final report

Trans-Texas Corridor Rural Development Opportunities: *Ports-to-Plains Case Study*

prepared for

Texas Department of Transportation
Government and Business Enterprises Division

prepared by

Cambridge Systematics, Inc.

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R.J. Rivera Associates, Inc.

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Foreword – Achieving TxDOT Goals through Rural TTC Development

The Texas Department of Transportation (TxDOT), in cooperation with local and regional officials, is responsible for planning, designing, building, operating, and maintaining the State's transportation system. TxDOT's goals are to:

- ***Reduce congestion;***
- ***Enhance safety;***
- ***Expand economic opportunity;***
- ***Improve air quality; and***
- ***Increase the value of transportation assets.***

This study addresses the goals and strategies of the TxDOT 2007-2011 Strategic Plan with specific focus on rural Texas. The development of Trans-Texas Corridor facilities has the potential to achieve TxDOT's five strategic goals in rural parts of the State by:

- **Reducing congestion** by providing additional transportation capacity and alternative routes that decrease stress on infrastructure in Texas' large metropolitan centers. Reliever routes decrease congestion in rural population centers, particularly for traffic moving through these areas to more distant destinations. In addition, development of utility facilities relieves capacity constraints on the electrical grid serving Texas' rural *and* urban communities.

- **Enhancing safety** through the development of intermodal linkages that reduce traffic volume on Texas highways and by providing new highway capacity with enhanced safety features.

- **Expanding economic opportunity** by establishing partnerships between rural businesses and communities to enhance access to Texas, U.S., and international markets and by providing lower transportation and utility costs statewide.

- **Improving air quality** through investment in wind power transmission and intermodal linkages that reduce vehicle emissions and facilitate the movement of commodities to market.

- **Increasing the value of transportation assets** through strategic investments in intermodal linkages which reduce dependency on highway infrastructure and result in lower maintenance costs.

1.0 Introduction

1.1 Study Background

In 2002, Governor Rick Perry introduced the Trans Texas Corridor (TTC) initiative to create a system of strategic multiuse transportation corridors to bring about increased public safety, economic vitality, and overall quality of life throughout the State. Thus far, the Texas Department of Transportation (TxDOT) and Regional Mobility Authorities (RMA)[1] have pursued development of TTC facilities primarily in congested urban areas or on corridors that connect large metropolitan centers, such as the TTC-35 and TTC-69 corridors. Rural areas of the State, while not overwhelmed with traffic congestion, can derive other benefits from TTC development, including enhanced economic development opportunities. In order to identify rural development opportunities for TTC facilities, TxDOT's Government and Business Enterprises (GBE) Division commissioned this study as a first step in applying the TTC concept to rural Texas. One of the primary goals of this study is to develop a framework for assessing TTC development potential to rural corridors throughout the State.

TxDOT selected the Ports-to-Plains Corridor in West Texas as a case study for application of this framework. Stretching from Laredo, Texas to Colorado, the Ports-to-Plains Corridor is a Federally designated High Priority Corridor. Based in Lubbock, the Ports-to-Plains Corridor Coalition formally advocates for transportation and economic development in the Corridor in four states. Since its inception more than a decade ago, the Coalition, in partnership with TxDOT, has successfully developed a system of four-lane divided highways to enhance trade and safety. While some portions of the highway corridor are still in need of improvement, the Coalition is examining other multimodal transportation needs as it moves forward.

The outcome of this study is a set of recommendations to advance rural TTC corridor development in the Ports-to-Plains Corridor. Some of the findings are applicable to other rural areas of the State, especially for corridors with economic geographies similar to the Ports-to-Plains Corridor. Findings regarding financing and governance issues, including suggested changes to the TTC legislation to facilitate rural TTC development, also are valuable to rural areas statewide.

[1] A regional mobility authority (RMA) is a political subdivision formed by one or more counties to finance, acquire, design, construct, operate, maintain, expand, or extend transportation projects. These projects may be tolled or nontolled. Source: TxDOT (http://www.dot.state.tx.us/services/texas_turnpike_authority/rma.htm).

To assess TTC development opportunities, the study team conducted meetings and telephone interviews with more than 60 individuals representing more than 30 organizations with expert knowledge of the transportation, financial, and regulatory issues. The study team also consulted local and national studies and literature to capture the most recent trends and insight. This report details results of these efforts and provides direction for further action by the Ports-to-Plains Corridor, other rural Texas corridors, and state officials to advance TTC development throughout the State.

1.2 Approach

This study seeks to leverage existing economic and institutional resources to assess potential development opportunities for Trans-Texas Corridor infrastructure in the Ports-to-Plain Corridor and other areas of rural Texas by answering three core questions:

1. *What are the opportunities for developing TTC infrastructure in the Ports-to-Plains Corridor?*

2. *What financial and institutional actions are likely to lead to construction and continued maintenance of new infrastructure in the Ports-to-Plains Corridor?*

3. *What types of development/financing opportunities exist for other rural Texas corridors and what is the framework for analyzing feasibility?*

For the Ports-to-Plains Corridor, the answers to these questions are straightforward:

1. ***What are the opportunities for developing TTC infrastructure in the Ports-to-Plains Corridor?***

   - **Additional Rail Terminals and Connectivity –** The Corridor holds the potential to develop intermodal and conventional terminal facilities to facilitate the movement of agricultural commodities, including cotton and ethanol, from production to market. The Corridor might also benefit from improved rail network connectivity resulting from a new connection between Lubbock and Midland-Odessa.
   - **Wind Power Transmission –** Cooperative development of utility transmission facilities to move wind power from the Corridor's highest wind producing regions to high demand areas in the eastern half of Texas presents another development opportunity.
   - **Highway Development –** Highway development opportunities exist, but are limited. The most promising opportunities are south of I-20, for reliever routes around urban centers and to support high-density international trade lanes in need of capacity and safety improvements.

2. ***What financial and institutional actions are likely to lead to construction and continued maintenance of new infrastructure in the Ports-to-Plains Corridor?***

   – **Define the Benefits and Cost-Sharing to Structure Financial Participation.** To move these development opportunities forward, the Ports-to-Plains Corridor Coalition and TxDOT should engage potential partners in the freight and energy industries in a dialogue to outline specific implementation steps, including determining benefits and cost-sharing for financing within a public-private partnership arrangement.

   – **Identify Institutional Activities to Advance Development.** On an institutional level, the Ports-to-Plains Corridor Coalition and TxDOT should work together to identify additional intermodal development opportunities and bring the Texas Public Utilities Commission, Electric Reliability Council of Texas (ERCOT), Southwest Power Pool (SPP), and other partners to the table to cooperatively identify transmission corridors and financing arrangements for wind power transmission. Finally, TxDOT should work with the Texas Legislature to consider changes to the existing TTC laws – including additional flexibility to establish Regional Mobility Authorities (RMA) in rural areas to facilitate development.

3. ***What types of development/financing opportunities exist for other rural Texas corridors and what is the framework for analyzing feasibility?***

   – **Other Rural Development Opportunities –** Potential to develop rail infrastructure, electric transmission facilities, highways, and other public utility facilities – including water pipelines – exists in other rural corridors of the State but would require more assessment to determine feasibility, costs, and benefits. Financing these opportunities will require the same steps outlined under question 2, including determining benefits to structure cost sharing.

   – **TTC Development Opportunities Analysis Framework –** The framework developed through this study, and applied to the Ports-to-Plains Corridor, could be applied to other rural corridors in the State. The four steps of this framework include:

      1. Identify infrastructure gaps between supply and demand regions for commodities (e.g., agriculture, mining, energy, water);
      2. Determine participation feasibility by industry (who will participate financially and under what conditions);
      3. Conduct economic and financial analyses (regional and local economic analysis, benefit-cost analysis, and financial feasibility analysis) to identify beneficiaries (who benefits, where, and how much); and
      4. Develop a cost-sharing plan to move forward with appropriate financial arrangements.

The answers to these core questions are intended to guide TxDOT, the Ports-to-Plains Corridor Coalition, and other interested parties toward tangible progress in applying the TTC concept in rural areas. The remainder of this report details how the study arrived at these answers and provides background on other key issues, including the status of statewide rural corridor development.

1.3 Report Outline

In addition to Section 1, the report also includes five sections, described below, that discuss the key issues related to rural corridor development.

- **Section 2 – The Trans-Texas Corridor Initiative –** This section provides background on the Trans-Texas Corridor initiative, including some of its key provisions and applicability to rural versus urban areas.

- **Section 3 – Potential Financing for Rural Texas Corridors –** This section provides an overview of potential funding for rural transportation improvements in Texas and concludes with an overview of strategies for financing rural Texas corridors.

- **Section 4 – Analysis Framework for Assessing Rural TTC Development Opportunities –** This section presents a framework for identifying and analyzing the development potential for rural TTC corridors, including financial and institutional approaches for formation of public-private partnerships resulting from development opportunities.

- **Section 5 – Ports-to-Plains Case Study –** References to the Ports-to-Plains Corridor are integrated throughout the report, but this section applies the framework outlined in Section 4 to the Corridor to produce recommendations for next steps. This section also serves as a case study example of how the process might be repeated for other rural Texas corridors.

- **Section 6 – Conclusions and Recommendations –** This section presents the conclusions of the study and recommendations for TxDOT, the Ports-to-Plains Corridor Coalition, and other potential partners in rural TTC corridor development.

2.0 The Trans-Texas Corridor Initiative

2.1 Overview of the TTC Initiative

First proposed in January 2002 by Governor Rick Perry, and approved by the Texas Transportation Commission in June of the same year, the Trans-Texas Corridor is a multiuse, statewide network of transportation routes in Texas that will incorporate existing and new highways, railways, and utility rights-of-way. In 2003, the Texas Legislature passed House Bill (HB) 3588 granting the Texas Transportation Commission and TxDOT broad powers to develop TTC facilities – including highway, freight rail, passenger rail, public utilities, and supporting structures within rights-of-way up to 1,200-feet wide. Following the passage of HB 3588 in 2003, the Texas Legislature amended the Texas Transportation Code governing TTC development via HB 2702 to further enhance the State's abilities to construct and operate TTC facilities.

The original TTC law and subsequent legislation grant the State a set of flexible tools to develop transportation and public utilities facilities. This section presents details of Trans-Texas Corridor law contained in the Texas Transportation Code and outlines the powers the statute grants to TxDOT to finance, build, own, and maintain several types of transportation and utilities infrastructure. It also provides an update on the status of TTC development and outlines the challenges and opportunities of rural TTC development.

2.2 Trans-Texas Corridor Facilities

Chapter 227 of the Texas Transportation Code, or the "TTC Law," authorizes the State to build, own, and maintain any of the facilities shown below in Table 2.1.

Table 2.1 Trans-Texas Corridor Facilities

Facility	Includes
Transportation	
State Highway Turnpike Freight Railroad Passenger Railroad	**Supporting Facilities:** Intermodal transfer or staging area, weigh station, inspection station, rest area, service station, restaurant, train or bus station, warehouse, freight interchange, switching yard, maintenance yard.
Public Utility	
Pipeline	Water, wastewater, natural gas, petroleum pipeline or associated equipment (i.e., pipeline pumping station).
Electric Transmission	Electric transmission or distribution line or associated equipment.
Telecom/Information	Telecommunications, information services, cable television infrastructure or associated equipment (fiber optic cable, conduit, wireless communications equipment).

Source: Texas Transportation Code Chapter 227. Trans-Texas Corridor.

For the purposes of analyzing rural development opportunities in Texas, this report classifies these TTC facilities into two broad categories, irrespective of mode: passenger facilities and freight facilities. The passenger facilities include both highway and rail infrastructure that support the movement of people. The freight facilities category includes highway and rail infrastructure that support goods movement. The freight facilities category also includes public utilities, which exhibit similar transportation or conveyance characteristics to freight commodities moved via truck and rail.

Passenger Facilities

The TTC law authorizes TxDOT to develop several types of passenger-oriented facilities, including general-purpose highway lanes, dedicated passenger lanes (when commercial vehicles are separated onto "truck lanes"), commuter rail, and high-speed intercity passenger rail. The TTC law also enables the State to set speed limits of up to 80 miles per hour on new TTC designated highway segments. In addition, TxDOT can develop several types of supporting facilities under the TTC law. These supporting facilities include service stations, passenger rail stations, and other ancillary structures that facilitate or sustain transportation operations, including modal transfers.

Freight and Utilities Facilities

Under the TTC law, freight facilities could include general-purpose highway lanes to accommodate personal and commercial vehicle traffic, truck-only lanes, and freight rail infrastructure. Like passenger infrastructure, the State also can develop supporting freight facilities that sustain freight operations. For freight, these supporting facilities could include intermodal terminals, rail yard facilities (switching, maintenance), warehouse facilities for truck or rail, inspection or weighing stations, and staging areas. Finally, the law allows the State to establish commercial vehicle size and weight standards that may exceed those on other state highways.

The TTC law authorizes TxDOT to develop several types of public utilities infrastructure, including pipelines, electric transmission and distribution lines, and telecommunications/ information facilities. For each of these categories, the law also authorizes the State to build supporting structures such as pump stations, transformers, relay stations, or other associated equipment or facilities that sustain the operations of the respective systems.

Route Selection

Several selection criteria in the TTC law guide the Commission in determining the route of TTC segments. These criteria include:

- Current and projected traffic patterns;
- The safety of motorists;
- Potential risks to persons from spills or accident of any kind;
- Environmental effects, including the effect on air quality;
- Current and projected economic development;
- The current and projected need for additional transportation options; and
- System connectivity.

The law does not specify whether route selection differs by facility type.

Applications and Exceptions

Through the TTC law, TxDOT may authorize a government or private entity to construct or operate a Trans-Texas Corridor facility. For governmental entities, the powers extended by TxDOT only apply to facilities within their jurisdictions. The statute encourages participation by private entities, especially through Comprehensive Development Agreements (CDA), but imposes some limitations, including a cap of 50 years on any toll concession. While the law allows the State to build, own, and maintain utility facilities, it

cannot directly or indirectly provide public utilities service to customers. It also precludes the State from directly operating a railroad although it may maintain the railroad infrastructure, including rolling stock.[2]

2.3 Trans-Texas Corridor Development Tools

Provisions contained in the TTC law facilitate development, including financing tools, but they also grant the Texas Transportation Commission and TxDOT flexibility in implementing TTC facilities and establishing TTC systems. Flexibility built into the law allows public and private entities and partnerships the ability to creatively approach TTC development opportunities. While Section 3 of this report presents applicable Federal, state, and local funding sources and financing programs, this section focuses on the development and financing tools specifically outlined in the TTC law.

Discrete Systems

The TTC law allows the Commission to create a "system" of two or more facilities if the system meets the State's mobility needs more efficiently or economically than operating facilities individually. The Commission also can combine two or more systems in the same way. From a development perspective, the chief benefit of forming a system results from the ability to utilize revenues generated from one or more facilities operating within a system to pay for construction or finance costs of another facility within the system. There are institutional and geographic limitations, including a provision that systems may only include facilities within a particular corridor developed under a Comprehensive Development Agreement. The TTC law generally limits the geography of any system to one metropolitan planning organization (MPO) or two adjacent TxDOT Districts.

Public-Private Partnerships

The TTC law encourages private participation in corridor development through Comprehensive Development Agreements. Section 3 provides greater detail on CDAs, but this form of partnership allows the State to engage private entities, other governmental entities or any combination thereof in the planning, design, construction, and maintenance of TTC facilities.

[2] Other limitations apply to both public and private entities, including a requirement for private entities to submit tolling methodologies.

Right-of-Way Acquisition

The statute provides the State with flexibility in the way it acquires rights-of-way for development of TTC facilities. The law allows TxDOT to purchase options for right-of-way even before finalizing route selection, and to sell back those options if the route is not selected. The law also provides TxDOT with the authority to secure sufficient right-of-way to accommodate planned corridor facilities, environmental mitigation, safety/scenic buffers, future expansion, and supporting facilities. Purchase and leaseback arrangements allow the State to acquire property and immediately lease it back to the landowner for continued use (such as agricultural use) until construction or expansion of TTC facilities.

Private property owners can participate in development through two rights-of-way related provisions, including retention of development rights and corridor participation payments. In the first, landowners sell rights-of-way to TxDOT, but retain the rights to develop supporting or ancillary facilities in the future. Through corridor participation payments, the State grants a landowner the right to receive future fee revenue from facilities in lieu of direct payment for the land.

Funding Sources

The TTC law allows the State to use any available funding source to acquire property, construct, or operate TTC facilities, including those mentioned above. Other examples cited in the law include:

- State Highway Fund appropriations (for construction or maintenance of highways only);
- Fees or tolls collected for use of TTC or other facilities or through leases, licenses, or franchises;
- Proceeds from bonds secured by fees;
- Proceeds from an obligation secured by the Texas Mobility Fund;
- Donations, in kind or in cash;
- Private investments;
- Monies transferred from the State Infrastructure Bank;
- Contributions from or contractual obligations of governmental entities; and
- Loans, grants, or reimbursements from the Federal government.

