

Task 1 - Summary of Best State Rail Planning Practices

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In discussing the best state rail planning practices, as background for *Colorado's State Freight and Passenger Rail Plan (SFPRP)*, it is appropriate to provide perspective on the history of state rail planning in the United States.

State rail planning has been in existence since the 1970s. The focus of initial state rail planning efforts was to support rail freight service on lines subject to abandonment. This program was known as the Local Rail Service Assistance (LRSA) program. The Federal Railroad Administration (FRA) provided planning grants to states to develop their initial state rail plans and updates to those plans, and it also provided some funding for rehabilitation of light density rail lines that may have been subject to abandonment without certain infrastructure improvements. In the 1980s and early 1990s, this program continued with the same light density line focus, but was referred to as the Local Rail Freight Assistance program (LRFA).

In the mid 1990s through 2008, the focus of state rail planning efforts began to change. The states began to identify both passenger and freight rail investments in their rail plan updates, as part of multi-modal planning efforts. These efforts were called for in multi-year pieces of federal surface transportation funding authorization bills: The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), the 1998 Transportation Efficiency Act for the 21st Century (TEA-21) and the 2005 Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

In 2008, the Passenger Rail Investment and Improvement Act (PRIIA) was passed by the U.S. Congress. This legislation authorized increased federal funding for intercity rail passenger service and high-speed rail development. It also mandated the creation of state rail plans, or updates to existing plans, as a requirement for states to be eligible for future federal rail project funding.

The American Recovery and Reinvestment Act of 2009 (ARRA) created a program titled Transportation Investment Generating Economic Recovery (TIGER). This program funded \$1.5 billion of infrastructure projects around the country. Freight and passenger rail projects were eligible, along with highways, bridges, ports, and public transit projects. The 2009 ARRA also provided \$8.0 billion for capital projects related to intercity and high-speed rail corridors. These funds could be utilized for acquisition, construction, or improvement of track, rolling stock, and other rail facilities.

A Congressional appropriation in 2010 of \$50 million for rail planning grants was aimed at helping to establish a pipeline of future high-speed and intercity passenger rail projects and corridor development programs, by advancing planning activities for corridors that were at an early stage of development. The grants are to be used for completion of state rail plans. These funds require a 50% state match and are the impetus for numerous state rail planning initiatives, as shown in Figure 1-1.

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Figure 1-1 Map Showing Status of State Rail Plans by State



PRIIA indicated that a state rail plan must be “PRIIA compliant” in order to be approved by FRA. The plans must therefore address the following general minimum requirements:

- Inventory of rail system, services and facilities
- Evaluation of rail lines including high-speed rail and abandonments
- Review of intermodal connections
- Review of existing publicly funded rail projects
- General transportation, economic and environmental impacts of rail service
- Passenger rail service objectives
- Rail infrastructure needs assessment based on stakeholder input
- Performance evaluation of existing passenger services
- High speed rail corridor development plan
- Long-range service and investment program; project lists
- Determination of public and private benefits

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○ Financing alternatives

FRA has yet to develop final rules and regulations related to the determination of “PRIIA compliant.”

Another requirement of FRA in PRIIA was the development of a National Rail Plan. FRA, in compliance with a PRIIA requirement, developed a *Preliminary National Rail Plan* (October 2009). That document addresses state rail planning practices, and suggests that the final National Rail Plan must ultimately reflect the issues and priorities addressed in various state rail plans.

The following are key elements of state rail planning activities, as described in the American Association of State Highway and Transportation Officials (AASHTO) *State Rail Planning Best Practices*, completed in November 2009.

Rail Advisory Body

A key element of every state rail planning effort is the organization and maintenance of an “external” rail advisory body. These groups are made up differently in states but the crucial members are the state’s operating railroads, the owners of the rail assets, and a well-diversified group of other key stakeholders. Balancing the focus between freight and passenger rail is beneficial. The sizes of these organizations vary greatly. Oregon DOT has 15 members on its Rail Advisory Committee, while Tennessee DOT has 55 members of its Rail System Plan Advisory Committee. Smaller-sized committees tend to be more efficient, but larger groups are sometimes required due to the local political climate.

