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16. Abstract

Given the forecast growth in the Texas population and freight movements, it is clear that substantial demands will be placed on the already heavily used transportation infrastructure of the state. Railroads are thus viewed as a key element of a greater intermodal solution to supply increased travel demand. It is widely hypothesized that rail service (particularly commuter rail on existing tracks) can be less costly than highway expansions when used to supply personal travel. However, it is foreseen that TxDOT will face many challenges, and in some cases opposition, when the agency proposes to accommodate both passenger and freight trains on the same track or the same right-of-way. In 2004 the Texas Department of Transportation (TxDOT) contracted with the Center for Transportation Research (CTR) at The University of Texas at Austin to outline and explain the environments in which public agencies and private railroads operate and to highlight the negotiation issues and concerns regarding passenger rail sharing freight infrastructure from both parties' perspectives. The research culminated in this report.

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Public Support of Passenger Rail Sharing Freight Infrastructure

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1. Introduction

Texas is forecast to have a population of more than 27 million by 2025, with a growth rate of about 30,000 new residents per month. A growing population combined with a growing economy is resulting in increased levels of passenger travel demand in Texas. In addition, freight movements are expected to continue to increase, especially once Mexican trucking companies are allowed to operate into the U.S. Key elements of the Texas transportation system are thus becoming overwhelmed, resulting in congestion, increased travel times, and safety and air quality concerns. At the same time, it is being realized that the demand for motorized mobility needs to be reconciled with the limited available resources and the environmental and social impacts of motorized highway travel. Railroads are thus often looked on as a key element of a greater intermodal solution to the problem of reducing roadway congestion and associated societal and environmental costs. However, the addition of new passenger-rail capacity, i.e., through building new rail lines on a newly purchased Right-of-Way (ROW), is considered prohibitive in terms of the costs and therefore the required funding. Hence it is widely advocated that passenger rail service, particularly commuter rail on existing tracks, presents a less costly alternative to highway expansions and new rail-line expansions. In other words, rail sharing is seen as an attractive option for providing additional required passenger travel capacity in Texas.

Passenger rail services in the U.S. are generally planned and operated by public entities. This includes not only Amtrak (the national intercity passenger rail operator), but also operators of local commuter rail services. Local entities look to commuter rail to encourage a modal shift away from the private automobile and to move toward achieving equity through providing modal alternatives to the traveling public. However, achieving a modal shift to rail requires, among other factors, short headways during peak hours and maintenance of a reliable schedule. These can be difficult to achieve in a busy freight corridor. In most cases, passenger rail will require priority dispatching during peak travel hours. However, freight moving through Texas often originates and terminates far from the state's borders and schedules to serve these distant markets may mean that freight must operate on Texas tracks during peak commuter hours. Also, freight railroads, as profit maximizing private enterprises, want to provide reliable and high quality service to their customers and maximize utilization of their equipment and ROW. Shared use of freight infrastructure is further complicated by capacity concerns. Because the overall capacity of the rail freight system has not increased in line with the increase in demand for rail freight transportation, capacity concerns are usually a key factor in negotiating shared use agreements. Other issues such as safety, liability, and cost-sharing must also be considered in the decision to share rail freight corridors.

The role of the Texas Department of Transportation (TxDOT) in supporting the development of passenger rail services relates to the need for improved mobility. This role was further strengthened by recent legislative acts, especially the passage of House Bill 3588 by the 78th Texas Legislature. House Bill 3588 defines the Trans-Texas Corridor (TTC) concept and calls for a system of multimodal facilities, including rail services, to be established, designated, constructed, and operated within the state of Texas. The proposed 4,000 mile TTC project will accommodate both road and rail

modes. With many freight rail lines already at or near capacity, the TTC is foreseen to provide needed relief on the current system and may make existing freight rail line capacity available for shared operations with commuter or intercity passenger trains. However, it is foreseen that TxDOT will face many challenges, and in some cases opposition, when the agency proposes to accommodate both passenger and freight trains on the same track or ROW. Hence the success of "rail sharing" in Texas will require much negotiation and cooperation. The success of these negotiations will in part depend on the parties' (i.e., the public agency and the private railroads) ability to understand and accommodate each others' goals and concerns.

In 2004 TxDOT contracted with the Center for Transportation Research (CTR) at The University of Texas at Austin to outline and explain the environments in which public agencies and private railroads operate and to highlight the negotiation issues and concerns from the perspectives of both parties. This research culminated in three documents:

- a stand-alone synthesis of best practices (0-5022-P1), which summarizes information gathered from an extensive literature review and interviews with various transit agencies and freight railroads regarding the issues and concerns associated with shared railroad infrastructure and ROW use by passenger and freight trains,
- a stand-alone rail sharing primer (0-5022-P2), which delineates and explains many of the potential issues or concerns that TxDOT and other public sector agencies need to consider and understand in terms of various rail sharing arrangements, and
- this research report, which documents the research performed and results achieved.

This report is organized as follows. Chapter 2 discusses Texas's rail freight environment and current rail freight trends. Chapter 3 provides a similar perspective with regard to the public agencies involved in operating passenger rail services. This chapter also discusses the environment in which rail transit decisions are made and the role of TxDOT in facilitating passenger rail transit in Texas. Chapter 4 highlights the negotiation issues and concerns from both the transportation agency and the private railroads' perspective, and Chapter 5 summarizes the main conclusions from this research.

2. Private Railroad Perspective

This chapter discusses the environment in which the private, for-profit freight railroads operate in Texas. It begins with an overview of the nation's rail freight system and a brief history of railroads in the U.S., taking special note of the regulatory environment in which railroads have historically operated. Later sections address the specifics of the Texas rail freight system, providing an overview of the present situation, recent trends, and future forecasts.

2.1 The Nation's Rail Freight System

2.1.1 Importance of Rail Freight

The rail freight system is of vital importance to the nation. About 42 percent of the nation's surface freight (by tonnage) moves by rail (Association of American Railroads, *Railroad Facts).* This transportation capacity provided by the rail freight network is equivalent to 92 billion truck vehicle miles of travel, resulting in substantial highway cost savings (American Association of State Highway and Transportation Officials [AASHTO], 2003). The rail freight network is thus an important component of the nation's intermodal transportation network. It contributes to economic development and enhances productivity by providing shippers with a cost-effective transportation alternative, especially for heavy and bulky commodities. Available rail service can also play a vital role in attracting and retaining industries that are central to state and regional economies. The location of the Toyota plant south of San Antonio illustrates the importance of existing rail services in attracting businesses to a region. The rail freight network serves international trade by connecting U.S seaports and border ports of entry with inland producers and customers, thereby contributing to the global competitiveness of U.S. industries. Rail freight is believed to be comparatively fuel-efficient and a preferred mode for hazardous materials shipment. Finally, the rail freight system is important to military mobilization and provides crucial transportation system redundancy in case of national emergencies (AASHTO, 2003).

2.1.2 Increasing Constraints on Rail Freight Capacity

The demand for freight transportation services is increasing. Domestic freight tonnage is forecast to increase by 57 percent by 2020 and import-export tonnage is forecast to increase by almost 100 percent. It is projected that the national rail freight system will have to carry an additional 888 million tons of freight by the year 2020. Although highway transport is an alternative, trucks are already carrying 78 percent of domestic freight traffic (by revenue) and it is forecast that an additional 6,600 million tons of freight (62 percent increase) will be added to the highway system. Moreover, the highway system is increasingly congested and the socioeconomic and environmental costs of adding new highway capacity are becoming prohibitive in many areas. Some state governments (notably Virginia and Texas) have been investigating the economic viability of constructing state-funded rail corridors as a cost-effective way of increasing transportation system capacity (AASHTO, 2003).

The following brief history of railroads in the U.S. is provided as background to understanding the historical role of rail in moving the nation's freight.

2.1.3 History of Railroads in the United States

2.1.3.1 Pre-Staggers Act Period

Historically, the railroads in the U.S. were built and operated as private enterprises. In the mid 19th century, federal and state governments encouraged the expansion of the railroad network, in some cases through direct financial assistance or large grants of state-owned and federally owned land to private interests. Railroads were considered a technological innovation, freeing businesses from the need to locate near navigable waterways or canals and opening up vast areas of the country for agriculture by reducing transportation costs. However, as the railroad network neared completion, the focus began to shift from supporting growth toward regulation of the perceived abuses of market power by railroads.

As part of the regulatory effort, the first federal regulatory agency, the Interstate Commerce Commission (ICC), was created in 1888. The increasingly restrictive regulatory environment resulted in the private railroads ceasing to be profitable before World War I. This decrease in profitability, together with the railroads' failure to meet transportation needs at the time of the First World War, resulted in the nationalization of the railroads in 1917. In 1920 the railroads were returned to private ownership. However, the Transportation Act of 1920 changed the basis for economic regulation of the industry. Rather than simply restraining rate increases, the ICC was also to ensure that railroads received a fair return on their assets. Despite this requirement, the financial performance of the railroads worsened as competition from automobiles (for passengers) and from trucks (for freight) increased.

Therefore, in the Transportation Act of 1958, the federal government for the first time formally recognized that the railroads were no longer a transportation monopoly, and should no longer be regulated as such. This was a positive step, but two years earlier (in 1956) the nation had committed to the construction of a national network of interstate and defense highways. These highways generally followed railroad lines because railroads served centers of population and industry. Although they were planned without specific consideration of freight flows, the availability of express highways provided a tremendous impetus to the trucking industry and also made automobile travel time competitive with passenger trains. This resulted in the depletion of railroad revenues.

By the mid-1970s, a third of the railroad mileage in the U.S. was operating in bankruptcy. The federal government realized that many of the rail freight industry's problems resulted from federal transportation policies, especially economic regulation. In essence, the regulatory regime prior to 1980 prevented the railroads from any type of price, service or system restructuring to deal with modal competition.

2.1.3.2 Post-Staggers Act Period

In 1980, Congress enacted the Staggers Act, deregulating the rail freight industry and relieving the railroads of most regulatory restrictions. Passage of the Staggers Act produced an immediate improvement in the financial performance of the industry. By

giving the railroads the flexibility to adjust rates and services to meet client needs and their revenue requirements, the profitability of the industry was enhanced.

The Staggers Act, in combination with several other measures, had a significant effect on the railroad industry's financial performance and other indicators. For example, in the 30-year period before 1980, the railroad market share (in terms of revenue ton-miles) declined from 56.1 percent to 37.5 percent. The market share in the post-Staggers Act era increased to a stable 41.7 percent. In addition, the railroads' return on investment has increased to around 7 percent in 2003-2004 from a very low 2 percent in the 1970s and 4.25 percent in 1980. In addition, there are some indications that railroads are currently able to raise rates because of a shortage of truck drivers, which could further increase their return on assets.

The Staggers Act liberalized the procedures for eliminating light density and unprofitable rail lines. This enabled the railroads to reduce costs by abandoning infrastructure. Railroads thus eliminated redundant facilities such as yards and multiple main tracks, and reduced train crew sizes. The overall rail system mileage was reduced by half, from 380,000 miles of operated track in 1920 to around 170,000 miles in 2003 (Association of American Railroads, n.d.). The improved financial situation of the railroad industry also resulted from economies of scale and density achieved through mergers and acquisitions. Railroad ownership was consolidated into a smaller number of class I, II, and III railroads. As a result, freight-rail productivity increased, rates fell, service improved, and market share stabilized at approximately 42 percent of total domestic ton-miles.

