

RAIL

FLORIDA RAIL SYSTEM PLAN

2015

December 2018



FLORIDA RAIL SYSTEM PLAN - 2018 UPDATE

The Florida Department of Transportation (FDOT) Freight and Multimodal Operations Office (FMO) present this 2018 update of the 2015 Florida Rail System Plan. As new challenges have had a great impact on the needs and future projects identified in the 2015 Rail System Plan, FDOT prepared this update.

CHALLENGES

- New State Rail Plan Guidance was created in 2013 to set a standard format and elaborate on required elements of the plan to include a 5-year update cycle, and a requirement for states seeking capital grants under Sections 301, 302, and 501. See <https://www.fra.dot.gov/Page/P0511>. Thereafter, FDOT prepared a 2015 Rail System Plan that was completed in December 2015. The Plan was not published at that time, as major industry changes were expected and no public outreach had yet been conducted.
- Major industry changes occurred that impacted most of the rail mileage in Florida:
 - CSX hired Hunter Harrison in spring of 2017, and radically changed the company by imposing precision-scheduled railroading instead of a hub-and-spoke system. This approach has been continued by CSX leadership through 2018.
 - Grupo México Transportes (GMXT), the leading rail freight transportation company in Mexico, successfully completed the acquisition of Florida East Coast Railway in 2017.
 - Brightline began service in 2018 between West Palm Beach, Ft. Lauderdale, and Miami later in the year, and with plans to connect to Orlando and potentially to Tampa in the future.

APPROACH

- The FAST Act (Title 49, Section 22702) passage in December 2015 changed the 5-year update cycle to a 4-year update cycle.
- FDOT initiated this 2018 update to revise the inventory and needs aspects to reflect current conditions.
- This updated version of the plan was shared for public review, edited based on feedback, and is now published as the 2015 Rail System Plan - 2018 Update to meet Florida statute and Federal Railroad Administration (FRA) requirements.
- As industry changes continue to impact the rail industry in Florida, FDOT will address any changes in needs and future projects in the next full Rail System Plan update. These industry changes include the intention for CSX to sell track between Pensacola and Jacksonville to Florida Gulf and Atlantic Railroad, as well as Brightline partnering with Virgin Group.



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EXECUTIVE SUMMARY

INTRODUCTION

The Florida Department of Transportation (FDOT) developed the *Rail System Plan* to guide the state's rail freight and passenger transportation planning activities and project development plans. This Plan complies with Section 341.302(3), Florida Statutes, which require an identification of priorities, programs, and funding levels required to meet statewide and regional goals. This Plan also meets the requirements embodied in the Federal Passenger Rail Investment and Improvement Act (PRIIA), as amended by the Fixing America's Surface Transportation Act (FAST Act) of 2015, and in the Federal Railroad Administration's (FRA) *State Rail Plan Guidance*. The plan describes the state's existing rail network, its challenges and opportunities, and rail-related economic and socio-environmental impacts of each rail mode. The plan also includes Florida's Rail Vision and Supporting Goals, along with both proposed publicly sponsored short and long-range capital improvements and policy recommendations to achieve the Vision and Goals.

FLORIDA'S RAIL SYSTEM

Freight rail is a vital asset to the State of Florida. Freight rail provides a critical link to business markets across the state, nation, and ultimately the world. Freight rail is a key component of the State's mobility network, as it provides:

- Opportunities to manage growing highway congestion;
- An economic resource that provides employment and business development opportunities; and
- A means to adapt to changing market conditions using technology and innovative management tools.

The freight rail network in Florida transports many of the goods consumers and businesses use every day. Historically, freight railroads primarily transport large, heavy bulky items for long distance that are usually inappropriate for truck or air cargo. However, more and more railroads are finding market 'niches' and competing with the trucking industry for lighter load short-haul products. Computers, fresh produce, medical equipment, and other items traditionally transported by long haul trucks are more frequently being carried by freight rail cars in containers.

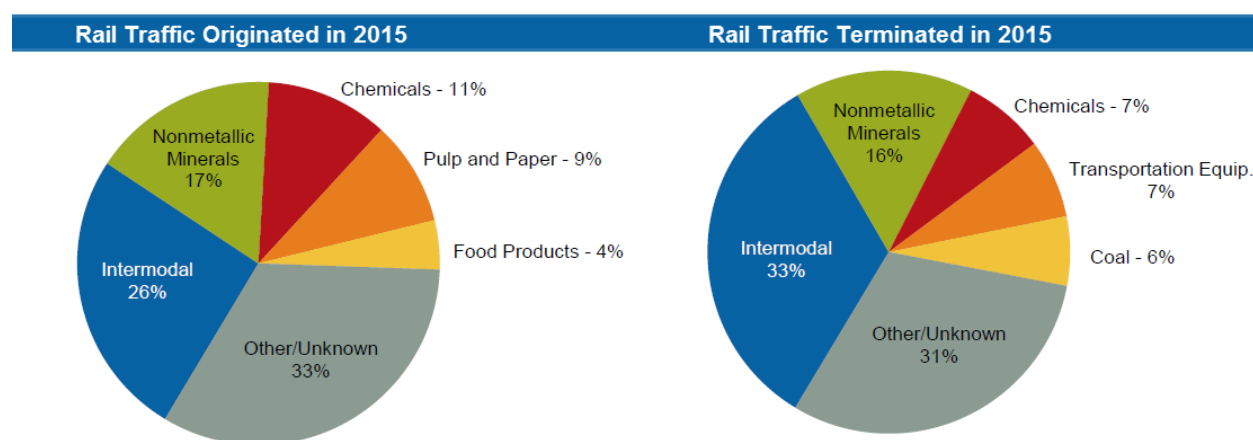
Railroads are classified based on their annual operating revenues. The class to which a carrier belongs is determined in accordance with the following revenue thresholds:

- Class I - \$447,621,226 or more
- Class II - Less than \$447,621,226 but in excess of \$35,809,698
- Class III - \$35,809,698 or less

These revenue thresholds are periodically updated to account for the impact of inflation. They were last updated in 2017. Railroads are reclassified upward or downward if they meet revenue requirements for three consecutive years. Florida's freight rail system is operated by two Class I railroads, one Class II railroad, and Class III railroads that are further categorized as switching and terminal railroads or short lines. The system consists of 2,743 mainline miles, excluding connector, siding, spur, storage, and yard miles.

