PB99-157307

A SUMMARY OF THE RAILROAD SYSTEM OF TEXAS: A COMPONENT OF THE STATE AND NATIONAL TRANSPORTATION INFRASTRUCTURE

by

Leigh B. Boske
Lyndon B. Johnson School of Public Affairs

Steve Roop
Texas Transportation Institute

and

Rob Harrison
Center for Transportation Research

Report 1703-S
Research Project Number 0-1703
Research Project Title: The Railroad System of Texas: A Component of the State and National Transportation Infrastructure

Sponsored by the
Texas Department of Transportation
In Cooperation with the
U.S. Department of Transportation
Federal Highway Administration

December 1998

TEXAS TRANSPORTATION INSTITUTE
The Texas A&M University System
College Station, Texas 77843-3135

REPRODUCED BY: NTIS
U.S. Department of Commerce
National Technical Information Service
Springfield, Virginia 22161

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FHWA/TX-99/1703-S		

4. Title and Subtitle	5. Report Date
A SUMMARY OF THE RAILROAD SYSTEM OF TEXAS: A COMPONENT OF THE STATE AND NATIONAL TRANSPORTATION INFRASTRUCTURE	December 1998
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
Leigh B. Boske, Steve Roop, and Rob Harrison	Report 1703-S

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Texas Transportation Institute The Texas A&M University System College Station, Texas 77843-3135	11. Contract or Grant No. Project No. 0-1703

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
Texas Department of Transportation Research and Technology Transfer Office P. O. Box 5080 Austin, Texas 78763-5080	Project Summary: September 1997-August 1998
	14. Sponsoring Agency Code

15. Supplementary Notes

Research performed in cooperation with the Texas Department of Transportation and the U.S. Department of Transportation, Federal Highway Administration.
Research Project Title: The Railroad System of Texas: A Component of the State and National Transportation Infrastructure

16. Abstract

Railroads continue to play an important role in moving domestic and international freight through Texas, contributing to economic growth in the state. This study addresses the potential for implementing a rail planning process in the Texas Department of Transportation. In order to accomplish this, successful rail planning processes at other U.S. departments of transportation were evaluated and exemplary programs identified. Three reports were published addressing a variety of findings. The first, published by the Lyndon B. Johnson School of Public Affairs at the University of Texas at Austin, provides an overview and examination of 32 state rail policies, plans, and programs for both passenger and freight traffic. The second report, also published by the Lyndon B. Johnson School of Public Affairs at the University of Texas at Austin, provides information on exemplary state rail programming and planning based on case studies of California, Florida, North Carolina, and the state of Washington. The third report, published by the Texas Transportation Institute at Texas A&M University, provides (1) a framework for rail planning in Texas, (2) identification of current rail issues in Texas, (3) a case study on urban rail rationalization, and (4) a characterization of the rail system in Texas. In each report, detailed appendices are provided to complement the findings and recommendations. In this project summary report, an implementation schedule is recommended to institute rail planning in the Texas Department of Transportation.

17. Key Words	18. Distribution Statement
Railroads, Rail Planning Process, Rail Policies, Passenger Rail, Freight Rail, Texas Rail System	No restrictions. This document is available to the public through NTIS: National Technical Information Service 5285 Port Royal Road Springfield, Virginia 22161

19. Security Classif.(of this report)	20. Security Classif.(of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	42	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

IMPLEMENTATION RECOMMENDATIONS

Researchers and the Texas Department of Transportation (TxDOT) advisory staff met to determine a suitable program of implementation for the project findings. It is inappropriate for researchers to determine TxDOT policy with respect to modal planning in general, and rail in particular. Rather, researchers should identify what policy options are available to decision makers. Thus the authors have decided to recommend three related implementation activities to be undertaken sequentially.

1. Institutionalize Rail Planning: Project 0-1703 successfully identified a wide variety of state rail processes and plans, covering both passenger and freight traffic. The Texas DOT itself must now decide the appropriate rail planning process to be adopted for use by the department. Fortunately, the Multimodal Office, which sponsored this study, is now located within the Transportation Planning and Programming Division of TxDOT, and so this task should be easier to undertake. We recommend that it be linked to ongoing efforts to update the 1994 Statewide Transportation Plan so that modal planning, like rail, is included. This is particularly important when considering the impact of freight corridors in Texas, which are frequently combinations of both highway and rail modes, or rail to seaports. We recommend that this implementation stage be undertaken within 18 months of study completion.

2. Select a Specific Planning Process for Texas: Once the first implementation stage is complete, it is then possible to identify the appropriate organizational structure that rail planning should adopt, together with the key issues it will address. Resources ranging from individuals to databases can be linked into the appropriate framework. Study Report 1703-1 clearly showed the wide variety of rail planning processes that exist in the U.S., indicating that they reflect both the issues facing the state DOTs and resources placed at their disposal. If substantial resources can be provided, a structure such as Florida might be appropriate. However, if resources are more constrained for rail planning in TxDOT, a more incremental process, like North Carolina, may be more suitable. In any event, this implementation stage again resides wholly within TxDOT, although the documentation (which includes enabling legislation) reported in this study would be valuable in structuring the function. We recommend that this be undertaken within 24 months of study completion.

3. Implementing the Rail Planning Process: Once the first two stages have been undertaken, it will then be possible to evaluate the generic planning process recommended in this summary and calibrate it for Texas use. A wide variety of data sources and models have been identified that could be incorporated into this process. The number of issues that are to be considered will largely determine the scale of the process. Again, if the process is incremental in nature, it would be sensible to identify two or three key issues to begin the rail planning process and feed its findings into statewide planning. The federal authorities appear to be focusing on trade corridors in the continental U.S. and this could be an important feature of the rail planning mechanism to be evaluated by TxDOT. Rail not only provides valuable links to industrial sectors within the state, but also links to the state maritime sector and the border with Mexico for the movement of international

trade. We recommend that this stage begin around 24 months after the completion of the study.

DISCLAIMERS

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration or the Texas Department of Transportation. This report does not constitute a standard, specification, or regulation. Not intended for construction, bidding, or permit purposes.

There was no invention or discovery conceived or first actually reduced to practice in the course of or under this contract, including any art, method, process, machine, manufacture, design or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the patent laws of the United States of America or any foreign country.

ACKNOWLEDGEMENT

The researchers acknowledge the invaluable assistance provided by E. Kasparik (MMO), TxDOT project director for this study. Also appreciated is the guidance provided by the other members of the project monitoring committee, which included J. Brown (SAT) and M. Leary (FHWA).

This report was prepared in cooperation with the Texas Department of Transportation and the U.S. Department of Transportation, Federal Highway Administration.

