Freight Rail Public-Private Partnerships: How Texas May Accommodate the Future Surge in Growth

by

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Approved by
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Dedication

To my family and Bryan in appreciation for their love and support.

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ABSTRACT

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This report assesses the current and future freight conditions in Texas, and how more freight will need to be transported by rail to keep up with the population and economic trends. Public-private partnerships are necessary to accommodate this surge in growth in order to make it financially feasible for both the public and private sectors.

The intent of this report is to introduce the concept of freight rail public-private partnerships in order to relate it to the State of Texas to help accommodate growth. Two case studies will be discussed as examples of successful public-private partnerships where freight rail expansion was feasible. At the end of each case study, there is a section for implications in Texas' rail system. A series of interviews with public and private stakeholders will portray the sides of both sectors as to why freight rail public-private partnerships are difficult to achieve in Texas. Finally, some recommendations will be made for Texas based on the case studies and interviews.

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Chapter One: Introduction

1.0 INTRODUCTION

This report is a preliminary study of expanding the Texas freight rail system through public-private partnerships to accommodate the demand for increased goods movement. The traffic congestion and road conditions on Texas' main interstate highways are quickly deteriorating as population growth increases and trade from the Mexico border and Texas ports expand rapidly. Since the enactment of the North American Free Trade Agreement (NAFTA) in 1994, trade has increased dramatically between the U.S. and Mexico, causing a strain on the current infrastructure of many Texas border cities and interstate highways. Not only has truck traffic increased, but regular car traffic has as well. According to a Texas Department of Transportation news release:

> Approximately 45 percent of the 21 million Texans live within 50 miles of I-35. With this significant portion of the population centered around I-35, the corridor is no longer an efficient option for intercity and freight travel but rather has become a commuter route, particularly in the urban areas (Garcia, 2006).

Not only is I-35 suffering from congestion, but also many of Texas' highways are exceeding capacity with this combination of commuter traffic and intercity goods movement. Including international trade, commercial truck[1] traffic makes up approximately 20-38 percent of the overall Texas I-35 traffic (Garcia, 2006). The financial and environmental impacts of constructing new lanes of highway are costly for the state, but are inevitable as the demand for more than just highway infrastructure improvements is long overdue.

[1] For the purposes of this report, a *truck* entails an 18-wheeler, tractor-trailer type vehicle that moves freight.

This report introduces the movement of goods through freight rail as a solution to increase the efficiency in trade throughout the state of Texas. Understanding that trucks are necessary for trade, transferring a certain percentage of freight movement to the railroads would not only benefit the state's economy due to more efficient trade, but it would also benefit the environment by lowering emissions, decrease traffic congestion by taking a portion of trucks off of the highly traveled roadways, and would alleviate some of the demand for continuous highway improvements. Written from a transportation planning perspective, this report will go into specifics about current and projected conditions in Texas, the importance of freight movement, public-private partnerships and two case studies.

1.1 IMPORTANCE

Moving goods by rail has economic and environmental benefits. With the current energy crisis and national heightened environmental awareness, government officials should consider looking towards the most efficient means of moving goods through the state to benefit the public welfare. The major freight railroads in Texas are private; therefore in order for the public to become involved in expanding rail, a public-private partnership may be necessary. This report is important for planners to realize that a freight rail public-private partnership is possible through proper planning, innovative financing, and cooperation and collaboration of key stakeholders.

1.2 WHY RAIL?

Over a long haul[2], railroads are more fuel-efficient, safer, and haul more freight at once than trucks. Trucks are necessary for freight movement; however, diverting a portion of long haul freight routes to rail may be beneficial to the general public welfare

[2] For purposes of this report, a long-haul can be defined as any amount exceeding 500 miles.

by helping to improve emissions, congestion, and quicker freight flow to deliver goods. Below are some facts about the railroads and how they are becoming more and more appealing to shippers, especially to help avoid highway congestion and increasing fuel prices.

Quick Railroad Facts

- Freight rail is two to four times more fuel efficient and generates less air pollution per ton-mile compared to trucking;
- The Environmental Protection Agency (EPA) estimates that for every ton-mile, a typical truck emits roughly three times more nitrogen oxides and particulates than a locomotive;
- If just 10% of freight moved by highway were diverted to rail, the nation could save as much as 200 million gallons of fuel each year;
- According to the American Society of Mechanical Engineers, if 10% of intercity freight now moving by highway were shifted to rail, 2.5 million fewer tons of carbon dioxide would be emitted into the air annually;
- Capacity-wise, one double-stack train equals up to 280 trucks;
- Freight rail provides shippers with cost-effective transportation, especially for heavy and bulky commodities;
- Rail offers separated rights-of-way for most corridors, and generally is preferred for movement of hazardous chemicals;
- Rail provides for a smoother ride than highway travel, further reducing damage to trailer contents;
- Railroads are reliable, trustworthy, and do not have the unpredictable interruptions of congested highway interstate travel;

Sources: Proctor & AASHTO, 2007; "Rail Vs. Truck," 2004; and Union Pacific, 2008.

The railroad facts show the importance of increasing rail capacity in order to help move freight through Texas. It is specifically important to note how much more freight can be moved by one train compared to moving 280 trucks on the interstates. If a certain percentage of freight can be diverted from the highways and onto railroads, this can help alleviate the environmental and congestion constraints many major Texas cities face.

The negative externalities associated with trucks often times are outweighed by the positive externalities that rail can offer for long-haul freight movement. The table

(Table 3.1) below shows an example of marginal cost differences between a truck on an interstate highway and rail, taken from a case study that looks at the movement of grain between two places about 215 miles apart. As mentioned before, trains are most efficient when moving goods over 500 miles (long-haul), however this is a good example of other ways trains are beneficial when looking at externalities and costs to the public.

Table 1.1: Freight Marginal Public Costs (dollars)

Category	**Truck**	**Rail**
Congestion	6.25	0.00
Accident	26.11	9.19
Pollution	6.75	1.43
Energy Security	3.63	0.39
Noise	0.00	0.78
Public Infrastructure	61.02	0.00
Carrier Cost	427.94	113.00
TOTAL:	**531.70**	**124.87**

Source: McCullough, 2007, p. 68 and TRB, 1996

It is important to note that this table shows that trucks cost the public much more in public infrastructure, whereas railroads do not cost the public anything for construction of its infrastructure. This is a benefit and also a constraint of the railroad companies. Although trucks pay a user fee to the government to drive on the interstates and higher gas taxes, it is difficult to measure if these fees compensate for the amount of wear-and-

tear on the major interstates through Texas, especially since the enactment of NAFTA. Fortunately it is not up to the trucking companies to find a way to build new and better roads for freight movement.

Railroads, on the other hand, pay for their capital improvement projects themselves such as expanding rail capacity, improving tracks that may need repair, purchasing locomotives, and land acquisitions. This is a benefit to the public, as railroads are private entities that finance their own capital projects in order to help move freight. With that said, railroad capacity in key corridors in Texas are becoming more and more congested, just as the highways. With the demand for increased freight movement, railroads may have a difficult time keeping up with funding rail capital improvement projects. It is important to note that railroads provide public benefits to non-users of the railroad as trains move goods all over the nation.

The many benefits of rail have caused "public policy-makers at all levels of government [to look towards] the railroads to carry more freight to relieve truck and highway congestion, and to help conserve energy, reduce engine emissions, and improve safety" (Cambridge Systematics, Inc., 2007). In order to better expand the railroads' capacity in Texas, governments need to consider public-private partnerships as a means to better address freight capacity and mobility.

1.3 PUBLIC-PRIVATE PARTNERSHIPS

A public-private partnership (PPP[3]) means the public puts into a project what would benefit the public interest and the private puts in what benefits the private. Another definition as defined by BNSF Railway states that public-private partnerships are "projects which combine freight rail business goals with diverse goals of local, state,

[3] PPP's will be used to abbreviate writing out "public-private partnerships" throughout the remainder of the document.

and federal governments" (Rickershauser, 2008). In most PPP cases, all entities involved benefit by achieving their goals faster, better and cheaper. PPP's are usually formed when each party involved has a need or is lacking something that the other party may be able to offer. A PPP may be formed by the public sector approaching the private or vice versa.

Public-private partnerships can be a useful tool to help increase railroad infrastructure and capacity in order to accommodate freight movement and growth in Texas. This report explores PPP's as a means to mitigate highway and railroad congestion, air quality, and overall economic growth for the State of Texas. A more detailed look at PPP's will be discussed further in the literature review section of this report.

1.4 REPORT THEME

Although public-private partnerships would help both the railroads and the public sector in Texas with expanding railroad infrastructure, there has been a theme of overall lack of coordination between the public and private parties. There is not a formula for going about a railroad PPP, and many attempted PPP projects do not come to fruition. In Texas there are two rail public-private partnership projects that will be discussed further in the report. These are the only two projects worth mentioning as somewhat successful for rail PPP's in the state. With that said, this report explores ways in which Texas may develop a comprehensive method for developing PPP's for rail projects to improve freight capacity and mobility. Through case study exploration and informal interviews with public and private entities, this report makes recommendations and conclusions about how Texas could better improve the freight rail PPP coordination.

1.5 CHAPTER OVERVIEW

This report is broken into three parts: literature review, methodology, and implementation. The literature review sets up background information for Texas and gives a brief discussion of public-private partnerships. The methodology section breaks down how the implementation occurs, and the implementation section uses two case studies, informal interviews with public and private stakeholders and makes recommendations for Texas. The two case studies look at successful freight rail PPP's. One is the Alameda Corridor project in California and the other is the CREATE project in Chicago. Below is a brief chapter overview.

Chapter two introduces Texas background information and current issues in terms of population and economic growth, freight traffic and congestion problems, infrastructure strains, and other contributing factors that point to the need for freight rail expansion through public-private partnerships. Chapter Two also discusses public-private partnerships and a few efforts in Texas. Chapter Three is the methodology section introducing how the case studies and interviews are laid out and how recommendations are made based on these. Chapter Four explores the two case studies in detail and interviews, and discusses lessons for Texas. Chapter Five makes some conclusions and recommendations based off of the findings within the report and case studies.

BACKGROUND

Chapter Two: Literature Review

2.0 INTRODUCTION

This chapter is a literature review of Texas' economy, population, freight, infrastructure conditions, and public-private partnerships. This chapter is divided into two main parts. The first part reviews the Texas existing conditions that helps set the stage depicting that Texas is a growing state in need of freight capacity improvements. The second section gives a background on public-private partnerships as a solution to overcoming cost constraints of developing railroad expansion projects to alleviate congestion.

2.1 TEXAS EXISTING CONDITIONS

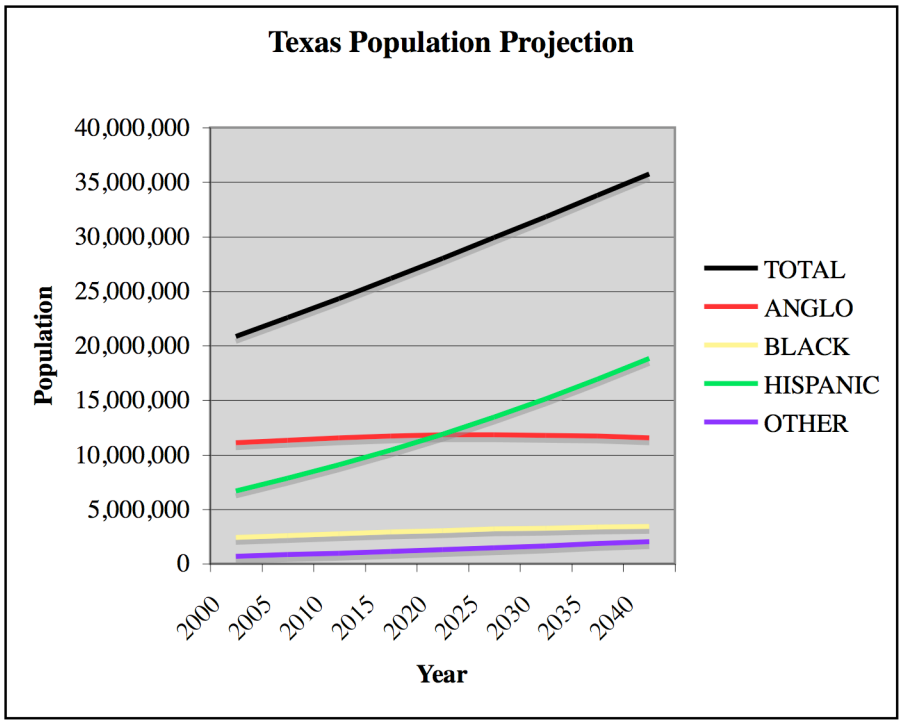
2.1.1 Population

The state population growth rate in Texas is one of the highest in the nation, surpassing California's rate in 2006, as the Lone Star State reached 12.7 percent with a U.S. Census Bureau estimate of 23,507,783 people ("Overview of the Texas," n.d.). The population based on 2000 U.S. Census Bureau data is used to project Texas' population up to the year 2040 in Table 2.1 and Figure 2.1, to illustrate how it is expected to grow. There is a noticeable Hispanic population surge over the 40-year projection time frame, and it is expected that by the year 2020, the Hispanic population will be the majority by race/ethnicity in Texas.

Table 2.1: Population 2000 and Projected Population 2005-2040 by Race/Ethnicity and Migration Scenario for the State of Texas[4]

YEAR	TOTAL	ANGLO	BLACK	HISPANIC	OTHER
2000	20,851,820	11,074,716	2,421,653	6,669,666	685,785
2005	22,556,054	11,327,875	2,588,604	7,820,854	818,721
2010	24,330,612	11,533,974	2,754,744	9,080,436	961,458
2015	26,156,715	11,694,533	2,913,063	10,436,536	1,112,583
2020	28,005,788	11,796,493	3,052,401	11,882,998	1,273,896
2025	29,897,443	11,830,579	3,170,986	13,448,469	1,447,409
2030	31,830,589	11,789,298	3,268,616	15,140,100	1,632,575
2035	33,789,668	11,682,014	3,345,684	16,934,444	1,827,526
2040	35,761,201	11,525,112	3,403,169	18,804,298	2,028,622

Figure 2.1: Illustration of Texas Population Projection 2000-2040



Source: Texas State Data Center and Office of the State Demographer http://txsdc.utsa.edu/tpepp/2006projections/

[4]Population projection is the recommended Texas State Data Center "Scenario 0.5", for long-term planning purposes, and is based off of 2000 Census Bureau data.

Approximately 91% of the population growth is occurring in or near the major metropolitan areas within the state ("Overview of the Texas," n.d.), and will have an effect on the state's economy and current infrastructure needs in, around, and between the large metropolitan areas. The state of the current highway infrastructure and capacity will be discussed further in this chapter.

2.1.2 Economics

Texas' economy is growing just as its population is growing. The most recent data from 2006 states that Texas' annual job growth rate is at 2.2 percent and is "once again outpacing the nation['s rate]" ("Overview of the Texas," n.d.). Texas' geographic location bordering Mexico, on the Gulf, and its central location within the United States make it a great place for international trade and transporting goods throughout the country. Also with its central location, the mild to warm climate, the affordability of living, and the job availability are all reasons why Texas is a thriving and economically viable state and why more and more people are migrating here. Although Texas' economy grew more slowly from 2006 to 2007, it still outpaced every other state in the nation due to the availability and types of jobs, and the less recessive house market (Combs, 2008). With the current national economic situation heading for recession, it appears that Texas will still have a tendency to grow.