Outreach Activities

PRIIA requires that states “provide adequate and reasonable notice and opportunity for comment and other input to the public, rail carriers, commuter and transit authorities operating in, or affected by, rail operators within the state, units of local government and other interested parties in the preparation and review of its state rail plan.”

Much of this interaction would take place within the rail advisory body mentioned above, but states also benefit from additional interaction with the public and rail stakeholders. Interviews, surveys and public meetings are the most common and effective method of outreach. Recent technological advances allow electronic and social media to be utilized effectively.

Public meetings are still the most common way to provide the public and other stakeholders with direct interactions with the state’s department of transportation or equivalent agency, and freight and passenger rail operators, as well as a broad cross section of other rail stakeholders. For example, Minnesota DOT conducted 15 open house meetings attended by 900 individuals as a key element of its public outreach. They conducted an additional 34 stakeholder meetings with groups and associations interested in providing input to the DOT on its state rail plan.

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The important point to note is that there is no uniform “best practice” in gaining public input to the state rail plan. The method(s) that best suit the agency and its stakeholders in acquiring critical input should be utilized. Emphasizing stakeholder groups tends to result in more focused, technical input, whereas public meetings or open houses tend to generate comments on a broader spectrum of issues.

Rail Vision

A state’s Rail Vision is crucial to helping the state’s primary rail organizations (normally departments of transportation) determine where the agency wants to go in regard to freight and passenger rail, and the most appropriate paths to get there.

Most Rail Visions accomplish the following:

- Describe the future role of rail transportation in the state
- Recognize not only the opportunities, but also the challenges
- Suggest a “picture” of rail’s future in the state
- Communicate the wishes of rail stakeholders and the public
- Allow for the setting of more specific goals and objectives related to rail activities

There are two types of visions: Short and concise vs. longer and more detailed, as illustrated by these two examples:

Iowa - “The vision will create a passenger rail network that connects Iowans to each other and the country, and makes Iowa a more attractive place to live, work and visit.”

Arizona - “A safe, secure, efficient and cost-effective passenger and freight rail network forms an integral part of Arizona’s multimodal transportation system. Arizona railroads promote economic opportunities and environmental sustainability that reflect the high value Arizonans place on their unique southwestern lifestyle.

Intercity passenger rail, a new and reliable mode for Arizonans, is well connected to commuter rail and local transit systems. Through coordinated land use decisions and wise investments in multimodal facilities, passenger rail has competitive travel times and is the preferred option for many trips. The State has a freight rail system that carries long-distance cargo in an energy-efficient manner, with intermodal connections that permit seamless distribution of local deliveries.”

Rail System Inventory

The rail system description is handled quite differently in various states. However, there are basic components to any rail plan that is PRIAA compliant. The ability of states to utilize Geographic Information System (GIS) technology to include more complicated data sets (major