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION 1
1.1 Background 1
1.2 Terms of Reference and Study Objectives 3
1.3 Summary Report Structure 4

CHAPTER 2. REPORT SUMMARIES AND FINDINGS 7
2.1 Report 1703-1: *State Rail Policies, Plans and Programs* 7
2.2 Report 1703-2: *Exemplary State Rail Programming and Planning: Case Studies of California, Florida, North Carolina and Washington State* 13
2.3 Report 1703-3: *The Railroad System of Texas: A Component of the State and National Transportation Infrastructure* 18

CHAPTER 3. IMPLEMENTATION RECOMMENDATIONS 29
3.1 Institutionalize Rail Planning 29
3.2 Select a Specific Planning Process for Texas 29
3.3 Implementing the Rail Planning Process 30
3.4 Conclusions 30

CHAPTER 1. INTRODUCTION

1.1 BACKGROUND

State rail programming and planning have matured greatly since the 1970s, an era that spawned the National Railroad Passenger Corporation (Amtrak) and saw the U.S. government intervene in restructuring the insolvent Penn Central and other eastern railroads into Conrail. Rail programming and planning has become an economic development tool, an environmentally attractive alternative to highway transportation, and a mechanism to improve a state's comparative advantages in the movement of people and freight. Moreover, transportation logistics and telematics are making freight movements more efficient and competitive, forcing states to adopt a holistic (intermodal) approach to freight delivery. As the most efficient long-haul carriers of many types of freight, railroads are increasingly incorporated into intermodal transportation planning.

As the 1970s and 1980s saw the industry-wide abandonment of rail track mileage, state and local governments responded by promoting policies of local rail freight assistance, culminating in the promulgation of the Local Rail Freight Assistance Program. For many states, the sole purpose of rail programs was to preserve rail corridors. For some states, the reorganization of intercity passenger rail service into a state-owned entity forced the new corporation, Amtrak, to rationalize its route structure and schedule the termination of some routes. Some states entered passenger rail service provision to preserve existing service by subscribing to Amtrak's 403 (b) program outlined in the 1970 National Railroad Passenger Corporation Act. The 403 (b) program allowed states to negotiate and contract with Amtrak for supplemental service. Many states used the program to supplement existing service and build intercity rail service along vital transportation corridors.

Prosperity in the mid-1980s changed the profile of state rail programs. Rail interests in some states appropriated new financing, transforming it into stable funding sources for the rail mode. States ventured into a variety of activities involving rail freight programs, intermodal connectivity at seaports, river ports and truck-rail terminals, passenger rail programs, and high-speed rail planning in addition to grade-crossing safety programs, branchline rehabilitation, and right-of-way acquisition for future use (rail

banking). What had once been rail freight assistance programs dependent on federal funding, which the state would match or make counterpart payments, were now comprehensive programs.

The 1990s are witnessing an abundance of rail mergers among the Class 1 railroads, with some unknown long-term consequences. Meanwhile, as a result of branchline abandonment by Class 1 railroads and economic growth, a relative rail renaissance has occurred with the proliferation of shortline, switching, and terminal railroads. Texas needs to look no farther than RailTex of San Antonio, the largest branchline operator in the nation, to see a rapidly expanding branchline market.

Population growth and heavy congestion on highways and at airports also condition rail planning. Highways and air traffic are running at or near capacity in some areas, convincing states to embark on high-speed rail (which, for the U.S., is defined by this study as speeds greater than 125 miles per hour) feasibility studies. Other states are looking at more modest incremental improvements, such as the elimination of highway-railroad grade crossings and the straightening of track curvature that slows average train speeds. In both cases, states are attempting to make passenger rail more competitive with the automobile so states can use transportation choice as an economic development tool to lure new business and induce existing business that otherwise would not consider the rail mode.

1.1.1 Texas

Industry and commerce in Texas are heavily dependent on the railroads operating in the state for reliable and cost effective transportation of goods and material. Railroads provide a particularly efficient means of moving bulk commodities. They are better suited than other transportation modes for moving heavy loads long distances. Railroads are environmentally friendly, as compared with trucks, and they are more fuel efficient. Among their many distinctions, most freight railroads are privately owned, financed, and operated.

Texas has an extensive and robust freight railroad network. The state currently has three Class I railroads operating within its borders and many smaller regional and shortline operators serving the transportation needs of shippers. Texas tops several lists

in terms of railroad statistics. For example, Texas has more miles of track than any other state supporting the transport of more tons of freight than any other state. Texas serves as the gateway to Mexico, and the lion's share of international rail freight between the U.S. and Mexico moves across the Texas border. The recent consolidations in the rail industry, specifically the Burlington Northern-Santa Fe merger and the acquisition of Southern Pacific by Union Pacific, have reduced the number of railroads operating in Texas; but there remain significant corporate commitments to new rail infrastructure and market development in the state.

Texas serves as a major crossroads for national and international rail freight movements. Its geographic location adjacent to Mexico means that north-south movements intersect with significant east-west trade to make Texas a major junction for national and international trade. And the North American Free Trade Agreement (NAFTA) has further increased the volume of both rail and truck traffic moving between Mexico and U.S. markets in the mid-west, a development that has generated significant policy questions within the Texas Department of Transportation (TxDOT) regarding how best to accommodate commercial traffic on Texas-financed roadways. The traffic mitigation role of freight movement by rail is of increasing importance to TxDOT, and planning efforts must be construed to effectively consider the role of railroads.

TxDOT has begun to approach transportation needs from a multimodal planning perspective. This is demonstrated by the creation of the Multimodal Operations Office in 1994, the development of a statewide transportation plan in 1994, and the incorporation of the Multimodal Operations Office into the Transportation Planning and Programming Division in 1998. A major charge of Multimodal Operations is to integrate railroads and rail planning into the larger planning process, and a significant early step toward this end is to develop a rail planning process. This study will help define the steps, personnel, and deliverables required to provide TxDOT with the relevant data and processes needed to implement an effective rail planning program within the Multimodal Section.

1.2 TERMS OF REFERENCE AND STUDY OBJECTIVES

The objectives of this proposed research are twofold. First, the Texas Transportation Institute (TTI) and the Center for Transportation Research (CTR) will

work jointly to define the parameters associated with successful rail planning processes at other state departments of transportation and apply the findings of this analysis to the unique circumstance of TxDOT's Multimodal Section. Second, TTI and CTR will collaborate to characterize the rail transportation industry in Texas, both passenger and freight, from the perspective of infrastructure, operations, and participating carriers.

Several study tasks necessary to meet these objectives were identified in the workplan and comprise the following categories.

1. Examine and evaluate rail freight and passenger planning programs in other U.S. states, and state departments of transportation.
2. Develop a model rail planning process for TxDOT.
3. Identify the types, sources, costs, and users of the databases supporting the rail planning process.
4. Suggest a method to implement a rail planning process within Texas.
5. Produce a basic database of Texas railroading, using most current data available.