The majority of rail mileage in the state is owned by the Class I carrier CSX Transportation (CSX), and Class II carrier Florida East Coast Railway (FEC). These railroads own a total of 2619 miles, or 68% of the statewide total. Class I Carrier Norfolk Southern Railway (NS), the short line railroads, and the State of Florida own the remaining miles in the state.

In 2015, Florida's freight railroads carried 83 million tons of freight that originated in, terminated in, or traveled through the state of Florida. The leading commodities are shown below.



Source: American Association of Railroads, 2017

Florida is served by three long-distance intercity trains operated by the National Railroad Passenger Corporation (Amtrak). Two commuter services, SunRail (serving the Orlando area) and Tri-Rail (serving southeast Florida) currently operate in the state. There are also four tourist railroads offering excursion trips and exhibits in the Central and Southern Florida regions.

Amtrak operates mostly over CSX Transportation (CSX) freight trackage, but also operates over state owned trackage between Deland, Orlando and Poinciana, and between Mangonia Park and Miami. The three long-distance Amtrak trains are: the *Silver Meteor* and the *Silver Star*, operating between New York and Miami, and the *Auto Train*, operating between Lorton, Virginia (south of Washington DC) and Sanford. A total of over 920,000 passengers boarded and alighted at the 18 Florida Amtrak stations in 2017. Of these 228,943 boardings and alightings were at Sanford, 133,248 were at Orlando, and 110,577 were at Tampa.

Operating since 1989, Tri-Rail links Miami, Fort Lauderdale, and West Palm Beach. Tri Rail is managed by the South Florida Regional Transportation Authority (SFRTA) along lines owned by the FDOT. The 72-mile system has 18 stations and connects to Metrorail and Metrobus, the Miami Airport, and to Amtrak at several stations. Tri-Rail service includes 50 weekday trains and 30 weekend/holiday trains. Tri-Rail's average weekday ridership is approximately 14,000.

SunRail service began on May 1, 2014. Phase 1 covers 32 miles with 12 stations along former CSX Transportation tracks connecting Volusia and Orange Counties through the City of Orlando. Phase 2 opened July 30 2018 and added four more stations and extended South 17.2 miles to Poinciana in Osceola County. SunRail currently runs 36 train trips per day, Monday through Friday, excluding holidays. Average daily ridership is approximately 5,000.

Florida has two long journey tourist trains, the Orlando Star Clipper Dinner Train and the Seminole Gulf Railway. Additionally, there are five other tourist or excursion trains. These attractions include the Walt Disney World Railroad, which features an original restored steam locomotive; the TECO Line Streetcar System, which provides trolley rides on restored Briney cars through downtown Tampa on more than two miles of streetcar trackage, and other long journey tourist trains that enact murder mysteries or other interactive theatre experiences.

RAIL IMPACTS

Freight rail facilitates the movement of goods and associated economic activity, reflecting the reallocation of intermediate goods for production and final goods for consumption. Freight volumes can be translated into economic impacts to demonstrate the role that rail activities provide in Florida's economy.

In terms of freight rail-related impacts, transport providers (CSX, FEC, NS and the short lines), and users (Florida rail shippers) create direct economic impacts through rail operations. Further, indirect impacts associated with suppliers, and induced impacts associated with the re-spending of income, are also quantified. The indirect and induced impacts are collectively known as multiplier effects. The same is true of passenger rail-related impacts, with transport providers (Amtrak, commuter rail operators and tourist trains) and users (residents and visitors).

Key freight impacts calculated using *IMPLAN* data include the employment (measured in terms of full-time-equivalent job-years), personal income (wages and salaries), and value added (or net economic activity or Gross State Product¹):

- *Employment* – Economic impacts of rail extend beyond the 4,990 direct employed in the provision of freight rail transport. When the freight user impact activities and multiplier effects are included, rail-related employment in Florida totals 738,840 jobs, which represent 7.0% of the 10.6 million jobs statewide.
- *Income* – \$34.2 billion earned by these total impacted employees represent 7.0% of Florida's total labor income.
- *Value-Added* – The combined value-added impact, \$57.9 billion, associated with the rail services and users represent 7.3% of the state's Gross State Product.

¹ 2013 dollars

Key passenger impacts calculated using *IMPLAN* data:

- *Employment* – Economic impacts of rail extend beyond the 970 directly employed in the provision of passenger rail transport. When the passenger rail user impact activities and multiplier effects are included, passenger rail-related employment in Florida totals 9,420 jobs.
- *Income* – A total of \$379.8 million is earned annually by these total impacted employees.
- *Value-Added* – A combined value-added impact of \$589.3 million is associated with the passenger rail services and users.

RAIL SYSTEM PLAN DEVELOPMENT PROCESS

FDOT is the designated State Rail Transportation Authority (SRTA) and State Rail Plan Approval Authority (SRPAA) for Florida. The *Rail System Plan* was developed under the authority and guidance of the Florida Department of Transportation's Freight and Multimodal Operations Office. The Freight and Multimodal Operations Office is comprised of various rail-related functions and areas of oversight. These areas include leadership, direction and support for rail staff activities, rail policy and technical support to executive leadership, and liaison with the private rail industry, the Federal Railroad Administration, and Amtrak. The office also has a role addressing multimodal freight issues and opportunities.

Freight and passenger railroads operating in the state were contacted to solicit information regarding their operations, projects or other needs, as well as their opinions regarding what the public sector could do to assist or improve the efficiency and expansion of rail in the state. Also, interviews were conducted for shippers located on the Class I, II and III railroad networks within the state to gather stakeholder input on the quality of rail service in Florida.

Various themes were raised during the outreach process regarding existing freight and passenger rail issues at the local, regional or state levels and the direction or actions that should be taken in the future. The major themes described include:

- Railroad concerns about maintaining their physical infrastructure.
- Shipper concerns about access to intermodal facilities and rail line capacity.

The plan is intended to integrate with and expand upon past Florida transportation plans including Florida's *Freight Mobility and Trade Plan* and updated *Florida Transportation Plan*.