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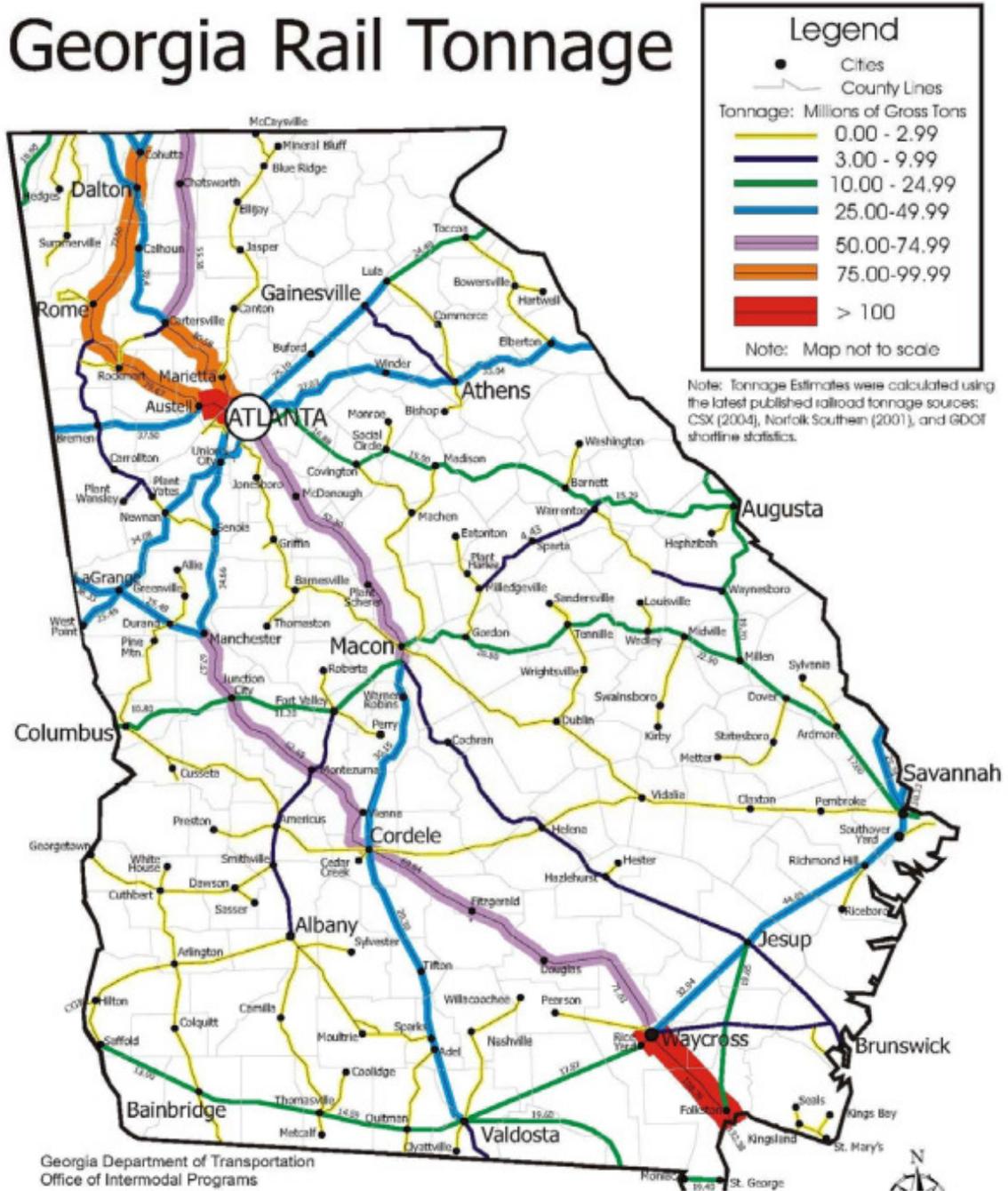
commodity flows, clearances, tonnages, intermodal facilities) on maps within rail plans has proven beneficial in recent rail planning efforts. States such as New York, Montana, Georgia and Ohio are good examples.

System description – The physical description of the assets that make up the state rail network comprises this element of the rail system inventory. Much of these data are being effectively communicated in a GIS-based format in a great majority of state rail plans. A state rail plan is a document for an entire state; therefore statewide summaries for key railroad statistics are appropriate. The Association of American Railroads (AAR) is a common source for much of the data. An understanding of the ownership of various rail assets, whether Class I, Class II, or Class III, is a key element of a rail plan. These privately held companies own the assets that will be the focus the state’s rail planning effort. GIS-based mapping readily depicts the state’s key railroad partners in a very usable manner.

Rail operations and rail capacity – Rail operations and capacity issues are also key components of the rail system inventory. The ability of one railroad to operate on another railroad’s lines is known as trackage rights, and is easily shown on maps depicting trackage rights, railroad densities (millions of gross tons) and trains per day. Figure 1-2 shows a Georgia State Rail Plan GIS depiction of rail tonnages.