The study team was organized so that the TTI group took the lead in developing a basic rail planning process and associated databases while the Lyndon B. Johnson School of Public Affairs (LBJ School)/CTR group examined planning processes in other states and identified a variety of program elements that could be adopted in Texas. The TTI group comprised a team from their Rail Center of Excellence, who undertook a conventional program of research. The LBJ School team was rather different as it was based on a Policy Research Project, a course where faculty members direct the research of graduate students on a policy issue of concern to federal or state agencies. This entails face-to-face contact with administrators, legislators, and other officials active in the rail planning process and helps meet the challenge of implementing policy in a world of harsh political realities. This vehicle was highly appropriate to study diverse and numerous state rail programs and complemented the TTI team developing the actual process.

1.3 SUMMARY REPORT STRUCTURE

The two study teams worked relatively independently in terms of day-to-day operations, and results were shared between the teams at intervals during the study. At

the end of the first year, the LBJ School group produced a report (1703-1), *State Rail Policies, Plans and Programs,* that was authorized for publication. Given the success in establishing a substantial body of state rail planning programs, mechanisms, and characteristics (in 32 state profiles) it was agreed that a second-year report be undertaken focusing on exemplary programs of particular interest to Texas. The project director specifically chose programs in the states of California, Florida, North Carolina, and Washington for evaluation and also requested that all enabling legislation related to the key characteristics of the program be included to help frame any legislative initiatives for Texas. The second LBJ School report (1703-2), *Exemplary State Rail Programming and Planning: Case Studies of California, Florida, North Carolina and Washington State*, was submitted for publishing approval in August 1998.

The activities of the TTI team were also captured in a report submitted at the end of the first year that was not published but formed the basis for the second-year's activities and report covering the recommended rail planning process for TxDOT and related databases.

A second-year report (1703-3), *The Railroad System of Texas: A Component of the State and Federal National Transportation Infrastructure*, was submitted by the TTI team. The report is organized into four chapters and contains supporting appendices. The chapters cover characterization of the rail system in Texas, rail issues in Texas, a rail planning process for the state, and an application of the planning process in urban rail rationalization. Appendices cover a wide range of issues from data sources through TxDOT district maps to Class I railroad timetables.

This summary report is structured so the following chapter contains summaries of each of the three study reports, providing both details of the research and concise findings. Chapter 3 of this report comprises a series of recommendations made by the TTI/LBJ School/CTR team and the project coordinator and project director detailing the steps toward the full implementation of a rail planning process in Texas.

CHAPTER 2. REPORT SUMMARIES AND FINDINGS

2.1 REPORT 1703-1: *STATE RAIL POLICIES, PLANS AND PROGRAMS*

Report 1703-1 provides an overview and examination of state rail policies, plans, and programs. The report comprises five chapters. Chapter 1 provides a summary of the key findings of the report. Most of the information contained in the first chapter is drawn from state rail profiles appearing in the appendices of Report 1703-1. Chapter 2 describes the diversity of state involvement in railroad transportation in terms of staffing levels, agency organizational structures, budgets, freight and passenger assistance programs, relationships with the private sector, types of planning activities, and the like. Chapter 3 addresses exemplary state rail freight programs and the manner in which those programs are financed. Similarly, Chapter 4 focuses on exemplary state passenger rail service programs. The final chapter examines the efforts of three states—Florida, Oregon, and Washington—to integrate rail planning into a larger intermodal/multimodal transportation planning process.

The appendices of Report 1703-1 contain 32 state rail profiles and a New England-region profile. In an effort to facilitate and coordinate transportation planning within the six-state region, New England has created the New England Transportation Consortium and the New England Transportation Initiative (NETI). Information appearing in the state and region rail profiles was based on collected state transportation plans, programs, statutes, and other relevant documents; extensive telephone interviews with public- and private-sector officials; on-site interviews with officials in several states; and written responses received from a mailed Rail Program Personnel and Funding Questionnaire.

2.1.1 Findings

2.1.1.1 State Involvement in Railroad Transportation

Since the passage of the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, all states are required to conduct comprehensive multimodal transportation planning. This comprehensive planning, including rail planning, generally falls under the auspices of the individual state departments of transportation, although this

does not apply in all cases. The number and diversity of plans/reports that address the rail concerns of the various states are remarkable. Many states have incorporated all rail planning activities within larger state transportation plans or documents. Other states, while also addressing rail in state transportation plans, continue to develop individual state rail plans as a more detailed complement to the overall state transportation plan. Still other states have produced transportation/rail policy documents. Finally, many states have decided to contract with consulting firms to develop rail plans, while others produce their own documents with in-house staff.

This same diversity is reflected in the number of full-time equivalent (FTE) in-house staff (excluding safety-related staff positions) that state departments of transportation assign to rail matters. Arkansas assigns only one staff person to rail freight and no staff to passenger planning activities. In Michigan, 22 staff address rail freight planning, while three staff are assigned to passenger planning. North Carolina employs four staff in rail freight and seven in passenger planning. There is also no uniformity in state agency organizational structures for handling rail matters. For example, in Illinois, the Bureau of Railroads administers all rail-related activities, whereas, in Florida, rail-related activities are spread among three different offices.

2.1.1.2 State Freight Assistance Programs

The freight assistance programs highlighted in this report represent successful state efforts at reasonable cost. Many states face legacies of limited involvement in rail matters. Some states have statutes prohibiting state assistance to the rail industry. They must deal in the practical realm of what is possible. Washington's Grain Train project, Virginia's and North Carolina's rail industrial access programs, and Tennessee's Transportation Equity Fund (TEF) are rail freight programs limited in scope that have measurable benefits to their respective states and citizens. Their models demonstrate that it is possible to find funding to finance, operate, and implement successful rail freight projects. On the other hand, Pennsylvania serves as an example of what can be achieved by a state with a large budget and strong political support.

These programs share four characteristics that make them successful. First, the states seem to have benefited from auspicious funding circumstances. In Washington, the rebate from oil companies provided the Washington State Department of Transportation (WSDOT) with a funding source. Virginia witnessed growing revenues for transportation-related programming with the establishment of the gas tax. North Carolina passed legislation creating a large Highway Trust Fund from which rail received a small, but significant ($5 million) share.

The second aspect shared by these rail programs is their ability to seize upon these auspicious funding circumstances. Such is the benefit of having a commitment to planning. With research and development, Washington and Virginia had programs on board, ready to implement upon provision of a funding source. North Carolina, by extension, had the astuteness to copy the program of its northern neighbor, hoping to produce its own successes. Because of rail freight's small constituency, freight interests struggle to make a place on the agenda of state legislators. Where it occurs, state rail planning has seized timely moments to advance its interests. Being opportunistic is perhaps the most important element of realizing the implementation of rail programs, especially in states with minimal funding for rail freight programs. A commitment to rail planning allows states to be opportunistic. The example of Pennsylvania's outreach illustrates the advantages of comprehensive rail planning. Pennsylvania will have no trouble in the future identifying projects that will assist rail freight. This improves the chances that rail freight will not only make a place on the agenda, but realize some form of public service delivery.