FLORIDA'S RAIL VISION, GOALS AND INITIATIVES

Based on the comments obtained through the outreach effort, FDOT has developed the following vision statement for freight and passenger rail transportation in the state.

Florida Rail Vision Statement

"A safe, secure, reliable, efficient and well-maintained passenger and freight rail system enhancing quality of life, environmental stewardship, mobility, and economic competitiveness for Floridians through sustainable investments."

Rail service goals aligned with the vision statement were developed based on the rail-related benefits, issues and obstacles that had been identified. These goals are as follows:

- **Safety and Security:** Identify and support rail and rail-highway safety improvements and coordinate with appropriate partners to identify and implement security and emergency response plans.
- **Agile, Resilient, Quality:** Maintain and preserve rail infrastructure and service, and modernize the rail system.
- **Efficient and Reliable Mobility:** Emphasize improvements in on-time performance of passenger trains and for fluidity of the state's rail system for handling freight and passenger rail traffic.
- **More Transportation Choices:** Aggressively pursue opportunities for funding rail projects in cooperation with leaders at the local, regional, state, and national levels.
- **Economic Competitiveness:** Invest in rail system capacity improvements to enhance the interstate and intrastate movement of people and goods when public benefit can be demonstrated.
- **Quality Places:** Integrate rail and land use planning at the state, regional, and local levels.
- **Environment and Conserve Energy:** Integrate transportation and environmental decisions into the statewide, regional, and local planning processes.

CAPITAL INVESTMENT PROGRAMS AND FUTURE STUDIES

Based on identified needs and available funding sources, short and long-range proposed rail investment programs were developed for both freight and passenger rail. The projects are divided into short range and long-range projects, and financing will include a mix of funding sources.

Freight projects in the Rail Service and Investment Plan total between \$903.5 and \$909.5 million. Projects include rail infrastructure needs on several railroads and highway-rail crossing improvements. Passenger projects in the Rail Service and Investment Plan total to \$616 million. Projects include SunRail expansion and additional vehicles.



CHAPTER 1 ROLE OF RAIL IN STATEWIDE TRANSPORTATION

The Florida Department of Transportation (FDOT) developed the Rail System Plan to guide the state's rail freight and passenger transportation planning activities and project development plans. This Plan complies with Section 341.302(3), Florida Statutes, which require an identification of priorities, programs, and funding levels required to meet statewide and regional goals. This Plan also meets the requirements embodied in the Federal Passenger Rail Investment and Improvement Act (PRIIA), as amended by the Fixing America's Surface Transportation Act (FAST Act) of 2015, and in the Federal Railroad Administration's (FRA) State Rail Plan Guidance.

Due to leadership changes at both CSX and Florida East Coast Railway (FEC), among other rapidly developing changes impacting rail transportation in the state, the Rail System Plan has been updated to address outdated rail improvements and investments. Descriptions and inventory aspects have been updated selectively rather than performing a full Rail System Plan update.

This chapter describes the current and proposed future role of rail in Florida's multimodal transportation system and how the state is organized to provide political, legal, and financial support for rail development.

FLORIDA'S GOALS FOR ITS MULTIMODAL TRANSPORTATION SYSTEM

In 2015, FDOT updated the *Florida Transportation Plan (FTP)*.² The FTP is the statewide long-range transportation plan for all of Florida. Florida's goals for its multimodal transportation system are outlined in the *FTP*. These goals are:

- **Safety and security** for residents, visitors, and businesses
- **Agile, resilient, and quality** transportation infrastructure
- **Efficient and reliable mobility** for people and freight
- **More transportation choices** for people and freight
- Transportation solutions that support Florida's global **economic competitiveness**
- Transportation solutions that support **quality places** to live, learn, work, and play
- Transportation solutions that enhance Florida's **environment and conserve energy**

Florida's freight and passenger rail network, and in connection with other modes, play a critical role in achieving these goals.

² <http://floridatransportationplan.com/>

RAIL TRANSPORTATION'S ROLE

Rail transportation has played an instrumental role in Florida's growth and development. Railroads have opened Florida to new industry, expanded the tourist economy, and allowed for rapid development of residential and commercial areas. In concert with the state's many ports, rail transportation has provided the ability to move goods both within the state and to/from the rest of the nation. Early rail only hinted at the profound impact passenger and freight rail would have on Florida's economy.

Florida's rail network continues to expand its role as a vital freight and passenger mode. It is comprised of large and small freight railroads which combine to provide interstate and intrastate transportation for Florida businesses and industries and their suppliers and customers, as well as intermodal connections for water and highway transfers. Rail services also reduce environmental impacts such as highway damage and congestion, energy consumption and generation of pollutants. From an economic perspective, the rail freight network provides transportation alternatives and cost structures for its customers resulting in lower transportation costs.

The rail network continues to expand its role for intercity passenger and regional commuter rail services through improvements in Amtrak, and Tri-Rail and SunRail commuter rail operations. These passenger services provide redundancy and thus relief to the highway network, increase efficient access to the state's airports, contribute to tourism, provide access to employment, and protect the environment.

The various rail roles and their associated economic and transportation benefits for the state are described in further detail throughout this plan.

INSTITUTIONAL STRUCTURE OF FLORIDA'S STATE RAIL PROGRAM

Public sector rail activities in Florida entail planning, project development and programming, design and construction, as well as safety and security. These activities are conducted by both state and local agencies. This section will describe the various public agencies and systems in place in the state.

FLORIDA DEPARTMENT OF TRANSPORTATION RAIL FUNCTIONS

Section 341.302, Florida Statutes, requires "the department, in conjunction with other governmental entities, including the rail enterprise and the private sector, shall develop and implement a rail program of statewide application designed to ensure the proper maintenance, safety, revitalization, and expansion of the rail system to assure its continued and increased availability to respond to statewide mobility needs." In addition, FDOT is the designated State Rail Transportation Authority (SRTA) and State Rail Plan Approval Authority (SRPAA) for Florida. Most rail-related functions are centralized in the Tallahassee Central Office, but several policy implementation responsibilities also lie with Rail and Freight Coordinators in each District Office. The specific responsibilities are described below along with participation of other agencies and organizations.