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Figure 1-2 Rail Tonnages in Georgia



Rail capacity related issues (passing capacity, weight limits, and double-stack clearance) are also crucial information for a rail planning agency. These variables affect the overall speed and passing capabilities for both freight and passenger rail services; they impact a rail carrier's ability to haul heavy goods due to weight restrictions on track and bridges; and they identify

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the potential for double-stack capability, which increases a freight railroad's throughput and efficiency.

This information is typically depicted as a narrative, or in a combination of maps and tables. It is dependent upon the quality of information gathered from the railroads and other sources. It is suggested that maps, in combination with tables, be used wherever possible to convey this information. This allows geographic context, and makes the plan more user-friendly for the public and the DOT.

Rail carrier profiles – The profiling of each rail operator in the state is an important element of the state rail plan. Each owner/operator should have a current description of not only the specifics of that carrier's infrastructure and traffic, but also its employment, and other economic factors which benefit the state and local communities in which the railroads operate. Each rail carrier profile should be depicted graphically in a GIS-based format, which provides the State and stakeholders with an understandable view of that railroad and its operations.

States that have combined maps with rail carrier profiles include Kansas, Georgia, Arizona, and Minnesota. The maps typically depict a carrier's network and primary lines. Statistics, such as number of employees, wages/benefits and capital spending by carrier, are usually conveyed in accompanying tables. Maps of economic statistics are not typically included. For the Colorado SFPRP, Colorado's rail carrier profiles will follow this same format. Data requests made to the railroads have been as condensed as possible, and the requested statistics are not specific to individual rail lines.

Commodity flows – The Surface Transportation Board's (STB) Carload Waybill Sample and other data can be utilized to depict the various commodities that have an economic impact on the state, based on the origination or termination of that commodity within the state. This is very important data for state economic development organizations, and for communities to attract rail-served businesses. The commodity flow data also describes those commodities that flow "through" the state, neither originating nor terminating within the state. These flows are important because they use up critical rail capacity within the state without having the direct economic benefits of originating and/or terminating rail traffic. Such data are also readily communicated on maps within the rail plans in GIS formats.

Generally, states convey commodity flow information in statistical tables rather than maps. It is suggested that commodity flows can be conveyed by maps, but must be somewhat generalized to be easily understood. It is also suggested that only the top five commodity flows by value/weight be mapped. One way this can be achieved is through the use of the Freight Analysis Framework (FAF3) along with statistics from the 2007 Economic Census Commodity Flow Survey and the Surface Transportation Board's Waybill Sample.

National "spider" maps will be constructed depicting top destinations for Colorado commodities and origins into the state by FAF3 zones. The maps depict the general flow of