However, the productivity gains and competitive rates have not been enough to re-establish the railroads' previous market share and increase revenue. Also, although the industry's return on investment has improved, it is still below the cost of capital. The railroad industry today is stable, productive, and competitive with enough business and profit to operate. It is, however, not able to replenish its infrastructure as it wears out or to accommodate rapid growth.

2.2 The Texas Rail Freight System

The following sections address the current status of and future prospects for Texas's rail network.

2.2.1 Overview of the Rail Environment in Texas

The Texas rail system represents a significant component of the nation's rail network in terms of size and traffic levels (see text box).

Texas Rail Facts

Compared to the nation's rail system, Texas is ranked

- 1st in terms of total rail route miles with a total of 10,749 miles,
- 2nd in terms of the total number of railroads,
- 5th in terms of total rail tonnage moved,
- 2nd in terms of total rail carloads moved, and
- 1st in terms of total railroad employment (AAR, 2005).

As of December 2004, Texas was served by 45 rail carriers, which can be categorized in the following three classes[1]:

- Three Class I carriers: Union Pacific (UP) operates on 6,388 miles of track, Burlington Northern Santa Fe (BNSF) operates on 4,824 miles of track, and Kansas City Southern (KCS) operates on 368 miles of track.
- Two regional railroads: the Texas Mexican Railway, which operates on 525 miles of track and the Texas Pacifico Transportation Ltd that operates on 393 miles of track.
- About 37 local and switching and terminal railroads that operate on about 1,696 miles of track in total. These statistics include trackage rights (AAR, 2005).

Data compiled by the railroads show that the volume of Class I freight originating in Texas increased by 26 percent between 1991 (86.5 million tons) and 1999 (109.3 million tons). Class I freight terminating in Texas increased by 32 percent between 1991 and 1999, from 140.8 to 185.1 million tons (Cambridge Systematics, 2002). By the same token, the total rail freight tons moved in Texas increased from 230 million tons in 1991 to 363 million tons in 2004, an increase of almost 58 percent (AAR, 2005).

In terms of the commodities moved, a few commodities dominate the tonnage originating and terminating by rail in Texas. Chemicals and nonmetallic minerals account for 56 percent of all rail freight tonnage originating in Texas. In addition, petroleum products, mixed freight, and glass and stone products represent about 19 percent of the total tonnage originating in Texas by rail. The top five rail commodities terminating in Texas (i.e., coal, nonmetallic minerals, farm products, chemicals, and food products) comprise 75 percent of the total rail tonnage destined for Texas (AAR, 2005).

Finally, a number of rail corridors critical to through freight movements traverse the state. Texas facilitates major north-south flows to and from Mexico via several routes and major east-west flows on two routes connecting El Paso via San Antonio with Houston and via Dallas-Fort Worth with New Orleans. Much of the east-west traffic consists of ocean containers moving on "land bridges" between Los Angeles and Houston or between Los Angeles and population centers in the Midwest and on the east coast of the U.S.

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[1] The Surface Transportation Board (STB) categorizes rail carriers into four classes:

- "Class I Railroad – …a railroad with 2004 operating revenues of at least $289.4 million.
- Regional Railroad – A non-Class-I line-haul railroad operating 350 or more miles of road and/or with revenues of at least $40 million.
- Local Railroad – A railroad which is neither a Class I nor a Regional Railroad and is engaged primarily in line-haul service.
- Switching and Terminal Railroad – A non-Class-I railroad engaged primarily in switching and/or terminal services for other railroads" (AAR, 2005).

2.2.2 Rail Freight Trends and Forecasts

2.2.2.1 Growth in Trade with Mexico

The 1990s were a period of rapid economic growth in Texas, contributing to the increase in rail freight handled in the state. In addition, the expansion of trade with Mexico resulted in increased rail freight originating, terminating, and passing through Texas. The advent of the North American Free Trade Agreement (NAFTA) on January 1, 1994 strengthened the existing historic, cultural, and economic ties that defined the relationship between Texas and Mexico. With five of the seven U.S.-Mexico rail border crossings in Texas, Texas has become a major link in facilitating international trade between the U.S. and Mexico. The five rail border crossings are in Brownsville, Laredo, Eagle Pass, Presidio, and El Paso. "Between 1994 and 2000, total U.S. surface trade with Mexico rose from $90.1 billion to $210.6 billion—a 134 percent increase. The gain in overall surface trade was led by imports from Mexico, which grew by 160 percent" (TxDOT, 2005). Combined, the Texas border crossings at Laredo, Brownsville, Eagle Pass, and El Paso accounted for 90 percent of the value of U.S.-Mexico rail traffic in 2000. Finally, the rail car volumes crossing the Texas border from and to Mexico have more than doubled between 1993 (roughly 200,000 rail cars) and 2000 (in excess of 500,000 rail cars) (TxDOT, 2005).

In addition to the advent of NAFTA, the emerging concentration of North American manufacturing in Mexico has also resulted in an increase in the use of Texas rail, both for Texas-Mexico and U.S.-Mexico trade movements. Finally, the privatization of the Mexican rail system, which began in 1997 and was fully implemented in 1998, also contributed to the increasing importance of the rail freight network in Texas.

International trade flows between the U.S. and Mexico are therefore expected to continue to increase, almost tripling the rail freight tonnage crossing the Texas-Mexico border between 1998 and 2025. Laredo is forecast to remain the primary location for rail trade flows crossing the Texas-Mexico border. It is expected that rail flows crossing at Laredo will increase by almost 14 million tons between 1998 and 2025, representing an increase of more than 177 percent. Similarly, it is forecast that rail flows passing through El Paso will increase from 1.7 million tons in 1998 to almost 5 million tons in 2025, representing an increase of more than 196 percent (TxDOT, 2005). NAFTA trade will thus continue to exacerbate the capacity concerns on some of the key transportation corridors and crossings located in Texas.

2.2.2.2 Ports

It is generally recognized that Texas seaports are important to the state's economic vitality and the flow of goods. Texas has 10 primary deepwater ports located along its Gulf Coast: Houston, Galveston, Texas City, Freeport, Brownsville, Corpus Christi, Port Lavaca-Point Comfort, Beaumont, Orange, and Port Arthur. Ship traffic and port growth contributes to rail traffic growth and most Texas ports experienced significant increases in the amount of tonnage handled between 1990 and 1997. The Texas Gulf Coast ports thus feature some of the busiest rail hubs in the nation, partly due to the nature of the commodities (i.e., bulk commodities) handled by the ports. In addition, the inbound and outbound rail freight handled by Texas Gulf Coast ports is forecast to increase by more than 36 percent between 1998 (106 million tons) and 2025

(144 million tons) (TxDOT, 2005). Houston, one of the busiest ports in the country, is expected to continue to account for the largest volume of rail freight tonnage in Texas, increasing from 70 million tons in 1998 to 104 million tons by 2025 (TxDOT, 2005). For a detailed discussion of the landside access issues affecting deepwater ports in Texas, the reader is referred to TxDOT research report 0-4437-1 entitled "Landside Access Needs for Deepwater Ports."

2.3 Increasing Pressure on the Reduced Texas Rail System

As mentioned before, the Staggers Act liberalized the procedures for eliminating light density and unprofitable rail lines, which enabled the railroads to abandon a considerable amount of track mileage. As a result, freight rail productivity increased. However, the overall capacity of the rail system has not increased to accommodate the current and future growth in demand. This is a major concern for Texas. The following sections document several specific changes to the Texas rail network that have led to the current capacity constraints on certain key corridors.

2.3.1 Railroad Mergers

Three major mergers of Class I rail carriers within Texas occurred between 1988 and 1996:

- Union Pacific Railroad acquired the Missouri-Kansas-Texas Railroad in 1988;
- Burlington Northern Railroad (BN) merged with Atchison, Topeka and Santa Fe Railway (ATSF) in 1995, becoming the Burlington Northern Santa Fe Railway (BNSF); and
- Union Pacific Railroad merged with the Southern Pacific Transportation Company (SP) in 1996 and became known as the Union Pacific Railroad (UP).

These mergers have resulted in consolidations and efficiencies through a reduction of redundant rail lines. However, they have also reduced available capacity and routing options for the current carriers.

2.3.2 Railroad Abandonment[2]

The first rail in Texas was a 20-mile segment along Buffalo Bayou in present day Houston in 1853. Subsequently, railroads were built across the state until the rail mileage peaked in 1932 at more than 17,078 route miles. Since then, the track miles have continually declined to the current level of 10,749 miles, representing a loss of 37 percent of total track miles since 1932.

Several major rail segments were abandoned as part of the railroads' efforts to reduce their asset base and increase their return on investment. Figure 2.1 displays the rail line abandonments in Texas since 1953. Abandonments are shown in red. The significant reduction in rail service that has occurred, particularly in rural areas, is evident in Figure 2.1. These abandonments have resulted in the closure or relocation of businesses unable

[2] This section of the report provides an excerpt of the information and data included in the rail freight chapter of TxDOT's Texas Rail System Plan (2005).

to survive without rail service, as well as potentially higher transportation costs for farmers forced to use trucks. Also, as agricultural products moved from rail to road for at least part of their journey to market, the impacts on the rural road network have to be considered.

