Executive Summary

The purpose of the Minnesota Comprehensive Statewide Freight and Passenger Rail Plan ("State Rail Plan"), pursuant to Minnesota Statute Minnesota Session Law 2008, Section 174.03 subd 1b, is to guide the future of the rail system and rail services in the State. The development of the Plan, managed by the Minnesota Department of Transportation (Mn/DOT), included extensive involvement by the private sector, public officials, and representatives, as well as the general public.

Detailed technical analyses can be found separately in Technical Memoranda 1 through 9 which are posted on Mn/DOT's web site at http://www.dot.state.mn.us/planning/railplan/resources.html. Information from the Technical Memoranda which are in the Final Report have been updated and corrected to reflect the newest information and to respond where possible to comments received during the course of the project from stakeholders. The Technical Memoranda will be updated as needed to qualify present and future project components for funding applications to the Federal Railroad Administration (FRA).

Upon adoption as part of the State Transportation Plan, the State Rail Plan, its addenda, and supporting technical memoranda, are intended to be a living documents subject to modifications and improvements that will reflect both the active evolution of Federal and regional programs and plans, and the development of project specific improvements and investments as rail enhancements are designed and implemented. As the Rail Plan advances, it should be further integrated with planning for other complementary freight and passenger modes, including public transit, highway, and air services.

The timing of this plan is critical. The rail system has long played a significant role in the movement of freight in Minnesota, carrying an estimated thirty percent of all freight tonnage – more so than many comparable states. Minnesota has the eighth highest number of track miles in the U.S. At the same time, intercity passenger rail service has been minimal in recent decades. In recent years, Minnesota has experienced a dramatic renewal of interest in passenger rail, with Northstar commuter rail service initiated in December 2009 following the introduction of Hiawatha light rail service several years earlier. Numerous counties, cities, regional rail authorities, other supporters, and Mn/DOT have been actively engaged in planning new passenger rail services.

During 2008 and 2009, major new Federal funding support emerged for rail, particularly for investment in intercity passenger rail. This Plan addresses opportunities for Minnesota to improve both freight and passenger rail in the State, and intentionally builds upon and supports several rail transportation programs in place and new initiatives currently under development. Many of these opportunities overlap as most of the proposed passenger rail

services would operate in whole or in part on existing trackage owned and operated by the freight railroads.

The State Rail Plan effectively integrates Minnesota's efforts with a national resurgence of interest in high speed and intercity passenger rail. The Plan has determined that the option for a high-capacity, high-speed rail transportation option is not only desirable, but affordable and even preferable as fuel prices rise and larger volumes of travelers shift to an available rail system here and around the nation. These services have the potential to offer faster, more economical alternatives to automobile and air travel in intercity corridors up to 500 miles in length that have sufficient density and demand. The State Rail Plan is the first step in establishing a federally compliant program with an intentional, well-planned, and incremental approach to building the regional and national system, similar to the Interstate System of Highways. Minnesota will positively benefit economically and in our style of life from these expanded transportation options, including high speed trains that tie into the emerging national rail system using the best available technologies, designs, and operating methods.

Relatively small Federal and state grant and loan programs have existed for many years to support certain types of freight rail investments which have broader public purposes, such as grade crossings. In 2008, Congress enacted the Passenger Rail Improvement and Investment Act (PRIIA) which authorized approximately $750 million/year in grants for intercity rail projects. In 2009, the American Reinvestment and Recovery Act (ARRA or "Stimulus") appropriated an additional $8 billion for passenger rail projects in the PRIIA programs. These actions at the Federal level have set off a lively national competition for current and potential future funding.

The State Rail Plan establishes the following:

- A long-term vision for Minnesota's rail system, consisting of an integrated freight and passenger rail network, as part of a balanced statewide transportation system, as defined in Mn/DOT's Statewide Transportation Plan;
- A recommended program of priority improvements over the next 20 years, including an estimate of investments needs and benefits resulting from those investments;
- Recommended potential approaches to financing these improvements, including accessing federal funds, public-private partnerships, and alternative financing mechanisms; and
- Other suggested changes, including refinements to existing state rail programs, and institutional responsibilities for rail service and infrastructure development.