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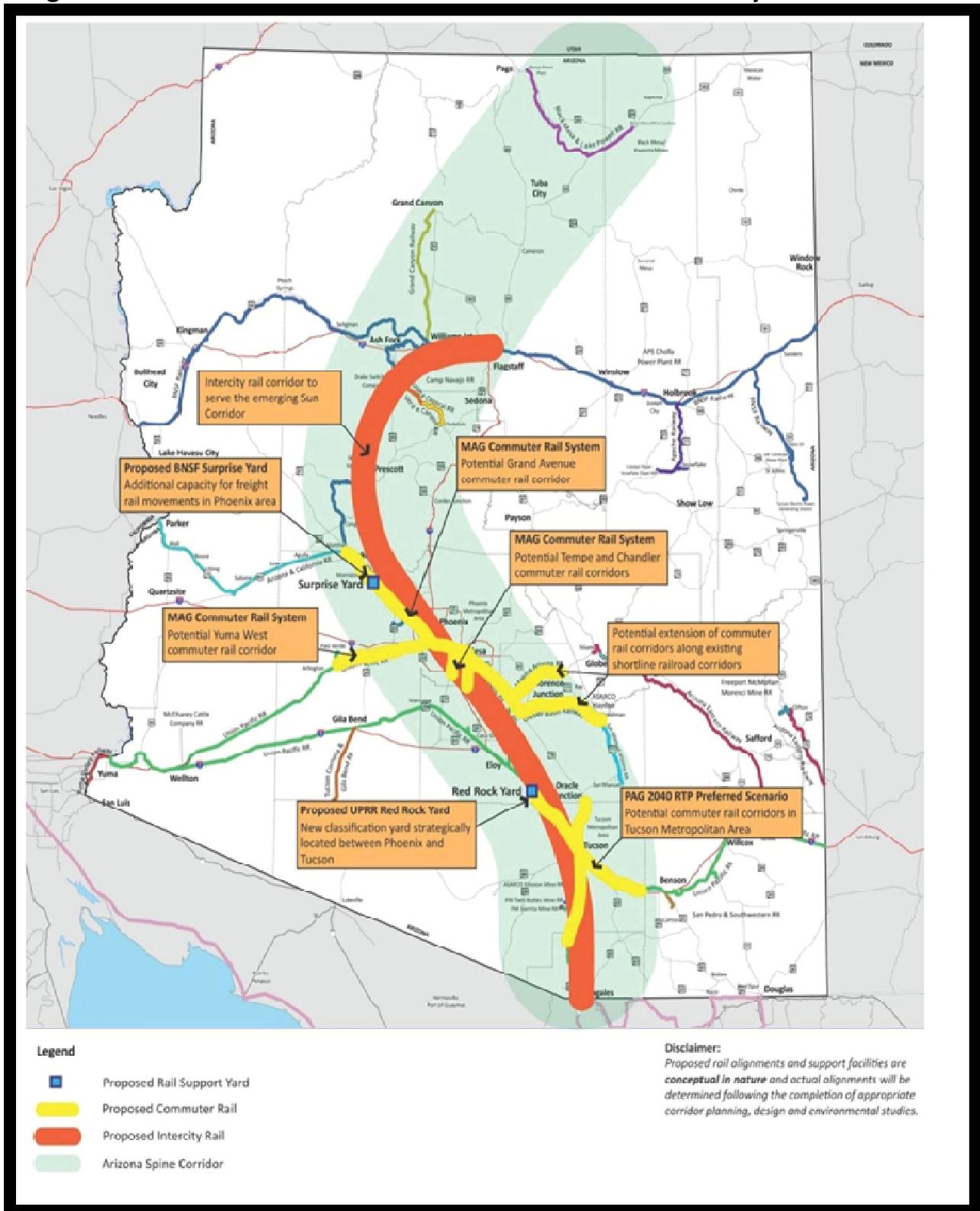
commodities to and from other states, without depicting the specific rail route used to move the commodities. This could be constructed for value and weight of commodities.

This provides the reader with a general sense of where important commodities are moving to/from and provides context of the dominant movements. An additional benefit of using the FAF3 network is the inclusion of projected commodity flows for 2010 - 2035 in five year increments.

Passenger rail data – The ridership data on rail passenger services within the state are readily available from the passenger rail service operators (Amtrak). These can be quantified by the various passenger station locations, and can be graphically plotted to identify trends in the demand for various passenger services. Due to the high costs of developing and maintaining their own individual state rail passenger demand models, many states choose to use utilize commercially available passenger demand models to project future passenger demand. The state of Georgia has initiated development of its own model, and California is in a 5-year process of developing a passenger travel demand model which will incorporate rail, highway and aviation modes. Figure 1-3 shows an Arizona State Rail Plan GIS depiction of commuter and intercity rail corridors, while Figure 1-4 shows the recommended Minnesota regional passenger rail system.

