Chapter 3 – Freight Rail System

The Texas freight rail system is a significant component of the national network. The purpose of this chapter is to provide an overview of the demand, commodities, infrastructure, connectivity, planning, and operations of freight rail in Texas.

Section 3.2 explains the types and amount of commodities moved by railroads in Texas.

Section 3.3 provides a comparison of the Texas rail system with other states; maps and description of the existing freight rail infrastructure, including privately- and state-owned; and a description of the recent changes to Texas' freight rail system. Section 3.4 details the freight rail connectivity in Texas at intermodal facilities, the international border with Mexico, and the Gulf ports.

Lastly, Section 3.5 provides an overview of the types of public sector involvement in freight rail, including a description of the different types of governmental entities with the authority to study, plan, and implement improvements to the freight rail system. Section 3.5 concludes with summaries of rail freight studies initiated by the Rail Division (RRD) of the Texas Department of Transportation (TxDOT), as well as other governmental entities described in Section 3.5. These studies have identified improvements that can be advanced as funding becomes available.

3.1 – Freight Rail Traffic Tonnage, Volumes, and Commodities

Tonnage

The 1990s were a period of strong population growth in Texas that led to an increased need for commodities and consumer goods. Increases in the quantity of rail freight handled in the state reflect the states' economic growth. In 1991, 230 million tons of rail freight was transported in Texas. By 2006, this figure had increased to some 395 million tons—an increase of more than 71%. The growth came to a stop, and by 2008, total rail tons decreased to about 384 million. Figure 3-1 depicts the tonnage of commodities flowing on rail routes throughout the state. Figures 3-2 through 3-5 present the annual rail tons on routes in North, East, South, and West Texas, respectively.

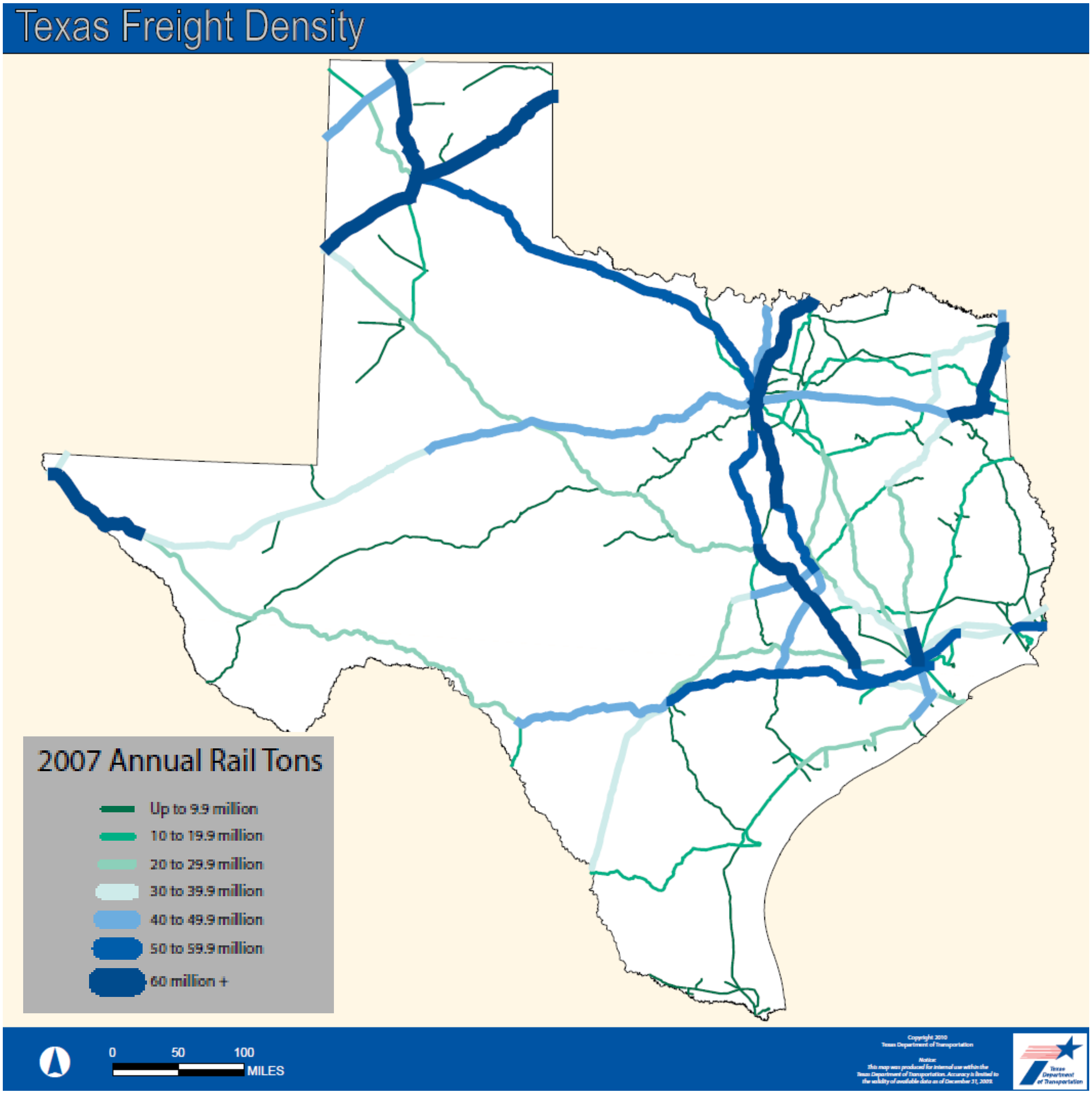

Figure 3-1: Annual Rail Tons on Texas Rail Routes, 2007

Source: Derived from Surface Transportation Board (STB) waybill sample data

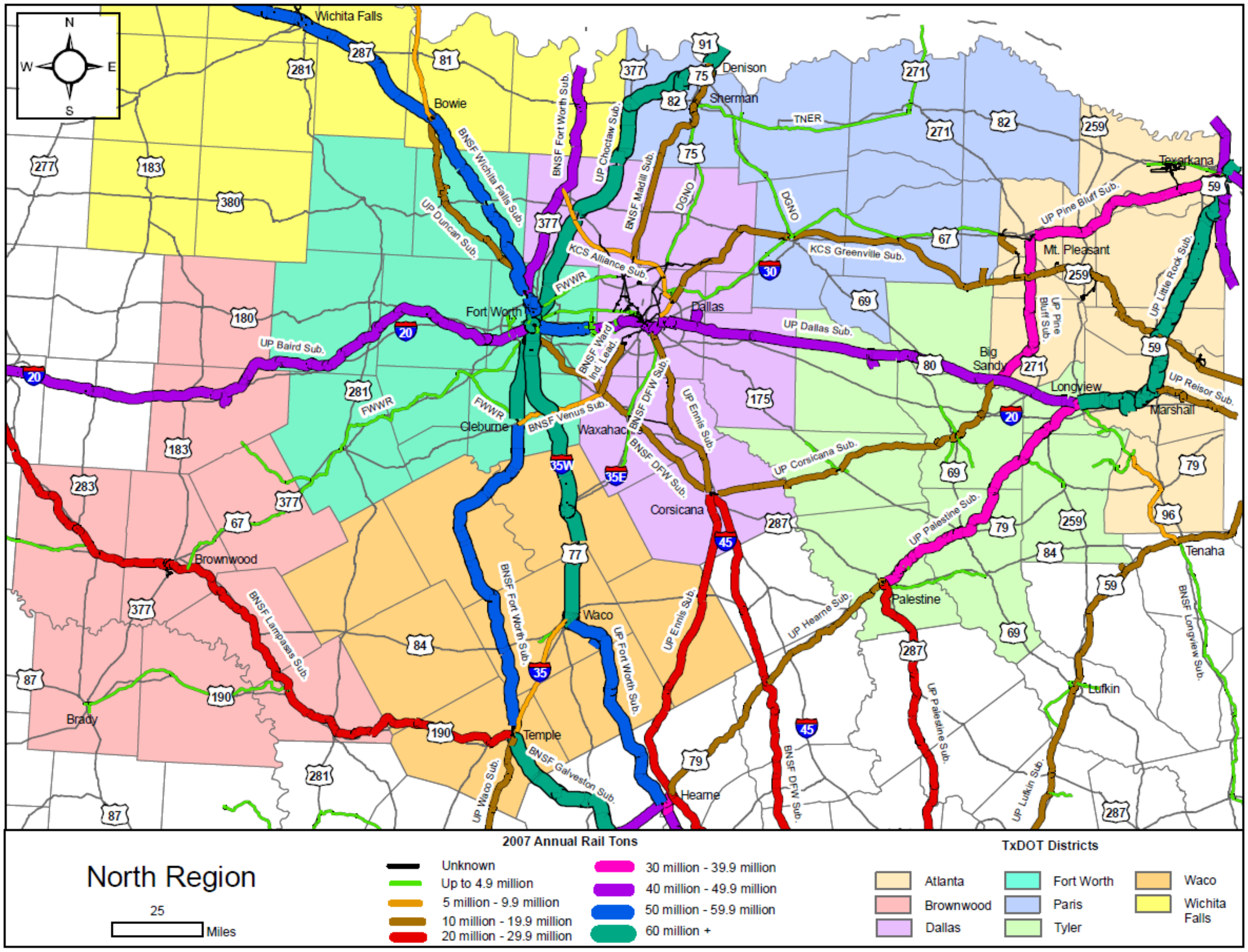

Figure 3-2: Annual Rail Tons on North Texas Rail Routes, 2007
Source: HNTB Corporation, derived from STB waybill sample data

Figure 3-3: Annual Rail Tons on East Texas Rail Routes, 2007

Source: HNTB Corporation, derived from STB waybill sample data

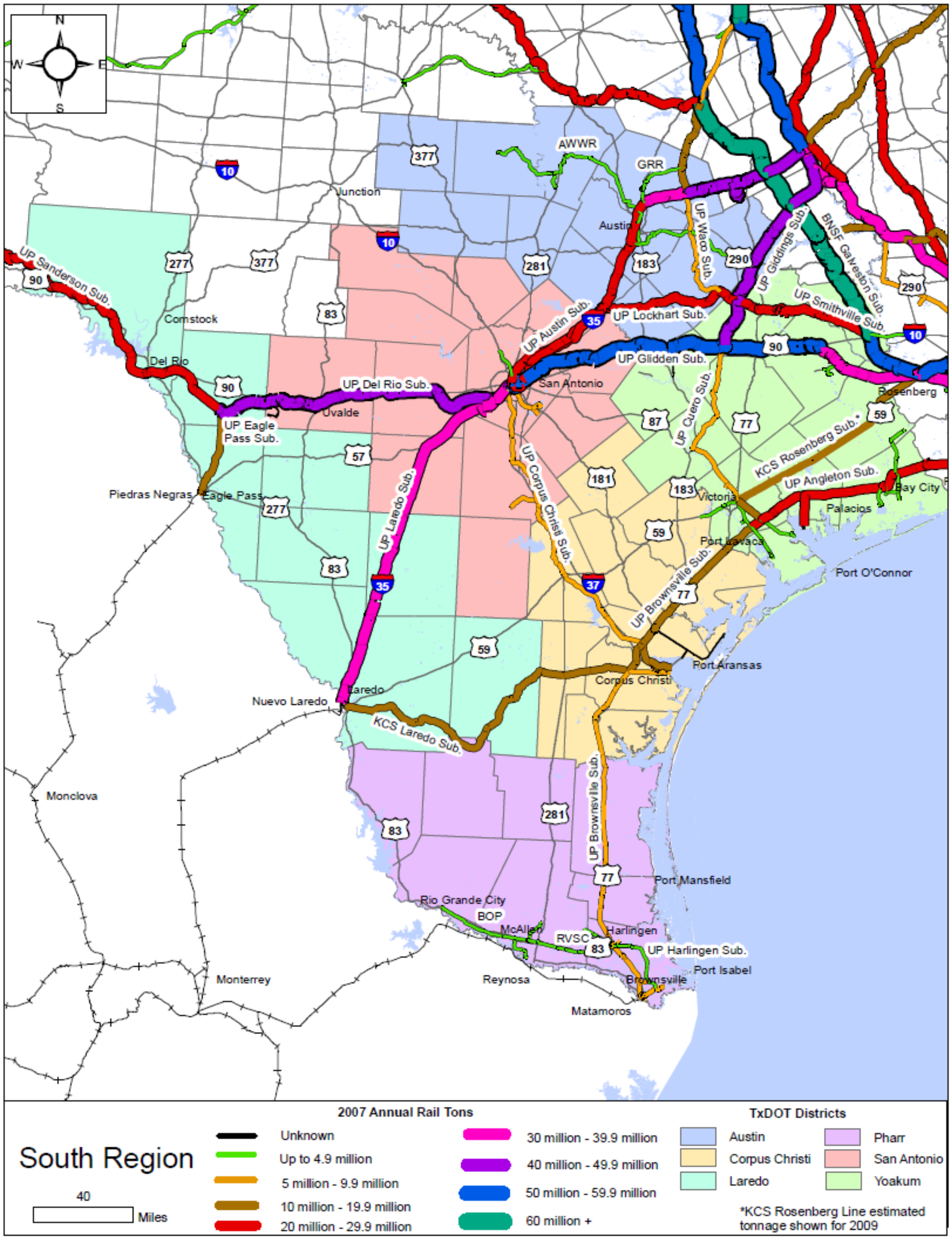

Figure 3-4: Annual Rail Tons on South Texas Rail Routes, 2007

Source: HNTB Corporation, derived from STB waybill sample data

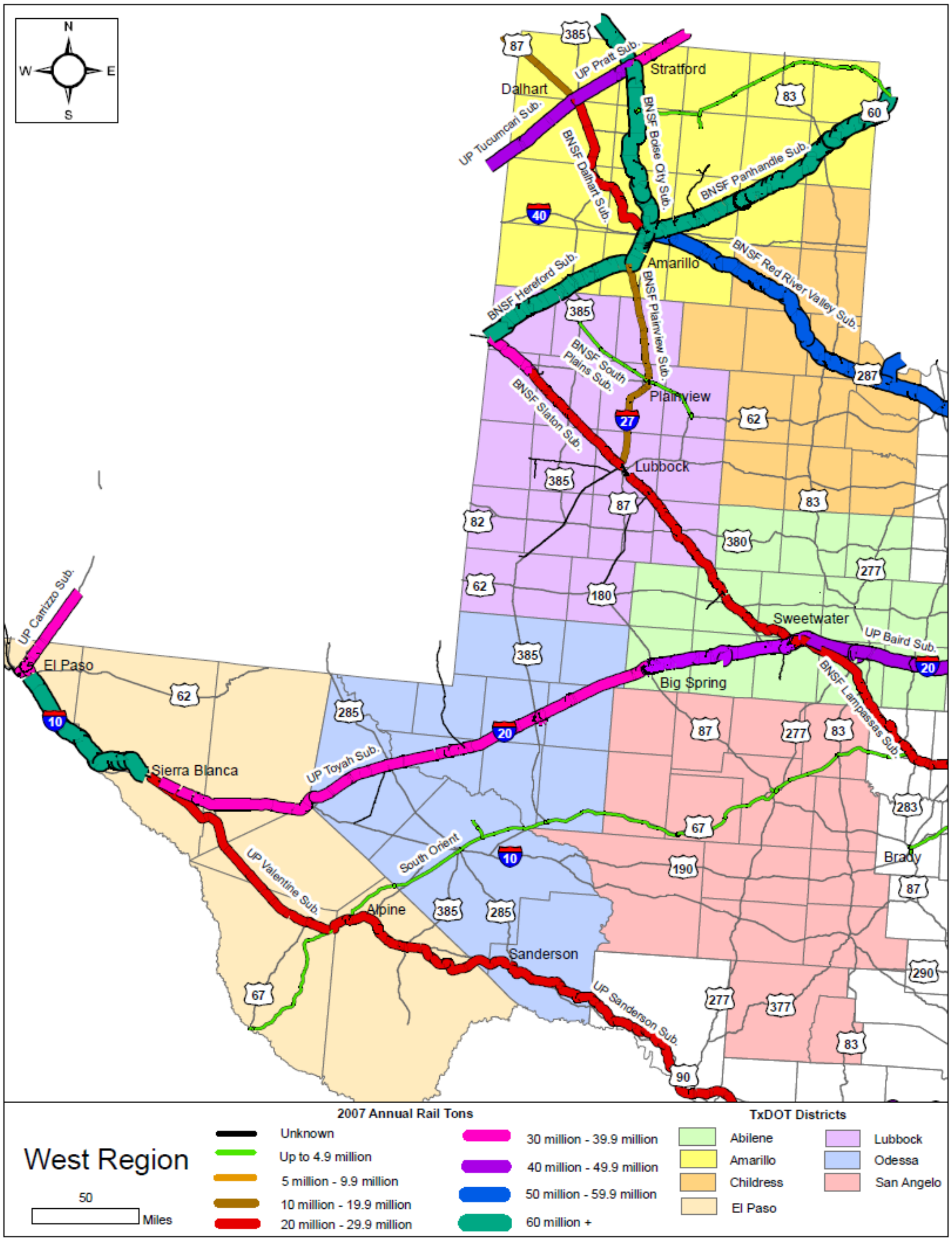

Figure 3-5: Annual Rail Tons on West Texas Rail Routes, 2007
Source: HNTB Corporation, derived from STB waybill sample data

Volume

The number of loaded railcars handled in Texas grew even more quickly than the increase in tonnage between 1991 and 2006, increasing from 4.1 million cars in 1991 to 10.1 million cars in 2006—an increase of more than 146%. The expansion of trade, especially with Mexico in the years after the North American Free Trade Agreement (NAFTA) was passed, the growth of manufacturing, and a rapidly-growing population all contributed to increases in rail freight shipped within the state. However, as with the total rail tonnage, the number of carloads dropped to 9.4 million by 2008. Decreases in rail tonnage and carloads are attributed to the general downturn of the economy. However, it is anticipated that once the U.S. economy recovers, both railcar and intermodal rail volumes will increase again in the U.S. and in Texas.

Commodities

The Association of American Railroads (AAR) compiled a state ranking list for the top 12 rail commodities originating and terminating in 2008, shown in Table 3-1. Texas appears in the top 10 for each top 12 commodity, except for coal and farm products. For those two commodities, Texas ranks second in tons terminated, indicating a strong demand for coal and farm products from other states.

Texas ranks first among all states in originating and terminating rail tons of chemicals and petroleum products, placing Texas first in tonnage of hazardous materials movement.

Table 3-1: Top Railroad Commodity Groups Originating and Terminating in Texas, 2008

National Commodity Rank	Tons Originated 2008 Commodity	Texas' Rank	Tons Terminated 2008 Commodity	Texas' Rank
1	Coal	Not in top 10	Coal	2
2	Farm Products	Not in top 10	Chemicals	1
3	Chemicals	1	Farm Products	2
4	Nonmetallic Minerals	2	Nonmetallic Minerals	1
5	Intermodal	3	Intermodal	3
6	Food Products	9	Food Products	2
7	Metallic Ores	4	Primary Metal Products	3
8	Primary Metal Products	9	Metallic Ores	Not in top 10
9	Cement, Stone & Concrete Products	4	Cement, Stone & Concrete Products	1
10	Waste & Scrap Material	4	Petroleum Products	1
11	Petroleum Products	1	Waste & Scrap Material	10
12	Pulp & Paper	9	Pulp & Paper	6

Source: Railroad Statistics by State, published by the Association of American Railroads and derived from STB waybill data

Figure 3-6 illustrates major commodities originating and terminating in Texas in 2008, and Table 3-2 summarizes data available for the four largest commodity groups, in terms of tonnage, originating in Texas in 1991, 1996, 2006, and 2008. The amount of freight in most commodity groups experienced a decline between 2006 and 2008.

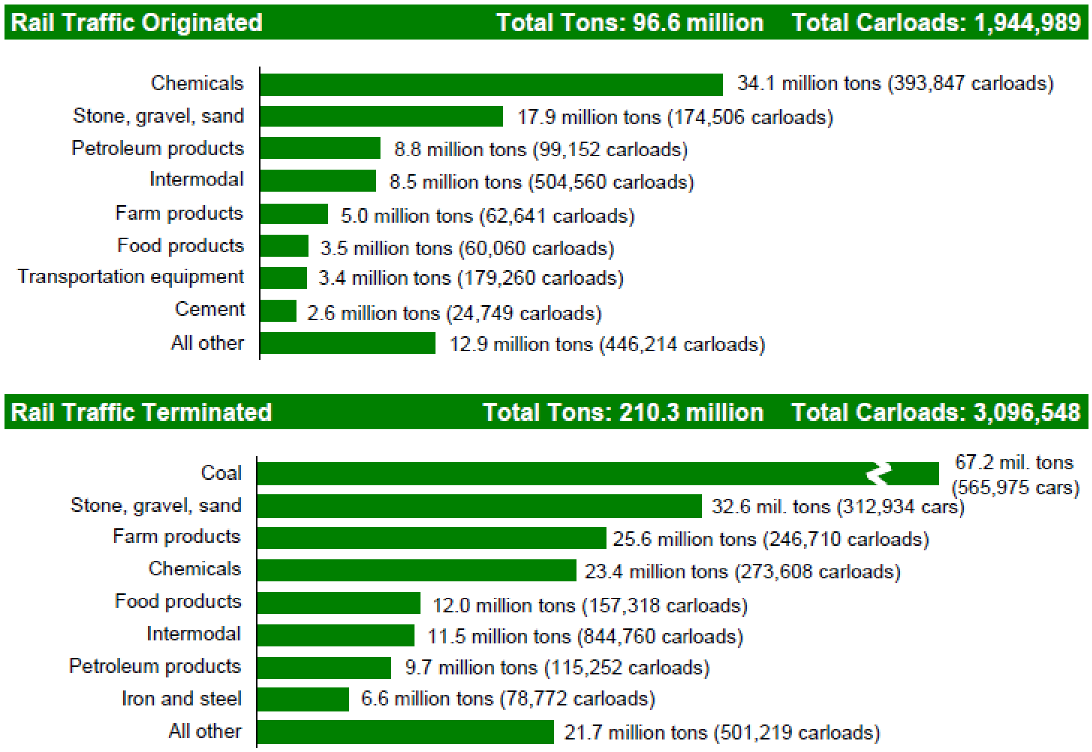

Figure 3-6: Rail Movement Commodity Summary

Source: Railroad Statistics by State, published by the Association of American Railroads and derived from STB waybill data

The decrease in originating tonnage occurred in the four largest commodity groups except for intermodal, which increased 5% between 2006 and 2008. Prior to the decrease, petroleum products posted the largest percentage increase at 60% between 1991 and 2006, with non-metallic minerals coming in second with a 54% increase.

Table 3-2: Major Railroad Commodity Groups Originating in Texas

Commodity Group	1991		1996		2006		2008		% Change, 1991-2008
	Tons	% Total	Tons	% Total	Tons	% Total	Tons	% Total	
Chemicals	27,558,824	32	33,568,992	33	39,527,390	34	34,060,894	35	24
Non-Metallic Minerals	17,473,657	20	20,954,179	21	26,891,452	23	18,916,900	20	8
Petroleum Products	6,112,348	7	8,317,200	8	9,760,498	9	8,798,656	9	44
Mixed Freight	6,062,817	7	7,042,740	7	8,055,400	7	8,465,760	9	40
All Other Groups with tonnage less than mixed-freight	24,210,205	28	32,013,771	31	30,898,076	27	26,384,761	27	9
Total	81,417,851	100	101,896,882	100	115,132,816	100	96,626,971	100	19

Source: Railroad Statistics by State, published by the Association of American Railroads and derived from STB waybill data

Table 3-3 summarizes the largest commodity groups, in terms of tonnage, terminating in Texas in 1991, 1996, 2006, and 2008. Growth in shipments of coal, non-metallic minerals (e.g., stone and aggregates), and farm products coincide with heightened demand for energy, roads, and food from Texas' increasing population.

After 2006, tonnage of chemicals terminating in Texas continued to increase, while the other major commodity groups decreased. The volume of chemical shipments terminating in Texas grew as the state's chemical industries increased production following a series of large-scale investments. Freight rail shipments of chemicals terminating in Texas are exported from the state's ports to international markets or used as inputs in the production of other chemicals or manufactured goods.

Table 3-3: Major Railroad Commodity Groups Terminating in Texas

Commodity Group	1991		1996		2006		2008		% Change, 1991-2008
	Tons	% Total	Tons	% Total	Tons	% Total	Tons	% Total	
Coal	39,997,651	28	49,052,357	29	68,164,252	31	67,186,336	32	68
Non-Metallic Minerals	19,579,387	14	24,934,767	15	39,724,558	18	34,294,664	16	75
Farm Products	19,373,633	14	21,627,685	13	25,900,856	12	25,550,893	12	32
Chemicals	18,218,919	13	18,945,148	11	23,042,975	11	23,355,435	11	28
Food Products	9,782,907	7	10,010,216	6	12,289,637	6	12,005,696	6	23
All Other Groups with tonnage less than Food Products	33,774,473	24	43,853,394	26	49,172,535	22	47,889,768	23	42
Total	140,726,970	100	168,423,567	100	218,294,813	100	210,282,792	100	49

Source: Railroad Statistics by State, published by the Association of American Railroads and derived from STB waybill data

Intermodal/mixed-freight is the largest commodity by tonnage traveling through Texas that is neither originating nor terminating in Texas. Consistent with the pattern seen for other types of freight movement, tonnage of mixed-freight declined in 2007. However, growth continued for the other commodities in the top five for through movement, as shown in Table 3-4.

Table 3-4: Major Tonnage (in Millions) Through Texas (2002–2007)

Commodity	2002	2003	2004	2005	2007
Mixed	32.40	34.70	37.70	40.20	36.20
Food	7.49	7.03	7.45	9.87	10.30
Coal	3.29	2.63	3.69	3.66	9.99
Farm products	6.77	7.63	6.86	6.69	8.38
Hazmat	4.40	3.95	5.75	6.35	6.60
Chemicals	5.25	5.55	5.14	5.27	5.01
Transport equipment	2.77	2.54	2.76	3.13	3.66
Paper, pulp	3.29	3.38	3.48	3.73	3.58
Non-metallic minerals	2.73	2,18	3,08	3.66	3.26
Metal products	2.51	2.96	3.26	2.79	3.20
Clay, concrete, glass, stone	1.23	1.23	1.34	1.65	1.72
Lumber and wood products	1.49	1.59	2.09	2.08	1.64
Petroleum or Coal Products	0.99	1.29	1.34	1.47	1.55
Shipping Containers	1.01	1.13	1.46	1.92	1.40

Source: STB Waybill Data; 2006 data excluded due to inconsistent commodity categories and outliers

Hazardous Materials

Texas ranks first as an origin and a destination state for hazardous materials shipments, according to the latest (2002) Commodity Flow Survey (CFS). A report prepared in 2009 by the Texas Transportation Institute (TTI) examined the movement of hazardous materials commodities by rail within Texas using the 2005 Carload Waybill Sample.[1] Dividing the hazmat movement by rail into four categories of internal, through, originating, and terminating, the report gave the percent of hazardous materials transported by each category of movement and listed the top ten hazardous materials commodities at the state level.

Table 3-5 summarizes the report findings, listing only the top five commodities. Unsurprisingly, Texas ranks first in originating and terminating shipment of rail tons in petroleum products; petroleum products place in the top five for each category of hazmat movement. For the "through" movement, the "freight forward traffic," and "all freight rate shipment," commodities listed first and third, respectively, refer to break-bulk shipments with more than one commodity on the same carload/waybill.

Table 3-5: Hazardous Material Rail Movement in Texas

Category of Rail Movement	Origin	Destination	% of Total Hazardous Waste Rail Shipments by tonnage in Texas	Top Five Hazardous Materials Commodities Shipped by Rail
Internal	Texas	Texas	14%	Vinyl Chloride Petroleum Gas Liquid Caustic Sodium Petroleum Oil Sulfuric Acid
Through	Non-Texas	Non-Texas	18%	Freight Forward Traffic Ethyl Alcohol All Freight Rate Shipment Alcohols, NEC Petroleum Gas Liquid
Originating	Texas	Non-Texas	43%	Petroleum Fuel Chemicals, NEC Vinyl Chloride Vinyl Acetate Asphalt, Petroleum Liquid
Terminating	Non-Texas	Texas	25%	Petroleum Gas Liquid Sulfur Liquid Propylene Chlorine Gas Sulfuric Acid

Source: Derived from 2005 STB carload waybill sample data[2]

Additionally, within each category of movement, the report identified the top five counties and the top five commodities originating and terminating in those counties (Table 3-6).

Again, the petroleum and chemical industry in the Houston area generates and demands more shipments of hazardous materials by rail than other areas of Texas.

Table 3-6: Top Five Counties Originating or Terminating Hazardous Materials

	Internal-Origin	Internal-Destination	Originating	Terminating
1	Harris	Harris	Harris	Harris
2	San Patricio	Brazoria	Brazoria	Chambers
3	Jefferson	Jefferson	Jefferson	Galveston
4	Brazoria	Galveston	Galveston	Brazoria
5	Gregg	El Paso	Gregg	Jefferson

Source: Derived from 2005 STB carload waybill sample data[3]

The top five origin and destination U.S. states for hazardous material transported by rail in Texas are Illinois, California, Louisiana, Kentucky, and Arizona. Of all origins and destinations of hazardous material coming into or leaving Texas, Canada is the top origin of hazmat tonnage and the third highest for hazardous material tonnage from Texas.

Regarding the safety issues associated with moving hazardous material by freight rail, the 80th Texas Legislature passed H.B. 160 directing TxDOT to conduct a study to determine the economic feasibility of relocating freight trains that carry hazardous materials away from residential areas of the state in municipalities with a population of more than 1.2 million. This study presented an evaluation of cost options for reducing the risk of hazardous material exposure, which included the relocation of freight trains from urban residential areas in Houston, San Antonio, and Dallas/Ft. Worth. This report is discussed further in Chapter 5: Rail Safety and Security.

3.2 – The Texas Freight Rail System

Nationally, 567 freight railroads operate on approximately 140,000 miles of rail infrastructure. The freight railroads carry more than 40% of the nation's intercity freight (in ton-miles), including 70% of vehicles from domestic manufacturers, 65% of the nation's coal, and 30% of the nation's grain[4], while only generating 10% of the intercity freight revenue. The Texas rail system represents a significant component of the national network in both size and traffic levels. Table 3-7 shows how the Texas rail system ranked nationally in 2006 and 2008 for several key indicators. Texas' ranks remained the same for those two years except in originating rail tons, which slipped from second to fourth place. The amount of Class I rail freight originating in Texas between 1991 and 2006 rose from 86.5 to 115.1 million tons (a 33% increase), placing Texas second among all states. However, by 2008, the number of tons originating decreased to 96.6 million and dropped Texas' ranking to fourth place. In terms of mileage, Texas accounts for nearly 8%, with close to 11,000 miles of track.[5] Figure 3-7 shows the extensive rail network traversing Texas and major cities.

Table 3-7: Ranking Texas on Key Statistical Indicators, Comparison of 2006 and 2008

Key Indicator	Statistic-2006	Rank-2006	Statistic-2008	Rank-2008
Number of Freight Railroads	44	2nd	44	2nd
Total Rail Miles				
Excluding Trackage Rights	10,600	1st	10,743	1st
Including Trackage Rights	14,965	-	14,982	-
Total Rail Tons	395,222,630	5th	384,405,761	5th
Originating	115,132,816	2nd	96,626,971	4th
Terminating	218,294,813	1st	210,282,792	1st
Total Rail Carloads	10,141,437	2nd	9,425,554	2nd
Originating	2,218,220	4th	1,944,989	4th
Terminating	3,245,459	3rd	3,096,548	3rd
Total Railroad Employment	17,394	1st	17,251	1st
Total Wages by Rail Employees	$1,211,040,000	1st	1,283,800,000	1st

Source: Railroads and States – State Rankings, published by Association of American Railroads, using STB Waybill sample data, 2006 and 2008.