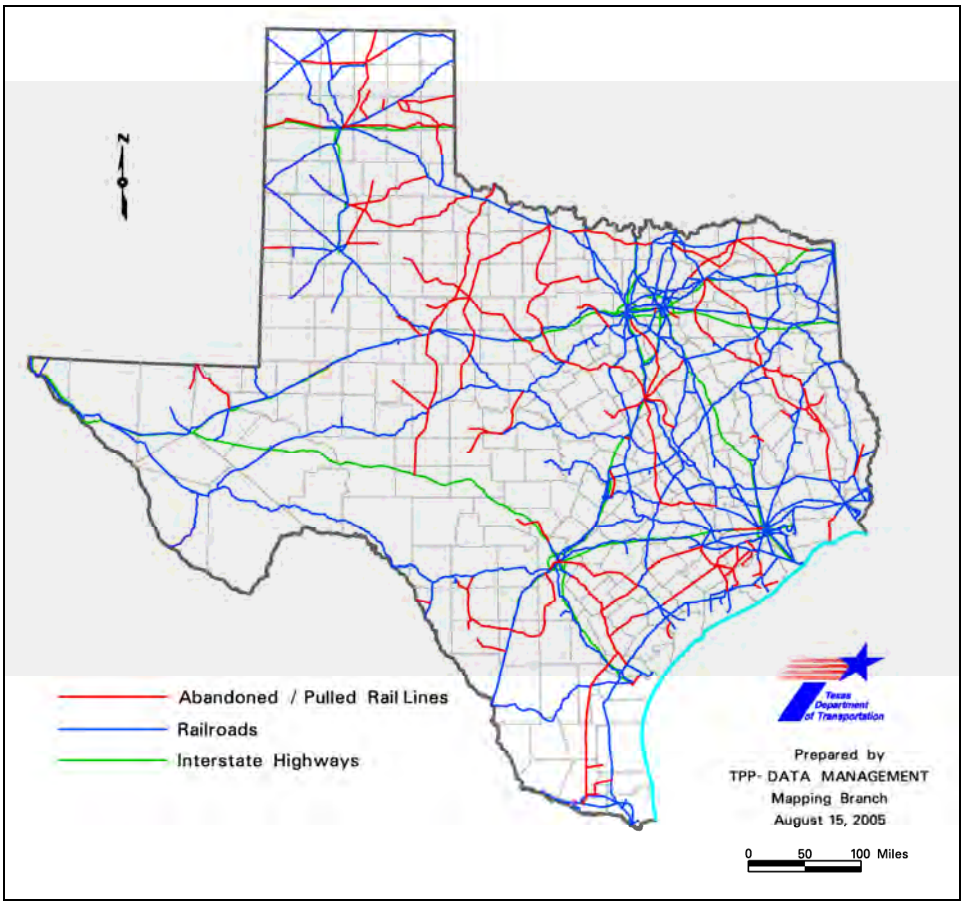

Figure 2.1 Abandoned Rail Lines in Texas Since 1953

Railroads across the nation divested economically unprofitable lines by either selling marginal routes to short-line operators or petitioning for abandonment approval from the ICC. In Texas, the number of Class II and III operators has increased from 20 in 1979 to 41 in 2000. As mentioned earlier, these carriers owned approximately 2,000 miles of track in 2003, much of which might have otherwise been abandoned. Unfortunately, despite the efforts by short-line operators to maintain service, even short lines are struggling to make these previously unprofitable lines viable. Ultimately the short lines, too, may seek abandonment[3].

[3] Class II and III railroads face significant challenges in maintaining and upgrading their infrastructure, and typically do not maintain it to the same standard as Class I railroads. Also, many short lines were formed as the result of Class I railroads divesting themselves of marginally profitable lines or lines that were earmarked for abandonment. In many cases, these Class I owners deferred maintenance and avoided capital investments in these lines. Owners-operators of Class II and III railroads often lack the

The miles of rail track approved for abandonment since the early 1980s are shown in Table 2.1. It is evident that approximately 2,400 miles of track was abandoned between 1981 and 1998.

Table 2.1 Miles of Rail Line Approved for Abandonment 1981-1998

Year	Miles of Track
1981	275
1982	265
1983	126
1984	43
1985	40
1986	40
1987	126
1988	142
1989	28
1990	144
1991	148
1992	120
1993	210
1994	172
1995	338
1996	101
1997	72
1998	27
Total	***2,417***

Source: Texas Transportation Institute, 1998.

One major concern regarding abandonments is the declining ability of the state's rail system to handle the anticipated increase in freight traffic. From 1991 to 1999 the tonnage transported by rail carriers in Texas grew by approximately 40 percent. Over a similar time period (1991 to 1998), the rail network declined by almost 1,200 miles. This translates into more trains operating over fewer miles of track, which could constrain any future rail operator's ability to handle increased traffic levels without making substantial investments to improve the network. This also creates greater conflict at highway-railroad grade crossings between trains and automobile traffic.

The abandonment of rail infrastructure and certain operating lines also affects the capacity available for intercity passenger rail service. This results in a greater risk of conflicts and reduced capacity along existing lines if these lines have to be shared with passenger rail. An example of an abandoned rail line that reduced future passenger

resources to adequately maintain the railroads they have acquired, and major upgrades or component renewals may be completely beyond their financial ability. In addition, the recent increase of standard railcar weight limits from 263,000 pounds to 286,000 pounds presents a substantial challenge to the short-line industry, because of the costs associated with upgrading these lines to 286,000 pound capacity (Cambridge Systematics, 2002). Zeta Tech Associates, Inc. (2001) estimated that about $ 6.8 billion will be required to upgrade all 50,000 miles of short-line railroad track to handle 286,000 pound cars nationwide.

options is the abandoned 23.5-mile Cotton Belt rail line between Wylie and Greenville, northwest of Dallas. Abandonment made the ROW subject to purchase by nonrail interests and spawned concerns that reacquiring the ROW might be impossible should passenger rail be desired in the future.

"Rail banking" offers a means to combat the abandonment of railroad ROWs, but it requires agencies willing to purchase ROW and keep it intact for future rail service. For example, the Trinity Railway Express (TRE) ROW between Dallas and Fort Worth was purchased with Federal Transit Administration assistance in advance of service start-up. Similarly, Capital Metro in Austin and Houston Metro[4] have also purchased rail ROW to protect transportation corridors in their service areas. These three initiatives are noteworthy examples of public sector "rail banking" in Texas.

In response to concerns about the loss of rail service in rural parts of Texas, the legislature allowed the formation of Rural Rail Transportation Districts (RRTDs) in 1981. As of March 2002, 18 rural rail transportation districts existed in the state, one of which is the South Orient RRTD[5]. The purpose of RRTDs is to help develop, maintain, and diversify the economy of the state. The intent is to reduce unemployment and foster economic growth by preserving rural rail service. One or more counties can establish a RRTD to acquire lines that may be otherwise abandoned, to construct new lines, or to rehabilitate existing lines. The RRTDs can also develop rail to serve industrial parks, intermodal facilities, and transloading facilities. The program, however, is exhibiting variable results, working well in some instances but not in others. NETEX and Centex Rural Rail Districts are considered the most successful in terms of the RRTD program. Centex, for example, was servicing 65 shippers and annual traffic levels exceeded 20,000 carloads in 2001 (Roop et al., 2001). Centex's success has been predicated on its commodity diversification.

2.4 Concluding Remarks

Texas's rail freight system is an important component of the nation's rail system and is vital to the state's economic viability and growth. Most tracks in Texas are privately owned and used primarily for freight transportation. The current state of the railroad network in Texas is the result of several factors, including the regulatory environment before 1980, railroad consolidations following deregulation, and the railroads' restructuring efforts since deregulation. Deregulation thus may have saved the industry financially but resulted in reduced excess capacity, capacity now largely unavailable for passenger rail use.

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[4] Houston Metro allows temporary trail uses, for example pedestrians and cyclists, on its preserved ROW.

[5] Until recently, the only rail infrastructure owned by TxDOT has been the South Orient rail line. This corridor stretches 391 miles from the Texas-Mexico border at Presidio, through West Texas and into Coleman County. TxDOT became the owner of the infrastructure and ROW in 2001. TxDOT acquired all rights, titles, and interests in the rail line to ensure that ownership of the infrastructure and ROW would be preserved. TxDOT and Texas Pacifico Transportation Ltd., a subsidiary of Grupo Mexico, subsequently entered into a lease and operating agreement to operate on the line. Operations on the line continue, and work to rehabilitate the deteriorated railroad is under way. This is considered a timely and resourceful initiative by TxDOT to prevent the abandonment of the ROW and infrastructure, thereby assuring continued rail service along the line.

Texas's proximity to the Gulf Coast and Mexico, coupled with the state's economic growth in the 1990s, which resulted in higher agricultural and manufacturing production levels, and its growing population have contributed to significant freight movements to, from, and through the state. The state's rail freight system is a critical element of the intermodal freight transportation system, facilitating these higher volumes of freight movements. With rail shipments forecast to grow over the next 25 years, it is obvious that the system will become increasingly important, especially given the fact that the number of motorized vehicles is starting to overwhelm key elements of the highway infrastructure, resulting in congestion, air quality, and safety concerns in Texas. Therefore rail is seen as an option for reducing road congestion by reducing the number of trucks and vehicles on Texas highways. All of these factors place increasing pressure on the performance and capacity of Texas's rail freight system.

The overall capacity of the rail system in Texas has not increased to accommodate future growth in demand. The railroad industry today is stable, productive, and competitive with enough business and profit to operate but not necessarily to replenish its infrastructure or grow rapidly. However, there are some indications that a chronic shortage of truck drivers, combined with recent regulatory changes, has allowed railroads to raise rates and, for the first time, increase revenues more rapidly than tonnage.

3. Passenger Rail in Texas

The private freight railroads have been sharing track and facilities with each other for many years. In the early years of the 20th century, railroads often jointly constructed and operated passenger terminals ("union stations") in many cities and also organized jointly owned freight terminal railroads. As early as 1916, the ICC mandated revisions to the railroad system of accounts to better associate costs with specific activities. This made it apparent to railroads that passenger service, as a whole, was making a net negative contribution to railroad income. Regulation, however, made it difficult for railroads to exit any markets. By the 1960s, however, the declining health of the industry as a whole meant that losses on passenger rail services actually threatened some railroads with bankruptcy. Several states organized agencies to fund (and later to actually operate) commuter rail service over tracks that in many cases remained in the hands of private railroads. In addition, the Rail Passenger Service Act in 1970 led to the formation of Amtrak (officially the National Railroad Passenger Corporation) in 1971 to ensure continued operation of intercity passenger trains on a similar basis. These commuter and Amtrak trains used tracks owned and dispatched by freight railroads for part or all of their routes, which required the negotiation of access fees.

Public agencies, responsible for commuter rail, are generally looking to provide a modal alternative to the traveling public, to ease congestion on local roads and freeways, and to provide sustainable transportation. These are very different aims from those of the freight railroads.

Given this background, this chapter provides an overview of the rail passenger network in Texas, examines the transit planning process with a specific emphasis on rail transit planning, and highlights opportunities for TxDOT to support passenger rail services on existing freight rail lines and/or ROWs.

3.1 Growing Travel Demand in Texas

Given the projected growth in the Texas population (more than 30,000 new residents per month [Personal communication with M. Cline, Texas State Data Center]), the increasing miles of interurban travel per capita, and the forecasted increases in freight movements, it can be concluded that substantial demands will be placed on the already heavily used transportation infrastructure of the state. Many metropolitan areas are concerned about safety and air quality (and hence non-attainment) because of the increasing traffic levels. There is an increasing realization that the demand for mobility needs to be reconciled with the availability of limited resources and the environmental and social impacts of transportation choices.

U.S. Census Bureau data indicated that most of the metropolitan areas in Texas grew more rapidly than the U.S. as a whole between 1990 and 2000. The Austin metropolitan area led all Texas cities with a growth rate of about 40 percent, as compared with an average 19 percent growth rate for the four other major urban areas of the state (Dallas, Fort Worth, Houston, and San Antonio). This tremendous growth led to an increase in vehicle miles traveled (VMT) and has worsened highway congestion. The Texas Transportation Institute's 2005 Urban Mobility Study indicates that, in 2003 two

Texas regions, Houston and Dallas-Fort Worth-Arlington[6], were ranked in the top ten (fifth and sixth, respectively) in terms of "annual delay per traveler" (Shrank and Lomax, 2005). In addition, the 2005 Urban Mobility Study points to rising roadway congestion in the region, showing that San Antonio and Austin rank third and fifth, respectively, among the nation's metropolitan areas in terms of how fast traffic delays are rising. This type of growth in the region has kindled interest in commuter rail as a transportation option.