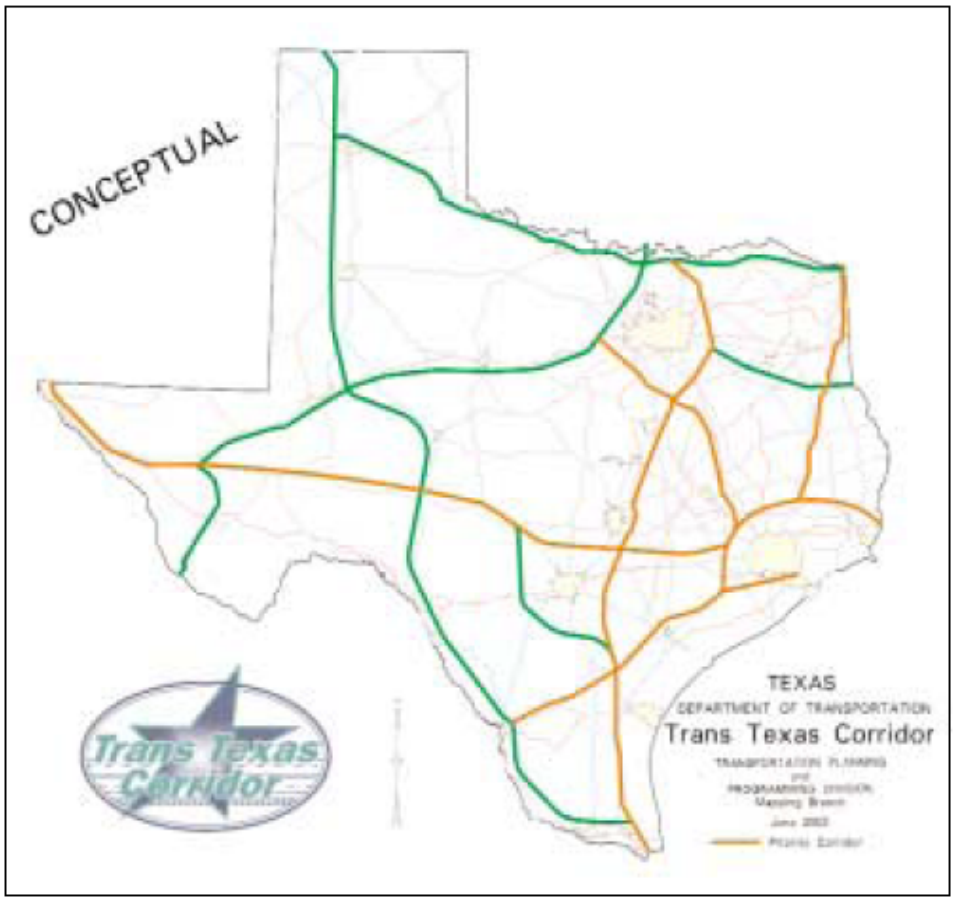
The law provides some exceptions and limits to financing and expenditures, including a limit of 20 percent of Federal-aid dollars transferred from the State Highway Fund each year applied to right-of-way purchase, grading, and initial construction of highway facilities.

Although the TTC legislation grants a powerful array of tools to finance and implement transportation improvements, TTC developers have primarily applied these in urban areas with the principal goal of reducing congestion. While rural parts of the State may not suffer from the same congestion and mobility issues as the urbanized areas, there are many mobility, safety, and economic development benefits that could accrue to these areas if they were able to make better use of TTC tools.

2.4 Status of TTC Development

TxDOT has developed a conceptual map of eight Trans-Texas Corridors throughout the State (shown in Figure 2.1). The Texas Transportation Commission has designated four of the eight corridors as "priority" corridors (shown in Figure 2.1 in tan).

Figure 2.1 Conceptual Trans-Texas Corridors



Source: Crossroads of the Americas: Trans-Texas Corridor Plan. TxDOT. (June 2002.)

The "priority corridors" include the following:

- I-35, I-37, and I-69 (proposed) from Denison to the Rio Grande Valley;
- I-69 (proposed) from Texarkana to Houston to Laredo;
- I-45 from Dallas-Fort Worth to Houston; and
- I-10 from El Paso to Orange.

In designating TTC priority corridors, the Commission considered the ability of the corridors to provide the following benefits:

- Congestion relief for metropolitan areas;
- Alternative hazardous material routes;
- Adequate toll revenue; and
- Opportunities for economic development.

Nonpriority TTC designations may not meet all these four criteria, but may be capable of generating sufficient benefits to warrant development of TTC facilities. Ultimately, the Texas Transportation Commission can grant the authority to move forward with the development of TTC facilities in nonpriority corridors.

TTC Corridors Under Development

Since the State announced the TTC designations, the State has launched various studies to determine alignments and environmental impacts for two of the priority corridors: TTC-35 and TTC-69. Both corridors remain in the preliminary development stage.

TTC-35

TTC-35 extends for nearly 600 miles from the U.S.-Mexico border near Laredo to the Texas-Oklahoma border north of Dallas. While the exact alignment is still under study, the corridor would roughly parallel Interstate 35 and would link several of the State's largest metropolitan areas and serve as a major conduit of international commerce. Although development of TTC-35 remains in the planning stages, its implementation is backed by a Comprehensive Development Agreement. TxDOT and Cintra Zachry LP entered into the CDA in March 2005, authorizing a $3.5 million planning effort, accelerating the development process for TTC-35 and setting a precedent for public-private partnership in TTC corridors.[3] Much of the TTC-35 corridor parallels rapidly growing urban areas

[3] Texas Department of Transportation TxDOT History web site. http://www.dot.state.tx.us/about_us/present_2001.htm.

including the burgeoning region between Austin and San Antonio. In the future, the TTC-35 facilities will serve a large part of the "Texas Triangle" megaregion that will develop between three of the nation's 10 largest cities: Dallas-Fort Worth, San Antonio, and Houston.[4]

I-69/TTC-69[5]

I-69/TTC-69 is part of a planned 1,600-mile national interstate highway connecting Mexico, the United States, and Canada. In Texas, the proposed corridor extends from Texarkana/Shreveport to Mexico. In 2004, the State began the Federally required environmental review process to narrow the alignment alternatives to either a no-build option or a preferred corridor study area approximately four miles wide. That review process continues and additional public hearings are planned for 2007. While the environmental study continues, the State has initiated the search for development partners. In 2006, the State issued a solicitation for private developers and the TxDOT Texas Turnpike Authority Division currently is reviewing detailed proposals. In addition to private funding, I-69/TTC-69 could receive additional Federal funding and fast-track approval through the Corridors of the Future Program. The U.S. DOT recently designated the entire corridor – from Mexico to Michigan – a semifinalist in this program.[6]

2.5 Urban and Rural Considerations

The demands for new transportation and utility capacity and the viability of tolling make applications of the Trans-Texas Corridor concept more likely in urbanizing regions. While TTC facilities are less likely to be developed solely to provide transportation capacity in rural areas of the State, rural development offers greater flexibility in the construction of facilities because of fewer space constraints. Figure 2.2 illustrates the opportunities and challenges of urban versus rural TTC development.

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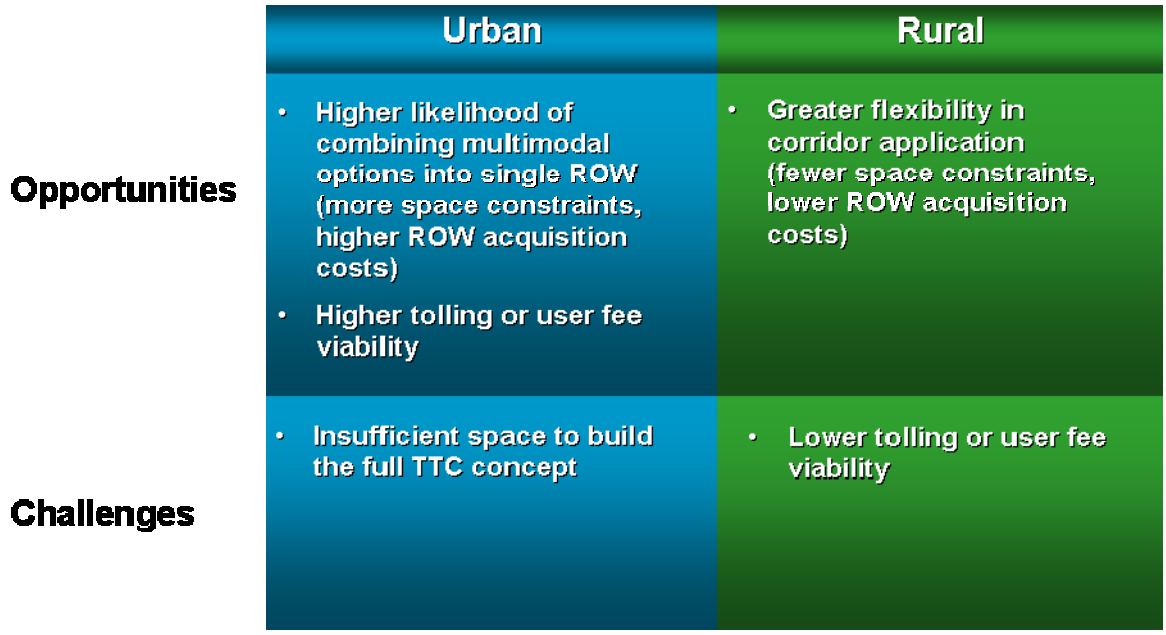
[4] Regional Plan Association, "America 2050: A Prospectus," New York. September 2006.

[5] Texas Department of Transportation Turnpike Authority Division web site, TTC-69. http://www.dot.state.tx.us/services/texas_turnpike_authority/ttc_69.htm.

[6] USDOT, "Secretary Peters Advances Plans to Reduce Congestion on the Nation's Busiest Highways, Announces Semi-Finalists in Corridors of the Future Program," Press Release. February 1, 2007. (http://www.dot.gov/affairs/dot1207.htm).

Figure 2.2 TTC Application
Urban versus Rural Opportunities and Challenges



Development Potential for Urban Corridors

In general, corridors within urban areas or connecting large urban areas present greater development opportunity for TTC facilities than rural corridors. This is due largely to the ability of urban facilities to provide revenue streams that support construction and maintenance. Congestion relief for highway users, passenger and freight users, and utility customers is the principal reason why urban facilities are more viable than rural facilities. Through the provision of new infrastructure, individuals and businesses accrue savings resulting from enhanced speed, improved reliability, and other benefits that outweigh the cost of user fees (tolls, etc.) collected to fund improvements.

Urban areas, because of space constraints and the resulting higher land costs, also present a higher likelihood of combining many or all of the TTC in a single right-of-way, as illustrated in the traditional TTC cross-section drawings. At the same time, land development in urban areas may constrict the size of the right-of-way to effectively prevent combining these together.

Development Potential for Rural Corridors

The potential for rural TTC development is more limited for some TTC facilities, particularly highways, due to largely uncongested traffic conditions. In these situations, toll or user fees do not provide a reliable revenue stream to secure financing of facilities unless

demand is greater than capacity, which occurs less frequently in rural areas than in urban regions. While rural transportation facilities generally exhibit lower development potential from a financial perspective, rural corridors can benefit from TTC facilities that provide improved safety, mobility, environmental conditions, economic development results, or system connectivity. Rural corridors capable of benefiting in these ways can advocate for alternative funding outside of financing secured by tolls or fees to develop TTC facilities.

In contrast to the lower development potential of rural transportation facilities, public utility facilities may provide greater development potential than in urban areas. This is especially true where rural areas serve as the source regions for commodities, such as electricity or water demanded by distant urban areas. When this is the case, TTC utility facilities could serve as important utilities corridors, providing growing urban areas with needed resources.

3.0 Potential Financing for Rural Texas Corridors

In recent years, Federal transportation funding shortfalls have forced state departments of transportation to employ alternative financing strategies to provide new capacity. Fast-growing states such as Texas have taken dramatic measures to provide the financial and institutional flexibility necessary to build new highways, rail lines, ports, and other facilities in order to keep pace with demand. In many cases, especially in urban areas where transportation system users will more readily participate in expansion through tolls, transportation agencies have delivered new capacity. In Texas' rural areas, toll-funded expansion is not as common due to lower traffic volumes, but other development opportunities have the potential to qualify for a combination of public and private financing.

Applying public financing tools and attracting private investment in rural areas requires additional flexibility and creativity to advance needed projects. There are few national examples of innovative transportation finance in rural areas and no state or regional entity has attempted to form public private-partnerships to build multiuse transportation/utility corridors on the scale of the Trans-Texas Corridor. Research for this study concludes that Texas is at the forefront in exploring multiuse rural corridor financing, especially with regard to engagement of private-sector partners. The U.S. DOT and other states are clearly watching its lead. Still, there is a need to explore the options available and demonstrate successful examples from other states in order to provide Texas with a basis for advancing TTC development on rural corridors. To that end, this section provides an overview of some of the national financing programs and approaches, both public and private, that Texas could utilize to provide financial backing for TTC facilities in rural corridors.

3.1 Funding Sources and Programs

Transportation agencies and their private partners can tap a number of traditional and innovative public and private financing sources and programs to build new infrastructure. This section outlines sources and programs potentially available for TTC facilities in rural Texas at the Federal, state, and local levels for highway infrastructure, rail projects, and public utilities development.

Federal Funding Sources and Programs

Funding Sources and Programs for Highway Projects

Federal-aid Highway Program. The Federal-aid highway program provides funding for NHS designated roadways and other highway facilities, excluding local streets and rural minor collectors. Funds are distributed to states through formula programs (e.g., National Highway System, Surface Transportation Program) or through discretionary programs (e.g., Projects of National and Regional Significance). Highway projects funded through discretionary programs go through a selection process, although some of these programs were earmarked by Congress in the most recent surface transportation bill.

The Federal-aid highway program is funded with revenues from the Federal motor fuel tax (18.4 cents per gallon of gasoline and 24.4 cents per gallon of diesel)[7] and several heavy vehicle taxes, which are deposited into the Highway Trust Fund (HTF).

Funding Sources and Programs for Highway and Rail Projects

The most recent surface transportation bill, Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) expanded existing and developed several new programs and tools that can be used for both highway and rail transportation projects. These programs and tools fall into two broad categories:

Loan and Credit Enhancement Programs. These programs provide states the ability to leverage Federal resources and stimulate capital investment in transportation infrastructure by providing loans or credit support (rather than grants) for transportation projects.

Tax-Expenditure Financing Programs. These programs can be used to provide targeted income-tax benefits for investments made to improve the efficiency or increase the capacity of the transportation system or other infrastructure by reducing or eliminating tax burdens on some interest paid by investors.

Tables 3.1 and 3.2 provide details on the eligibility and funding levels of these two program types.

[7] Federation of Tax Administrators. Motor Fuel Excise Tax Rates. http://www.taxadmin.org/FTA/rate/motor_fl.html.

Table 3.1 Loan and Credit Enhancement Programs in SAFETEA-LU

Funding Program	Description	Funding Level[a]
Transportation Infrastructure Finance and Innovation Act (TIFIA) (Section 1601)	Provides loans and credit assistance for major transportation investments of national or regional significance	$610 million
State Infrastructure Banks (SIB) (Section 1602)	Allows states to establish infrastructure revolving funds that can be capitalized with Federal transportation funds	N/A
Rail Rehabilitation and Improvement Financing (RRIF) (Section 9003)	Provides loans and credit assistance to both public and private sponsors of rail and intermodal projects	$35 billion

[a] Funding levels are for 2005 to 2009 unless otherwise noted.

Table 3.2 Tax Expenditure Programs in SAFETEA-LU and Other Financing Programs

Funding Program	Description	Funding Level
Private Activity Bonds	Allows the issuance of tax-exempt private activity bonds for highway and freight transfer facilities	Up to $15 billion
Grant Anticipation Revenue Vehicle (GARVEE) Bonds	Allows states to issue tax-exempt debt backed by future Federal-aid highway revenues	N/A

Funding Sources and Programs for Public Utilities Projects

Several Federal government agencies sponsor programs to assist public and private developers of utilities in rural areas. These programs range from grants for rural electrification to broadband access loans. The U.S. Department of Agriculture's (USDA) Rural Utilities Service (RUS) is a leading provider of financial support and maintains several programs that finance construction or improvement of rural utilities. Those programs include the Rural Broadband Access program, which provides loans and loan guarantees, and the

Expedited Telecommunications Loan and Loan Guarantee Program, which assists private developers in financing the construction of rural telecommunications projects.[8]

State Funding Sources and Programs

Funding Sources and Programs for Highway Projects

State Highway Fund ("Fund 6"). The State Highway Fund (Fund 6) receives deposits from several sources, including the state motor fuel tax, state motor vehicle registration fees, sales taxes on motor lubricants, revenues from oversize/overweight permits, and reimbursement from Federal funds. Fund 6 also receives payments from developers participating in Comprehensive Development Agreements (CDA). The State can issue up to three-billion dollars in bonds backed by Fund 6 revenues, with a limit of one-billion dollars per year. As of November 2006, approximately $1.37 billion remains in this bond program, with the next planned bond issuance tentatively scheduled for September 2007.

Tolls.[9] Tolls accounted for almost 10 percent of the state highway funding at the national level, and almost 5 percent in the State of Texas. At the local level, tolls provided about 10 percent of Texas local highway funding in 2005. Combined, toll facilities (i.e., toll roads and bridges) generated $529.7 million for highway spending at both local and state government levels, or 7.5 percent of the total highway revenues reported by the State. Texas is exploring a variety of options to toll new roads, including the Trans-Texas Corridor, to help pay for their construction and maintenance costs.

Funding Sources and Programs for Highway and Rail Projects

Texas Mobility Fund. Approved by voters in 2001, the Texas Mobility Fund authorizes the State to issues bonds backed by fund revenues support transportation system expansion. In 2003, the Legislature dedicated fines from drunk drivers and those who regularly break the law to support debt service from bonds issued to support the fund. The TxDOT Strategic Plan 2005-2009 indicates that fees from drivers' licenses and vehicle inspections also will be used to fund the program in the future. Projects eligible for financing backed by the fund include expansion of the state highway system (acquisition, design, construction, etc.) and state participation in publicly owned toll roads and other public transportation projects determined by the Commission to improve mobility of the residents of the

[8] USDA Telecommunications Program (http://www.usda.gov/rus/telecom/).

[9] FHWA Highway Statistics, Tables HF-10, SF-1, and LGF-1, Cambridge Systematics analysis of the data.

State.[10] As of December 2006, approximately $1 billion remains in this program, with the next planned bond issuance tentatively scheduled for summer 2007.

Rail Relocation and Improvement Fund.[11] Established in the 2005, the Rail Relocation and Improvement Fund, once appropriated, would support rail development projects through short- and long-term bonds. The statute allows the State to use the fund without limitation to "pay all or part of the costs of relocating, constructing, reconstructing, acquiring, improving, rehabilitating, or expanding rail facilities owned or to be owned by the department." The State also can use the fund to invest in privately-owned rail facilities if the money will "relieve congestion on public highways, enhance public safety, improve air quality; or expand economic opportunity." To date, no appropriations have been directed to the fund, but possible revenue sources include diesel fuel tax on rail freight, container fees for intermodal developments, ton-mile tax on freight transportation, or a sales tax on freight transportation.[12] Once funded, the monies cannot be obligated to specific projects unless the State has completed a strategic plan identifying the benefits of proposed projects. If projects are located within a metropolitan area, the MPO must include the project in its planning process for it to be eligible to receive funds.