Vision for Rail

The vision for freight rail is that Minnesota should develop a balanced multimodal freight system which can respond to increased regional and international economic competition, constrained highway capacity, environmental challenges, a diverse customer base, and rising energy costs. Actions necessary to implement this vision include:

- Continue to make improvements to the condition and capacity of Minnesota's primary railroad arterials to accommodate existing and future demand.
- Address critical network bottlenecks.
- Upgrade main line track (all Class I-III railroads) to 25 mph minimum speed, as warranted.
- Improve the network (all Class I-III railroads) to support the use of 286,000 pound railcars throughout.
- Implement state-of-the-art traffic control and safety systems.
- Expand intermodal service access options throughout the State.
- Maintain and ensure broad access to competitive freight rail services for shippers throughout the State.
- Better integrate rail into the public planning process.
- Build upon the existing Minnesota Rail Service Improvement Program (MRSI), including an increase in the maximum loan amount in excess of the current $200,000 ceiling.
- Expand the Rail/Highway Grade Crossing program.
- Actively manage preserved rail corridors held in the State Rail Bank and evaluate for possible future transportation uses.

The vision for passenger rail is that Minnesota should develop a robust intrastate and interstate intercity passenger rail system which results in improved travel options, costs and speeds for Minnesota and interstate travelers. The priority program elements are as follows:

- Continue to participate in the Midwest Regional Rail Initiative (MWRRI) and support the development of sustained 110 mph service for connections from the Twin Cities to Wisconsin and the Chicago Hub Network.[1]
- Develop an intrastate intercity passenger rail network connecting the Twin Cities with viable service to major outlying regional centers.
- Connect all services eventually to both the new Minneapolis downtown terminal and St. Paul Union Depot.
- Advance corridors incrementally and simultaneously with Mn/DOT's support; sequencing depending on financing, ROW acquisition and agreements with freight railroads.

[1] Mn/DOT in its leadership role will need to pursue a Level 1 National Environmental Policy Act (NEPA) assessment and preliminary engineering on at least four transportation corridors, including Milwaukee-Twin Cities. This will include a Federal Railroad Administration (FRA) directed alternatives analysis that will determine which route could receive the next grants for development. This work is intended to be done by September 2010, in partnership with Wisconsin.

- In Phase II, rail connections should be established to additional intercity and commuter rail markets in Wisconsin and Minnesota, and to an interstate/I-35 Corridor, Red River Valley, Eastern plains, and Canada.

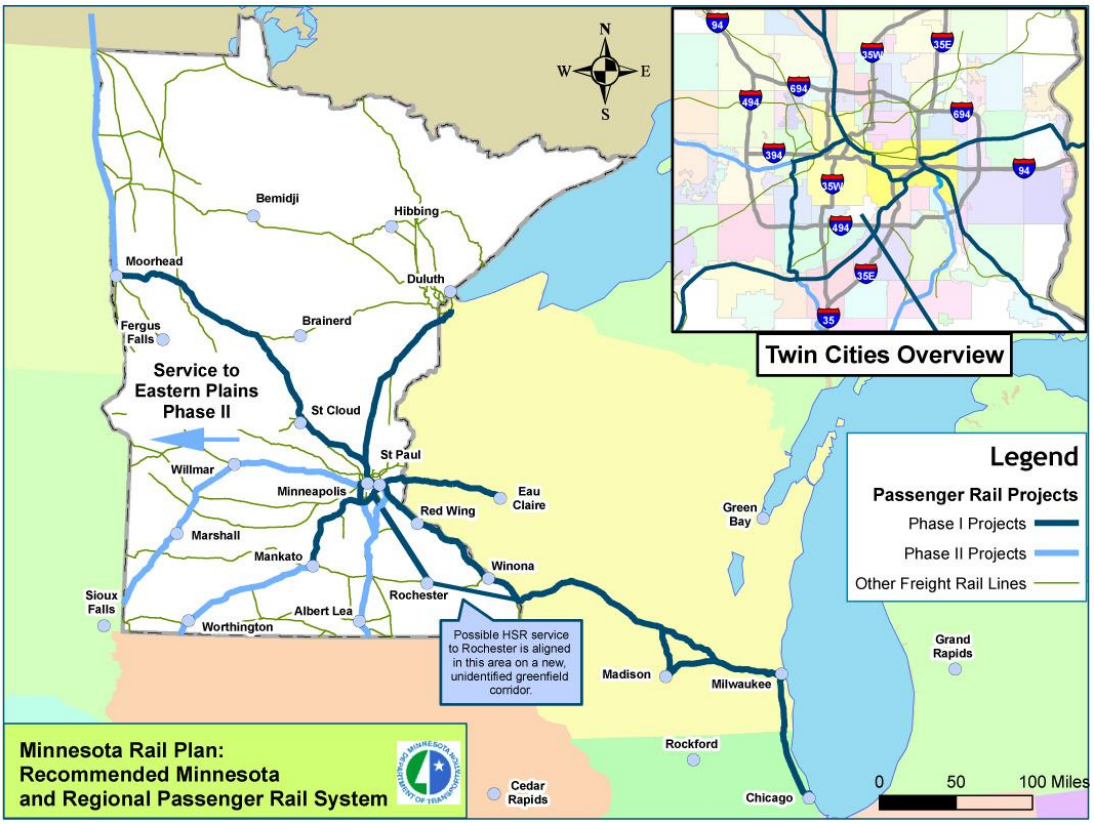
This State Rail Plan focuses on the development of intercity passenger rail service that would link the Twin Cities with the Chicago Hub high speed rail network, the national Amtrak system, and major regional trade centers in Greater Minnesota and the upper Midwest, fully coordinated with independent and shared freight improvements. The priority passenger and freight program elements are as follows:

- High-Speed Rail passenger service from the Twin Cities to Madison/Milwaukee/Chicago, to Duluth, and to Rochester (sustained speeds of 110 mph), with connections in Chicago to numerous other Midwestern cities also via high speed service;
- Enhanced conventional passenger rail service (sustained speeds of 79 to 90 mph) from the Twin Cities to St. Cloud; Mankato; Fargo, North Dakota; Eau Claire, Wisconsin; and between Minneapolis and St. Paul;
- Positive Train Control (PTC) on all shared passenger-freight corridors and any freight-only corridors which may handle certain categories of hazardous material to prevent train to train collisions;
- Highway/rail grade crossing safety improvements on all shared corridors;
- Upgrades of major junctions and bridges;
- Mainline track upgrades to accommodate freight industry standard 286,000 pound railcars and provide 25 mph operations;
- Systematic statewide replacement of all existing active highway/rail grade crossing warning devices (flashers/gates) and warning signs;
- Additional intermodal (truck to rail) freight loading facilities to improve statewide access to international and domestic container shipping and transloading; and
- Short line railroad bridge upgrades including repair and replacement.

If fully implemented, this program would eliminate all substandard rail system capacities due to current and anticipated growth in rail traffic. The improvements would allow for a comprehensive network of passenger rail services and the preservation and continued growth of freight rail service in Minnesota, with connections for both to destinations beyond the State's borders.

The State Rail Plan's proposed passenger rail system is shown in Figure ES.1. The dark blue lines represent Phase I priority corridors, and the lighter blue lines are identified as longer-term Phase II projects (not included in the Plan's cost estimate).

Figure ES.1 Recommended Minnesota and Regional Passenger Rail System



System Costs

The total capital cost of the fully implemented program (both passenger and freight) over 20-years is estimated to be $6.2 to $9.5 billion. This total includes $2.2 to $4.4 billion for stand-alone freight improvements, which traditionally have been the responsibility of the private railroads. The total estimate also includes $4.0 to $5.1 billion for the priority passenger and shared freight improvements if built as a system rather than as a series of individual, unrelated projects. Substantial synergies across projects can be achieved if planned as parts of an eventual unified system.

These "planning" level cost estimates are based on high-level systemwide unit costs. More detailed engineering costs developed for specific corridors may vary significantly from these estimates as individual projects enter actual assessment and design processes. These detailed and refined estimates will of necessity be the actual qualifying numbers for any and all actual funding applications. High- and low-end ranges were developed for most cost elements. The high-end numbers are referred to as the "base case," and the low-end numbers are referred to as the "best case."

All costs shown in this report are in current real (uninflated) dollars as is typically done in a report of this type so that the difficult to predict impacts of inflation are factored out. However, for the purposes of consistency with Mn/DOT's Statewide Plan, the total program costs inflated over the 20-year life of the program would be between $12.4 and $19.0 billion. This estimate is based on an annual inflation rate of four percent through 2020, three percent thereafter, and equal expenditures across the 20-year period. In reality, expenditures would probably start out low, peak in the middle years, and then decline in the out years.