Third, these programs have placed minimal requirements on the state. Washington State's Grain Train is a self-sustaining joint venture. Washington State DOT spends just four hours a month keeping records and acting as a clearinghouse for the project. Tennessee has structured its TEF to make railroads essentially finance themselves. The North Carolina and Virginia programs, combined, spend less than $3 million annually. Yet the results are economically positive, as they promote job growth, rail use, and new investments.

Finally, communications between state officials and rail interests have greatly enhanced the ability of states to anticipate rail needs. Communication and outreach enable state rail planners to overcome a tendency toward isolation. States that have measured successes, like Virginia and Washington, communicate with their constituencies.

A successful state rail planning effort takes advantage of current and future funding opportunities. A proactive state rail planning effort will have more chances to realize auspicious funding circumstances and act when they occur. In the absence of a Local Rail Freight Assistance program, state rail planning that steps away from a dependence on federally funded programs will need to be innovative.

2.1.1.3 State Passenger Assistance Programs

States are becoming increasingly important sources for funding and the resulting programs that lead to expanded passenger rail service. In doing so, they are forced to grapple with the benefits and costs of subsidizing passenger service, just as the U.S. Congress did in 1970 when it created Amtrak. In the rail profiles contained in Report 1703-1, strong intercity programs exist primarily in states where there are large, growing metropolitan areas (usually within 300 miles of each other) that can be linked in linear transportation corridors. In states with such characteristics, arguments for the economic benefits derived from investment in rail passenger transportation seem to be most persuasive.

Passenger rail operations generally incur a financial loss. Therefore, precise projections on revenues/costs are a key component to a state's planning effort. An incremental attainment of more trains and shorter travel times over the course of a long-term action plan has been adopted in many states in order to minimize risk. Where it works best, the incremental goals are in line with an overall vision of where the state wants to be in terms of passenger rail service in 20 years. A quandary facing rail planners is that, in most models, a large investment is necessary before ridership increases to a level where the disparity between revenues and costs begins to shrink. This entails more risk than most rail planners are able to persuade their states to assume.

For instance, the Pacific Northwest Rail Corridor Planning Report compares the costs of $15.1 million and revenues of $5.5 million in 1995 with the projected costs of $107.9 million and revenues of $100.1 million (in its high-revenue assumption) in the year 2015. Clearly, the ratio of costs and revenues is expected to improve dramatically as the investments grow and the services improve.

In North Carolina, the projections are based on six scenarios describing differing levels of state investment in passenger rail services. The base scenario is the current state of affairs, and the sixth scenario is a full system of eight train sets running at 100 miles per hour within North Carolina and with connections to the Northeast Corridor. In the base case scenario, current losses are $4.4 million. In the sixth scenario, a profit of $1.4 million is projected, despite vast increases in costs.

A caveat to these favorable projections may be found in California, along the San Joaquin and San Diegan routes, where increased investment in 403(b) passenger rail subsidies has seen fluctuations between increases and decreases in revenue/cost ratios over the lifetime of operation. Specifically, the San Diegan route operated at a small profit until 1992, when it experienced a decrease in the revenue/cost ratio despite the addition of four trains along the route between 1992 and 1996. This can be attributed in part to the fact that in October 1995, the state took on a larger portion of Amtrak's operating losses, from 55% to 64%. In may also carry the message that merely adding train sets to a route will not improve revenue/cost ratios. Rather, improvements in running times and quality of service, which are more expensive investments, must be made as well.

For transportation planners, a balanced system that includes the rail option has societal benefits. For business people, passenger rail service may be seen as more comfortable and convenient than air service because the seating is more spacious and rail stations are typically located in the heart of the city, as opposed to the outskirts where airports are located. For middle-income or low-income travelers, rail service is usually less expensive than air travel, and more pleasurable than taking the bus.

The argument that carries great weight for advocates of passenger rail service is that it is a powerful economic development tool. In North Carolina, for instance,

Governor James B. Hunt, Jr., made the case that a high-speed rail line through the most populous parts of his state will help him recruit new business. Thus, even if the projected margins between costs and revenues are thin, the projected indirect revenues to the state from economic growth spurred by passenger rail service boosts the returns on this investment.

Even among those states that have shown interest in increasing the role of passenger rail service through subsidizing existing Amtrak service and planning for high-speed rail, none have reliable, dedicated funding on a scale to realize the ambitious goal that has been set. For this reason, states tend to fund improvements to passenger rail service in an incremental fashion. Rather than taking the risks associated with a major infrastructure project that would bring high-speed passenger rail service to their state in a matter of several years, they instead make improvements to grade crossings and straighten curves as the money become available. In North Carolina, the cars and locomotives used for the *Piedmont* were all second-hand and low-cost. In this way, the state prepared for the possibility that their models predicting ridership were wrong, and they might have to terminate the service. As it turns out, however, ridership has exceeded projections in each of the states that are highlighted in the report.

This is a function, perhaps, of the increased interest in rail as a travel option that occurs when a state begins to invest in the service. Taxpayers take on a proprietary interest in the success of the venture and respond favorably to state efforts to market the new service. This trend of giving funding responsibilities of passenger rail operations to the states is turbulent, but often has the effect of raising the profile of passenger rail service. Threatened with its absence, people respond with renewed interest in keeping this vital transportation service alive.

2.1.1.4 State Intermodal Planning

Oregon, Washington, and Florida offer three specific examples of state efforts to rise to the challenge of intermodal transportation planning. Through unique but similar approaches to information gathering, economic analysis, coordination, and financing, these states have succeeded in moving transportation planning efforts toward a more

integrated approach. The key to the methodologies utilized by these state departments of transportation is that they provide decision makers with more effective information about specific transportation needs, as well as an understanding of the impact particular investment decisions may have.

In all three states, the broad-based involvement of interest among citizens and community groups with their state departments of transportation has fostered many synergistic relationships. These state agencies have worked closely with regional and local governments, as well as with private-sector interests, to identify the issues affecting a sound and desirable state transportation network. These partnerships have highlighted the importance of transportation providers and users working together to understand the relationship between a community's economy and the movement of goods. It is only with this understanding that sound analysis and decision making can occur.

What is seen in these three states is a strong response to ISTEA's call for intermodalism. The commitment to the integration of all modes into a strong, functioning, and interconnected transportation network that best meets private, state, regional, local, and community priorities has led to increasingly effective resource utilization and a more creative approach to transportation funding. The synergy of interests working toward a mutually defined common goal—an improved transportation system—has led to a new understanding of what is possible.