Cambridge Systematics, Inc. (2002) projects that VMT in Texas will grow by 39 percent through 2025. The growth in VMT between Dallas-Fort Worth and San Antonio is forecast to be nearly 50 percent, while the San Antonio-Houston and Houston-Dallas-Fort Worth corridors are projected to grow by 28 percent and 41 percent, respectively. VMT in the Austin-San Antonio corridor is projected to increase by about 58 percent. In addition to these statistics, VMT is projected to expand by 21 percent in Harris County (Houston) and as much as 60 percent in Tarrant County (Fort Worth). The 2005 Urban Mobility Study emphasized that "the addition of, or improvements to, heavy rail or commuter rail can assist in adding transportation capacity" to the Texas multi-modal system (Shrank and Lomax, 2005).

3.2 Passenger Rail System in Texas[7]

Per the Texas Rail System Plan, passenger rail service in Texas can be categorized either as intercity or commuter rail service. Intercity rail service can be broken down into two subcategories: Amtrak intercity rail routes in the state and commuter rail services that connect urban areas within the state. Both forms of passenger rail are important components of Texas's multimodal system, providing people with choices for completing their travel. Passenger rail service in Texas is currently provided only by Amtrak at the intercity level and by Dallas Area Rapid Transit (DART) and Fort Worth Transportation Authority (FWTA) at the regional commuter level. In addition, two local passenger rail services (i.e., light rail) are provided by DART and Houston Metro.

3.2.1 The Amtrak Intercity System

The National Railroad Passenger Corporation, Inc. (Amtrak) is the only provider of intercity passenger rail service in Texas. Amtrak serves most of the state's major metropolitan districts[8], and several of the state's nonmetropolitan districts. Three Amtrak routes, the Sunset Limited (Orlando to Los Angeles), the Heartland Flyer (Fort Worth to Oklahoma City), and the Texas Eagle (San Antonio to Chicago) account for the intercity passenger rail service in Texas.

On average, Amtrak ridership in 2004 was 748 passengers per day on the three Amtrak routes together. Amtrak ridership decreased from 1994 to 1999 but grew by 58

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6 While the population of North Texas grew by 10 percent between 1995 and 1999, total VMT increased by approximately 18.4 percent, and road capacity increased by only 1.8 percent. As expected, North Texans are thus spending 37 percent more time on congested roadways than they were in 1995 (TxDOT, 2005). For example, the annual hours of delay per person in the Dallas-Fort Worth area increased from 24 hours in 1996 to 36 hours in 2001 (Schrank and Lomax, 2003).

7 This section of the report provides an excerpt of the information and data included in the passenger rail chapter of TxDOT's Texas Rail System Plan (2005).

8 Amtrak in partnership with Greyhound is serving Pharr through bus connections to San Antonio from Brownsville and McAllen.

percent between 1999 to 2004 with the launch of the Heartland Flyer to Oklahoma City and the service expansion of the Texas Eagle to daily trains. Despite the growth in Amtrak's annual ridership to 273,000 in 2004, it remains a relatively small segment of the Texas intercity passenger market share. Even though the state's employment and population base grew significantly, Amtrak experienced only moderate growth in its Texas ridership levels, adding just over 100,000 annual passengers during the period between 1995 and 2004. This seems to indicate that rail's intercity market share will remain small without improved service and frequencies. Previous Amtrak expansion plans included increased frequencies, service rerouting, and additional passenger rail services. These improvements will, however, require large amounts of annual funding.

3.2.2 Intercity Commuter Rail Services

The only intercity commuter rail service currently operating in Texas is the Trinity Railway Express (TRE) between Dallas and Fort Worth. DART and the Fort Worth Transportation Authority (The T) entered into a partnership to provide the TRE commuter rail service. The TRE operates on 35 miles and serves nine permanent and one special event station (the American Airlines Center). In 2004, TRE's ridership totaled 2.2 million passenger trips. In addition, DART has purchased 70 miles of rail line from UP that could be used in the future to expand services to Denton, Sherman, and Rockwall. TRE represents one of the most significant joint ventures between Dallas and Fort Worth since the construction of the Dallas-Fort Worth International Airport in the early 1970s.

Three other commuter rail services are being planned or studied in Texas:

1. A commuter rail service between downtown Austin and Cedar Park over 32 miles of rail line owned by Capital Metro.
2. An Austin to San Antonio commuter rail system. Discussions are underway with UP to determine the possibility of rerouting UP through freight east of the I-35 corridor.
3. Potential commuter rail systems serving certain suburbs in the Houston region have been studied.

The Austin commuter rail service is planning on using diesel multiple unit (DMU) railcars, probably an FRA-compliant design or alternatively the temporal separation of freight and passenger services will be required, because the tracks will be shared with a short-line freight railroad.

3.2.3 Metropolitan Passenger Rail Services

Currently local light rail transit (LRT) services are limited to two major metropolitan districts: Dallas and Houston. In each of these districts the LRT services are operated by local transit agencies.

The DART light rail system is composed of two lines serving downtown Dallas. The system consists of 23 miles of rail serving 29 stations. The service frequency is about every 10 minutes and trains operate from approximately 5 a.m. to midnight. Ridership in FY 2004 totaled 13.5 million passenger trips. In the same year, the average weekday ridership was 55,000 passengers.

The Houston-Harris County Metropolitan Transit Authority Light Rail System (METRO) operates over 7.5 miles, serving downtown Houston. Service began in January 2004. In June 2005, average weekday ridership was 34,770 passengers, not far from the projected weekday ridership levels of 40,000 passengers per day by 2020.

However, neither of these LRT services shares track or ROW with the freight railroads.

3.2.4 High Speed Rail Initiatives

In addition to the rail services discussed above, interest has been expressed in passenger rail services operating at much higher speeds over longer distances. In the early 1990s research concluded that a system of faster trains serving the state's largest cities (i.e., Austin, Dallas-Fort Worth, Houston, and San Antonio) could potentially be feasible. Recent legislative efforts, such as the High-Speed Investment Act of 2001, have also supported development of high speed rail. Two rail corridors have been designated as future high speed rail corridors in Texas. The South Central High Speed Corridor stretches from San Antonio to Dallas-Fort Worth and on to Oklahoma and Arkansas. The Gulf Cost High Speed Rail Corridor could provide service between Houston and Atlanta (Georgia) and Mobile (Alabama).

3.3 Issues Affecting Passenger Rail System in Texas[9]

The preceding discussion indicates that increasing passenger rail capacity and expanding service can alleviate the growing highway passenger travel demand to a certain extent. However, passenger rail is not necessarily a panacea. As pointed out earlier, there are many obstacles to increasing passenger rail service in Texas, including rail abandonment, service reliability, and other quality of service issues.

3.3.1 Rail Abandonment

Much of the lightly used track mileage that might have been used by passenger rail no longer exists. At the same time, freight traffic growth is being accommodated on a relatively small number of dense corridors. Increasing conflicts between freight traffic and existing passenger rail service on these corridors are of increasing concern to both freight operators and passenger rail interests. For example, NAFTA-related trade and congestion along the I-35 corridor have contributed to an increase in rail freight traffic, creating congestion that negatively affects passenger rail services by delaying Amtrak trains, such as the Texas Eagle between San Antonio and Fort Worth.

Increasing freight traffic on existing routes will also limit the potential to operate faster trains on those routes designated as Higher-Speed Rail Corridors in Texas. For example, the South Central High-Speed Rail Corridor includes track on the I-35 corridor between Dallas and San Antonio where freight traffic already causes delays to Amtrak's passenger trains. Absent any infrastructure improvements to expand capacity, higher speed rail services using these tracks are likely to experience even greater delays. In San Antonio, large numbers of freight trains move intercontinental traffic east-to-west and NAFTA traffic north-to-south, also slowing Amtrak's passenger trains. In other parts of

[9] The information in this section of the report is an excerpt of the passenger rail chapter of TxDOT's Texas Rail System Plan (2005).

the state, freight rail needs have received priority and at times have resulted in a deterioration of passenger rail service. For example, Union Pacific's decision to implement "directional running" on two parallel main lines in East Texas resulted in reduced passenger service for Longview and Marshall for a period of time. Thus total rail line mileage is decreasing, but total freight traffic and tonnage are increasing.

3.3.2 Service Reliability

When the rail network is operating close to capacity, it is more vulnerable to impacts from minor incidences such as an emergency track repair or a train schedule conflict. Once a passenger train is off schedule, other delays become more likely when priority is given to freight trains and other passenger trains running on time. In addition to dealing with reliability problems, the passenger rail agencies also have to deal with longer running times resulting from congestion. For example, the average operating speed of the Sunset Limited is less than 40 mph, which causes the 800 mile journey between Houston and El Paso to take more than 21 hours. In addition to low track speeds, rail and highway crossings may require trains and vehicle traffic to stop or slow down, increasing travel times, aggravating congestion, and creating potential highway and rail conflicts and accidents. The heavily used rail line between San Antonio and Austin, currently being considered for intercity commuter rail services and possibly for higher speed intercity passenger service along the South Central High Speed Rail Corridor, is experiencing these problems.

3.3.3 Other Quality of Service Issues

In addition to delays and reduced speeds, low train frequency and lack of scheduling flexibility also leave passengers with few options in terms of departure and arrival times. Amtrak runs only one train a day in each direction on two of its routes through Texas and only one train three times a week in each direction on the Sunset Route, which serves Beaumont, Houston, San Antonio, and El Paso.

The current rail system is thus not able to provide an attractive travel option for Texans. The low frequencies, low speed, and often-unpredictable nature of current passenger rail service prevent it from being an attractive travel option for most people traveling in Texas's busiest corridors. Even after Amtrak's recent expanded and new service additions, frequencies remain low. Run-times between major cities in Texas are not competitive with commercial air carriers or even with motor vehicles. Although Amtrak fares are lower than air fares and even road travel, the savings are not compelling when travel time is taken into account. Dealing with these problems, in addition to accommodating increased ridership as a result of increased population and increasing highway congestion will require upgrading and service improvements. The demand for travel in Texas may warrant an improved passenger rail system, but the necessary improvements to establish such a system may be cost prohibitive. In addition, since the current limited passenger rail network in Texas loses money, it is impossible to fund an expansion of rail passenger services from retained earnings or even a "trust fund" financed by a tax on rail passengers.

3.4 Public Transit System and Planning in Texas[10]

In Texas, public transit is the responsibility of Metropolitan Transit Authorities (MTAs), Urban Transit Districts (UTDs), Rural Transit Districts (RTDs), and providers of services to elderly and disabled Texans.

MTAs serve the largest metropolitan areas in Texas and have a dedicated transit sales tax. There are eight MTAs in Texas: Houston, Dallas, Denton (designated in 2003), Fort Worth, San Antonio, Austin, Corpus Christi, and El Paso. Each MTA is composed of a principal city and those surrounding jurisdictions that chose to be part of the authority. The Texas MTAs, excluding Denton, provided approximately 253 million unlinked passenger trips in 2002. The latter amounted to over 90 percent of the total transit trips in the state. In the past, TxDOT did not have any role in the planning, financing, and or operations of MTA transit services. These services are funded by the federal government and dedicated local sources. TxDOT's involvement has been limited to overseeing MTA compliance with state and federal laws and MTA collaboration on TxDOT's regional planning activities.