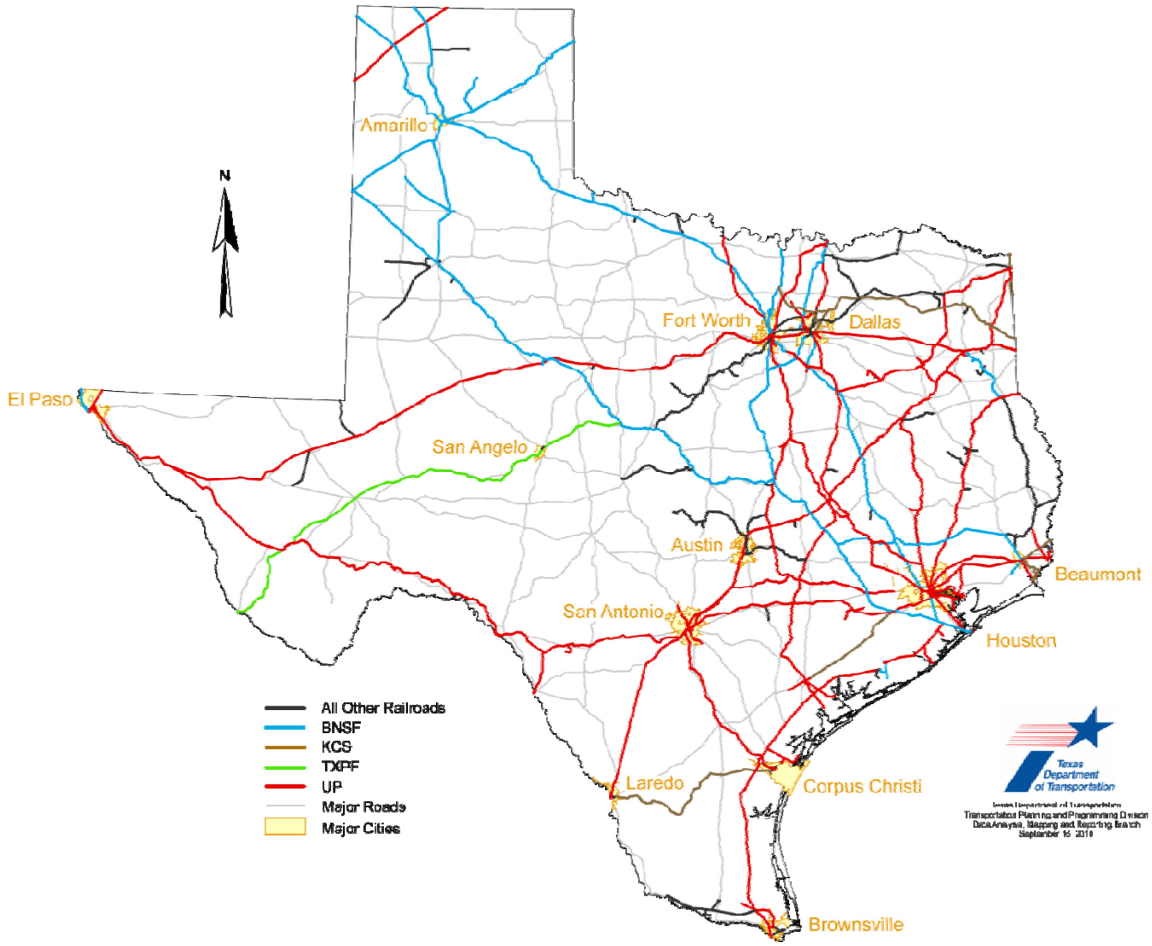

Figure 3-7: Major Texas Rail Lines and Major Highways

As indicated in Table 3-8, Texas has 44 total freight railroads, which ranks Texas second nationally for number of freight railroad operators. The Surface Transportation Board (STB) categorizes rail carriers into three classes based on annual earnings. The earnings limits for each class were set in 1991 and are adjusted annually for inflation. Per federal regulations,[6] all switching and terminal companies and electric railway carriers, regardless of revenue, are Class III carriers. Only Class I carriers are required to file annual and periodic financial and statistical reports with the STB.

The AAR utilizes the STB classification system, but also divides the non-Class I railroads by miles of track and purpose. Class II railroads must have a minimum of 350 miles of track, and Class III railroads are divided into local or switching and terminal railroads. Table 3-8 categorizes the Texas rail network into AAR classifications.

Table 3-8: Freight Railroads Operating in Texas by AAR Classification and Miles of Track, 2008

Railroad Classification	Number of Railroads in Texas	Miles of Track Operated	
		Excluding Trackage Rights	Including Trackage Rights
Class I	3	8,302	12,180
Class II – Regional	2	813	1,058
Class III – Local	19	713	741
Class III – Switching & Terminal	20	915	1,003
Total	44	10,743	14,982

Source: *Railroad Statistics by State*, Published by the Association of American Railroads, 2008.

Class I railroads represent major railroad companies moving significant amounts of freight over long distances and owning track spanning several states (Figure 3-8). Three Class I railroads operate in Texas: the BNSF Railway Company (BNSF), the Kansas City Southern Railway Company (KCS), and the Union Pacific Railroad (UP).

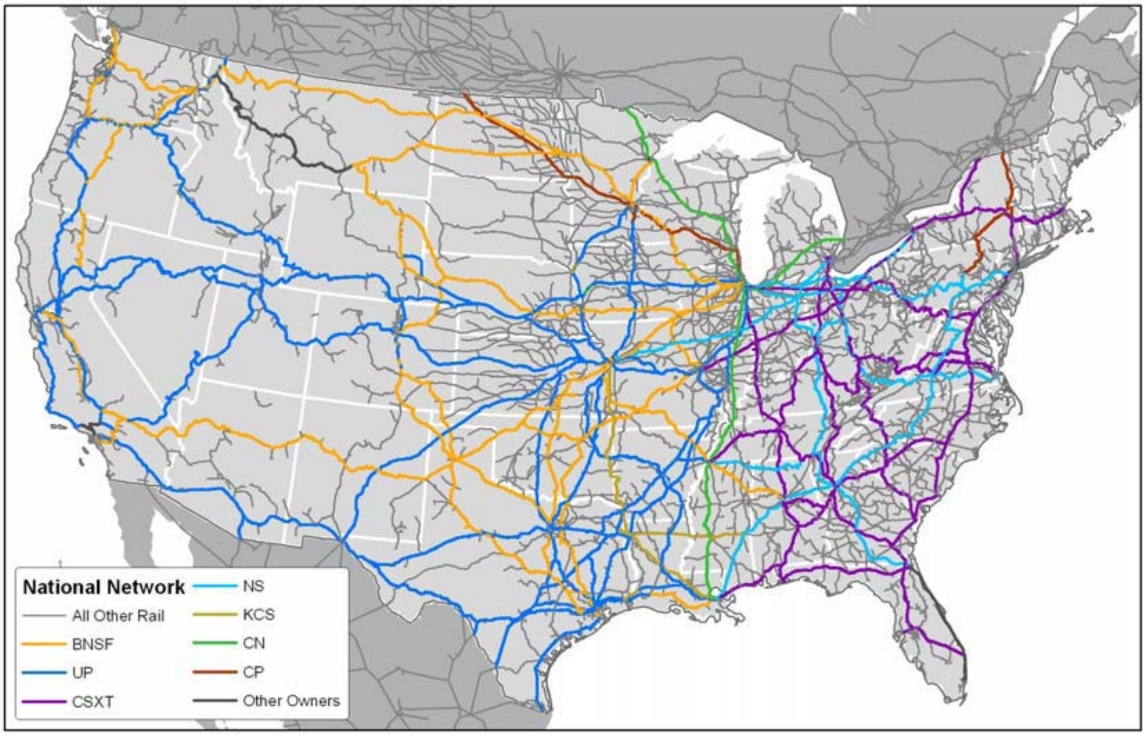

Figure 3-8: National Freight Network and Primary Rail Corridors
Source: National Rail Freight Infrastructure and Investment Study, Association of American Railroads, 2007

In 2008, the three Class I railroads operated on 12,180 (81%) of the state's total track miles, including trackage rights. Most of that mileage was owned and used by BNSF and UP. Combined, BNSF and UP operated on over 93% of the Class I track mileage in the state.[7] The widespread coverage of BNSF and UP allows them to connect to most of the major markets statewide. Table 3-9 compares the infrastructure of the Texas Class I railroads, using 2010 data provided by the railroad operators.

Table 3-9: Comparison of Class I Infrastructure and Business in Texas

	Union Pacific	BNSF	KCS
Miles of Railroad Operated in Texas, including trackage rights (2010)	6,336	4,929	908
Percentage of National System (2010)	20%	15%	30%
Top Commodities Originating in Texas (in descending order)	By volume: Intermodal-Wholesale Plastics Stone, Sand, Gravel Liquid and Dry Chemical Assembled Autos	By carload: Consumer Industrial Agricultural	By volume: Intermodal Unit coal Pet coke Fiberboard/pulpwood Gravel
Top Commodities Destined for Texas (in descending order)	By volume: Intermodal-Wholesale Coal Stone, Sand, Gravel Plastics Assembled Autos	By carload: Consumer Coal Industrial Agricultural	By volume: Unit coal Intermodal Soda Ash Pet coke Sheet steel
Location of Major Yards	Ft. Worth (Davidson) Houston (Englewood) Houston (Settegast) Houston (Strang) San Antonio (SoSan) Laredo (Port Laredo) Dallas (DIT) Intermodal Mesquite Intermodal San Antonio Intermodal	Alliance Amarillo Beaumont Brownwood Cleburne Dayton (leased) El Paso Ft. Worth Gainesville Galveston Houston Laredo Longview Lubbock Saginaw Sherman Silsbee Slaton Somerville Sweetwater Teague Temple Wichita Falls	Wylie Port Arthur Beaumont Kendleton Corpus Christi Laredo

Sources: Union Pacific, BNSF, KCS

BNSF Railway (BNSF)

Within the BNSF system, Ft. Worth lies on a heavily-traveled line connecting coal from Wyoming's Powder River Basin with Central Texas and the Houston area (Figure 3-9).

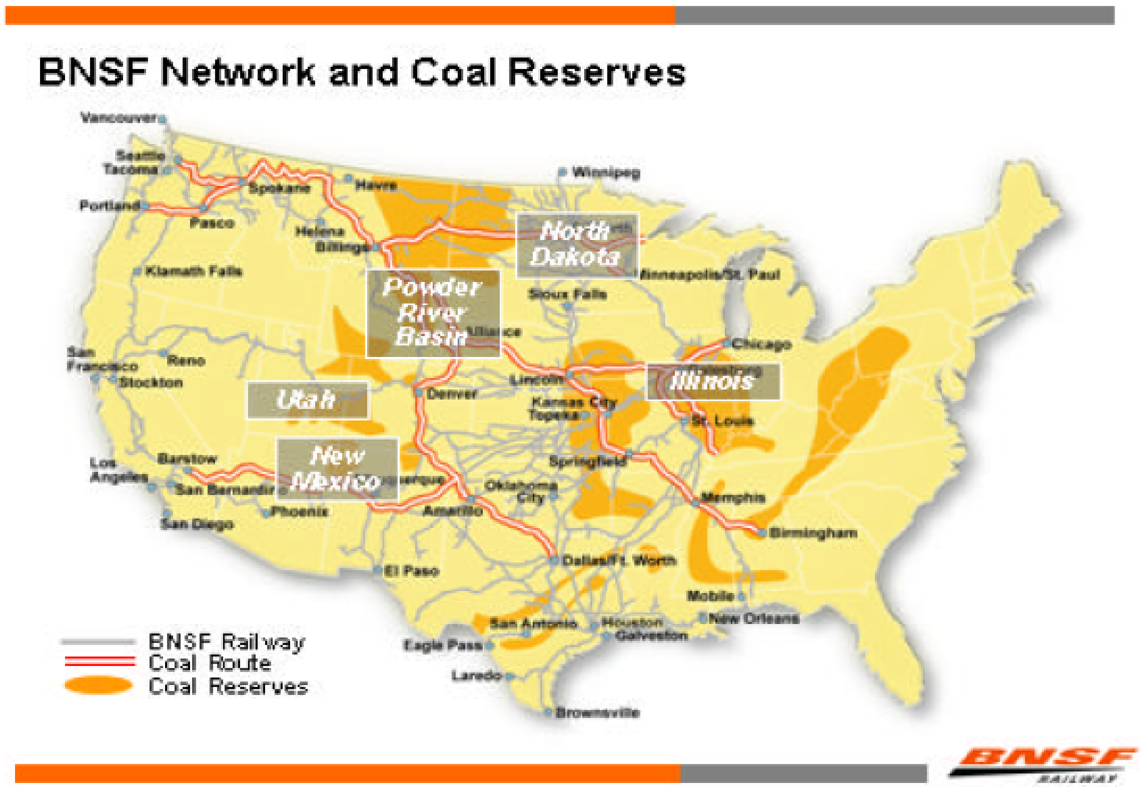

Figure 3-9: BNSF Coal Routes in Texas

Also entering Ft. Worth is a busy BNSF line originating in the grain-producing Plains states and then proceeding to Texas Gulf Coast Ports. Each of these BNSF lines carried more than 33 million gross tons (MGT) of freight in 2000. The BNSF's Transcontinental Line traverses the Texas Panhandle, carrying over 100 MGT each way from Los Angeles to Chicago, in 2000.

The BNSF currently has five automobile distribution facilities statewide. The Amarillo facility services Ford, and the Alliance facility near Ft. Worth services Honda, Hyundai, Mitsubishi, Subaru, and Isuzu. The Midlothian facility ships Mazda vehicles, while a Temple facility handles Gulf States Toyota vehicle shipments. Lastly, the Houston (Pearland) facility handles cars manufactured by Isuzu, Mazda, Honda, Mitsubishi, Hyundai, and Nissan, as well as used GM trucks.

Union Pacific (UP)

Within the UP system, UP's high-volume, major east-west lines connect California with the Gulf Coast and Memphis, and its north-south NAFTA corridor connects Mexico to the northeast U.S. and Canada (Figure 3-10). Dallas, Ft. Worth, Austin, and San Antonio are each on the heavily-used rail corridor connecting Laredo with the Upper Midwest. Houston is a UP hub for six lines, linking the region with the Louisiana Gulf Coast, Midwest, West Coast, and Mexico. El Paso, San Antonio, Dallas, and Ft. Worth are also on main east-west corridors going across the southern tier of the U.S. connecting to ports at Los Angeles and Long Beach. Figure 3-11 shows a UP train near Alpine, Texas.

Figure 3-10: Union Pacific System in the U.S.

UP also maintains automobile distribution facilities in Texas. The UP Mesquite facility has both an intermodal and an automotive terminal that are two separate operations managed by different groups and different contractors. The Mesquite, Arlington and Houston Westfield automotive terminals serve General Motors, Ford, Nissan, and

Chrysler. UP also services, but does not own or operate, the Gulf States Toyota facility across from the Westfield facility. In San Antonio, UP's Kirby Yard handles General Motors, Ford, and Chrysler and south of San Antonio UP serves the Toyota manufacturing facility.

Figure 3-11: UP Operating on Sanderson Subdivision Near Alpine, Texas

Kansas City Southern (KCS)

In the KCS system, 908 miles of track are operated in the state (including the Tex Mex, which KCS acquired in 2004), and is limited to connections in Laredo, Corpus Christi, Houston, Dallas/Ft. Worth, and Beaumont.[8] In June 2009, KCS added approximately 84.5 miles to its Texas rail network when it opened for operation a restored Southern Pacific Railroad line segment between Victoria and Rosenberg. Figure 3-12 presents a KCS train in operation near Victoria.

Figure 3-12: KCS Operating on UP's Port Lavaca Subdivision Near Victoria, Texas

The restored line is from milepost 87.0 near Victoria to milepost 2.5 near Rosenberg and is located in the counties of Jackson, Victoria, Wharton, and Ft. Bend. Efforts to rehabilitate the line started in 2000, when Tex Mex Railroad filed an exemption to acquire and operate UP's Victoria-Rosenberg line (Figure 3-13). When KCS acquired Tex Mex Railroad in 2004, the line was included but was out of service at the time of acquisition and needed significant rehabilitation. The STB granted the petition.

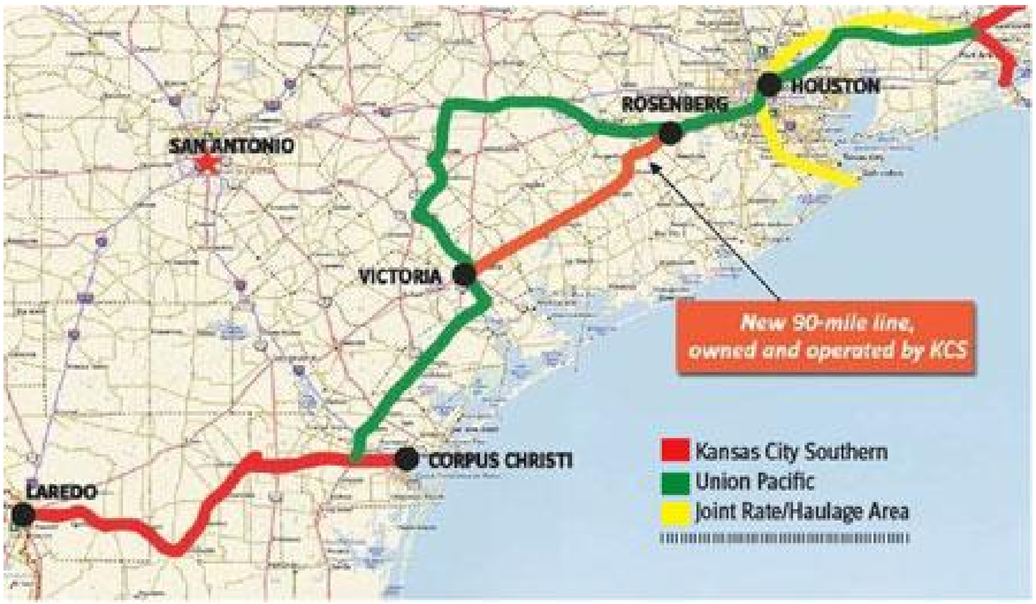

Figure 3-13: New KCS Line Between Rosenberg and Victoria, Texas[9]

Figure 3-14 shows the KCS system.

Figure 3-14: KCS System Map

In 2007, KCS applied to the Federal Railroad Administration (FRA) for an approximate $100 million Railroad Rehabilitation and Improvement Financing (RRIF) loan. KCS did not obtain the FRA RRIF loan for the Robstown to Victoria line rehabilitation project, and instead financed the rehabilitation itself.[10] In addition to the rehabilitated tracks, KCS constructed an intermodal facility on the eastern end of the route near Rosenberg. Routing over the Rosenberg line instead of using current trackage rights over UP's Sunset Route reduces KCS's mileage between Laredo and Houston by 67 miles in each direction.

Class II and III Regional Railroads

The Texas Class II railroad presence in Texas is only 7.1% of the state's trackage (including rights) and is limited to the Texas Pacifico Transportation, Ltd. (TXPF), which operates on 391 miles of state-owned track in West Texas (the "South Orient rail line," or SORR), and the Texas Northeastern Railroad (TNER), which operates on 665 miles of track in Northeast Texas. Although TXPF is listed as a Class II railroad by the AAR (due to miles operated), the STB considers TXPF a Class III railroad due to the limited revenues TXPF earns from its operations.

The majority of railroad operators in Texas are classified as Class III railroads, although their 1,744 miles of track, including trackage rights, made up only 11.6% of the state's total trackage in 2008. Often referred to as "short lines," Class III railroads usually engage in specialized services and are typically geographically concentrated. One characteristic of short lines is that they may be privately owned to serve only a specific company or industry. For example, the Angelina & Neches River Railroad was founded by a paper mill and now connects shippers in the Lufkin area to UP rail lines.

Short Line Railroads

Short lines are also used to connect a group of local customers to Class I networks. Many short lines came into existence following the purchase of track formerly controlled by Class I railroads. For example, the Gulf, Colorado & San Saba Railway operates on 69 miles of track in Central Texas acquired from the Atchison, Topeka and Santa Fe Railway Company (ATSF) following an abandonment proceeding.

Some Texas ports, such as Houston, Corpus Christi, and Orange, are served by dedicated switching railroads (Port Terminal Railroad Association, Corpus Christi Terminal Railroad, and the Orange Port Terminal Railway, respectively) that provide rail services in close proximity to the port areas. Switching railroads, such as the Dallas, Garland & Northeastern (DGNO), operate on Class I lines or on their own track and deliver or pick up goods (e.g., limestone, farm products, plastics, lumber, soybean oil, steel, paper, chemicals, and auto parts) within the region. The DGNO serves as a switching carrier for UP in the Dallas region and interchanges rail cars to provide cross-country rail services to area shippers.

Operational Leases

Rail track may be owned by one entity, either public or private, but operated by another through an operational lease. There are several operational leases in Texas, and the information about the leases, where known, is provided as part of the plan to indicate where more than one entity is involved with the track in a community.

Austin Western Railroad

In September 2007, the Austin Western Railroad (AWRR), a subsidiary of the Watco Companies, filed a notice of exemption to operate 164.83 miles of track from Giddings to Marble Falls, owned by Capital Metropolitan Transportation Authority in Austin, Texas. The agreement provided for the AWRR to provide freight services on the line while allowing commuter rail services across a portion of the line.

Timber Rock—BNSF

In mid-2004, the Timber Rock Railroad (TIBR) entered into a lease agreement with BNSF for approximately 117 miles of track between Dobbin, Silsbee, Somerville, and Beaumont, Texas in Montgomery, Liberty, Hardin, and Jefferson Counties, as well as approximately 55 miles of incidental trackage rights. TIBR provided service to eight shippers on the leased line and handled bridge traffic for BNSF that averaged less than 1,300 carloads per month. However, by late 2006, the BNSF bridge traffic had increased to the point where the original operational savings for both railroads were undermined. TIBR and BNSF agreed to cancel 116 miles of the lease and allow BNSF to haul the bridge traffic, eliminating a double-interchange for the increased traffic volumes. BNSF also agreed to provide service to local shippers on the lines. TIBR retained a small amount of lease trackage to facilitate other interchanges of traffic with BNSF at Silsbee.

South Orient Rail Line (SORR)

In 2001, the owner—TxDOT, entered into a lease agreement with TXPF to operate and maintain the SORR. Approximately 391 miles in length, this line extends from San Angelo Junction (in Coleman County, 5 miles southwest of Coleman) through San Angelo to Presidio at the Texas-Mexico border. In 2007, TXPF interchanged 2,707 carloads with other railroads in Texas; in 2008, it exchanged 2,890 carloads; and in 2009, it exchanged 1,491 carloads. In 2010, traffic was expected to double on the line due to additional sand traffic received by TexSand company, increases in steel traffic, and an abundant harvest.

Bonham Subdivision

In 2006, TxDOT entered into a lease agreement with Fannin County Rural Rail Transportation District (FRRTD) to operate on the state-owned rail line located in Lamar and Fannin counties that extends from mile post 94.0 to mile post 127.5 on the Bonham Subdivision—a total of approximately 33.5 miles. FRRTD is working to identify potential funding sources for rehabilitation of the line and possible operators that would contract for freight rail service.

Blacklands Railroad

The North East Texas Rural Rail Transportation District (NETEX) secured a legislative appropriation rider that granted it funds from state general revenue through TxDOT for the purchase and operation of the rail line from a point west of Sulphur Springs at mile post 524.0 to a point west of Greenville at mile post 555.0. Blacklands Railroad, through an operating lease with NETEX, has been successfully moving commodities such as grain, plastic, rock, and aluminum.

Rail Line Abandonment

Railroad development across Texas continued to grow until it peaked in 1932 when over 17,078 miles of track existed.[11] The miles of track in Texas have continually declined since that time period to the 2008 level of 10,743 miles, representing a loss of 37% of total track miles since its peak. The Staggers Rail Act has allowed railroads to more easily shed economically unprofitable lines by either selling them to short line operators or petitioning for abandonment. These lines are usually subject to deferred maintenance for years prior to abandonment and sometimes are inoperable when sold or abandoned (Figure 3-15). Short line operators must struggle to make the line viable on infrastructure that has suffered from years of deferred maintenance. Short lines may also seek abandonment as allowed by the Staggers Rail Act if lines are deemed economically unprofitable.

Figure 3-15: Deferred Maintenance Prior to Abandonment

Figure 3-16 displays rail line abandonments (shown in red) in Texas between 1953 and 2005. It is easy to see the significant reduction in rail service to many parts of the state, particularly the rural regions. Rural towns and regions are especially affected by rail abandonment where shippers may be forced to shut down or relocate with the loss of viable transportation options, thus affecting the areas' economic base. Rail abandonments since 2005 are presented in Table 3-10.

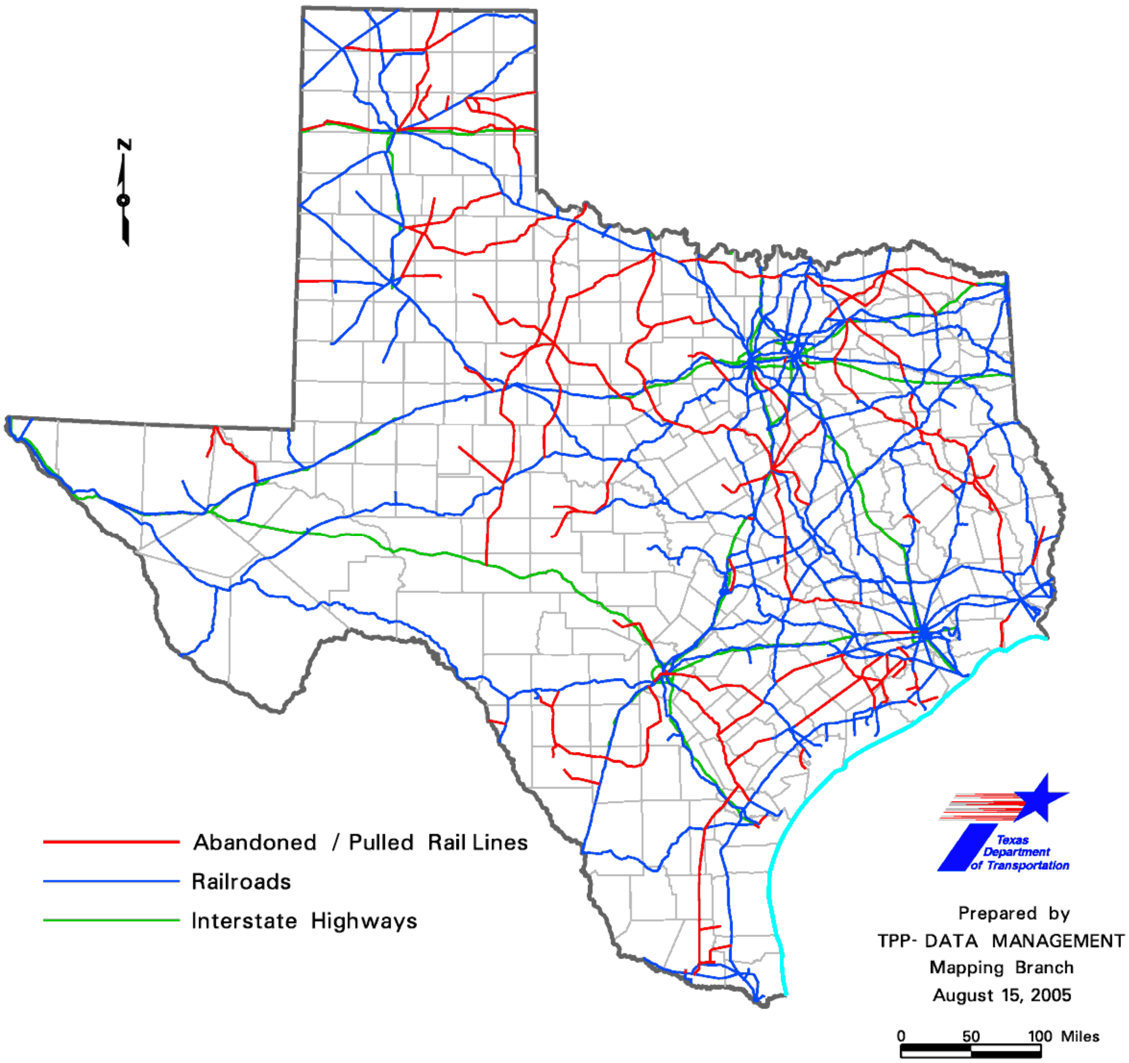

Figure 3-16: Abandoned Rail Lines in Texas between 1953 and 2005

Table 3-10: Abandonments in Texas Since 2005

Date	Railroad	Line	STB #	Miles	Status
11-16-05	UP BRG	Arthur Street	AB-33-226X	2.2	Consummated 4-24-06
12-7-05	UP	Waxahachie Industrial Lead	AB-33-229X	4.57	Rail banked by city of Waxahachie 10-2-07
4-20-06	UP	Tyler Industrial Lead	AB-33-223X	7.25	Consummated 11-1-08
8-7-07	UP & DGNO	Trinity Industrial Lead	AB-33-256X	41	Consummated 6-24-09
11-20-08	SWRR	Hansford County	AB-341-1X	80.0	Right-of-way acquired by Top of Texas RRTD 2009
2-15-08	UP	Port Arthur Industrial Lead	AB-33-245X	1.21	Consummated 2-3-09
2-15-08	UP	Sinton Industrial Lead	AB-33-244X	1.52	Consummated 2-3-09
2-15-08	UP	Chesterville Industrial Lead	AB-33-253X	8.3	Rail banked by Harris County Metropolitan Transit Authority 2-18-09

Source: Surface Transportation Board

Rail Banking

The National Trail Systems Act provided a mechanism for preservation of a rail corridor for future rail use, even if the tracks are removed. Under this program, a railroad and another entity can enter into an agreement to "rail bank" the corridor as an alternative to complete abandonment. This preserves the corridor through an STB approval and decision to issue a Notice of Interim Trail Use, allowing the preservation of the right-of-way and its use as a trail until such time as railroad service is re-established. Some corridors have been preserved in Texas through this process, particularly in the Dallas/Ft. Worth area and Houston, where they may one day be part of a rail transit system.

TxDOT's Acquisition of Abandoned Rail Lines

When rail lines are abandoned and rails removed, economic opportunity is lost due to the loss of a shipping alternative and a high cost to replace the infrastructure. This contributes to increased truck traffic over state highways and local roads and bridges, causing increased congestion and roadway maintenance costs. The 78th Texas Legislature passed H.B. 2 (Section 91.071, Transportation Code), which increased TxDOT's involvement in the preservation of rail lines. This bill authorized TxDOT to acquire rail lines and facilities and to assist rural rail districts in the acquisition of rail lines (see 43 T.A.C. Section 7.22 for procedural guidelines).

South Orient Rail Line (SORR)

The state's initial involvement in the preservation of rail lines came about as the result of an application to abandon the old Kansas City, Mexico & Orient line (otherwise known as the South Orient rail line, or SORR) by the ATSF. In 1989, the Texas Transportation Commission (TTC) provided a $3 million secured grant to the South Orient Rural Rail Transportation District to purchase the line from the ATSF. In return for the grant, TxDOT received the existing right-of-way for the rail line and a security interest in the installed rails and ties. The rail district entered into a lease and operating agreement with private investors, bringing about the formation of the South Orient Railroad Company (SORC). However, by 1998, SORC filed an abandonment application with the STB. In 1999, the Texas Legislature appropriated $6 million towards the $9.5 million purchase price of the rail line from SORC. After almost two years of negotiations between all parties, TxDOT entered into a $3.5 million lease and operating agreement with Texas Pacifico, securing the balance of the purchase price. At the same time TxDOT acquired all rights, titles, and interests in the rail line, thereby ensuring that ownership of the rail infrastructure and right-of-way would be preserved by the state. Figure 3-17 depicts a SORC locomotive.

The SORR, approximately 391 miles in length, extends from San Angelo Junction (in Coleman County, 5 miles southwest of Coleman) through San Angelo to Presidio at the Texas-Mexico border. The rail line was constructed by the Kansas City Mexico & Orient Railway in the early 1900s and terminated in Alpine, Texas. In 1928, ATSF bought it and completed construction from Alpine to Presidio. The line was moderately successful well into the 1970s due to sulphur and oil mining activities along the line, as well as several shippers in the San Angelo area, such as Hirschfeld Steel. ATSF filed for abandonment in the late 1980s and operated the line until 1991. ATSF deferred maintenance on the SORR for several years before abandonment due to a low traffic volume and the anticipation of abandonment.

Figure 3-17: South Orient Railroad Company Locomotive at Time of TxDOT's Acquisition

The SORR has had no significant rehabilitation since the early 1980s. The infrastructure contains rail manufactured between 1915 and 1966, including more than 75 miles of jointed 70-pounds-per-yard rail. Current freight rail infrastructure is constructed of at least 115-pounds-per-yard rail. Increased traffic over the line would contribute to the rapid deterioration of the infrastructure, and a substantial rehabilitation program is necessary to sustain operation along the entire line.

TxDOT has leased operations on the line to TXPF. TXPF performed a limited rehabilitation of the line, replacing defective cross ties at critical locations to allow continued service, with an initial rehabilitation expenditure of roughly $9 million. Approximately 68,900 new ties have been purchased and installed at strategic locations on the line to enable operations along the entire length.