2.1.3 Highways and Traffic

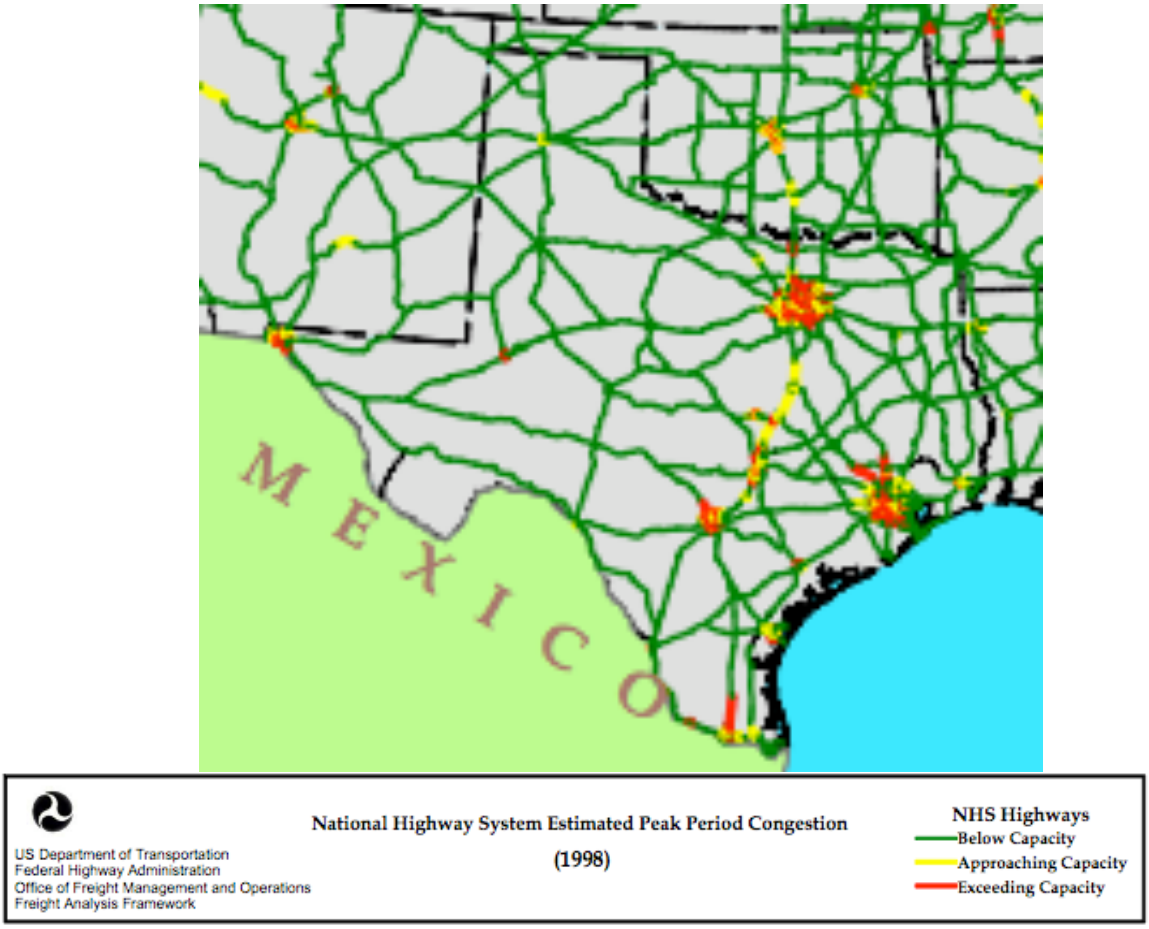
National and international trade movement on the highways is competing with domestic traffic as major metropolitan areas continue to grow. As mentioned in the introduction to this report, major highways are not only used for trade flow, but are used for commuting vehicular movement as well. This causes major congestion and bottlenecks near populous areas. Traffic and congestion are taking a toll on the overall

productivity of the state's economy as well as the environment. This section takes a closer look at these elements.

Texas Highway Capacity

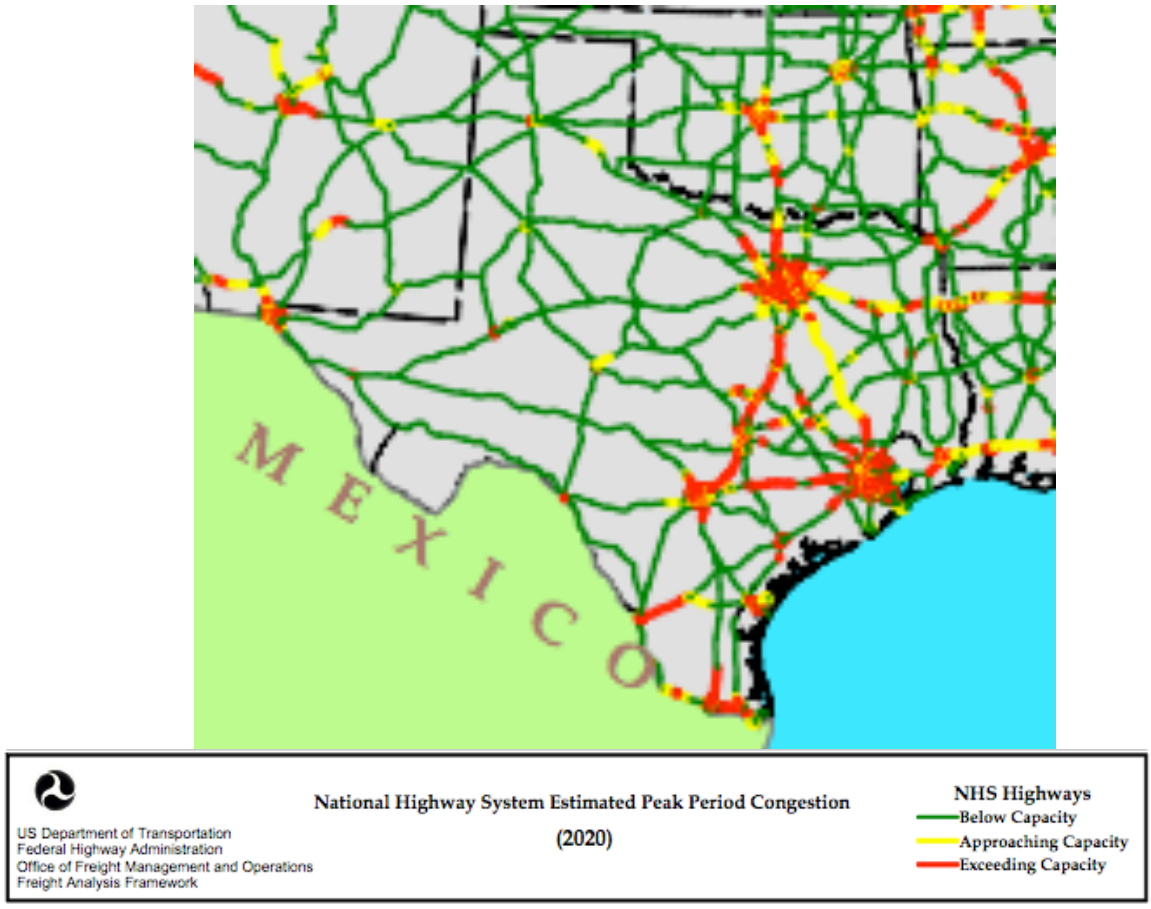
The following maps in Figures 2.2 and 2.3 show the current and projected capacity on Texas' highway system. The first map shows conditions in 1998, and the second map projects conditions in 2020.

Figure 2.2: 1998 Texas Highways Estimated Peak Period Congestion



Source: U.S. Department of Transportation Federal Highway Administration, 2006

Figure 2.3: 2020 Texas Highways Estimated Peak Period Congestion



Source: U.S. Department of Transportation Federal Highway Administration, 2006

It is important to note that not only the major urban highways become congested in these scenarios. Rural highways become congested as the major interstates become overcrowded. The highway maintenance and growth is unable to keep up with the traffic and trade growth that is occurring in Texas. There are many negative effects that

congestion can have including weakening the existing infrastructure and polluting the environment.

Effects of Congestion

There are three negative effects that congestion has on a society: 1) infrastructural effects; 2) environmental effects; and 3) social effects. Texas suffers from all three of these as population and the economy continue to grow.

Infrastructure

Initially, the interstate highway system funding began in 1956 in order to move goods by truck through the nation more efficiently, to increase overall mobility of Americans, and to provide an interstate for military and safety (Pfeiffer, 2006). This increased movement throughout the nation stimulated growth and created a need for constant maintenance and expansion of the interstate highway system. In Texas, the interstate highway carries approximately 23 percent of total vehicle travel mostly between the major urbanized areas (TRIP, 2006). Unfortunately, the rate of vehicular growth on the highways is outpacing the expansion of lanes on the highways, such that "between 1990 and 2004, vehicle travel on Texas's Interstates increased by 53 percent, while lane miles on the system increased by four percent" (TRIP, 2006). This heavy vehicular traffic increase is hard on the infrastructure, and makes it difficult for the state to keep up with maintenance and expansion. When NAFTA was passed in 1994 under President Clinton's administration, there was not a major push to improve the highway infrastructure to accommodate the increase in truck traffic. After its enactment, there was combined estimate of "30,000 additional truck crossings per day" (NAFTA/Mexican Truck Emissions, 2005) along the NAFTA border states of Texas, New Mexico, Arizona and California. As a result, there are now major bottlenecks throughout Texas' interstates, causing traffic delays for both intercity and through-traffic alike.

In some of the more congested urban areas, the percentage of trucks can be overwhelming. From the border of Texas at Laredo to San Antonio on I-35, it is estimated that "48 percent of the daily traffic is large 18-wheelers" (Carabin & Shaw P.C., 2008). In other sections of I-35, all the way through to the Oklahoma border, and even up to Canada, the percentage of trucks is significant. The nation became more aware of the current infrastructure strain when an I-35 NAFTA bridge collapsed in Minnesota last summer, 2007.

Environment

Highway vehicles emit hazardous materials into the earth's atmosphere, and "according to the BTS, highway vehicles were the largest contributors of pollution in the transportation sector" contributing "66 percent of total U.S. carbon monoxide, 30 percent of carbon dioxide, 47 percent of nitrogen oxide, and 35 percent of volatile organic compounds" (Bartle & Devan, 2006, p. 226). The more vehicles there are in a compact area, the more toxic materials are being emitted into the air. The idling of vehicles also contributes to the hazardous toxins being emitted into the air. Idling vehicles in slow, congested traffic tend to consume more fuel than moving vehicles, and emit carbon monoxide into the air (Texas Transportation Institute, 2003). It is better to keep traffic flowing in order to help reduce emissions. The carbon monoxide gases and other toxins have been linked in research to causing many public health problems such as: cancer, asthma, heart disease, and more (Bartle & Devan, 2006, p. 226).

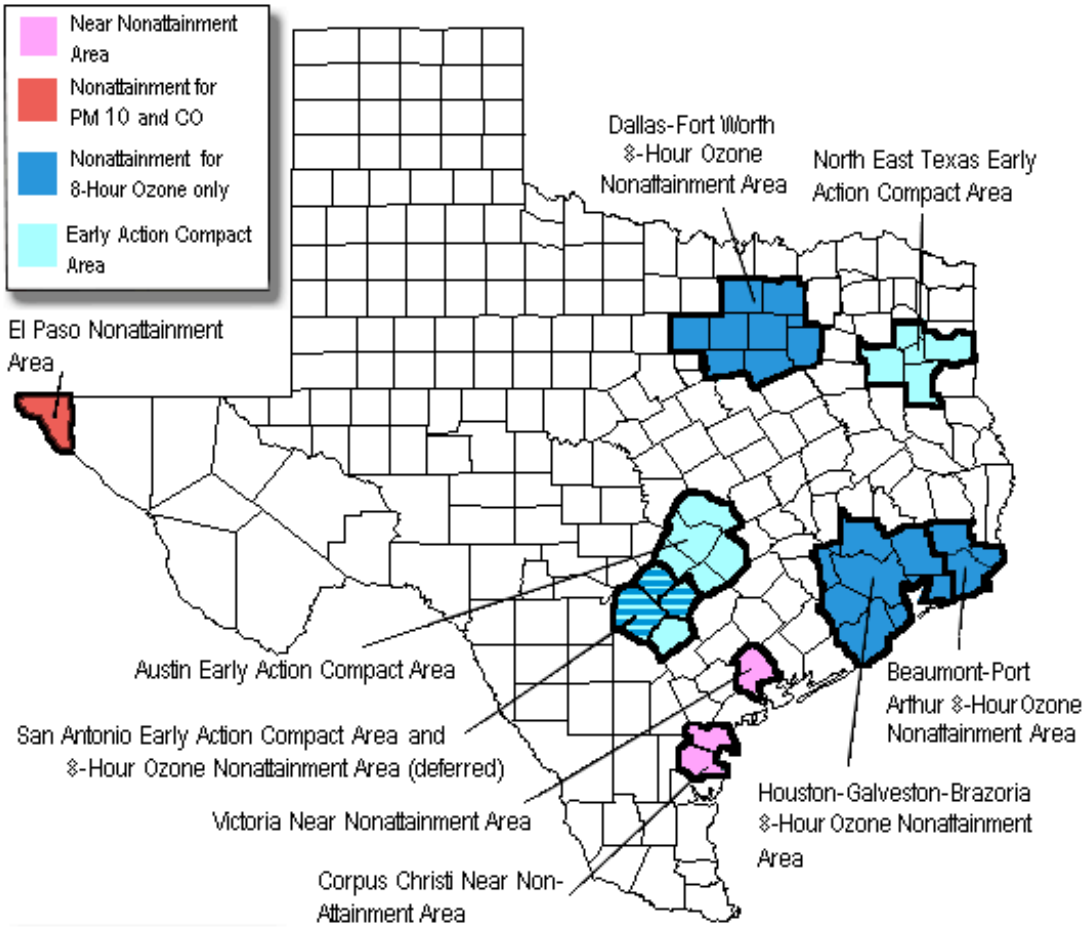
Many Texas urban areas have been classified as "non-attainment areas", which are based off of the Environmental Protection Agency's (EPA) standard of the air pollutant levels in a city. This is an explanation of EPA's non-attainment:

> The U.S. Environmental Protection Agency (EPA) has established NAAQS [National Air Ambient Quality Standards] for six air pollutants: ozone, lead, carbon monoxide, sulfur dioxide, nitrogen dioxide, and respirable particulate

> matter. The standards were established to protect the public from exposure to harmful amounts of pollutants. When the pollutant levels in an area have caused a violation of a particular standard, the area is classified as "non-attainment" for that pollutant. The EPA then imposes federal regulations on pollutant emissions and designates a time period in which the area must again attain the standard (AACOG, n.d.).

Localities that are non-attainment zones do not receive the usual state and federal funding allocation for road construction for single-occupancy lanes, in order to promote alternatives to putting more vehicles on the roadways (TxDOT, 2007). Figure 2.4 shows the areas in Texas that are non-attainment areas in Texas as of 2003. The Dallas-Fort Worth and the Houston areas have the most significant problems.

Figure 2.4: Texas Non-Attainment Areas



Source: "Texas Attainment Status," 2008

Further in the report, a discussion about truck emissions and fuel inefficiencies will be discussed and how rail can often times be more fuel efficient for longer-hauls. This discussion is significant for the purposes of this report, when introducing the concept of public-private partnerships to expand freight rail to help alleviate problems such as the ones mentioned.

Social Implications

Congestion not only has an effect on the public infrastructure and the environment, it also has social implications and affects the productivity and economy of a region. Studies have shown that "Americans lose 3.7 billion hours and 2.3 billion gallons of fuel sitting in traffic jams" and it is "robbing them of time that could be spent with families and friends" (Proctor & AASHTO, 2007). Not only is this time wasted in traffic that could be spent with families and friends, it is also lost time and productivity for truckers moving freight from destination to destination. Highways provide routes for the trucking industry to transport and deliver goods across the nation. With congestion problems, specifically around urban areas causing major delays, this can be detrimental to freight movement and the timing and delivery of goods.