2.2 REPORT 1703-2: *EXEMPLARY STATE RAIL PROGRAMMING AND PLANNING: CASE STUDIES OF CALIFORNIA, FLORIDA, NORTH CAROLINA, AND WASHINGTON STATE*

The purpose of this report, the second in a two-report series, is to document and draw lessons from exemplary state rail programs that might benefit the state of Texas in the event the state considers more active participation in state rail programming and planning. During the first year of the project, which ended with the publication of the Lyndon B. Johnson School of Public Affairs' (LBJ School's) Policy Research Policy report, *State Rail Policies, Plans, and Programs*, the project documented, in broad strokes, current state rail programming and planning in 38 states. In Report 1703-1, *State*

Rail Policies, Plans, and Programs, three of the five chapters addressed pertinent themes involving rail freight, passenger rail, and intermodal planning. These three chapters were drawn from the experiences of 38 states presented in 33 appendices (the six states of New England were consolidated into one appendix). The second-year report, using the first-year's policy research project as a point of departure, seeks to explore in more detail the experience of some "model" states comparable to Texas or in competition with Texas.

Four states (California, Florida, North Carolina, and Washington State) were selected for more in-depth study. Overall, the study sought balance among rail freight, passenger rail, and high-speed rail activities. The result is a picture of the possible. Constraints that led to the selection of these states over others included population growth, geography, international trade, economic growth, size and scale of the state rail network, and politics. To give context to the situation of the Texas Eagle, we included states that participated in Amtrak's 403 (b) program.

Driving this report are the questions, How?, What?, and How much? First, how did the rail programs evolve, and what were the circumstances that generated their growth? Second, what are the programs, and how are they managed? All four states presented locate the organizational structure of rail activity (with the exception of high-speed rail in California) inside the jurisdiction of their respective state Department of Transportation (DOT).

What are the results of the programs undertaken by the rail division in DOT's over time? Third, how much do these rail programs cost the state? How were sustainable financing sources discovered and applied? What is the fiscal impact of state involvement with the rail mode? By addressing these three question areas of "how, what, and how much," the report attempts to deduce some lessons from the experiences of these states. Although embedded in this report is the idea that taking "no action" in Texas may have a great opportunity cost to the state in terms of lost trade and economic growth, it is not the goal of the report to endorse any state or rail program. Given the legal, political, geographic, and economic differences among the four states included in the report, documentation of these rail programs may serve as a useful resource for Texas. For that purpose, considerable material was added as appendices in Report 1703-2. The

appendices include maps, state statutes, funding histories, program descriptions, feasibility studies, and Amtrak 403 (b) contracts, among other items. In addition to describing these programs, presentation of primary source material serves as further support in answering the questions, How?, What?, and How much? It is hoped that this report will serve as a reference for state rail planners and legislators considering the rail mode.

2.2.1 Findings

In no uncertain terms, these four states all have in common a political and financial commitment to rail programming and planning. California's rail program demonstrates how far a state is willing to go, both financially and in terms of organizational structure, to build a passenger rail program. What began as policy measures to retain and add passenger service in existing corridors has evolved into the addition of entirely new rail service and the pursuit of high-speed rail. California, however, is an outlier in passenger rail service. It has a unique relationship with Amtrak (Amtrak West) and utilizes more full-time equivalent staff (more than 50) than any other program in the country. As a consequence of its size, passenger rail in the state is closely tied to the fate of Amtrak. Costing changes undertaken by Amtrak have forced costs to increase to the extent that future state service may be untenable. What is striking about California is the manner in which partisan interest politics, private industry, and citizen involvement coalesced with federal legislation (the Clean Air Act Amendments of 1990) and externalities, such as earthquakes, to spur rail investment in the state. It is also noteworthy how times have changed, that there has been a call to devolve state services across the board. This includes rail and is most clearly evident in the devolution of the state's interest in the Capitol Corridor to local management. Owing to the newness of the devolution of state service, it is not possible to make any conclusions on the effectiveness or possible savings to the state. But it does stand out as a potential example of how a state entered into the provision of passenger rail service in a clearly defined corridor and, subsequently, turned the service over to private management.

California and Florida hold the keys to the future high-speed rail in the United States. California is gearing up for a crucial bond vote in the year 2000 on a system designed to send trains from Sacramento to San Diego, via San Francisco and Los Angeles, at speeds of greater than 200 miles per hour. Florida, on the other hand, is well into its high-speed rail program; it is awaiting final feasibility support and executive authorization to start construction of high-speed lines between Miami and Tampa. Both programs will require start-up costs in the billions of dollars and Florida is close to authorizing annual expenditures of $70 million in 1998 dollars (corrected upward at 4% each year) for more than three decades. This effort received a setback in early 1999 when Florida's Governor Jeb Bush thought that it incurred too much financial risk and decided not to support the project.

Not lost on Florida is the need to strengthen comparative advantages in international trade. Rail has been addressed in terms of intermodal connectivity of passenger and freight to expand trade and grab a greater market share. Intermodal planning is emphasized and a funding structure provides the wherewithal to act. In conventional passenger rail, Florida is a state without Amtrak 403 (b) service. Contrasting the lack of profitability of Florida routes with the Texas Eagle suggests that not all states are treated equitably by Amtrak. North Carolina has a comprehensive rail program marked by its relative young age. Perhaps more so than any other state, rail planning has attracted the political attention of consecutive governors, republican and democrat. Bipartisan political support and stable parameters have allowed North Carolina to explore more rail planning. North Carolina demonstrates how a rail program can grow in less than 10 years when it is viewed as an economic development tool, as well as an alternative for congestion mitigation of the highway system. Specifically, North Carolina's rail freight activity is a program of minimal scope that Texas could implement with little fiscal hardship. North Carolina's entrance into passenger rail service also illustrates the extent to which a state can unlock dormant potential when leadership from the top supports a singular goal (reducing rail travel times between key cities to make rail competitive with the automobile). Just as California represents an

outlier in passenger rail programming and planning, the state of North Carolina draws a more modest course for its involvement.

The state of North Carolina also has a storied past, tracing its involvement in rail back to last century. With pendulum swings between state activity and nonstate activity in railroading, the state has made a key decision for the future of rail by assuming total control of the North Carolina Railroad Company. Noting that state ownership of a railroad that passes through the state's major population areas is unique, the North Carolina experience underscores that significant gains can be made in rail when the political will exists to rally behind a goal. The state depends a great deal on the participation of neighboring states, namely Virginia, to make track improvements concomitant with its own. In fact, North Carolina's eagerness to open a high-speed rail corridor and the state's susceptibility to failure is evidenced by its participation in undertaking studies that include Virginia, as well as the governor's intervention in trying to forge a Southeastern regional alliance around passenger rail. The state's high-speed program is marked by modest incremental goals of track straightening, signaling improvements, and grade separations. The state has measurable goals and a timetable for their realization.

Washington State, like North Carolina, presents another comprehensive program that aids freight and passenger interests. Because of the importance of Pacific Rim trade to the state, intermodalism is especially strong in Washington. The state has in place an outreach process that is creative in addressing short-term and long-term needs of freight shippers. The Washington State Grain Train shows how a small program, reflective of a good government, originated, won funding, and made a positive economic impact for the state. The funding framework for Washington State and the outreach that state planners undertake to recognize shippers concerns greatly facilitates the state's ability to act. Washington State rail planners know the issues facing shippers, and, when funding sources are found, can adroitly address problem areas. Washington State railroads are valued assets, and the state is charged to preserve and promote the valuable choice and alternative rail provides. For passenger rail interests, Washington is notable for its cooperation with British Columbia and Oregon in the research and development of the

Pacific Northwest High-Speed Rail Corridor. Exemplary regional cooperation has readied Washington State for a possible venture in high-speed rail.