Funding Sources and Programs for Public Utilities Projects

The State of Texas provides various loan programs to finance rural utilities development and maintenance. The Texas Water Development Board, for example, provides grants supporting regional water planning and loan programs, such as the Rural Water Assistance Fund (RWAF) Program, that provides financing for public and nonprofit utilities providers. The Texas Public Utilities Commission (PUC) administers the Texas Universal Service Fund (TUSF), which primarily subsidizes rural telecommunications providers in order to maintain competitive consumer rates.

Local Funding Sources and Programs

Local Option Taxes. In Texas, municipalities, counties, and regional authorities can levy taxes, user fees, or surcharges and dedicate the revenues to any type of transportation or utility project. The most common local option tax dedicated to transportation projects is a sales or excise tax levied on retail purchases, but applications vary widely across the State

[10] Texas Mobility Fund. Description TxDOT web site (http://www.dot.state.tx.us/services/finance/mobility_fund.htm). Texas Transportation Code, Chapter 201.

[11] Texas Transportation Code. Title 6, Roadways. Chapter 201 General Provisions and Administration. Subchapter O, Rail Relocation and Improvement.

[12] Greater Austin Chamber of Commerce 2007 Legislative Agenda. Greater Austin Chamber of Commerce 2007 Legislative Agenda.

and can include taxes on telecommunications to hotel rooms. In the Ports-to-Plains Corridor, for example, the Laredo City Transit Department levies a telecommunications tax to support its public transportation system.[13] Throughout Texas, the State collects 6.25 percent sales tax on retail purchases but local jurisdictions can levy up to an additional two percent, or 8.25 percent total, and dedicate those revenues at the discretion of elected officials or voters. Cities and counties increasingly use local option taxes to pay for projects that lack sufficient state or Federal financial backing.

Transportation Bonds. Texas municipalities, counties, and regional authorities can issue bonds to finance transportation projects. Bonds offer Texas localities flexibility to leverage current and future revenue streams, often generated from local option taxes, to finance projects that would otherwise be unaffordable given currently available financing. Other bond revenue streams include tolls, user fees, permit fees, and a variety of eligible sources of revenue collected by local or regional governments.

Private Investment

In addition to the public funding sources outlined in this section, and in light of transportation revenue shortfalls, public or private developers of TTC facilities should actively pursue private investment to finance all or part of new facilities. In other words, public financing will not likely be sufficient to pay for needed improvements or in some cases may not be available. The term "private investment" generally refers to financing obtained from private sector entities. For the purpose of this study, private investment refers to debt or equity capital that is:

1. Provided by a private (*nongovernmental*) source; and

2. Secured or paid by user fees or other revenues or collateral of a private (*nongovernmental*) nature.

Private investment is becoming more common as a source of funding in transportation financing packages. For example, developers of the State Route 125 toll road in Southern California commingled private equity, a public loan from FHWA's TIFIA program, and private debt as well as issued private debt underpinned by user revenues (tolls in this case).

Of the total capital investment made in highways over the last decade, only a very small portion – perhaps in the range of one to three percent – was funded on a purely "private" basis according a FHWA report.[14] Statistics are not available on nonhighway applications

[13] Jurisdictions That Impose Local Sales Tax on Telecommunications Services (96-339). April 1, 2007. Texas Comptroller of Public Accounts.

[14] "FHWA Future Directions of Innovative Finance." Cambridge Systematics, 2004.

of private investment, but railroads and many utilities continue to fund capital improvements using their own cash reserves and private securities.

3.2 Institutional Arrangements

In addition to the funding sources and programs listed above, public and private entities can also engage in institutional arrangements ranging from public-private partnerships to the formation of regional authorities to leverage existing resources and accelerate project implementation. This section describes institutional arrangements with potential application to rural TTC facilities.

Federal Institutional Arrangements

Public-Private Partnerships (PPP). Public-private partnerships can take several forms, including project delivery (development phase through design and construction), asset management (long-term operations and maintenance), and project finance. As of October 2006, 21 states – including Texas – and Puerto Rico had adopted enabling legislation authorizing some form of PPPs for transportation projects. The Federal government is encouraging the use of PPPs to deliver transportation projects. Most recently, the U.S. DOT created model PPP legislation[15] to provide states with information on basic elements to consider when creating PPP legislation. The authorization of private activity bonds in SAFETEA-LU and programs like Special Experimental Project Number 15 (SEP-15)[16] have been created to encourage private participation in delivering transportation projects.

In Texas, public-private partnerships, including those where the Federal government is a party, take the form of Comprehensive Development Agreements, which are discussed below.

[15] http://www.fhwa.dot.gov/ppp/legislation.htm.

[16] SEP-15 is an experimental process for FHWA to identify, for trial evaluation, new public-private partnership approaches to project delivery. Texas has already submitted applications for this program for four projects (including TTC-35; I-69/TTC-69; Texas Toll Collection System; and a joint TIFIA application for IH 635, US 281/Loop 1604, and SH 161). More information on this program is available at http://www.fhwa.dot.gov/ppp/sep15.htm.

State Institutional Arrangements

Pass-Through Financing. The Texas Legislature in 2003 authorized pass-through financing, in which developers fund improvements to transportation infrastructure – including highway or rail facilities – and are later reimbursed by TxDOT based on the level of usage. Developers can include any one or combination of the following:

- Regional Toll Authority;
- Regional Mobility Authority;
- Private entity;
- TxDOT; or
- Local or county government.

Pass-through financing is essentially a partnership between a developer and TxDOT where infrastructure construction is funded with a usage-based fee paid by TxDOT to the developer. For projects on the state highway system, the fee reimbursed by TxDOT is based on "pass-through tolls" which compensate for usage based on traffic levels – either per vehicle or per vehicle-mile.[17] Similarly, rail improvements are repaid based on "pass through fares" on a per passenger or per passenger-mile basis for passenger rail facilities or a per carload or per commodity-ton basis for freight-rail traffic.[18] In a pass-through financing agreement, the developer agrees to finance, construct, maintain, and/or operate a project. TxDOT reimburses the developer the cost of the project rather than assessing a toll or fee directly on users. TxDOT makes periodic payments based on the number and types of highway vehicle, rail passenger, or freight-rail traffic using the facility.

Comprehensive Development Agreements (CDA). Authorized by HB 2702 of the 79th Texas Legislature, CDAs are a Texas-specific form of public-private partnership in which TxDOT and a private developer enter a strategic business arrangement for developing transportation corridors. Developers participating in CDAs will become an important source of future revenue, but the State has not yet received payment because projects initialized under these agreements are only now beginning to come on-line. In addition, the Texas Transportation Code[19] authorizes TxDOT to spend surplus toll revenue and developer fees generated through CDAs on regional transportation and air quality projects.

[17] Pass-Through Financing Questions and Answers. Texas Department of Transportation. 2005.

[18] Texas Transportation Code Title 5, Railroads, Chapter 91, Rail Facilities, Subchapter D, Financing of Rail Facilities.

[19] Texas Transportation Code 228.0055 (use of CDA fees) and 228.006 (use of surplus toll revenue).

Local Institutional Arrangements

Local government entities in Texas, including municipal and county governments, can participate in institutional arrangement to deliver transportation infrastructure projects.

- **Pass-Through Financing.** As stated above, government entities can participate in pass-through financing. State law gives local governments some flexibility in pass-through applications.
- **Regional Mobility Authorities (RMA).** Counties and some cities (large cities on the U.S.-Mexico border) can participate in RMA. RMAs have broad powers to develop and maintain transportation projects – including highway or rail facilities – within their boundaries. RMAs can issue bonds to finance projects and secure those obligations through taxes, tolls, or fees on new infrastructure. RMAs also can participate in CDAs with private developers.

3.3 Applicability of Potential Funding and Financing Alternatives to Rural Texas

For rural highway corridors, toll facilities may have limited applicability due to low traffic generation and potential diversion to parallel, nontolled facilities. The low revenue potential of these corridors also may be an obstacle to attract private investors. There are some portions of the Ports-to-Plains Corridor that may support a tolled highway facility (this is discussed in more detail in Section 5 of this report). These segments may include reliever routes and some highway segments where there are no viable parallel alternatives.

Federal and state programs, including RIFF loans, TIFIA loans, and future funds from the Texas Rail Relocation and Improvement Fund, may provide funding for rural Texas rail projects. The success of these projects depends on their ability to generate revenue through the collection of a carload, container, or tonnage-based fee or toll to use new or improved facilities.

The private sector provides financing for most privately owned utilities projects. However, the Federal government maintains many programs across several Executive Branch departments that provide financial support to rural utilities development, including telecommunications infrastructure.

Local governments, including counties, have the greatest potential to support rural corridor transportation improvements through dedicated local taxes and fees. Establishment of Regional Mobility Authorities may allow counties to dedicate funds to finance transportation improvements. The challenge is in establishing benefits and developing cost-sharing arrangements that are politically palatable. Whatever facility is pursued, it must enhance the respective economies of the contributing communities. The dedicated taxes and fees can be used to support a pay-as-you-go program, or as repayment sources for the financing tools described above.

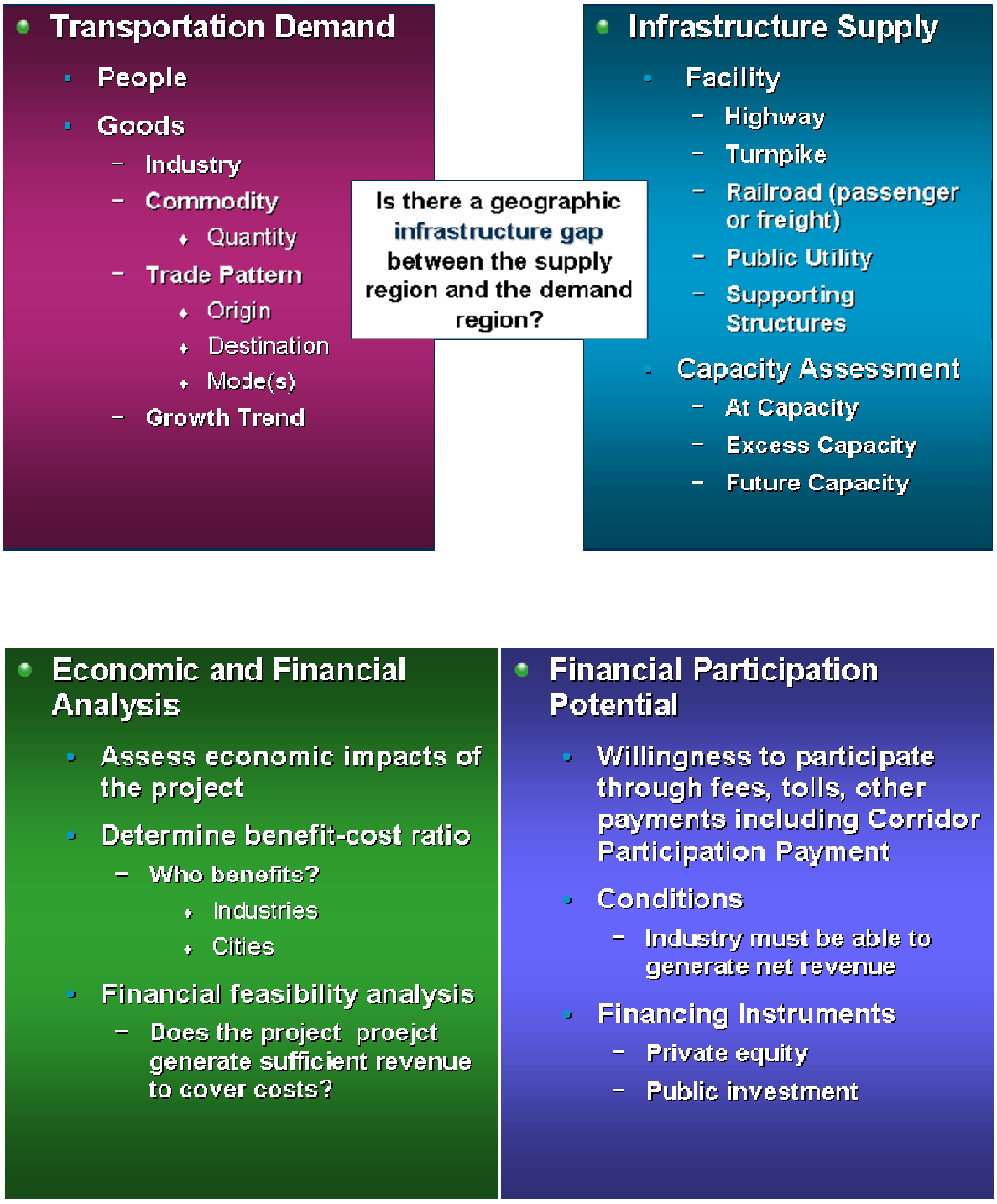
4.0 TTC Rural Development Opportunities Analysis Framework

What are the opportunities to develop Trans-Texas Corridor infrastructure in rural corridors of Texas? Throughout rural parts of the State, public officials and business leaders are beginning to assess opportunities to build TTC facilities to support transportation and public utility needs. This section outlines an analytical approach that can be used to assess development opportunities in the Ports-to-Plains Corridor and other rural corridors using a three-step analysis framework:

- **Step 1 –** Identify transportation demand;
- **Step 2 –** Inventory infrastructure supply;
- **Step 3 –** Conduct economic and financial analyses; and
- **Step 4 –** Evaluate financial participation potential.

These steps are shown in Figure 4.1 and this section presents them in detail. Development potential can be assessed based on the existing transportation demand and infrastructure supply in a study area, through the identification of gaps where there is insufficient infrastructure to support demand. The framework also can be used to measure the participation potential of stakeholders – including public and private users – and takes the first steps toward establishing a preliminary cost-sharing plan based on accrual of benefits. Section 5 presents the application of this framework to the Ports-to-Plains Corridor and demonstrates its utility in assessing development opportunities in other rural Texas corridors.

Figure 4.1 Rural TTC Development Opportunities Analysis Framework



4.1 Identify Transportation Demand

Transportation demand is the way in which people and businesses use the transportation system to fulfill their personal and economic travel and mobility needs. The economic geography, including population demographics, natural resources and trade patterns, dictate the use, or demand, for transportation systems and utilities infrastructure. Understanding the variables impacting demand, including economic drivers, freight logistics patterns, and the unique characteristics of different segments of a given corridor, is critical when gauging the potential need for transportation system infrastructure improvements.

More importantly, understanding the way that industries move their goods and the challenges they face enables transportation agencies and stakeholders to assess the feasibility of public-private partnerships that would help finance improvements.

This step of the analysis considers passenger, freight, and public utilities transportation demand. Passenger demand is related to a number of factors, including the corridor's position relative to major population and employment centers. In rural areas, freight demand is typically dominated by agricultural, extractive, or industrial uses that rely on regional natural resources. Demand for the transportation or conveyance of public utilities is closely associated to freight demand by traditional modes and is considered jointly with freight.

Passenger Demand

Rural transportation improvements related to passenger demand typically are driven by a need to enhance safety or provide increased accessibility to rural communities, often to enhance economic development potential. In some cases, when rural corridors connect large metropolitan areas, the need for system improvements are driven by growing intercity traffic volumes. This is the case in East Texas where several rural corridors link major metropolitan areas. In West Texas, population centers tend to be smaller and more isolated, generating fewer intercity trips. Rural passenger demand also is affected by commuting patterns and congestion in growing population areas, as many rural areas become more urbanized.

Analytical Methods

Many tools can be used to support this analysis framework to assess passenger demand on rural corridors, including origin-destination surveys, traffic classification counts, and travel demand models. Ultimately, the analysis should establish current and future quantity and frequency of passenger travel and the geographic characteristics of movement (origins, destinations, principal corridors, etc.). The Texas Department of Transportation maintains the Statewide Analysis Model (SAM) that could be applied as the primary tool in this analysis framework. The SAM represents passenger and freight travel demand,

population and employment forecasts, travel behavior characteristics, and the entire Texas transportation system across all roadways owned and maintained by TxDOT. This tool can analyze rural corridor passenger demand, assess the potential impacts of system improvements, and to identify sensitivities to specific factors (e.g., speed, travel time, delay, reliability, and toll rates).

Freight and Utilities Demand

A number of factors influence goods movement or freight demand in rural corridors, including the natural resources of the region and the location of consumers of exported materials. Agriculture, mineral extraction, energy production, manufacturing, and warehouse/distribution activities form the mix of industries that should be considered in rural corridor analysis. Public utilities exhibit similar demand characteristics to freight commodities and are considered jointly with freight under this analytical framework.

Public Utilities and Freight Considerations

Public utilities infrastructure is closely related to freight transportation infrastructure as it facilitates the movement of commodities from production location to markets for consumption. The commodities, in many cases, differ from those transported by traditional freight transportation modes (truck, rail, water, air cargo). For example, electricity and information (telecommunications) cannot be conveyed by traditional freight modes. Commodities such as water, petroleum, ethanol, and several other agricultural or natural resource based products, are amenable to either traditional freight modes or pipelines. Within the authority of the TTC law, the State of Texas, through TxDOT, can build and own public utility infrastructure, including pipelines, electric transmission or distribution facilities, telecommunications lines and equipment, and supporting facilities and infrastructure.

Analytical Methods

Because each corridor has a different industrial profile, it is important to interview stakeholders and analyze trade data to quantify freight and utility demand specific to the study area. For each industry, the commodities and trade patterns should be identified, and to the extent possible, quantified. As suggested for passenger demand, the SAM can serve as the primary analytical tool to quantify freight demand as part of this framework. The SAM has a freight component that provides for detailed modeling of truck movements under current and future simulated conditions. The analysis framework should determine the origin, destination, and mode(s), including intermodal transfers of each commodity. Growth trends and changing patterns also should be considered. Several data sources can supplement the SAM to quantify these factors for freight, including industry interviews, commercial vehicle surveys, truck counts, and commodity flow data sets such as Global Insight's TRANSEARCH data (contained and formatted in the SAM), which is available at the county level.