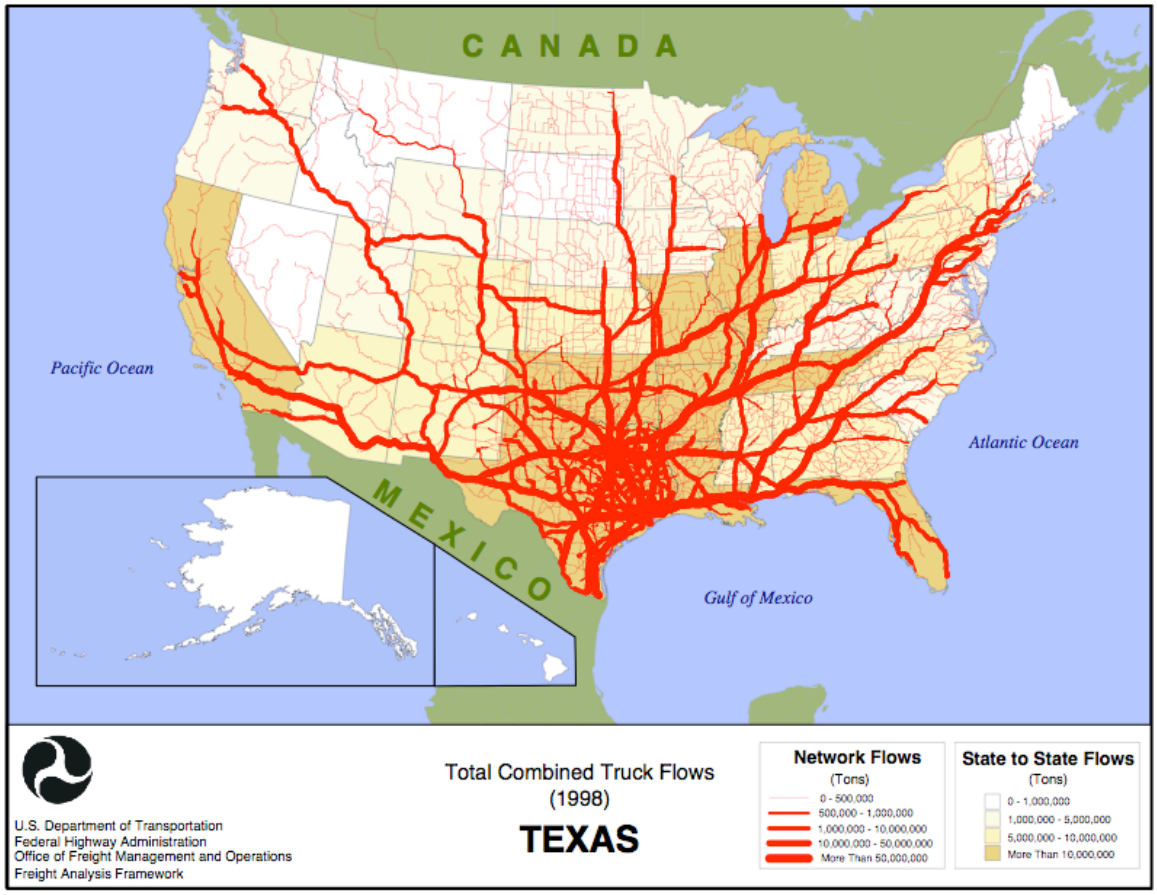
2.1.4 Freight Conditions

Freight and goods movement in Texas reflects the population trends and economic growth. Trade domestically and internationally influence the freight movement into, through and out of the state along highways, railways, waterways and airways. With Texas' geographic location on the Gulf of Mexico, trade has increased at the ports and at the Texas-Mexico border over the past decade. Since the West Coast ports shut down in 2002, trade through the Panama Canal has increased causing the Texas ports to grow (Logistics Today, 2005). Shipping companies are trying to diversify their trading options and not have to solely rely on California's Long Beach and Port of

LA. Container trade at Texas seaport locations is only expected to increase because of this. Currently, at the Port of Houston, 86 percent of freight that comes in at this location stays within the state, and the rest is distributed to other states (Logistics Today, 2005). This is projected to change as trade is expected to grow from China and other countries at the Texas ports. California's ports are very congested as they receive the majority of container ship trade from East Asia. Texas is becoming a more competitive choice for shippers to deliver goods into the heartland of the United States more quickly (Wright & Hudgins, 2007). The planning implications for this growth potential are critical when looking at the current state of roadway and railway infrastructure and capacity.

Below is a map depicting domestic and international freight cargo movement through Texas by truck. This map gives a visual representation of the amount of freight that is flowing into and out of the state, contributing to the economy of both the state and the nation. Maps such as this can be used as a planning tool to help determine how much freight is moving through the state and growing over the years to help determine where expansion projects should take place. The map after that (Figure 2.6) illustrates commodity flows by railroad. This can be used in the same way as the truck freight flow map. From both maps, it is evident that the ports along the Gulf of Mexico and the land borders along Mexico allow for great amounts of trade and freight movement into and out of the country.

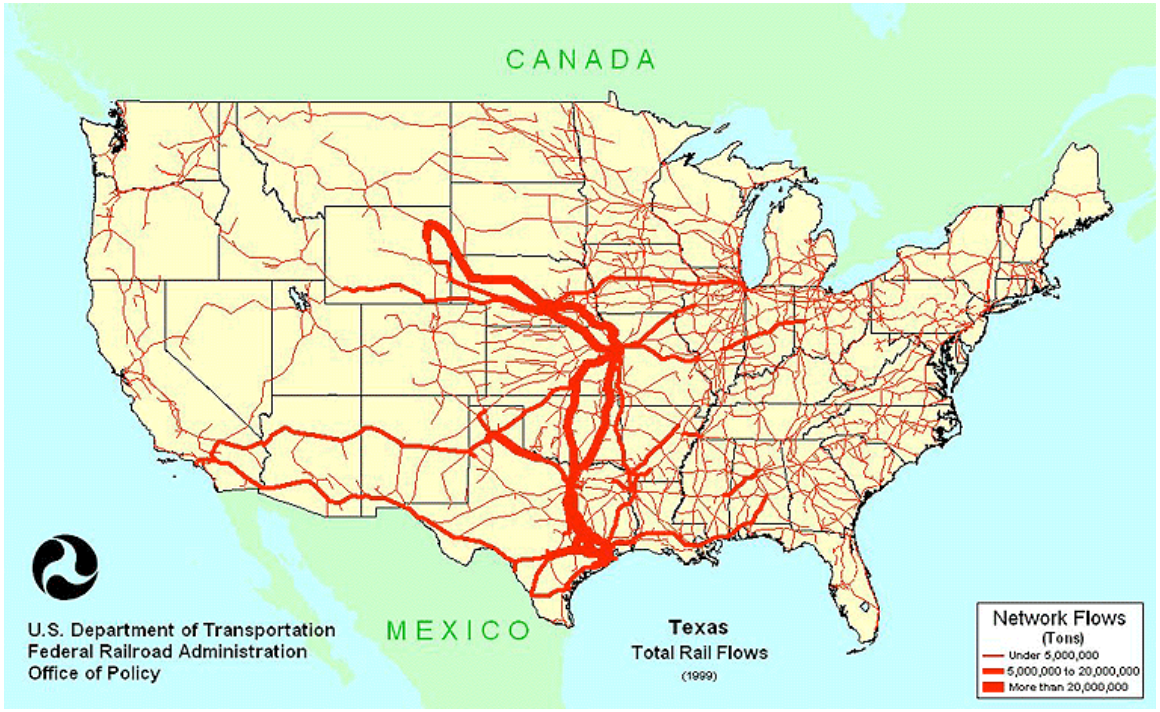
Figure 2.5: Texas Combined[5] Domestic & International Truck Commodity Flows



Source: Federal Highway Administration, 2006

[5] The individual domestic and international truck flow maps were very poor resolution. The combined map (above) was of higher resolution, and therefore used to portray overall truck goods movement in/out/through Texas.

Figure 2.6: Texas Total Rail Commodity Flows



Source: Federal Highway Administration, 2006

Texas has 304,000 miles of road network and 10,386 miles of railroad available for goods and freight movement, making this the largest roadway and railway network of any other state in the nation (Wright, 2007). Through the Texas-Mexico border, approximately 72 percent of all goods are hauled by truck, and about 27 percent by rail (Wright, 2007). The majority of freight movement into, out of and through the state of Texas takes place by semi trucks, and second most by train, however some goods are also moved via pipeline, air, and ship. As a state and a nation, we are reliant on our trucks and roadways to transport the majority of goods, although trains can often be more efficient.

Infrastructure strain and capacity is an issue that is being talked about at local, state and federal levels for all types of freight movement. According to the Federal Highway Administration, "International trade moving through Texas is expected to grow at a faster pace than domestic trade over the next 20 years" and "U.S.-Mexico trade crossing the state's numerous border facilities will be one of the fastest growing segments" (2006). With the influx of growth and international trade potential, infrastructure capacity is a critical topic that cannot be ignored. In order to accommodate the current and potential growth, policymakers must look at ways to keep goods moving and flowing through the state. As an alternative to building larger highways, Texas state decision-makers should turn to other modes of transporting freight, such as railroads.

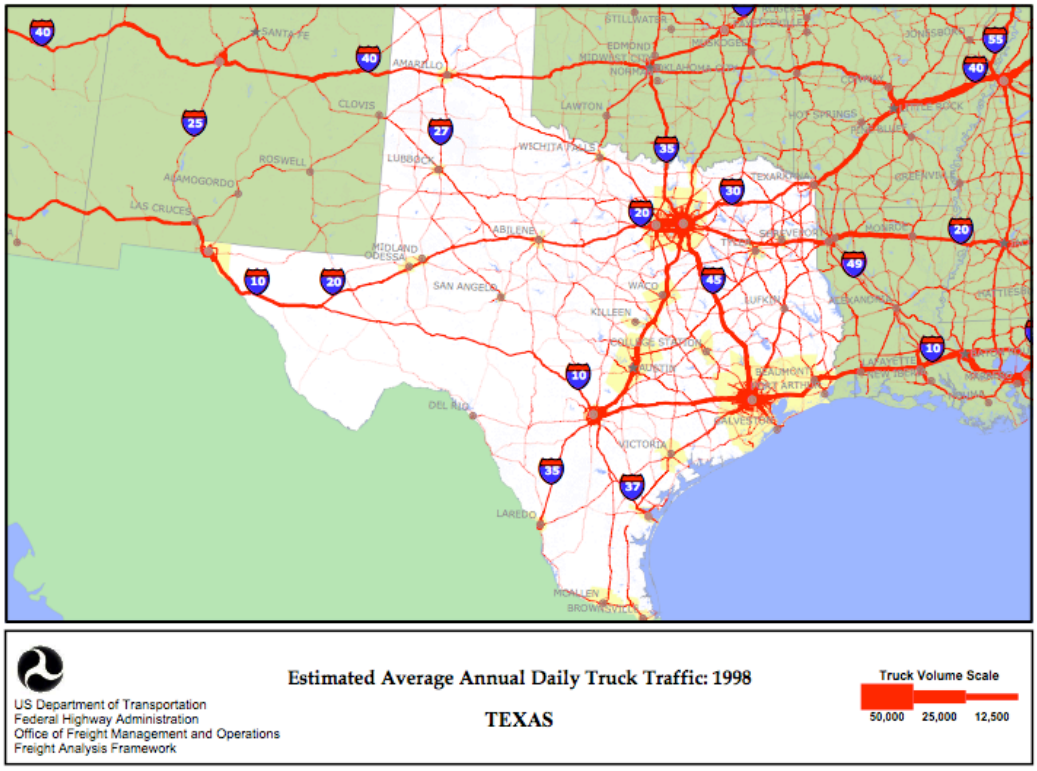
Freight Movement by Truck

As mentioned earlier in the chapter, Texas has a problem with traffic and congestion on the major highways and interstates. Vehicular growth on Texas' corridors has increased by about 95 percent in the past 25 years, however expansion and road capacity has only increased by about 8 percent (Wright, 2007). Truck traffic contributes

a large portion to this traffic, but also suffers from the congestion delays delivering goods.

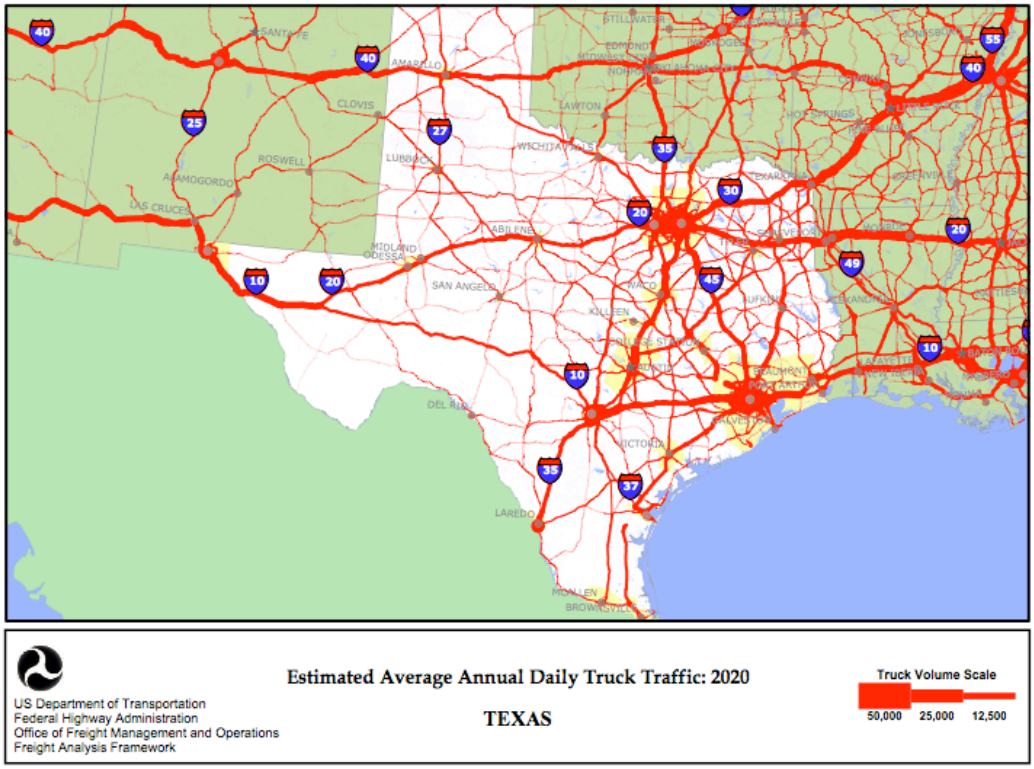
The following maps (Figure 2.13 and 2.14) show the estimated annual daily truck traffic flows in Texas for 1998 and projected for 2020. There is a noticeable increase between the two in terms of volume, therefore adding to the capacity constraints of the major roadways. It is important to note the trends in truck volume between the major Texas metropolitan areas of Dallas-Fort Worth, Austin-San Antonio and Houston. This triangular section of Texas experiences the most congestion and traffic build-up, and is apparent through the following maps. Worsening traffic congestion in and around the metropolitan areas is detrimental to air quality and quality of life in general. At the rate that highways are being expanded in comparison with the percentage of growth, there needs to be another mode of transportation to alleviate this overcrowding.

Figure 2.7: Estimated Average Annual Daily Truck Traffic 1998



Source: Federal Highway Administration, 2006

Figure 2.8: Estimated Average Annual Daily Truck Traffic 2020



Source: Federal Highway Administration, 2006

At the rate of volume increase between 1998 and 2020 shown on these maps, truck traffic volume will adversely affect the traffic conditions and infrastructure capabilities to move freight efficiently. Railroads are being considered to take on more of the freight movement capacity and are "an option for reducing road congestion through the diversion of freight from truck to rail, thereby reducing the number of trucks on Texas highways" (TxDOT, 2005).