UTDs serve areas with 50,000 to 200,000 people, as well as those urban areas with more than 200,000 people that cannot be designated an MTA. Texas UTDs are operating 30 transit systems, which were responsible for carrying approximately 15 million unlinked passenger trips in 2000. UTD funding comes from federal sources channeled annually through the governor, from biennial state appropriations, and from local general funds. TxDOT allocates state and federal funds to each UTD based on a formula. TxDOT is also responsible for managing and overseeing funding for UTDs, including grants and compliance with state and federal program rules and regulations in small urban areas.

RTDs serve nonurban areas, ranging from individual towns to multiple counties, with populations of fewer than 50,000 people. Texas's 39 nonurban area transit systems serve 243 of Texas's 254 counties. These transit systems offer a variety of services, such as subscription services for their regular riders and flexed-route or deviated-route services. TxDOT is responsible for managing and overseeing state and federal programs that support nonurban transit services and for allocating state and federal funding to the RTDs in the state.

In Texas, 219 elderly and disabled transit providers serve 207 of Texas's 254 counties. Local, state, and federal funds are used to purchase specially equipped vehicles for these providers. Federal funds are apportioned to the state by formula and awarded annually by TxDOT on a competitive basis. TxDOT is responsible for managing and overseeing the program, including compliance with federal rules and regulations.

3.4.1 Role of TxDOT in Transit Planning

Traditionally, TxDOT has played a peripheral role in transit planning and decision making despite the fact that TxDOT's Public Transportation Division (PTN) has a Planning and Support section. Also, because TxDOT does not have a statewide transit plan, some issues remain unaddressed at the local transit agency level. Federal transit

[10] This section of the report is an excerpt of the information contained in the draft Business Plan for the Texas Department of Transportation Public Transportation Division Strategic Plan prepared by Cambridge Systematics, Inc. and KFH Group, Inc. (2005).

planning requirements are met through MPOs and Transportation Improvement Programs (TIPs). TxDOT has little involvement in either. Furthermore, local transit agencies do not develop transit plans unless they are part of an MPO. TxDOT's limited role in local and regional transit planning is also attributable, at least in part, to the structure of the funding. For example, large urban areas receive no state funding for transit. Furthermore, the FTA distributes all federal funding directly to the MTAs. Finally, TxDOT is not required to undertake transit planning apart from developing regional coordination plans and developing plans for use of Section 5310 funds (see Section 3.5). It has thus been recommended that TxDOT plays a more active role in defining and guiding an improved transit planning process at both the state and regional levels (Cambridge Systematics, Inc. & KFH Group, Inc., 2005).

3.4.2 Recent Changes in the Transit Planning Process and Implications

Recent legislation has increased the role of TxDOT in state transit (including rail) planning and funding. These legislative changes provide for the active involvement of TxDOT in encouraging passenger rail projects.

The enactment of House Bills 3588 and 2292 by the 78th Texas Legislature substantially altered the role and responsibility of TxDOT's PTN. In addition to managing and overseeing traditional state and federal transit programs in Texas, TxDOT was given the responsibility to direct funding and to manage, and oversee transportation services traditionally delivered under programs of the Texas Health and Human Services Commission and the Texas Workforce Commission.

House Bill 3588 (HB 3588) pertains to public transportation providers that receive government funding. The objectives are:

"(1) to eliminate waste in the provision of public transportation services;

(2) to generate efficiencies that will permit increased levels of service; and

(3) to further the state's efforts to reduce air pollution" (Chapter 461 Statewide Coordination of Public Transportation, Texas Transportation Code).

Ultimately, the objective is to coordinate transportation funds and resources among Health and Human Services, the Texas Workforce Commission, and TxDOT. In addition to funding, the bill also pertains to the construction, acquisition, financing, maintenance, management, operation, ownership, and control of transportation facilities. Specifically, the legislation (Article 4 of the Texas Transportation Code) authorizes TxDOT to plan, construct, and maintain rail facilities or systems, including the acquisition and development of existing facilities. However, if rail service is to be provided on state-owned facilities, TxDOT must contract with an operator. Permissible sources of revenue are: appropriations from the state highway fund that are not otherwise dedicated (e.g., vehicle registration fees and taxes on motor fuels), bonds secured by the Texas Mobility Fund, donations, and the proceeds of revenue bonds.

In addition, Article 1 of Chapter 461 (Texas Transportation Code) provides for the establishment, designation, construction, and operation of a system of multimodal facilities including toll roads, rail facilities, and utilities to be known as the Trans-Texas Corridor (TTC). This Article gives TxDOT the authority, including financing, to construct and operate the TTC.

In essence, HB 3588 and recently HB 2702[11] provide TxDOT with additional responsibilities, authority, and flexibility to coordinate the planning and funding of public transportation, including rail, throughout the state.

The effect of this new rail authority will most likely be determined by the level of available funds. Although TxDOT may use any available funds to implement Chapter 461, the Legislation has placed a $12.5 million cap on the level of funding for rail infrastructure. This restriction, however, does not apply to the TTC, the acquisition of abandoned rail facilities, grading and roadbed preparation or funds derived from bonds, gifts, private donations, grants awarded from the Texas Enterprise Fund or certain federal funds. These legislative changes should therefore encourage TxDOT to promote rail projects in Texas.

3.5 Rail Funding in Texas[12]

Future funding for rail projects in Texas may come from federal, state or local sources. Almost all federal funding comes from the U.S. DOT. Within this agency, the Federal Transit Administration (FTA), the Federal Railroad Association (FRA), and the Federal Highway Association (FHWA) are most likely to fund rail projects.

3.5.1 Federal Funding Sources

Several programs are available for funding rail projects under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (see Chapter 6 of the Texas Rail System Plan for a complete list). The federal funding available under these programs is influenced by: 1) Federal legislation, 2) revenues from federal gas and other taxes, 3) distribution formulas, and 4) decisions at the federal level regarding project grants and legislative earmarks.

The FTA continues to be one of the main sources of passenger rail funding. However, most of the FTA funds allocated to Texas are used to support bus transit. Having said that, there might be some applications where FTA funding can be used to provide or improve "fixed guideway" passenger rail options. The term "fixed guideway" can refer to commuter rail running on freight tracks, light rail transit (LRT) vehicles operating on their own ROW, or even Bus Rapid Transit and High Occupancy Vehicle lanes. A brief summary of the existing major FTA funding categories that can be used for passenger rail projects follows:

- *Section 5307 Urbanized Area Formula Program.* This program's funds are available to urbanized areas. The size of the urban area determines the amount and eligible uses of the program funds. A formula, taking into account population and population density, bus revenue vehicle miles, fixed guideway revenue miles, fixed guideway route miles, and an incentive considering bus-fixed guideway passenger miles and operating costs, is used to calculate funds to urban areas with a population of more than 200,000 people. In this case,

[11] HB 2702 refined HB 3588 and changed the Texas Railroad Commission to the Texas Energy Commission. All previous authority for railroads was transferred to TxDOT. In addition, the bill broadened and clarified TxDOT's role for rail transportation.

[12] This section of the report draws extensively on the information and data included in the rail funding chapter of TxDOT's Texas Rail System Plan (2005).

funds can be used only for capital and preventative maintenance activities. Urbanized areas with a population of 50,000 to 200,000 people can use their allotted funding for operating expenses in addition to capital and preventative maintenance activities. In the case of these urban areas, funds are distributed based on a formula that only considers population and population density.

- *Section 5309 Capital Investment Funds ("New Starts" Program).* This program makes capital investment grants or loans available through the FTA for providing new and for modernizing existing fixed guideway systems. Competition for funding is high, however, because Texas cities will be required to demonstrate to the FTA that the public benefits from investing in Texas passenger rail projects exceed those of other U.S. city rail projects.
- *Section 5311 Non-urbanized Area Formula Program.* These funds are available to rural counties and small cities with fewer than 50,000 people. The FTA allocates Section 5311 funding to a state based on the state's share of the nation's non-urbanized population. Funding may be used for capital or operating expenses but has been rarely used for rail transit projects.

In addition, a number of new programs have been added with the reauthorization under SAFETEA-LU. These are:

- "Growing States and High Density States
- Small Starts
- Alternative Analysis
- New Freedom
- Alternative Transportation in Parks and Public Lands" (TxDOT, 2005).

The rules and application criteria still have to be developed by the FTA.

3.5.2 State Funding Sources

In essence, the funding sources available to support rail projects in Texas have been mainly limited to federal sources. Until the 77th Legislature authorized the creation of the Abandoned Rail Account in 2001, there was no specific funding source under TxDOT's control for rail projects. Hoewever, with the passage of HB 3588 and HB 2702, the following state resources have become available for rail projects:

- "non-dedicated funds from the State Highway Fund;
- bonds secured by the Texas Mobility Fund for passenger rail projects;
- donations;
- loans from the State Infrastructure Bank (SIB);
- pass-through fares; and
- grants or loans from the Federal Government, public or private entities" (TxDOT, 2005).

In addition, TxDOT may enter into Comprehensive Development Agreements to finance, design, acquire, construct, maintain, or operate a rail facility or system (TxDOT, 2005).

TxDOT traditionally has been unable to spend state transportation funds on rail projects without specific legislative appropriations. Therefore limited rail funding, combined with the private nature of most of the existing rail system, has restricted the role of TxDOT in improving rail transportation options. Given new funding sources or increased state appropriations to transportation, TxDOT should take a more proactive role in obtaining rail funding to support public-private partnerships with private rail freight carriers, passenger rail projects, and rail improvements in the state.

3.6 Concluding Remarks

A growing population and economy are contributing to increased levels of passenger travel demand in Texas. At the same time, key elements of the state's highway transportation system are experiencing increased levels of congestion in several metropolitan areas. Alternative modes, including passenger rail, are thus often seen as part of the intermodal solution to these problems in the state. Until recently, however, TxDOT played an insignificant role in the planning and funding of passenger rail services for these reasons: funding sources available for passenger rail projects being mainly limited to federal sources, the inability of TxDOT to have used state transportation funds for rail programs, and the private nature of most of the existing rail system. Recent legislative changes have increased the role of TxDOT in state transit--including rail--planning and funding. These changes provide opportunities for the active involvement of TxDOT in encouraging passenger rail projects.

4. Rail Sharing Issues

4.1 Introduction

With the Texas population expected to increase by 74 percent (Texas state data center) between 2000 and 2025, passenger travel in the state will increase. At the same time, freight traffic is also expected to continue to grow with larger population centers to serve and as NAFTA increases freight traffic movement in and through Texas. The highway system is thus expected to become increasingly congested at a time when the socio-economic and environmental costs of adding new highway capacity are almost prohibitive in many areas. Thus passenger rail becomes an important option for providing needed mobility in many of the metropolitan areas of Texas. However, shortages of available rail ROWs in densely populated areas may make shared passenger rail on existing freight corridors the only feasible option to introduce passenger rail in Texas. Given the constrained capacity situation faced by the freight railroads and the possibly conflicting goals of the two parties (public agency and private operator), it is important that the "rail sharing" proposals be designed to achieve synergy. Because of the disparate goals of the two parties, various issues may arise when the public transit agency approaches a private railroad with a rail sharing proposal. In this section, a number of these issues will be addressed including track rights, operations and dispatching, capital improvements, maintenance, liability, and safety. The discussion of each of these issues is drawn from literature on shared use arrangements and interviews with passenger rail agency and freight railroad representatives who have entered into shared use arrangements in metropolitan areas around the U.S.