Rail-related functions within FDOT are managed by the Assistant Secretary of Strategic Development, and conducted by the Office of Freight, Logistics and Passenger Operations, which includes the Aviation and Spaceports Office, the Freight & Multimodal Operations Office, the Seaport Office, and the Transit Office.

The Freight & Multimodal Operations (FMO) office's various rail-related functions include development of FDOT's rail policy, as well as technical support to FDOT's executive leadership, districts, and to Florida's Strategic Intermodal System Program (SIS). Other functions include serving as FDOT's liaison with the private rail industry, the Federal Railroad Administration (FRA), and Amtrak, leading FDOT's preparation for and response to major rail incidents and emergencies, and addressing any rail freight/rail passenger interoperability issues with freight railroads and intercity/commuter rail entities. The Transit Office has a co-leadership role with the districts in development of commuter rail systems. The FMO is responsible for developing and implementing the *Rail System Plan*, rail safety, rail project development/management, and rail research. The FMO office also represents the Department on the American Association of State Highway and Transportation Officials' (AASHTO) Standing Committee on Rail Transportation (SCORT).

On the multimodal freight side, the FMO office has taken a leadership role in developing the *Freight Mobility and Trade Plan* in coordination with all modal offices, as well as assisting FDOT freight coordinators in implementation. While many department offices impact truck movements, the FMO office has also taken on the role of setting policy guidance regarding asset management, safety, and truck mobility.

In addition, Section 341.822, Florida Statutes, states that the Florida Rail Enterprise "shall locate, plan, design, finance, construct, maintain, own, operate, administer, and manage the high-speed rail system in the state." Any proposed rail enterprise projects or improvements are developed in accordance with the Florida Transportation Plan and work program.

REGIONAL AND LOCAL ORGANIZATIONS

Regional Planning Councils

Designated by Section 186.512, Florida Statutes, Florida's 10 regional planning councils³ were created to meet government and regional needs, provide services, and collaborate on state and federal initiatives and programs.

Among their many responsibilities, regional planning councils assist in planning for and coordinating intergovernmental solutions to growth-related problems, providing technical assistance to local governments and meeting the needs of communities across the regions they serve. The geographic boundaries are shown in **Figure 1-1**.

Metropolitan Planning Organizations

Metropolitan Planning Organizations (MPOs) are federally mandated and funded transportation policy-making organizations comprised of local government and transportation officials. The formation of an MPO is required for any urbanized area with a population greater than 50,000. There are 27 MPOs within Florida. The geographic boundaries of each MPO are shown in **Figure 1-2**.⁴

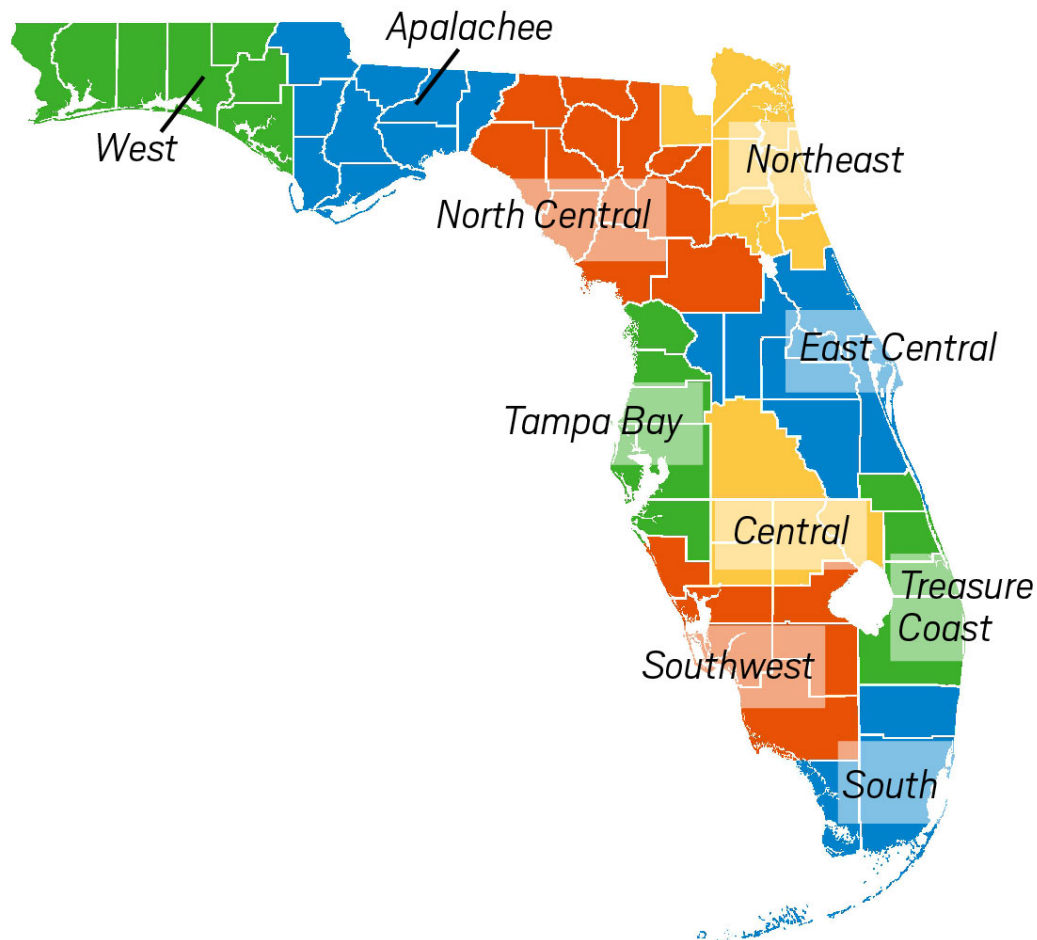
MPOs are required to maintain and continually update a Long Range Transportation Plan (LRTP), as well as, a Transportation Improvement Program (TIP), which is a multi-year program of transportation projects to be funded through federal and other transportation funding sources. As MPO planning activities have evolved to address the movement of freight as well as passengers, they have included consideration of multimodal