Freight Movement by Rail

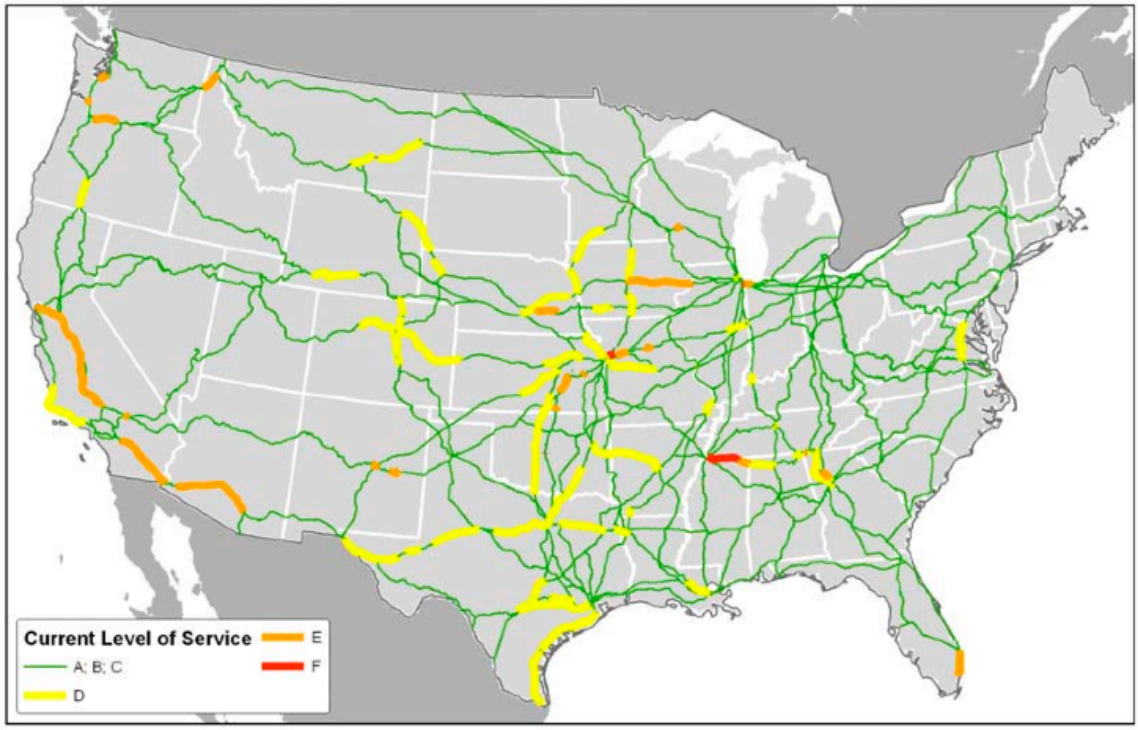
With the projected increase in trade and population growth, "trade will almost double the demand for rail freight transportation by 2035" (Cambridge Systematics, Inc., 2007). Looking ahead, Class I[6] freight railroads nationally are estimated "that an investment of $148 billion (in 2007 dollars) for infrastructure expansion over the next 28 years is required to keep pace with economic growth and meet the U.S. DOT's forecast demand" (Cambridge Systematics, Inc., 2007). Out of this $148 billion dollars, the Class I railroads' share is about $135 billion dollars (the other share the smaller railroads take on). Unfortunately, it is projected that the Class I railroads will only be able to generate approximately $96 billion of this $135 billion from increased earnings and revenue. The other $39 billion will need to be "funded from railroad investment tax incentives, public-private partnerships, or other sources" (Cambridge Systematics, Inc., 2007). Without this investment in infrastructure, freight movement may have to be diverted even more to the roadways, which will be even more burdensome on the public.

The following maps (Figure 3.1 through 3.3 and corresponding tables 3.2 through 3.4) illustrate the current railroad capacity compared to what it could be without

[6] A Class I railroad is defined by operating revenue. There are seven Class I railroads in the U.S. In Texas, the Class I railroads include: Burlington Northern Santa Fe Railway (BNSF), Union Pacific (UP) and Kansas City Southern (KCS).

improvements or expansions. The tables below the maps explain what each color designation entails for the maps.

Figure 2.9: Current Train Volumes Compared to Current Train Capacity (2007)



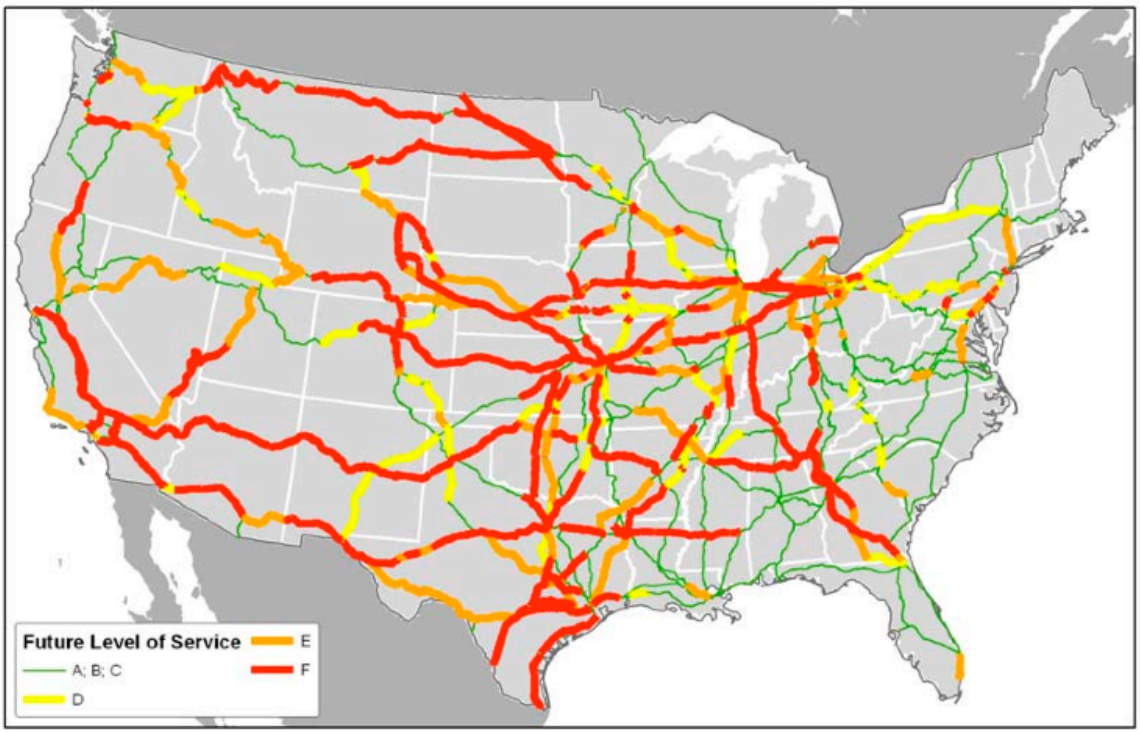
Source: Cambridge Systematics, Inc.
Note: Volumes are for the 85th percentile day.

Table 2.2: Primary Rail Corridor Mileage by Current Level of Service Grade: *Current Volumes and Current Capacity*

LOS Grade	Total Mileage	Percentage
A	9,719	19%
B	15,417	30%
C	20,683	39%
D	4,952	9%
E	1,461	3%
F	108	<1%
Totals	52,340	100%

Source: Cambridge Systematics, Inc.

Figure 2.10: Future Corridor Volumes Compared to Current Corridor Capacity: *2035 without Improvements*



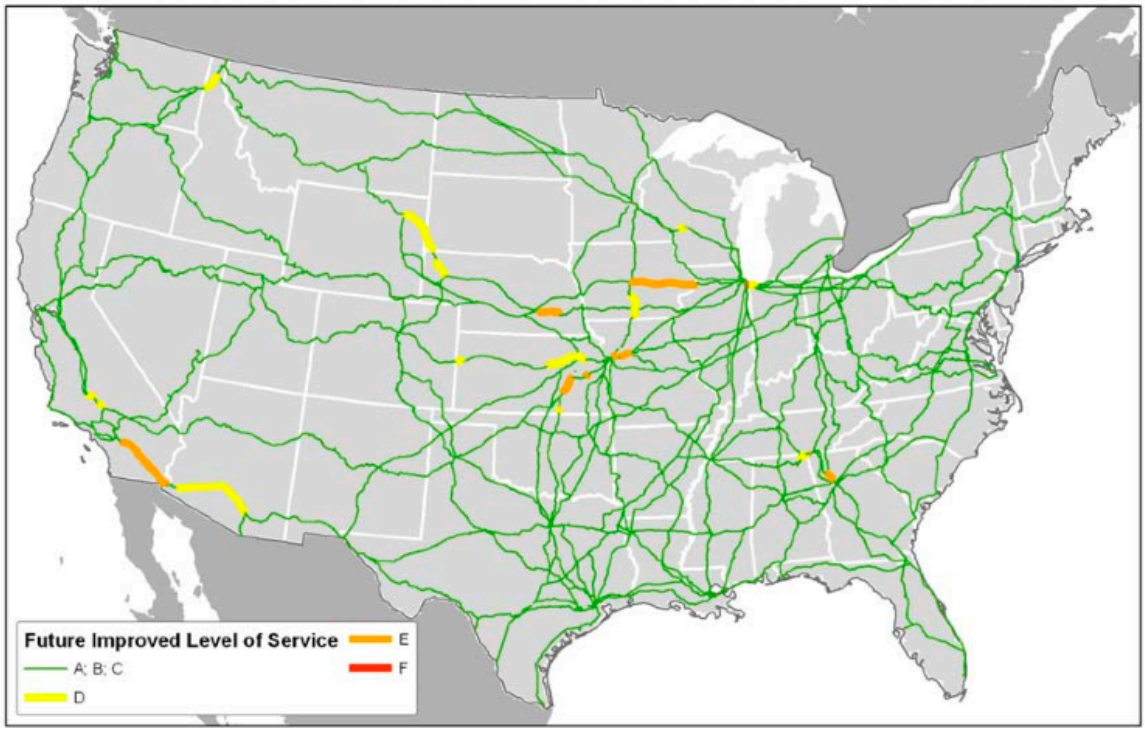
Source: Cambridge Systematics, Inc.
Note: Volumes are for the 85th percentile day.

Table 2.3: Primary Rail Corridor Mileage by Future Level of Service Grade: *2035 without Improvements*

LOS Grade	Total Mileage	Percentage
A	4,895	9%
B	6,626	13%
C	11,708	23%
D	5,353	10%
E	7,980	15%
F	15,778	30%
Totals	52,340	100%

Source: Cambridge Systematics, Inc.

Figure 2.11: Future Train Volumes Compared to Future Train Capacity: *2035 with Improvements*



Source: Cambridge Systematics, Inc.
Note: Volumes are for the 85th percentile day.

Table 2.4: Primary Rail Corridor Mileage by Future Level of Service Grade: 2035 *with Improvements*

LOS Grade	Total Mileage	Percentage
A	4,895	9%
B	15,198	29%
C	31,036	59%
D	608	1%
E	597	1%
F	6	<1%
Totals	52,340	100%

Source: Cambridge Systematics, Inc.

The first map (Figure 2.9) portrays current train volumes as of 2007 data. The second map (Figure 2.10) illustrates what the rail system capacity would be in 2035 if no rail improvements were made to the current system. This map shows that the rail system would be very strained, specifically in Texas. The third map (Figure 2.11) shows what investing in the rail infrastructure could do to help alleviate that strain if improvements were made, and portrays a prediction of what it could look like in 2035 with improvements. The third map is only possible with public help, as the private sector cannot take on the overall financial burden alone.

Unfortunately, besides current and projected economic growth putting a strain on rail capacity, certain corridors are more limited as a result of historical railroad abandonments that began as early as 1932. Railroads have had a history of abandoning lines due to trends in increased truck freight movement competition throughout the country (Wright, 2007). Some of these abandoned lines in Texas that have not been used for another use are being considered for railroad expansion or passenger rail projects. The Texas Rail System Plan is a report put out by TxDOT that came out in October 2005 that identified the current rail conditions and needs of Texas' railroads. It discusses capacity constraints and bottlenecks at key intersections in major cities where freight movement is crucial, and introduces potential expansion opportunities on abandoned lines. Identification of these problem areas and opportunities by a state entity such as TxDOT in collaboration with the private railroads can lead to a type of public-private partnership to help improve freight mobility for the state. These public-private conversations are important to the feasibility of developing such projects.

2.1.5 Oil Prices

In addition to the infrastructure and congestion constraints, diesel fuel prices around Texas are at or over four dollars a gallon. This price is extraordinarily higher than in years past, and is increasing very quickly with crude oil prices rising frequently. This means that it will not only become more expensive to move goods by truck through the state, but it will also be particularly more expensive to construct roadways to facilitate this movement. All goods will continue to go up in price to make up for the elevated shipment costs due to increased gas prices. Railroads use diesel to move goods as well, however the amount used can be more economical in a long haul movement.

2.1.6 Conclusion

It is important to look at the current issues such as population and economic trends in order to recognize the implications these have on the state's infrastructure system. At the current rate of growth and the current at-capacity highways and railroads, the volume of traffic and freight needed to be transported will continue to multiply and clog the current roadway system. In order to promote growth of railroad infrastructure to accommodate this potential population and economic influx, public-private partnerships may be used to facilitate capacity expansion.

2.2 PUBLIC-PRIVATE PARTNERSHIPS

The public sector has a "critical interest in the health of freight transportation" (FHWA, 2007) as it affects the economy in many ways. The public sector has financial and political control over the infrastructure for which trucks drive upon to move freight. All infrastructure for other freight transportation modes are privately funded. By taking on an interest in other forms of freight movement such as rail to help stimulate the growth of the economy, or help the air quality, governments may enter into public-private

partnerships. This section explores what a rail public-private partnership entails, what some financing tools and legislation that make PPP's possible, and finally a brief discussion about Texas rail PPP's.

2.2.1 What is a Public-Private Partnership?

A public-private partnership means the public puts into a project what would benefit the public interest and the private puts in what benefits the private. BNSF Railway defines public-private partnerships as "projects, which combine freight rail business goals with diverse goals of local, state, and federal governments" (Rickershauser, 2008). In most PPP cases, all entities involved benefit by achieving their goals faster, better and cheaper. PPP's are usually formed when each party involved has a need or is lacking something that the other party may be able to offer. A PPP may be formed by the public sector approaching the private or vice versa.

The key to a public-private partnership is that both sides must have a vested interest in the project to ensure success. According to the Transportation Research Board's Report 586, these three things can measure the success of a railroad public-private partnership:

> (1) the public investment or support is sufficient for the private carriers and customers to justify more use of rail and less use of highway transport, (2) the public benefits are sufficient to justify the public portion of the investment, and (3) there were no clearly superior means of achieving similar results (Bryan, Weisbrod, Martland, & Wilbur Smith Associates, Inc., 2007, p. 21).

The public and private sectors when determining the viability of a PPP project use these points mentioned. All three of these points may be difficult to quantify, therefore making it difficult to make a successful PPP. For example, for the third point, it may be challenging to measure the costs and benefits of doing a project; therefore if a similar result can be reached without going through a PPP, the partnership may not take place.

The success may actually lie in quantifying the aforementioned three points so that all parties involved can realize the benefits. It is also important for all parties involved to establish a level of trust, such that the project will equally benefit both the public and private entities.

Some of the private railroad companies have set criteria for evaluating a public-private partnership. Having criteria such as these help the companies weigh out the costs and benefits of projects to determine if a PPP is worthwhile. For example, BNSF Railway has a fact-based approach to evaluating PPP's that:

- describes the project's scope;
- assesses impact on current freight traffic levels and future traffic growth;
- provides a cost-benefit analysis on an after tax risk-adjusted basis;
- identifies public funding sources, timing, processes, and probability of obtaining funding to meet the public's timeliness objectives and achieve the public's goals;
- compare the project's merit to that of other capital projects; and
- look for cooperation between involved federal, state, and local governments (where appropriate) (BNSF, 2008)

It is important for both private and public entities to have criteria such as these to ensure that both sides receive what they need out of the project. It is specifically important for the public sector to come up with a set of criteria in order to get a return on their investment into the project just as the private sector. In Texas, there is not a set standard procedure for going about a rail PPP such as the private railroads have. However, for the public sector, "scale of and justifications for public investment are much more complex than what is used by railroads…justified in terms of broader concepts of economics, environment, and equity" (Bryan, Weisbrod, Martland, & Wilbur Smith Associates, Inc., 2007, p. 21). This makes it more difficult for the public sector to define criteria as easily as a business looking to make a specific return on investment.

Some states have a system of weighing the public benefits with the project to see if it may be a worthy public-private partnership. California, for example, has had numerous successful transportation-related public-private partnerships, specifically relating to rail projects. California uses various categories to evaluate the public benefits for a PPP. Here are a few of California's definitions of public-benefit categories they use to weigh PPP's:

1. Freight System (Goods Movement) Factors:
    a. Throughput: Project provides for increased volume of freight traffic through capacity expansion or operational efficiency
    b. Velocity: Project increases the speed of freight traffic moving through the distribution system
    c. Reliability: Project reduces the variability and unpredictability of travel time
2. Transportation System (Priorities) Factors:
    a. Safety: Project increases the safety of the public, industry workers, and traffic
    b. Congestion Reduction/Mitigation: Project reduces daily hours of delay on the system and improves access to freight facilities
        i. Key Transportation Bottleneck Relief
        ii. Multi-modal Strategy
        iii. Interregional Benefits
3. Community Impact Factors:
    a. Air Quality Impact: Project reduces local and regional emissions of diesel particulate, CO2, NOx, and other pollutants
    b. Community Impact Mitigation: Project reduces negative impacts on communities (noise, localized congestions, safety, etc.)
    c. Economic/Jobs Growth: Project stimulates local economic activity, enhances trade value, and preserves/creates jobs (Rickershauser, 2008).