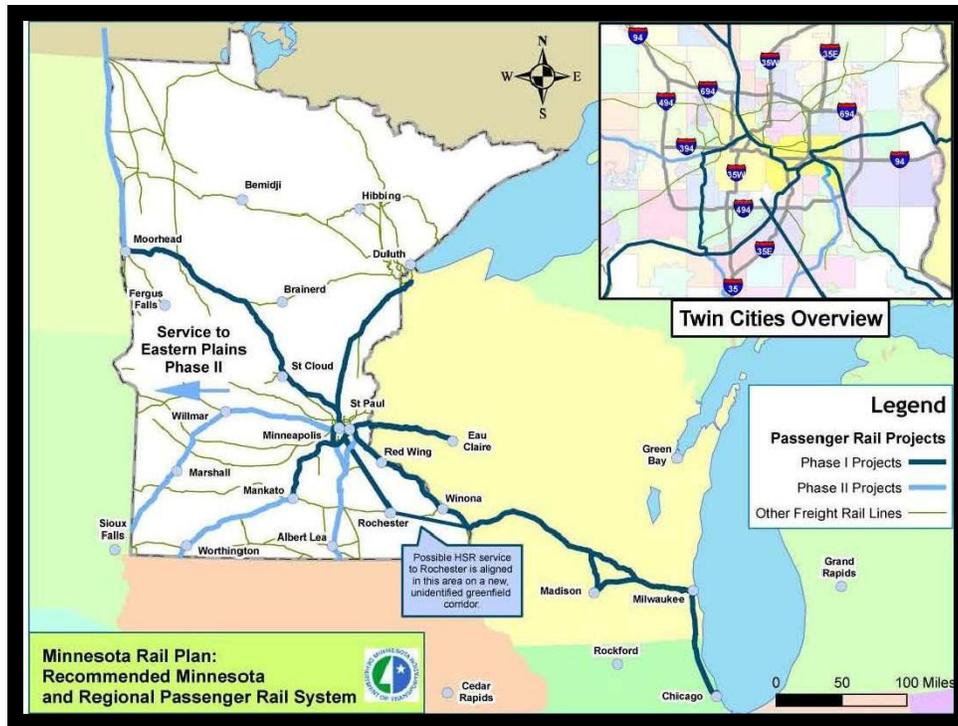
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Figure 1-3 Arizona State Rail Plan – Commuter and Intercity Rail Corridors



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Figure 1-4 Recommended Minnesota Regional Passenger Rail System



The usefulness of GIS is shown as a tool in depicting future rail corridors on the maps above for proposed passenger rail services in the Arizona and Minnesota State Rail Plans.

Rail Issues and Opportunities

The PRIIA compliant state rail plan will be expected to include a discussion of the freight and passenger railroad industry's impacts on the environment, state and regional economies and transportation safety.

Climate change and air quality – Both freight and passenger services offer advantages over their rubber-tired competitors, such as trucks and automobiles. The state rail plan should highlight these advantages in terms of climate change and reduced energy consumption. The Kansas State Rail Plan calculated that if the 344 million tons of freight moving by rail in the state were transferred to highways and moved by trucks, an additional 294 million gallons of diesel fuel would be consumed. This would cost nearly \$1.1 billion. It would generate an additional 34,000 tons of pollutants, at a cost of \$108 million. Examining the environmental impacts of rail provides the DOT with a tool to use in prioritizing rail investments.

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Economic development – Rail-served industry is a great economic driver at the state and local levels. The state’s ability to compete in the emerging global economy, utilizing the more efficient mode of freight and passenger rail transportation, should be analyzed in the state rail plan.

The rail industry is a key economic driver in state economies, as identified below in the Kansas and Minnesota State Rail Plans.

Table 1-1

ECONOMIC IMPACT OF RAIL INDUSTRY - 2008

State	Rail Employees	Average Salary	State Payroll Tax	Property Tax
Kansas	5,800	\$73,746	\$28,000,000.00	\$36,000,000.00
Minnesota	4,500	\$71,400	\$15,000,000.00	\$20,700,000.00

In addition to these direct benefits, both states also identified substantial *indirect* financial benefits to the states related to rail-related industries. DOTs utilize these quantified financial benefits to further assist in the project prioritization process.

Passenger rail also generates positive economic impact. The value of goods and services purchased by rail passengers (intercity, light rail and tourist railroads in the state) can be significant. Also, the economic contribution from the value of commercial development/redevelopment surrounding passenger station locations should be noted.