³ <http://flregionalcouncils.org>

⁴ <http://www.mpoac.org>

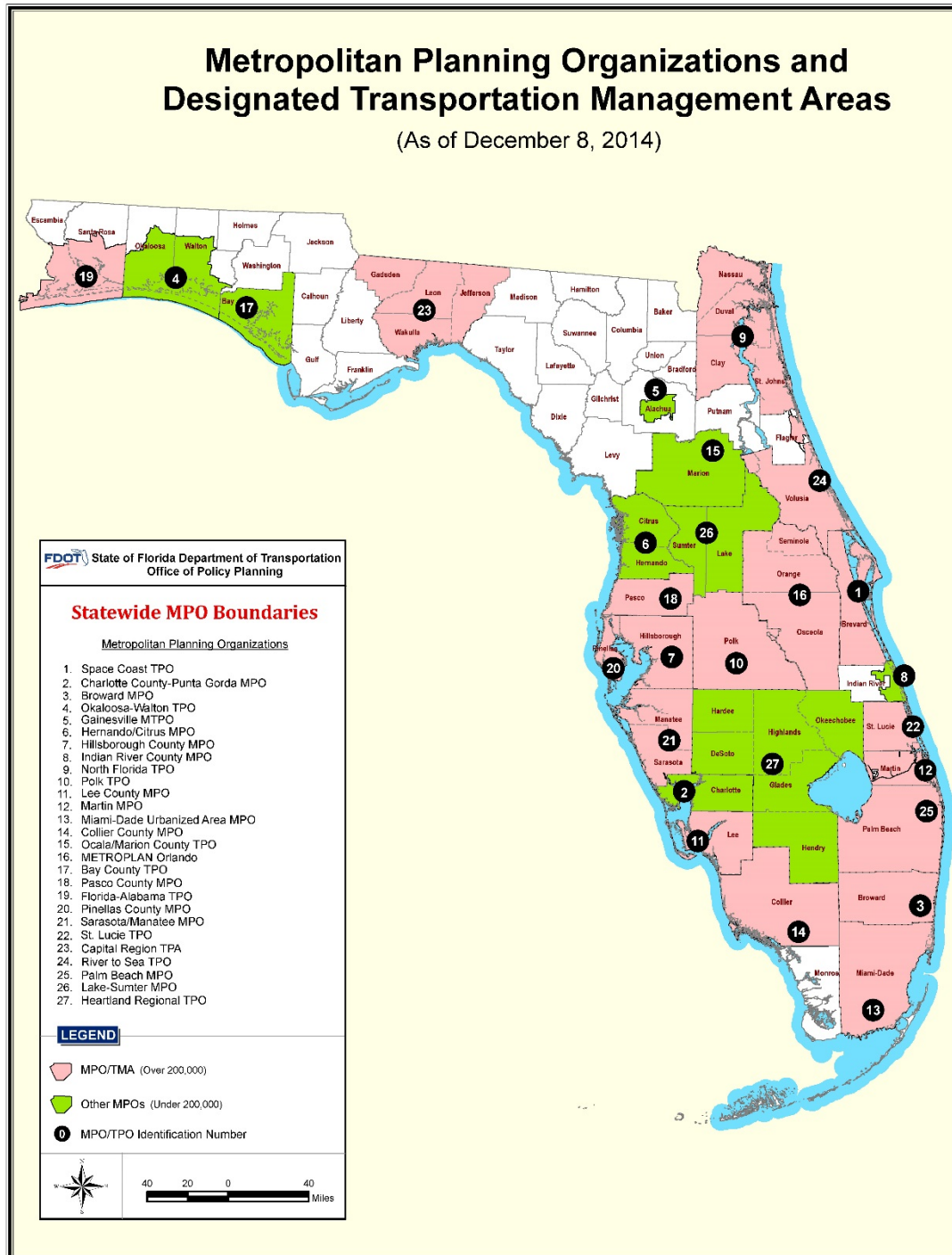
solutions, improved intermodal connections, and more specific rail and rail-related project solutions. MPOs must work cooperatively with area transportation stakeholders to understand and anticipate the area's travel needs and to develop these documents.

Figure 1-1: Regional Planning Councils



Source: Florida Regional Councils Association, 2018

Figure 1-2: Florida's Metropolitan Planning Organizations



Source: Florida Metropolitan Planning Organization Advisory Council, 2018

Economic Development Agencies

The vision and mission of the Florida Department of Economic Opportunity is “[to] advance[e] Florida’s economy by championing the state’s economic development vision and by administering state and federal programs and initiatives to help visitors, citizens, businesses, and communities.” The department has several programs and services options to assist businesses in expanding or shipping to, from, and through Florida.

Florida has several local public and private economic development agencies that recruit industries and businesses based on their location, available labor force, room for growth, and access to rail and other transportation assets. These organizations include economic development agencies and authorities, chambers of commerce, alliances, development councils (The Florida Economic Development Council, for example, connects Florida’s economic development stakeholders), corporations, and associations at the regional, county or local level of government. Many of these agencies offer incentives such as tax exemptions and credits and other means of assistance to attract business interests.

Although these agencies do not generally work directly with freight railroad operators, they do work with railroad industrial development departments and have a vested interest in the level of rail services and rail assistance programs available to supplement their incentives.

FLORIDA’S AUTHORITY TO CONDUCT RAIL PLANNING AND INVESTMENT

FDOT is authorized to develop the Florida Rail System Plan per Section 341.302, Florida Statutes. This statute requires that FDOT, in conjunction with other governmental entities, including the rail enterprise and the private sector, shall develop and implement a rail program of statewide application designed to ensure the proper maintenance, safety, revitalization, and expansion of the rail system to assure its continued and increased availability to respond to statewide mobility needs.

FDOT is in compliance with 49 U.S. Code – Section 22102, which stipulates eligibility requirements for a long-established FRA rail freight grant assistance program pertaining to state planning and administration.

STATE AUTHORITY FOR GRANT, LOAN AND OTHER RAIL FINANCING

Section 341.302, Florida Statutes, in addition to providing the FDOT the authority to carry out rail planning in the state, provides FDOT the authority to secure and administer federal grants, loans, and apportionments for rail projects within the state when necessary to further the statewide rail program. Furthermore, Section 341.303, Florida Statutes, provides FDOT the authority to direct funding and coordinate publicly funded passenger rail operations in the state through the Department’s Florida Rail Enterprise. The Rail Enterprise is authorized to use funds provided under Section 201.15, Florida Statutes. The first \$60 million of the funds allocated to the Transportation Regional Incentive Program (TRIP) specified in Section 339.2819, Florida Statutes is allocated annually to the Florida Rail Enterprise. Florida Rail Enterprise TRIP funding totaled \$133,010,579 over the past five years, FY2013-FY2017.