Texas needs to come up with a comprehensive approach of evaluating public-private partnerships such as California. If Texas could identify and measure public benefits, this could be a major step towards weighing out if a PPP would be advantageous.

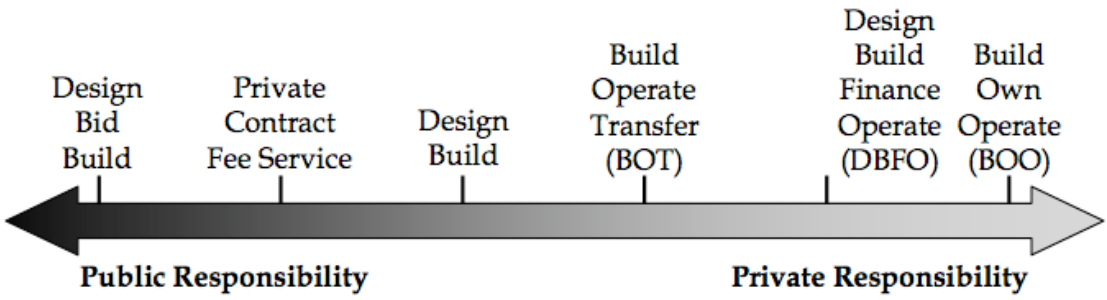
Public-private partnerships have been used in a variety of ways for railroad projects throughout the country. The public sector enters into PPP's with railroads for

economic development reasons or for some public benefit, and the private sector enters into PPP's in order to help with business and capacity. There are many public financing tools that the public sector uses to assist with the PPP's, which will be discussed below. For the most part, the private sector takes care of construction, operations of the project and more. A few railroad PPP case studies will be discussed in Chapter 4 to give an idea about how PPP's work in order to relate it to Texas. Unfortunately, Texas has not had many PPP success stories. However there are a few PPP projects worth mentioning to demonstrate that it is possible, and with some increased effort, Texas could take on more PPP projects to increase freight capacity.

2.2.2 Types of Public-Private Partnerships

The public and the private sectors can take on various roles in a public-private partnership. The image (Figure 2.12) below shows the various types of PPP's and the amount of public or private responsibility that it entails.

Figure 2.12: Public-Private Partnership Options



Source: FHWA, 2007, p. 54

These PPP options can be applied to roadway, rail or other infrastructure projects. Additionally, specific to freight projects, there are many ways the public and private sectors can work together to fund a project.

2.2.3 Public Financing and Legislation

A few examples of how public-private partnerships can work for freight-related projects include the following:

- Public sector provides funding up-front through grants and loans and the private sector pays back through user fees;
- Investment fully paid by the public sector and the private sector provides in-kind[7] contributions;
- Public-Private Funded, where the funding share determined by benefits realized by each sector;
- Public-Private Funded, where the funding share determined through agreements between partners;
- Concessions (Private sector financing and ownership);
- Operations and Maintenance or warrants by private sector (FHWA, 2007, pgs. 56-57).

These are just a few examples of how PPP financing may work. As for the funding portion from the public sector, there are numerous public financing mechanisms that the public sector may use when entering into a public-private partnership. Some public money may come from federal highway transit program formulas, some from federally allocated funds that are earmarked for certain types of projects and others may include state/local tax breaks, land dedications and more. Below are just a few examples of some financing tools that could be used to support a PPP.

[7] In-kind means entities donate land or services as part of the project cost.

Federal Funding Programs Under SAFETEA-LU[8] (FYs 2005-2009)

These federal funding programs can be allocated to states for specific projects or to the state in general depending on the type of fund/program it is. The states have to go through an administrative and legislative process to receive funding for specific projects. Under SAFETEA-LU legislation, the programs listed in the table can be used for railroad projects.

[8] SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users), enacted in 2005, is the federal legislation that determines how much federal highway and transit funds each state will receive.

Table 2.5: SAFETEA-LU Funding Programs that can Support Rail Projects

SAFETEA-LU Funding Program:	Program Description:
CMAQ (Congestion Mitigation and Air Quality Improvement Program) Funds	Projects that are identified by the US EPA that can demonstrate a reduction in highway-based vehicle emissions.
Capital Grants for Rail Line Relocation Projects	Provides grants to states for rail line relocation and improvement projects for rail traffic safety, traffic flow, quality of life, or economic development. The federal share cannot be more than 90% of the project cost.
Projects of National and Regional Significance Program	This provides funding for high-cost projects that are expected to have national and regional benefits that may facilitate national/international trade, relieve congestion, and improve transportation safety (FHWA, 2007, p. 19).
Freight Intermodal Distribution Grant Program	This is a form of discretionary funding[9] for intermodal freight transportation and distribution facilities to help relieve congestion, facilitate trade, and encourage public-private partnerships (FHWA, 2007, p. 21). Available funds have already been earmarked.
Surface Transportation Program[10]	A form of discretionary funding that provides flexible funding for preservation of abandoned rail corridors, bridge clearance increases to accommodate double-stack freight trains, and freight transfer yards (FHWA, 2007, p. 11).
Environmental Protection Agency Brownfield Revitalization Program	Provides grants and loans for brownfield site cleanup to be redeveloped for commercial, residential, or industrial uses including intermodal facilities. A 20% match is required in order to receive the grant (FHWA, 2007, p. 18).

[9] Discretionary funds do not have to qualify under the normal federal-aid highway transit program formulas. Programs that qualify for discretionary funds are earmarked by congress as a significant transportation project that receives a special allocation of money through SAFETEA-LU.

[10] This fund was used for a Railroad Crossing Reliability Program in the Dallas-Fort Worth area in Texas..

Some of the discretionary funds are more difficult to receive, and have been earmarked long before any other states have the opportunity to receive allocation (Ramirez, 2006). For example, the Freight Intermodal Distribution Grant Program allocated funds to only six projects for the entire SAFETEA-LU time span. This makes it difficult for other states, such as Texas to receive funding for a similar project. However, these are available to all states, and Texas should strive to receive some money from these funds for future rail projects. In addition to these funds, there is also financial assistance available to fund research and studies relating to freight rail. Studies and research can help in discovering new projects that for future funding allocations.

Federal Financing Tools

These financing tools are passed down from the federal government to the state, to assist in financing public infrastructure projects. Most of these can be used for freight infrastructure including rail. Many of these financing tools have a cost threshold and may only be used for smaller freight projects such as SIB and GARVEE bonds (see below).

Table 2.6: SAFETEA-LU Funding Programs that can Support Rail Projects

Federal Financing Tools:	Financing Description:
TIFIA (Transportation Infrastructure Finance and Innovation Act)	Provides credit assistance for major transportation investments of national or regional significance through secured loans, loan guarantees, or lines of credit (FHWA, 2007, p. 26). The goal of TIFIA is to find co-investment by a private entity to leverage the most worth out of a transportation project (Dept. of Transportation, 2008).
SIB (State Infrastructure Banks)	Allows states to establish infrastructure revolving funds eligible to be capitalized with federal transportation dollars where states can issue loans and other credit tools to public and private entities for transportation projects (FHWA, 2007, p. 27). State must match federal funds in order to capitalize.
RRIF (Rail Rehabilitation and Improvement Financing)	Provides loans and credit assistance to both public and private sponsors of rail and intermodal projects (FHWA, 2007, p. 28).
Private Activity Bonds	Allow the issuance of tax-exempt private activity bonds for highway and freight transfer facilities that may be sponsored by the private sector (FHWA, 2007, p. 29). This helps to increase private sector investment in public infrastructure to make capital expenditures of the private sector more affordable.
GARVEE Bonds	Allows the states to issue debt backed by future federal-aid highway revenues (FHWA, 2007, p. 32).

Many of these financing tools can be used in partnership with private or used for private companies to help finance a project. Many of these federal sources trickle into the state sources and influence how the state can fund various rail projects.

New Federal Legislation

In 2007, the Senate and the House introduced a Bill called the *Freight Rail Infrastructure Capacity Expansion Act*, that allows for up to a 25 percent tax credit for freight rail expansions to help with capacity needs. This Bill acts as a stimulus or incentive for private companies, whether it is rail, port, truck, or other entity, to invest in freight movement projects. Project investment could include rail expansion, investment in locomotives, railroad grading, railroad signaling, intermodal development, and many other types of projects, not including land acquisition (AAR, 2008). The Bill has been supported by many and could help with environmental needs, job needs and economic needs. This Bill supports the private sector with a public incentive to increase freight capacity.

State of Texas Support

The state is limited in terms of spending on transportation and infrastructure projects, as the gas tax[11] does not cover the needs of the state. In order to provide money on projects specific to rail, TxDOT needs "specific legislative appropriations" (TxDOT, 2005, p. 6-4). Under the 78th and 79th Texas Legislatures, certain rail funding sources were permitted including:

- Non-dedicated funds from the State Highway Fund;
- Bonds secured by the Texas Mobility Fund for passenger rail projects;
- Donations;

[11] The state gas tax is usually allocated towards transportation projects and education. Because of limited funds, however, usually roadway maintenance projects receive the greatest allocations.

- Loans from the State Infrastructure Bank (SIB);
- Pass-through fares; and,
- Grants or loans from the Federal Government, public or private entities (TxDOT, 2005, p. 6-4).

The Texas Mobility Fund may only be used if the project can prove that there is a benefit to highway projects and transit projects. The others are merely small steps towards funding and financing rail projects. The 78th and 79th Texas Legislatures also gave TxDOT more power to be a part of rail projects in terms of acquisition, financing, maintenance, construction, and operation. TxDOT may enter into Comprehensive Development Agreements with rail companies in order to acquire, finance, maintain, etc. (TxDOT, 2005, p. 6-5). There are some stipulations on these legislations, however this gives TxDOT more power than they had before in terms of rail projects (both passenger and freight).

In the 79th Texas Legislature, HB 1546 was passed, called the Railroad Relocation and Improvement Fund. This is very similar to the federal RRIF (Rail Rehabilitation and Improvement Fund), except that this fund would essentially help pay to relocate rail from hazardous/dangerous areas in or within cities in Texas to a safer location. This bill passed, but funding is not available as of 2007. This could potentially help to finance railroad public-private partnerships to construct new rail lines outside of congested city limits.

Texas needs to look for other ways to help promote PPP's with freight rail companies to stimulate capacity and growth. It is important for Texas policy-makers and state transportation leaders to look at successful PPP case studies in other parts of the country and the world to seek ways to apply towards projects within the state. There is not one set way to go about doing a PPP, and there are not many funds allocated to do

such partnerships. Changes in policy will help the future success of expanding freight infrastructure.

2.2.4 Current PPP Projects in Texas

Texas does not have many freight railroad PPP projects currently or many that have taken place. There are two specific projects that have been successful that include both public and private involvement. The two projects are: the Railroad Crossing Reliability Partnership Program and the Texas Pacifico Rail Line project.

Railroad Crossing Reliability Partnership Program

The Railroad Crossing Reliability Partnership Program is in the Dallas-Fort Worth area and addressed at-grade rail crossings to help with safety and the flow of traffic. This project included collaboration from TxDOT, the North Central Texas Council of Governments (NCTCOG), BNSF Railway, the Dallas Area Rapid Transit (DART), local municipalities within the Dallas-Fort Worth area, and FHWA (Federal Highway Administration) assistance. The project identified and addressed specific at-grade crossings to be relocated, improved or enhanced, along the Trinity Railway Express. The project began in 2002 and has been a series of steps of identifying, evaluating, approving, and constructing at-grade improvements. Currently this project is within the last round of contract letting that lasts from 2006 through 2012 (FHWA, 2007, p. 124). The program uses STP funds (mentioned above) and requires a 20 percent match from entities such as BNSF, DART, TxDOT, NCTCOG and the local municipalities (FHWA, 2007, p. 124).

Texas Pacifico Rail Line

This project is a railroad acquisition and rehabilitation project from Fort Worth to Presidio, Texas. This project is a partnership between TxDOT and Grupo Mexico to

acquire an abandoned 400-mile long Texas Pacifico Rail Line, and lease to Grupo Mexico to operate the rail. Financing came from legislature appropriations and from a 40-year lease and operating agreement with Grupo Mexico (FHWA, 2007, p. 125).

2.2.5 Other Railroad PPP Opportunities

In Texas, there are many opportunities for the public and the private sectors to partner together to help improve deteriorating railroad tracks, expand or alleviate chokepoints on busy railroad lines, develop intermodal facilities for the transshipment of goods from port to plains, and other railroad PPP's. In 2005, TxDOT and many stakeholders from freight railroad, transit companies, planning organizations and port authorities partnered to come up with the *Texas Rail System Plan*. This plan identified the current state of railroads throughout Texas and identified some projects that the state and private companies could work on in the future to help with mobility, safety, and economic throughput. Identifying the need and seeing who and how it could benefit the public or private sector is a first step towards a public-private partnership. Financing these projects may be the most challenging part.

Another example of a potential PPP that has been identified is Tower 55 in Fort Worth, TX. According to an interview with Dennis Kearns of BNSF Railway, private railroads are looking at doing more PPP's with Regional Mobility Authorities (RMA's) to identify chokepoints in the rail system, and figure out a way to finance, relocate or expand track to alleviate congestion issues. Tower 55 in the Dallas-Fort Worth area is an example of where this is currently taking place between BNSF Railway, Union Pacific and the public sector. Tower 55 is one of the nation's busiest and congested railroad intersections located within the urban core of downtown Fort Worth, Texas. Both Union Pacific and BNSF Railway have busy tracks that run through this area, causing congestion and idling trains. By working with the public sector to help fund a relocation

of these tracks to an area outside of downtown, it could help with traffic congestion and air quality.

A third example is in Houston, where the railroad companies and many stakeholders in the public sector have teamed up to identify areas that need improvement on the rail system, to come up with a *Houston Region Freight Rail Study*. This is essentially a Master Plan that identified areas where the public and private sectors may work together to make improvements on rail relocation projects, expansion projects, at-grade crossing improvements, and increase the overall safety and economic throughput of the railroads. This study was performed in support of the Texas Rail Relocation and Improvement Fund that was mentioned previously, to help identify projects that could be funded by the RRIF ("About the Study," 2006). Unfortunately, there is no source for funding this RRIF at this time, but the effort has gone into identifying where improvements need to be made.

A final example of where public and private sectors may begin to identify opportunities for moving freight, alleviating congestion, helping air quality, etc., is through the development of multimodal or intermodal trade corridor facilities, relocation of railroad tracks from urban cores to alleviate congestion and safety hazards, grade crossing improvements, and chokepoint or bottleneck expansion projects. It is also important for governments to look at projects as opportunities to alleviate truck congestion and pollution problems in non-attainment areas such as in the Dallas-Fort Worth area or Houston.

2.2.6 PPP Conclusion

Texas has many opportunities for the private and the public sectors to enter into public-private partnerships to help with freight movement, alleviate traffic congestion (both on the highways and railroads), and help with air quality mitigation. It is important

for the public and private sectors to negotiate a partnership that will balance the most public benefits with the most private return on investment so that both entities are putting into the project what they expect to get out it. The freight rail PPP's that have and are currently taking place in Texas are small-scale due to financial limitations and lack of a comprehensive way of going about the partnership.

It is important for Texas decision-makers to look towards case studies of successful freight rail PPP's in other states to gain a better understanding of how it could potentially be feasible in this state. Some financing tools are available to the state, and even more can be available with the help of legislation. The more people realize the benefits of improving the freight rail infrastructure, the better traffic on and off the highways will improve, the better the air quality may become, and the quicker freight can move through the state.

2.3 Literature Review Conclusion

This literature review sets the current conditions for Texas and shows how the population and economic trends shape transportation constraints. Through proper coordination of public and private entities, public-private partnerships can facilitate railroad expansion projects. The need for a solution to traffic and congestion problems is apparent. The implementation and potential of public-private partnerships for rail projects in Texas is discussed in the next half of the report.

IMPLEMENTATION

Chapter Three: Methodology

3.0 INTRODUCTION

Through analysis of rail public-private partnership case studies and personal interviews with public and private stakeholders, the implementation section of this report explores ways in which Texas can establish a more efficient means of taking on PPP projects to increase freight mobility. This section is the methodology and introduces the case study approach, the method and idea behind doing interviews, and finally the rationale behind making recommendations and drawing conclusions based on these for Texas.