In February 2004, TxDOT received a U.S. Congressional appropriation of $5.5 million in the Omnibus Transportation Act for further rehabilitation of the infrastructure. TxDOT administered the expenditure of these funds, which included the installation of 34,101 ties, 23,169 tons of ballast, 56 miles of surfacing (track alignment) between Alpine and Presidio, the improvement of two grade crossings in the city of Ft. Stockton, and the installation of 2,182 ties at the Ft. Stockton rail yard to enable economic development there. TXPF resumed limited operations over the border at Presidio in March 2005 (Figure 3-18).

The eastern section of the line begins at San Angelo Junction, where the SORR interchanges with the BNSF Railway, and the Ft. Worth and Western Railroad (FWWR). This section of the line is constructed of predominantly 90-pound jointed rail and has been operated as Excepted Track (10 mph) from San Angelo Junction (5 miles southwest of Coleman) through the west end of San Angelo (approximately 85 miles) due to the deteriorated state of the infrastructure. In September 2008, the Martifer-Hirschfeld Energy Corporation announced plans to develop a wind tower manufacturing facility in the city of San Angelo. Rail service is essential for transportation of Martifer's raw materials and finished products. Other shippers have expressed an interest in locating on the line, and the existing shippers are experiencing an increased need for rail service. This resulted in a commitment from TxDOT and TXPF to rehabilitate the line as funding is secured to improve service. Currently, TxDOT is using $14.09 million in American Recovery and Reinvestment Act (ARRA) funds: $1,122,355 remaining from a prior project; $250,000 from the city of San Angelo; and $4.6 million in funding from TXPF to rehabilitate the line between San Angelo Junction and San Angelo. Rehabilitation will be accomplished through several construction projects which will include installation of more than 70,000 cross ties, replacement of worn rail, reconstruction of 103 roadway-rail crossings, miscellaneous bridge repairs, and replacement of a truss bridge at Ballinger, Texas, where clearance restrictions would prevent the transport of Martifer-Hirschfeld's wind towers. When completed in the summer of 2011, this section of the line will be operable at a minimum of Class II (25 mph).

Figure 3-18: TXPF's First Train Crossing the Texas–Mexico Border at Presidio

Bonham Subdivision

In 2005, TxDOT acquired 33.5 miles of UP's Bonham Subdivision between Paris and Bonham. The facility is leased to the FRRTD. FRRTD is working to identify potential funding sources for rehabilitation of the line and possible operators that would contract for freight rail service. FRRTD has also requested TxDOT's assistance in the acquisition by TxDOT of approximately 1.35 miles of additional rail line that connects to TxDOT's current ownership on the Bonham Subdivision. FRRTD intends to promote a "tourist train" operation to travel between Dodd City and Bonham in support of a proposed "Old West" tourist site to be located in Bonham. The Bonham Economic Development Corporation has agreed to fund the acquisition. TxDOT is working with UP on a purchase agreement for this additional trackage.

3.3 – Freight Transport Connectivity

Intermodal Rail Facilities in Texas

"Intermodal" is the use of two or more modes of transportation to complete the movement of a shipment of freight or passengers from origin to destination. An intermodal freight rail facility is a location where cargo can be transferred from one mode to another (with rail as one of the modes) without transferring loads from one container to another ("transloading"). Intermodal transportation of containers can yield savings compared with truck transport alone when the cost of the transfer is offset by rail's lower cost per ton mile. Intermodal freight also includes bulk commodities (non-containerized) that involve a transfer from one mode to another, such as grain shipments from rail to barge.

Intermodal freight has the potential to relieve congestion and reduce maintenance costs on highway systems when truck freight is diverted to rail. Intermodal movement of goods therefore provides for more efficient use of transportation assets and improved efficiencies for both shippers and transportation providers. To be successful, intermodal terminals must meet the needs of the private sector freight industry. These needs can be influenced by frequent changes in markets and technologies. Because public sector infrastructure projects can take many years to plan and develop, the full benefits may be difficult to achieve. However, the cost to the public sector of providing funding for intermodal facilities so that additional freight may move on rail may be less than the cost of expanding highway capacity to meet those same needs.

There are four basic types of intermodal containers that are used in railroad operations: container on flat car (COFC), trailer on flat car (TOFC), double stack (two containers on top of each other in specially designed "well" cars), and RoadRailers, which are semi-trailers that can also run on tracks after being placed on a rail bogey assembly. Containers can be loaded on freight cars using gantry cranes or rubber-tired equipment. TOFC can be loaded using the same methods (when the trailer is structurally adequate for those methods) or by roll-on roll-off using ramps. RoadRailer equipment is loaded where the top of rail is generally level with the surrounding pavement or ground.

BNSF reports that approximately 40% of its revenue comes from intermodal movements, while UP receives 18% of its revenues from its intermodal services.[12]

The amount of freight transported by intermodal movements has increased considerably since the 1990s. In response to the growth and interest in intermodal operations, the Class I railroads, BNSF, KCS, and UP, have invested in intermodal facilities (see Table 3-11).

Table 3-11: Class I Railroad Intermodal Facilities in Texas

Class I Railroad	Number of Intermodal Facilities	Location of Intermodal Facilities
BNSF	5(+1)	Ft. Worth, Amarillo, Houston (Pearland), El Paso, Dallas (planned), La Porte (Barbours Cut)
Kansas City Southern	3	Garland, Ft. Bend County (Houston), Laredo
Union Pacific	8	Mesquite, Wilmer (Dallas Intermodal Terminal), San Antonio (SAIT), El Paso, Laredo (Port Laredo), La Porte (Barbours Cut), Houston (Settegast), Houston (Englewood)

BNSF operates intermodal facilities near Ft. Worth, Amarillo, El Paso, and Houston (Pearland) and has equal access with UP to La Porte (Barbours Cut). At BNSF's Intermodal and Carload Transportation Center at Alliance Airport near Ft. Worth, 200,000 lifts occurred in 1994 (the year the facility opened) and increased to 540,000 in 2008. BNSF added more track and trucking lanes at Alliance to meet current and future demand and plans to expand lifting capacity to roughly 1 to 1.5 million lifts at Alliance. In Amarillo, BNSF's intermodal facility processes about 1,000 containers and trailers annually.[13] To add more intermodal capabilities in North Texas, BNSF purchased 198 acres with 9,000 feet of rail frontage at the Dallas Logistics Hub in South Dallas County in 2008.[14] Figure 3-19 illustrates BNSF's national network of intermodal facilities.

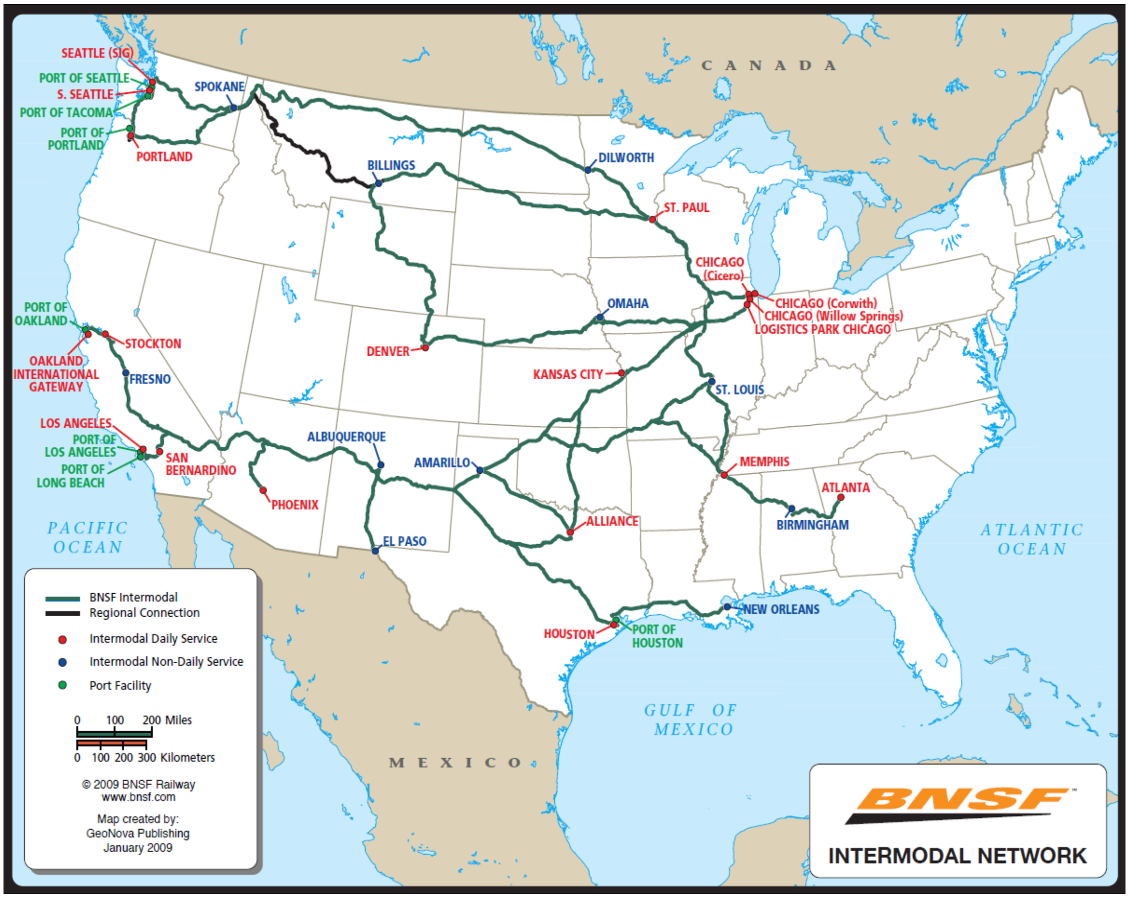

Figure 3-19: BNSF Intermodal Facility Network

KCS owns intermodal facilities in Garland, the Houston area, and Laredo. In early 2008, KCS announced plans for a new $300 million, 800-acre intermodal facility in Ft. Bend County between Rosenberg and Houston. Construction of the facilities is complete. KCS's line from the Dallas (Garland) facility leads to the Meridian Speedway, a rail corridor ending in Meridian, Mississippi.

UP operates the largest number of intermodal facilities in Texas with eight facilities. In 2005, UP opened a new $90 million Dallas Intermodal Terminal (DIT) adjacent to the Dallas Logistics Hub, located south of Dallas in Hutchins and Wilmer, to move the intermodal business from UP's smaller Miller facility, which is still used as a classification yard and ramp tracks. The Dallas Intermodal Terminal was UP's eighth busiest intermodal terminal by number of annual lifts in 2009[15] and is UP's sixth largest intermodal terminal based on year-to-date 2010 lifts. With a 500,000 annual lift capacity (expandable to 700,000 annual lifts), the terminal handled 233,000 lifts in 2009 and

294,000 lifts in 2008. Most containers are overseas shipments arriving by UP train from Los Angeles/Long Beach port. Figure 3-20 maps the Dallas area intermodal facilities.

In 2009, UP opened a new intermodal terminal in Southwest San Antonio near Macdona that replaced the two inner-city, intermodal facilities at the SoSan and East yard in San Antonio (Figure 3-21). The $100 million San Antonio Intermodal Terminal (SAIT) facility is built on 300 acres of a 1,200 acre tract and has an annual capacity of 190,000 lifts, expandable to 250,000 lifts annually.

UP's intermodal facilities in El Paso, San Antonio, Laredo, Dallas (Mesquite), and Houston (Settegast) offer TOFC/COFC terminal capabilities, while the Dallas Intermodal Terminal, La Porte (Barbours Cut), Houston (Englewood), and Donna offer COFC. Of all the intermodal facilities UP services, only Barbours Cut is not owned by UP; it is a private terminal that both UP and BNSF service.

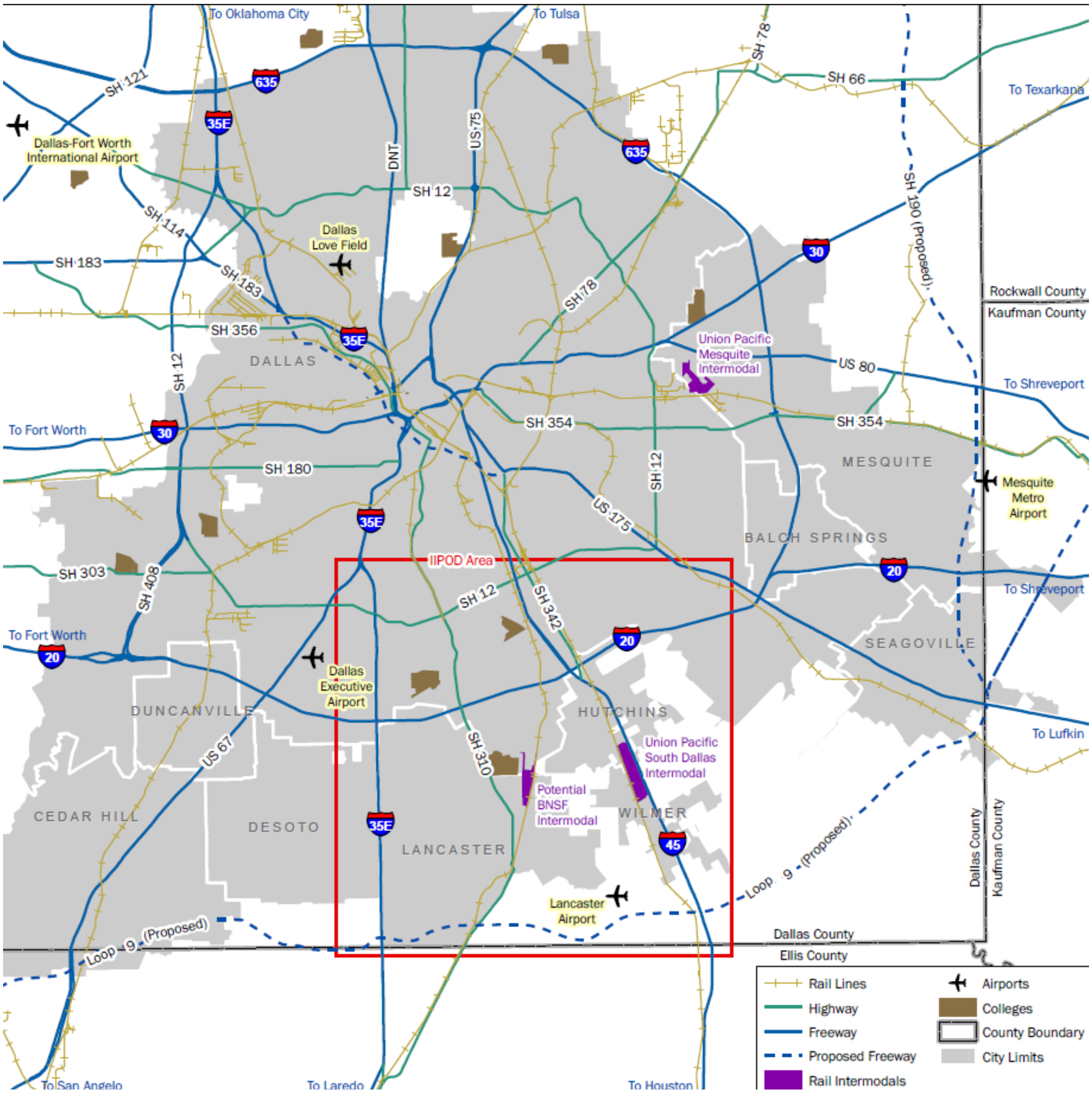

Figure 3-20: Map of Intermodal Facilities in Dallas Area

Source: International Inland Port of Dallas, http://www.iipod-texas.org/maps-main.html

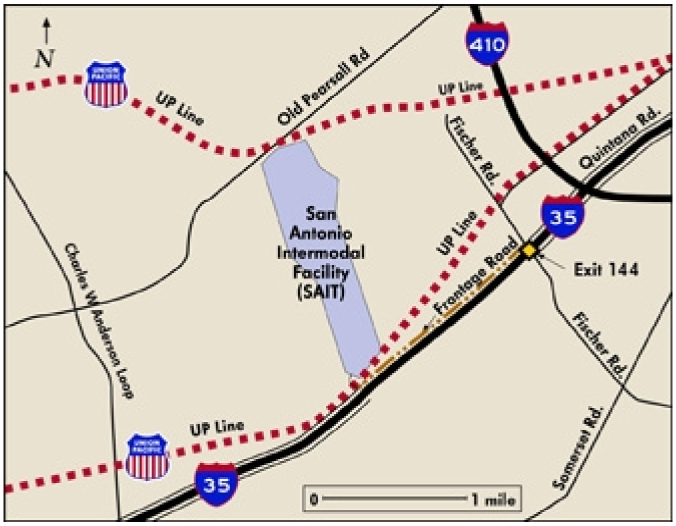

Figure 3-21: UP San Antonio Intermodal Terminal
Source: Union Pacific Railroad

Rail Systems in International Border Districts

Five of the seven locations for rail traffic to cross the U.S.–Mexico border are in Texas. The international rail gateways in Texas are in Brownsville, Laredo, Eagle Pass, Presidio, and El Paso (Table 3-12). Each of these five gateways can transport rail freight over the Rio Grande by way of single-track bridges with the exception of El Paso, which has two rail bridges. The other two international rail crossings traverse the border in Nogales (Arizona) and Calexico (California).

Table 3-12: Texas–Mexico Border Gateways and Railroad Connections

District	Border Crossing		Connecting Railroads	
	Texas	Mexico	Texas	Mexico
Pharr	Brownsville	Matamoros	UP*	KCSM
Laredo	Laredo	Nuevo Laredo	UP, KCS	KCSM
	Eagle Pass	Piedras Negras	UP, **BNSF	Ferromex
El Paso	Presidio	Ojinaga	TXPF	Ferromex
	El Paso	Ciudad Juarez	UP, BNSF	Ferromex

* BNSF does not have trackage rights to connect with KCSM, but does have trackage rights with UP to access the Port of Brownsville.
** Through trackage rights with UP.

Source: "The Impact of Mexican Rail Privatization on the Texas Transportation System," Texas Transportation Institute, 2001 (updated to reflect the KCS acquisition of TFM & TexMex)

The two Mexican railroads connecting to the Texas gateways are Ferromex (Ferrocarril Mexicano) and KCSM (Kansas City Southern de Mexico).

Table 3-12 provides a list of the connecting railroads at each border crossing and also includes the TxDOT district in which crossings are located. Figure 3-22 shows the information contained in Table 3-12 on a map. Figure 3-23 and Figure 3-24 map the Mexico rail routes, while Figure 3-25 graphs the train volume entering Texas from Mexico. The border crossing at Laredo has the most trains entering Texas from Mexico.

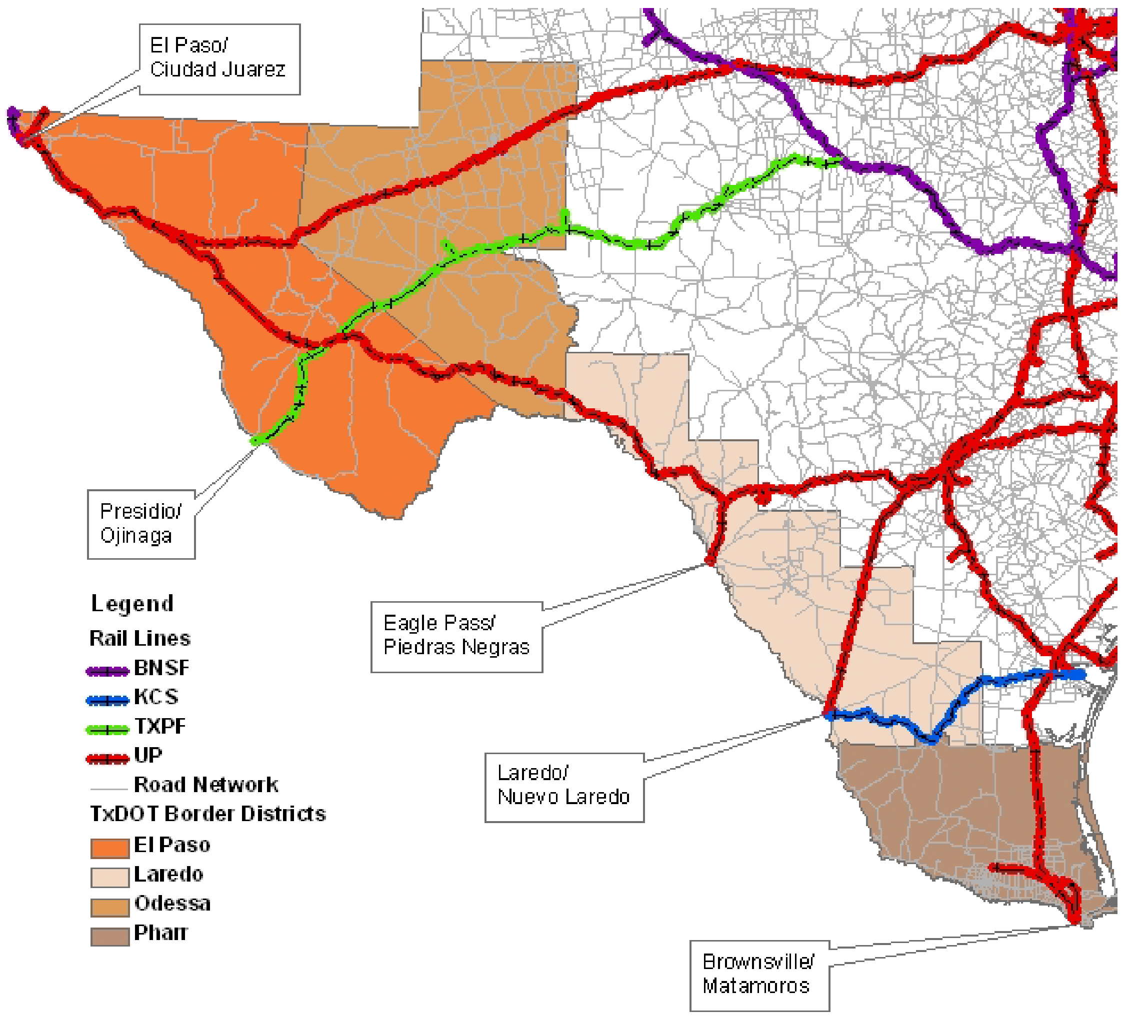

Figure 3-22: Texas–Mexico Rail Border Crossings and Border Districts

Figure 3-23: Ferromex Railroad Routes in Mexico
Source: Ferromex, http://www.ferromex.com.mx/serv/rutas.html

Figure 3-24: KCS of Mexico Routes in Mexico[16]

Source: KCS de Mexico website: http://www.kcsouthern.com/en-us/KCS/Documents/system_map[1].pdf

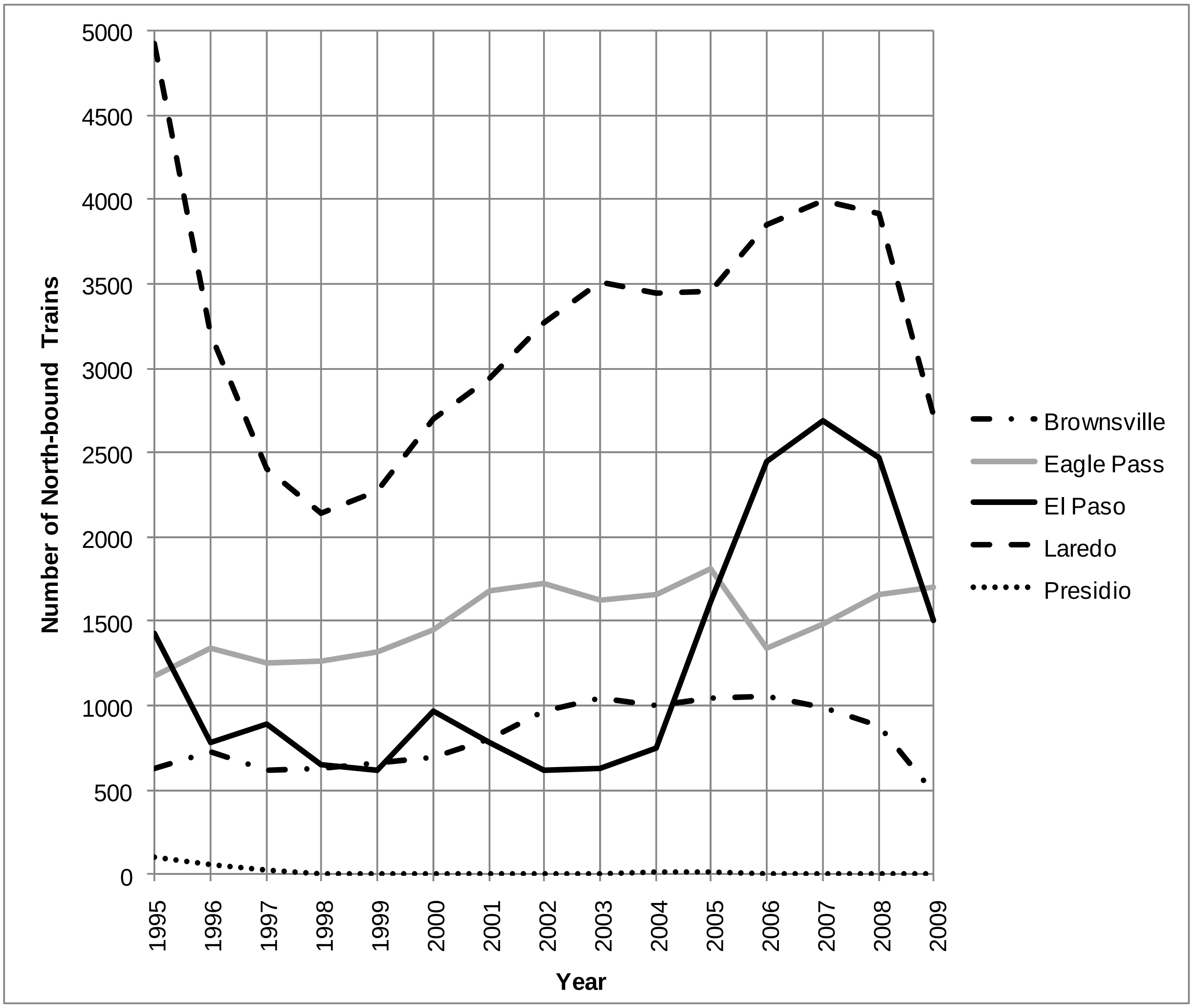

Figure 3-25: Total Number of Trains Entering Texas from Mexico
Source: Bureau of Transportation Statistics Border Crossing/Entry Data

International Rail Infrastructure

With the exception of Presidio, all of the Texas–Mexico crossings are served by at least one Class I railroad. UP has the largest presence at the border, with rail crossings in Brownsville, Laredo, Eagle Pass, and El Paso. The BNSF railroad connects at El Paso with its own bridge and at Eagle Pass with trackage rights over the UP lines from San Antonio to Del Rio, then Del Rio to Eagle Pass. BNSF does not have trackage rights to cross the border at Brownsville, but BNSF does have trackage rights on UP lines to the Port of Brownsville. The KCSM also serves Laredo via its own bridge and Brownsville via trackage rights over the UP.

All of the Texas–Mexico crossings are bridges over the Rio Grande River. Four new bridges are planned to either supplement or replace existing international rail bridges. A list of all existing and planned international rail bridges is provided in Table 3-13. The U.S. Department of State must approve a presidential permit for construction of a new international bridge in accordance with the International Bridge Act of 1972 and Executive Orders. Prior to requesting a presidential permit, Texas sponsors of the international bridge construction must secure approval from the TTC.[17] Three of the four international rail bridges have received presidential permits; the other is awaiting approval.

Table 3-13: Existing and Proposed International Rail Bridges in Texas

Location	Rail Bridge Name	Bridge Owner(s)	Tracks	Year Opened or Year of Presidential Permit
Brownsville	Brownsville & Matamoros International Bridge	Owned jointly by UP and Mexican federal government	Single track	1907
	PROPOSED Brownsville West Rail Bypass International Bridge	Not built. Applicant to build bridge: Cameron County; once constructed UP will control rail line and B&P Bridge Company will own U.S. part of bridge.	Single track	Presidential permit issued October 2004.
Laredo	Texas Mexican Railway International Bridge	Texas Mexican Railway (controlled by KCS, 2005) and KCSM	Single track	1920
	PROPOSED Union Pacific Railway International Bridge	Not built. Applicant to build bridge: UP		Presidential permit issued May 1995.
	PROPOSED East Loop Bypass	Not built. Applicant to build bridge: KCS		Applied December 31, 2008 for a presidential permit
	PROPOSED Laredo-Colombia International Railway Bridge (Colombia-Webb County Rail Bridge)	Not built. Applicant to build bridge: Webb County Rural Transportation District		Applied for presidential permit August 2007—applicant responding to comments on Presidential permit application.[18]
Eagle Pass	Union Pacific International Railroad Bridge	UP and Ferromex	Single track	1923 (previous structure was destroyed by a flood)
Presidio	Presidio-Ojinaga International Rail Bridge	TxDOT and the Mexican federal government (and operated under a lease by Ferromex subsidiary Texas Pacifico Transportation.	Single track	Closed due to fire.
El Paso	Union Pacific International Railroad Bridge	UP	Two single track bridges	

Brownsville Bridges

The current Brownsville & Matamoros International Bridge (B&M Bridge), located in downtown Brownsville, has been used to support rail, vehicular, and pedestrian traffic but now primarily supports rail traffic, as a four-lane toll bridge was built next to the B&M Bridge in 1997 for vehicular and pedestrian traffic. However, once the Brownsville West Rail Bypass International Bridge is completed, the B&M Bridge must be permanently closed to rail traffic pursuant to the condition imposed in the 2004 presidential permit approving the bridge. It may be converted to another toll bridge for motor vehicles. The permit also requires Cameron County to fund the removal of the Rail-Vehicle and Cargo Inspection Systems (VACIS) Gamma Ray machine at the existing B&M International Rail Bridge and its relocation and installation at the new international rail bridge crossing. Construction on the new bypass bridge, to be built about 15 miles west of the existing B&M Bridge over U.S. Highway 281 and the International and Boundary Water Commission levee, is expected to start in 2011 and be completed in 2012.

The relocation of the international rail bridge in Brownsville offers several benefits to the community, as stated in the Final Environmental Assessment and the Finding of No Significant Impact (FONSI). First, removal of rail from the existing B&M Bridge will remove freight trains from residential areas in Brownsville and Matamoros and reduce the community's potential exposure to hazardous materials from derailments and other accidents. Second, moving the rail system to the new bridge will eliminate at-grade road crossings. Third, rail travel time and traffic congestion will be reduced. A potential fourth benefit, although secondary, centers on the reduction of at-grade crossing traffic delays in Harlingen associated with switching operations. As the new rail alignment will connect to existing tracks near UP's Olmito Yard, upgrades being made to the yard in terms of extra switching tracks and inspection/repair facilities (construction started July, 2010 and is anticipated to be completed in early 2011) will eliminate nearly four hours daily of traffic delays resulting from railroad switching operations.

Laredo Bridges

UP, KCSM, and the KCS use the existing Texas Mexican Railway International Bridge, with UP carloadings accounting for approximately 65% of rail traffic. Since 1995, three other international rail crossings have been proposed. UP applied for a presidential permit to build a new bridge based on concerns that the existing bridge was approaching capacity limits. UP secured the permit in May 1995. However, with capital capacity improvements, the implementation of operating efficiencies such as faster clearing of U.S.-to-Mexico railcars prior to arrival at the border and automated systems with the U.S. Customs and Border Patrol (CBP), the economic downturn, and customer rerouting of trains to the Eagle Pass crossing, the current rail traffic utilizes only 50% of the capacity of the existing bridge. The U.S. Department of State initiated a public review of the presidential permit in 2009 to determine if the unused permit should be revoked, modified, or retained. UP sent a letter to the department in September 2009 indicating that it wants to maintain the permit, explaining that although there is not a current need for the bridge, anticipated increases in rail traffic may necessitate the need for a new bridge. Therefore, maintaining the permit would allow for immediate construction.[19] If the bridge is built, the existing Texas Mexican Railway International Bridge would be used for passenger trains or converted to a northbound express bridge for buses and trailers.[20] In its letter, UP expressed opposition to the two other proposed Laredo area rail bridges.