A SUMMARY OF FREIGHT AND PASSENGER RAIL SERVICES IN FLORIDA

The rail system in Florida is comprised of 3,843 miles which are owned by freight railroads (short lines, switching or terminal railroads), private companies, and FDOT. Two of these railroads, CSX Transportation (CSX) and Norfolk Southern Railway (NS), are categorized as Class I⁵ or major railroads. Together, they make up over 50% of rail miles in Florida. The Florida East Coast Railway (FEC) is a Class II or regional railroad with around 15% of rail miles in the state. Short line railroads or small local, switching and terminal railroads and the FDOT own the remaining miles in the state. These railroads carried 83 million tons of freight that originated in or terminated in or passed through Florida in 2015.

Florida is served by three long-distance intercity trains operated by the National Railroad Passenger Corporation (Amtrak). The three long-distance Amtrak trains are: the *Silver Meteor* and the *Silver Star*, operating between New York and Miami, and the *Auto Train*, operating between Lorton, Virginia (south of Washington DC) and Sanford. Tri-Rail operates between Mangonia Park, West Palm Beach and Miami, and SunRail operates in the Orlando area. The *Silver Star* and *Silver Meteor*, Amtrak's *Auto Train*, and the Tri-Rail and SunRail commuter rail services operate over lines owned by freight railroads and FDOT. Florida has two long journey tourist trains, the Orlando Star Clipper Dinner Train and the Seminole Gulf Railway.

Florida's rail network, as well as its contributions and impacts on the state, will be described in greater detail in subsequent chapters of the *Rail System Plan*.

⁵ The US Surface Transportation Board defines class of railroad based on revenue thresholds adjusted for inflation. As of 2017, a Class I railroad has operating revenue of \$447,621,226 or more. Class II has revenues between \$447,621,226 and \$35,809,698. A Class III railroad has operating revenue below \$35,809,698.

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CHAPTER 2 FLORIDA'S EXISTING RAIL SYSTEM

DESCRIPTIONS AND INVENTORY

The history of railroading in Florida spans over 175 years and is intricately linked to the state's growth and development. Most of the significant railroading activities occurred in the first half of the 20th century with the opening of peninsular Florida and a boom in railroad construction. Fewer rail investment activities occurred in the second half of the 20th century, largely due to the construction of the National System of Interstate and Defense Highways, which largely made the automobile the preferred choice for personal mobility and increased the trucking industry's share of freight movement. The following are historical events of note since 1980:

- The Staggers Rail Act of 1980, which deregulated the industry, allowed railroads to compete in the transportation marketplace and abandon unprofitable lines;
- Growing highway congestion (particularly on Interstate 95), which emphasized the need for competitive alternatives to truck haulage to and from South and Central Florida;
- New rail intermodal technologies such as double-stack rail cars, which lower rail haulage costs for trailers and containers;
- The ascendancy of economies in Asia and South America, which has resulted in more rail-hauled cargo flowing through Florida ports;
- The recent widening of the Panama Canal, and the potential of increasing Florida port cargo volume originating from or destined to inland U.S. manufacturing and distribution centers.
- Growing highway and airport congestion emphasized the need for a renewed role for rail passenger service;
- Legislation creating the High Speed Rail Transportation Commission (1984) and the Florida High Speed Rail Authority (2001);
- The 1988 purchase of the South Florida Rail Corridor by the Florida Department of Transportation from CSX Transportation and the initiation of Tri-Rail commuter rail operations in southeast Florida in 1989;
- Analysis of high-speed rail opportunities linking Jacksonville and Savannah and Atlanta in 2012, building on an earlier 2003 study;
- The 2014 initiation of SunRail commuter service in the Orlando area; and

- All Aboard Florida's *Brightline* began service between Miami, Ft. Lauderdale and West Palm Beach in 2018. Phase 2 expansion to Orlando is underway..

Florida has over 3,800 miles of railroad, including 2,742 miles of mainline. CSX is the largest railroad in the state, with over 50% of total rail mileage. The FEC is the second largest railroad at almost 15%, although some mileage is operated by a short line. FDOT is the third largest owner, though all its mileage is operated by others.

Table 2-1: Rail Mileage in Florida

Railroad	Miles Owned ^(a)	Percent
CSX Transportation	2,057	54%
Norfolk Southern Railway	126	3%
Florida East Coast Railway	561	15%
Short Lines	819	21%
Florida DOT	137	4%
Other ^(b)	1442	4%
TOTALS	3,843	100%

Notes:

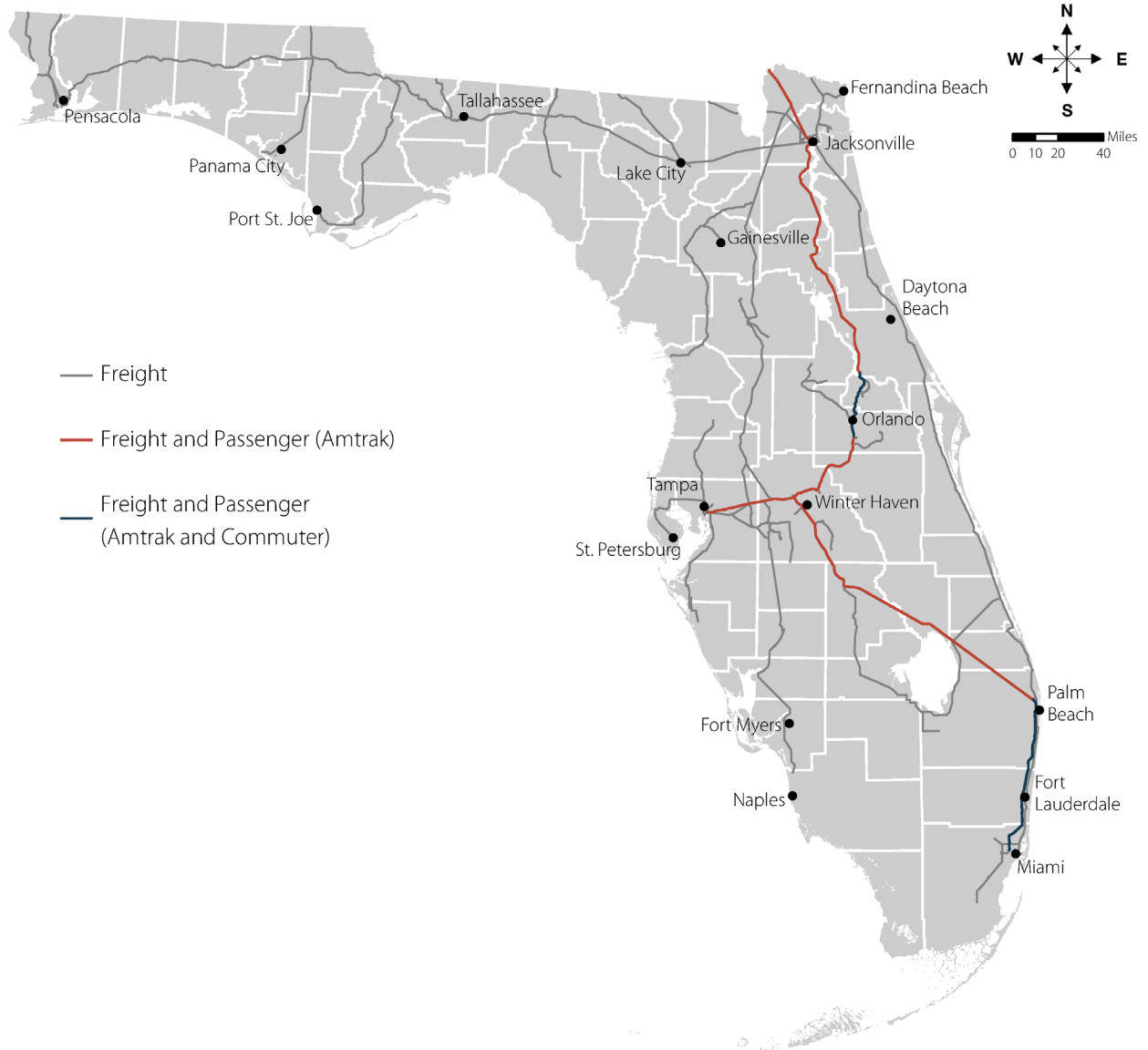
(a) Includes mainline, siding, spur, connector, yard, and storage miles. Route miles shown elsewhere refer to aggregate length, excluding yard tracks, sidings, and parallel lines.

(b) Includes switching, terminal, private operators and US Government.

Source: Freight and Multimodal Operations Office rail shapefile, FDOT, 2017

See **Appendix I** for an overview of Florida's rail freight commodity flows and forecast information. Florida's freight and passenger rail system is shown in **Figure 2-1**.