While the system will realistically be built out in segments over many years as funding and project approvals become available, it is important to maintain the ultimate goal of a fully integrated system. Minnesota has successfully taken this approach – incremental development with a long-term system goal – for both the Twin Cities regional light rail and commuter rail systems. This system will service 100 percent of the Twin Cities Metro area population, and 41 percent of the Greater Minnesota population. Ridership growth depends on developing a base of steady rail users, which in turn depends on the extent, coverage, frequency, reliability, speed, and convenience of an integrated system of coordinated routes and schedules. Based on previous studies done for NLX and MWRRI, passenger transfers among routes could add 10 to 20 percent in ridership, and feeder bus systems and coordinated transit services could add 10 to 15 percent. The full system will also result in service to both the Minneapolis and St. Paul downtowns, key suburban stops, and the potential for through routings and easy connections between Greater Minnesota cities, Chicago, and other Midwest destinations. Wisconsin and the other partners in the nine-state MWRRI compact are all supportive of this approach, and it reflects the national rail vision as well.

Passenger Rail Performance and Benefits

Table ES.1 summarizes annual passenger rail system performance for both the base and best case forecasts for the fully developed Phase 1 system. In general, this system compares favorably on several dimensions with existing national rail performance data. The system would carry 4.1 to 6 million riders annually. Annual operating subsidies for the passenger system as a whole would range from $95 million per year in the base case (49 percent farebox recovery) to $41 million in the best case (71 percent farebox recovery). The latter assumes that profit from the Minnesota portion of the interstate Twin Cities to Chicago high-speed rail route could not be applied to intrastate operating deficits. If it can be so applied, the overall operating deficit would almost be eliminated in the best case. Note that the best case forecast assumes higher ridership and revenue than the base case.

Transportation investments can generate a range of direct and indirect economic benefits in excess of the cost of the programs. While not quantified in this Plan, these benefits are discussed qualitatively in Section 5.3.

Rail System Development and Funding Responsibilities

The State of Minnesota, through Mn/DOT management and the active oversight of the Legislature, should assume a lead role in advancing the unified system envisioned in this Plan. Specific steps include:

- Organize the State's response to Federal rail grant programs to maximize the opportunities for Federal funding;
- Coordinate negotiation of actual operating agreements with the freight railroads;
- Analyze public/private benefit/cost allocation for each passenger rail corridor to better position corridors for FRA grants:
  - Ensure third party due diligence of each corridor investment;
  - Clarify capital/operating costs, revenues, financial plan, and project management plan; and
  - Provide for Legislative review/acceptance.
- The State should adopt the following principles in moving forward:
  - Limit state funding of operating subsidies to about 25 percent of total O&M costs; (overall existing state-supported Amtrak corridors generate revenues that cover more than 85 percent of costs);
- Assume equal capital cost share of freight investments in shared corridors – actual state capital costs will depend on benefit/cost allocation with freight rail owner;
- Public sector pays for passenger-related capital costs; and
- Stand-alone freight improvements will continue to be the primary responsibility of the private freight railroads, with public participation only for priority projects (up to approximately 25 percent of overall costs) where clear public benefits can be identified and where such improvements are consistent with a publicly adopted plan, such as this State Rail Plan. Projects involving grade crossing safety that facilitate passenger rail projects, or that clearly support local economic development efforts, are logical candidates for expanded public investment.

Table ES.1 Annual Passenger Rail Systemwide Performance Measures

Performance Measure	Base Case Forecast	Best Case Forecast
Train Miles	12,252	12,252
Ridership (thousands)	4,157	6,000
Passenger/Vehicle	154	231
Passenger/Train Mile	1.1	1.61
Vehicle Miles of Travel Saved (millions)	489	733
Greenhouse Gases Reduced (thousands of tons)	318	526
Greater Minnesota Population with Access to System by contiguous County or MPO	1 million (41%)	1 million (41%)
Operating and Maintenance Costs (million $ annually)	$182	$141
Farebox Revenue (million $ annually)	$89	$99
Subsidy (million $ annually)	$93	$42
Farebox Recovery Ratio	49%	71%
Operating Subsidy/Rider	$22	$6.6

Other public entities such as Regional Rail Authorities and Joint Powers Boards should partner with Mn/DOT and provide such additional funding as necessary for program elements such as rolling stock, operating subsidies, and local station development for passenger rail service development, or to facilitate priority freight improvements. Future partnerships for both funding and governance will be facilitated by the transition of the Minnesota Passenger Rail Forum and similar advisory bodies to permanent status. The State and Mn/DOT considers this ongoing relationship and coordination with local partners and other stakeholders in freight and passenger services to be vital for the ultimate success and implementation of the Plan.