On December 31, 2008, KCS applied for a presidential permit for a new international rail bridge near Laredo called the East Loop Bypass.[21] About 50 miles of track would be constructed to connect existing rail lines with the new bridge. The bridge would be located about 12 miles southeast of the existing bridge. KCS wants the bridge to move freight rail traffic away from the Laredo city center, increase capacity, improve corridor safety, and enhance efficiency of border crossings. If the East Loop Bypass is built and becomes operational, a few alternative uses for the existing Texas Mexican Railway International Bridge that have been suggested, but not agreed to, could be for passenger commuter trains or convert the bridge to a northbound express bridge for buses and trailers. No decision or commitment regarding those bridge use considerations has been made.[22] UP opposes the project due to the significant prior infrastructure investments by UP that would be rendered obsolete with the bypass route. UP argues that the project would also add 30 miles to all movements for interchange with KCSM, increasing both operational cost and emissions within the Laredo area.[23]

On August 15, 2007, the Webb County Rural Transportation District applied for a presidential permit for a new bridge referred to as the Colombia Rail Bridge that would be located 31 river miles northwest of the existing international rail bridge. For the Mexican state of Nuevo Leon, the bridge would be the first and only international rail bridge link. Both the UP and KCS oppose this project because the bridge would present operational problems for the railroads.[24]

Eagle Pass Bridge

There are no current public plans to supplement or replace the Eagle Pass Bridge.

Presidio Bridge

The rail bridge in Presidio to Ojinaga is part of the SORR, which was purchased by the State of Texas to prevent the line's abandonment. As one of only seven rail gateways between the U.S. and Mexico, the SORR has the potential to relieve some of the congestion at other border crossings through diversion of rail traffic to the gateway at Presidio/Ojinaga.

The crossing at Presidio was functional until it was partially destroyed by fire in February 2008 and then again in 2009. Prior to the damage, the rail crossing had seen limited use since July 1998, when regular operations over the western end of the line were allowed to be discontinued by the STB. Ninety-eight carloads were interchanged at Presidio in 2005, while only 51 carloads were interchanged through August 2006. No cars have been interchanged at the border since this time due to lack of traffic, as well as since the 2008 fire. TXPF still offers service to the border but has been unable to establish a sound traffic base. Agreements with TxDOT stipulate that the bridge must be replaced by 2014.

El Paso Bridges

Two single-track rail bridges cross the border in El Paso. BNSF owns and operates the U.S. side of the east rail bridge, located between the Paso Del Norte International Bridge and the Good Neighbor International Bridge, also known as the "Black Bridge." UP owns and operates the U.S. side of the west bridge, located on the west side of the Paso Del Norte Bridge (see Figure 3-26).

Both the UP and BNSF railroads interchange with Ferromex in El Paso, each via their own bridge and independent detection equipment. Each bridge has a center gate system at the international border to prevent trespassing into the U.S. Both structures are considered 286K-compliant, meaning they are structurally sufficient to support the current industry standard maximum weight of 286,000-pound design loads.

Currently, there are no plans for additional international crossings in El Paso; however, the potential for replacement structures exists should the international crossing be relocated to Santa Teresa, NM.

Figure 3-26: El Paso International Rail Bridges
Source: Google Images

Border Rail Operational Issues

The following four issues adversely impact the operation of rail at and near border crossings:

- Limited and suboptimal rail infrastructure;
- Limited hours of operation;
- Incompatible land use and at-grade crossings; and
- Lengthy border inspections.

Rail infrastructure with poor geometry and constrained capacity for accessing and crossing the Texas–Mexico border contributes to train delays. For example, the rail bridge at Laredo is a single-track structure used by UP, KCS, and KCSM trains for rail movement to and from Mexico. The single-track bridge at Brownsville carries rail traffic for both directions and is also a vehicular traffic bridge. Two bridges are located at El Paso (one owned by UP and the other by BNSF on the U.S. side), with each bridge handling rail movement to and from Mexico.

Rail border crossing operating hours limit train operations. Hours are limited by the CBP and by the border crossing communities. The hours that trains can cross at El Paso are restricted to 10:00 p.m. to 6:00 a.m. each day due to vehicular and pedestrian crossing issues in Juarez, the Mexican city on the opposite side of the border. Ciudad Juarez, the State of Chihuahua, and the Mexican rail company Ferromex are working on plans and funding commitments to grade separate five roadways in Juarez so the restriction on operating hours can be removed. Additionally, rail carriers would like to have CBP staff the Laredo and Eagle Pass gateways 24 hours a day, 7 days a week. UP would like the El Paso gateway to operate a couple of hours before the Juarez operating window to avoid train delays and seeks better coordination of the Brownsville gateway CBP hours.[25]

The at-grade crossings and the high land use density of commercial and residential activity near the rail lines adversely impacts rail operations. Likewise, the numerous at-grade crossings adversely impact the community. For example, UP reported in 2006 that up to 26 at-grade street crossings are blocked for tests and inspections in Laredo.[26] The implementation of NAFTA and increases in trade between the two countries has only served to increase these delays. In Laredo, only four trains passed through per day in 1989, whereas in 2006, usually 24 trains per day traveled through the community, with 27 to 30 trains traveling during peak times.[27]

Inspections at the border are also a major source of train delay. Rail carriers have requested improvements and more coordination by the federal governments of Mexico and the U.S. According to UP, inspections in Mexico are repeated in Texas at the Port of Laredo, adding five to seven hours of delay to each train, with more than 300 trains inspected annually.[28] UP requested a waiver from air brake and inspections on the U.S. side, because inbound trains were already inspected in accordance with federal regulations on the Mexican side; however, they withdrew their request in January 2007.[29] A proposal to conduct FRA-required train inspections on the Mexican side of the border would enable Texas-bound trains to cross the border and move beyond the immediate congested border region before any inspections were needed. Such a program could provide substantial benefits to rail congestion and increase operating efficiencies on portions of the rail network. Significant opposition to this proposal exists from various interest groups due to a perceived threat to public safety and homeland security. Transportation unions contend that the government of Mexico has not adopted adequate inspection and testing regulations commensurate with those in the U.S., and that there is no rail safety enforcement agreement between the U.S. and Mexico. Unions believe that these issues could lead to unsafe equipment being transported for a thousand miles or more without adequate safety inspections. Others point to the

Department of Homeland Security's warnings about the vulnerability of the rail network to terrorist attacks. These advocates believe it is essential that all rail equipment entering the country be inspected on the U.S. side of the border before being allowed to proceed.

International Rail Freight Traffic Levels

NAFTA went into effect on January 1, 1994, continuing already increasing trade levels between the U.S. and Mexico. Between 1994 and 2000, total U.S. surface trade with Mexico increased from $90.1 billion to $210.6 billion—a 134% increase. The increase in overall surface trade was led by imports from Mexico, which grew by 160%. Imports and exports handled by all land transportation modes both increased, with the trade value of imports exceeding export values (Figure 3-27).

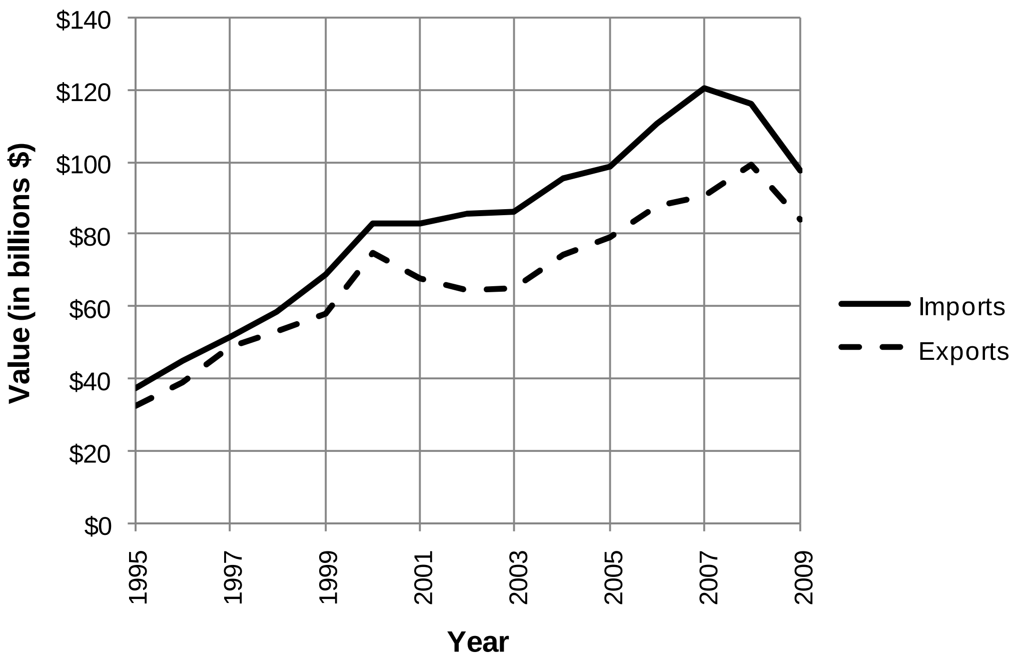

Figure 3-27: Annual Import and Export Trade Values by All Land Transportation Modes

Source: Bureau of Transportation Statistics, Transborder Freight Data

With its extensive transportation network and connections with Mexico, Texas has become the hub of international trade between the U.S. and Mexico. Although trucks are the dominant mode of transportation for U.S. trade with Mexico, the amount of rail freight and its importance to the overall transportation system has also grown since 1994. More than 80% of the total value of imports and exports were transported across the border by truck and less than 20% by rail since the start of data reporting in 1995 (Figure 3-28).

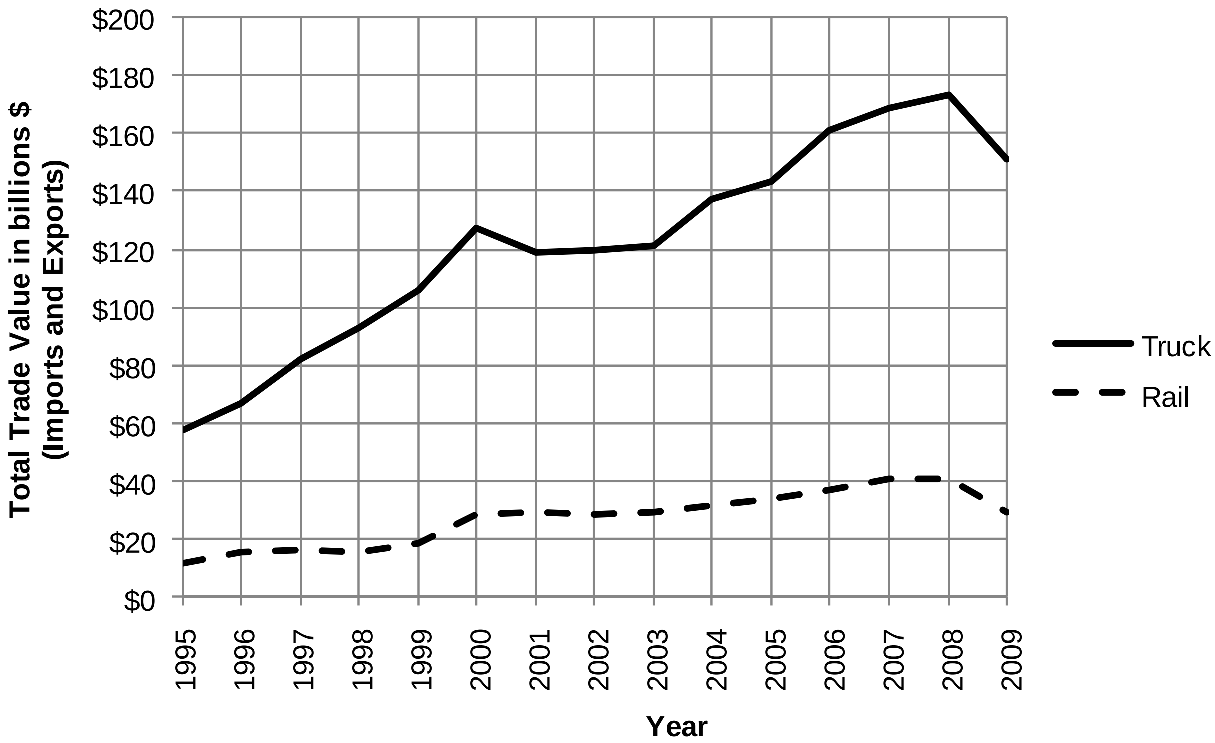

Figure 3-28: Total U.S.–Mexico Trade Value by Rail and Truck at Texas Border Crossings

Source: Bureau of Transportation Statistics, Transborder Freight Data

Of the five Texas border rail crossings, Laredo has consistently had the highest total of trade value transported by rail (Figure 3-29). In 2009, Laredo captured 51.4% of the total U.S.–Mexico trade value of imports and exports transported by rail across the Texas border. In the same year, Eagle Pass ranked second, with 29.8% of the total value (after a drop between 1997 and 2003), followed by El Paso (14.8%), and Brownsville (3.9%). Soon after NAFTA went into effect, only Laredo recorded a noticeable increase in the total value of imports and exports crossing the border. In El Paso and Brownsville, total import and export trade values eventually started to increase after 1999.

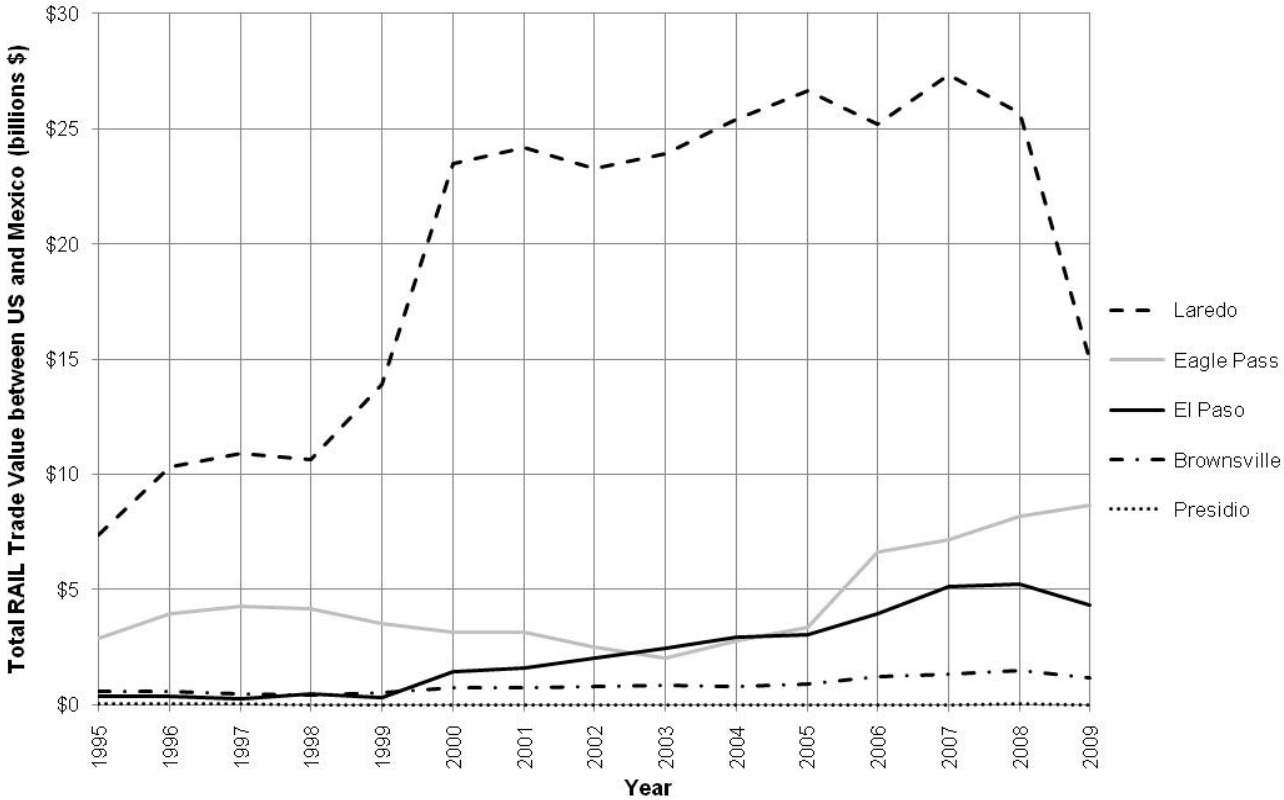

Figure 3-29: Total U.S.–Mexico Trade Value by Texas Rail Border Crossing
Source: Bureau of Transportation Statistics, Transborder Freight Data

The total number of rail cars crossing at the U.S.–Mexico border generally increased during the period between 1991 and 2006, but began a decline in 2007. Figure 3-30 shows that the sum of the rail car volumes at all of the Texas border railroad crossings in El Paso, Eagle Pass, Laredo and Brownsville more than doubled from 1994 to 2000 and continued to trend upward until 2006. The graph depicts major increases in the number of rail cars transported after the inception of NAFTA and the privatization of the Mexican rail system, which began in 1997 and was fully implemented in 1998.

The growth in U.S.–Mexico trade and the emerging concentration of North American manufacturing in Mexico created a more intensive use of Texas rail prior to the economic downturn, both at the border crossings as well as throughout the state. In addition, the amount of freight moving through Mexico's five largest ports of Tampico, Veracruz (Gulf Coast), Guaymas, Manzanillo, and Mazatlan (Pacific Coast) increased with much of the freight also destined for the U.S. KCSM has been promoting the Gulf Coast port of Lazaro Cardenas as an alternative to other, more congested ports and offers seven-day rail service there.

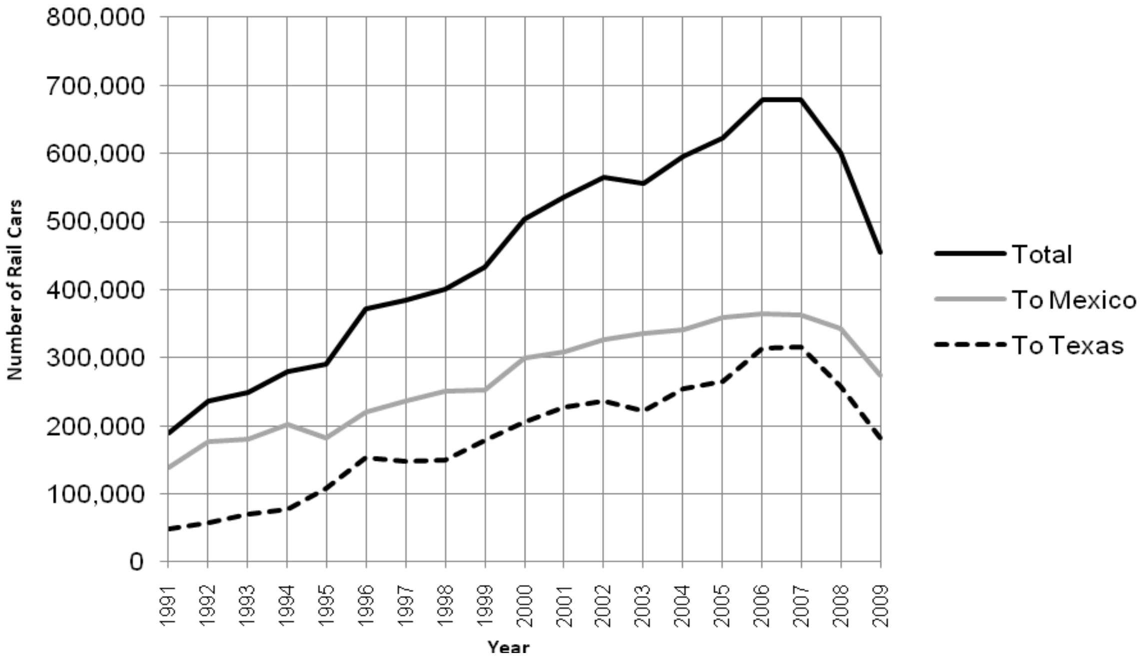

Figure 3-30: Total Loaded and Empty Rail Cars through Texas Border Crossings, 1991–2009
Source: Texas A&M International University, Laredo, Texas

Figure 3-31 shows the total loaded and empty rail cars at each of the four major rail border crossings. Rail cars headed to Mexico exceed the number of rail cars crossing into Texas as a total of all border crossings and at each border crossing. Rail traffic at Laredo accounts for the majority of the rail car volumes. El Paso is indicated with an asterisk (*) to indicate the data is completely missing in 2000 and incomplete after 1999 because of data acquisition issues. The El Paso loaded rail car count after 2000 includes only the northbound counts available from the U.S. Customs Service and does not include any southbound counts. Of the border crossings, Laredo has the highest number of northbound and southbound loaded rail cars. In the period between 1993 and 2000 the volume of loaded rail cars handled in Laredo increased by 130% and continued to increase until 2005.

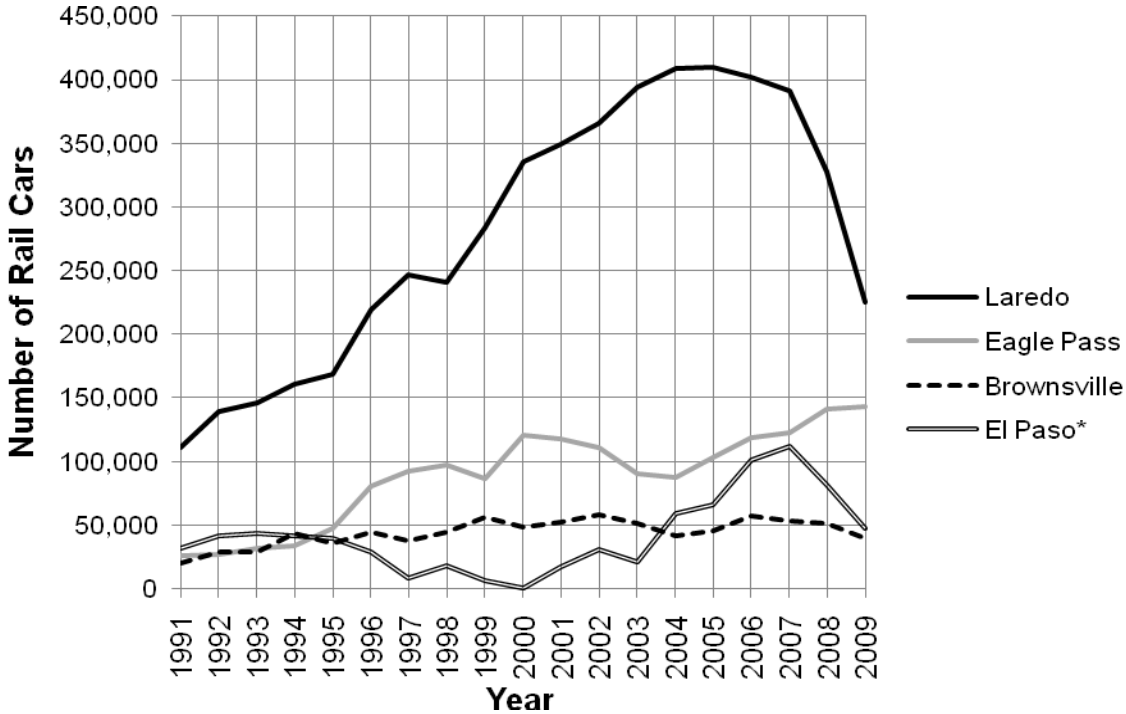

Figure 3-31: Total Loaded and Empty Rail Cars at Specific Texas Border Crossings, 1991–2009

Source: Texas A&M International University, Laredo, Texas

Rail Systems in Texas Ports

Some of the nation's busiest rail hubs reside in the ports of the Texas Gulf Coast due to a combination of marine shipping, manufacturing, refineries, and a large population base.

Houston represents one of the busiest ports in the country, while Corpus Christi, Texas City, and Beaumont are also nationally significant. The Texas Gulf Coast includes industry concentrations in machinery, chemicals, and petroleum refining, and is one of the country's largest population centers. Texas has more than 970 wharves, piers, and docks for handling freight located on 271 miles of deep-draft channels and 750 miles of shallow-draft channels.

Ship traffic is a stimulus for rail growth and most Texas ports experienced significant increases in the amount of tonnage handled between 1990 and 2008 (see Table 3-14).

Table 3-14: Tonnage Handled by Texas Deep-Draft Ports, 1990–2008

Port	1990	2008	% Change 1990–2008
Beaumont	26,729,000	69,483,539	160
Brownsville	1,372,000	5,669,445	313
Corpus Christi	60,165,000	76,786,173	28
Freeport	14,526,000	29,842,295	105
Galveston	9,620,000	9,781,368	2
Houston	126,178,000	212,207,921	68
Port Arthur	30,681,000	31,752,742	3
Port Lavaca Point Comfort	5,097,000	10,317,614	102
Port of Orange	709,000	676,735	-5
Texas City	48,052,000	52,606,030	9

Source: U.S. Corps of Engineers Waterborne Commerce Statistics Center

Forecasted Gulf Coast Ports Rail Freight

Table 3-15 shows the projected increase in tons for Texas ports. Table 3-16 shows increases in intermodal containers through deep water ports at various potential levels of growth.

In response to the proposal to expand the Panama Canal that went before Panamanian voters in 2006, TxDOT requested a report on the possible impacts of the expansion on Texas ports, rail lines, and highway corridors. The final report released in October 2006 found the expansion would have "significant impacts on Texas ports, their surrounding communities and the highways and rail lines that serve them," with the Port of Houston the most affected because it is the primary container port along the Texas coast and has developed a partnership with the Panama Canal Authority for increasing trade. Currently, only Port Freeport is able to handle the larger, post-Panamax ships, expected to travel through the expanded Panama Canal. A post-Panamax containership can be up to 366 m (1,200 ft) long and 49 m (160 ft) wide and have a maximum 15-m (50 ft) draft with capacity of up to 12,000 TEU (twenty-foot equivalent units). Before expansion, the Panama Canal could accommodate 4,500 TEU containerships.[30]

The Panama Canal expansion is expected to be completed and operational in 2014 and the forecasted growth in tonnage is expected to affect Texas. One of the key planning and policy strategies included in the report stated the potential impacts of the Panama Canal expansion should be fully integrated into the policy, planning and programming activities at all levels. In response to the Panama Canal expansion, the UP expects a need to improve track infrastructure and increased capacity to handle bulk trains at the ports of Beaumont and Galveston and in the ports of Freeport and Corpus Christi to handle intermodal container trains.

Table 3-15: General Cargo Forecasts for Largest Texas Ports by Tonnage, 2008–2035

	2008 (tons)	2035 (tons)			Percent Change		
Port		**Low-Growth**	**High-Growth**	**Average**	**Low-Growth**	**High-Growth**	**Average**
Beaumont	81,383,531	128,292,792	131,742,692	130,017,742	57.6%	61.9%	59.8%
Brownsville	5,306,311	10,066,802	10,894,183	10,480,493	89.7%	105.3%	97.5%
Corpus Christi	85,859,440	128,342,706	185,781,802	157,062,254	49.5%	116.4%	82.9%
Freeport	36,000,000	53,812,806	58,276,372	56,044,589	49.5%	61.9%	55.7%
Galveston	5,911,882	8,837,082	11,215,654	10,026,368	49.5%	89.7%	69.6%
Houston	225,000,000	354,689,431	364,227,325	359,458,378	57.6%	61.9%	59.8%
Orange	681,982	1,019,427	1,260,129	1,139,778	49.5%	84.8%	67.1%
Port Arthur	29,261,601	43,740,246	47,368,332	45,554,289	49.5%	61.9%	55.7%
Port Lavaca-Point Comfort	4,600,000	6,876,081	7,446,425	7,161,253	49.5%	61.9%	55.7%
Texas City	53,953,540	80,649,761	87,339,349	83,994,555	49.5%	61.9%	55.7%
Victoria	3,035,978	4,538,180	4,902,769	4,720,475	49.5%	61.5%	55.5%
Total	**530,994,265**	**820,865,315**	**910,455,032**	**865,660,174**	**54.6%**	**71.5%**	**63.0%**

* The 2008 data shown in Table 3-15 differs from the 2008 data shown in Table 3-16, because the Cambridge Systematics (CS) report used different baseline 2008 data for its forecasts. For the Ports of Beaumont, Orange and Port Arthur, CS used 2007 American Association of Port Authorities (AAPA) tonnage data only. For the rest of the ports, CS used data reported by the ports for CY 2008, which is different from the 2008 data reported by the AAPA and the Corps.

Source: 2009 Texas Port and Waterway Forecast Update, Cambridge Systematics, Inc, November 2009

Table 3-16: Forecast Container Increases at Texas Ports (in TEUs)

	2008	2035			Percent		
Port		**Low-Growth**	**High-Growth**	**Average**	**Low-Growth**	**High-Growth**	**Average**
Beaumont	3,280	4,407	4,407	4,407	34.36%	34.36%	34.36%
Brownsville	0	2,658	2,658	2,658	N/A	N/A	N/A
Corpus Christi	0	856,538	1,064,096	960,317	N/A	N/A	N/A
Freeport	71,900	800,000	800,000	800,000	1012.66%	1012.66%	1012.66%
Galveston	8,666	20,822	45,104	32,963	140.28%	420.47%	280.37%
Houston	1,794,309	4,311,277	9,338,893	6,825,085	140.28%	420.47%	280.37%
Orange	0	4,681	4,681	4,681	N/A	N/A	N/A
Port Arthur	170	408	885	647	140.28%	420.47%	280.37%
Total	**1,878,325**	**6,000,792**	**11,260,724**	**8,630,758**	**219.48%**	**499.51%**	**359.49%**

Source: 2009 Texas Port and Waterway Forecast Update, Cambridge Systematics, Inc, November 2009

Texas seaports contribute enormously to the state's economic vitality and the flow of goods. Maintaining and improving rail connectivity with the ports will enhance the efficiency of statewide goods movements, and requires ongoing evaluation, investment, and improvements. Figure 3-32 shows the Texas Gulf Coast with several major seaports indicated, and Table 3-17 summarizes these ports with their connecting railroad information. The following section discusses rail connectivity and operations at the top 11 seaports in Texas in terms of tonnage: Beaumont, Brownsville, Corpus Christi, Freeport, Galveston, Houston, Orange, Port Arthur, Port Lavaca-Point Comfort, Texas City, and Victoria.

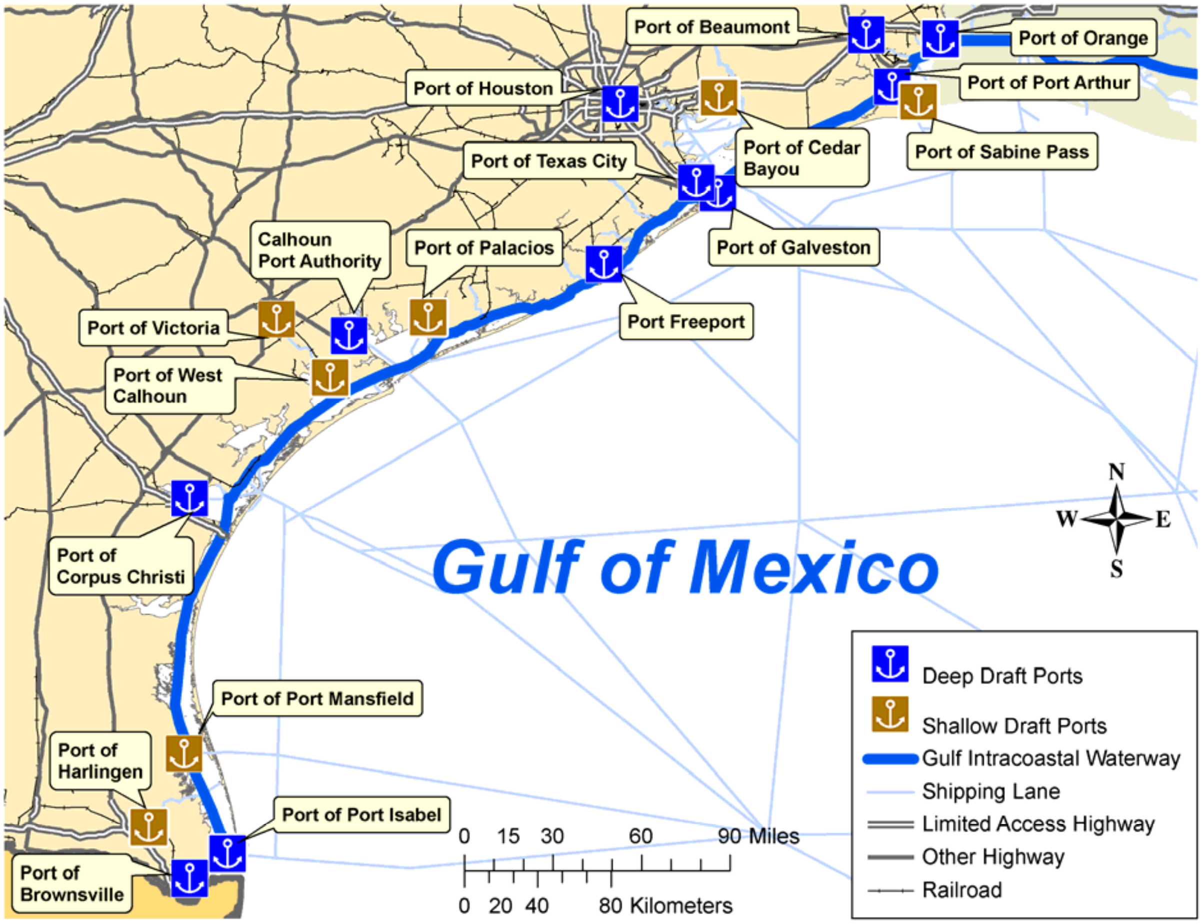

Figure 3-32: Texas Ports and Rail
Source: Cambridge Systematics, 2010

Table 3-17: Summary of Ports and Connecting Railroads

Port	Classification	Port Owner/ Facilities	Connecting Railroads
Beaumont	40 ft	Port of Beaumont Navigation District	KCS, UP, BNSF
Brownsville	44 ft	Brownsville Navigation District	Brownsville & Rio Grande International switching with UP, BNSF, KCS
Corpus Christi	45 ft, authorized to 52 ft	Port of Corpus Christi Authority	KCS, UP, BNSF
Freeport	45 ft	Brazos River Harbor Navigation District	UP
Galveston	40 ft, current deepening to 45 ft	Port of Galveston	UP, BNSF
Houston	45 ft	Port of Houston Authority	UP, BNSF, KCS (via trackage rights)
Orange	30 ft	Orange County Navigation Port District	UP, BNSF
Port Arthur	40 ft	Port of Port Arthur Navigation District	KCS, UP, BNSF (via trackage rights and switching)
Port Lavaca- Point Comfort	36 ft	Calhoun County Navigation District	Port Lavaca via UP, Point Comfort via Point Comfort & Northern
Texas City	40 ft	UP, BNSF	UP, BNSF
Victoria	12 ft	Victoria Navigation District	UP

Port of Beaumont

The Port of Beaumont Navigation District was established in 1949 and currently encompasses approximately 150 square miles of land, including the City of Beaumont, and is accessible via the federally-maintained Sabine-Neches Ship Channel. The facilities at the port include heavy lift cranes, forklifts, and other heavy equipment for handling cargo. Moving cargo in and out of the port is assisted by an extensive railway system that can accommodate 600 rail cars, and handles 80 cars simultaneously at shipside. The Port of Beaumont performs all terminal switching of rail cars through the use of a subcontractor. Rail freight service connections are provided by UP, BNSF, Tex Mex, and KCS. The Port of Beaumont is a major shipper of military equipment (as shown in Figure 3-33) and is working on an expansion project that will increase rail storage capacity, reduce delays at the port, and improve railroad mainline operations near the port.