4.2 There Is No Single Best Shared Use Agreement

The first and foremost point to be noted about shared use agreements is that there is no single "best" agreement that will serve all situations. Chicago's Metra (properly called the Northeast Illinois Commuter Railroad) can be used as an example to elaborate this statement. Metra, a subsidiary of Chicago's Regional Transit Authority (RTA), was created to take over an existing commuter rail operation threatened by the bankruptcy and liquidation of the Class I railroad that historically operated it. One by one, Metra assumed responsibility for various other commuter rail operations formerly run by seven different Class I railroads. In each of these cases, different circumstances dictated different types of operating agreements. Metra thus provides examples of the broad range of possible operating arrangements available to an entity proposing to start a commuter rail service.

The first commuter rail service taken over by Metra had been run by the Chicago, Rock Island and Pacific Railroad, which declared bankruptcy in 1974 and was liquidated in 1981. During liquidation, Metra acquired the tracks between Chicago and Joliet, Ill., over which the commuter trains operated, including the Chicago terminal La Salle Street Station. Agreements were made with a short-line carrier, who provided freight service to shippers on the route, and a regional railroad, Iowa Interstate, who also operated over the Metra-owned tracks to interchange freight with other Chicago carriers. Finally, Metra purchased the commuter equipment from the bankrupt Chicago, Rock Island and Pacific railroad and hired the necessary staff to operate and dispatch the trains.

Metra's second acquired operation also came about as the result of a bankruptcy. The Milwaukee Road historically operated two commuter rail lines, the West Line between Chicago and Elgin, Ill., and the North Line from Chicago to Fox Lake. The trustee of the Milwaukee Road, which entered bankruptcy in 1974, sold most of its track in Illinois and Wisconsin to Soo Line, a regional railroad now part of the Canadian Pacific Railway (CP). Metra entered into an agreement with CP in which the rail cars, locomotives, and crews would be provided by Metra. Metra would also own and maintain certain main tracks used by commuter trains. CP, on the other hand, would dispatch all trains and continue to own and maintain those tracks used by freight trains. The commuter trains, operated by Metra, use Union Station, which is owned by Amtrak, as their downtown terminal.

Continuing financial losses led Illinois Central (now owned by Canadian National Railway) to offer its entire commuter operation to Metra. Illinois Central's commuter railroad was electrified and operated on a separate ROW from its freight service. As a "stand alone" entity, it could thus be operated independently from the freight operation. Today, the "Metra Electric District" is owned, dispatched, maintained, and staffed by Metra employees and uses its own terminal at Randolph Street in central Chicago.

The next commuter service that Metra acquired was the "Southwest Service," a limited operation over Chicago and Western Indiana terminal railroad track. Metra acquired the assets of C&WI from its Class I owners. In addition, Metra also purchased track from southwest Chicago to Manhattan, Ill., from Norfolk Southern. Metra now owns, maintains, and dispatches track from 35th Street to Orland Park, the southern terminus for commuter rail service. North of 35th Street, commuter trains use Amtrak tracks to reach Union Station.

Metra also assumed financial responsibility for commuter trains operated by BNSF (one route) and UP (three routes), under "purchase of service" agreements. The two freight railroads own and have dispatching control of the track and are responsible for staffing the trains with operating crews. Metra provided funds for new equipment.

Finally, Metra began an entirely new commuter service partly over regional rail track owned by Wisconsin Central (now Canadian National Railway). Metra made substantial capital investments on the Wisconsin Central (WC) track to increase track capacity. Trains operate from Union Station over CP trackage to a junction with CN, thence over CN track to a terminal at Antioch, IL. Dispatching is controlled by CP and CN, but equipment and crews are provided by Metra.

Clearly, outright ownership is the preferred alternative for a commuter rail operator as is the case for Metra's Rock Island District[13], Southwest, and Metra Electric District Service. Shared use agreements are generally complex and involve sub-agreements. If a commuter rail operator must execute shared use agreements with freight railroads, the agreements should clearly specify the criteria for capacity improvements and service expansion. Service expansion criteria should not only specify the number of trains per day, but also the spatial and temporal details, such as the location of additional capacity, time-of-day, and frequency. In addition to detailed terms on capital investments and service expansion, operational issues must also be considered during negotiations. Issues such as signal design and spacing that impose operational limitations on specific

[13] Metra has freight tenants on its Southwest Service and Rock Island District, but it remains in control of operations.

segments of track, speed limits, and other operational limitations should be recognized. These issues can result in bottlenecks, which may need to be targeted for capital improvements.

Finally, purchase of service agreements might be the only viable means of accommodating passenger trains on freight rail track. Although the commuter lines around Chicago are critical to passenger movements they are also critically important freight routes for BNSF and UP. That is the reason Metra entered into a purchase of service agreement with the freight railroads. Neither UP nor BNSF were willing to risk any degradation in their service to their customers. Retaining ownership and dispatching control allows them to maintain their service levels.

4.3 A Freight Railroad's Business is to Earn Profits by Moving Freight

The freight railroads want to provide their customers with a high quality and reliable service and want to make the most profitable use of the ROW and track they own. As profit-making private corporations, railroads will thus only allow the use of their rail track for passenger rail services under the following conditions:

- The freight railroads are assured that it is safe.
- The freight railroads are not expected to cross-subsidize passenger rail services. In other words, the freight railroads are fully reimbursed for all costs incurred, plus a profit.
- There is no negative impact on the quality of their freight service, and
- Liability issues can be resolved in good faith and legal liability can be held to a manageable level.

Freight railroads are generally unwilling to enter into agreements with passenger rail operators if there is a risk of degradation in the quality of the freight service. Even if the full track maintenance costs could be recovered, the demands of passenger train schedules could still impose a substantial financial burden on railroads. Scheduled passenger trains may impact freight railroads in three ways:

1. If they travel at higher speeds than freight trains, they may not only meet but also overtake freight trains;
2. The rigid schedules of passenger trains interfere with maintenance of way work blocks (unlike freight, passenger trains cannot be held and then moved in a fleet through maintenance locations), and
3. Dispatcher knowledge of penalties for poor performance often results in excessive meet delays to freight, which may be held for hours awaiting the arrival of a scheduled passenger train. This can impose a substantial cost to the freight railroad.

Commuter rail operations, in general, pose special difficulties because of their concentrated peak-period service. On many commuter lines, the track is simply not available to freight trains for six to eight hours per day. Temporal separation (passenger and freight rail operate on the same track at different times of the day) works well if the freight trains can operate during the nighttime. If not, temporal separation can impose significant costs to the freight railroad in terms of delays and lost business. Freight

railroads therefore often find it difficult to estimate the full costs imposed by passenger trains. Also, freight railroads are often concerned about successful commuter rail operations confining freight trains and work gangs to ever smaller windows on their ROW. It can thus be expected that freight railroads as the owners of the track will want to decide the priorities for track usage.

In essence, the freight railroads must be assured that they will be able to run as efficiently after allowing passenger services as before. In many cases, capital investments will be required to ensure that the freight railroads' capacity or future ability to operate is not compromised. Historically, private railroad investment in capacity additions has been constrained by low returns on investment. A public agency should thus approach the freight railroads with enough funding to address likely impacts imposed by the passenger service on the freight franchise. By making needed investment available to freight railroads, public agencies can become partners in working out a "business deal" from which both parties can realize gains. This strategy has worked well for the Capital Corridor Joint Powers Authority in California (CCJPA). CCJPA obtained permission from UP to operate additional trains, simply by offering to pay for necessary capacity enhancements that have benefited both operators.

4.4 Gain Some Negotiation Power

Typically the public agency cannot realistically provide passenger rail services without using an existing ROW. Because, in most cases, rail corridors are private property and because railroad property used for transportation purposes cannot be condemned through use of state eminent domain powers[14], freight railroads typically start off in a position where they have tremendous leverage in negotiations. Therefore the first important issue that a public agency inevitably faces when seeking to gain access to freight owned track is how best to negotiate an agreement with the freight railroad.

Given this situation, it is critical that the public agency attempt to optimize its bargaining position and avoid a situation in which its bargaining position is diminished. The latter can manifest itself in a number of different scenarios, including issues surrounding public expectations and available funding. Regarding the former it is very important that the transit agency does not create high public expectations that cannot be achieved. For example, "[the] public designation of high-speed corridors most frequently create expectations that cannot be satisfied because of [a] lack of capital" (Reistrup, 2002). On the other hand, the public agency can use political support (such as a senator, governor, or other high-placed politician) to argue its position. If a high-level legislator or elected official can be convinced of the regional benefits of partnering with the freight railroads in providing passenger services, he or she may become invaluable in facilitating agreements and securing public support.

From a public agency's perspective, the ideal negotiation situation in terms of maintaining bargaining position would be to make the approval of further funding conditional upon reaching certain goals and objectives. The best case scenario would be for the agency to reach an agreement with the freight railroad before a set level of

[14] The Interstate Commerce Clause of the U.S. Constitution reserves the regulation of interstate commerce to the Federal government, and an attempt to condemn an active railroad ROW would certainly be considered a "burden on interstate commerce" by Federal courts. Thus, any use of freight railroad ROW for commuter or other passenger service must be negotiated.

funding is determined and before the public has significant and specific expectations. However, the freight railroad may be unwilling to even come to the negotiating table unless substantial funding is available. A potential solution may be for the agency to arrive at negotiations with enough funding to interest the railroad while concealing from the railroad any projections or expectations regarding the total funding that might be available.

4.5 Establish Trusting Relationship

The collaborative process works best when a level of trust can be established between the transit agency and the freight railroad. Building trust requires a conscious effort at relationship building.

The first step in building a trusting relationship is often establishing an open dialogue and good communication early in the planning process and cultivating it throughout negotiations. Good communication can be facilitated by:

- bringing interested stakeholders together in a stakeholder meeting;
- establishing consistent contact between the freight railroad and public agency in the form of regularly scheduled meetings;
- preparing progress and follow-up reports to ensure that information is communicated often; and
- involving high level participation and accountability to ensure effective communication.

A stakeholder roundtable or symposium, for example, can serve as a foundation for building a trusting relationship between the public agency and the freight railroad. Such meetings can help clarify the different philosophical and operational perspectives and objectives of those involved. It can also facilitate the identification of common goals and the attainment of mutually beneficial arrangements. Finally, while it is clearly important to establish early and direct communication in the initial stages of the planning process, it is also equally important to ensure continuous dialogue thereafter, because often new agency and freight railroad staff come aboard.