For public utility demand – which is closely related to freight demand – there are fewer analytical tools readily available to TxDOT for assessing demand characteristics. Institutional knowledge relating to public utilities planning resides chiefly with TxDOT's Right-of-Way Division, although much of that expertise is related to accommodating utilities within existing state-owned rights-of-way. This study recommends that the Department utilize the expert abilities of the public and private entities traditionally responsible for utilities planning, such as the Texas Public Utilities Commission or the Texas Railroad Commission and their corporate partners, to more fully determine the steps for TTC utilities development in rural Texas.

For both freight and utilities, this analysis should establish the type of commodities moved (e.g., grain, coal, electricity, information), the origins, destinations, modes (or type of utilities conveyance) and quantities. Growth trends and future forecasts should be carefully considered to determine future demand and identify the implications that will have on the transportation and utilities systems.

4.2 Inventory Infrastructure Supply

The next step compares the transportation demand to the available infrastructure supply to identify "gaps." This part of the analysis should be used to determine whether there is an infrastructure supply gap between origin (supply region) and destination (demand region) for key commodities. For example, if rural County A is a leading producer of gravel and its principal consuming market is County B, an urban county located 250 miles to the north, and the rural route between Counties A and B is overwhelmed by trucks, there is a "gap" between the transportation demand and the infrastructure supply. The development opportunity supports widening the existing highway or building a new one to ensure that supply is commensurate with the truck demand using the route or corridor.

The previous example illustrates a simple infrastructure gap involving only one mode. The TTC law authorizes TxDOT to develop facilities serving multiple modes and public utilities infrastructure as outlined in Section 2 of this report. Accordingly, those applying this analysis framework on a rural corridor should carefully compare supply characteristics to demand of several types of infrastructure to accurately identify gaps.

4.3 Conduct Economic and Financial Analyses

Once a TTC development opportunity is identified through the demand-supply gap analysis outlined above, the next step in the analysis framework involves conducting economic and financial analyses, including regional and local economic impact analysis; benefit-cost analysis; and financial feasibility analysis. The results of these analyses set the

groundwork for the fourth step in the framework, evaluating the participation potential. The three basic types of analyses of this step include:

1. **Economic impact analysis** to identify the local and regional impacts of a proposed project;
2. **Benefit-cost analysis** to identify beneficiaries; and
3. **Financial feasibility analysis** to gauge the financial viability of a project.

Economic Impact Analysis

Economic impact analysis of transportation or utilities infrastructure projects requires data collection and front-end modeling or other calculations to determine the net change in utilization characteristics (speed, capacity, reliability, safety, efficiency, etc.) resulting from the new TTC facility. The Statewide Analysis Model, for example, can simulate the effects of new transportation infrastructure. Other models, including those utilized by the utilities industries, demonstrate the change in system performance.

The economic impact analysis then takes the results of system performance estimates and feeds them into an economic model that gauges the local or regional effect of the new TTC facility on a number of factors, including employment, wages, gross regional product, and industry attraction or shifts.

Benefit-Cost Analysis

Benefit-cost analysis demonstrates the advantages and disadvantages of a TTC facility investment for many potential benefit categories, including transportation, economic development, safety, and environment. The benefit-cost approach for rural TTC development should compare the costs of the proposed improvements to the benefits generated in the economic impact analysis to determine the financial and geographic distribution of benefits and costs. The output of this analysis will help structure cost sharing discussed in the subsequent section.

Financial Feasibility Analysis

Financial feasibility of a project hinges on it ability to generate sufficient revenue to cover costs of construction and maintenance. The benefit-cost analysis may provide enough information to answer this question, but the final result of financial feasibility analysis may depend not only on the numbers but on the actual willingness of participants to contribute financially (generally through fees or tolls for financing infrastructure). The next step in the framework presents an approach to ascertain the willingness of participants.

4.4 Evaluate Financial Participation Potential

The fourth step in the analysis framework draws from the information developed from the economic impact, benefit-cost, and financial feasibility analyses to identify financial partners and to begin to structure a cost-sharing arrangement.

Willingness to Participate

As conducted for the Ports-to-Plains Corridor Case Study, the most effective way of ascertaining whether potential participants are willing to enter into a financial partnership is through direct engagement or interviews of business and government stakeholders. Interviews with industry and public officials, a key element of the analysis framework, should reveal the conditions that would have to be met in order to ensure participation. For example, an opportunity to develop truck toll lanes on a major international trade corridor would not move forward without obtaining knowledge of and understanding the trucking industry's sensitivities toward tolling a specific corridor. Would the trucks use the new facility, remain on existing routes, or use alternative routes? What conditions or allowances would secure industry participation? Would the ability to run longer combination vehicles (LCV) or defining other incentives increase the likelihood of securing the trucking industry's participation? Advancement of TTC development opportunities hinge on answers to these types of questions in order to evaluate participation potential and to gauge the willingness by industry and opportunity.

Participation Conditions

In general and key to the analysis framework, financial implementation depends on the ability of a given project improvement to provide benefits to users. For private industry, this means a return on investment or higher profit margin. To the private sector, participation depends on the following equation:

Participation fee + lower cost of doing business = higher profit margin

If participation costs (i.e., tolls, user fees, local option taxes, right-of-way lease revenue) does not result in an overall higher profit margin, the likelihood of private sector involvement is greatly diminished. Improvement projects also should generate public sector benefits, which can range from increased economic development potential to improved air quality.

Financial Feasibility

The strength of any investment proposal relies not only on the willingness of participants to contribute, but whether the sum of the contributions covers the cost of capital and continued maintenance. It is essential to determine whether the collective financial strength of the investors is sufficient to pay down short- or long-term debt. Back-of-the-envelope analyses can reveal whether funding will be sufficient to meet costs, but detailed investment studies must be part of the analysis framework and must be used to confirm feasibility to move a development opportunity forward.

Financial Partnerships – Who Benefits?

Cost-sharing arrangements depend, in large part, on the accrual of benefits by participants. The proportion of payment or fees should directly relate to the stream of benefits captured by each partner. The mix of beneficiaries is unique in each development opportunity, but there are typically both public and private beneficiaries that gain through investments. Identifying who benefits is not as difficult as determining how much each party benefits and relating that to proportional cost-sharing. Should the public sector pay a larger share than the private sector? Should one jurisdiction contribute more than another? Does one business gain more than others?

Apportioning benefits to the private sector is often more straightforward than to the public sector because business interests can more readily calculate the effect on their bottom lines. The arithmetic of public sector benefits becomes complicated because of politics, jurisdictional boundaries, and the economic concept of public goods – many of which accrue indirectly, such as highway maintenance savings through investment in a rail line that diverts trucks. Public benefits are especially difficult to quantify when they are accrued in a geographically uneven manner where one jurisdiction benefits more than another. Establishing the proportionality of payment in these cases can be complicated and requires detailed benefit-cost analysis. Currently, many multijurisdictional corridor groups in the United States are grappling with this very issue: how to allocate costs among participants when benefits vary greatly by geography. The key to resolving these challenges, and important to this analysis framework, is the ability of potential partners to come together and collaboratively assemble a financial and cost-sharing package that distributes costs in a way that is both equitable (based on the best determination of benefits) and politically feasible.

Financing Instruments

Part of developing a cost-sharing plan to move development opportunities forward is the identifying appropriate financing instruments. Section 3.0 presents some of the specific public sources of financing instruments and funding pools available. For this analysis framework to work effectively, it will be important to understand that each development

opportunity will provide a unique set of financing opportunities and will require a careful assembly of the appropriate traditional and innovative funding packages involving the public and private sectors and their resources.

4.5 Applicability to Other Rural Corridors

This framework was designed for application to multiple rural corridors in the State in order to provide a consistent means of identifying opportunities for TTC facilities and to determine the potential for public-private partnerships. This analysis framework was applied in the Ports-to-Plains Corridor. In the future, studies utilizing this framework will benefit from the acquisition of more detailed trade data and other information through additional interviews with a wider cross section of potential participants. The following section reveals the results of the application of this framework for the Ports-to-Plains Corridor.

5.0 Ports-to-Plains Corridor Case Study

The Ports-to-Plains Corridor is the first test case by the Texas Department of Transportation to identify opportunities to develop Trans-Texas Corridor facilities in predominantly rural regions of the State. Through application of the methodology described in Section 4, this case study provides answers to the following core questions:

1. What are the opportunities for developing TTC infrastructure in the Ports-to-Plains Corridor?

2. What financial and institutional actions are likely to lead to construction and continued maintenance of new infrastructure in the Ports-to-Plains Corridor?

The following sections provide background on the Ports-to-Plains Corridor and describe infrastructure development potential by industry. Ultimately, this Section provides TxDOT and the Ports-to-Plains Corridor Coalition (the Coalition) with an initial assessment of opportunities to develop TTC facilities.

5.1 The Ports-to-Plains Corridor

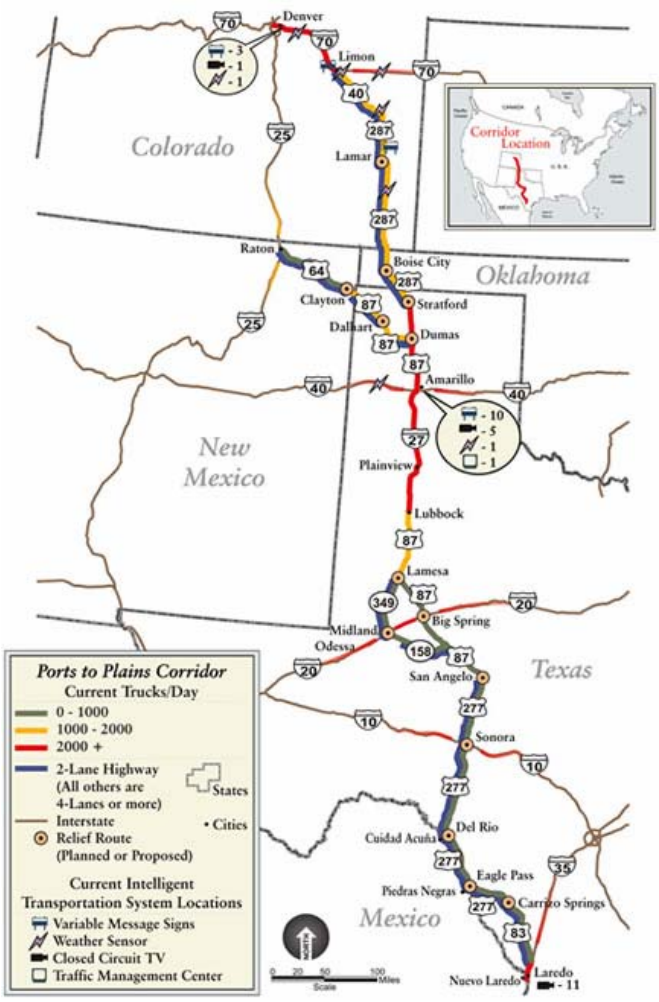
The Ports-to-Plains Corridor extends for 1,390 miles from the U.S./Mexico border in Texas through portions of Oklahoma and New Mexico to Denver, Colorado. With multiple ports of entry from Mexico to Texas, enactment of the North American Free Trade Agreement (NAFTA) in 1994 elevated the importance of the Ports-to-Plains Corridor as an international trade corridor. The Transportation Equity Act for the 21st Century (TEA-21), which authorized highway and other surface transportation programs for the years 1998 through 2003, designated the Ports-to-Plains as a High Priority Corridor, making it eligible for additional Federal funding. The most recent Federal surface transportation bill, SAFETEA-LU, earmarked additional funds for Corridor projects in Oklahoma and Colorado.

Ports-to-Plains Corridor Overview

The designated Ports-to-Plains Corridor intersects five of the 45 High Priority Corridors: Corridor 23 (I-35 in Laredo, TX), Corridor 20 (U.S. 59 in Laredo), Corridor 3 (East-West Transamerica near the Texas/Oklahoma border), Corridor 14 (proposed Heartland

Expressway in Denver and Limon, Colorado), and Corridor 27 (Camino Real in Raton, New Mexico and Denver, Colorado). In Texas, the corridor is on the planned Texas Highway Trunk System and a significant portion of the Corridor is identified on the conceptual Trans-Texas Corridor map. The Ports-to-Plains case study portion of this report focuses on the Texas portion of the Corridor shown on Figure 5.1.

Figure 5.1 Ports-to-Plains Corridor



Source: Ports-to-Plains Corridor Coalition.

The Ports-to-Plains Corridor Coalition formally advocates for transportation and economic development in the Corridor. The Coalition is a not-for-profit organization supported by

public and private members located along the Corridor in Texas, Oklahoma, New Mexico, and Colorado.[20] Since its formation nearly a decade ago, the Coalition has obtained Federal and state funding for many transportation improvements, especially for expansion of existing routes from two to four lanes. Currently about half the Corridor's highway mileage has either been upgraded to four- or six-lane divided highway or is in the design or construction phase of development.[21] The primary mission of the Coalition is to enhance the transportation system of the Corridor in order to increase trade and economic development. The Coalition also advocates for projects that facilitate operations, increase safety, and reduce long-term maintenance costs of the highway corridor itself.

Over the past 20 years, the Coalition and its partners have completed a number of transportation studies regarding the feasibility and development of the Corridor. The *Ports-to-Plains Feasibility Study* (2001) and *Lubbock to I-10/Amarillo North Route Study* (1996) established the current Ports-to-Plains route. The *Ports-to-Plains Corridor Development and Management Plan* (CDMP), which was prepared in compliance with Section 1118(d) of TEA-21 and completed in 2004, includes a development plan, operations and maintenance plan, benefit-cost analysis, and finance plan.

The Ports-to-Plains case study presented here focuses on the Corridor in the State of Texas and more generally on the region surrounding the designated highway facilities of the Corridor. Although this study builds on and incorporates elements of previous studies, it is oriented towards highlighting resources throughout the Corridor which could produce revenue streams for infrastructure funding or financing.

Ports-to-Plains Key Facilities and Activity Centers[22]

The geographic coverage of this study includes the designated highway corridor and the surrounding region, including other transportation infrastructure and population centers. In addition to the officially designated highways shown on Figure 5.1, the study considers the rail network surrounding the Corridor (see Figures 5.10 and 5.11), the principal utility transmission facilities, and the cities these systems link.

Laredo, with a metropolitan population of more than 225,000, anchors the southern end of the Corridor. Laredo is the most important international freight crossing between the United States and Mexico and much of the truck traffic originating or terminating at

[20] Ports to Plains Corridor Development and Management Plan web site (http://www.dot.state.co.us/ports2plains/index.html).

[21] Ports-to-Plains Corridor Coalition.

[22] All population figures from U.S. Census Bureau, 2005 Population Estimates.

Laredo is related to NAFTA trade.[23] North of Laredo on U.S. 83 and U.S. 277, the Corridor links additional border crossings at Eagle Pass and Del Rio with I-10 at Sonora. Laredo and Eagle Pass also serve as international rail crossings, although rail facilities do not follow the Corridor.

Continuing north, the Corridor links San Angelo (metropolitan population more than 100,000) to two national east-west routes: I-10 and I-20. At both I-10 and I-20, the Corridor intersects with two of Union Pacific Railroad's (UP) primary transcontinental routes: the Sunset Route (near I-10) and the Texas & Pacific: (TP) Line (near I-20). At San Angelo, the Texas al Pacifico Railroad crosses the Corridor. Highways north of San Angelo (SH 158 and U.S. 87) reach Midland on the west and Big Spring on the east, both of which are located on I-20.

The I-20 corridor is an important junction with the Ports-to-Plains Corridor because of its concentration of transportation and utilities facilities and several population centers. For example, east of the officially designated Corridor, the BNSF Railway (BNSF) joins the I-20 corridor near Sweetwater en route between the Texas Panhandle and Ft. Worth. The I-20 corridor also is important because it is the current location of major electrical transmission facilities that run east-west towards Dallas-Ft. Worth. Midland-Odessa is an important population center, with over 225,000 residents; the Big Spring area has over 30,000 residents. Because of the concentration of facilities and population in the I-20 corridor, this study considered development opportunities on a wider scale from roughly Odessa to Sweetwater within this part of the State.

North of I-20, SH 349 (from Midland), and U.S. 87 (from Big Spring) converge at Lamesa and then U.S. 87 continues north to Lubbock, the largest population center of the Texas portion of the Corridor, with a metropolitan population of more than 250,000. At Lubbock, U.S. 87 becomes I-27 and several major regional highways and rail lines converge.

I-27 north of Lubbock links Plainview (Hale County population 36,000) with Amarillo (metropolitan population nearing 200,000). At Amarillo, the Corridor intersects I-40, another major national east-west shipping lane and BNSF Railway's principal transcontinental route from Los Angeles to Chicago. Dumas and Dalhart are the final activity centers on the Corridor in Texas located on U.S. 87/287 and U.S 87, respectively. The upper Panhandle, as discussed in this report, is a major center for the dairy and cattle industries.

[23] Bureau of Transportation Statistics. 2006 Transborder Data.

5.2 Identification of TTC Development Opportunities

This section presents the potential to develop TTC opportunities for passenger transportation and for specific freight and public utility industries in the Ports-to-Plains Corridor. Because of the relatively low traffic volumes on the region's highways and the corresponding low demand for passenger improvements, the majority of this section is dedicated to the evaluation of key freight and power-generating industries located in the Ports-to-Plains Corridor. The study team used a series of interviews with local, regional, and state agencies as well as industry representatives to supplement available data and identify emerging industries and economic trends.

5.3 Passenger Development Opportunities

The results of this study indicate that there is limited passenger demand for new highway infrastructure in the Ports-to-Plains Corridor due to the general lack of congestion, which is partly due to the many improvements that already have been made to the Corridor since the Coalition's founding. There are exceptions, including some increasingly congested urban highway segments of the Corridor and some rural two-lane sections that would derive economic and safety benefits from expansion to four lanes. Currently TxDOT is studying or developing several highway improvements on the current network to address these issues. The TxDOT Texas Turnpike Authority Division (TTA), for example, is weighing several options for reliever routes and widening the Corridor south of Del Rio.

There is no identifiable demand for passenger rail development in the region at this time, nor is this demand likely to develop within the near future. This is primarily due to the lack of large metropolitan areas, which typically drive intercity passenger rail demand, and the generally free flow traffic conditions on existing highways.