Figure 3-33: Military Cargo at the Port of Beaumont

The existing rail infrastructure near the Port of Beaumont is shown in Figure 3-34. The UP tracks are used to move east-west rail freight to the west of Beaumont. UP track and KCS track are used to move east-west rail freight to the east of Beaumont. The KCS track extends north from Port Arthur into Beaumont and east to Louisiana. All east-west rail traffic consolidates into a single, 1.5-mile, KCS-owned track near the Neches River.

Rail traffic traverses the river using a KCS-owned, single-track lift bridge with a maximum train operating speed of 20 mph.

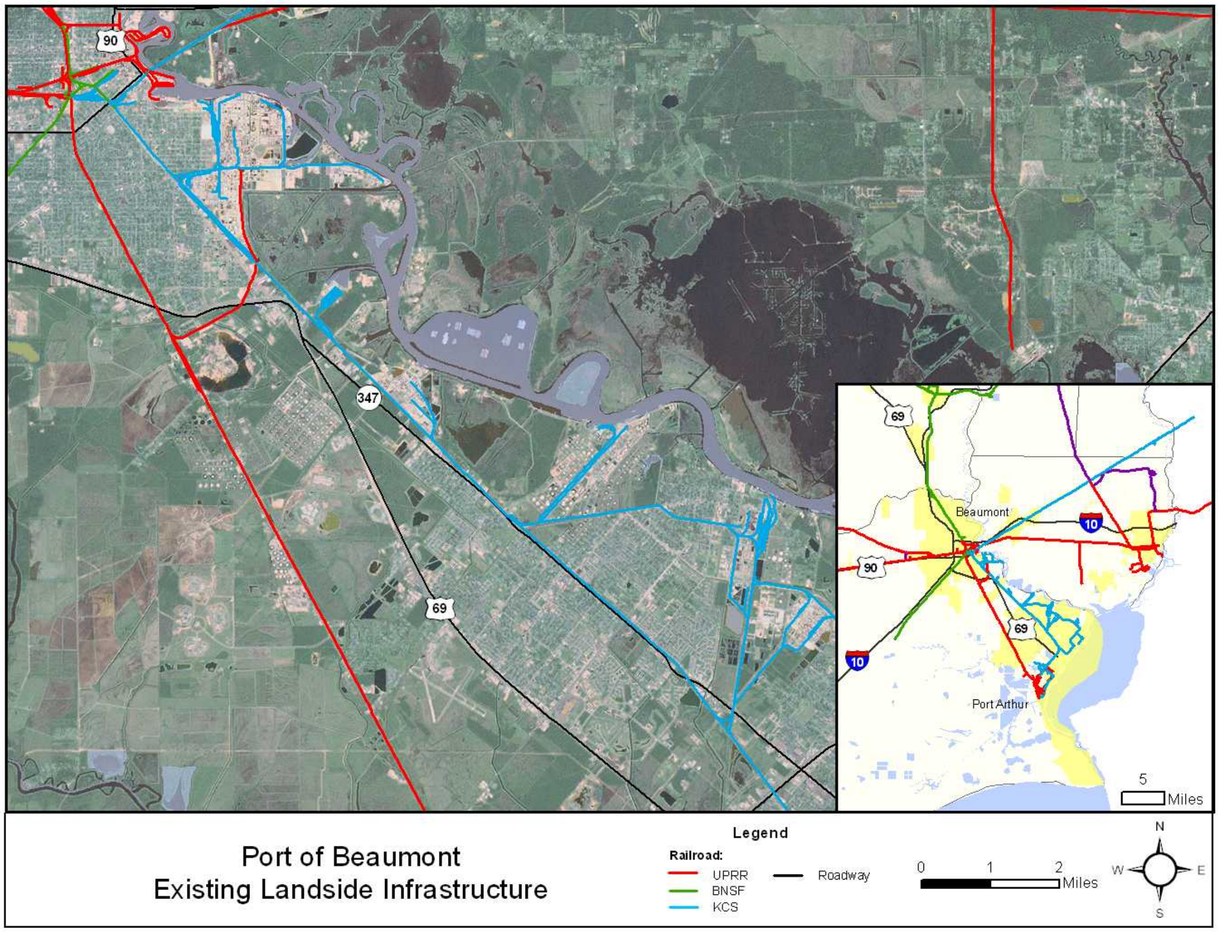

Figure 3-34: Port of Beaumont Rail Infrastructure
Source: Developed by HNTB Corporation

This section of the KCS line is part of Amtrak's "Sunset Limited" route and therefore sees passenger traffic in both directions. BNSF and UP both have trackage rights over the line, which they use to access the Port of Beaumont, as well as for through trains. Most freight rail service to and from the port is via BNSF or UP. Combined, BNSF and UP have approximately 50 freight trains passing over this line daily. KCS has four trains that cross the line near the port.

The interchange yard for the port is located on the north side of the main line, while the port is located on the south side. Cars are delivered to the interchange yard by trains moving over the main line. To pick up cars that have been delivered to the interchange yard, a locomotive must cross the mainline from south to north, at grade. It is difficult for a train going from the port to the yard to get across the busy main line due to the heavy volume of traffic. The interchange yard tracks are short and only hold 100 cars. When trains are in the interchange yard, they block the main line, causing mainline traffic to stop while switching movements are being performed. This also contributes to delays and capacity constraints on the system.

In 2003, the Port of Beaumont contacted TxDOT to discuss a proposed plan that would improve the rail infrastructure at the port and reduce traffic delays in the city of Beaumont.

The port proposed a project to address the capacity constraints on the rail system. Access to the port could be improved by constructing a new turnout from the mainline, south, directly into the port and adding capacity in the port by extending current tracks and constructing new tracks. This would enable the railroads to perform interchange within the port itself, making the north yard unnecessary. TxDOT and the port funded a study to determine the feasibility of the project. The report determined the project to be both feasible and beneficial. TxDOT facilitated agreements between the various railroads and the port to implement the project. The Beaumont MPO provided $8.5 million in federal Congestion Mitigation and Air Quality (commonly referred to as CMAQ) funds for the project. It is currently under construction.

In addition, KCS assisted in the development of the 400-acre Triangle Marine Industrial Park in Beaumont. The industrial park accesses KCS's 23-acre rail yard and includes a switching yard with a 150-car capacity, which could potentially be expanded to 300 cars if necessary. The industrial park includes 1,700 feet of frontage on the Neches River with 3 deep water docks and a 90-acre turning basin.

Port of Brownsville

The Port of Brownsville, established in 1936, is located on the southernmost point of Texas along the Gulf Coast, three miles north of the Rio Grande and the Mexican border. The port's location is in both a major metropolitan district and an International Border District, and is classified as a deep-draft seaport.

Railroad transportation plays an important role for the port's daily operations, with rail service to warehouses, surrounding industries and every dock in the area. The port has storage capacity for approximately 500 rail cars. Four cargo docks have ship-side tracks, and three of them also have double depressed tracks at the rear of the transit sheds.

Rail freight traffic at the port is handled by the Brownsville & Rio Grande International Railroad (BRG) shown in Figure 3-35, which is a short line railroad owned by the

Brownsville Navigation District (BND). BRG provides common carrier service to all facilities located within its jurisdictional boundaries and connections to the UP and KCSM across the border. Trains at the port interchange with the UP Brownsville Subdivision at Olmito Junction on the North Rail Loop. The Brownsville Subdivision runs from the Texas-Mexico border, parallel to the Texas coast, to a connection with the UP Angleton Subdivision north of Corpus Christi at Bloomington. The new North Rail Loop provides a single-track rail bypass to the north of the City of Brownsville, thus avoiding conflicts with roadway vehicles within the City of Brownsville and increasing train operating speeds from the port. BNSF does not have clearance to interchange across the border with Mexico, but it does have trackage rights on the UP to interchange with the BRG at the Port of Brownsville.

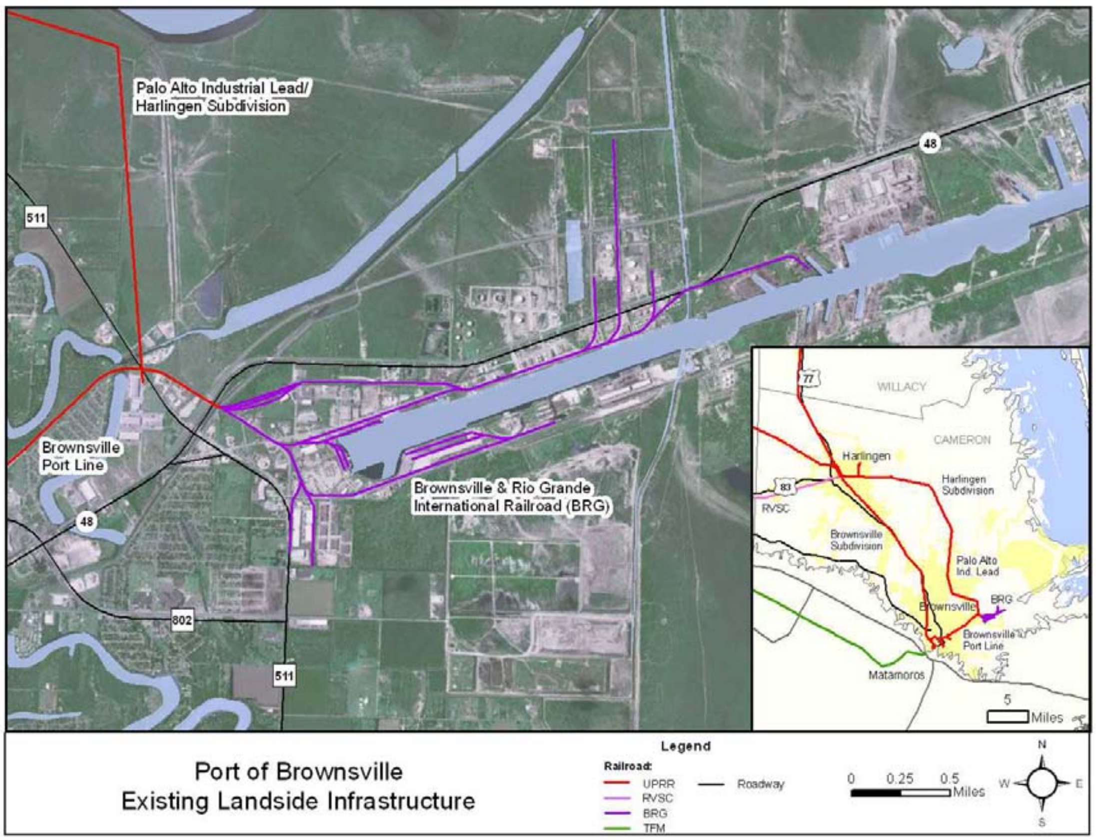

Figure 3-35: Port of Brownsville Rail Infrastructure
Source: Developed by HNTB Corporation

The BRG has completed the construction of an additional 190-car track on the south side of the channel to service new container business, and is negotiating with UP for the purchase of the Palo Alto Yard. Planned transportation improvements include a new bridge to be constructed over a 1,000-foot wide strip of land owned by the port and a major upgrade of the railroad network. Brownsville transportation entities are working on a project called the West Rail Relocation Plan that will allow the UP railway system to link directly to the port, eliminating approximately 60 to 70 unnecessary highway-railroad crossings.

Port Corpus Christi

Port Corpus Christi (PCC) is located along the southeastern coast of Texas on the Gulf of Mexico approximately 150 miles north of the Mexican border. The port opened in 1926. It is one of the deepest seaports along the Gulf of Mexico, with a depth of 45 feet along its navigational channel and is second in the amount of tonnage moved at Texas seaports. Port services include an extensive line of heavy equipment such as container lift machines, heavy lift docks, cranes, forklifts, and refrigerated facilities, with a container handling capacity of up to 100,000 TEUs.

Twenty-six miles of port-owned rail lines are operated by the Corpus Christi Terminal Railroad, which serves the public docks within the Inner Harbor. Mainline rail service connections are provided by three carriers: BNSF, KCS, and UP. The PCC has specially-designed rail cars that can handle very heavy petroleum refining equipment. Rail traffic through the port amounts to approximately 1.5 million tons per year. Most rail shipments through the port are heavy in nature and move in trainload or volume quantities. These include minerals, metallic ores, unit trains of export grain, and over-sized loads of industrial equipment moving over the general cargo docks. In mid-2000, an on-dock refrigerated distribution center with rail access opened at the port.

Rail infrastructure in and around the PCC is shown in Figure 3-36. Rail freight from the PCC travels on the UP Corpus Christi Subdivision, which currently has no sidings between the port and the Brownsville Subdivision. This portion of the Corpus Christi Subdivision has a train speed of 40 mph, except for speeds of 10 mph within the first three miles of the port. The Corpus Christi Subdivision runs north to the City of San Antonio; it then connects to the Brownsville Subdivision that passes through Corpus Christi along its route that parallels the Texas coast. Rail access on the east side of Corpus Christi Bay and the proposed La Quinta container terminal near Ingleside is provided by the UP Kosmos Subdivision, which has one 2,300-ft siding. The predominant train speed on the Kosmos Subdivision is 20 mph except for a two-mile segment at 10 mph. The KCS Laredo Subdivision, seen in the bottom left corner of Figure 3-36, connects Laredo to the Port of Corpus Christi, and has one 5,963-ft siding at Robstown.

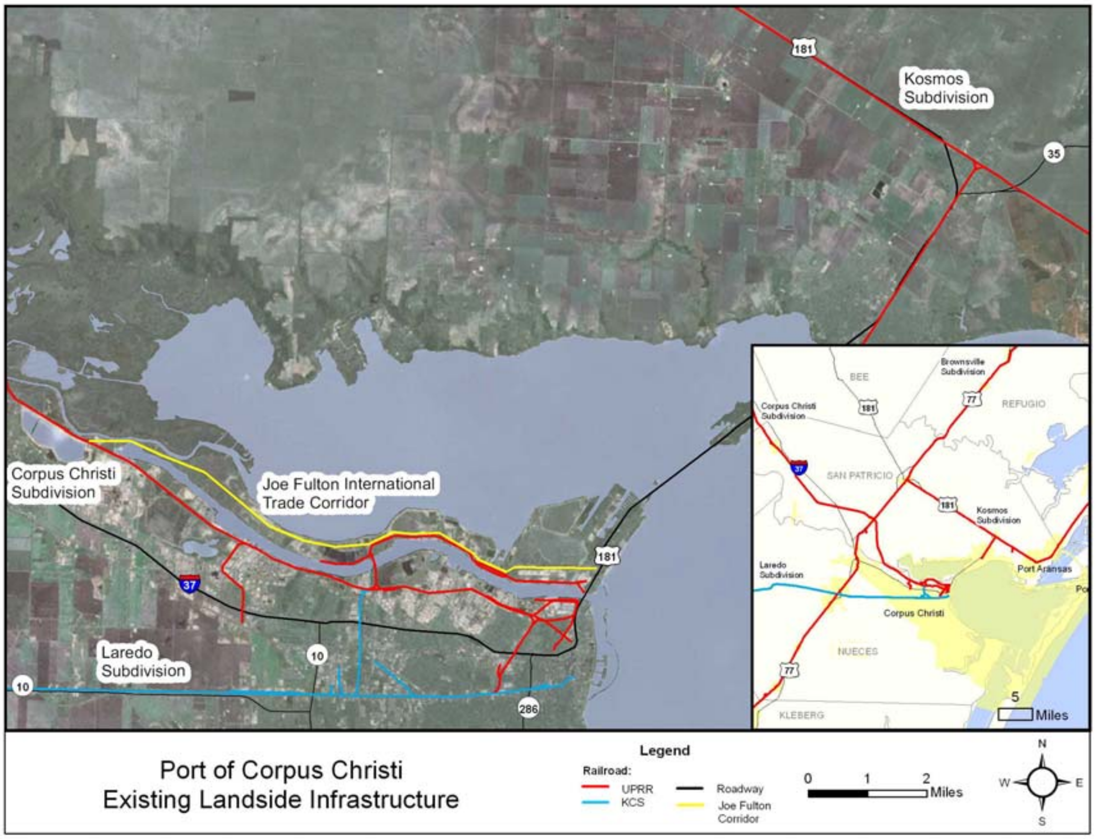

Figure 3-36 Port of Corpus Christi Rail Infrastructure
Source: Developed by HNTB Corporation

The PCC completed a study in 2003 to develop a long-range master plan for rail that will ensure adequate rail terminal facilities for future operations at the port. In June 2004, PCC began construction on the Joe Fulton International Trade Corridor (Figure 3-37), a $56 million project encompassing 11.5 miles of road and 7 miles of rail that will improve access to over 2,000 acres of land for existing and future development. The first phase of the project, which included the opening of the 7 miles of rail, was completed in October 2007. The new Joe Fulton International Trade Corridor that has recently been constructed at the PCC contains seven miles of new track extending from the port to the Corpus Christi Subdivision near Viola Yard. The port is in the process of identifying funding and methods for implementing other components of the long-range plan.

Figure 3-37: Joe Fulton International Trade Corridor Project
Source: Texas Rail System Plan, October 2005

Port Freeport

Port Freeport opened for commercial traffic in 1926. Port Freeport is classified as a deep-draft seaport, located just 1.3 miles from deep water, allowing the Port of Freeport the ability to offer a fast and safe turnaround to ship operators.

Port Freeport provides direct connection to highways, inland rail systems, and barge transportation. UP has direct connections to the port's covered loading areas. This port has a service capacity of up to 75,000 twenty-foot-equivalent container units, making it the second most popular destination for all containerized cargo into Texas after Houston.

Rail freight moved between the Port of Freeport and the UP Angleton Subdivision is hauled over the 10-mile UP Freeport Subdivision and the 7-mile Freeport Industrial Lead shown in Figure 3-38. The Freeport Industrial Lead limits train speeds to 5 mph and currently relies on an antiquated swing bridge to cross the Old Brazos River near the port. UP is scheduled to replace this bridge with a vertical lift bridge within the next few years.

Train speeds on the Angleton and Freeport Subdivisions range from 20 to 30 mph, with three sidings on the Angleton Subdivision in place between Angleton and the BNSF Mykawa Subdivision at Algoa.

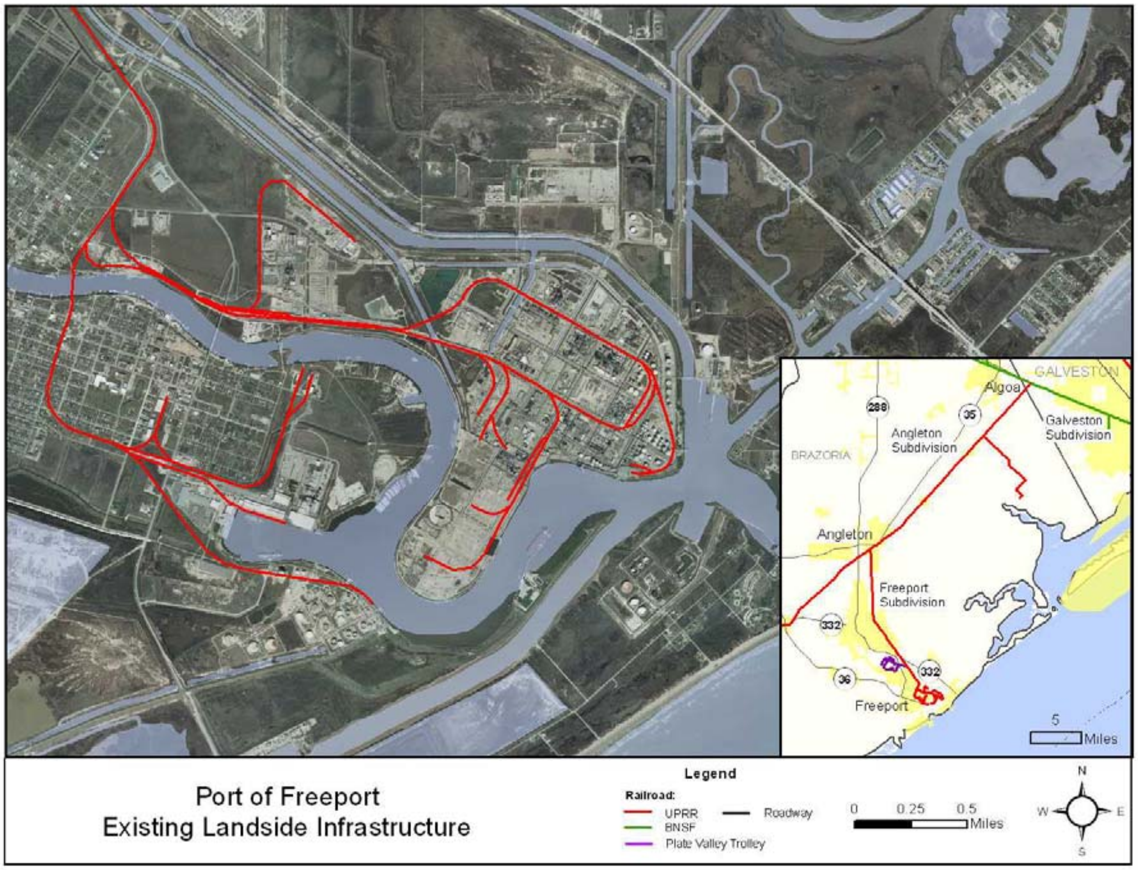

Figure 3-38: Port of Freeport Rail Infrastructure
Source: Developed by HNTB Corporation

Port Freeport has begun developing a new $225 million terminal, designated the Velasco Terminal. The Velasco Terminal will include two 1,200-foot-long berths and a total of 90 acres of developed backland that will enable the Velasco Terminal to handle an annual throughput of more than 750,000 TEUs. Trains serving the Freeport container terminal location on the south side of the Old Brazos River at Port Freeport access the terminal over the UP Freeport Industrial Lead.

Rail access to the port requires trains to cross the Old Brazos River, which currently necessitates use of a swing bridge constructed in 1916. UP considered restoration of the existing bridge ($17.5 million) and replacement with a vertical lift bridge ($13.5 million) as viable options to increasing load capacity and safety on the rail line. In August 2008, UP released a contract proposal, Freeport Industrial Lead MP 15.60 *1 TTR-OD Lift Span x 258' Replacing 1 TTR-OD Swing Span x 288' Freeport*, *Texas*, to relocate an unused single-track vertical lift span and two 29-foot tower spans from

Houma, Louisiana to Freeport. This bridge replacement project is expected to be completed within the next few years.

Port of Galveston

The Port of Galveston is a wholly-owned utility of the City of Galveston. Established in 1825, it is located at the mouth of Galveston Bay on 300 acres of land on the northern end of Galveston Island and 549 acres on Pelican Island. Port rail facilities include storage, heavy lift cranes, forklifts, and one rail ramp for loading and unloading. The Port of Galveston's inbound trade consists mainly of cement, fruits, and vehicles, while the outbound trade is mostly grain. The terminal railway for the Port of Galveston is the Galveston Railroad, L.P. (GVSR). The GVSR operates on 32 miles of yard track with 126 turnouts spread over 50 acres. GVSR delivers cars to BNSF and UP, whose lines transport commodities via railway to the rest of the nation. Rail access at the Port of Galveston serves the Pier 10 Container Terminal, the export grain elevator, an import/export vehicle handling facility, Imperial Sugar, the Foreign Trade Zone, and the rail-barge terminal at piers 37 and 38.

Rail facilities on Galveston Island connect with the mainland over the UP Galveston and the BNSF Galveston Subdivisions. As shown in Figure 3-39, these lines share a single track within a two-mile joint zone from Virginia Point to Galveston Island. The single track within the joint zone traverses the Gulf Intracoastal Waterway (GIWW) via the Galveston Island Causeway Bridge, owned jointly by UP, BNSF, and Galveston County. This bridge had been identified as a hazard to navigation along the GIWW. Funds have been identified to replace the bridge and the project is under construction.

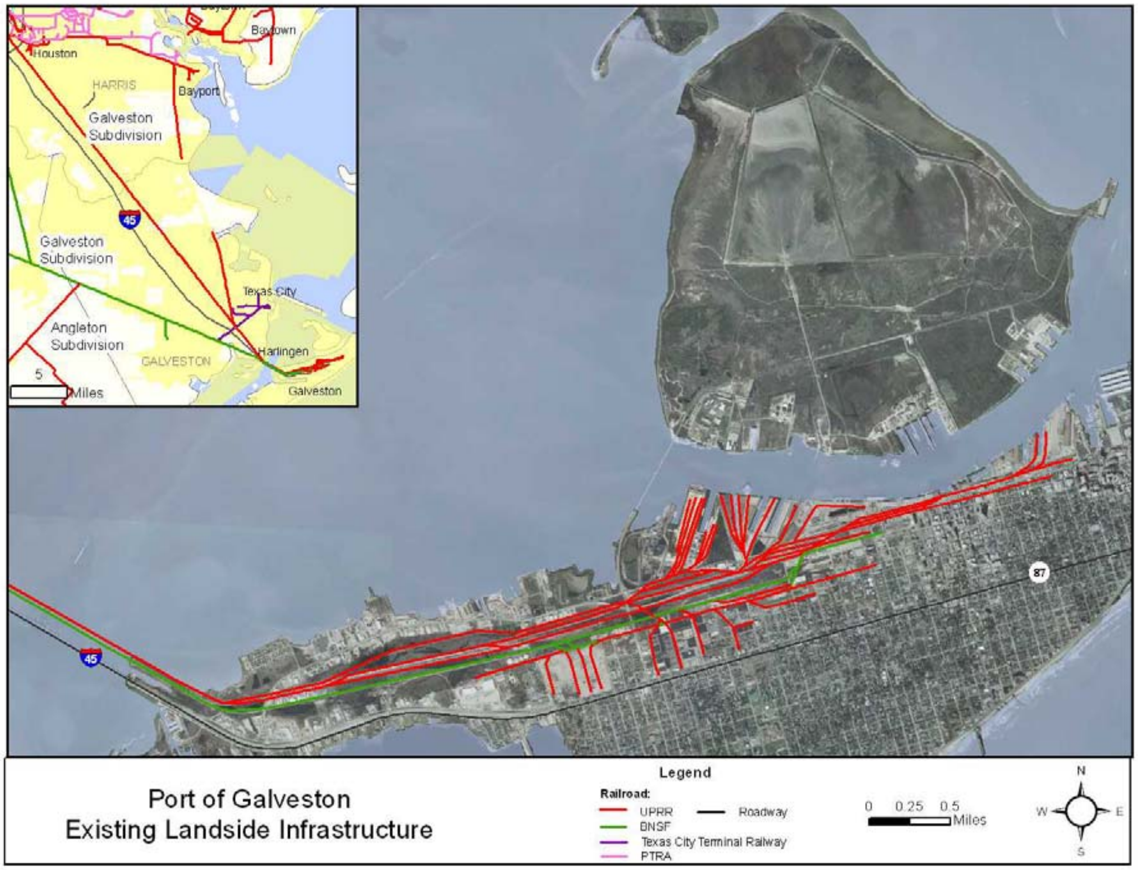

Figure 3-39: Port of Galveston Rail Infrastructure
Source: Developed by HNTB Corporation

Port of Houston Authority

Texas' busiest and largest seaport in terms of tonnage and commercial value is the Port of Houston. The Port of Houston is a 25-mile-long complex of public and private shipping agencies and facilities located just a few hours from the Gulf of Mexico. The Houston area is served by BNSF, UP, and KCS (through trackage rights), with the port areas along the Houston Ship Channel served by the Port Terminal Railroad Association (PTRA). All of the Port of Houston's facilities are served by the PTRA except Woodhouse.

The Port of Houston provides over 170 miles of railroad tracks, as well as heavy equipment for moving freight, including container lift machines, cranes, rail ramps, forklifts, and heavy lift docks. Approximately 130 different trucking companies also transport cargo in and out of the port. The main commodities include grain, iron and steel, and container shipments. As of 2008, according to the Port of Houston website, the Port of Houston ranks first in the U.S. in foreign waterborne tonnage, second in the U.S. in total tons, seventh largest container port in the U.S., and tenth in the world in total tonnage.

U.S. Corps of Engineers statistics showed a constant increase in total tonnage handled by the Port of Houston, from 109 million tons (1980) to more than 222 million tons (2006), until 2007 when tonnage started to decrease. By 2008, tonnage declined to 212.2 million tons.

The existing rail and roadway infrastructure located at the Port of Houston is shown in Figure 3-40. Shore facilities include the Bayport and Barbour's Cut Container Terminals along Galveston Bay and numerous wharves and terminals along the Houston Ship Channel. The Barbour's Cut terminal contains a 42-acre rail ramp and 2,700-ft of working tracks with access to the UP Strang Subdivision over the Barbour's Cut Industrial Lead. The Bayport terminal is adjacent to the single-track Seabrook Industrial Lead, which connects to the Strang Subdivision at the La Porte Yard. Phase II of the Bayport facility will include an intermodal rail yard and truck loading facility, connected by a new 4.4-mile track that parallels and ties in with UP's Seabrook Industrial Lead.

Port facilities along the Houston Ship Channel are served by rail by the PTRA, which is jointly owned by UP, BNSF, KCS, and the Port of Houston Authority. The PTRA owns 154 mile of track, including 46 miles of mainline track, and serves approximately 150 customers along the port. Rail freight hauled over the UP Strang Subdivision of the Houston Belt rail network is gathered or received by the PTRA at one of several yards, such as Manchester Yard or Pasadena Yard (south of the ship channel) or North Yard (north of the ship channel).