4.6 Clearly Defined Goals and Objectives

Clearly defined goals and objectives are critical to the successful implementation of mutually beneficial shared use agreements in a timely manner. Different departments within an organization typically focus on specific areas and, in the process, may lose sight of the overall organizational objectives. It is very important to uphold the “big picture goals” when the specific details of arrangements, including operational agreements and access contracts, are negotiated. It is also very important to identify common goals and assess common needs early in the planning process to facilitate a productive and cooperative working relationship. Examples of common goals include:

- increasing capacity
- increasing train speed, reducing travel time
- improving reliability, ensuring on-time performance

- optimizing maintenance costs
- improving ROW conditions

Clearly defined goals and objectives allow both parties to leverage their respective strengths toward reaching common goals. For example, in the case of capacity improvements, the freight railroad can use its experience and buying power to manage the construction of agreed improvements. The transit agency, on the other hand, can use its government ties to obtain environmental clearance and permitting.

4.7 Philosophical and Operational Perspectives

Ultimately, the most crucial factor to successful negotiations is the ability of the public agency and freight railroad to understand each other's philosophical and operational perspectives. This is essential in performing the hard work necessary to reach constructive and creative solutions. A public agency looking to share freight infrastructure should recognize the freight railroad's viewpoint and how it differs from that of the public agency. It should be recognized that freight railroads are not beholden to public interests but are concerned primarily with the interests of their shareholders and customers. It is also important to recognize their business needs.

Since rail corridors are in most cases private property owned by freight railroads, it is important to approach them as business partners. As private corporations, freight railroads do have interests in expanding capacity, improving safety, and of course in obtaining additional revenue. Every effort should be made to avoid the notion that track rights are a means of using private property for public purposes (Spitulnik and Rennert, 1999). Instead, the public agency should think in terms of working out a "business deal" from which both parties stand to gain. This is particularly important as rail corridors in dense urban areas, which is often where public agencies wish to add passenger services, have seen freight volumes that are approaching capacity levels. If public money can thus be used to address the capacity constraints, a private railroad may be willing to agree to the operation of rail passenger service. This approach was successful in California, where the CCJPA made significant investments in a UP mainline. These investments have permitted CCJPA to operate 10 passenger trains a day in each direction while simultaneously relieving UP freight congestion. This sort of investment creates a "win-win" situation.

In terms of operational concerns, there are significant differences between the freight railroad's operational needs and those of a transit service with regard to track quality and wear and tear costs. In a nutshell, passenger trains tend to operate at higher speeds and therefore require higher track standards. Freight trains, on the other hand, tend to be heavier and imply more wear and tear costs (U.S. General Accounting Office, 2004). Freight railroads typically operate at speeds of 60 MPH or less. Passenger service may operate at speeds up to 79 MPH, and although FRA standards will permit operation of passenger trains at this speed on 60 MPH freight tracks, ride quality may not be at the level desired by passengers. Passenger train operation thus typically requires higher track maintenance standards. In the latter case, agreements must be structured to specify track quality, usually in terms of ride quality targets in addition to explicit maintenance standards. Unless the agreements specifically state a higher, and thus more costly, maintenance level, the freight railroad will have little or no motivation to incur the

additional costs. Therefore the public agency either has to provide the funding required for the incremental maintenance costs or negotiate agreements that will bring the track quality up to the desired level, which will translate into significant upfront capital costs and continuing higher maintenance costs.

4.8 Experienced and Knowledgeable Negotiators

Experienced and knowledgeable negotiators can help to address the many issues involved in complex shared use agreements. It is very important that the negotiators are people with the power to make decisions and implement change to ensure that negotiations move forward. The American Public Transportation Association (2001) recommends that negotiators possess actual decision-making authority. Delays may result if lower level employees lack the authority to make key decisions during negotiations. In the absence of such authority, APTA recommends that the instances where such higher level authority or approval may be needed be clearly defined.

Negotiators should also uphold the big picture goals when the specific details of arrangements are negotiated, including operational agreements and access contracts. Different departments within an organization typically focus on specific areas. In the process, they may lose sight of the overall organizational objectives. In addition, goals and objectives should be clearly defined so contractual agreements are in line with operational issues.

Finally, the public agency's negotiators should have rail industry experience. Specifically, someone with freight railroad engineering experience and not just railroad transit engineering experience is needed. During negotiations, it is important to come to a common understanding and be able to converse on equal terms. This can best be achieved by having not only lawyers, lawmakers, and marketers available during negotiations, but also experienced railroad industry experts who have the industry background and knowledge of terminology, technology, and operational issues. These railroad experts can speak the freight railroad's language and respect the railroad's concerns (American Public Transportation Association, 2001). This can help limit delays and also help prevent unanticipated problems resulting from agreement structures.

4.9 Long-Term Arrangements

With so much invested in an operating commuter rail service, it is in the interest of the transit agency to negotiate long-term arrangements. From the transit agency's perspective it is best to negotiate agreements that are in perpetuity, so there is no uncertainty about the feasibility of capital investments and concerns about renegotiating agreements. Short-term arrangements might be susceptible to adjustment or cancellation at a later date. Also, if new access agreements have to be negotiated, the transit agency runs the risk of losing some negotiating power.

On the other hand, the freight railroads pointed out that the further into the future the agreements are negotiated, the more uncertainty exists and the higher the associated risks and ultimately the funding required to offset the higher risks. Agreements in perpetuity require funding in perpetuity and because public agencies usually bring relatively short-term funding to the negotiation table, agreements will have to be renegotiated from time to time.

4.10 Dispatching Control, Maintenance Schedule and On-time Performance

A significant issue for the transit agencies is on-time performance and reliability, because it impacts ridership levels. At the same time, the freight railroads are increasingly facing demands for just-in-time service. Higher value intermodal freight shipments tend to be time sensitive, so freight railroads risk losing customers if they are not on time. On-time performance and reliability are intrinsically linked to the corridor capacity, control over dispatching, scheduling of maintenance work, and, in the case of commuter services, a commitment from the freight railroad to ensure that passenger trains run on time.

Dispatching becomes more complicated when passenger and freight trains share ROW and track. Control over dispatching can thus become very contentions. APTA (2001) recommends that a transit agency should buy the ROW when possible to ensure control over its service, reliability, and future service expansions. However, the costs associated with obtaining the ROW might be prohibitive for new systems (APTA, 2001). For example, the Florida Department of Transportation purchased the ROW and track on which Tri-Rail operates from CSX in 1988 for $264 million (Lebowitz, 2005). Alternatively, it is recommended that a transit agency attempt to obtain dispatching control over its entire service area. If that fails, care should be taken to ensure that shared use agreements are appropriately structured so that passenger trains have priority during rush hours when on-time performance is critical to ensure targeted ridership levels. One way of accomplishing this is to negotiate exclusive time windows each day for operating passenger trains on the rail corridor without the interference of freight movements.

The rigid schedules of passenger trains, especially during commuter rush hours, require that maintenance work be scheduled so as not to impact passenger services. Unlike freight trains, passenger trains cannot be held and moved in a fleet through maintenance locations. One option is to schedule maintenance work at night, which should eliminate passenger train delays resulting from such maintenance work. Caution should, however, be exercised to limit the impacts on freight movements, especially if exclusive rush hour windows have resulted in re-scheduling a significant share of the freight movements to traverse the corridor at night.

Holding a freight train for a short period of time (to allow a passenger train to pass through) can have significant ripple effects across other lines and at crossing and merge points on other tracks. Impacts may be larger than they would intuitively seem. A commitment from the freight railroad to ensure the on-time performance of passenger trains is thus required. To further encourage on-time performance, the transit agency can specify penalties for failing to meet on-time performance targets (or alternatively, incentives for meeting on-time performance targets) in shared use agreements. This can help ensure that the freight railroads and the rail transit agencies have the same objectives concerning the dispatching of passenger trains.

4.11 Costs

Much of the controversy surrounding rail sharing centers on determining a payment that is considered fair compensation for the use of the railroad track or ROW and, where applicable, for the additional costs imposed by passenger trains. The

fundamental questions that persist in determining fair compensation are which costs[15] should be considered and how the costs should be shared. Regarding the former, there are obvious categories of solely related costs on any shared freight-passenger rail line. Yard and industry tracks used for local freight service are certainly wholly assignable to freight service. Equally obvious are station costs, which are wholly assignable to passenger trains. Less obvious are how costs associated with signaling, communications, and general administrative expenses should be shared. In general, when considering track costs it is probably appropriate to use gross tonnage rather than train-miles. However, train-miles are more appropriate when allocating cost components such as signal or dispatching costs or when evaluating capacity concerns. Railroad cost analysis is, however, a specialized and arcane field. A brief discussion on track maintenance costs can be used to highlight some of the complexities surrounding the allocation costs between passenger and freight rail. Track component live and thus track maintenance costs are determined by both environmental factors and traffic damage. Total traffic (in millions of gross ton miles per year) is the main determinant of track component lives, but on low-tonnage lines, environmental factors can dominate. Only on high-traffic lines is traffic damage the primary determinant of track component lives. This has the paradoxical effect of producing small incremental costs for new traffic on light-density railroad lines, and high incremental costs on already-busy rail lines.

Compensation for overhead or administrative costs, which a freight railroad incurs for supporting passenger service that it would otherwise not have to incur, could be a potential issue. From the commuter agency's perspective, it would be beneficial to specify a limit on overhead or administrative costs. Payments would then be based on what is actually attributable to passenger service or a flat or predetermined rate to protect the public agency from increased overhead or administrative costs if a freight railroad reorganizes its administrative structure. From the freight railroad's perspective, all costs associated with allowing the passenger services on its track, including administrative costs, must be covered. The freight railroad will thus ensure that all capital, operating costs, administrative costs, and profit are included in the operating agreement. Hence, the transit agency requires a certain level of understanding of the variables that influence the financial costs associated with track sharing imposed on the private freight railroads (e.g., traffic volume, traffic characteristics—how heavy, how fast—environmental factors, and the characteristics of the track) to have an informed discussion with the railroads. Ultimately, it is probably best for prospective operators of commuter rail service to seek assistance from a qualified consultant or other railroad industry expert in this area.

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[15] Freight railroads are, in general, not eager to see Amtrak expand its services, especially in corridors that are capacity constrained. This is because, by law, Amtrak is required to only reimburse the freight railroads for the "incremental" costs associated with the use of the track (defined as the cost that would be avoided should Amtrak cease to operate, and specifically excluding any share of overhead or fixed costs) and any incentives to promote on-time performance. This cost is substantially less than the fully allocated costs the passenger trains impose on the freight railroads—estimated at roughly 19 percent of the fully allocated costs (Reistrup, 2002)—and substantially less than what the private railroads typically pay Amtrak or each other for trackage rights. Until Amtrak provides the same level of revenue to its host railroads as freight trains, resistance can be expected to the expansion of intercity passenger rail services by Amtrak. On the other hand, commuter rail services are not regarded as incremental users and can be required to pay higher trackage right fees.