2.3 REPORT 1703-3: *THE RAILROAD SYSTEM OF TEXAS: A COMPONENT OF THE STATE AND NATIONAL TRANSPORTATION INFRASTRUCTURE*

As noted in the introduction, Report 1703-3 comprises four main chapters and a substantial number of appendices covering data sources, models, railroad timetables, and TxDOT district maps. And because of the importance of implementing a rail planning process, emphasis is maintained by introducing it as the first chapter.

2.3.1 A Framework for Rail Planning

Compared to the planning functions for other transportation modes, the state rail planning process in Texas has historically been limited in its scope. The reasons for this are varied, but principally derive from the private ownership of rail transportation. However, because rail carries so much freight and drastically reduces the number of trucks on Texas' roads, integration of rail into the statewide transportation plan is important to developing a balanced transportation system in Texas. A balanced transportation system, rather than one dependant on only one mode, optimizes resources and takes advantage of the strengths of each type of transportation system: road, rail, water, and air. In this undertaking, there is an implicit understanding that each mode is different, with differing requirements, constraints, and constituencies. Some of the unique considerations pertaining to planning for rail transportation are:

- Rail transportation is largely a private-sector transportation service.
- Different interests are affected by railroad service. Many of these are dependent on the low rates afforded by rail transportation, and each are valuable to the planning process.
- Rail planning technical issues are different, particularly when it comes to analyzing the costs and benefits associated with rail issues facing shippers, railroads, and the state.

- Historically, state concerns regarding rail issues have been questions regarding the retention of existing rail service and facilities, rather than improving service. However, this may be changing.

Planning by private rail companies traditionally has concentrated on network considerations, facilities, maintenance, types and level of service provided, pricing, and marketing policy. Rail planning from the perspective of the railroad companies is, of necessity, primarily concerned with enhancing the economic viability of the enterprise. The role of the state in the rail planning process must then, by definition, consider the relationships between rail service and the economic and social well being of its citizens. A basic requirement of the state rail planning process is the formulation of a mechanism by which an assessment can be made as to the interests of the state government regarding rail operations in light of social, economic, and environmental considerations. In order to achieve this, a major component of any rail planning process should be a rational and factual analysis of rail operations in the state and their impact on shippers, carriers, and other affected interests. The kind of impacts evaluated should focus on each specific circumstance. The rail planning process outlined in Report 1703-3 will assist TxDOT in determining the appropriate focus.

Rail services are, and will continue to be, of vital importance to the effective functioning of the economic interests in the state. It is essential for the rail planning process to respond to these needs in an organized manner. The purpose of this document is to present an overview of the key steps in the planning process for rail transportation at the state level. The steps proposed represent the basic foundation required to initiate and implement a comprehensive, ongoing rail planning process.

2.3.1.1 Steps in the Rail Planning Process

A state rail planning process often concentrates on rail considerations involving either branch lines or a system-wide network. A branch line planning process is, in many cases, a reaction to a perceived need to retain rail service if rail abandonment occurs. On the other hand, a system-wide planning process takes a much broader view of rail operations in the state, treating the rail system as a component of the overall

transportation network. The rail planning process steps detailed in this document can serve rail planners both from a branch line or statewide perspective.

It is important to make a distinction between the rail planning process and the development of a distinct plan to respond to one or more rail-related transportation needs. A specific plan is developed methodically with the best data available and considers important issues by using the process outlined in this research. The process is a logical sequence of steps that determines or uses pre-existing goals, consults with affected parties, and gathers and evaluates information in order to make the best possible choice for the combined constituencies.

A comprehensive assessment of global state needs using the rail planning process may contribute to the development of a statewide rail plan by identifying many individual plans, projects, or initiatives. This research frequently discusses the steps of the planning process in the context of a single assessment, but it should be understood that the process encompasses both strategic (global) and tactical (individual project) activities.

The state railroad planning process may involve a large number of participants. An important requirement for a successful planning process is the identification of a lead agency and the clear definition of the mechanisms and relationships by which other affected state agencies participate in the planning process. Additionally, the process framework must be constructed so rail plan objectives are compatible with public policies in other areas, such as other modes of transportation, economic development initiatives, and environmental policies. A rail planning process needs to draw on a wide range of sources, not only for information and data, but for the different perspectives they will contribute toward the undertaking. In its simplest form, a rail planning process is schematically displayed in Figure 1.