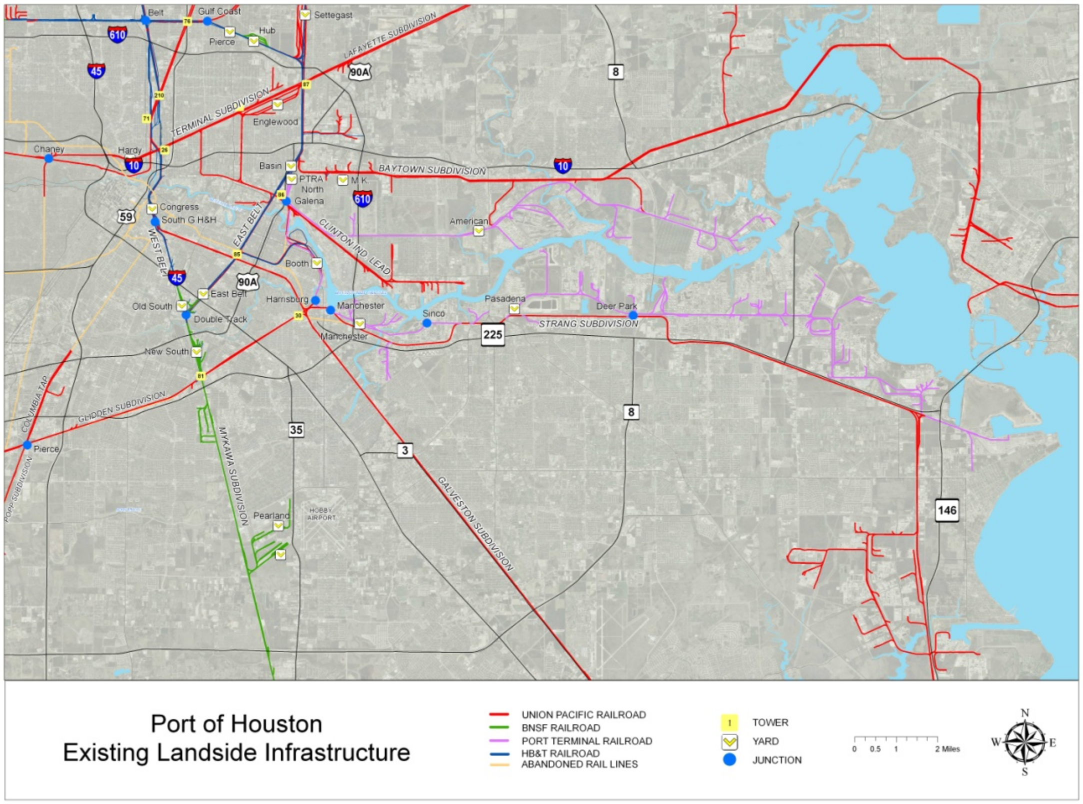

Figure 3-40: Port of Houston Rail Infrastructure
Source: Developed by HNTB Corporation

In anticipation of providing satisfactory service to all of the port's tenants, the Port of Houston has renovated many of its terminals, including a $40 million project at the Barbours Cut terminal that permits a higher volume of containers to be handled and the accommodation of larger vessels. The new intermodal rail ramp at Barbours Cut terminal includes the addition of four working tracks (each approximately 2,700 feet in length) and five storage tracks (each approximately 2,550 feet in length). The Port of Houston Authority is in the process of developing a new $1.5 billion container, intermodal, and cruise facility at Bayport, in southeast Harris County, which will include access by highway, rail, and waterways.

Port of Orange

The Port of Orange is a deep-draft seaport located on the Sabine River approximately 36 miles from the Gulf of Mexico. The port is near Interstate Highway 10, less than 100 miles east of Houston. The port is served by UP, BNSF, and Sabine River and Northern Railway.

The port includes four berths with a total of 2,300 feet of docking space and eight warehouses. All warehouses have covered rail service, allowing up to 60 cars to be unloaded simultaneously. The port is owned by the Orange County Navigation and Port District, which serves as both the port authority and the industrial development authority for the county.

Rail access is provided by the UP Lafayette Subdivision, which extends east to New Orleans and west to Houston. A 1.8-mile track operated by the Orange Port Terminal Railway, shown in Figure 3-41, connects with the UP Orange Industrial Lead, which accesses both the Lafayette and KCS Beaumont Subdivisions to the north.

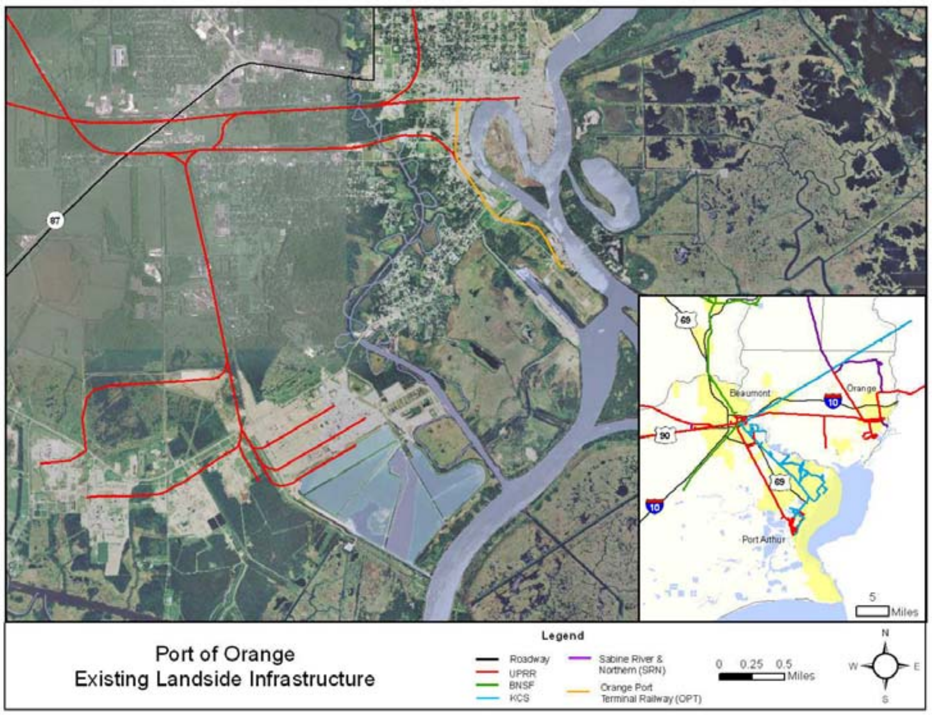

Figure 3-41: Port of Orange Rail Infrastructure
Source: Developed by HNTB Corporation

Port of Port Arthur

The Port of Port Arthur is a deep-draft seaport located on the Gulf Intracoastal Waterway (GIWW) north of Houston and east of Beaumont, 19 miles from the Gulf of Mexico. The port has been in public operation since 1968 and is actually an improved bank of the GIWW that is capable of handling numerous types of cargo. The port's rail system consists of three wharf tracks with 150-car capacity, two shed tracks with 80-car capacity, and a 6-track storage yard with 140-car capacity.

Rail freight is moved to and from the port over the KCS Beaumont Subdivision shown in Figure 3-42, which extends from Port Arthur through Beaumont and into to Louisiana, where it connects with another KCS rail line. UP extends from Beaumont to industrial facilities in Port Arthur, but does not access port facilities.

Figure 3-42: Port of Port Arthur Rail Infrastructure
Source: Developed by HNTB Corporation

Port of Port Lavaca-Point Comfort

The Port of Port Lavaca-Point Comfort is a deep-draft seaport located near the midpoint of the Texas Gulf Coast, at the western terminus of the Matagorda ship channel. The port is owned by the Calhoun County Navigation District and primarily serves local industries and manufacturers.

Rail freight is moved between Port Lavaca and the UP Angleton Subdivision over the 14-mile Port Lavaca Industrial Lead shown in Figure 3-43, which has no sidings. Except for seven miles of 5-mph track near the Port, trains are permitted to travel at speeds up to 25 mph. The Port Lavaca Industrial Lead corridor continues north past the Brownsville

Subdivision to Flatonia as the UP Port Lavaca Subdivision. Rail freight is moved at Point Comfort by the PCN, a short line railroad that connects Point Comfort with the Angleton Subdivision to the north.

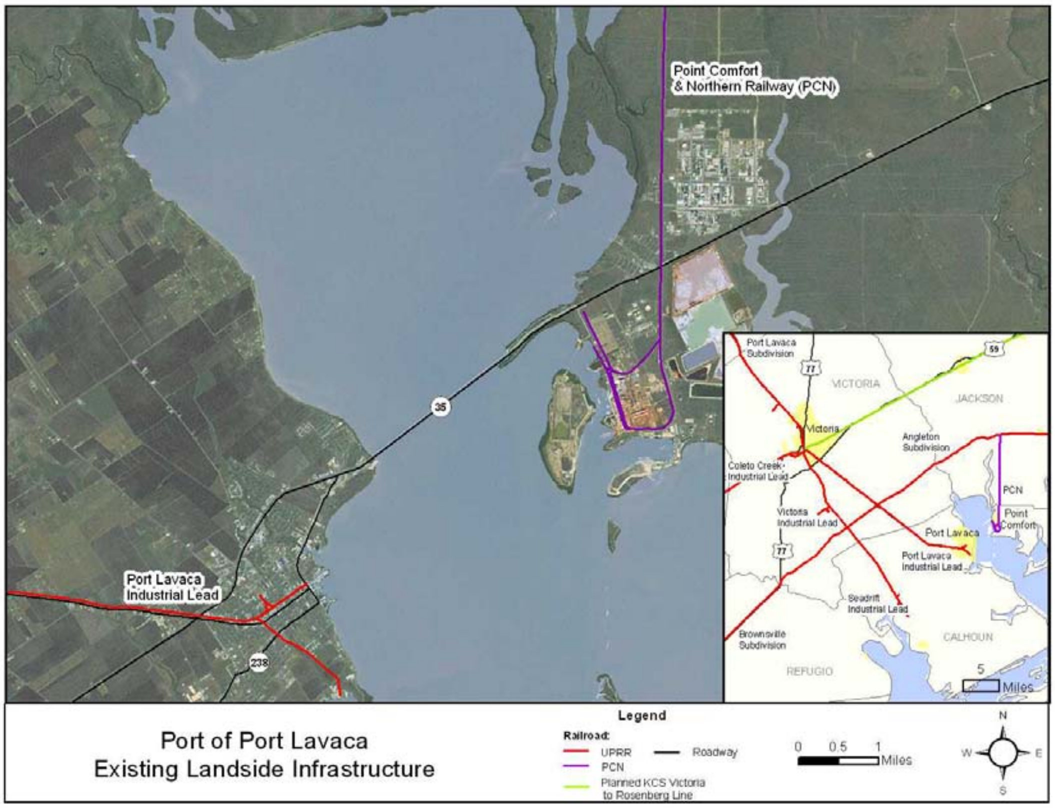

Figure 3-43: Port of Port Lavaca Rail Infrastructure
Source: Developed by HNTB Corporation

Port of Texas City

The Port of Texas City is the fourth largest in Texas by tonnage handled. The port has been in operation since 1893 and is located on Galveston Bay, 11 miles inland from the Gulf of Mexico. A number of oil refineries and chemical processing plants are located on port property and nearby, with an extensive network of pipelines connecting the docks to these refineries.

The Port of Texas City is a privately-owned seaport whose major shareholders are the UP and BNSF. The Port of Texas City Railway Company, jointly owned by UP and BNSF, provides switching services for local industries and businesses, typically handling more than 25,000 cars per year. Interchanges with UP and BNSF within six miles of the main classification yard help expedite switching operations at the port.

The BNSF Galveston Subdivision connects to Texas City Terminal Railway tracks at Terminal Junction, as shown in Figure 3-44, providing a direct north-south connection for freight moving to and from the port.

The rail infrastructure in and around the Port of Texas City is shown in Figure 3-44. The UP Galveston Subdivision is accessed from Texas City by the Texas City Industrial Lead, which extends parallel to the UP track from Texas City to Virginia Point. There is no direct connection to Texas City from the north on the UP Galveston Subdivision, requiring reverse train movements into Texas City from the south on the Texas City Industrial Lead.

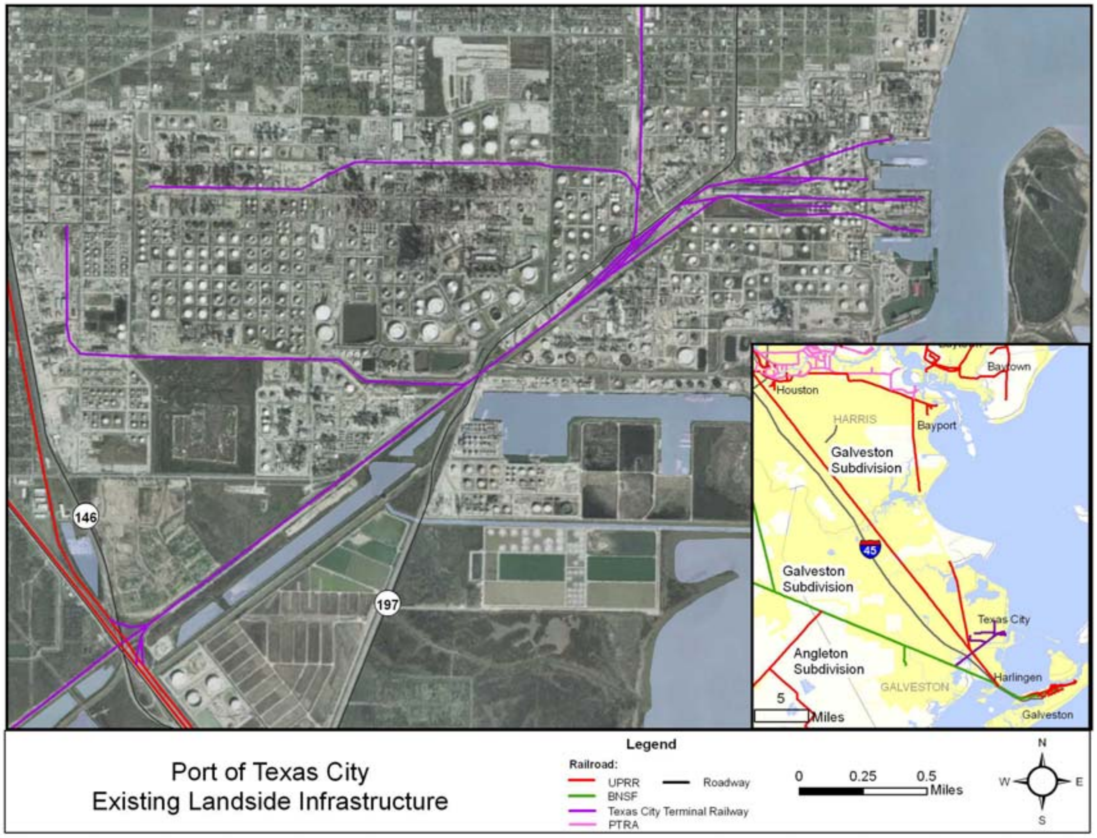

Figure 3-44: Port of Texas City Rail Infrastructure
Source: Developed by HNTB Corporation

Port of Victoria[31]

The Port of Victoria, established in 1968, is responsible for the operation of both the Victoria County Navigation District and the Westside Calhoun County Navigation District. The 35-mile barge canal connects to the GIWW and is 12 feet deep and 125 feet wide. The port and the turning basin area covers more than 400 acres and is served by the UP and four-lane divided highways. Deep water access is located at Point Comfort, which is reached via the Barge Canal and GIWW.

The industrial park located at the port has its own rail spur, with rail service provided by UP with track agreements with KCS/Tex-Mex, Canadian National Railway (CN), and BNSF. Rail service to the Port of Victoria Industrial Park is provided by the Victoria Navigation District rail spur, which is connected to the UP Victoria Industrial Lead that runs to the south from the UPRR Angleton Subdivision, as shown in Figure 3-45. In

2006, the industrial park at the Port of Victoria was expanded by approximately 1,800 acres.

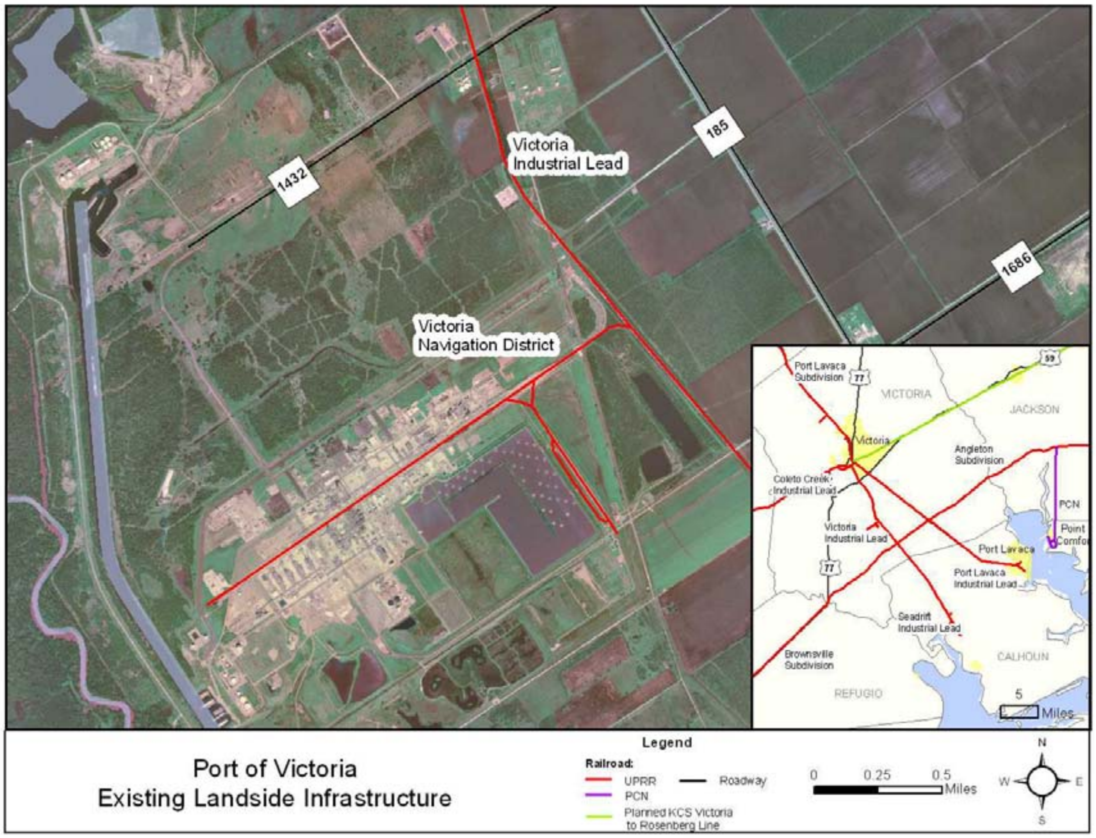

Figure 3-45: Port of Victoria Rail Infrastructure
Source: Developed by HNTB Corporation

In 2005, the Ports of Houston and Victoria signed a Memorandum of Understanding to increase the use of barges for transporting cargo containers between ports along the Texas Gulf Coast. This agreement offers a cost effective alternative to trucking, while decreasing congestion and reducing air pollution. Furthermore, this agreement may enhance the Port of Victoria as a good midpoint freight transfer station on the Gulf Coast.

Port and Freight Rail Issues[32]

Texas ports and waterways will similarly be impacted by a combination of national and local rail bottlenecks. These capacity constraints will make it difficult for Texas ports to access the national rail system, contribute to delays on the system, and hinder the ability of Texas ports to handle increased volume. Exacerbating these issues are local rail bottlenecks that hinder efficient movements into and out of Texas port facilities. Critical rail access issues include:

Grade Crossings: Safety at rail grade crossings is major issue for the greater Houston area. Several crossings have been identified as being “hot spots” for auto-train collisions. Conflicts between trains and trucks at grade crossing on the railroad mainlines create further reductions in mobility of trucks that serve the Port of Brownsville. The Ports of Texas City and Lavaca also have significant grade crossing issues.

Sidings: Longer and heavier trains also are being used by the railroads to maximize existing capacity and improve efficiency. For example, the BNSF prefers that all its international intermodal shipments be handled in 40-foot well cars and all its intermodal trains be 8,000 feet in length. These changes will allow the BNSF to increase the amount of freight that can be handled over its mainlines without increasing the number of trains. However, the longer trains cannot be handled without lengthening sidings to permit trains to meet and pass—and without providing the corresponding yard capacity to assemble and hold the longer trains. The UP rail line between the Port of Corpus Christi and the Brownsville area subdivision currently is not equipped with rail siding to marshal, store, load, and unload vehicles. Furthermore, rail freight is moved between Port Lavaca and the UP railroad Angleton Subdivision over a 14-mile port industrial lead, also with no sidings.

Rail Yard Capacity: Increasing amounts of freight are straining capacity at rail yards in many parts of the state. For instance, over 95% of all freight trains moving in the Houston region must stop to pick up or drop off cars. Yard capacity is also a concern at the UP railroad interchange yard at the Port of Beaumont.

Figures 3-46 through 3-49 summarize the most critical landside access issues (both rail and highway access) affecting the Texas waterborne freight system, which were identified by a combination of quantitative analysis of freight demand and expected capacity, as well as interviews with Texas port and waterway stakeholders.

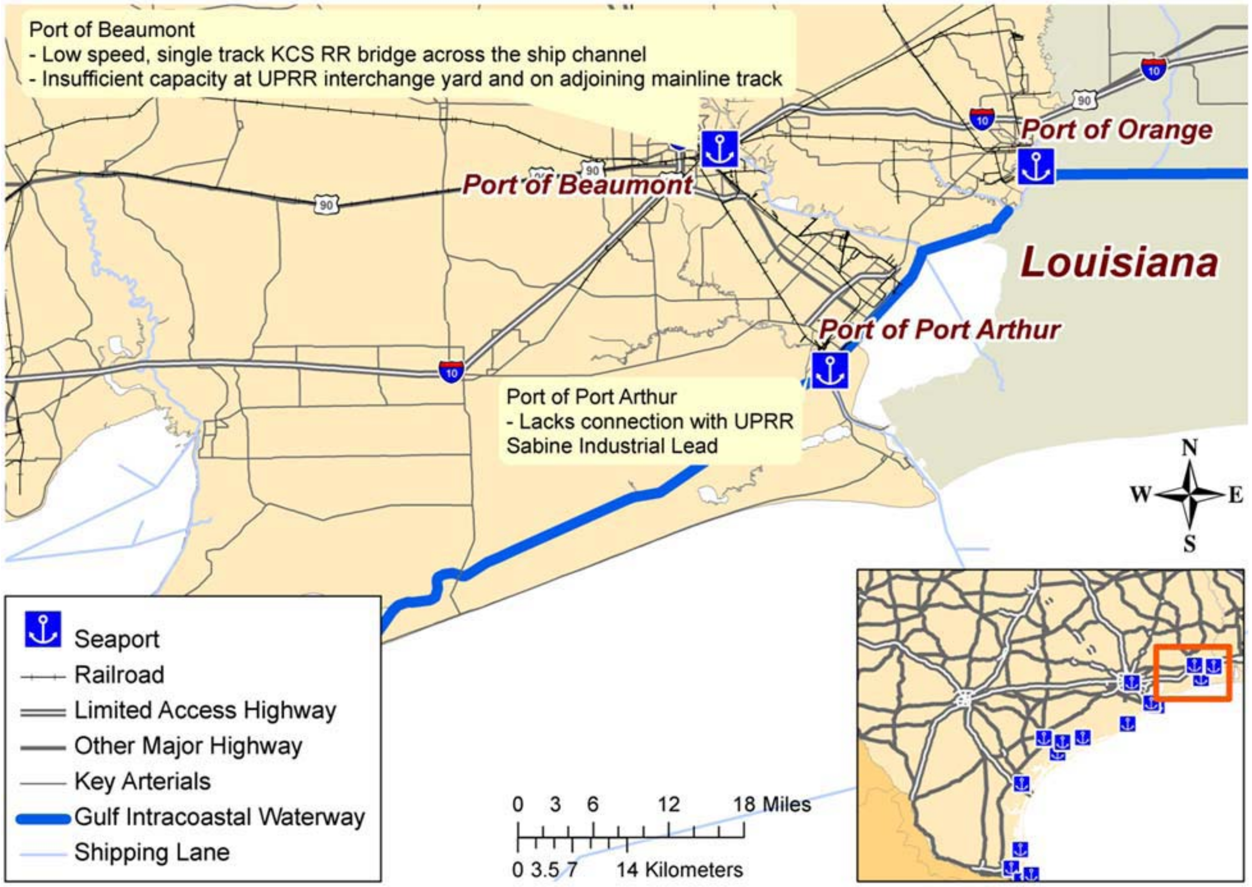

Figure 3-46: Landside Chokepoints—Sabine-Neches Area
Source: Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study, 2010

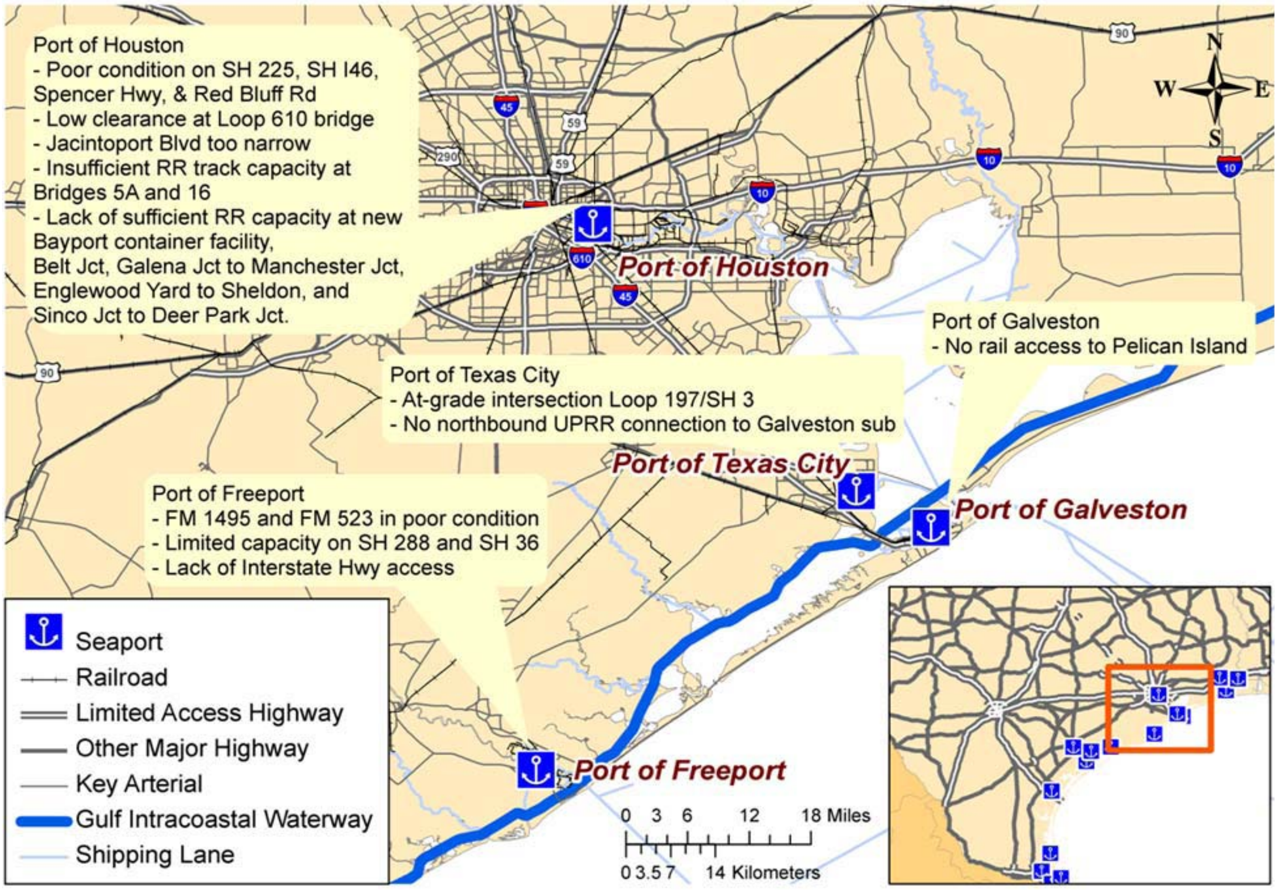

Figure 3-47: Landside Chokepoints—Houston-Galveston Area
Source: Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study, 2010

Figure 3-48: Landside Chokepoints—Central Coast Area
Source: Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study, 2010

Figure 3-49: Landside Chokepoints—South Texas Area
Source: Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study, 2010

3.4 – Public Sector Involvement in Freight Rail

Freight rail as a transportation mode offers several benefits to the public, such as providing more efficient and environmentally-friendly goods movement as compared to trucks, reducing the number of trucks on the roads, and supporting the economy of the state and its cities. Specifically, rail accessible land in urban areas is important to reduce roadway maintenance costs, lost productivity costs, and the environmental impacts of excessive trucking in the urban environment. However, freight rail also introduces several potential adverse impacts on communities, such as incompatibility with adjacent land uses, adverse environmental impacts, such as noise and vibration, blocked crossings and safety issues related to at-grade crossings and hazardous material movement. As an additional benefit, freight rail lines offer opportunities to provide local and intercity passenger rail service, but the primary purpose of freight delivery along these lines must not be hindered.

Because of the potential benefits to the public, the Texas Legislature has created several districts, authorities and agencies that have the authority to pursue improvements on the existing freight rail system. These political subdivisions of the state include the following:

- Freight Rail Districts
- Regional Mobility Authorities
- Rural Rail Transportation Districts (RRTDs)

These entities, along with TxDOT, have performed studies of the freight system to identify improvements that would be of the greatest benefit to the public.

Freight Rail Districts

In 2005, the 79th Texas Legislature authorized in Chapter 171 of the Transportation Code the creation of a Freight Rail District (FRD) by a county with a population of 3.3 million or more. Counties that are adjacent to the eligible county are permitted to join the FRD once it is established. A FRD has the power of eminent domain, the powers of Rural Rail Transportation Districts (RRTDs), Regional Mobility Authorities (RMAs) and the powers of Intermunicipal Commuter Rail Districts (ICRDs) (see Chapter 4, Passenger Rail Systems, for more information on ICRDs).

Early in 2007, Harris County, Fort Bend County, and the City of Houston created the Gulf Coast Freight Rail District as a result of this authority. The name has since changed to Gulf Coast Rail District (GCRD) and Galveston County and Waller County have joined GCRD. The board of directors is established, meets monthly, and has become a voting member of the Houston-Galveston Area Council (H-GAC) metropolitan planning organization. In 2008 the GCRD compiled a list of recommended projects selected from the TxDOT and Harris County Freight Rail studies.

The GCRD has compiled a list of high priority freight rail improvements projects selected from the TxDOT and Harris County Freight Rail studies. In partnership with the City of Houston, GCRD is studying the feasibility of grade separations and closures along the UP West Belt Subdivision as recommended in the TxDOT study. The GCRD has supplemented the previous rail infrastructure studies with analysis of rail congestion impacts on regional shippers.

Regional Mobility Authorities

In 2001, the 77th Texas Legislature authorized the creation of regional mobility authorities (RMAs), with a constitutional amendment approved by the Texas voters on November 6, 2001. In 2003, the 78th Texas Legislature amended and placed the regional mobility authority legislation under Chapter 370 of the Transportation Code. An RMA is authorized to finance, design, construct, operate, maintain, and expand a wide range of transportation facilities, including rail facilities. Projects can be financed from a wide range of financing tools, including the sale of tax-exempt revenue bonds, private equity, grants, loans, and revenue generated from existing facilities. RMAs have the power of eminent domain and can also enter into public-private partnerships for transportation projects. RMAs are overseen by a Board of Directors. The chair is appointed by the Governor and the Commissioner's Court of each county appoints at a minimum two members. The members cannot be elected officials, and must reside in the county they represent on the RMA Board. As of 2010, there are eight RMAs throughout Texas (Figure 3-50).

RMAs have concentrated on the development of highway projects, though some have expressed interest in potential rail projects in their areas. For instance, the Central Texas RMA funded a study completed in April 2010 looking into the feasibility of a commuter rail connecting Austin with Pflugerville, Round Rock, and Georgetown. The Rail Subcommittee of the Northeast Texas RMA sent a Freight and Passenger Rail survey to representatives of 57 organizations in East Texas counties between November 2006 and January 2007 for identifying strategies to help meet rail needs. They also submitted to TxDOT their regional priorities. The Cameron County RMA mentions in its Strategic Plan two short-term rail projects called the West Loop Rail Relocation and the North Cameron County Rail Relocation. Rail extensions and border crossings are mentioned as potential long-term projects.