The State Rail Plan presumes the need for multiple partners, multiple financing techniques, and a long-term implementation horizon. This 20-year program represents a long-term goal to be achieved incrementally over the life of the program. A range of financing tools will be needed among the public sector stakeholders – Federal, state, regional/local – and the private railroads. Unlike the interstate highway program to which this national rail initiative is often compared, there currently is no single dedicated source of funding.

The 2008 Passenger Rail Improvement and Investment Act (PRIIA) created three new passenger rail investment programs for states: the State Capital Grant for Intercity Passenger Rail, Congestion Grants, and HSR grants. The American Reinvestment and Recovery Act of 2009 (ARRA, commonly referred to as "the Stimulus") appropriated an additional $8 billion for projects in the three PRIIA programs. The FRA developed a three-track grant process for distribution of these funds. Mn/DOT submitted applications for $135.8 million in partnership with the Ramsey County Regional Railroad Authority for design and construction of the Union Depot Multimodal Transit Hub; and with the Wisconsin Department of Transportation for

$600,000 to prepare a Service Level environmental document for a HSR route between Milwaukee and the Twin Cities.

Options for leveraging private sector investment include the following:

- Expanding the Minnesota Rail Service Improvement Program (MRSI) from a revolving loan program to a combination of loan and grant programs as done in some other states like Iowa, Wisconsin and Virginia, and increase the loan ceiling above the current $200,000.
- Offering financial assistance for Railroad Rehabilitation and Improvement Financing (RRIF) applicants (Oregon has such a program);
- Providing state maintenance and investment tax credits for rail improvements; and
- Broadening access to the Transportation Revolving Loan Fund for rail projects beyond grade crossing improvements.

In addition to these existing or potentially expanded Federal funding programs and Federal/state programs designed to leverage private investment, a dedicated stream of state and or local/regional revenue should be considered to support bonding for capital investment and to defray annual operating subsidies, provide local match for Federal programs, and ensure the orderly development of corridors. Otherwise, this program will always be in competition with a broad array of annual state priorities and it will be difficult to achieve the unified system envisioned in the Plan. Note that a Minnesota constitutional limit of $200 million originally limiting state investments for public or private rail improvements following the 1980 initiation of the MRSI program may impact future rail program bonding for state capital funds.

Of the $2.2 to $4.4 billion in freight-only improvements, 74 percent of these costs are assumed in the Plan to be covered by the private railroads, with public contributions primarily in the areas of Positive Train Control (PTC), 286,000 pound railcar compliancy, and grade crossings. The financing plan for the shared passenger and freight improvements (including the stand-alone HSR passenger lines) assumes three levels of Federal funding support (0, 50, and 80 percent), and base and best case cost estimates.

Total annual non-Federal public sector costs under all scenarios, including capital and operating, range from $125 million (best case financial assumptions, 80 percent Federal share) to $433 million (base case financial assumptions, zero Federal share).

The relatively large 20-year capital needs in this Plan should not be seen as a daunting obstacle, but rather as a goal which can be achieved over time. While the national intercity rail initiative is often compared to the early stages of the interstate highway program, there is at least one major difference – the lack of a single dedicated funding source. However, we are still in the formative stages of federal funding and grant formulas, partnership agreements with stakeholders and railroads, political commitments, and project development. All modes of transportation around the world are subsidized by the public sector to one extent or another. As one example, 18 states currently subsidize regional rail services out of general funds, with

generally widespread support for this investment in a multimodal transportation system. In addition to the support for passenger rail investments in Minnesota, there is also significant support for further investment in rail freight among the public, industry, and unions. There is a clear recognition that freight rail is essential to the economic well-being of Minnesota, and needs improvement to support the overlay of an effective passenger rail network.

Other Societal Benefits

Chapter 5.0 of the report discusses a wide range of societal benefits of rail infrastructure investment, including environmental, economic, accessibility, safety and security, and ridership. Some of these topics may warrant more detailed analysis as specific projects move forward. These are summarized below.