3.1 CASE STUDIES

In order to better understand the PPP process for freight rail projects, two successful case studies are introduced including the Alameda Corridor project in the Los Angeles area in California, and the CREATE project in Chicago, Illinois. Both projects are large-scale railroad-related public-private partnerships where it is simple to analyze and draw conclusions that can be related back to the State of Texas. Both of the case studies follow the same approach below:

A. History/Background
B. Key Players and Responsibilities
C. Risks
D. Financials
E. Lessons for Texas

3.2 INTERVIEWS

In order to gain industry insight from a more candid perspective, I performed a series of interviews both in person and over the phone with public and private entities that work with freight-related entities. These interviews were conducted in a more conversational manner in order to get a better feel of the railroad industry and PPP collaboration, instead of having a set list of questions. Below are the people I spoke with and what entity they are affiliated with:

Private Sector:
Dennis Kearns – BNSF Railway – Government Relations
Nate Asplund – BNSF Railway – Public-private Partnerships
Mark Schmidt – BNSF Railway – AVP Shortline Business Development

Public Sector:
Wilda Won – TxDOT – Multimodal Rail Planning
Yolanda Prozzi – Center for Transportation Research (CTR) – Research Scientist

I was unable to have a full conversation with anyone from the Union Pacific railroad, but received the support from their public-private partnerships representative that railroads and the state need more collaboration.

The most common theme that could be concluded from all of the interviews is that it is difficult for the public and the private sectors to agree on a partnership where all parties feel fairly compensated for their efforts. This lack of a comprehensive way of going about a rail PPP was mentioned earlier in the report and is a crucial reason case studies are looked upon to draw conclusions and relate or bring back to Texas.

3.3 CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations section at the end draw upon all of the findings within this report. Given the current conditions of the State of Texas and how public-private partnerships can help to alleviate congestion (and related) issues as found

in the case studies, there are many ways in which Texas can begin to make strides towards improving the freight flow movement.

Chapter Four: Case Studies and Interviews

4.0 INTRODUCTION

This chapter explores two case studies: the Alameda Corridor project in the Los Angeles area in California and the CREATE project in Chicago, Illinois. Both projects are touted for being successful public-private partnerships coordinating freight rail and other transportation uses to help improve mobility, the environment, and economic viability. At the end of each case study, there is a small section on what lessons Texas can take from each example. In the conclusion, the lessons learned from the case studies are applied to what is happening currently in Texas. The second half of this chapter explores a few interviews with public and private rail stakeholders. These interviews provide valuable insight to the public and private entities when looking at railroad PPP's.

4.1 ALAMEDA CORRIDOR PROJECT

The Alameda Corridor is public-private partnership project that is first of its kind that is often used as an example of a successful PPP freight rail project. This PPP project is a 20-mile long port access and grade-separation project that aimed to move container traffic out of the ports of Los Angeles and Long Beach to transcontinental rail yards within the City of Los Angeles, in the most safe, efficient, least environmentally hazardous way, in order to increase trade capacity.

4.1.1 Background

The Ports of Los Angeles and Long Beach in the San Pedro Bay are two of the busiest and most congested ports in the nation. Combined, these ports "handle more than 64 percent of Asian container imports and nearly 25 percent of all U.S. imports," (Proctor & AASHTO, 2007, p. 33), and both require efficient transportation options to help move goods through the system. Goods are taken from the ships and into the City of Los

Angeles where they are sent off on various transcontinental rail lines to deliver goods across the nation. Prior to this project, slow-moving railroads would inch their way along the 20-mile stretch between the ports and the city, causing not only delay for trains, but traffic buildup for cars and trucks as there were many at-grade crossings. The Alameda Corridor project helped to improve the connectivity between the ports and the City of Los Angeles by decreasing traffic interferences and increasing overall freight movement in and out of the area.

The purpose of the Alameda Corridor project was: to increase freight capacity and throughput at the ports; improve safety and reduce delays while moving freight from the ports to Los Angeles; improve train operations by increasing the speed and capacity of trains; lower the impacts on the environment by having fewer idling vehicles in congestion (trains, trucks and cars); and to encourage economic development by providing jobs and better trade (Bryan, Weisbrod, Martland, & Wilbur Smith Associates, Inc., 2007, p. 40-41). As a positive externality of the project, car traffic congestion was lowered in and around the corridor as the railroad tracks were submerged into a trench, allowing for car traffic to pass by above the tracks without any delay from trains.

The overall project accomplished the following: it consolidated all traffic from the San Pedro Bay ports into one route by acquiring and rationalizing the network of rail lines; it improved right-of-way along the consolidated route by eliminating two-hundred grade crossings, multi-tracking, and upgrading materials; it widened the road adjacent to the rail trench within Los Angeles to help the flow of traffic; it is able to move short-distance, high-volume urban freight rail from the ports to Los Angeles at speeds of up to 40 miles per hour; and since operations on this project began in 2002, it has the potential to increase train traffic by 160 percent by 2020 (Bryan, Weisbrod, Martland, & Wilbur Smith Associates, Inc., 2007, p. 12). There is another phase to the project to help

increase capacity for the future. This project benefits numerous people both in the public and private sectors, and many stakeholders were involved to make this PPP possible. A map of the corridor, ports and rail yards can be seen in Figure 5.1 on the next page.

Figure 4.1: Map of the Alameda Corridor Project

Source: Alameda Corridor Project, 2005

4.1.2 Key Players and Responsibilities

The players in the Alameda Corridor project include more than just private rail companies and the local government. This project required great coordination of various organizations including private, public, local, regional, national and federal. Some of the key players that made (and still make) the Alameda Corridor project a success are: the U.S. DOT (Department of Transportation), ACTA (Alameda Corridor Transportation Authority), ACET (Alameda Corridor Engineering Team), and the Alameda Corridor Operating Committee. These governing bodies are all made up of various entities, both private and public.

U.S. Department of Transportation (DOT)

The U.S. Department of Transportation (DOT) was responsible for coordinating with ACTA to make a direct federal loan of $400 million for the corridor project ("Alameda Corridor Project," 1999). A more detailed financial perspective will be discussed in the next section.

Alameda Corridor Transportation Authority (ACTA)

The Alameda Corridor Transportation Authority (ACTA) is a joint power seven-member governing board that includes two representatives from the Port of Los Angeles, two from the Port of Long Beach, one from the City of Los Angeles, one from the City of Long Beach and one delegate from the Los Angeles County MTA (Metropolitan Transportation Authority) ("About ACTA Governance," n.d.). This governing board was created in 1987, and began coordination of the project to help improve the flow of freight movement in this area.

Alameda Corridor Engineering Team (ACET)

The Alameda Corridor Engineering Team (ACET) is the Alameda Corridor project's lead program manager. The ACET is a joint venture comprised of four firms that designed the civil engineering layout of the project ("About ACTA Governance," n.d.).

Alameda Corridor Operating Committee

There is a four-member Alameda Corridor Operating Committee that operates the corridor currently that is comprised of one representative each from the Port of Long Beach, the Port of Los Angeles, BNSF Railway, and Union Pacific Railroad ("About ACTA Governance," n.d.). This committee is currently overseeing operations since the main corridor project opened in 2002, and works under coordination with the ACTA.

4.1.3 Risks

The main risk with a project of this scale is timing, ensuring that all players get what they put into it in terms of time and money. The Alameda Corridor project was a concept that did not come to fruition for about 20 years. That is two decades of planning and investing time and money into a project with the hopes that it will be successful. The area near LA where this corridor resides is crucial to the economic success of a large percentage of the nation, so if the freight bottleneck was not resolved, or the construction was delayed, it could have been detrimental to not only the project success but the economy as well.

The two private railroad companies of BNSF and Union Pacific faced a great amount of risk. Before project commencement, the corridor only allowed for very high volume, yet slow movement of large trains due to the numerous at-grade crossings and congestion near the ports to LA. In order for this project to work successfully, both competing entities had to be on board with helping to pay for the improvements in order

to help throughput. Fortunately risking to partner with one another as well as with the public sector was a benefit as it increased net results of getting more freight through the region.

4.1.4 Financials

The Alameda Corridor project was a $2.4 billion endeavor that included financing from multiple public and private sources. Table 5.1 breaks down the financing of the initial project costs.

Table 4.1: Alameda Corridor Project Cost

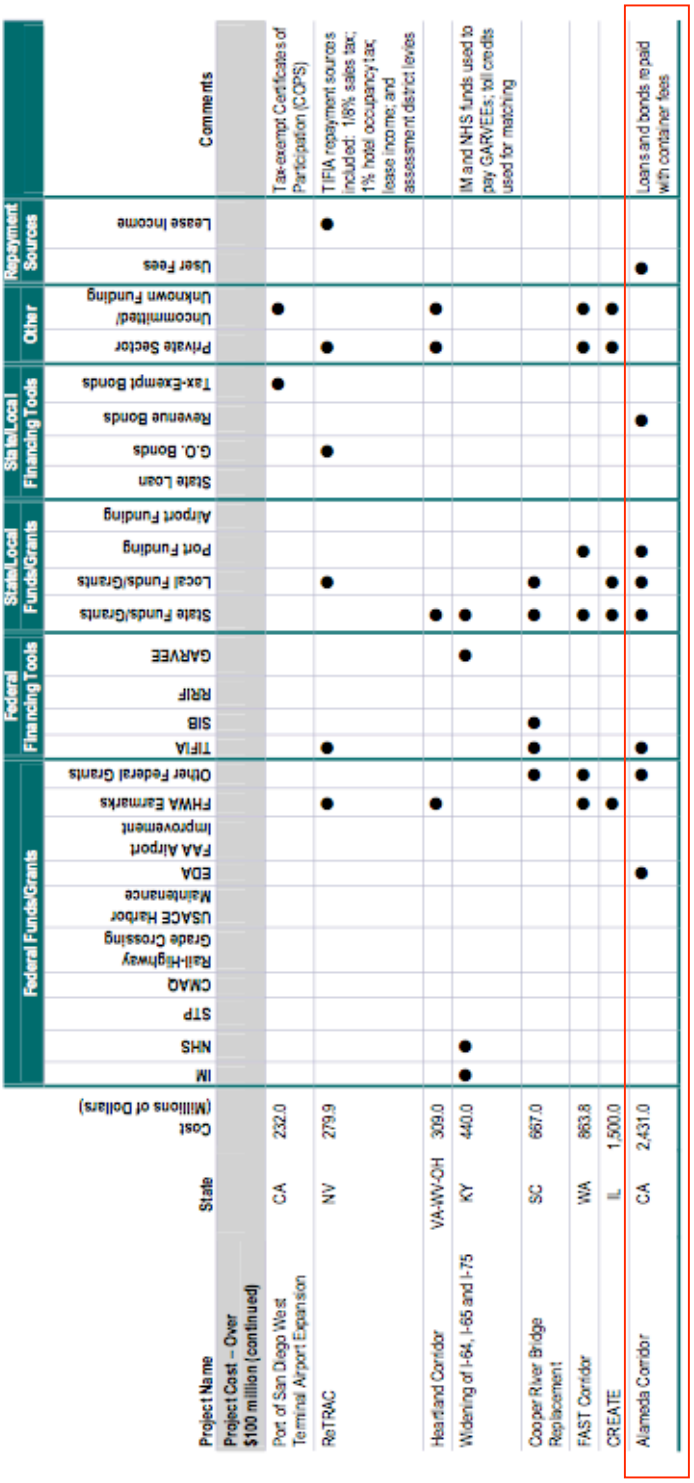
Financing entity:	**Amount**
Bonds sold by ACTA	$1.16 billion
U.S. DOT loan (like TIFIA)	$400 million
Ports	$394 million
Grants administered by LA County MTA	$347 million
Other state and federal sources and interest income	$130 million
Approx. Project Cost:	**$2.4 billion**

Source: Financing Freight Improvements, FHWA, 2007, p. 67

Railroads pay container fees for shipments into and out of the area, which help repay debt from the revenue bonds sold by ACTA and TIFIA loans (loan from DOT) mentioned above (FHWA, 2007, p. 51). The railroads somehow have a charge worked into their shipping cost for their customers to help pay for this fee. There are also port

charges that function the same way. There was an addition to the original Alameda Corridor project, called the Alameda Corridor East project that received $155 million of SAFETEA-LU funding under the Projects of National and Regional Significance. The table below (Table 4.2) highlights the Alameda Corridor and shows a comparison of funding sources with other PPP's in the nation.

Table 4.2: Alameda Corridor Funding Source Comparison



Project Name	State	Cost (Millions of Dollars)	Federal Funds/Grants: IM	NHS	STP	CMAQ	Rail-Highway Grade Crossing	USACE Harbor Maintenance	EDA	FAA Airport Improvement	FHWA Earmarks	Other Federal Grants	Federal Financing Tools: TIFIA	SIB	RRIF	GARVEE	State/Local Funds/Grants: State Funds/Grants	Local Funds/Grants	Port Funding	Airport Funding	State/Local Financing Tools: State Loan	G.O. Bonds	Revenue Bonds	Tax-Exempt Bonds	Other: Private Sector	Uncommitted/ Unknown Funding	Repayment Sources: User Fees	Lease Income	Comments
Project Cost – Over $100 million (continued)																													
Port of San Diego West Terminal Airport Expansion	CA	232.0																								●			Tax-exempt Certificates of Participation (COPS)
ReTRAC	NV	279.9									●		●					●				●			●				TIFIA repayment sources included: 1/8% sales tax; 1% hotel occupancy tax; lease income; and assessment district levies
Heartland Corridor	VA-WV-OH	309.0									●						●	●											
Widening of I-64, I-65 and I-75	KY	440.0	●	●												●	●												IM and NHS funds used to pay GARVEEs; toll credits used for matching
Cooper River Bridge Replacement	SC	667.0										●	●	●			●	●											
FAST Corridor	WA	863.8									●	●					●		●						●	●			
CREATE	IL	1,500.0									●						●	●							●	●			
Alameda Corridor	CA	2,431.0								●		●	●				●	●	●				●				●		Loans and bonds repaid with container fees

Source: FHWA, 2007, p. 66

4.1.5 Lessons for Texas

Although the Alameda Corridor project took 20 years of evaluation, discussion and coordination between multiple stakeholders to get to where it is today, Texas can take away many valuable tips and lessons from this case study. First of all, it may be helpful for delegates of ports, cities, railroads, and other interests to group together such as the ACTA (Alameda Corridor Transportation Authority) with some common goals in mind as to what and how improving freight mobility could help the region, state, nation, and private interests. This idea may work best with trade corridor projects that integrate ports with rail and inland movement. Not only would this help coordinate efforts and ideas, but it would also provide a sense of checks-and-balances to a public-private partnership project as each entity has a proportional stake in coordinating efforts.

Secondly, the financial coordination that took place for this project was a major undertaking that involved numerous sources. Each major project will not have one specific way of financing a project, but it is important to keep in mind the use of matching federal funding to make the project more viable. Often times, federal money will only be granted under the condition that the state matches by a certain percent. Finding enough innovative sources to generate the matching funding may be challenging. User fees are not always a popular choice to help repay debt; however for a specific stretch of a project such as the 20-mile Alameda Corridor it may be feasible because it specifically benefits the project.

Thirdly, the idea of an "operating committee" such as the Alameda Corridor Operating Committee is another good use of checks-and-balances with a public-private partnership to ensure that all parties have an equal stake in what goes on in a project. This entity ensures the operations and functionality of a finished product, as each of its

stakeholders wants the project to continue to do well for its own purpose as well as for the whole.

In general, the most important lessons that can be taken from the Alameda Corridor case study are the cooperation, coordination and collaboration that went into planning, financing and maintaining this large undertaking of a freight rail project.

4.2 CREATE PROJECT

The Chicago Region Environmental and Transportation Efficiency (CREATE) Program is a freight rail, passenger rail and highway public-private partnership. This project aims to: increase mobility of passenger and freight movement while promoting economic development, reducing traffic congestion, creating jobs, and improving air quality and safety.

4.2.1 Background

The Chicago area is one of the busiest intermodal hubs of the world ("Chicago Regional Environmental," n.d.), and has been known as the rail capital of the world as well as America's transportation hub ("History," n.d.). Chicago's intermodal hubs are where six of the seven major freight railroads in North America pass through to pick up and deliver freight in order to make shipments. Unfortunately the rail lines are not interconnected in an efficient manner, and require large amounts of truck traffic to flow between the hubs, contributing to congestion problems. Chicago has suffered from congestion problems as a result of the large amounts of freight (truck and rail) traffic, as well as passenger rail and highway traffic. It is important to keep freight flowing through this area in order to maintain and stimulate the local, state and national economy.