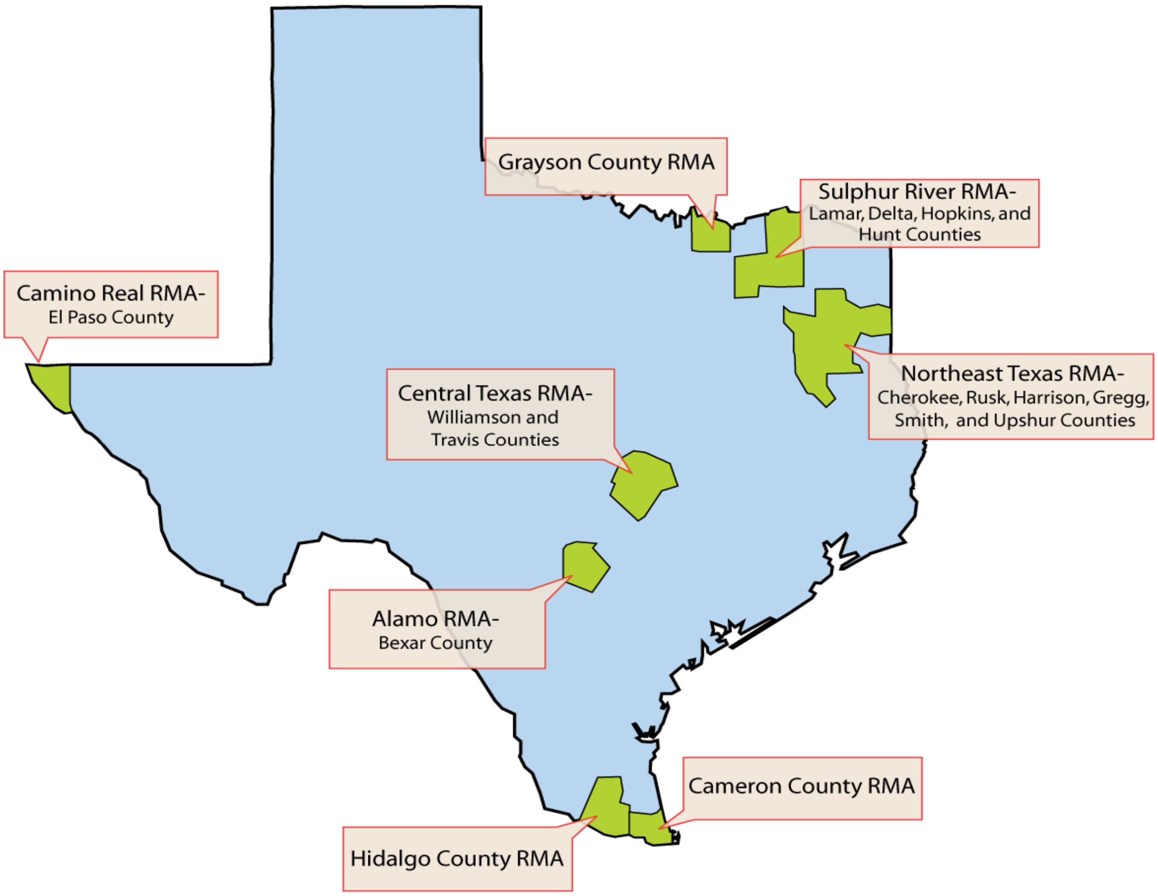

Figure 3-50: Texas Regional Mobility Authorities (RMA)

Rural Rail Transportation Districts (RRTDS)

Reductions in service and abandonments have had significant local effects in some of the state's rural areas. Rail abandonment normally is associated with reduced options for transporting harvests and increases in costs, so that the economic livelihood of these areas becomes less certain. Grain producers are especially vulnerable (see the "Texas Grain Transportation Study" for an overview of the importance of rail for moving grain[33]). In response to concerns about the loss of rail service in rural parts of Texas, the Texas Legislature passed legislation allowing the formation of RRTDs in 1981[34]. RRTDs were given the power of eminent domain as well as the authority to issue bonds to assist in their efforts to preserve rail infrastructure and promote economic development in the state.

As of June 2007, 38 RRTDs had been formed in the state, as shown in Figure 3-51. The current level of activity in these districts vary greatly, from those that are actively involved in preserving rail corridors and providing services; to those that were unable to prevent abandonment of lines and are currently inactive.

The purpose of RRTDs and the facilities they acquire is to help develop, maintain, and diversify the economy of the state. The intent is to reduce unemployment and foster economic growth within the district. One or more counties can establish RRTDs in order to acquire lines that may be abandoned, construct new lines or rehabilitate existing lines. The districts can also be used to develop rail to serve industrial parks, intermodal facilities, and transloading facilities. Rail districts cannot levy ad valorem taxes, but can issue revenue bonds to finance acquisitions and construction. Rail districts must charge rents that are sufficient to maintain their properties and pay off their bonds. While most RRTD's are inactive, below is information regarding the more active RRTDs.

Rusk County Rural Rail Transportation District (RCRRTD)

On September 19, 2008, TxDOT received an Amended System Diagram Map for Union Pacific Railroad Company that indicated UP's intent to abandon approximately 15.69 miles of rail line in Rusk County, Texas. The rail line begins at railroad milepost (MP) 0.59 near Overton and ends at MP 16.28 near Henderson.

On March 3, 2009, TxDOT staff met with the President of the Rusk County Rural Rail Transportation District (RCRRTD). The RCRRTD was formed to prevent the abandonment of the Henderson Subdivision, which provides rail access to the West Fraser Lumber Mill in Henderson and also provides rail access to an industrial park that is being developed in Henderson. The local economic development interests believe that rail service to West Fraser and the industrial park must be preserved in order to support the continued development and interests of the region. RCRRTD requested that TxDOT assist in any way possible.

TxDOT staff performed an inspection and evaluation of the line on April 7, 2009. An inspection and evaluation report was presented to RCRRTD at no cost. RCRRTD entered into negotiations with UP and purchased the line in December 2009. Operations on the line are leased to the Blacklands Railroad. RCRRTD is seeking funding for a rehabilitation of the infrastructure.

Fannin County Rural Rail Transportation District (FRRTD)

The Fannin Rural Rail Transportation District was formed in 1999 to prevent the abandonment of rail infrastructure in Fannin County. As stated earlier, the FRRTD is currently leasing 33.5 miles of UP's Subdivision between Paris and Bonham from TxDOT. FRRTD is working to identify potential funding sources for rehabilitation of the line and possible operators that would contract for freight rail service. FRRTD has also requested TxDOT's assistance in the acquisition by TxDOT of approximately 1.35 miles of additional rail line that connects to TxDOT's current ownership on the Bonham Subdivision. FRRTD intends to promote a "tourist train" operation to travel between Dodd City and Bonham in support of a proposed "old west" tourist site to be located in Bonham. The Bonham Economic Development Corporation has agreed to fund the acquisition. TxDOT is working with UP on a purchase agreement for this additional trackage.

Northeast Texas Rural Rail Transportation District (NETEX)

The Northeast Texas Rural Rail Transportation District was formed in 1994 to prevent the abandonment of rail infrastructure in four Texas counties: Franklin, Hopkins, Hunt, and Titus. In 1995, the Texas Legislature authorized an appropriation rider that granted NETEX $2 million from state general revenue through TxDOT for the purchase and operation of the rail line from a point west of Sulphur Springs at milepost 524.0 to a point west of Greenville at milepost 555.0. In 2000, NETEX also obtained $1.5 million from the U.S. Department of Agriculture to purchase and rehabilitate track from milepost (MP) 489.4 to 524. NETEX leases operations on the line to the Blacklands Railroad, which has increased carloads from 453 in 1999 to 2,315 in 2009. NETEX has been regarded as one of the more successful examples of an active and involved rail district[35].

South Orient Rural Rail Transportation District (SORR)

As discussed in the section entitled "Rail Abandonment," the state's initial involvement in the preservation of rail lines came about as the result of an application to abandon the old Kansas City, Mexico & Orient line by ATSF. In 1989, the Commission provided a $3 million secured grant to the South Orient Rural Rail Transportation District towards the purchase from ATSF. In return for the grant, TxDOT received the existing right-of-way for the rail line and a security interest in the installed rails and ties. The rail district entered into a lease and operating agreement with private investors, bringing about the formation of the South Orient Railroad Company (SORC). However, by 1998, SORC filed an abandonment application with the STB. In 1999, the Texas legislature appropriated $6 million towards the $9.5 million purchase price of the rail line from SORC. In 2001, TxDOT entered into a lease and operating agreement with TXPF.

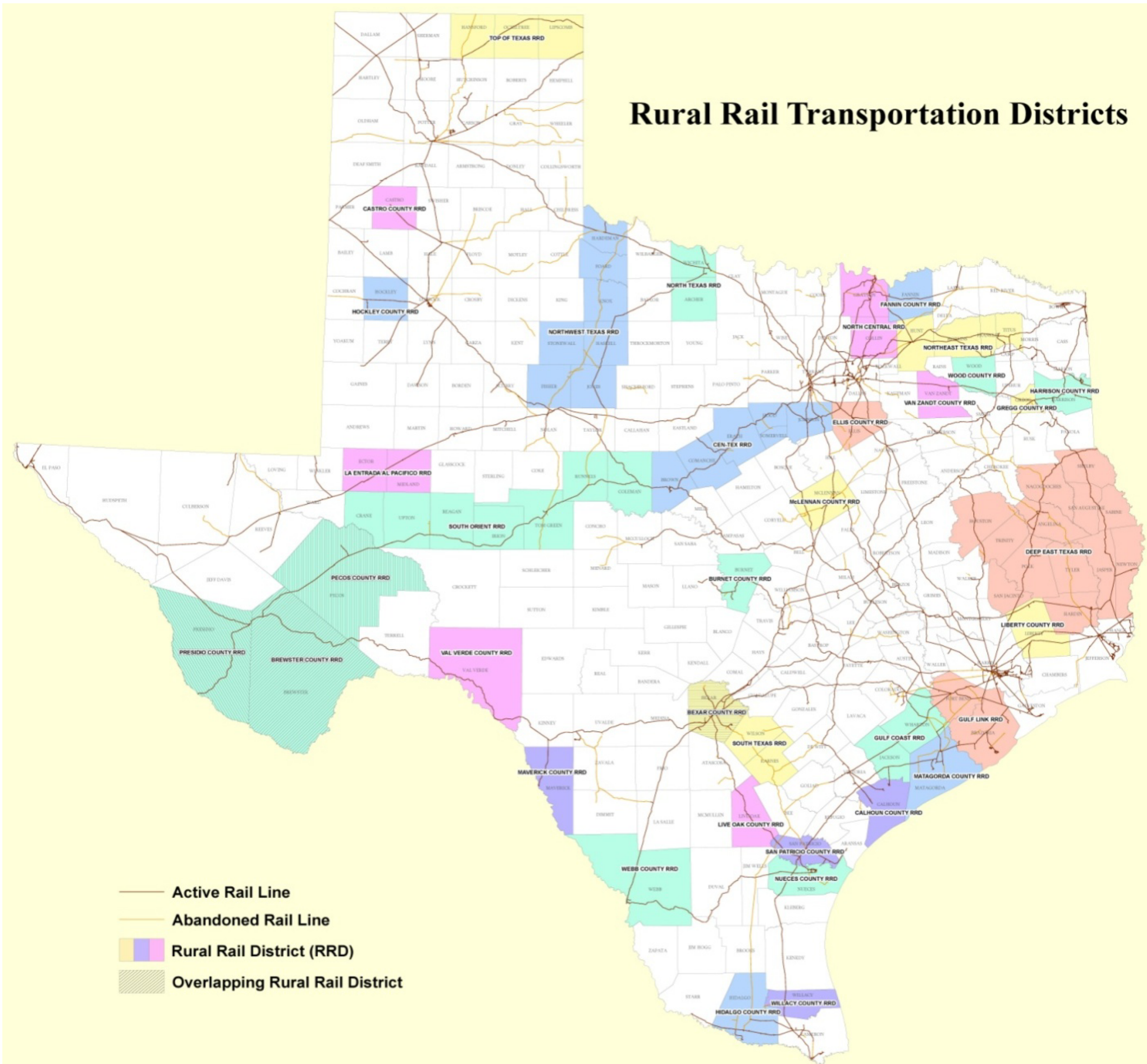

Figure 3-51: Rural Rail Transportation Districts in Texas

TxDOT Freight Studies[36]

To better understand the freight movement in Texas both by truck and rail, TxDOT's Multimodal Section of the Transportation Planning and Programming Division initiated a series of regional freight rail studies. These studies are now being led by the RRD and have been undertaken by HNTB Corporation and Jacobs Engineering throughout the state, with each region encompassing one or more TxDOT districts (see Figure 3-52). Specifically, the goal of these studies is to:

- inventory existing rail systems;
- conduct a study of existing operations;
- identify freight constraints;
- identify safety issues with rail interactions and roadways;
- develop alternatives for improvements; and
- model these alternatives and complete cost-benefit and economic analysis for these alternatives.

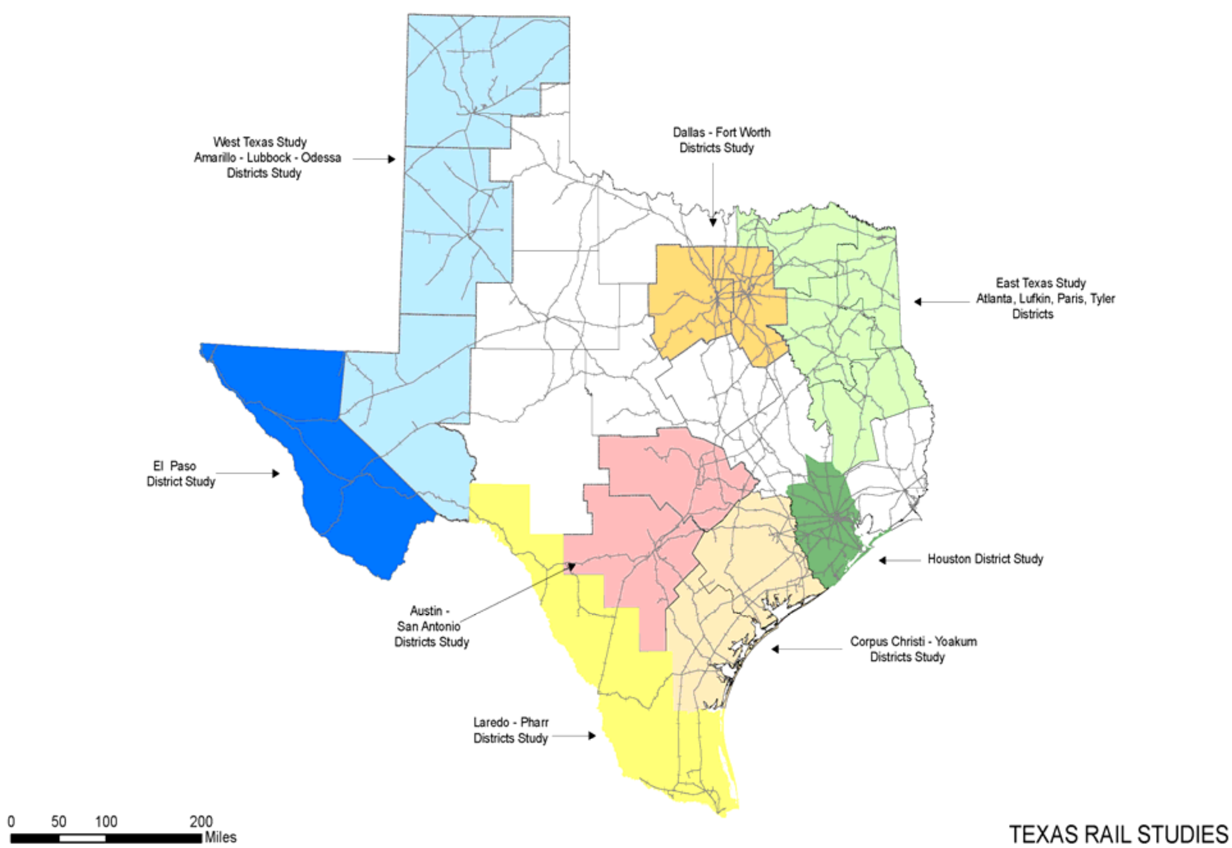

Figure 3-52: TxDOT Rail Study Regions

The Statewide Analysis Model (SAM) was used in each of the freight studies to identify current and projected future truck and rail freight activity for each region. SAM is a statewide travel demand modeling package developed for and used by TxDOT to analyze the movement of people and freight throughout the state. The maps and data produced by the SAM are particularly useful in planning regional transportation system improvements and addressing future needs and priorities. The SAM was used to estimate passenger flows by travel mode, travel time estimates, and traffic counts. SAM freight models were also used to develop estimates of freight tonnage flow by commodity type.

Each of the TxDOT regional freight studies contains extensive details on railroad subdivisions and freight movement patterns. These studies also create regional freight rail operations simulations to identify bottlenecks and estimate effects of infrastructure improvements. TxDOT can use the level of detail in these studies, including costs and benefit information, for project prioritization. To date, studies have been completed in San Antonio, Houston, West Texas, East Texas, Corpus Christi/Yoakum, and Dallas/Ft. Worth. Phase I of the Rio Grande Valley/Laredo study is also complete, and the Phase I study for El Paso has recently started. The full reports for these studies are available on the TxDOT website (www.txdot.gov).

Appendix A at the end of Chapter 7 provides a complete list of all identified potential improvements from these studies and their estimated costs and benefits, should they be undertaken. The studies identify benefits attributable to both the public and private sector. General findings for each region are detailed below:

San Antonio Region Freight Study

The San Antonio Region Freight Study examined the 12-county region comprising TxDOT's San Antonio District, as well as Hays, Travis, and Williamson counties of the TxDOT's Austin District. Since NAFTA went into effect, San Antonio has seen a significant increase in both truck and rail freight. This trend is expected to continue, with the amount of freight carried by each mode more than doubling by 2025. To compound this problem, major truck routes and rail lines in the San Antonio area pass through the central business district. This has created a great deal of concern about safety and congestion in the San Antonio area and generated a desire to relocate the rail lines outside of the city.

A number of intermodal facilities located within the region use trucks to ship goods to local businesses and warehouses, as well as regional locations. As a result of projected population and freight movement growth, multiple segments of interstate, U.S., and state highways are projected to experience high congestion (exceeding their capacities) in the future. Examples of such roadways include I-35 north of I-410; I-37 north of I-410; I-410 east of US 281; and Loop 1604 northwest of San Antonio.

The movement of freight by truck is the predominant method of freight transport for the study region both in the current and projected future years. The majority of truck freight is comprised of imports into the study region from other Texas counties, primarily the

Dallas/Ft. Worth, Houston, and Austin areas. Approximately 79% of truck freight to and from the study region remains in Texas, while 9% travels to or from Mexico. The remainder travels to or from other U.S. states. Building materials and food are the leading commodities imported to, exported from, and transported within the study region by truck.

The majority of rail freight is exported from the study region to other Texas counties, primarily the Houston area. Approximately 65% of rail freight to and from the study region remains in Texas, while 12% travels to or from the Eastern U.S., 5% travels to or from Mexico, and the remainder travels to or from the Northern and Western U.S. The primary products being moved by rail in the region (in terms of tonnage) are raw materials, secondary products, and building materials.

There are five major rail lines owned and operated by the UP, with more than 420 miles of single track mainline in the San Antonio area and three active rail yards in the region (Kirby Yard, East Yard, and SoSan Yard). Approximately 100 trains per day travel within the San Antonio region and areas extending north to Taylor and east to Flatonia. A significant volume of the rail freight moving into and/or out of San Antonio does not originate or terminate there; it is only in San Antonio to be switched or classified into another train destined elsewhere, or for movement onto another mainline that traverses the San Antonio area. Approximately 70 to 75% of the trains moving into/out of San Antonio perform operations such as dropping off or picking up rail cars, maintenance services, fueling, and crew changes at SoSan Yard, located near the Port Authority of San Antonio (formerly Kelly AFB). East Yard is primarily used as an industrial service yard for local and regional customers. North-south trains terminating in San Antonio therefore typically do so at East Yard, located north of the Alamo Dome and the Amtrak Station. Kirby Yard, located east of San Antonio near Kirby, is a crew change point as well as in-line fueling facility. Kirby Yard is also equipped for unloading auto racks and provides some local service.

The San Antonio Region Freight Study completed in July 2008 identifies improvements that may provide relief to residents and the traveling public adversely affected by delays, interruptions, and noise attributed to the movement of freight within the region. It also identifies alternatives that may improve regional freight rail capacity by enhancing the efficiency and operations of the railroads. The identified improvements for the 12-county region comprising TxDOT's San Antonio District as well as Hays, Travis, and Williamson Counties of the Austin District, are summarized as follows:

- Grade Separations (bridges to separate the railroad from streets)
    - 66 in San Antonio District for an estimated cost of $924 million
    - 26 in Austin District for an estimated cost of $238 million
    - Total estimated cost of $1.16 billion; estimated public benefit of $1.1 billion

- Grade Crossing Closures (closing and rerouting the street at the intersection with the railroad)
    - 65 in San Antonio District for an estimated cost of $3.3 million
    - 4 in Austin District for an estimated cost of $0.2 million
    - Total estimated cost of $3.5 million, estimated public benefit of $92.2 million
- Improvements to Existing Railroad Infrastructure (improving capacity and connectivity on existing rail lines)
    - 28 rail capacity improvements at a total estimated cost of $183 million
    - Improvements include additional mainline tracks, new siding tracks, extensions and upgrades to existing sidings, signal improvements, additional capacity at rail yards, and improved connections between rail lines
- New Railroad Corridors (possible bypass routes)
    - 3 bypass alternatives at estimated costs ranging from approximately $1.4 billion to $2.4 billion

The bypass alternatives were also studied in the Central Texas Rail Relocation Study (also by HNTB Corporation) that would re-route through rail freight around San Antonio and Austin (alternative bypass routes were studied and assigned cost estimates).

Certain rail improvements warranted further analysis and were grouped into separate planning cases. In general, the planning cases consisted of:

- Planning Case A – San Antonio rail bypass between Seguin and Macdona
- Planning Case B1 – Austin rail bypass between Taylor and Seguin, trains routed on the Del Rio Subdivision between East Yard and Tower 112
- Planning Case B2 – Austin rail bypass between Taylor and Seguin, trains routed on the Austin Mainline 2 Subdivision between East Yard and Tower 112
- Planning Case C – Combined San Antonio and Austin rail bypass between Taylor and Macdona
- Planning Case 1 – A second mainline in and out of SoSan Yard
- Planning Case 2 – A second mainline between East Yard and Kirby Yard and a siding near the Toyota Facility
- Planning Case 3 – Improvements to address network fluidity and capacity (added capacity near Kirby and SoSan Yard)

- Planning Case 4 – Improvements to increase meet/pass efficiency and reduce train delays (at North Loop/ Adams and Converse)

Estimated costs, as well as public and private benefits for each planning case, are shown in Table 3-18. As shown in the table, Planning Case C (the combined Austin-San Antonio bypass) was shown to have the highest total public benefit to cost ratio, as well as the highest total benefit to cost ratio. The estimated private benefit is largely due to savings in run time and delay time over the 20-year period.

Table 3-18: Planning Case Estimated Cost and Benefits Summary (2008 Dollars)

Planning Case	Estimated Cost	Estimated Public Benefit	Ratio: Public Benefit/Cost	Estimated Private Benefit	Ratio: Private Benefit/ Cost	Estimated Total Benefit	Ratio: Total Benefit/Cost
A	$1,369,610,000	$ 504,790,000	0.37	$(162,860,000)	-0.12	$ 341,930,000	0.25
B1	$1,595,850,000	$ 587,100,000	0.37	$ 161,990,000	0.10	$ 749,090,000	0.47
B2	$1,741,260,000	$ 843,460,000	0.48	$ 157,890,000	0.09	$1,001,350,000	0.58
C	$2,423,510,000	$1,424,950,000	0.59	$ 95,490,000	0.04	$1,520,440,000	0.63
1	$ 9,260,000	NA	NA	$ 670,000	0.07	$ 670,000	0.07
2	$ 21,060,000	NA	NA	$ 14,820,000	0.70	$ 14,820,000	0.70
3	$ 25,740,000	NA	NA	$ 16,450,000	0.64	$ 16,450,000	0.64
4	$ 35,130,000	NA	NA	$ 15,310,000	0.44	$ 15,310,000	0.44
Estimated public and private benefits are based on a 20-year study period.							

Relocation of the rail lines between Austin and San Antonio would not eliminate all rail freight in San Antonio but would significantly reduce the number of trains using the existing lines. This would create some capacity on the existing line that could possibly be used for passenger rail service between San Antonio and Austin.

Houston Region Freight Study

The Houston Region Freight Study examined the eight-county Houston region comprised of Harris, Ft. Bend, Montgomery, Galveston, Waller, Brazoria, Liberty, and Chambers counties. A key difference between San Antonio and Houston is that Houston is commonly the origin or destination for the freight in the region. Only approximately 5% of the freight in the Houston region is through-freight.[37] This presents different challenges in addressing freight movement in the region. Safety and congestion cannot be improved with a bypass as was suggested for San Antonio, as local rail yards and rail freight originating from or destined for Houston are a primary cause of congestion. As a result, improvements need to be made to the existing network to address rail yard capacity and the ability to provide less-restricted movements throughout the network to improve rail and public safety.

The study region's truck freight movement is predicted to nearly triple in volume, while rail tonnage is projected to nearly quadruple between 2004 and 2025. The movement of freight by truck is the predominant method of freight transport within, into, and out of the study region both in the current and projected future years. The majority of the truck freight is comprised of imports and exports between the study region and other Texas counties, primarily the Dallas/Ft. Worth, San Antonio, Austin, Beaumont, and El Paso areas. Approximately 65% of truck freight to and from the study region remains in Texas, while 22% travels to or from the Eastern U.S., and the remainder travels to or from other U.S. states and Mexico. Chemical/ petroleum products, building materials, food, and secondary cargo are the leading commodities imported to, exported from, and transported within the Study Region by truck.

The majority of rail freight is imported to the study region with the largest destination (in terms of tonnage), being the Port of Houston, and the largest origins located in other Texas counties. Approximately 37% of rail freight to and from the study region remains in Texas, while 26% travels to or from the Eastern U.S., 13% travels to or from Mexico, and the remainder travels to or from the Northern and Western U.S. The primary products being moved by rail in the region (in terms of tonnage) are chemical/ petroleum products, wood products, raw materials, and building materials.

Approximately 2,200 trains per week travel within the Houston regional rail network, which is comprised of tracks owned and operated by UP, BNSF, and the Port Terminal Railroad Association (PTRA). KCS has the right to operate its trains over the UP and BNSF tracks as well. The region's infrastructure includes more than 800 miles of mainline tracks and 21 miles of railroad bridges.

The activity at the major rail yards located within the region is a contributing source of the congestion-related delay and the key to delay relief. Almost half (48%) of all the trains in the network are local trains and rail yard engines. Of the trains in the Houston regional network simulation model, less than 5% operate completely through the region without having to stop in Houston to pick up or drop off rail cars.

The freight trains in the Houston region carry freight cars coming into, or leaving, the Houston, Dayton, Baytown, Bayport, and Beaumont industrial complexes. The freight carried on these trains is mostly for local business. It is shipped in carloads and must be sorted by destination (customer) at one or more of the major Houston yards. This traffic is predominantly local business for local customers. Most of the trains carry chemicals and/or heavy bulk commodities such as coal, grain, rock/aggregate, and coke. This heavy industrial cargo accounts for about 84% of Houston's rail activity.

There are approximately 1,200 roadway-railroad crossings with a daily volume of almost five million vehicles within the Houston region. The FRA has reported more than 300 incidents between trains and vehicles at public and private railroad crossings since January 2000, including more than 90 injuries and seven fatalities in Harris County alone.

Given growth rates for both vehicle and train traffic, the total public cost of delay at the roadway-rail crossings in the eight-county Houston region is estimated to be more than $2.6 billion over the next two decades. The cost of lost time is estimated at $2.3 billion; the cost of collisions is estimated at $146 million; and the combined cost of emissions and wasted fuel is $191 million. The estimated public benefit of the grade separations and crossing closures identified in this report is more than $828 million.

The Houston Region Freight Study, completed in July 2007, identifies nearly $3.4 billion of improvements for the eight-county Houston region comprised of Harris, Ft. Bend, Montgomery, Galveston, Waller, Brazoria, Liberty, and Chambers counties, which are categorized as:

- Grade Separations – 55 for an estimated cost of $808 million
- Grade Crossing Closures – 63 for an estimated cost of $5.2 million
- Improvements to Existing Railroad – 33 for an estimated cost of $1.4 billion
- New Railroad Corridors – two rail relocation alternatives for a total estimated cost of $1.1 billion

Certain rail improvements warrant further analysis and were grouped into separate planning cases. In general, the planning cases consisted of:

- Planning Case 1 – which tested improvements intended to unlock the congestion at the locations identified as most problematic;
- Planning Case 2 – which tested improvements that add capacity to existing mainline tracks, increasing train speeds and improving train performance;

- Planning Case 3 – which investigated creating a new rail corridor in Ft. Bend County that bypasses the existing Rosenberg to Houston line; and
- Planning Case 4 – which investigated creating a new rail corridor that bypasses the east side of Houston.

More than $1.4 billion of the $3.4 billion in identified improvements were tested in the planning cases described above, which included establishing estimated public and private benefits for each planning case as shown below in Table 3-19.[38] In regards to benefits, any projects to improve freight rail movement through the City of Houston could potentially enhance the region's ability to add passenger/commuter trains that may be desired by the public and elected officials. These passenger rail/social benefits of proposed freight rail improvements have, however, not been calculated, but may apply to rail projects proposed in the terminal area (downtown Houston). As such, the public benefits for the following projects identified in the Houston Region Freight Study are thus underestimated: West Belt (Planning Case 2), East and West Belt, Belt Junction, Fort Bend Bypass (Planning Case 3), Settegast Yard switching leads (Planning Case I), North Yard switching lead (Planning Case 1), and Bridge 16 (Planning Case 1).[39]

Table 3-19: Planning Case Cost and Benefit Comparisons (2007 Dollars)

	Planning Case 1	Planning Case 2	Planning Case 3	Planning Case 4
Total Estimated Cost*	$ 92,000,000	$ 331,000,000	$ 1,080,000,000	$ 542,000,000
Total Estimated NPV Private Benefit (over Base Case)**	$ 48,000,000	$ 73,000,000	$ (63,000,000)	$ 76,000,000
Total Estimated NPV Public Benefit (over Base Case)**	$ 73,000,000	$ 98,000,000	$ 634,000,000	$ 131,000,000
Benefit (Private + Public)/Cost Ratio	1.3	0.5	0.5	0.4
*Planning case costs are cumulative and rounded up to three significant figures. For example, Planning Case 3 costs include the costs of Planning Case 1 and 2 improvements as detailed on the following pages.				
**Estimated private and public benefits shown are based on a 20-year study period.				

West Texas Region Freight Study

The West Texas Freight Rail Study, made up of 46 counties in the Amarillo, Lubbock, and Odessa TxDOT districts, utilized the power of the SAM to understand the demand and growth for freight movement by different modes in both incoming and outgoing shipments for the region. The majority of the rail freight movement in the study area is through freight. Class I railroads have reduced local service to improve the capacity of their main lines, forcing local industries to ship products by truck. The lack of freight rail service in West Texas is a major complaint for much of the region.

In Lubbock, there is a desire to develop a multimodal facility at the old Reese Air Force base. The facility would serve as a shipping point for agricultural products such as cotton and peanuts. Currently, these products are put on trucks shipped to Dallas where they are loaded on to trains and shipped back through West Texas to ports in Southern California.

The West Texas regional rail network is comprised of tracks owned and operated by BNSF, UP, and multiple short line railroads. The region's infrastructure includes more than 1,700 miles of mainline track and nearly eight miles of railroad bridges.

The overall freight rail tonnage for the West Texas Region is projected to more than double by 2025. The commodity with the largest tonnage increase is raw materials, which accounts for the coal movement through the region. The movement of agriculture is projected to increase approximately 151%, due in part to the large growth in the agriculture industry that includes corn grain, ethanol plants, feed supplements, dairy, and cotton. Food was also projected to result in high growth rates. Although high percentages of growth are projected for wood, building materials, textiles, machinery, chemical/petroleum, and secondary products, they result in a small portion of the overall commodity rail movement. The majority of other rail commodities occur in the Amarillo District.

Like the rail freight network, the overall truck tonnage is projected to nearly double within the West Texas region by 2025. Food will be the largest growing commodity in terms of weight of increased tonnage, accounting for approximately one-third of the total truck freight tonnage moved. The development of the Reese Technology Center in the Lubbock District is also projected to be a major origin and destination for truck and rail freight in the West Texas region.

Given growth rates for both vehicle and train traffic, the total public cost of delay at the roadway-rail crossings in the 46-county West Texas region is estimated to be more than $193 million over the next 20 years. The cost of lost time is estimated at $3.0 million per year; the cost of collisions is estimated at $1.4 million per year; and the combined cost of emissions and wasted fuel is $276,000 per year. The FRA reported 123 incidents between trains and vehicles at public and private railroad crossings occurring between 2002 and 2006, including 45 injuries and 17 fatalities the West Texas region alone. The estimated 20-year public benefit of the grade separations and crossing closures identified in this report is more than $28.7 million.