Economic Development

The direct, indirect, and induced economic impacts of proposed transportation investments are usually analyzed using an economic impact model. They are discussed qualitatively in Section 5.3 and summarized here with some examples from other studies.

Direct benefits are those that are directly associated with the planned investment during planning, construction, and implementation. During construction, typical benefits include construction jobs and direct supplier purchases. Once operational, the range of benefits expands to include out-of-pocket cost reductions by system users, time savings, reduced maintenance costs on parallel highways, and gains in safety from a reduction in accidents. Some of these benefits are quantified in Table 1.2. Indirect benefits entail the broader economic effects that an investment will have on a region's economy. Research has shown that countries and regions which provide more transportation services tend to dominate growth. For example, passenger rail services which expand tourism opportunities or increase the labor and market accessibility of specific industries can increase the amount of investment and jobs in those sectors. Similarly, freight rail services which reduce the cost and time of shipping raw materials and finished products can improve the economic competitiveness of specific industries.

As one example, the California High-Speed Rail Project, probably the most advanced and thoroughly analyzed such plan in the country, estimates the total benefits through 2050 of $150 billion versus a cost of $53 billion, for a benefit/cost ratio of 2.84, which is excellent by industry standards.[2] Earlier work done for the Midwest Regional Rail Initiative (MWRRI) estimates the

[2] California High Speed Rail Authority Business Plan, 2008.

prorated benefits to Minnesota of the Chicago Hub Network as being worth between $1.2 and $2.3 billion and 1,570 new jobs created.[3]

Land Use

All major transportation infrastructure investments result in land use changes. Highways have typically contributed to suburban sprawl development and often urban blight in areas in proximity to elevated urban structures. Passenger rail investment, on the other hand, has a tendency to concentrate growth in a more dense pattern around stations when supported by proper zoning and economic development strategies. These types of development can lead to urban renewal, historic preservation, and city center planning. Other transit services in the region can be reoriented around serving the rail hub. Freight rail investment can encourage concentration of industrial activities and development of freight villages.

Many of the cities located on prospective passenger rail lines in Minnesota have already engaged in land use planning studies to optimize the urban development potential of new stations. These include the following:

- Minneapolis-St. Paul area Metropolitan Council: 2006 "Guide to Transit-Oriented Development"; 2008 "Transportation Policy Plan"; 2008 "Transitway Plan";
- St. Paul Union Depot Area Redevelopment Plan;
- Minneapolis Interchange' Downtown Station Area Study; "Twinsville" Redevelopment Proposals;
- Duluth Urban Development Plans: Duluth Union Depot redevelopment; Downtown Duluth Rail/Transit Intrermodal Center; Duluth Tourism Center Redevelopment Plan;
- Red Rock Corridor Station Area Studies for Hastings, Cottage Grove, Newport, and St. Paul;
- St. Cloud Area Transit Plan; Northstar Phase 2 Planning;
- Cambridge Station Area Plan;
- Sandstone Station Area Design; and
- Mankato Area Transportation Plan.

[3] Midwest Regional Rail System Project Notebook, Chapter 11, Benefit Cost and Economic Analysis, TEMS, Inc., November, 2006.

Safety and Security

In Chapter 5.0, this report addresses some of the safety benefits which would be realized from further investments in freight rail, including reductions in highway grade crossing accidents, hazardous materials related incidents, and train-to-train collisions. Passenger rail is an extremely safe mode relative to auto travel despite a few well-publicized incidents. Diversion of trips from auto to rail almost always results in a net reduction in fatalities and personal injuries. The Federally mandated investment in Positive Train Control (PTC) systems discussed in this report will make rail all that much safer.

Passenger rail has to-date not been subject to the same type of stringent security clearance procedures as is the case for air travel, which makes travel more convenient for the customer. Imposing airport type security on passenger rail would obviously present major challenges. Nevertheless, the terrorist attack on rail transport in Spain several years ago graphically demonstrated the potential risks. While devastating in and of itself, rail-related terrorism, which occurs by nature on the ground and not in the air, has less potential for broader societal disruption. It is likely that as investment in rail systems in the U.S. increases in coming years, the Transportation Security Administration (TSA) and the Congress will need to take a further look at this issue.