The demand for freight rail is growing and is only expected to cause more strain on the current infrastructure if nothing is done about expansion or improvements. It is

also predicted that if expansion and improvements are not made to accommodate this growth, “the Chicago region will miss out on 17,000 jobs and $2 billion in annual economic production within two decades” (“History,” n.d.). The effects that corridor bottlenecks would have in the freight transportation system would not only have consequences locally, but regionally, nationally, and internationally as well, as Chicago is such a vital hub to the economy. The State of Illinois and the City of Chicago joined with passenger and freight rail companies to identify and select key rail and highway corridors where improvements were necessary to help with these transportation needs.

The CREATE project includes 78 total projects that will be completed over a six to ten-year period of time. These projects include:

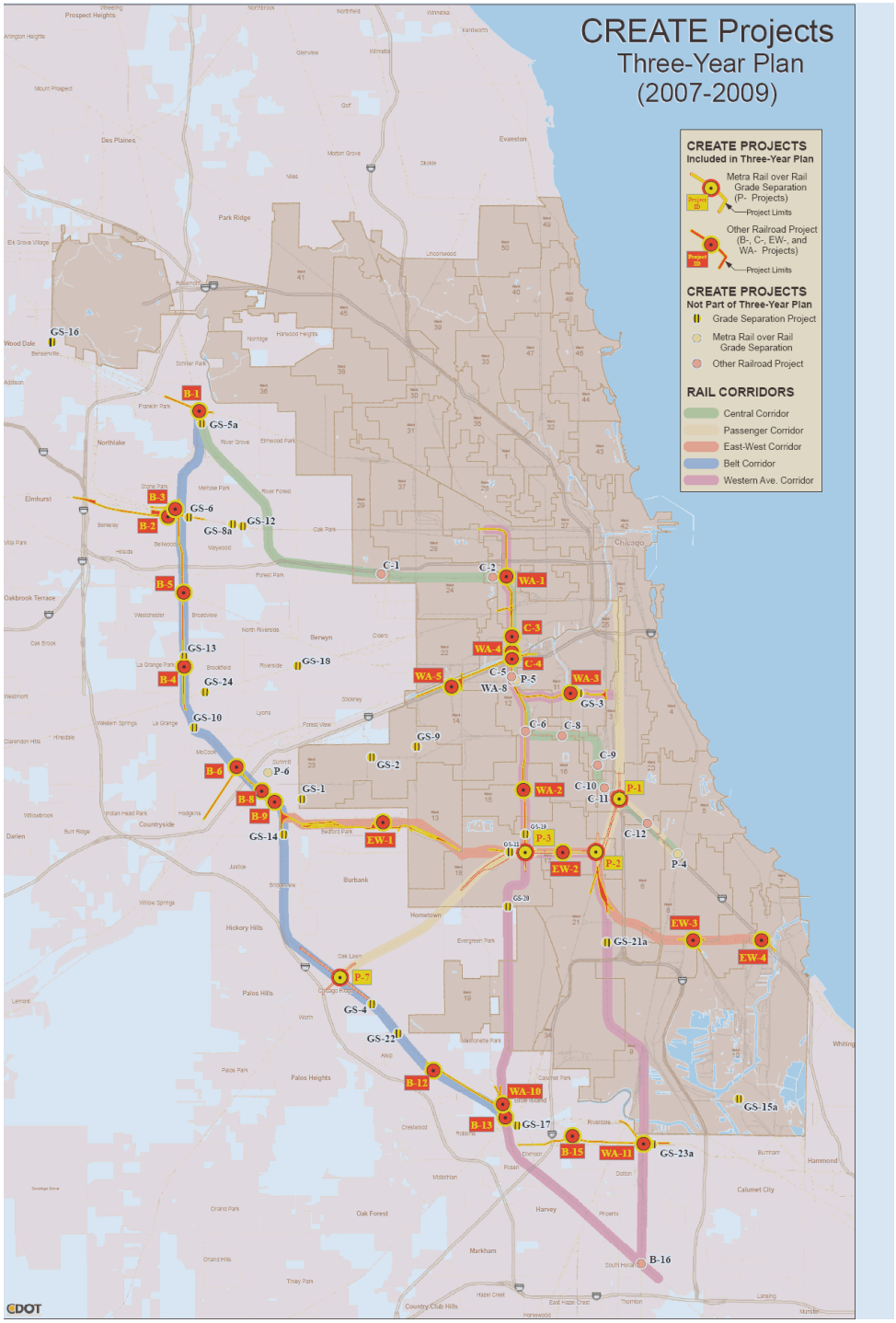
- 25 new roadway overpasses or underpasses at locations where auto and pedestrian traffic currently crosses railroad tracks at grade level
- 6 new rail overpasses or underpasses to separate passenger and freight train tracks
- Viaduct improvements
- Grade crossing safety enhancements
- Extensive upgrades of tracks, switches and signal systems ("Project Overview," n.d.).

All of these projects will help with congestion, environmental issues, freight throughput, and the overall economic viability of the nation. The public benefits of the project were weighed based on monetary values such as: the CREATE project is worth “$595 million related to motorists, rail passengers and safety; $1.1 billion related to air quality improvements; and $2.2 billion related to construction” ("Public Benefits," n.d.). The project will also provide thousands of new jobs and other positive externalities as a result of improving freight flow and decreasing congestion problems.

As of 2006, twelve rail projects and four highway-rail grade separation projects are in the environmental phase and one rail and one highway-rail grade separation has completed the environmental documentation (FHWA, n.d.). As of 2006, two highway-

rail grade separation projects are under construction (FHWA, n.d.). It is expected that the first 32 of 78 total projects will be in design or construction by 2009 ("CREATE FAQ," n.d.). On the CREATE project website, projects are identified and mapped in a three-year plan time frame. In the Appendix located in the back of this report, is the CREATE three-year plan for 2007-2009. Below in Figure 5.2 is a map that corresponds to the three-year plan. This map identifies the CREATE rail corridors in solid colors, and also identifies project numbers that correspond to projects within the three-year plan.

Figure 4.2: CREATE 3-Year Project Plan



Source: "CREATE Project Descriptions," n.d.

4.2.2 Key Players and Responsibilities

The City of Chicago and the Chicago Department of Transportation is the sponsoring agency for the CREATE project. Other entities are also involved with the public-private partnership including: the US Department of Transportation (FHWA), the State of Illinois Department of Transportation, and the Association of American Railroads with six of the seven major railroads in North America. The six railroads include: BNSF Railway, Union Pacific, Canadian National, Canadian Pacific, CSX, and Norfolk Southern. Metra and Amtrak passenger rail companies are also partners in this PPP.

The majority of the responsibility resides in the Chicago DOT and Illinois DOT, as they are the ultimate decision makers for the majority of the projects within CREATE. All of the other parties involved have a stake in what occurs for rail improvements, costs, etc. All of the key players contributed a large amount of money to the initial start of the project, and have an equal stake in the project's success. Usually, railroads make investment decisions based on what is best for their bottom line, but in this situation, they are not only doing that, but are "making additional investment decisions based on what is best for the overall rail network" ("Chicago Region Environmental," n.d.).

4.2.3 Risks

The most significant risk with the CREATE project, similar to the Alameda Corridor project, is the amount of time it can take to coordinate time, money and construction efforts to produce the improved corridors. The CREATE project did not "secure the largest chunk of funding, $900 million, in the 2005 federal transportation bill, but any hopes of fulfilling this goal must wait until 2009, when the next federal transportation bill" comes out (Biel, 2006). This is a risk for decision makers when

determining if there are enough funds to support certain corridors within the CREATE project improvements. This can also be a risk for the many railroads involved as they wait for their railroad project to be next on the list of improvements.

4.2.4 Financials

As of today, the CREATE project has cost a total of $1,534 billion and is financed using federal grants, state bond proceeds, and private equity. Authorized under SAFETEA-LU's *Projects of National and Regional Significance*, the CREATE project received $100 million (FHWA, 2007, p. 80). Through private railroad equity, the project received $100 million; however the total amount from this source will total $212 million over the course of the entire project (FHWA, n.d.). The railroads pay a share of what the project benefit would be for their company. The railroads and the state made sure to match the SAFETEA-LU amount by the railroads providing at least $100 million (as mentioned) and the state committing $100 million as well. The City of Chicago is committing approximately $30 million towards the CREATE project (FHWA, 2007, p. 80). This funding is enough to provide for Phase I of the CREATE project (current stage). See Table 4.3 to see a breakdown. Table 4.4 shows the types of funding the CREATE project uses in comparison to other PPP projects, specifically to the Alameda Corridor project.

Table 4.3: CREATE Funding Source

Funding Source/Mechanism	**Amount**
FHWA (SAFETEA-LU)	$100 million
Illinois DOT	$100 million
City of Chicago	$30 million
Railroads	$212 million
Total Project Amount:	**$1.5 billion**

Source: FHWA, 2007, p. 81

Table 4.4: CREATE Funding Source Comparison

Project Name	State	Cost (Millions of Dollars)	Federal Funds/Grants: IM	NHS	STP	CMAQ	Rail-Highway Grade Crossing	USACE Harbor Maintenance	EDA	FAA Airport Improvement	FHWA Earmarks	Other Federal Grants	Federal Financing Tools: TIFIA	SIB	RRIF	GARVEE	State/Local Funds/Grants: State Funds/Grants	Local Funds/Grants	Port Funding	Airport Funding	State/Local Financing Tools: State Loan	G.O. Bonds	Revenue Bonds	Tax-Exempt Bonds	Other: Private Sector	Uncommitted/ Unknown Funding	Repayment Sources: User Fees	Lease Income	Comments
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ReTRAC	NV	279.9									●		●					●				●			●				TIFIA repayment sources included: 1/8% sales tax; 1% hotel occupancy tax; lease income; and assessment district levies
Heartland Corridor	VA-WV-OH	309.0									●						●												
Widening of I-64, I-65 and I-75	KY	440.0	●	●												●	●												IM and NHS funds used to pay GARVEEs; toll credits used for matching
Cooper River Bridge Replacement	SC	667.0										●	●	●			●	●											
FAST Corridor	WA	863.8									●	●					●		●						●				
CREATE	IL	1,500.0									●							●							●	●			
Alameda Corridor	CA	2,431.0							●			●	●					●	●				●				●		Loans and bonds to be paid with container fees

Source: FHWA, 2007, p. 66

4.2.5 Lessons for Texas

Texas policy-makers, transportation planners and Department of Transportation can look towards the CREATE project for financial feasibility solutions and ideas for how to coordinate various stakeholders for a PPP. Texas does not have the largest intermodal hub in the nation like Chicago, but there are numerous essential freight corridors that are vital to the state and the nation's economic viability when it comes to freight movement. Texas plays a major role in bringing in freight from the Mexico border as well as through the ports on the Gulf of Mexico. Three Class I railroads serve Texas' ports and borders, and could facilitate major increases in freight growth through expansion. With proper coordination between railroads, ports, local governments, TxDOT and the FHWA, Texas could begin taking on major freight rail public-private partnerships that could not only increase freight mobility, but improve congestion, air quality and the economy. Another lesson that could be applied to Texas is that projects that include more than one private entity such as multiple railroads may a worthwhile partnership. The Tower 55 project in Fort Worth may be a good example to apply this case study as it is a congested rail intersection involving several railroads. By having a PPP between public agencies with multiple railroads, ports or other private entities, the focus is more about moving freight or making proper systems connections than solely about increasing the company bottom line.

4.3 CONCLUSION

The Alameda Corridor and the CREATE project both have many lessons that Texas planners, policy-makers and transportation entities can learn from and apply. It is apparent that Texas is striving for transportation solutions and seeking public-private partnerships. The Houston Region Freight Rail Study (mentioned previously) is one

example of where multiple entities including TxDOT, private railroads, and local governments are coordinating together and identifying areas along the freight rail system in the Houston area that need improvements. According to correspondences with Wilda Won from TxDOT's multimodal rail planning department, this Houston Region Freight Rail Study just came out, April 12, 2008, and extensively will discuss some freight rail improvement opportunities. This study identifies problematic areas in Houston, the estimated cost, and a potential plan. This is a needs assessment to identify projects and funding need for the RRIF (Rail Relocation and Improvement Fund) that was mentioned earlier. The RRIF is currently unfunded, but could potentially be beneficial to projects such as these identified in Houston for a public-private partnership. All in all, the intent of the Houston Region Freight Rail Study is to prompt funding of the RRIF to promote PPP's.

The proposed Trans Texas Corridor (TTC) is another example of where Texas is attempting a large-scale public-private partnership to more efficiently move freight and people throughout the state on highways and railroads. Texas can look at the Alameda Corridor and CREATE projects for some guidance on how to coordinate, finance, plan and maintain such a large endeavor. Although the TTC is a much larger scale than the two aforementioned case studies, the state of Texas should look towards coordinating efforts for intermodal facilities, and railroad improvement areas that could supplement the larger TTC project. Texas should also consider the many ways of financing and coordinating various stakeholders for a PPP such as was done in the Alameda Corridor and CREATE.

The State of Texas has and will attempt PPP's for freight rail expansion and improvement; however some of the main reasons why there have not been many successful PPP projects are because of lack of coordination, funding and follow-through.

Through researching, studying and applying successful case studies, Texas can coordinate a system of applying public-private partnerships to freight rail projects.

4.3 INTERVIEWS

As mentioned, interviews with both public and private entities that have a stake in the railroad industry were conducted. The topic of discussion between me as a student and the professionals was to discuss the benefits of rail, why there have not been more rail PPP's in Texas, and open the discussion for some ideas about case studies or ideas on how more rail freight growth may occur to accommodate growth. All parties involved suggested the exploration of the Alameda Corridor and the CREATE project mentioned above as good case students. There was an apparent difference in PPP perspectives, however, between the public and the private sectors that will be discussed below, and there was a general common understanding and consensus of the urgency to move more goods by rail.

4.3.1 Private Sector Interviews

I spoke with three people from BNSF including Dennis Kearns, Mark Schmidt, and Nate Asplund[12]. The overall sense I received from the people from BNSF Railway was that as a private entity, the bottom line is constantly driving business decisions. BNSF has a great reputation of being a leader not only in the railroad industry, but also in the larger corporate business world. With that said, the railroad is also very unique in the fact that it is a very capital-intensive industry, and is in fact the most capital intense industry in the nation, according to BNSF's Dennis Kearns (personal communication, February, 27, 2008). Although railroads are private business entities, they have certain

[12] Mark Schmidt and Nate Asplund and I talked via conference call on November 6, 2007 to discuss this topic. This section can be referenced to this day's discussion. November 5, 2007 and February 27, 2008, I had face-to-face meetings with Dennis Kearns at his office in Austin, TX and these dates can also be referenced.

limitations that are disadvantageous to their bottom line compared to normal private businesses. As an example, BNSF spends about 17 percent of its revenue on capital projects such as building/maintaining track, buying locomotives, etc. This is a large portion of its earnings, and does not necessarily look enticing to Wall Street investors looking for the best return on investment. This means that if BNSF were to enter into a public-private partnership, the company could not solely enter into an agreement because it helped the environment or improved traffic, but could partner additionally because it helps the bottom line.

The private sector needs the assistance of the public sector to perform certain tasks to make a project come to fruition. As mentioned earlier in the report, the railroad companies are limited in capital spending beyond a certain point compared to the predicted freight rail demand. Some government partnership or assistance can help major freight rail expansion projects take place. The railroads sometimes have a problem, however, with too much government interaction with freight railroad projects. After the public puts forth the funding or the government approval, the private companies do not want much more public sector interaction. The railroads want to avoid re-regulation as much as possible. The more government interaction and regulation, the more unappealing it becomes to the private railroads. This can be problematic in the PPP process.

An interesting fact that may not relate now to helping Texas with PPP's but could in the future is that short-rail lines could become more economical than short-haul trucks over time. Mark Schmidt discussed that for rail to be more economical than trucks railroads need to travel over long distances (500 plus miles). Schmidt discussed that as fuel costs escalate, truck driver shortages become more problematic, congestion becomes more acute, and the public becomes more concerned with air quality, the shorter line

railroads are becoming more economical. The economic landscape is not quite ready rail to be competitive in the short haul, but at the pace fuel prices, congestion and environmental concerns are heightening, it could becoming feasible in the near future.