5.4 Freight and Public Utility Development Opportunities

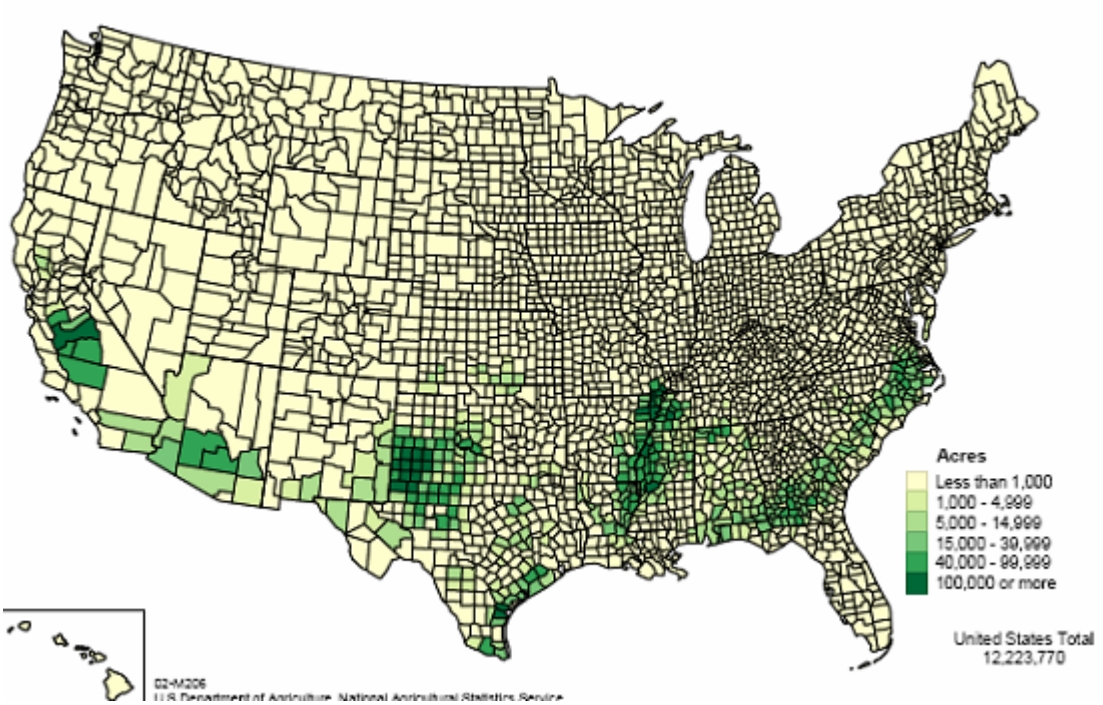
Multiple industries were interviewed and readily available data were analyzed to measure the demand, infrastructure gaps, and willingness to participate financially in the development of TTC facilities in the Ports-to-Plains Corridor. This study identifies several industries with existing and emerging demand characteristics and a shortage of transportation system capacity that have development potential to fill the infrastructure "gaps." The following paragraphs summarize the findings for key industries located in the Ports-to-Plains Corridor. Industries with the greatest potential for development are addressed first, but other important industries with lower development potential also are described.

Cotton

Transportation Demand

Producing more than 20 million bales of cotton a year, West Texas generates over one-third of the State's cotton. According to the United States Census of Agriculture, cotton is one of the top agricultural commodities in Texas; and in 2002 Texas cotton accounted for over a quarter of national cotton sales (as measured by value). As shown on Figure 5.2, the West Texas region contains among the highest acreage of cotton grown in the nation.

Figure 5.2 Cotton Producing Counties of the United States
2004 Harvested Acres of Upland Cotton



Source: USDA Agricultural Census, 2004.

About 40 percent of global cotton trade occurs between the United States and China and China is the principal destination of most U.S.-grown cotton. West Texas is no exception, as most of its cotton is exported via international shipping container to production facilities in China. In 2004 and 2005, West Texas cotton crops exceeded expectations and produced over 25,000 annual containers of cotton. Shipping cotton in containers is the most economical way of international transport and the domestic portion of the move (from the producing region to the maritime port) is most efficient and inexpensive by rail. Thus, cotton growers seek to increase revenue through reduced transportation costs realized by utilizing rail for as much of the journey as possible.

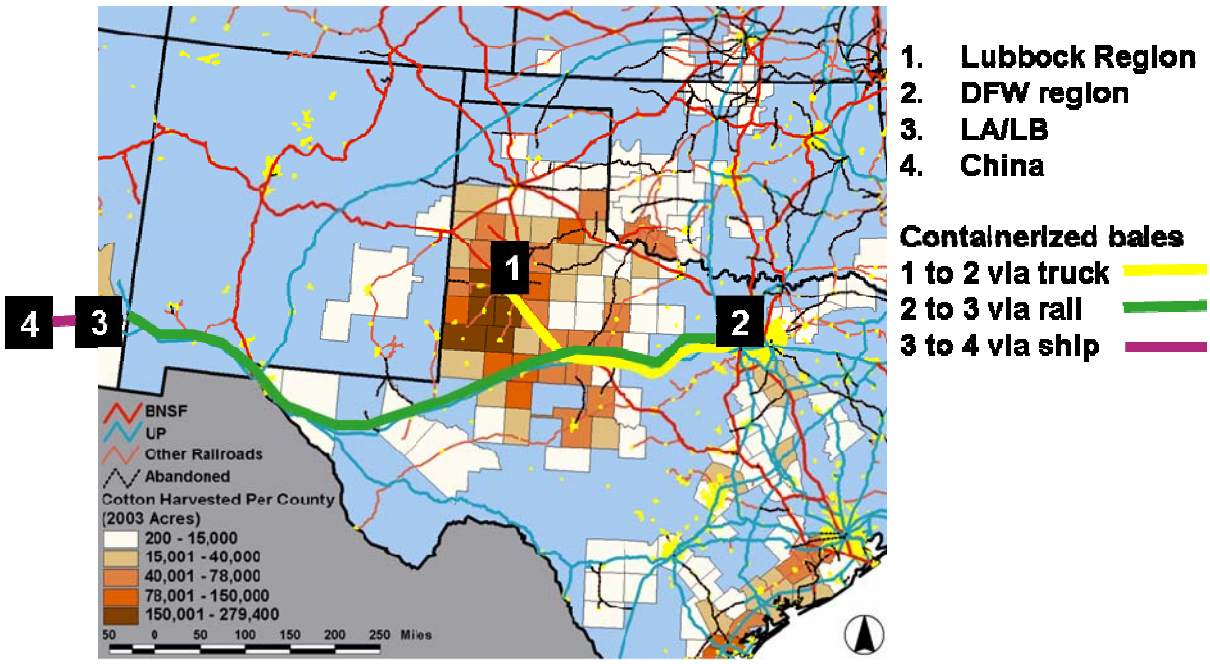
Currently, West Texas intermodal facilities cannot accommodate the shipment demand for containerized cotton. West Texas intermodal facilities, including the existing facility in Lubbock, currently are capable of handling about 10,000 containers a year. At these facilities, containerized cotton bales are transloaded from truck to rail and shipped to international destinations, principally China, via U.S. maritime ports. The approximately 15,000 excess containers that cannot be accommodated by existing intermodal facilities also are shipped by international container through U.S. ports, but a truck drayage trip is necessary to move the containerized bales from the Lubbock region to larger intermodal rail facilities, usually in the Dallas-Ft. Worth Metroplex. The West Texas cotton industry spends up to $7 million annually on these intermediate drayage shipments.

Infrastructure Inventory

The infrastructure gap in the case of cotton is the lack of adequate intermodal terminal capacity in West Texas. This gap requires cotton growers to ship up to 15,000 containers by truck to large Class I railroad intermodal facilities, including BNSF's Alliance Intermodal Terminal in Ft. Worth or to Union Pacific's Wilmer-Hutchins Terminal near Dallas. Figure 5.3 demonstrates a common shipment pattern of containerized bales from the Lubbock region (1), to Dallas (2), where the containers are loaded onto a unit intermodal train destined for the Port of Los Angeles/Port of Long Beach (3), and subsequently to China (4) by trans-Pacific container ship.

In addition to the physical gap in infrastructure, truck drayage of excess containers is partly driven by the increasing preference of Class I railroads to haul unit trains. Unit trains are 60 to 100 car single-commodity trains that typically travel nonstop from origin yard to final destination. The implication for West Texas is that Class I carriers are not normally willing to stop a long-distance train to pick up anything less than 60 to 100 cars. Because there is a lack of intermodal terminal facilities in the Lubbock region to build trains of this type, shippers use a truck drayage arrangement to get the containers to the Metroplex. Railroads increasingly are focusing on long-haul unit train shipments. To minimize shipment cost and close this gap, West Texas cotton would have to be containerized and loaded onto unit trains for delivery to a Class I carrier such as BNSF or Union Pacific.

Figure 5.3 West Texas Cotton Transport Patterns



Source: 2004 Agricultural Census.

A potential solution to this infrastructure gap is the construction of a larger regional intermodal facility to build unit intermodal trains to move cotton to overseas production facilities. A private consortium of regional cotton interests is presently working with the Lubbock Economic Development Alliance (LEDA) on preliminary engineering and a financing plan to convert the runways of the decommissioned Reese Air Force Base into an intermodal rail terminal west of Lubbock. The facility would utilize a spur of the short line Permian Basin Railways to exchange unit trains with BNSF at Lubbock. Potential also exists to extend the Permian Basin Railways line south of its current terminus at Seagraves to tie into Union Pacific in the Midland-Odessa area (see Figure 5.14).[24] The benefits of this terminal include lower shipping costs for cotton growers but also include reduced vehicle traffic on the Texas highway system in both rural and urban areas as the number of trucks would be cut by approximately 15,000 per year. The reduced vehicle traffic also would result in improved safety, air quality (especially in the Dallas-Ft. Worth Metroplex), and lower highway maintenance costs.

[24] An ongoing study commissioned by TxDOT is examining the potential to connect railroad infrastructure in West Texas and should provide a detailed analysis. The new linkage could be built by the State through its TTC authority.

Financial Participation

The cotton industry is supportive of the intermodal terminal development at the former Reece Air Force Base and is working with LEDA on a financing plan that would involve private equity only. Equity partners sponsoring the proposed terminal include Defuses, Dunava, Cargill, the Plains Cotton Cooperative Association (PCCA), and Ecom Cotton. The proposed means of financing the facility might include a container fee that would be assessed on each shipment and would provide a revenue stream to creditors. Container traffic at the facility for other industries, including agricultural products or inbound containers with consumer products for distribution and consumption in the local region, might provide further support to the financing plan.

Under TTC law, an intermodal terminal is a supporting facility and may not qualify as a stand-alone investment outside of a designated rail segment. Because of the potential to derive additional shipper benefits and provide system connectivity through the extension of the Permian Basin Railways line south to the Midland-Odessa area, the development of the intermodal terminal as a supporting facility would likely follow the designation of the rail extension as a TTC facility. Additional ongoing studies are considering the feasibility of that extension. Even without TTC designation, however, the potential of terminal development to bridge the infrastructure gap in this part of the State merits further consideration.

Ethanol

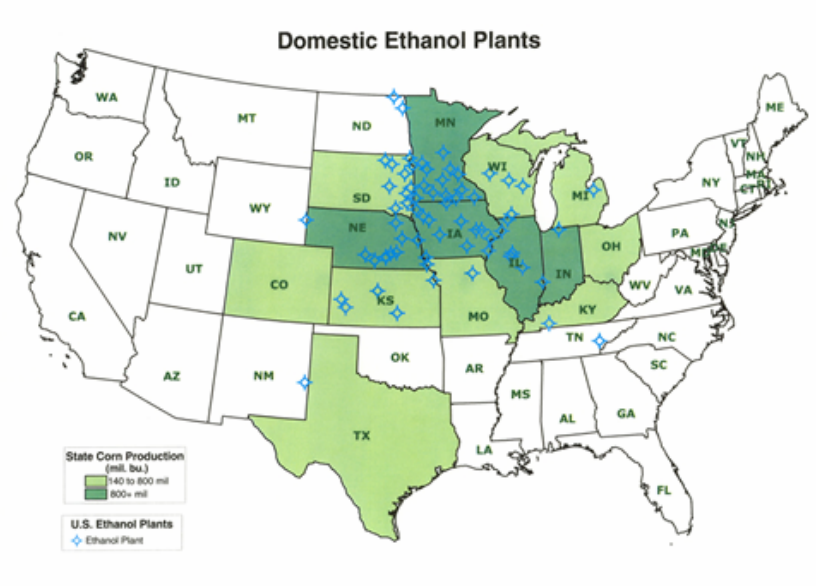
Transportation Demand

The Energy Policy Act of 2005 created the Renewable Fuel Standard (RFS), which raised the minimum quota for renewable fuels from 4.0 billion gallons in 2006 to 7.5 billion in 2012.[25] Ethanol production is expected to fill most of this quota, leading to expansion of the ethanol industry. The Energy Policy Act, combined with rising oil prices, has increased the demand for ethanol and heralded an unprecedented level of investment in ethanol plants in the United States.

As shown in Figure 5.4, most of the 100 operating U.S. ethanol plants have been constructed in the Upper Midwest, especially in Iowa, Minnesota, and other "Corn Belt" states. Currently, there is a strong trend toward building new ethanol generating facilities outside the Corn Belt, in places like California, Arizona, and now in Texas.

[25] U.S. Environmental Protection Agency. Renewable Fuel Standard Program (http://epa.gov/oms/renewablefuels/).

Figure 5.4 U.S. Ethanol Plants

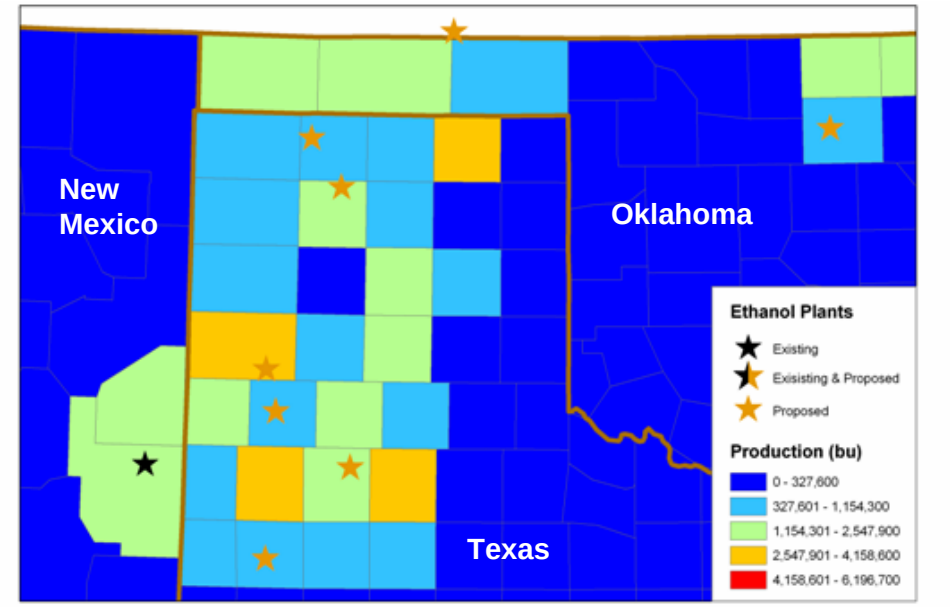


Source: USDA.

The Texas Panhandle is ideally situated for ethanol, having most of the key characteristics required for production. These attributes include 1) a readily available starch material, which in the Texas Panhandle is sorghum; 2) water; 3) Class I rail service; 4) good regional highways; and 5) nearby livestock feed lots to consume distillers grain, which is the byproduct of ethanol production. The inputs and byproducts of the ethanol industry lead to synergies with the farming and dairy industries. The concentration of these uses, combined with the availability of Class I rail and Class A highways, makes the Texas Panhandle a prime location for ethanol plants. Currently, there are no operational ethanol plants in the Texas portion of the Ports-to-Plains Corridor, but five to nine Texas ethanol plants are expected to come on-line between 2007 and 2008 and of these, four are located along the Ports-to-Plains Corridor.[26] Figure 5.5 shows the location of ethanol plants proposed or in development in the Texas Panhandle.

[26] http://www.seco.cpa.state.tx.us/re_ethanol_plants.htm.

Figure 5.5 Sorghum Production and Ethanol Plants
2005



Source: National Sorghum Producers.

According to the State Office of Energy Conservation, plants proposed under development include: [27]

- Panhandle Energies is developing a 30 million gallon/year plant in Dumas, Texas using corn and sorghum as feedstock;
- White Energy is developing a 100 million gallon/year plant in Hereford, Texas which is expected to be operational in May 2007 and will use corn and sorghum as feedstock; and
- Panda Energy is developing a 100 million gallon/year plant in Hereford, Texas which will be operational in the latter half of 2007 and will use corn and sorghum as feedstock.

The opening of new ethanol plants results in heavy demands on transportation infrastructure. It is anticipated that 80 percent of the inbound grain used will be grown locally and 20 percent transported by rail from Nebraska and Illinois. Each plant will require

[27] Texas State Office of Energy Conservation. http://www.seco.cpa.state.tx.us/re_ethanol_plants.htm.

anywhere from 30to 100 daily trucks of sorghum. In addition, 25 to 85 daily outbound trucks of distillers grain will be distributed as either wet feed to local areas or dried and transported longer distances. The primary markets for West Texas ethanol are East Texas and California, but because ethanol is not amenable to shipment via pipeline (it attracts water), the most economical means of transporting ethanol is by rail. Consequently, most ethanol will travel to markets beyond Texas by rail, with intrastate shipments to East Texas using truck transportation.

In the future, the demand for ethanol and other renewable fuels, such as biodiesel, will continue to increase nationally. Because of its geographical position and agricultural resources, the Ports-to-Plains Corridor in Texas has the potential to become a center for ethanol and biodiesel production. The pioneering use of cellulosic material in ethanol production may further increase development potential in the Corridor as cellulosic ethanol can be produced from a wider range of biomass materials readily available in the region, including grasses and cotton gin waste.

