes with turn lanes at the intersection on SH 115,
- 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 as well as follow processes set in the TxDOT Plan, Specifications & Estimate 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 percent has been provided for the construction of the Project as appropriate for the level of design.

### Project Schedule

The project schedule shown below in **Exhibit 7** includes the major project milestones for engineering and design completion, right-of-way (ROW) acquisition and permitting, and construction. The schedule demonstrates that the Project meets funding obligation and construction deadlines required by the BUILD grant program. The schedule allows adequate time for procurement, reviews, and contingency. With BUILD funding, the Project and associated noted improvements within Winkler County will be fully constructed in 2022.



**Exhibit 7. Winkler County Improvement Program Schedule**

Work Phase	2019	2020	2021	2022
Draft Environmental Documentation				
Public Involvement				
Anticipated NEPA Clearance (Milestone)				
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

This section provides a summary of all required approvals related to environmental permitting, environmental reviews, and state and local approvals. The project has followed the environmental process and portions of the project have completed the necessary National Environmental Protection Agency (NEPA) clearance. All the associated Winkler County projects that have gone through the NEPA process were found to have no significant environmental impacts. Environmental documentation can be available upon request. The following associated projects have received categorical exclusion (CE) approval.

The grade separation at SH 302/SH 115 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 has not been acquired. This is considered a medium risk considering the length of the ROW acquisition process. TxDOT has the experience with other projects in the area to secure the ROW within the identified timeframe.
- 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 and TxDOT knows the process well.
- Design effort: The design 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 Winkler County Improvement Project in accordance with 2018 USDOT BCA Guidance. The project includes a grade separation at SH 115 and SH 302 as well as widening of SH 302.

**Based on input data, the Winkler County Improvement Project has a Benefit/Cost (B/C) ratio of 1.35.** A 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.

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).