Another fact that could be potentially helpful to negotiating PPP's in Texas is for policymakers or state leaders to sit down and talk frequently with the private railroad stakeholders to better understand the industry. The railroads have tracks in many other states throughout the country, and often interact with other states' policymakers to coordinate PPP projects. If it is possible in other states, with some time and effort, it can be possible in Texas. The three BNSF interviewees discussed different experiences in other states and other projects where state governments attempt to work with the private entity. PPP's can be done, however they take diligent coordination between the parties.

4.3.2 Public Sector Interviews

The public sector interviews were with a woman from TxDOT (now formerly from TxDOT), Wilda Won[13], and a person from the Center for Transportation Research, Jolanda Prozzi[14], who works frequently on research projects with the public sector. The overall sense I got from speaking with these two parties about PPP's was that the public sector has a difficult time agreeing to partner because they feel that the private sector could always give more money than they do. Also, it is difficult to weigh public benefits against capital benefits, therefore weighing the benefits of both parties in a PPP is challenging.

Another point that the public sector entities brought up on both interview accounts is the use of freight rail corridors for passenger rail corridors. In order for some PPP's to

[13] Wilda Won and I met for a lunch discussion in Austin, TX on March 4, 2008. This date can be used to reference this section of the report.
[14] Jolanda Prozzi and I met for an hour meeting at the Center for Transportation Research office in Austin, TX on April 16, 2008. This date can be used to reference this section of the report.

be more feasible or appealing to the general public, a passenger rail element can make the project emerge. The private rail companies sometimes enter into these types of projects, but not very willingly as it can limit freight throughput (capacity).

The Center for Transportation Research person discussed the issue of favoritism in PPP projects, and that if a project is to take place between the public sector and one private rail industry, there may be feelings of favoritism. In most cases, the majority of successful PPP projects include more than on private rail industry so as to not play favorites.

There are many underlying issues between the public and private entities that act as barriers when attempting to coordinate a partnership. The public sector understands the need for freight rail and the capacity constraints, and attempts to help out wherever it is feasible.

4.4 CONCLUSIONS

The overall paradox of creating more public-private partnerships in Texas to help accommodate growth lies in the inability to coordinate the public and private entities. From these interviews, it is apparent that the private sector is somewhat fearful of too much government regulation, and the public sector is fearful of putting too much money in a project when they believe the private could put in more. In order to have a successful PPP, all parties involved need to have an equally vested interest and have to be willing to put in what they expect to get out of the project. Without a comprehensive way to discuss PPP projects between these entities, Texas may continue having a difficult time supporting the demand for freight rail infrastructure. The bottom line is that the state needs and wants more freight rail capacity, but neither the public nor the private sectors are willing to budge enough to get a reliable PPP together.

Chapter Five: Conclusions & Recommendations

5.0 INTRODUCTION

Population and economic growth in Texas is expected to increase greatly in comparison to the rest of the nation. On an already strained and congested highway system, Texas must look towards the use of railroads to move more freight as rail is a fuel-efficient, safe, reliable and an overall economical means to transport goods. As the railroads are mostly private, the public sector can work in conjunction with the private sector through public-private partnerships to increase the capacity and efficiency of the freight system throughout Texas. Below are some general recommendations for Texas to increase capacity, through PPP's in order to ensure the economic viability of the state.

5.1 RECOMMENDATIONS

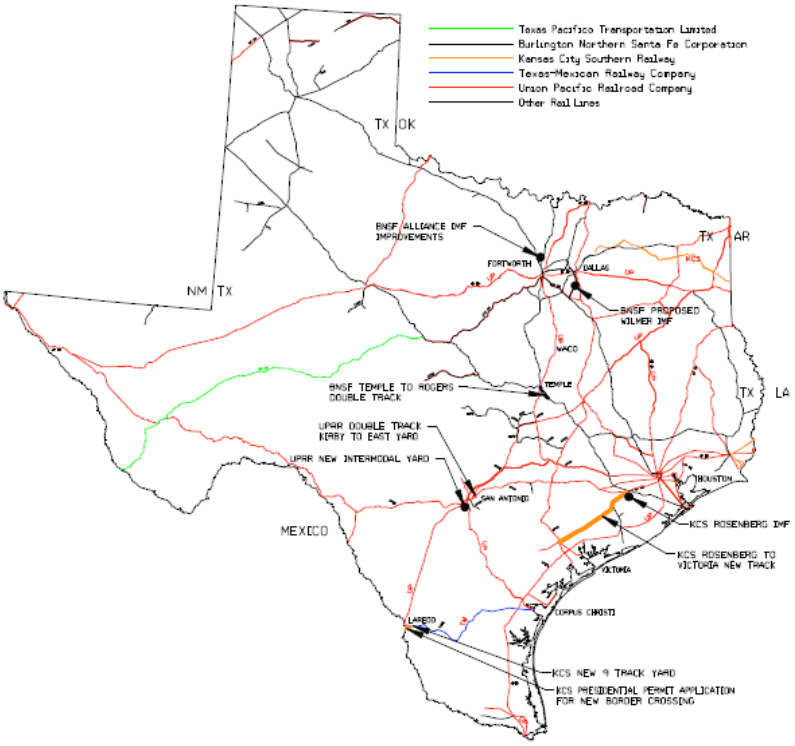
Recommendation One:

One recommendation would be for Texas to analyze the capacity of the current rail infrastructure, and identify where the existing rail lines can and should be expanded to accommodate the expected growth in trade movement and influx from international shipments. This coordinated effort is similar to what the Houston Region Freight Rail Study accomplished, and the Texas Rail System Plan of 2005. The Texas Rail System Plan needs to be updated, however, in order to address the concerning issues with the expected freight growth.

The map below in Figure 6.1 shows where current railroad expansion projects are taking place in Texas by railroad company. These projects are not necessarily PPP's, but having a map system that shows expansion and improvement projects like this can show where the state or public agencies can begin to weigh the public benefits of partnering

with the private companies. Having a comprehensive statewide map of expansion projects can help with coordination and consistency of PPP projects.

Figure 5.1: Texas Railroad Expansion Projects by Rail Company



Source: TranSystems, 2008

Recommendation Two:

A second recommendation would be for TxDOT and state government officials to sit down with executives from BNSF Railway, UP Railroad and KCS Railroad (the three Class I railroads in Texas) to discuss what sorts of policy changes Texas could begin

making in order to come up with a more comprehensive way to do rail public-private partnerships. From the examples of the Alameda Corridor and the CREATE project, BNSF and UP should have some invaluable insight as to what the states of California and Illinois are doing in order to make these projects work so well. The railroads are not only involved with projects within Texas, but are a part of projects throughout the nation, therefore have interacted with various public agencies. It may be of value for Texas officials to meet with government officials from other states that have had success with freight PPP's as well. Gaining insight from other states' successes would greatly benefit Texas.

Recommendation Three:

A third recommendation would be for a stronger push for funding and financing tools that could help with transportation projects, to assist with freight rail PPP's. This entails a stronger legislative interest in the transportation issues, and would require great public interest as well for voter support. Public education about the benefits of freight rail can only help this cause, as well as public and private interaction and coordination to ensure successful projects.

5.2 CONCLUSION

Based on the research provided in this report, public-private partnerships will help private and public agencies with improved freight mobility. At the current rate of growth and present state of our highways and railroads, it is imperative that freight rail capacity progresses.

Appendix

CREATE Projects
Three-Year Plan (2007-2009)
Updated 4/08

Municipality	Location	Project Number	Project Scope	Project Benefits	Environment, Engineering, and Design Schedule	Construction Schedule
Franklin Park	Grand Avenue and Washington	B-1	Install four sets of crossovers. A crossover consists of two switches and connecting track, which allows either a southbound or northbound train to switch from one track to the other. Install associated computerized train signals.	Provide additional capacity and reduce congestion between Elmhurst and the Indiana Harbor Belt Railway in the Bensenville rail yard area to handle 56 Metra and 30 freight trains per day	2008-2011	2011-2012
Bellwood	25th Avenue west past Mannheim Road overpass south of Lake St., to Proviso Yard 9	B-2	Construct a third mainline track on Union Pacific line. Improve the connection track between the Indiana Harbor Belt Railroad and Union Pacific line	Increase freight train speeds from 10 to 25 miles per hour and reduce standing time. Metra will experience reduced delays from freight train interference	2007-2008	2008-2010
Melrose Park	Proviso North Departure Yard west of 25th Avenue Between Lake Street and St. Charles Rd.	B-3	Add a second rail connection between Union Pacific Line and Indiana Harbor Belt Railroad	Trains will be able to move simultaneously through this connection	2007-2008	2008
LaGrange	West of East Ave. from Plainfield Road to Cermak Rd	B-4	Upgrade a segment of secondary track to a main track. Upgrade all signals to allow movement in each direction on each track.	Train speeds will increase from 15 to 30 miles per hour. Trains will be able to move simultaneously and staging time will be reduced	2007-2008	2008-2010

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Municipality	Location	Project Number	Project Scope	Project Benefits	Environment and Engineering, and Design Schedule	Construction Schedule
Broadview	West of East Ave. from Plainfield Road to Cermak Rd.	B-5	Install new crossovers and signal equipment on an existing section of double track. A crossover consists of two switches and connecting track, which allow either a southbound or northbound train to switch from one track to the other	Crossovers will no longer be operated by hand. Train speeds will increase from 30 to 40 miles per hour	2007-2008	2008-2010
McCook	East of East Avenue between I-55 and 55th Street	B-6	Extend the length of the existing rail connection between BNSF and the Indiana Harbor Belt Railroad. Construct a second southwest rail connection between these two lines	Train speeds will increase from 10 to 25 miles per hour and two trains can use the connection at the same time	2005-2008	2008-2009
Bridgeview, Bedford Park, Summit	West of Harlem Ave, North of 71st Street to the Chicago Sanitary and Ship Canal	B-8	Install computerized signal system	Increase speed of freight trains, Metra and Amtrak trains from 25 miles per hour to 40 mph and increase the number of trains that can pass through this location	2007	2008
Chicago	71st Street	B-9	Provide double-track connection between BOCT and BRC, including crossovers at 71st St.	Increase volumes from 76 to 88 trains per day. Trains will operate at 25 miles per hour. Increase flexibility for dispatchers and allow for simultaneous train movements	2006-2007	2010-2011

Municipality	Location	Project Number	Project Scope	Project Benefits	Environment and Engineering, and Design Schedule	Construction Schedule
Blue Island/Alsip	between Western and Pulaski and from 123rd St. to Francisco Ave.	B-12	Construct a third mainline track	Increase train speeds to 40 miles per hour and enable higher train volumes to be handled on this segment	2005-2008	2008-2009
Blue Island	North of Cal Sag Channel to south of Broadway St.	B-13	Upgrade to provide connection between two mainline tracks. Improve signal system. Upgrade the switch from one set of tracks so trains can operate at higher speeds	Increase train speeds from 10 to 25 miles per hour	2006-2007	2008-2009
Riverdale	Blue Island Yard south of Forest View between South Ashland and Halsted Streets	B-15	Install computerized signal system. Install power switches at School Street and Ashland Avenue	Increase speeds from 15 to 30 miles per hour. Improve flexibility of train dispatching	2007-2009	2010-2011
Chicago -28th Ward	"Ogden Junction" at Ogden Avenue and Western Avenue	WA-1	Realign and signalize Ogden Junction to enable a double track connection from UP to CSX and NS mainlines	Increase train speeds from 15 to 25 miles per hour. New control point will be governed by electronic signals	2007-2009	2009-2010
Chicago 5th, 12th, 15th 16th 17th 18th 25th, 28th Ward	"Ogden Junction" (Ogden Avenue and Western Avenue) to 75th Street	WA-2	Install computerized signaling on CSX, between Ogden Junction and 75th Street (Forest Hill Crossing)	Increase speeds from 20 to 25 miles per hour due to automated switches	2007-2008	2009-2010

Municipality	Location	Project Number	Project Scope	Project Benefits	Environment, Engineering, and Design Schedule	Construction Schedule
Chicago- 12th Ward	Between "Ogden Junction" (Ogden Avenue and Western Avenue) and 75th Street	WA-3	Install computerized signaling system. Install an additional mainline track along Ashland Avenue Yard	Increase train speeds from 15 to 25 miles per hour	2005-2008	2008-2009
Chicago – 12th Ward, 14th Ward,	North of Chicago Sanitary and Ship Canal west of Western Ave.	WA-4	Construct connection directly linking BNSF Chicago and Chillicothe lines. Improve Ash Street connection with CN	Increase capacity from 74 to 85 trains per day. Create direct connection between two rail segments. Eliminate throwing switches by hand.	2007-2009	2010-2012
Chicago – 14th Ward	South of Chicago Sanitary and Ship Canal, east and west of Pulaski Road	WA-5	Upgrade track and signals, and reconfigure Corwith interlocking and remote controlled Corwith tower	Increase train volumes from 122 to 134 per day. Increase speeds to 25-40 mile per hour	2007-2008	2008-2009
Blue Island	"Blue Island Junction" South of Broadway and West of Western Ave.	WA-10	Install universal track connections (allowing trains to switch tracks traveling northbound and southbound) between CSX and CN lines	Increase train volumes from 33 to 48 per day at speeds of 30 miles per hour	2007-2008	2008-2009
Dolton	West of Lincoln Avenue from 137th to 144th Streets	WA-11	Upgrade and reconfigure CSX/UP connection. Add third mainline track from Barr Yard to UP Connection in Dolton	Increase train speeds from 15 to 30 miles per hour	2008-2009	2009-2010

Municipality	Location	Project Number	Project Scope	Project Benefits	Environment, Engineering, and Design Schedule	Construction Schedule
Bedford Park/Chicago – 13th Ward	"Clearing Yard" Between 67th and 70th Streets from Harlem Ave. to Pulaski	EW-1	Construct two main tracks around Clearing Yard	Increase train volumes to 24 trains per day and increase speeds to 25 miles per hour	2007-2009	2010-2015
Chicago – 18th Ward	From 77th to 84th Street between Aberdeen and Wood.	EW-2	Create four tracks with clearance for double-stacked container cars. Create three main line tracks from 80th Street to Forest Hill	Will increase flexibility for train staging. Creates connection between NS and Metra line. Will increase train volumes from 40 to 56 trains per day	2005-2012	2012-2015
Chicago	North of 95th and "Pullman Junction"	EW-3	Realign track to allow use of four main lines between Pullman Junction and 80th Street	Improves flexibility for dispatchers; increases train volumes at junction from 33 to 46 per day.	2006-2009	2010
Chicago – 10th Ward,	95th and Commercial to Calumet River	EW-4	Improve connection from East-West Corridor to NS main line	Increase train speeds from 10 to 20 miles per hour. Double train volumes from 23 to 46 trains per day.	2007	2008
Chicago –20th Ward	63rd and State Streets	P-1	Flyover to separate Metra and NS (Amtrak) rail lines so one passes over the other	Eliminate rail delays. Increase Metra trains from 74 to 118 per day.	2006-2010	2010-2012

Municipality	Location	Project Number	Project Scope	Project Benefits	Environment, Engineering, and Design Schedule	Construction Schedule
Chicago -	75th and Union	P-2	New connection to reroute Metra Southwest Service onto the Rock Island line near 75th St., including a flyover to separate Metra, the BRC, and NS	Eliminate all passenger freight rail conflict. Increase Metra train volumes from 20 to 30 per day and freight trains from 40 to 56 per day. Allow Metra trains to operate at 45 miles per hour.	2005-2012	2012-2014
Chicago – 18th Ward	75th and Hoyne	P-3	Flyover separating Metra and CSX rail lines so one passes over the other	Increase Metra train capacity from 20 to 30 per day and freight rail capacity from 22 to 37 per day.	2008-2012	2012-2017
Chicago Ridge	107th and Central	P-7	Grade separation of Metra/CSX tracks and Ridgelawn Avenue highway crossing	Increase capacity from 20 Metra trains per day to 30. Increase speeds from 50 miles per hour to 70 miles per hour.	2009-2011	2011-2013

Notes:

Five Rail Corridor Project Classifications	Partner Rail Lines
B= Beltway Corridor	BNSF – Burlington Northern Santa Fe
EW= East-West Corridor	CN -- Canadian National Railroad
WA = Western Avenue Corridor	CPR – Canadian Pacific Railroad
C= Central Corridor	CSX
P=Passenger Corridor	IHB – Indiana Harbor Belt Railroad
	UP – Union Pacific

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Vita

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