Infrastructure Inventory

The transportation infrastructure serving the ethanol industry typically consists of local roads and Class I railroads. The local roads and highways accommodate the truck traffic associated with the inbound sorghum and the outbound distillers grain. The local highway system also will carry inbound biomass from local livestock sources used to provide part of the energy to run the plants. At this time, the highway network in the Ports-to-Plains Corridor is capable of supporting this growing industry and most proposed ethanol facilities are located adjacent to serviceable rail lines. The greater challenge is related to the provision of adequate railroad capacity to accommodate ethanol growth.

Ethanol plants typically locate on sites with Class I rail access, such as those listed above, but the emerging infrastructure gap in ethanol production is related to the railroads' inability to accommodate increased demand for ethanol shipment. North American railroads are riding a wave of growth fueled by demand for coal, intermodal, and other commodities and they are strained to provide terminal capacity to handle additional carloads. A recent article in the Wall Street Journal highlights this dilemma and reports that because of the general nationwide rail capacity crunch, the burden of providing additional rail capacity – in the form of additional rail yards at plants and more tanker cars – rests on ethanol producers.[28] This is becoming especially important as railroads increasingly favor unit train shipments. The implication for ethanol development in the Ports-to-Plains Corridor is that plants will likely have to build the rail yard infrastructure necessary to assemble unit trains at the plant site.

[28] "Can Ethanol Get a Ticket to Ride?" Ilan Brat and Daniel Machalba. Wall Street Journal. February 1, 2007.

Because of the expense of building rail yard infrastructure at each plant, there may be opportunities for ethanol producers and other partners to pool funds to develop one or more regional ethanol consolidation and storage facilities in the Corridor region. A storage facility would be built jointly with a rail yard to assemble unit trains for longer distance shipment. Trucks would deliver ethanol from surrounding plants to consolidate the shipments to rail. A regional facility of this type is currently under development in Manly, Iowa by a short line railroad, Iowa Northern Railway, Company.[29] The Manly Terminal, when complete, will provide 20 million gallons storage tanks on a 100-acre facility immediately adjacent to a Union Pacific mainline and will accommodate ethanol, biodiesel, and other liquid bulk commodities.[30]

Financial Participation

The potential partners in such a venture include Class I and short line railroad carriers, ethanol producers, and public investors interested in the economic development opportunities that could be spurred by ethanol production and shipment. The benefits to the private sector include reduced investment costs through pooled funding and reduced shipment costs because of good access to rail. While there are some potentially negative impacts from increased regional truck traffic to feed such a facility, there are positive public benefits in economic development and also the reduction in long-haul truck trips between the ethanol-producing region and Texas' large metropolitan areas, where ethanol is often a required additive to meet air quality standards.

As the intermodal terminal development described above, rail terminals for ethanol would qualify as supporting facilities under the TTC law. Use of TTC financing tools and resources to build terminal facilities would have to follow designation of the rail lines serving the ethanol plants as TTC corridors.

Wind Power

Transmission Demand

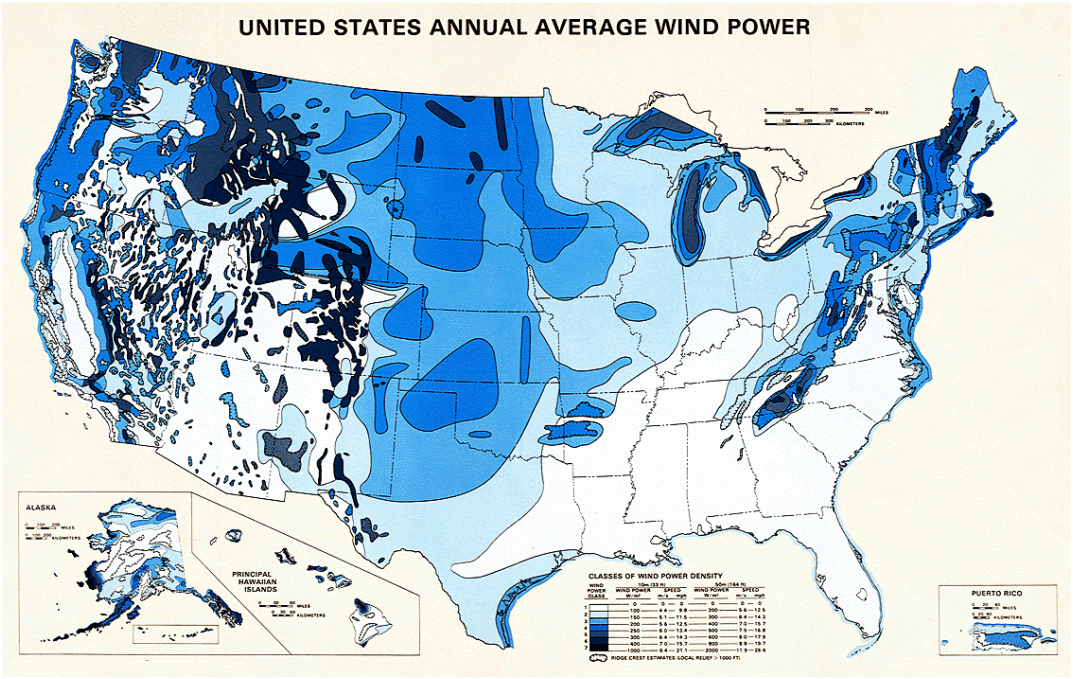
Increased environmental awareness has recently stimulated renewable energy industries such as ethanol and wind power generation. In the United States, wind power generating capacity increased by 27 percent in 2006 and is expected to increase an additional 26 percent in 2007 due to strong demand, investment of private capital and support of

[29] "Can Ethanol Get a Ticket to Ride?" Ilan Brat and Daniel Machalba. Wall Street Journal. February 1, 2007.

[30] Manly Terminal, LLC. http://www.manlyterminal.com/.

Federal and state governments.[31] The Texas wind power industry has grown rapidly and is now the largest wind energy producer in the country. Figure 5.6 illustrates the wind power potential in the United States with increasing potential indicated by darker blue shading.

Figure 5.6 United States Annual Average Wind Power



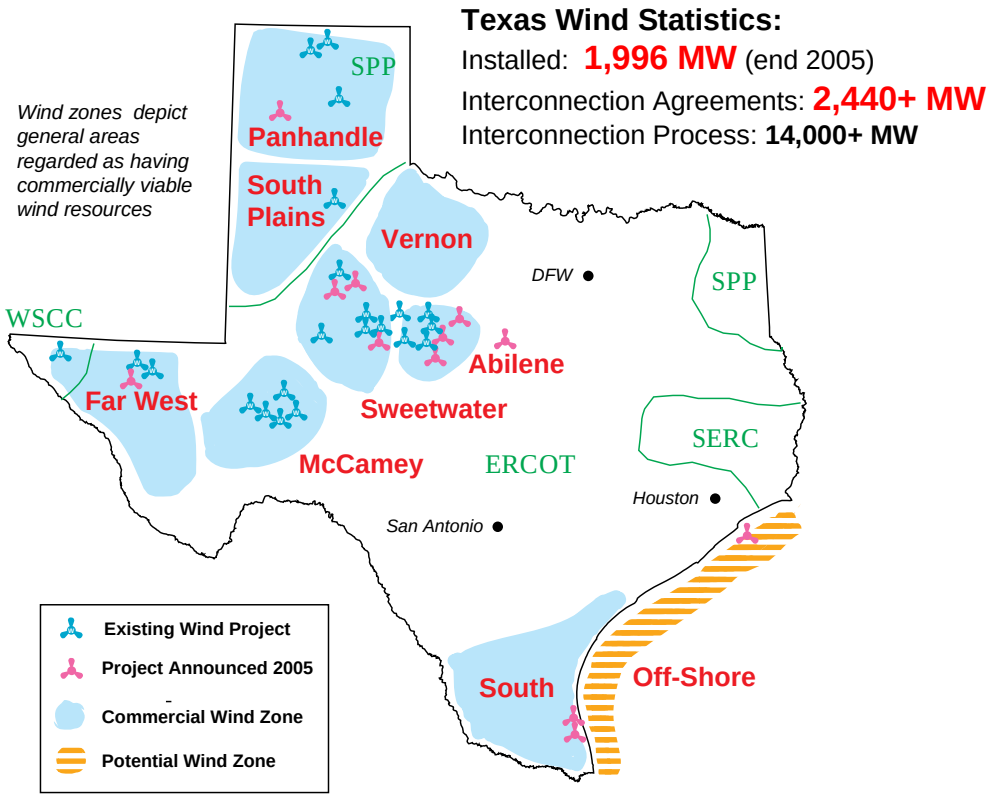
Source: U.S. Department of Energy.

As shown in Figure 5.6, West Texas, and especially the Texas Panhandle, is part of a large belt of high wind energy potential that stretches north to south through the Great Plains. There are areas of even higher wind power potential, but many of these are more difficult to develop, such as the zones located in the Rocky Mountains.

Figure 5.7 shows the geography of wind producing areas within the State of Texas and indicates the location of existing and proposed "wind farms," which are clusters of turbines that capture the wind power. The areas shaded in blue indicate the zones with commercially viable wind resources, meaning that wind is relatively consistent and that return-on-investment in turbines and other infrastructure will cover capital costs.

[31] American Wind Energy Association from Texas State Energy Conservation Office web site (http://www.seco.cpa.state.tx.us/).

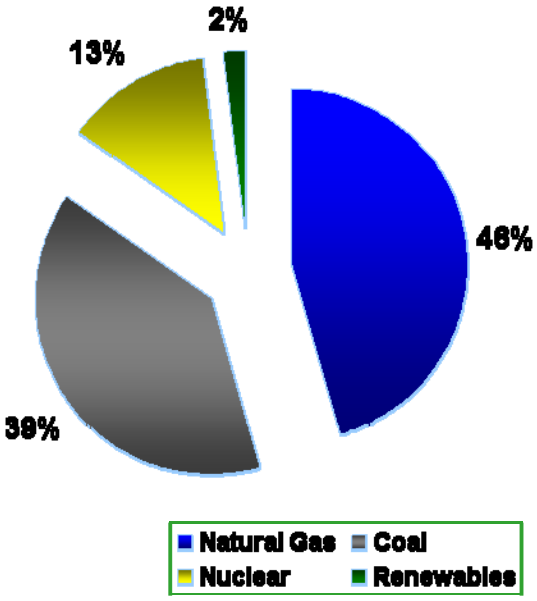
Figure 5.7 Commercial Wind Zones in Texas



Source: West Texas Wind Coalition (*MW represents Megawatts).

Demand for electricity is increasing throughout the United States and especially in fast-growing Sunbelt States like Texas. The major metropolitan areas of Central and East Texas are the principal demand centers for wind power currently produced in West Texas and will continue to generate demand in the future, especially as legislative mandates require a higher percentage of renewable energy. Figure 5.8 shows the current proportion of energy consumption within Texas (Electric Reliability Council of Texas region) by source.

Figure 5.8 Current ERCOT Energy Sources



Source: ERCOT

Currently, renewable energy sources (of which wind is part) account for approximately two percent of energy sources for consumers in Texas' major metropolitan areas.[32] In the future, this percentage will likely increase, bolstered in part by recently Texas legislation that requires the State to achieve a higher percentage of wind energy consumption by 2015.[33] In order to meet state mandates that increase wind power production, transmission capacity to move West Texas wind to consumers will require investments of more than $1 billion.[34]

Infrastructure Inventory

In order to increase existing transmission capacity and develop access to the highest wind producing part of the State – the Panhandle north of the Caprock Escarpment – a new transmission line would have to be constructed. This is the primary infrastructure gap identified through this analysis but there are several institutional issues that have hindered the development of transmission infrastructure into the Panhandle. Chief among these is the jurisdictional arrangement of electric power grids. As illustrated in Figure 5.9, the continental United States is divided into three power grids. Each grid is essentially a

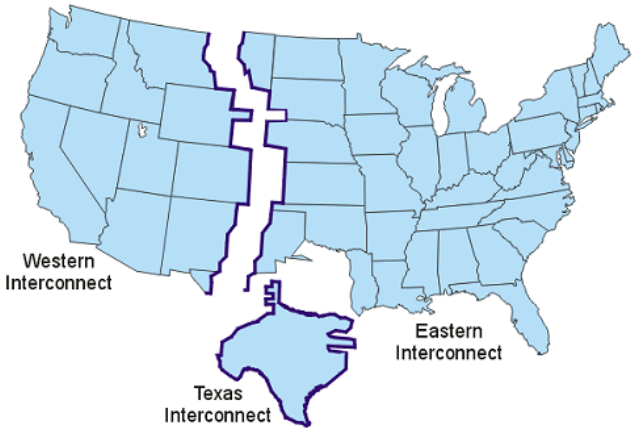
[32] ERCOT Presentation to Gulf Coast Power Association, 2005.

[33] Ibid.

[34] Ibid

closed system with balanced alternating current (AC) running throughout its network of transmission (long-distance) and distribution (local) power lines.

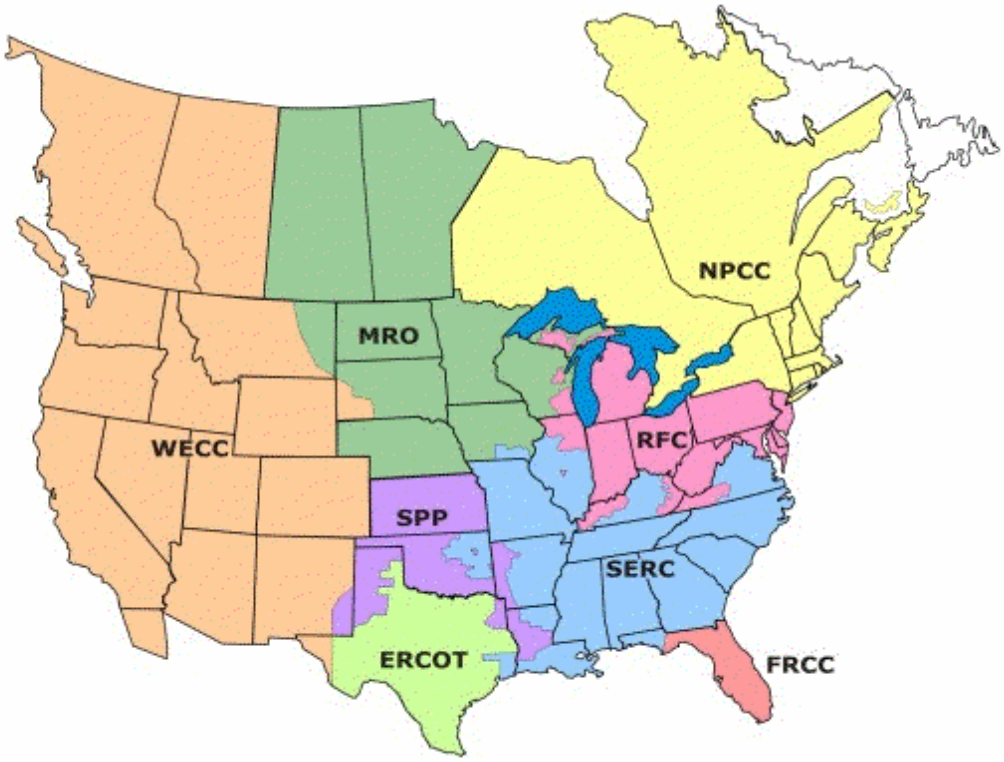
Figure 5.9 North American Power Grids



Source: Energy Information Administration.

As shown in Figure 5.9, Texas is mostly contained within the Texas Interconnect power grid but parts the Ports-to-Plains Corridor also are included in the Eastern Interconnect power grid. Throughout the United States, Regional Reliability Councils keep the power grid balanced through the control of energy flow. Regional Reliability Councils also are responsible for planning and development functions related to transmission and distribution of electric energy. The two Reliability Councils that oversee electric transmission within the Texas portion of the Ports-to-Plains Corridor are the Electric Reliability Council of Texas (ERCOT) and the Southwest Power Pool (SPP). Figure 5.10 shows the North American Regional Reliability Councils and the geographic relationship between ERCOT and SPP.

Figure 5.10 North American Regional Reliability Councils

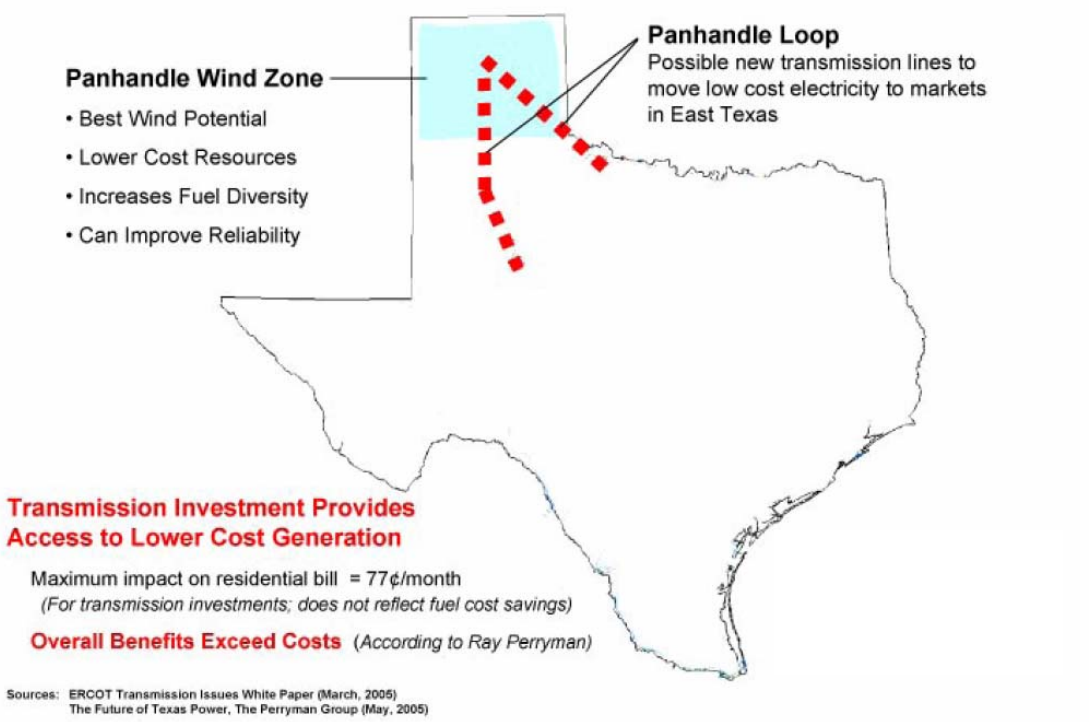


Source: North American Electric Reliability Corporation (NERC).