The West Texas Region Freight Study, completed in January 2009, identifies nearly $597 million of improvements. These improvements, shown in 2008 dollars, are categorized as:

- Grade Separations – 10 for an estimated cost of $83.4 million
- Grade Crossing Closures – 11 for an estimated cost of $550 thousand

- Roadway Capacity Enhancements (adding roadway lanes to existing highways or improving traffic operations) – 4 for an estimated cost of $347.4 million
- New Roadway Bypasses – 2 for an estimated cost of $165.2 million

East Texas Region Freight Study

The East Texas Freight Study analyzed freight rail operations to the east of Dallas/Ft. Worth and to the north of Houston in the 42 counties within the Tyler, Lufkin, Atlanta, and Paris TxDOT Districts. As in West Texas, the majority of rail freight movement in the study area is through freight. Like in West Texas, East Texas would also benefit from more access to rail—not just for freight but for commuter rail.

The East Texas regional rail network is comprised of tracks owned and operated by BNSF, UP, KCS, and multiple shortline railroads. The region's infrastructure includes more than 2,000 miles of mainline track and nearly 30 miles of railroad bridges.

The three major railroads (UP, BNSF, and KCS) ship a significant amount of tonnage through the East Texas region. The largest tonnage shipments occur between this region and the Houston area. Accommodating these and other locations with freight rail service is crucial to the future of Texas in terms of economic growth and also providing options to shift truck cargo to rail cars.

The overall tonnage shipped by rail in the East Texas region is projected to more than double by 2025. The challenge to accommodate the forecasted growth in freight rail is in planning for new or expanded rail facilities that can capitalize on the expected growth markets. The commodity with the largest projected tonnage increase is raw materials, which accounts for the coal movement through the region.

Like the rail freight movement, the overall truck tonnage shipped by truck in the East Texas region and each of the included districts is projected to more than double by 2025. Large volumes of trucks move and will continue to move between the region and major growth markets such as the Texas urban centers of Dallas/Ft. Worth, Houston, San Antonio, Austin, and El Paso, as well as the U.S.–Mexico border. The I-35 corridor between Dallas and San Antonio, the I-30 corridor between Dallas and Texarkana, and the U.S. 59 corridor between Houston and Texarkana accommodate the largest truck movements for trips going to and from East Texas. Major truck movements are also currently seen, and are projected to increase, between East Texas and Arkansas, Louisiana, Oklahoma, New Mexico, and Mexico. These movements inside and outside of Texas illustrate the need for increased capacity on the freeway system to allow for increased truck movements.

Given growth rates for both vehicle and train traffic, the total public cost of delay at the roadway-rail crossings in the 42-county East Texas region is estimated to be more than $269 million over the next 20 years. The cost of lost time is estimated at $3.7 million per year; the cost of collisions is estimated at $3.4 million per year; and the combined cost of emissions and wasted fuel is $345,000 per year. The FRA has reported nearly 340 incidents between trains and vehicles at public and private railroad crossings occurring between 2002 and 2006, including 150 injuries and 54 fatalities, in the East Texas region alone. The estimated 20-year public benefit of the grade separations and crossing closures identified in this report is nearly $23.4 million.

The East Texas Region Freight Study, completed in December 2008, identifies up to $519 million of improvements for the 42-county East Texas region comprised of the TxDOT Atlanta, Lufkin, Paris, and Tyler Districts. TxDOT Dallas District improvements will be included in a separate report. These improvements, shown in 2007 dollars, are categorized as:

- Grade Separations – 9 for an estimated cost of $61.1 million
- Grade Crossing Closures – 12 for an estimated cost of $600,000
- Roadway Capacity Improvements – 5 for an estimated cost of $426 million
- New Rail Bypass – between $8.4 and $30.9 million, depending on alternatives

Since the Dallas/Ft. Worth Metroplex and Shreveport, LA are close to the East Texas region, the possibility of increasing passenger rail service and adding commuter rail service was reviewed. Discussions with individuals within local government agencies involved in potential passenger and commuter rail corridors included topics such as potential origins and destinations, feasibility, and contact with railroads.

Four potential routes were chosen based on those discussions and locations of existing and abandoned freight lines. Two of the potential routes incorporated commuter rail into Dallas. The other most logical and feasible route within the East Texas region was an extension of the existing Amtrak service from Marshall to Shreveport. A computer simulation of a planning case with one additional train per day along the route showed a decrease in freight rail speeds and an increase in operating costs for freight rail operations totaling between $88.8 and $100 million over 20 years.

Corpus Christi Region Freight Study

The Corpus Christi and Yoakum Districts are surrounded by the Gulf of Mexico, Houston, San Antonio, and the Mexican border and represent an important crossroads along north-south and east-west trade corridors. The anticipated growth in both population and trade within the Corpus Christi and Yoakum Districts has already spurred state, county, and local leaders to address these transportation needs. With six separate RRTDs within the study area, the importance placed on rail transportation within the region is evident.

Ports play a vital role in the local economy. The Ports of Corpus Christi, Lavaca-Point Comfort and Victoria all anticipate significant growth in trade. Already one of the ten busiest ports in the U.S. (by tonnage), the Port of Corpus Christi is undertaking multiple large-scale project initiatives to handle increased trade activity.

Within the Corpus Christi and Yoakum Districts, there are approximately 812 miles of active mainline track. The UP is the major Class 1 carrier within the region and owns the overwhelming majority of the track located in the Corpus Christi and Yoakum Districts. Class 1 competitors BNSF and KCS also conduct operations with the region, largely through a trackage rights agreements with UP.

The main rail subdivisions with the region are the Angleton, Brownsville, Flatonia, Glidden and Corpus Christi subdivisions. The Angleton and Brownsville subdivisions are part of the path between Houston and the Mexican border; the Flatonia and Glidden Subdivisions are part of the San Antonio-Houston route; and the Corpus Christi subdivision connects the Port of Corpus Christi and San Antonio.

Modeling of the existing rail network using RTC software produced the following operational observations. Capacity improvements could be designed for the Brownsville Subdivision to improve existing rail flows. Two areas should receive focus: the Bloomington Yard and the main line between Inari and Odem. The Angleton Subdivision is approaching a level of capacity utilization that may also require mitigation. The east–west portion of the Flatonia Subdivision and the Glidden Subdivision are also approaching a level of utilization that may require mitigation. The other subdivisions in the Corpus–Yoakum Freight Districts are not currently in need of capacity mitigation.

Rail freight growth projections compiled for this report predict a growth rate of approximately 40 percent for rail commodities moving into, out of, through, and within the Corpus-Yoakum region between 2010 and 2035. Separate growth projections were prepared for seven commodity types. The commodity types analyzed included autos and auto parts, coal, grain, minerals, other commodities, petrochemicals, and intermodal. The largest increases are expected in intermodal, autos/auto parts and petrochemical freight, with coal and grain seeing modest growth.

Utilizing the forecasts in rail freight growth to project rail traffic and network operations for the year 2035, eleven different rail infrastructure improvements were recommended to mitigate rail traffic bottlenecks:

1. New leg of the wye[40] at Odem, ***Improvement BA-1***
2. New leg of wye at Sinton, ***Improvement BA-2***
3. New siding MP 171 Brownsville Subdivision, ***Improvement BA-3***
4. Upgrade siding at Woodsboro ***Improvement BA-4***
5. Upgrade siding at Greta, ***Improvement BA-5***
6. Second track Bloomington to Victoria Industrial Spur, ***Improvement BA-6***

7. Second track Bloomington to Placedo***, Improvement BA-7***
8. New siding and connection to BNSF at Bay City, ***Improvement BA-8***
9. New siding MP 16 Cuero Subdivision, ***Improvement C-1***
10. New siding MP 111 Glidden Subdivision, ***Improvement G-1***
11. New siding MP 85 Smithville Subdivision, ***Improvement S-1***

Collectively, these improvements cost $72 million in estimated construction costs (see Table 3-20). Two planning scenarios were modeled, including a "no-build" scenario, in which none of the improvements were built; and a "build" scenario, in which all 11 improvements were built. The "build" scenario showed considerable reductions in delay hours and significant increases in average train velocities through the network. The Flatonia and Glidden improvements should be monitored following the KCS rebuild of the Victoria-Rosenberg segment, as this improvement may remove capacity issues.[41]

Table 3-20: Corpus Christi/Yoakum District Rail Improvement Construction Cost Estimates

Improvement	Estimated Cost
Improvement BA-1 - Odem Wye	$ 2,050,000
Improvement BA-2 - Sinton Wye	$ 3,170,000
Improvement BA-3 - Brownsville Subd. Siding	$ 6,560,000
Improvement BA-4 - Woodsboro Siding Upgrade	$ 2,660,000
Improvement BA-5 - Greta Siding Upgrade	$ 2,660,000
Improvement BA-6 - Bloomington to Victoria 2nd Track	$ 6,250,000
Improvement BA-7 - Bloomington to Placedo 2nd Track	$ 16,520,000
Improvement BA-8 - Bay City Siding	$ 8,310,000
Improvement C-1 - Cuero Subd. Siding	$ 7,180,000
Improvement G-1 - Glidden Subd. Siding	$ 8,280,000
Improvement S-1 – Smithville Subd. Siding	$ 8,590,000
TOTAL	**$ 72,230,000**

The report also analyzed 10 at-grade crossings throughout the district for evaluation of grade separation projects (see Table 3-21). The crossings were selected through an evaluation process that took into account both vehicular and rail traffic.

Table 3-21: Grade Crossing Locations Identified for Analysis

Street Name	Crossing ID	County	City	Rail Subdivision	Approximate Milepost
Meyers St. (S.H. 36)	023270N (siding) 416484T (main)	Austin	Sealy	BNSF Bay City	0.26 (siding) 135.35 (main)
Avenue F. (S.H. 60)	448744X	Matagorda	Bay City	UP Brownsville	283.80
Rio Grande St. (U.S. 59)	746472J	Victoria	Victoria	UP Port Lavaca (Cuero)	27.50
Park St. (S.H. 44)	793819S	Jim Wells	Alice	Texas Mexican	119.90
Park Ave. (U.S. 77)	435545H	San Patricio	Odem	UP Corpus Christi	132.20
Sinton St. (U.S. 181)	436011U	San Patricio	Sinton	UP Brownsville	162.15
U.S. 90	742771C	Gonzales	Gonzales	Texas Gonzales & Northern	11.02
WB Frontage Rd. (U.S. 77)	764969W	Victoria	Victoria	UP Port Lavaca (Cuero)	31.48
NW Ingleside (S.H. 361)	746288W	San Patricio	Gregory	UP Kosmos	0.06
Esplanade St. (S.H. 87)	746703P	Victoria	Cuero	UP Port Lavaca (Cuero)	54.99

Each of the selected grade crossings was examined in detail to develop an order of magnitude cost estimate (see Table 3-22).

Table 3-22: Cost Estimates for Selected Grade Crossings

Street	Crossing ID	Cost
US 90	742771C	$12,700,000.00
US 77 / Park Avenue	435545H	$7,200,000.00
US 77 / WB Frontage Road	764969W	$9,000.00 *
US 59 / Rio Grande St.	746472J	$7,200,000.00
US 183 / Esplanade St.	746703P	$6,900,000.00
SH 36 / Meyers St.	023270N (siding) 416484T (main)	$8,300,000.00
SH 44 / Park St.	793819S	$6,700,000.00
SH 60 / Avenue F	448744X	$8,400,000.00
SH 361 / NW Ingleside	746288W	$8,800,000.00
US 181 / Sinton St.	436011U	$5,600,000.00

** Grade separation not feasible. Cost shown is for crossing closure.*

The Corpus Christi and Yoakum Districts Freight Study identifies nearly $150 million in rail intersection improvements and grade separation improvements for the area. It recommends that the Brownsville, Angleton, Flatonia, and Glidden subdivisions be considered for capacity mitigation. The Flatonia and Glidden improvements should be monitored following the KCS rebuild of the Victoria–Rosenberg segment, as this improvement may remove capacity issues. The Port of Corpus Christi would like to have improved rail access and there are plans to build a container facility at the decommissioned Ingleside Naval yards. Budget constraints and non-participation by the railroads limited the data available required to perform accurate cost-benefit analysis for this study. As a result the findings pertaining to costs and benefits for the public and private sectors performed within this report will be refined in subsequent versions of this document.

Dallas/Ft. Worth Region Freight Study

The Dallas/Ft. Worth Study encompasses the TxDOT Dallas and Ft. Worth Districts. TxDOT's study is being completed in conjunction with the North Central Texas Council of Governments (NCTCOG) Tower 55 Reliever Study.

The Dallas/Ft. Worth Metroplex is served by three Class I railroads (UP, BNSF, and KCS); two short line railroads (Dallas, Garland and Northeastern Railroad, and FWWR); and two passenger rail systems (Dallas Area Rapid Transit and Trinity Railway Express, or TRE). Collectively, these systems make up a regional rail network comprised of more than 1,300 miles of mainline track that routinely exhibits constrained freight mobility due to steady increases in annual train volumes relative to modest growth in rail capacity. The primary source of this congestion occurs at Tower 55 near downtown Ft. Worth, where nine Class I rail lines in the region converge at the Tower 55 interlocking. The demand for truck freight services in the region has created similar congestion problems on the roadway network. Additionally, vehicular mobility is reduced at highway-rail grade crossings, which experience long block times as a result of increasing train volumes and congestion-induced reductions in train speeds.

Current and future year truck and rail freight activity was analyzed using statewide and regional transportation models. The SAM was used to project future truck and rail freight movements on a tonnage basis, whereas the Dallas/Ft. Worth Regional Travel Model (DFWRTM) was used to project future truck and total vehicle movements on a volume basis.

Projections of truck freight from the SAM indicate that cargo moving strictly within the Dallas/Ft. Worth region is likely to increase by approximately 52 million tons (11% increase) between 1998 and 2025. Truck freight moving from the area to outside destinations during this time will increase by approximately 112 million tons (23% increase), and truck freight originating outside of Dallas/Ft. Worth being delivered to the area will increase by approximately 139 million tons (28% increase). The largest increase in truck freight on Dallas/Ft. Worth roadways will come from through freight, which is projected to increase by 187 million tons (38% increase).

Projections of rail freight from the SAM show somewhat smaller increases in tonnage handled by local industries between 2004 and 2025 compared to locally-based truck freight. Rail freight moving within the Dallas/Ft. Worth area is projected to increase by only 2 million tons (1% increase). Rail freight from the area to outside destinations will increase by approximately 22 million tons (8% increase), and rail freight originating outside of the Dallas/Ft. Worth region being delivered to the area will increase by approximately 47 million tons (17% increase). As with truck freight, the largest increase in rail freight on the Dallas/Ft. Worth rail corridors will come from through freight, which is projected to increase by 208 million tons (74% increase). Consequently, rail freight moving through the Dallas/Ft. Worth area not handled by local industries will make up the greatest increase in freight tonnage on the transportation network in terms of absolute tonnage and percent growth.

The DFWRTM analyses reflected truck volumes and congestion on the roadway network. The highest truck volumes on the Dallas/Ft. Worth roadway network occur on major sections of I-20, I-30, I-35, I-820, and I-635, which are intended to support the movement of vehicles through and around the Dallas/Ft. Worth area. These corridors are distinguished by a traffic mix consisting of more than 15% trucks compared to other roadways in the area with lower truck volumes. When total vehicular traffic is included in the DFWRTM analyses, traffic volume-to-capacity (V/C) ratios indicated that the greatest congestion currently exists in Dallas, Collin, Tarrant, and Denton Counties, and will extend to include Johnson, Parker, Ellis, and Rockwall Counties within the next two decades. The areas of highest projected traffic congestion also overlap with the roadway sections of highest projected truck volumes (I-20, I-30, I-35, I-820, and I-635), which supports findings suggesting the greatest benefits (measured as reductions in vehicle delay, fuel consumption, and emissions) from investment are located in Dallas, Tarrant, Collin, Denton, and Rockwall Counties.

The Dallas/Ft. Worth rail network consists of 22 rail corridors. Train operations over these rail corridors were modeled with the RTC computer simulation program using railroad network files that detail the physical rail infrastructure within the Dallas/Ft. Worth area and train files that contain routing and dispatching information for trains in the study region. Of these simulated trains, 1,595 freight and 360 passenger trains complete their run during the 7-day simulation period and are included in the analysis of railroad performance measurements. Approximately 70% of all trains operating in the Dallas/Ft. Worth area are through trains, which is consistent with the results of SAM analyses that found the greatest amount of rail tonnage to be through freight. Of these through trains, 23% are "expedited" intermodal and auto trains that carry time-sensitive cargo. Consequently, operations on the Dallas/Ft. Worth rail network must accommodate a mix of trains with different relative priorities, which places particular stress on line capacity at high volume rail junctions.

RTC simulation of train operations on the existing network (the Base Case) shows that most of the rail congestion problem in the Dallas/Ft. Worth area exists at Tower 55 on the UP Ft. Worth Subdivision south of downtown Ft. Worth, and at Tower 60 on the UP Duncan Subdivision just north of the Trinity River. Approximately 40% of total rail network delay occurs on railroad subdivisions that intersect either or both Tower 55 and Tower 60, most of which is attributable to train conflicts at these interlockings.

With congestion at Tower 55 considered the most problematic and largest contributor to rail network delay, the predominant focus on rail improvements in this report involve construction and extensions of second mainlines, installation of rail connections, and relocation of existing mainline in the Tower 55 area. Results from RTC simulation of nearly $94 million in at-grade rail improvements associated with Tower 55 showed that the public sector would realize approximately $364 million in benefits related to reductions in vehicle impedance and accidents at grade crossings, and that the railroads would save approximately $55 million from reductions in train delay times. A saturation analysis, in which trains were added to the RTC model until delay equal to that of the Base Case was reached, found that these improvements alone would improve rail capacity at Tower 55 by 18% in terms of the number of trains able to pass through the interlocking. The immediate effect of implementing the at-grade improvements would be a reduction in current train delay times by 23 to 24%.

In addition to Tower 55 improvements, an analysis was performed to determine the benefits associated with rerouting Amtrak Trains 21 and 22 from the UP Dallas Subdivision to the TRE. Results from the RTC computer simulation of $3 million in sidings and connections installed on the TRE showed that the public sector would realize approximately $72 million in benefits related to reductions in vehicle impedance and accidents at grade crossings, and that the railroads would save approximately $5 million from reductions in train delay times resulting from the rerouting of Amtrak trains.

An examination of FRA data showed that 274 roadway-rail grade crossing accidents occurred during a five-year period in the 16-county Dallas/Ft. Worth region from January 2002 to December 2006. Included in these accidents were 31 fatalities and 90 injuries, emphasizing the importance of eliminating vehicle-train interactions wherever possible. This study identified 47 grade crossings where the public benefit realized by eliminating vehicle impedance and accidents at the existing crossings would be greater than the estimated cost of constructing grade separations. An additional 42 grade crossings were identified for potential closure within the Tower 55 area that are either included in quiet zone studies by the City of Ft. Worth or could have traffic rerouted over a nearby grade separated roadway.

Forty-four identified potential grade separations, at an estimated cost of $342.5 million, which would separate railroad lines from streets, thereby reducing safety hazards and delays. For citizens who travel across these roadway-rail crossings, these projects could provide relief from blocked intersections and traffic congestion on the roadways. It also means improved safety by allowing emergency and law enforcement vehicles to respond without delay while improving the quality of life for residents in the impacted neighborhoods. The estimated 20-year public benefit value of the identified grade separations totals $1.28 billion.

Also identified are 37 locations where grade crossings may be closed for an estimated cost of $1.95 million. These safety improvements minimize conflict points between trains and cars by closing crossings and encouraging motorists to use grade-separated roadways or alternate streets, which have better safety systems in place. The estimated 20-year public benefit value for the crossing closures totals $47.6 million. All estimates for this analysis were calculated using 2008 dollars.

Rio Grande Valley/ Laredo Region Freight Study

Phase 1, completed in December 2009, of the Lower Rio Grande Valley and Laredo Region Freight Study identifies existing and projected truck and freight rail transportation operations, bottlenecks, and constraints for freight movement in the TxDOT Pharr and

Laredo Districts. Phase 2 of the study, which will identify improvements, has not yet been completed.

The study region's truck freight movement is anticipated to double in volume between 2003 and 2035, while rail tonnage is projected to increase by 64% between 2007 and 2035. The movement of freight by truck is the predominant method of freight transport within, into, and out of the study region in both 2003 and as projected in 2035. The majority of the truck freight is exported from the study region with the largest destinations (in terms of tonnage) located in other Texas counties and Mexico. Nearly 98% of imported truck freight in the study region originates in Texas counties outside of the study region, primarily from the Houston and Dallas/Ft. Worth areas. Nearly 68% of truck freight to and from the study region remains in Texas, while 21% travels to or from Mexico, and the remainder travels to or from other U.S. states. Food, building materials, and secondary cargo are the leading commodities imported to, exported from, and transported within the study region by truck in 2003 and projected in 2035.

The majority of rail freight is exported from the study region with the largest destinations (in terms of tonnage) located in the Eastern U.S. and Mexico. The largest growth is expected in rail freight exported from the study region that is destined for Mexico. Rail freight between Mexico and the U.S. crossing the Texas–Mexico border within the study region is projected to more than double by 2035, which will result in a large increase of rail traffic through the study region. Approximately 37% of rail freight to and from the study region remains in Texas, while 35% travels to or from the Eastern U.S., 21% travels to or from Mexico, and the remainder travels to or from the Northern and Western U.S. The primary products being moved by rail in the region (in terms of tonnage) are raw materials, food, machinery, and miscellaneous mixed loads in 2003 and projected in 2035.

The study region includes three rail border crossings with Mexico, which are located at Brownsville, Laredo, and Eagle Pass. The freight moved through the border crossings within the study region comprises 87% of all U.S.–Mexico rail trade across the Texas border, with the largest volume crossing at Laredo (54%). Approximately 86% of U.S.–Mexico rail trade crosses the Texas border, while the remainder crosses at the Arizona and California borders. The study region also includes 10 border crossings with Mexico that are used by freight trucks. The largest crossings by volumes of trucks are located at Laredo, Pharr, and El Paso (not within study area).

Approximately 385 trains per week travel within the study region rail network, which is comprised of tracks owned and operated by UP and KCS. BNSF has the right to operate their trains over the UP and KCS tracks as well. The region's infrastructure includes nearly 900 miles of mainline tracks, including all principal rail lines and yards between Bloomington on the north and Brownsville/Mission/Rio Grande City on the south, between Corpus Christi on the east and Laredo on the west, and between San Antonio on the north and Laredo on the south.

About half of all trains in the region traverse the UP Brownsville Subdivision, while another 37% use the UP Laredo Subdivision, and about 10% use the KCS between Robstown and Laredo.

The UP Brownsville and Laredo Subdivisions have reached their practical capacity based on studied train volumes. The KCS Laredo Subdivision has available capacity for growth; however, through trains using this route must also use the UP Brownsville Subdivision between Robstown and Bloomington. Therefore, they are still affected by capacity constraints. The rail network studied in Phase I of this analysis did not yet include operations on the recently rebuilt KCS abandoned line between Rosenberg and Victoria, and although this line segment will help create capacity north of Bloomington, it does not address the bottleneck south of Bloomington.

Investment will likely be needed in the mainline routes to the Mexican border if rail traffic grows substantially in the next 10 to 20 years. The Brownsville border crossing likely has available capacity on the U.S. side, although the Mexican side is likely a constraint on the KCSM line between Matamoros and Monterrey.

The local rail network can likely handle an increase in traffic volumes within the study region. Expanded capacity is more likely to be required north of Robstown, through Odem and Sinton to Inari. This section of the Brownsville Subdivision is used by UP trains as well as KCS and BNSF trains operating across the UP line under trackage rights agreements. Since the 1979 abandonment of a rail line between Coleto Creek, Beeville, Skidmore, and Alice, there is no alternate route through this part of the state.

The UP has improved the Laredo Subdivision in recent years with CTC signals and longer sidings, which added capacity to the line. Based on the train counts and distribution frequency used in the analysis, the Subdivision appears to be adequate to current demand. If NAFTA traffic grows significantly, however, the capacity and performance of this line may require further analysis.

An improved rail system can promote continued growth in the local economy, as well as support the shifting of truck cargo to rail cars, potentially providing congestion relief on regional freeways. It can strengthen the region's global competitiveness in goods movement, and help citizens reap the benefits associated with economic growth and vitality.

El Paso Region Freight Study

El Paso serves as one of the most important border gateways for Texas and the United States as a whole. Despite being generally isolated from much of the rest of the state and the nation as a whole, the city is a vital rail hub for the major Class I carriers. While no conclusive results or recommendations are currently available, TxDOT began the El Paso Region Freight Study in August 2010.

Summary

From the aforementioned studies commissioned by TxDOT, a number of needed improvements have been identified throughout much of the state and are listed in Chapter 7's Appendix A. Only improvements identified in the TxDOT studies are included in Appendix A.[42] The purpose of these freight rail studies is to generate a complete picture about the needs and potential costs of improvements to freight rail in different areas of the state. It is important to note that this list is not exhaustive, as it obviously neglects improvements identified in studies that are still incomplete, as well as areas of the state that have not been studied. Those TxDOT districts missing from these rail studies include San Angelo, Childress, Abilene, Wichita Falls, Waco, Beaumont, Bryan, and Brownwood. In addition, the recommendation of specific alternatives for some improvements are not within the scope of these studies, as that generally falls under the NEPA environmental review process. However, where the studies are complete, TxDOT now has a very good understanding of how freight moves by rail in those regions. This information is key in determining how additional passenger rail may coexist on these lines as will be discussed in the following chapter.

[1] Warner, Jeffery E., et al. "Understanding and Managing the Movements of Hazardous Material Shipments through Texas Population Centers." 0-5929. 2009.

[2] Warner, Jeffery E., et al. "Understanding and Managing the Movements of Hazardous Material Shipments through Texas Population Centers." 0-5929. 2009.

[3] Warner, Jeffery E., et al. "Understanding and Managing the Movements of Hazardous Material Shipments through Texas Population Centers." 0-5929. 2009.

[4] Association of American Railroads, 2010.

[5] Association of American Railroads, 2008.

[6] 49 Code of Federal Regulations Ch 10 Part 1201

[7] Association of American Railroads, 2008 Freight Railroads in Texas fact sheet.

[8] Association of American Railroads, 2010.

[9] Journal of Commerce, July 2009, "KCS Railway Celebrates New Texas Link" http://www.joc.com/rail-intermodal/kcs-railway-celebrates-new-texas-link

[10] Letter submitted as Texas Rail Plan public comments to TxDOT, dated October 25, 2010, from Kevin McIntosh, AVP of State and Local Relations, Kansas City Southern.

[11] *Texas Railroads: An Evaluation*. Texas Transportation Institute, 1977.

[12] Union Pacific 2009 Annual Report http://www.up.com/investors/attachments/secfiling/2010/upc10k_021710.pdf

[13] Draft BNSF Input to Texas State Rail Plan, November 4, 2010.

[14] "BNSF buys 198 acres at Dallas Logistics Hub" http://www.allegroweb.com/hutchins/press/bnsf.pdf

[15] UP Form 10-K 2009 Annual Report

[16] KCS de Mexico website: http://www.kcsouthern.com/en-us/KCS/Documents/system_map[1].pdf

[17] Texas Comptroller of Public Accounts, State Functions at the Texas-Mexico Border and Cross Border Transportation, January 2001, accessed at http://www.window.state.tx.us/specialrpt/border/sfatb1.html

[18] http://www.borderplanning.fhwa.dot.gov/StatusofProjects.asp

[19] Department of State, Federal Register (Volume 74, Number 237) Public Notice 6835 http://www.state.gov/p/wha/rls/133479.htm

[20] "City of Laredo: news from The Binational, published May 3, 2005, accessed May 2010: http://www.corpuschristidaily.com/article_detail_new.cfm?id=2024

[21] Federal Register Notice by Department of State, Volume 74, Number 17, January 28, 2009 http://www.state.gov/p/wha/rls/120276.htm

[22] Letter submitted as Texas Rail Plan public comments to TxDOT, dated October 25, 2010, from Kevin McIntosh, AVP of State and Local Relations, Kansas City Southern.

[23] Union Pacific public comments for Texas Rail Plan.

[24] "Review of Unused Presidential Permit: Laredo, Texas International Railroad Bridge," Federal Register (Volume 74, Number 237) Public Notice 6835, December 4, 2009. Department of State http://www.state.gov/p/wha/rls/133479.htm

[25] Email communication with Union Pacific, September 8, 2010.

[26] Union Pacific Railroad Request for Air Brake and Inspection Waiver, September 14, 2006.

[27] Union Pacific Railroad Request for Air Brake and Inspection Waiver, September 14, 2006.

[28] Union Pacific Railroad Request for Air Brake and Inspection Waiver, September 14, 2006.

[29] Federal Register , Vol. 72, No. 21, Thursday, February 1, 2007. Union Pacific Railroad Company; Notice of Withdrawal of Petition for Waiver of Compliance and Cancellation of Public Hearing,

[30] Panama Canal Authority, Proposal for the Expansion of the Panama Canal: Third Set of Locks Project, April 24, 2006.

[31] A Regional Freight Study of the Corpus Christi and Yoakum Districts. Phase I Report, available at: ftp://ftp.dot.state.tx.us/pub/txdot-info/rail/freight/corpus_yoakum_1.pdf

[32] Cambridge Systematics, *TxDOT Waterborne Freight Corridor Study, Final Report*, January 11, 2010.

[33] 2001 Texas Grain Transportation Study. Center for Transportation Research, University of Texas and Department of Agriculture Economics, Texas A&M University, 2001. Available on-line @www.dot.state.tx.us/mis/graintransp/study.htm

[34] Vernon's Texas Civil Statutes, Title 112, Chapter 13: Miscellaneous Railroads, Article 6550c: Rural Rail Transportation Districts.

[35] Roop, S.S., C.A. Morgan, J.E. Warner, L.E. Olson, and L.L. Higgins. 2001. "Texas Rural Rail Transportation Districts: Characteristics and Case Studies". FHWA/TX-02/4007-1. College Station: Texas Transportation Institute, The Texas A&M University System.

[36] This section focuses only on studies commissioned by TxDOT. Other entities, such as metropolitan planning organizations (MPOs), have completed freight studies. The results of those studies will be incorporated in future rail plans.

[37] HNTB Corporation defined through freight trains in the Houston Region Freight Study as "an express train between major terminals," with terminals defined as "railroad facilities established for the handling of passengers or freight, and for the breaking up, making up, forwarding and servicing of trains, and interchanging with other carriers."

[38] Per information provided in the Texas Rail Plan public comments submitted by the Gulf Coast Rail District (GCRD), October 2010 the TxDOT Houston Region Freight Study (HRFS) considered the proposed investment's impact on the public and private carriers. A report commissioned by the GCRD in 2009, The Economic Benefits of Rail System Improvements for Shippers in the Houston-Galveston Region, "addresses a third and very important consideration by assessing the economic benefits to shippers that were not counted in prior studies. Investments in infrastructure identified in HRFS Planning Case 2 will result in $137.9 million in annual benefits to shippers through delay cost reductions and more reliable rail operations. This translates into a net present value (NPV) of business savings of $1.42 billion over 20 years, which is significantly higher than the NPV attributable to public benefits ($98 million) or to private carrier benefits ($73 million) estimated in the HRFS for the same 20-year time period. Additional impacts include greater demand by local businesses from more industry purchasing (indirect effects) and secondary spending (induced effects) of goods and services used to provide inputs to their businesses. These "multiplier" effects produce a total economic impact of roughly $227 million in increased business sales (output) per year for the Houston region, supporting roughly 610 permanent jobs and $32.0 million in annual wages."

[39] Information provided in the Texas Rail Plan public comments submitted by the Gulf Coast Rail District, October 2010.

[40] HNTB Corporation defined a wye in the Houston Regional Freight Study as "a track shaped like the letter 'Y,' but with a connector between the two arms of the 'Y.' A wye is used to reverse the direction of trains or cars. A train pulls completely through one leg of wye, the switch is thrown and reverses the direction, allowing the movement across the semi-loop track of the wye, and the train is then headed in the opposite direction."

[41] Letter submitted as Texas Rail Plan public comments to TxDOT, dated October 25, 2010, from Kevin McIntosh, AVP of State and Local Relations, Kansas City Southern.

[42] Regarding Appendix A, other entities, such as metropolitan planning organizations (MPOs) have completed studies and the results of those will be incorporated into future rail plans. For instance, the Hidalgo County MPO completed a rail study in 2005 (http://www.hcmpo.org/files/Studies/RailStudy.pdf).