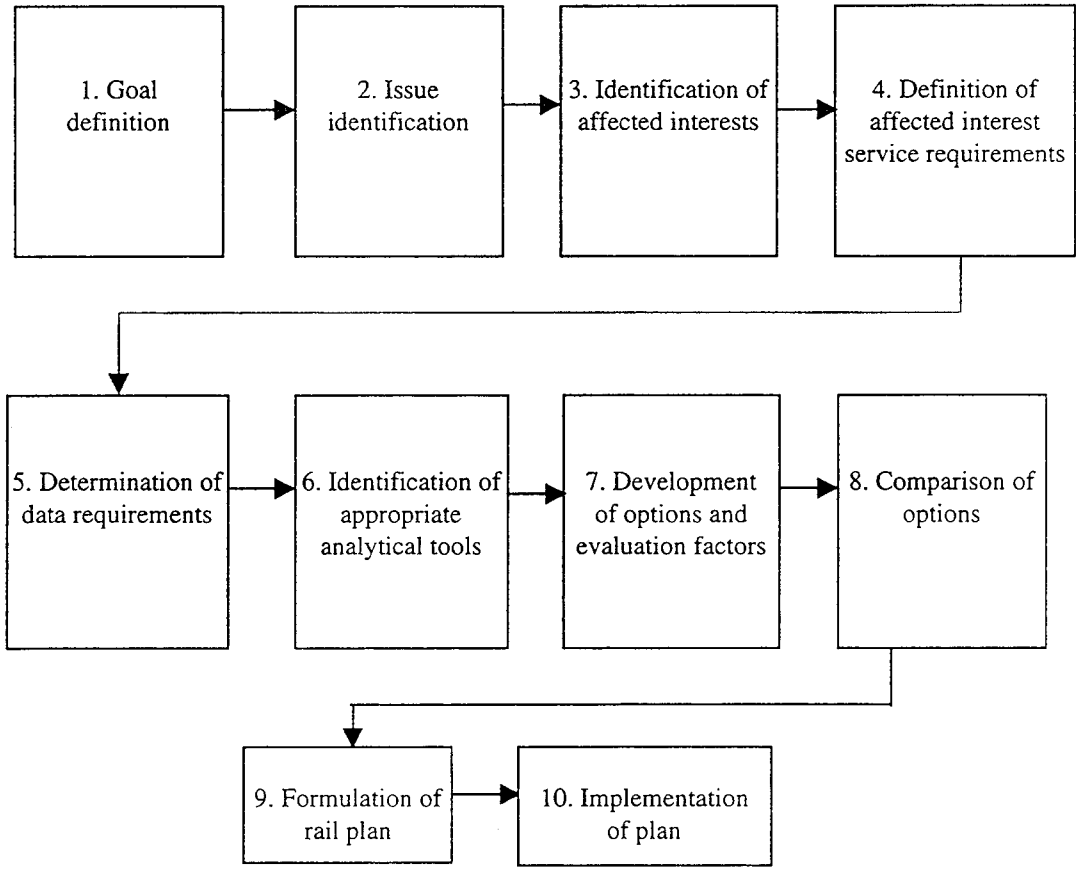

Figure 1. State Rail Planning Process Steps

Step 1. Goal Definition

Well-defined goals provide the targets for state rail planning. As such, they should be developed in a participatory atmosphere early in the rail planning process. These goals should be precise definitions of desirable future characteristics and should be related to the performance characteristics of facilities, systems, and programs that affect, or are affected by, the state rail system.

Step 2. Issue Identification

One of the first steps in a railroad planning process is the identification of key issues of concern to the state. These could include:

a. issues relating to the unique characteristics of the state rail system (e.g., cross-border traffic with Mexico, the centralized location of Texas),
b. current authority of state agencies with respect to railroads,
c. rail safety,
d. railroad mainline and branch line service,
e. passenger service,
f. the role of the state in abandonment proceedings, and
g. issues of concern to specific state agencies, such as agricultural, natural resources, and economic development.

As with goal formulation, issue identification is likely to be most successful if the process involves constituencies within the state that have a significant stake in rail transportation. Examples of such constituencies or interest groups could include:

a. rail companies,
b. rail freight shippers and receivers,
c. utility companies,
d. trucking associations,
e. environmental groups,
f. local governments or rail districts,
g. regional planning agencies, and
h. railroad labor unions.

Step 3. Identification of Affected Interests

Railroad planning must consider who would be affected by plan alternatives, and how they would be affected. The key groups to be involved in the planning process would include the rail carriers, rail users, government agencies, the trucking industry, waterborne carriers, rail service dependents, and the general public. The participation of

these affected interest groups is particularly critical for railroad planning because of the private ownership and nonpublic nature of the forum in which decisions are made regarding rail service within the state. In developing the rail plan, the state must take steps to ensure that a mechanism is in place that allows each affected interest the opportunity to provide input.

Step 4. Definition of Affected Interest Service Requirements

This step provides a preliminary formulation of state rail needs, derived principally from an analysis of the major issues identified by each of the affected interest groups, as well as their reactions to goals and objective statements. Needs to be considered may include passenger and freight level of service, infrastructure investment programs, line rehabilitation and any other programs aimed at achieving desired system characteristics.

Step 5. Determination of Data Requirements

One of the most important steps in a rail planning process is the determination of the information and data requirements necessary to evaluate and compare rail service options. In addition, it is crucial that the appropriate analytical and methodological tools be identified for analyzing data, preparing forecasts, and determining social, economic, and environmental impacts. These tools and techniques include those necessary for the analysis of freight and passenger service characteristics and needs, the potential for movement of rail traffic by alternative modes, and the relative cost and benefit of rail plan options.

Step 6. Identification of Appropriate Analytical Tools

Report 1703-3 identifies and describes an array of analytical tools for use in the evaluation of rail-related issues. The tools referenced in Step 6 range from specialized applications like TransDec, which is designed to assist the transportation professional in selecting projects using a multi-criteria approach, to general purpose programs such as

ARC/INFO or SAS/GIS, which are powerful geographic information systems. The software systems described include:

- TransDec (Transportation Decision Analysis Software)
- RAILDEC (Public Rail Investment Decision Support Tool)
- Geographic Information Systems
- ARC/INFO
- SAS/GIS 6.0
- HIRIIDE (Highway/Rail Intersection Integrated Database)
- Accident Prediction Calculator
- PCAPS (PC Accident Prediction System)
- PC*RAIL (PC Point-to-Point Rail Routing and Mileage Software)
- WAYSYS (Railroad Waybill Analysis System)

In addition to software, Step 6 of Report 1703-3 details appropriate *Methods for Calculating Key Impact Measures* that may relate to a range of rail issues. Also presented in 1703-3 is a set of worksheets for the rail planning practitioner to use to guide the evaluation of key measures of impact. These key measures include:

- transportation costs of alternatives to rail service,
- primary job losses,
- secondary job losses,
- wage and salary losses,
- unemployment compensation,
- personal income losses,
- property tax losses,
- increased highway construction and maintenance costs,
- energy consumption,
- air pollution, and
- noise pollution.

Each worksheet has been developed to show the practitioner the inputs required, sources for those inputs, outputs, and procedures for calculations. Each worksheet contains an example calculation to illustrate the application of the impact assessment methods employed. Alternative calculations are possible and short-cut methods may be used where data are unobtainable or their validity is in question.

Step 7. Development of Options and Evaluation Factors

Step 7 focuses on the development of evaluation factors that can serve to quantify the rail planning task. A set of goals that could serve as a nucleus for an initial set of rail plan goals is provided in such rail-impact areas as economics, transportation, state development, resource management, and the community. Each goal is listed with a set of objectives. The objectives serve to "operationalize" the goals in that they define a specific measurable outcome that indicates goal achievement. Likewise, every objective is tied to a specific performance measure by which the objective can be quantifiably measured. For example, if a specific goal of a state rail plan was "Increase Revenue and Solvency of Rail Carriers," one objective to reach in order to achieve this goal would be an increase in freight shipped. A measure of this objective would be annual carloads per mile and annual ton-miles. Each goal should have specific objectives that reflect attainment, and the objectives should be quantified by specific unit measurements.

Step 8. Comparison of Options

Step 7 in the rail planning process leads directly to Step 8, the Comparison of Options Defined and Evaluated. A systematic comparison of alternatives in light of the analyses performed and the evaluation factors selected is necessary to achieve an objective decision on desirable levels of state participation in developing or maintaining an adequate rail system. Major alternatives should be compared as fully as possible in terms of capital requirements, and social, economic, environmental and energy impacts. It is crucial that affected interests participate at this point in the planning process, since many of the criteria by which rail service alternatives must be compared are at odds with one another and require that trade offs be made.

The comparison procedure should be structured to consider the impact on each affected interest group of each important factor of each alternative. The time and cost associated with this element could become prohibitive unless the entire evaluation procedure is kept in perspective. The precision required for comparisons, many of which may be qualitative, should be assessed for each type of comparison made. Data and analytical techniques can be matched to provide meaningful comparisons at minimum cost and delay.