The Public Utility Commission of Texas (PUC), which regulates rates and terms of intrastate transmission and distribution in Texas, provides oversight of both ERCOT and SPP. Under the PUC, ERCOT manages the electric power grid and marketplace. The Southwest Power Pool (SPP) provides service to the northeast portion of Texas, all of Kansas, and portions of New Mexico, Oklahoma, Arkansas, and Louisiana.

It is not impossible for power users in one Regional Reliability Council to utilize energy from another council or grid, but it requires careful institutional and engineering cooperation. For several years, ERCOT has proposed the idea of a "Panhandle Loop" to capture Panhandle wind power for metropolitan Texas consumers. Figure 5.11 demonstrates a potential Panhandle Loop.

Figure 5.11 Panhandle Transmission Loop



Source: ERCOT.

Financial Participation

In February of 2007, several electric transmission construction companies from across the U.S. filed proposals with the Public Utilities Commission of Texas (PUC) to build new transmission capacity into the richest wind energy zones in the State. Among these proposals was a plan submitted by a consortium led by McAllen-based Sharyland Utilities LP to construct a $1.5 billion transmission loop similar to the concept in Figure 5.9.[35] The PUC solicited the proposals to develop renewable energy sources to meet legislative goals for growth of environmentally friendly power sources. Based on the interest by construction consortia and other investment groups, there is strong potential for financial success from investments in wind power and transmission.

For example, the Wall Street Journal reports Royal Dutch Shell Group, British Petroleum PLC, and a wind development group owned by Goldman Sachs are among the companies racing to buy land in the Texas Panhandle to develop wind farms.[36] These companies are

[35] "Panhandle Power Project Proposed." Robert Elder. Austin American-Statesman. February 16, 2007.

[36] "The Texas Wind Powers A Big Energy Gamble." Jeffrey Ball. Wall Street Journal. March 12, 2007.

gambling that other interests will construct transmission facilities to carry the wind to market, similar to the project proposed by Sharyland's international consortium, which includes Airtricity, Inc.; Babcock & Brown Renewable Holdings Inc; Celanese, Ltd.; and Occidental Energy Ventures Corp.[37]

The implication of these proposals to the Ports-to-Plains Corridor Coalition and to TxDOT is that development opportunities may exist to cooperatively develop TTC infrastructure to support the State's renewable energy goals and bring private equity partners to the table to finance improvements. As outlined in Section 2 of this report, the TTC concept includes not only traditional transportation modes such as highway and rail but also provides for development of a utilities transmission system. One scenario might involve electric companies paying transmission fees for usage of lines owned either by TxDOT or within TTC rights-of-way. Legally, TxDOT can acquire property and build utilities infrastructure directly, through CDAs, or via other public-private partnerships. The potential to establish a system of more than one TTC facility, including electric transmission, provides another opportunity to potentially leverage resources. However, this type of system application, especially where the facilities may not be contiguous, remains untested.

There are challenges to moving forward with development of TTC electric transmission facilities. One of the primary impediments may be the reluctance by the public for TxDOT to become engaged in the development of transmission facilities, especially when those facilities may not be part of the conceptual cross-section of the TTC. This may be offset by the strong benefits provided by wind power development, including cleaner air (in the source and consumption regions); potentially lower electricity rates; national energy independence; and economic development to rural areas.

Finally, there also is the issue of whether TxDOT could develop and own transmission facilities – which it is authorized to do under TTC law – but remain independent of any operation or delivery of the utility to users. What if the operator of the lines, which leased them from TxDOT, ceased operations…would this force TxDOT to take over operations (which it could not do legally)? These and other questions will have to be addressed as the Ports-to-Plains Coalition and TxDOT work with the Public Utilities Commission and other public and private partners to more fully explore TTC development of electric transmission facilities.

Other Industries

Several other existing and emerging industries of the Ports-to-Plains Corridor were considered in this study. While none of them exhibits a strong indication of a gap between transportation demand and infrastructure supply, this analysis identifies some important

[37] "Transmission Loop to Bring 4,200 MW of Wind Energy to Texas". February 19, 2007. Renewable Energy Access. (http://www.renewableenergyaccess.com/rea/news/story?id=47485).

issues and trends that are summarized below and are worthy of further discussion by the Ports-to-Plains Corridor Coalition and TxDOT.

Trucking

The trucking industry operating in the Ports-to-Plains Corridor serves both domestic and international transportation demand. Based on interviews conducted for this study, there are limited transportation infrastructure needs within the Corridor from the perspective of the trucking industry. There are some sections of the Corridor, including urban areas, and segments that are currently two lanes, where reliever routes and other upgrades may improve the performance and safety of trucking operations. Several projects are under study by TxDOT's Texas Turnpike Authority Division that may improve trucking operations. These projects include reliever route studies in Big Springs, San Angelo, Haskell, and Abilene. In addition, TTA is exploring the feasibility of expanding U.S. 277 from two to four lanes for approximately 35 miles south of Del Rio and also expanding I-27 in Amarillo from four to six lanes. TTA is evaluating the feasibility of financing these projects with tolls.

Oil and Natural Gas

As the leading oil and natural gas producer in the United States, Texas produces over three million barrels of crude oil and over six billion MCFs[38] of natural gas a year. Zapata County in the Ports-to-Plains Corridor is the largest natural gas producing county in Texas followed by Webb County, which also is located in the Corridor.

Transport of crude oil from wells to refineries is by pipeline or tanker trucks. The industry does not foresee the need to develop additional pipeline infrastructure to support oil transport. Pipeline is the only means of transport used for natural gas, making pipeline location a critical factor in the determination of commercial viability. In the Ports-to-Plains Corridor, the industry is satisfied with the current level of service provided by existing pipelines and does not believe the existing natural gas reserves warrant construction of additional pipelines along the Corridor.

Dairy

In 2007, the Hilmar Cheese Company will open the first phase of what will someday be the world's largest cheese manufacturing facility. The new plant, located in Dalhart, Texas, represents the rapid growth in dairy farming in the Texas Panhandle portion of the Ports-to-Plains Corridor over the last several years. This growth has been fueled by several factors, including 1) the increasing cost of land for dairy farming in California's Central Valley; 2) the abundant and relatively inexpensive land and water in the Texas Panhandle;

[38] MCF represents 1,000 cubic feet of natural gas and is the industry standard measurement.

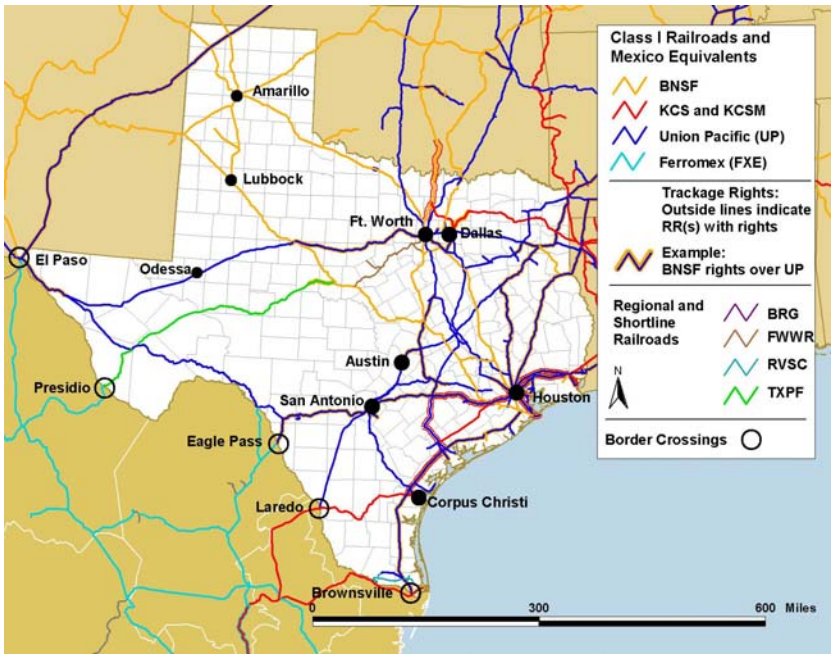
and 3) the region's strategic location halfway between the Pacific and Atlantic Coasts and relatively near major metropolitan areas of the Sunbelt, including Los Angeles, Phoenix, and Dallas-Ft. Worth.

The Hilmar plant and other new cheese and milk processing facilities will continue to attract new dairy farming ventures to the Corridor, many relocating from California. The processed cheese and milk that is produced in the Corridor will likely rely on refrigerated truck transportation to get the perishable products to market quickly. There is concern that the volume of trucks generated by the Hilmar plant and other facilities will decrease safety on the highway system, especially as many shipments are covering long distances and quickly return to the region. These safety concerns are amplified by the current shortage in truck drivers for the dairy industry, which often results in overworked drivers. This study recommends that safety considerations for truck transportation of dairy and other emerging industries should be elevated by the Ports-to-Plains Coalition, TxDOT, and other stakeholders to ensure economic vitality and safety as future transportation demands on the Corridor's highways increase truck traffic volumes.

Rail

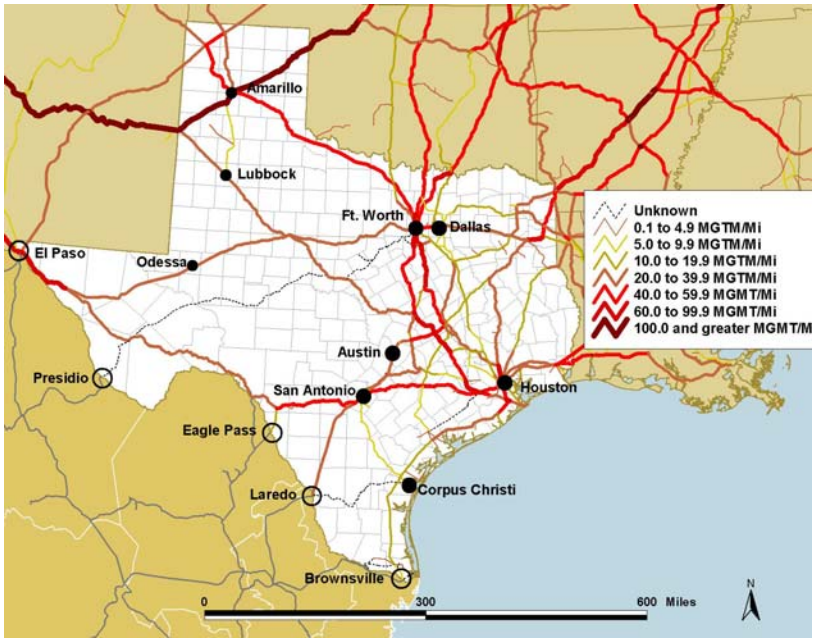
Figure 5.12 illustrates the ownership of Class I and major short line Texas railroads, including trackage rights. Figure 5.13 shows the performance of Texas railroads expressed in tonnage density for 2001. As shown by the maps, BNSF Railway (BNSF) and Union Pacific Railroad (UP) are the major Class I operators in the Ports-to-Plains Corridor, but neither indicate any capacity constraints within the Ports-to-Plains Corridor. According to the railroads, future capacity can be added on mainlines through the development of sidings. In this sense, there are limited TTC development opportunities for rail in the Corridor. The railroads are interested in adding terminal capacity, including intermodal terminals, to increase their customer base. As outlined in the sections on cotton and ethanol, there are opportunities for the public sector to jointly pursue rail yard development that benefits the railroads, the shippers, and the public.

Figure 5.12 Texas Railroads



Source: Cambridge Systematics, Federal Railroad Administration.

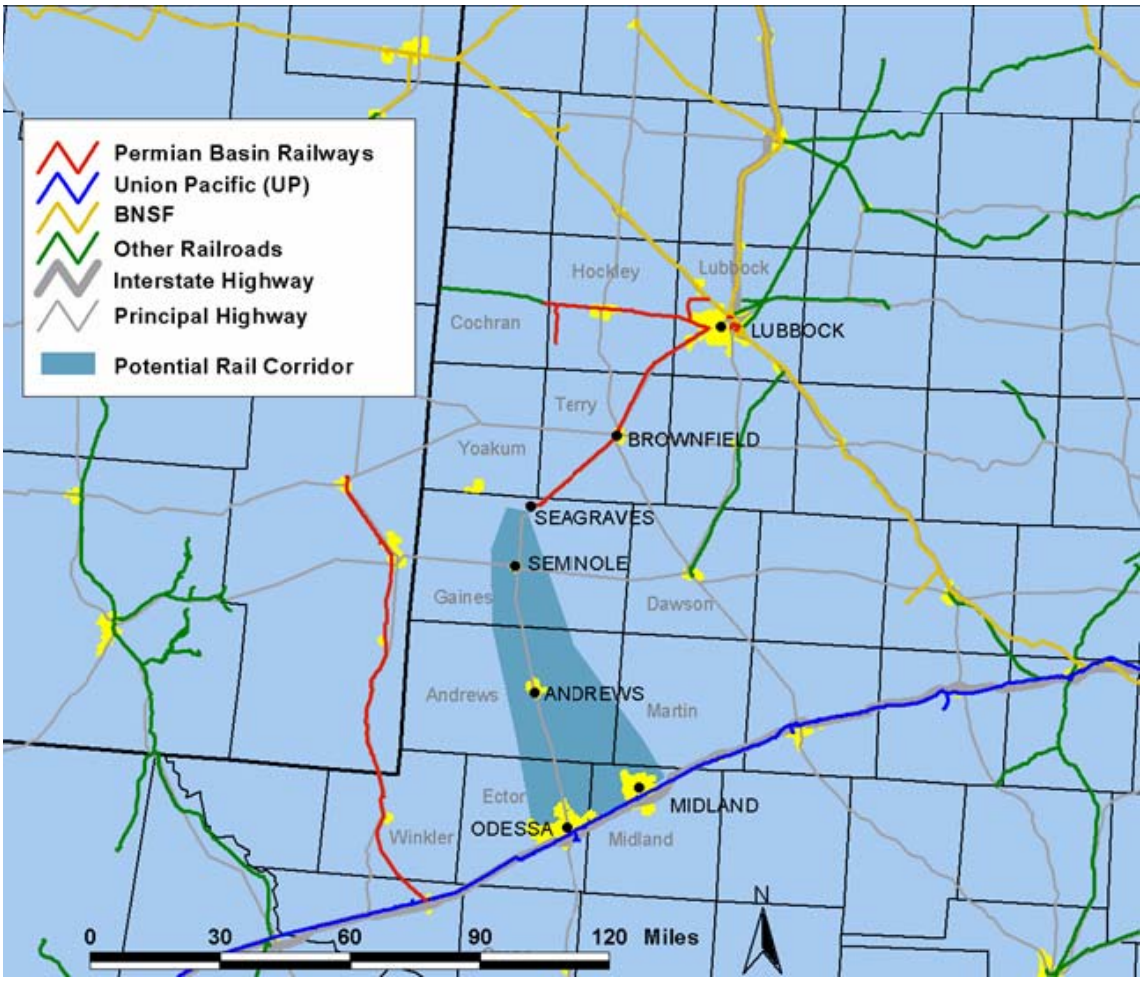
Figure 5.13 Texas Railroad Tonnage Density
2001



Source: Cambridge Systematics, Federal Railroad Administration.

In addition to terminal development opportunities, local and regional transportation and business officials in West Texas are examining additional rail infrastructure needs, including system connectivity, through ongoing studies. The proposal most related to this study is the extension of the Permian Basin Railways line to connect the Lubbock and Midland-Odessa areas. As mentioned previously, this line may be eligible for TTC corridor designation, which may spark additional economic development vis-à-vis intermodal and ethanol terminal development. Figure 5.14 shows the existing rail facilities between Lubbock and Midland-Odessa and highlights the general corridor location of the potential connection.

Figure 5.14 Potential Rail Connection
Lubbock to Midland-Odessa



Source: Cambridge Systematics, Federal Railroad Administration.

Telecommunication/Information

The telecommunications industry has relatively low potential to participate financially in TTC development opportunities in rural parts of the State, largely because Texas law allows free access by public utilities to state-owned rights-of-way. Instead of using new TTC new highway, rail, or electric transmission rights-of-way, telephone carriers, cable television companies, and other public utilities would likely exercise their rights to access non-TTC state-owned rights-of-way within equivalent parallel corridors.

There are some exceptions to this assessment. First, telecommunications companies sometimes favor railroad rights-of-way for placement of fiber optic or other conduit over "free" state highway rights-of-way because the construction costs can be lower in the railroad rights-of-way. The railroad typically collects a right-of-way use fee, but this fee is often less than costs incurred to build within a state highway right-of-way, especially where traffic control and pavement replacement is required. There is potential to collect a fee for use of TTC rail rights-of-way when the cost of doing so is less than the private railroad alternative.

Second, in the future it may be possible to derive revenue from wireless equipment installed within a TTC right-of-way, but this is dependent on the demand from users of the TTC facility itself (highway users presumably) and adjacent properties. This is similar to the potential for advertising revenues from billboards or lease revenues from service stations or other supporting facilities that locate within a TTC right-of-way; it all depends on whether the volume of traffic is sufficient to provide a profitable investment.

6.0 Conclusions and Recommendations

As highlighted in this report, there are several emerging opportunities to develop TTC facilities in the Ports-to-Plains Corridor and potentially in other rural corridors of the State. This report identifies opportunities to bridge infrastructure gaps that currently exist between the Ports-to-Plains Corridor and Texas' urban areas. Goods produced in the Ports-to-Plains region, including agricultural products and wind generated electricity, could be delivered to consumers in Central and Eastern Texas through the construction of intermodal terminal facilities and electric transmission lines. These new facilities will provide a more efficient means of delivery to Texas' urban areas and other destinations and will provide benefits that include enhanced air quality, lower consumer costs, improved highway maintenance, and better business attraction and economic development potential. These development opportunities, including the policy and planning recommendations necessary to move them forward, are presented below.