Congestion mitigation /modal shifts – Both freight and passenger rail have the opportunity to reduce highway congestion. By increasing investment in the rail mode, state and local transportation agencies may reduce financial demands related to highway capital and maintenance budgets. For example, the Arizona State Rail Plan (2011) identifies the importance of its rail network in relation to highway congestion. Arizona’s major interstate highways, that are adjacent to the state’s major rail lines, would be impacted by 23,000 additional trucks trips per day if the freight being carried on the rail lines were transferred to the interstate highways. Arizona is an excellent example of providing this level of detail. Some state rail plans make assessments that are much more qualitative, which don’t allow them to offer this depth of analysis.

Community impacts – State rail plans should promote coordinated land-use planning which will allow land-use decisions made at the local or county levels to improve the livability of communities. Future freight rail investments should be effectively integrated into supporting land uses. Also, proper and efficient access to highway networks from intermodal facilities can greatly reduce impacts of rail operations on communities.

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As additional rail passenger service is created across the country, transit-oriented development has an opportunity to impact urban settings. The Arizona State Rail Plan addresses ‘Livable Communities’ with the following statements:

“Passenger rail meets several of the livability principles defined by the US Department of Housing and Urban Development (HUD), the US Department of Transportation (DOT) and the US Environmental Protection Agency (EPA) Partnership for Sustainable Communities, by offering an alternative transportation option. It also helps to focus growth by encouraging infill and focused new development around station locations, thereby increasing mobility and lowering the combined cost of housing and transportation for residents. It also enhances the economic competitiveness of the region through reliable and timely access to such locations as employment centers and educational campuses. Planning for intercity passenger rail systems, in concert with planning for sustainable land use, presents the opportunity to secure additional funding through federal programs which will have an emphasis on supporting livable communities.

“Each Intercity rail station can be an important node on a statewide system, which if properly designed will add to Arizona’s already rich and diverse spectrum of cities. Examples from other cities throughout Europe and Japan have demonstrated how intercity rail stations can be a catalyst for improved communities, both in the form of great architecture for the stations and through well designed new development in the surrounding area.”

While this example supports the use of transit oriented development (TOD), it is suggested that information or references to studies that quantify benefits of TOD be included in the rail plan to be most effective.

The Ohio Rail Plan (2010) suggests that rail service in the state improves the quality of life in various ways. It removes trucks from already congested roadways, reduces the freight carbon footprint to the state, and provides businesses and industries with alternative and often less expensive options for moving materials and goods. Use of rail service reduces production and distribution costs, making Ohio businesses more competitive. As an example, the Norfolk Southern Railroad (NS) serves two mines in eastern Ohio, moving over 10 million gross tons of coal to a river barge facility less than 20 miles away. This “short-haul” rail initiative removes approximately 400,000 fully loaded coal trucks from the state’s highway system.

The Ohio example is much more specific and allows for a quantitative analysis of the reduction of impacts to communities through the use of rail. Generally speaking, quantitative assessments aid in project prioritization better than qualitative assessments.

Safety /security – Key elements of this state rail plan section emerged from recent events. Positive Train Control (PTC), a radio-based system that communicates between trains, the engineer, and dispatchers, is a relatively new technology that has been mandated by Congress

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to attempt to reduce train-to-train collisions, speeding, and incursions into work areas. PTC will be required by 2015 on all rail lines carrying passengers and also on all lines carrying dangerous chemicals.

Also, since 9/11, there is much more urgency about safety and security, related to rail transportation of both hazardous materials and passengers. The responsibility for rail security is primarily a federal matter, led by the Department of Homeland Security in cooperation with the FRA. Day-to-day actions to keep the railroad industry secure are the responsibility of railroad police officers. State rail plans should identify the state and local agencies that coordinate with the federal and railroad security forces. Another important element of this section of the state rail plan is the identification of the Strategic Rail Network (STRACNET) within the state. As was done in the Kansas State Rail Plan (2011), this could be a map identifying the portion of the state's rail network that is most critical to the national defense.