Step 9. Formulation of a Preliminary Rail Plan

A preliminary rail plan emerges as the culmination of all the preceding steps outlined in the current research. Options evaluated in Step 8 should lead to a finite number of reasonable actions that the state can pursue leading to the desired objectives and supporting one or more of the broad goals defined early in the process. With Step 9, as with the entire process, review and re-evaluation should be an integral part of the process, with program reassessment scheduled on a regular interval.

Step 10. Implementation of Plan

Implementation can be the most difficult portion of the process outlined in this research. However, through the inclusion of as many of the affected parties as possible, most of the barriers to implementation can be overcome within the context of the process itself. Political and institutional obstacles to various courses of action are often the result of an initial polarization of views that are not addressed at the beginning stages of a process. Through cooperative or coordinated goal formation, issue identification, and evaluation, most implementation challenges reduce to issues of timing and finances.

2.3.2 Rail Issues Affecting Texas

Many rail issues affect Texas. Rail plays an important role in the overall state transportation system and will continue to do so in the future. Far from being a static feature of the transportation landscape, railroads have changed—and are changing—in response to altered regulatory and economic pressures. Railroad mergers have reduced

the number of Class I carriers in the state, giving rise to a more important role for shortline operations. Changes in the regulations governing railroad operations have allowed many low-density or unprofitable lines to be abandoned. Containerization of freight and double-stack operations have made intermodal connections more important to the economics of transportation and to the efficiency and productivity of all freight movement operations (i.e., rail, truck, waterborne, and air).

While not all of the important future issues pertaining to rail transportation can be anticipated, Chapter 2 of Report 1703-3 addresses, in some detail, those likely to be central to the state's interests in the years to come.

Abandonment of rural rail lines will continue to be an important consideration in state rail planning as Texas attempts to maintain a sufficient capacity to move ever-increasing quantities of freight. The impact of rail operations on urban areas will also be of concern as railroads move more freight on more and longer trains through growing population centers. Chapter 2 covers these and other topics to provide TxDOT with additional background and resources to formulate the state's response. This chapter covers abandonment issues, urban rail rationalization, intermodal planning issues, national defense considerations, yard operations, and car availability.

2.3.3. The Application of the Rail Planning Process: A Case Study of Urban Rail Rationalization

2.3.3.1 Overview

The rail planning process can be viewed as a problem-solving approach, one that is tailored to each specific circumstance. In this chapter, an example of urban rail rationalization is used to demonstrate how ordered and logical processes contribute to the solution of one rail-related issue facing public entities. The case study is drawn from recent work by TTI in Bryan and College Station, Texas. TTI, in conjunction with the consulting firm DMJM of Houston, pursued an evaluation of the options available to the community to reduce or eliminate the safety, transportation, and community development problems created by an active rail line bisecting the area.

Funded by Texas A&M University, the research initially focused on grade crossing elimination. The study examined more than a dozen potential solutions and discovered through this analysis that rail relocation was a feasible option to pursue. Contact was made with Union Pacific Railroad early in the investigation to inform it of the study goals and to assess the potential for solutions that met its strategic needs. The success of this early and open contact speaks to a central point to be made in the current research—a recommendation that when planning publicly funded, rail-related initiatives, working with the railroads to understand their goals is not only desirable, but also often mandatory to ensure productive results.

2.3.4 Characterization of the Rail System of Texas

Chapter 4 of Report 1703-3 presents an overview of the components of the rail system in Texas. It addresses the Class I railroads, the state's shortline railroads, Amtrak operations within Texas, and rail interactions with Mexico, and presents some information on commodity flow. The information contained in Chapter 4 is presented as background information and as a resource for the rail-planning specialist. Additional information is contained in the report's appendices.

CHAPTER 3. IMPLEMENTATION RECOMMENDATIONS

Researchers and TxDOT advisory staff met to determine a suitable program of implementation for the project findings. It is inappropriate for researchers to determine TxDOT policy with respect to modal planning in general, and rail in particular. Rather, researchers should identify what policy options are available to decision makers. It was decided to recommend three related implementation activities to be undertaken sequentially. These are now described.

3.1 INSTITUTIONALIZE RAIL PLANNING

Project 0-1703 successfully identified a wide variety of state rail processes and plans, covering both passenger and freight traffic. The Texas DOT itself must now decide the appropriate rail planning process to be adopted for use by the department. Fortunately, the Multimodal Office, which sponsored this study, is now located within the Transportation Planning and Programming Division of TxDOT, and so this task should be easier to undertake. We recommend that it be linked to ongoing efforts to update the 1994 Statewide Transportation Plan so that modal planning, like rail, is included. This is particularly important when considering the impact of freight corridors in Texas, which are frequently combinations of both highway and rail modes, or rail to seaports. We recommend that this implementation stage be undertaken within 18 months of study completion.

3.2 SELECT A SPECIFIC PLANNING PROCESS FOR TEXAS

Once the first implementation stage is complete, it is then possible to identify the appropriate organizational structure that rail planning should adopt, together with the key issues it will address. Resources ranging from individuals to databases can be linked into the appropriate framework. Study Report 1703-1 clearly showed the wide variety of rail planning processes that exist in the U.S., indicating that they reflect both the issues facing the state DOTs and resources placed at their disposal. If substantial resources can be provided, a structure such as Florida might be appropriate. However, if resources are

more constrained for rail planning in TxDOT, a more incremental process, like North Carolina, may be more suitable. In any event, this implementation stage again resides wholly within TxDOT, although the documentation (which includes enabling legislation) reported in this study would be valuable in structuring the function. We recommend that this be undertaken within 24 months of study completion.

3.3 IMPLEMENTING THE RAIL PLANNING PROCESS

Once the first two stages have been undertaken, it will then be possible to evaluate the generic planning process recommended in this summary and calibrate it for Texas use. A wide variety of data sources and models have been identified that could be incorporated into this process. The number of issues that are to be considered will largely determine the scale of the process. Again, if the process is incremental in nature, it would be sensible to identify two or three key issues to begin the rail planning process and feed its findings into statewide planning. The federal authorities appear to be focusing on trade corridors in the continental U.S. and this could be an important feature of the rail planning mechanism to be evaluated by TxDOT. Rail not only provides valuable links to industrial sectors within the state, but also links to the state maritime sector and the border with Mexico for the movement of international trade. We recommend that this stage begin around 24 months after the completion of the study.

3.4 CONCLUSIONS

The study has comprehensively addressed coverage of U.S. state rail planning processes and exemplary programs that can be adopted by Texas, together with the enabling legislation that will allow planning to be institutionalized in the state. It has also recommended a generic rail planning process and identified related data sources and models that can provide input to the process. Historically, state rail planning in Texas has been neglected, yet rail provides important services to industrial sectors inside the state and to national and international markets linked to the state, and offers an opportunity of diverting traffic from many of the heavily trafficked freight arterials in Texas'

metropolitan areas. The team strongly urges TxDOT to adopt a form of rail planning that is harmonious with and can be integrated into the statewide transportation plan.