The conclusions and recommendations of this report are presented in the context of the three core questions of this study as outlined in Section 1:

1. ***What are the opportunities for developing TTC infrastructure in the Ports-to-Plains Corridor?***

2. ***What financial and institutional actions are likely to lead to construction and continued maintenance of new infrastructure in the Ports-to-Plains Corridor?***

3. ***What types of development/financing opportunities exist for other rural Texas corridors and what is the framework for analyzing feasibility?***

Conclusions and related policy and planning recommendations are provided to guide the Ports-to-Plains Corridor Coalition, the Texas Department of Transportation, and other agency stakeholder partners toward implementation.

What are the opportunities for developing TTC infrastructure in the Ports-to-Plains Corridor?

6.1 Conclusion One – Additional Rail Terminals and Connectivity Could Increase Freight Efficiency in the Ports-to-Plains Corridor

As a general rule in freight transportation, increasing the flexibility of the transportation system enhances its ability to more efficiently and economically move goods and support the local and regional economies. Rail is the most economical mode of shipment for several current and emerging agricultural commodities produced in the Ports-to-Plains Corridor, including cotton and ethanol. While the railroads indicate they have sufficient mainline capacity and that future demand can be accommodated relatively easily through the addition of sidings, there is a lack of rail terminal and yard capacity in the Corridor. There also is a gap in system connectivity that, if filled, would provide greater access to the Lubbock and Midland-Odessa regional markets and potentially cultivate economic development.

Local agricultural transportation demand is driving the need for terminals and connectivity. In the case of cotton, there currently is a lack of intermodal terminal capacity to accommodate a significant share of containerized bales for export originating in the Ports-to-Plains Corridor. As a result, shippers use trucks to dray containers of cotton from the Lubbock region to the Dallas-Ft. Worth Metroplex where they are subsequently loaded onto unit trains of 60 to 100 rail carloads for international shipment via U.S. maritime ports. Through the development of one or more intermodal rail terminals in the Ports-to-Plains Corridor, the State could decrease truck vehicle miles traveled (VMT) and generate benefits including lower shipment costs, decreased highway maintenance costs (e.g., the timing and costs associated with pavement resurfacing may decrease with lower truck volumes), and enhanced safety.

In the future, there may be potential to ship other agricultural commodities by rail, including by container, and to establish other intermodal facilities serving regional distribution needs. The best location for these intermodal terminals may be at sites near major transportation junctions where multiple modes converge. Locations along major highway corridors that provide access to regional population centers hold the greatest promise. East of Sweetwater, for example, developers could construct an intermodal yard on a relatively flat section of land between the BNSF and UP lines adjacent to I-20. This and other sites with these characteristics might be considered for future development.

In addition, the Texas Panhandle is beginning to experience considerable development of ethanol plants, which depend heavily on rail for outbound shipments to urban markets. In

order to support this burgeoning industry, consideration should be given to ensure that the industry has the ability to transport outbound products via reliable Class I rail service.

Both cotton and ethanol shipments frequently travel to California for export or consumption and could benefit from increased rail system connectivity that would link the Lubbock region directly to the Union Pacific mainline near Midland-Odessa. The new link, which currently is under study by the State, would follow the Permian Basin Railways line from its current terminus near Seagraves to the Union Pacific Texas & Pacific (TP) Line. If the State designated the new link a TTC facility, local communities might benefit from increased economic activity and shippers may benefit from lower shipping costs resulting from increased rail access and direct competition from two class I carriers, BNSF and Union Pacific.

Most rail development opportunities are located in the Panhandle portion of the Ports-to-Plains Corridor because other parts of the Corridor have little or no rail service and ongoing studies, including the La Entrada al Pacifico Study, will assess future needs.

Key Policy and Planning Recommendations

- **Pursue Intermodal Terminal Development.** A rigorous analysis of potential sites for intermodal or rail terminal facilities should be organized to determine critical details of potential development to support cotton and other agricultural industries. This activity should draw from ongoing freight studies sponsored by TxDOT, including the La Entrada al Pacifico Study and the Regional Freight Study focusing on West Texas. Ultimately, suitability of intermodal sites should be more fully vetted and a set of highly promising sites (including the Reese Center in Lubbock) should be identified for development through potential public-private partnership arrangements like Comprehensive Development Agreement (CDA). The Ports-to-Plains Corridor Coalition, under the guidance of its Board, could lead this analysis.

- **Support Rail Needs of Emerging Ethanol Industry.** The Ports-to-Plains Corridor Coalition, TxDOT, and other partners should cooperatively support the needs of the budding West Texas ethanol and biodiesel industries by ensuring that producers maintain good access to Class I railroads. This may include assisting producers in establishing regional storage/intermodal terminals such as the Manly Terminal under development in Iowa.

- **Encourage Rail Connectivity.** The Coalition should work with TxDOT and ongoing state-supported studies to explore the feasibility of directly connecting the Lubbock and Midland-Odessa regions via extension of the Permian Basin Railways line south of Seagraves. This new link could provide economic development benefits and shipper benefits resulting from enhanced access and capacity for agricultural shippers. The Coalition and TxDOT also should assess the benefits of designating the rail line as a TTC facility.

6.2 Conclusion Two – West Texas Wind Power Could Be Transmitted to Texas Urban Areas through TTC Facilities

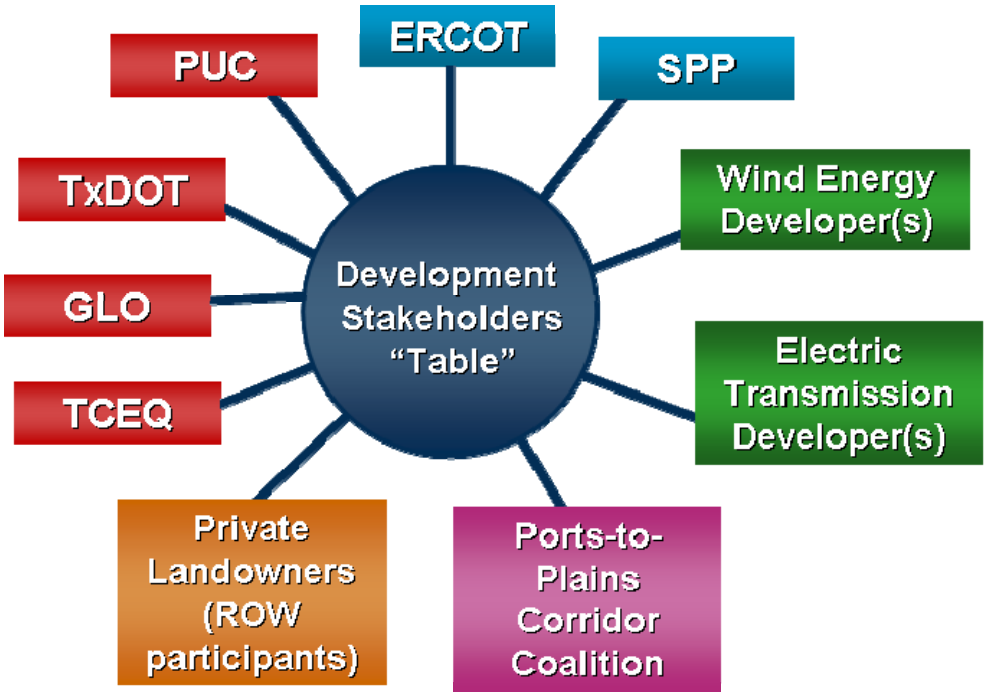
Wind energy development in the Texas Panhandle has grabbed national attention and headlines in recent months. According to the Wall Street Journal, West Texas currently is experiencing a land grab of historic proportions as large international energy corporations compete to lease expansive quantities of land in the Texas Panhandle to establish wind farms.[39] At the same time, several large electricity transmission consortia await approval of applications submitted to the Texas Public Utilities Commission for the rights to link some of the State's best wind producing regions to urban consumers in the eastern part of the State. One of the proposals, by the Sharyland Utilities, LP would draw wind power from the Texas Panhandle onto the main ERCOT power grid via a $1.5 billion, 800-mile "Panhandle Loop." Through the effective and timely application of the TTC authority, TxDOT and the Ports-to-Plains Corridor Coalition could partner with these interests to aid the development of this needed energy solution.

Key Policy and Planning Recommendations

- **Consider Development of Electric Transmission Lines as a TTC Facility**. The TTC law authorizes TxDOT to build, own, and maintain public utilities, including electric transmission facilities. Given recent interest, investment, and proposals before the PUC with regard to Panhandle wind power and the State's legislative mandate to increase the share of wind power provided to consumers, the time is appropriate for TxDOT and the Ports-to-Plains Corridor Coalition to join in the planning and development of transmission facilities in the region. The intent of the TTC law with regard to transmission facilities is to empower TxDOT with the ability to coordinate and participate with partners to develop corridors that would serve multiple purposes and that relate to other TTC facilities to form "systems." This is the first potential test case of the TTC in constructing long-distance transmission facilities and both TxDOT and the Ports-to-Plains Corridor Coalition should participate in the planning and implementation of the rapidly progressing developments to transmit wind power within the State. Figure 6.1 illustrates the potential partners in electricity transmission development in the Ports-to-Plains Corridor that should communicate and coordinate this development opportunity.

[39] "The Texas Wind Powers a Big Energy Gamble." Jeffrey Ball. Wall Street Journal. March 12, 2007

Figure 6.1 Potential Wind Power Transmission Development Participants



As shown in Figure 6.1, potential development participants include the two Regional Reliability Councils that control the power grid, ERCOT and SPP. Of these two, ERCOT should be considered the lead agency because of its coverage of most of Texas and because transmission will provide customers in its jurisdiction with wind power. ERCOT also should be considered the lead in coordinating the development interests at the discussion table because of its depth of expertise in implementation and operations. Private wind development interests should be represented, including the wind energy developers (such as Airtricity), transmission developers (such as Sharyland Utilities), and potential affected private landowners. Public agencies, including the Public Utilities Commission (PUC), the General Land Office (GLO), the Texas Commission on Environmental Quality (TCEQ) and TxDOT also should participate.

Given its statewide oversight responsibility, the PUC should be the regulatory lead. The General Land Office, which has experience in West Texas and offshore wind energy development, should participate in this process. The Texas Commission on Environmental Quality,[40] with statewide interest in air quality improvement, also

[40] A pending bill (HB 2794) would require the Texas Commission on Environmental Quality to evaluate wind development projects through a new permitting process. "State shouldn't over regulate new wind power." Editorial in The Victoria Advocate. April 16, 2007.

should be at the table. The Ports-to-Plains Corridor Coalition should be involved to represent its members in the Corridor. TxDOT, working with the Governor's office, should encourage the organization of this group to talk about cooperative development opportunities and to take the next steps toward defining a partnership.

- **Define the State's Role in Providing TTC Transmission Facilities.** In the future, there will be other opportunities for the State to participate via its TTC authority in the transmission of public utilities, including wind power, natural gas, water, and other goods in both rural and urban areas. In order to prepare for these upcoming opportunities, TxDOT should further investigate the State's role in TTC transmission through a series of case studies or white papers that test the legal, institutional, planning, engineering, and financial complexities of providing public utility infrastructure through TTC development. These case studies should culminate in the development of a step-by-step strategy to guide TxDOT's coordination with the public and private sector utility development community.

6.3 Conclusion Three – Highway Development Opportunities Exist, But Are Limited

Based on the interviews conducted for this study, the conditions and capacity of the Texas highway system in the Ports-to-Plains Corridor are good to excellent. It is a credit to the Ports-to-Plains Corridor Coalition and TxDOT that trucking companies and other users of the system give the facilities high marks for maintenance, limited congestion and delay, and reliability. That said, there are several locations within the Ports-to-Plains Corridor, especially south of I-20, that may have development potential. These development opportunities include several reliever routes (detailed in this report) and a section of U.S. 277 south of Del Rio that could be widened from a two to four-lane-divided highway. All of these proposals are in various stages of study and development by TxDOT. The TxDOT Texas Turnpike Authority Division currently is analyzing toll feasibility to provide financing on all the proposed sections of U.S. 277. In addition to the sections currently under study, some highway sections may warrant improvement to provide for enhanced safety and facilitate trade, especially between Del Rio and I-10. Following the recommendation presented in Section 6.4 below, the Ports-to-Plains Corridor Coalition should work with TxDOT to move development opportunities forward through benefit-cost analysis and appropriate financing, including the use of local option taxes or international bridge crossing tolls to implement needed improvements.

What financial and institutional actions are likely to lead to construction and continued maintenance of new infrastructure in the Ports-to-Plains Corridor?

6.4 Conclusion Four – Define the Benefits and Beneficiaries of TTC Development to Structure Financial Participation

There are groundbreaking yet complex development opportunities available for interested stakeholders to explore. One of the most important antecedent activities to defining a financing plan is the careful identification of benefits related to development. Potential benefits fall into several categories for each of the three broad development opportunities outlined in this report and are cataloged in Table 6.1 below.

Table 6.1 Potential TTC Development Benefits

Opportunity	Benefits
Rail Improvements (Intermodal terminals, ethanol terminals, system connectivity)	• Lower freight shipment cost • Faster freight travel time to market • Reduced emissions • Decreased safety costs • Lower highway maintenance costs • Less congestion (esp. as trucks enter urban areas, e.g., DFW) • Economic development including real estate • Increased tax revenues from real estate investment • Improved rail access to freight markets
Highway Improvements	• Faster freight travel time to market • Decreased highway safety costs (safer engineering, divided highways) • Less congestion on busy segments • Economic development through improved speed and access
Electric Transmission (Wind Power)	• Improved air quality (zero source pollution) in rural and urban areas • National security/energy independence • Lower consumer power costs • Economic development

Some of these benefits can be quantified, others are qualitative. A benefit-cost analysis also could allocate the benefits according to geography to provide additional detail to cost-sharing proposals. For example, the benefit-cost analysis might show that community A benefits 50 percent more than community B in tax revenues resulting from real estate development on an improved highway segment. The benefit-cost analysis helps define these distinctions to guide cost-sharing that is equitable and commensurate with benefits received.

Key Policy and Planning Recommendations

- **Conduct Economic and Financial Analyses to Determine Cost-Sharing Roles of Investors.** Economic impact and benefit-cost analyses should be conducted for each of the development opportunities identified in this study. The most pressing need, given the advanced progress of various wind power transmission proposals before state regulators at the PUC, is to determine the benefit-cost of involvement of the State in developing electric transmission lines as Trans-Texas Corridor facilities. The next priority is site selection analysis for intermodal terminal development by conducting a benefit-cost assessment to rank the feasibility and to help structure a financing plan for development. One of the parties mentioned above should sponsor the site selection and benefit-cost analysis to move this TTC development opportunity forward. Finally, there is a need for more intensive study and benefit-cost analysis to determine financial partnerships for other highway improvements discussed in this report. The Coalition might work with the TxDOT Turnpike Authority Division (TTA) in developing this analysis. Benefit-costs results for each of these opportunities projects should strongly consider the economic impacts of investment and may require economic impact assessments.

6.5 Conclusion Five – Allowing Cities to Establish RMAs Could Aid Rural TTC Development in West Texas

Texas statute defines a Regional Mobility Authority as "a political subdivision formed by one or more counties to finance, acquire, design, construct, operate, maintain, expand, or extend [tolled or nontolled] transportation projects." The RMA law devolves transportation development powers to allow local or regional jurisdictions greater flexibility to finance, design, and build infrastructure. To date, several RMAs have been formed throughout the State, including one RMA in a rural area (Northeast Texas RMA). With few exceptions, the ability to participate in an RMA is limited to the county level of government. One exception provides municipalities on the U.S.-Mexico border with a

population of 105,000 or greater the ability to form or participate in an RMA.[41] El Paso, for example, has formed a RMA under this exception. In general, county-based RMAs function well where county governments have sufficient political power to drive development forward in cooperation with other local governments. In the Ports-to-Plains Corridor and throughout West Texas, municipal governments typically hold greater political power – including the ability to levy local option taxes – than counties. This situation inhibits RMA formation, which could be promoted by allowing cities participate in RMAs.

Key Policy and Planning Recommendations

- **Allow Cities to Participate in RMAs.** On an institutional level, the Ports-to-Plains Coalition and TxDOT should work with the Texas Legislature to consider changes to existing laws to allow for additional flexibility to establish RMAs in rural areas to facilitate development. In the Ports-to-Plains Corridor, this would ideally allow for a greater number of Texas municipalities to join RMAs to further leverage the resources available to fund improvements for the development opportunities outlined in this report, especially associated with intermodal terminal and highway opportunities.

[41] Texas Transportation Code 227.

What types of development/financing opportunities exist for other rural Texas corridors and what is the framework for analyzing feasibility?

6.6 Conclusion Six – TTC Development Opportunities Exist in Other Rural Texas Corridors

Based on the findings of this study, TTC development opportunities exist in other rural Texas corridors. Some of the most promising potential opportunities are the same ones identified for the Ports-to-Plains Corridor, including a mix of rail improvements, power transmission, and highway development. Depending on the natural resources, agricultural commodities, and other industries in other rural Texas corridors, potential may exist to develop other TTC facilities to support goods movement and public utilities conveyance. These opportunities, for example, may include intermodal terminals that reduce the number of trucks on Texas highways carrying lumber, minerals, or agricultural products by diverting them to rail facilities. There also may be development opportunities related to passenger or freight transportation where rural TTC corridors connect larger urban centers.

Key Policy and Planning Recommendations

- **Evaluate the TTC Development Opportunities on Other Rural Corridors**. TxDOT should measure the potential to develop TTC facilities in other rural corridors of the State. This can be accomplished through application of the analytical framework designed for this study and successfully utilized in the Ports-to-Plains Case Study. The framework consists of the four following steps: 1) Identify infrastructure gaps between supply and demand regions for commodities (e.g., agriculture, mining, energy, water); 2) Determine participation feasibility by industry (who is willing to participate financially and under what conditions); 3) Identify beneficiaries (who benefits, where, and how much); and 4) Develop a cost-sharing plan to move forward with appropriate financial arrangements.