The value of preventing injuries and deaths related to highway accidents due to the presence of both freight and passenger rail should also be generally identified in the state rail plan.

Needs Identification

This element of the state rail plan is critical to the eventual development of a long-range investment plan. The effort basically consists of the compilation of identified "projects" for both freight and passenger rail.

Needs should be identified through the following sources:

- Short and long range needs identified by the state
- Physical and operational needs identified by the Class I and short line railroads
- User needs – Both freight rail shippers and rail passengers are users of railroad services. A series of interviews can be an effective means of identifying their needs. For the Kansas State Rail Plan, 40 interviews conducted with rail stakeholders (Class I and short line railroads, manufacturers, shippers, metropolitan planning organizations (MPOs) and local economic development agencies) provided meaningful input. Meaningful input led to the following conclusions:
 - Bottlenecks are negatively impacting efficient freight service.
 - 286,000 pound rail cars on short lines are creating additional track rehabilitation needs.
 - Rail service should facilitate emerging alternative energy sources such as wind and bio-energy.
- Communities with key freight and passenger rail facilities will also provide crucial input into the rail-related needs of communities. A combination of "expert sessions" and open houses are an effective way to achieve outreach. The expert sessions can be invitation-only meetings of railroads, shippers, local elected officials and economic development staff. These sessions provide conclusive identification of specific projects and policy direction that may require further analysis. These

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meetings may also clarify particular data elements (i.e., track deficiencies at specific mileposts). The open house format, which would follow the invitation-only sessions, gives other interested citizens and individuals an opportunity to present broader issues, such as a general support for more passenger rail service.

All of the identified needs are then sorted into freight and passenger categories, and are compiled into an overall Master List of proposed projects. These should be evaluated in more detail and prioritized in subsequent tasks of the state rail plan. (See below for example criteria that can be used in project evaluation)

Project Evaluation

Numerous criteria must be considered by the department of transportation and rail advisory body in order to prioritize projects proposed for inclusion in the Fiscally-constrained Plan (program of projects linked to a specific budget amount) and Vision Plans. Among them are the following:

Economic Competitiveness	Improved Assets
Cost Reductions	Service Improvements
Enhanced Mobility; Goods and People	Enhanced Environment
Congestion Mitigation	Enhanced Economic Development
Improved Air Quality	Improved Land Use
Enhanced Public Safety	Enhanced Public Security
Reduced Public Expenditures	Community Effects

Many types of weighting schemes can be applied to these criteria, to assist in the benefit/cost analyses that will be conducted in the development of project priorities. Public and private benefits should be considered, because both public and private partners will be analyzed for project funding. There are several examples of successful Public/Private Partnerships (PPP) around the country which focus on improved efficiency of rail services. While these projects (Alameda Corridor – Los Angeles; Crescent Corridor – Louisiana to New Jersey; CREATE – Chicago area) were implemented years before PRIIA compliant rail plans were developed, they were identified and prioritized in earlier state rail plans. It is expected that future successful PPP projects will stem from the benefit/cost analysis and project evaluations conducted in the current generation of state rail plans.

Final prioritization, while not required in PRIIA, is a natural outgrowth of the project evaluation process and is a critical step in developing a fiscally constrained list of projects. There are different methods that states use to prioritize projects. Some use categories (i.e. high, medium,

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or low) and others prioritize numerically (1 to 75). In most instances, the use of high, medium and low categories is a better way to prioritize, due to the qualitative nature of many of the criteria used in the prioritization of projects.

Funding for Project Implementation

The last step in the state rail plan prior to the development of the short and long term investments plan is to identify funding sources that might be utilized to implement the proposed projects.

This effort should be begin with identification of funding sources historically and currently used to fund rail-related projects at the federal, state and local levels. Once again, these sources should include both public and private sources, including public/private partnerships.

Potential funding programs that have been utilized in other states or communities should also be considered. An example of a successful program would be Kansas' State Rail Service Improvement Fund (SRSIF) which provides loans and grants to short line railroads in Kansas for rehabilitating track and bridge structures.