4.12 Safety and Liability

4.12.1 Safety

In many instances, safety concerns drive decisions about shared operations. Safety regulation for all commuter, inter-city, and freight rail lines is under the jurisdiction of the Federal Railroad Administration (FRA). The FRA defined nine track classes, with Class 1 as the lowest and Class 9 as the highest. Specific geometry and condition standards are established for each class of track, and speed limits for both passenger and freight traffic are also defined. In general, Amtrak operates at speeds only moderately higher than freight trains, while commuter trains generally operate no faster than Amtrak. However, when passenger and freight trains share tracks, there is always a risk of a collision, derailment, or damage caused by a shifted load.

Grade crossing safety is a primary concern and must be considered thoroughly before implementing any shared rail operations in a corridor. If rail traffic and train speeds are increased along a corridor with the implementation of commuter and or high-speed rail passenger services, it can be expected that both collisions and fatalities at grade crossings will increase. In 2002, 323 collisions between trains and vehicles occurred at grade crossings in Texas, resulting in 29 fatalities. Grade separations ensure a high level of safety but can be very costly. On the other hand, the closing of certain grade crossings (access management) in an effort to address safety concerns will affect roadway access and adjacent property owners, which could result in community opposition

4.12.2 Liability

In 1997, Congress passed the Amtrak Reform and Accountability Act (ARAA), which limited the aggregate overall damage liability to all passengers from a single incident to $200 million. The latter also applies to commuter rail operations. Commuter rail operations thus require $100 to $500 million in insurance coverage. Annual premiums tend to vary but tend to be between one and two million dollars. However, it should be noted that the $200 million limit does not limit damage to non-passengers. The latter has not been tested in court (U.S. General Accounting Office, 2004).

Congress also affirmed the statutory basis for enforcing indemnification obligations in contracts (U.S. General Accounting Office, 2004) with the result that liability should not present any additional costs to the freight railroads. In general, the freight railroads want full faith and credit indemnification (American Public Transportation Association, 2001). BNSF, for example, will only consider commuter rail service on BNSF track if no liability is incurred to BNSF.

Therefore, while current contracts between Amtrak and the freight railroads do not hold railroads liable for damage to Amtrak trains and injuries to passengers in accidents, courts have held that this provision does not apply in cases of gross negligence. Since railroads cannot insure against gross negligence, the cost of a serious accident could conceivably threaten the financial health of a large Class I railroad.

4.13 Concluding Remarks

The capacity constraint situation faced by freight railroads in many dense urban corridors, which is often where public agencies wish to add passenger services, will

require a clear understanding and appreciation of the philosophical and operational perspectives and, ultimately, the often conflicting goals and objectives of the public agency and the private freight railroad. Also, given the tremendous leverage freight railroads as the owners of the rail infrastructure have at the outset of negotiations, public agencies should make every effort to enhance their bargaining position by securing substantial funding, political support, and experienced and knowledgeable negotiators. Establishing a trusting relationship and the identification of common goals and objectives will be critical in finding a compatible solution to concerns surrounding access rights, the length of shared use agreements, dispatching control, capital investments, maintenance, cost compensation, liability, and safety. The key is to develop win-win situations for both freight railroads and public agencies, requiring the negotiation of a unique shared use agreement that suits the specific situation.

5. Conclusions

Increasing population, along with economic growth, is leading to increasing levels of passenger travel demand in Texas. Many metropolitan areas are concerned about the safety and air quality impacts (possible non-attainment) stemming from increasing motorized traffic levels. Given increasing miles of interurban travel per capita and forecasted increases in freight movements, it is expected that substantial demands will be placed on the already heavily used transportation infrastructure of the state. Increasingly it is realized that the demand for motorized mobility needs to be reconciled with the availability of limited resources and the environmental and social impacts of motorized highway travel. Railroads are thus often looked on as a key element of a greater intermodal solution to reduce roadway congestion, with associated societal and environmental benefits. It is widely hypothesized that rail service (particularly commuter rail on existing tracks) can be less costly than highway expansions. However, it is also foreseen that TxDOT will face many challenges, and in some cases outright opposition, when the agency proposes to accommodate both passenger and freight trains on the same track or the same ROW. This report outlined and explained the issues and concerns regarding passenger rail sharing freight railroad track from both a public agency and the private railroads' perspective in an effort to provide a basis for dialogue between the public sector and private rail communities in Texas.

5.1 Rail Freight in Texas

The rail freight system in Texas is a significant component of the nation's rail system and is vital to the state's economic growth. Most of the rail system in Texas belongs to private freight operators and all intercity passenger trains currently operate on track owned by freight railroads (Cambridge Systematics, 2002).

The current Texas rail system is the result of several factors, including the regulatory environment before 1980, railroad consolidations and mergers following deregulation, and the restructuring efforts of the railroads since deregulation. Burdensome economic regulation of the rail industry prior to 1980 resulted in low profits and the freight railroad's poor financial performance. Since 1980, the industry has seen a considerable improvement in its financial performance, but at the expense of reduced capacity, i.e., the abandonment of substantial rail mileage, in Texas and elsewhere, along with the divestment. Unfortunately, the railroad's abandonment of infrastructure has coincided to some extent with a period of rapid rail traffic growth. Texas's proximity to the Gulf Coast, coupled with strong economic growth in the 1990s and the expansion of trade, especially with Mexico, have increased the demand for rail freight movements from, to, and through Texas. In fact, a strong and steady growth in rail freight shipments is forecast through the next 25 years. This has contributed to capacity concerns on some key rail corridors. Moreover, increasing vehicle volumes, a growing population, and a growing economy are contributing to roadway congestion and increasing safety concerns in Texas. Rail transport is seen as an alternative to increasing highway travel, thereby reducing congestion. It has thus foreseen that Texas's rail freight network is going to experience increasing pressure in terms of capacity and performance.

5.2 Rail Sharing: Passenger Rail Agency Versus Private Railroads

Passenger rail systems are generally planned and operated by public entities looking to provide a modal alternative to the traveling public, ease congestion on local roads and freeways, and provide a more sustainable transportation system. The freight rail system, on the other hand, is usually privately owned by companies who seek to serve shippers and realize a profit. Freight railroads thus differ significantly from public agencies in how they are structured and in the objectives they wish to achieve.

Given the constrained capacity situation faced by freight railroads discussed above, it is understandable that they have become less inclined to accommodate passenger services on their track and ROW. Yet "rail sharing" is, in many cases, the only viable option available to public agencies looking to add passenger rail services.

Freight railroads thus have tremendous leverage at the outset of negotiations. Freight railroads will not even come to the negotiation table if (a) shared use is unsafe, (b) they are expected to subsidize passenger rail services, (c) there will be a negative impact on their quality of service, or (d) if liability concerns exist. Ultimately, a compatible shared use agreement has to be negotiated that address access rights, the length of shared use agreements, dispatching control, capital investments, maintenance, cost compensation, liability, and safety. A clear understanding and appreciation of the philosophical and operational perspectives—and ultimately the conflicting goals and objectives—of the public agency and freight railroad, a trusting relationship, and the identification of common goals and objectives will be crucial to finding a compatible solution.

To conclude, the era when lightly used rail lines could be purchased for modest sums by public agencies has passed. In the future, cooperation between freight railroads and public agencies will be required if additional passenger service is to be operated on freight corridors. The key is to develop win-win situations for both freight railroads and public agencies. A successful partnership will involve finding a compatible solution, careful planning, relationship building, and significant public funding.

5.3 The Role of TxDOT

TxDOT's role in transit, including rail planning and decision making has been peripheral. This is partly owing to the structure of the funding programs, mostly federal sources, which requires little or no planning from TxDOT. Limited funding has thus restricted the role the state has played in improving rail transportation options. Recent legislative changes, however, have expanded the role of TxDOT in state transit, resulting in opportunities for the active involvement of TxDOT in encouraging passenger rail projects. This would include identifying existing freight rail line capacity that can be shared with commuter or intercity trains.

In conclusion, shared track and joint use of rail corridors is being seen as a viable method of achieving the goal of developing a sustainable transportation system for the state and the goals of the Trans-Texas Corridor. This study indicates the necessity of careful planning and the many issues and concerns that need to be negotiated so as to realize effective shared use agreements. It is also clear that TxDOT needs to be proactive in planning, facilitating, and funding rail investments for shared track and joint use of rail corridors to be successfully implemented in Texas.

References

American Association of State Highway and Transportation Officials. 2003. "Transportation Invest in America: Freight-Rail Bottom Line Report." January 16. Available at: http://freight.transportation.org/doc/ex_railreport.pdf

American Public Transportation Association. "Commuter Rail: New Starts Handbook. Tips And Resources For Planning And Implementing A Successful Commuter Rail Enterprise." May.

Association of American Railroads. 2005. "Freight Railroads Operating in Texas." Washington, DC, December. Available at: http://www.aar.org/PubCommon/Documents/AboutTheIndustry/RRState_TX.pdf?states=RRState_TX.pdf

Association of American Railroads. 2004. "Railroad Facts." Washington, DC, October.

Association of American Railroads. n.d. "U.S. Freight Railroad Statistics." Washington, DC. Available at: http://www.aar.org/PubCommon/Documents/AboutTheIndustry/Statistics.pdf

Cambridge Systematics, Inc.. 2002. "Freight Rail." The Texas Transportation Plan Update. Prepared for the Texas Department of Transportation. October.

Cambridge Systematics, Inc. and KFH Group Inc. 2005. "Business Plan for the Texas Department of Transportation Public Transportation Division." Prepared for the Texas Department of Transportation, March. Available at: http://www.dot.state.tx.us/ptn/bp%5Fhome.htm

Lebowitz, L. 2005. "Tri-Rail, CSX Freight Carrier Running on a Collision Course." *The Miami Herald*. June 27.

Reistrup, P.H. 2002. "Passenger Trains on Freight Railroads: A View From Both Sides of the Track." *Journal of Transportation Law, Logistics and Policy*. Volume 70, Issue 1.

Resor, R.R., A.M. Zarembski, and P.K. Patel. 2001. "Estimating Investment in Track and Structures Needed to Handle 286,000 lb. Cars on Short Line Railroads." Transportation Research Record, No. 1742, National Research Council, Washington, D.C.

Roop, S.S., et al. 2001. "Texas Rural Rail Transportation Districts: Characteristics and Case Studies." FHWA/TX-02-4007-1. College Station: Texas Transportation Institute, The Texas A&M University System.

Shrank D., and T. Lomax. 2003. “The 2003 Annual Urban Mobility Report.” College Station: Texas Transportation Institute, The Texas A&M University System. Available at: http://mobility.tamu.edu

Shrank D., and T. Lomax. 2005. “The 2005 Urban Mobility Report.” College Station: Texas Transportation Institute, The Texas A&M University System. Available at: http://mobility.tamu.edu

Spitulnik, C.A., and J.P. Rennert. 1999. “Use of Freight Rail Lines for Commuter Operations: Public Interest, Private Property.” Transportation Law Journal, Volume 26, Issue 3.

Texas Department of Transportation. 2005. Draft Texas Rail System Plan, October. Available at: http://www.dot.state.tx.us/TPP/trsplan/DRAFTRail.pdf

United States General Accounting Office. 2004. “Commuter Rail—Information and Guidance Could Help Facilitate Commuter and Freight Rail Access Negotiations.” GAO-02-240, January.