Figure 2-1: Florida's Rail System

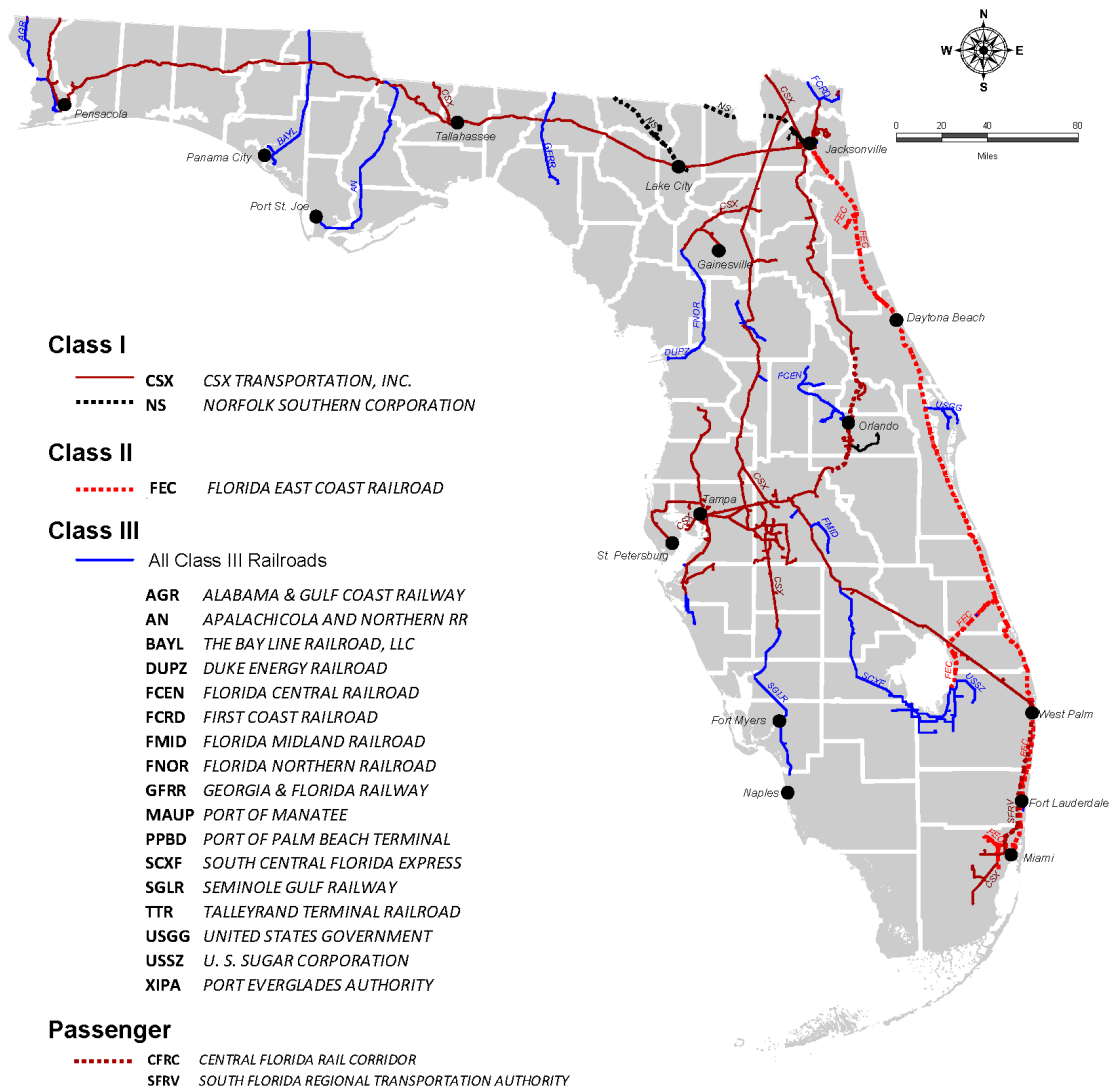


EXISTING FREIGHT AND PASSENGER RAIL SYSTEM

Class I Railroads

Two of the seven Class I railroads in the U.S. serve Florida – CSX Transportation (CSX) and Norfolk Southern Railway (NS). With few exceptions, the two systems are located, and dominate rail transportation, east of the Mississippi River. The location of all Class I, II, and III railroads appear in **Figure 2-2**.

Figure 2-2: Florida's Rail Line Locations



CSX Transportation

CSX operates over 21,000 miles of track in 23 eastern, southern and midwestern states, the District of Columbia and two Canadian provinces. It is the largest railroad in Florida providing statewide service. The CSX system mileage in Florida per its 2016 Annual Report (R-1) to the Surface Transportation Board is as follows:

- Line owned: 1,469 miles
- Line operated under contract: 64 miles
- Line operated under trackage rights: 125 miles
- Total mileage operated: 1,658 miles
- Line owned, not operated, by respondent: 122 miles

CSX Interchanges

Interchanges are locations where railroads meet and exchange railcars. CSX can interchange freight rail traffic with one Class I carrier (NS), one Class II (Florida East Coast Railway or FEC), and several Class III railroads (short lines) in Florida. Designated interchange point locations and connecting carriers are listed below:

- | | |
|---|--|
| • Cantonment – Alabama and Gulf Coast Railway (AGR) | • Arcadia – Seminole Gulf Railway (SGLR) |
| • Chattahoochee – AN Railway (AN) | • Oneco – SGLR |
| • Cottondale – Bay Line Railroad (BAYL) | • Sebring – South Central Florida Express (SCXF) |
| • Yulee – Florida Coast Railroad (FCRD) | • Jacksonville – NS, FEC, SCXF (the latter via haulage rights) |
| • Orlando – Florida Central Railroad (FCEN) | • West Palm Beach – FEC |
| • West Lake Wales – Florida Midland Railroad (FMID) | • Marcy – SCXF (via trackage rights) |
| • Winter Haven – FMID | • Newberry – FNOR |
| • Ocala – Florida Northern Railroad (FNOR) | • Oleander – FEC |
| • Foley – Georgia and Florida Railroad (GFRR) | • Lake City – NS |

CSX Intermodal Train at Florida Intermodal Logistics Center in Winter Haven



Source: CSX Transportation

Major Yards and Other Facilities

CSX has several major carload, intermodal, and other facilities in Florida. These facilities, along with the railroad's port connections, are described in subsequent sections.

CSX Trackage Rights and Joint Trackage

CSX has trackage rights: Quitman, Georgia to Foley, Florida over GFRR; also it operates over Tri-Rail and SunRail commuter lines by contract.

CSX Divisions and Subdivisions in Florida

CSX's Florida network is comprised of parts of two divisions, Jacksonville and Atlanta, and 28 subdivisions. Descriptions of the subdivisions appear in **Appendix C**.

CSX Operating Facilities in Florida



Source: CSX Transportation, 2016

Norfolk Southern Railway

Owned by Norfolk Southern Corporation, NS operates approximately 20,000 route miles in 22 states east of the Mississippi River. It has the least mileage of the major railroads in Florida, providing service only in the northeastern corner of the state.

The NS system mileage in Florida per its 2016 Annual Report (R-1) to the Surface Transportation Board is as follows:

- *Line owned and operated:* 95
- *Line operated under trackage rights:* 53 miles
- *Total mileage operated:* 148 miles

NS Interchanges

NS has the ability to interchange freight rail traffic with one Class I (CSX) and one Class II (FEC) in Florida. Designated interchange points and connecting carriers are listed below:

- Jacksonville – FEC, CSX and the Talleyrand Terminal Railroad
- Lake City - CSX

Major Yards and Other Facilities

NS has major carload, intermodal, and other facilities in Florida. These facilities, along with the railroad's port connections, are described in subsequent sections.

NS Trackage Rights

NS has trackage rights between Jacksonville and Palatka over CSX.

NS Divisions and Districts in Florida

The NS network in Florida is comprised of parts of one operating division, Georgia, and two NS districts (NS phrasing for subdivision) as shown in **Figure 2-2**. Descriptions of the districts appear in **Appendix C**.

NS Train



Source: Norfolk Southern

Class II Railroad

Florida East Coast Railway

FEC is the only Class II rail carrier in the state. Shown also on **Figure 2-2**, FEC is an intrastate railroad with 351 miles of mainline track running along the east coast of the state between Jacksonville and Miami. Grupo México Transportes (GMXT), the leading rail freight transportation company in Mexico, successfully completed the acquisition of Florida East Coast Railway in 2017.

FEC Interchanges

- Jacksonville – NS, CSX
- West Palm Beach – CSX
- Oleander – CSX

Major Yards and Other Facilities

FEC has major carload, intermodal and other facilities in Florida. These facilities, along with the railroad's port connections, are described in subsequent sections.

A description of the FEC main line appears in **Appendix C**.

FEC Train Hauling Automobiles in Multi-Level Cars



Source: Florida East Coast Railway

Class III Railroads

Florida's Class III railroads, also known as short line or local railroads, and their mileage are shown in **Table 2-2**. Many of the short line railroads were developed with the paper mill industry in Florida and still carry lumber, wood products, pulp and paper products.

Table 2-2: Short Line Railroads in Florida

Railroad	SCAC ^(a)	Parent Company	Miles Owned ^(b)	Percent ^(c)
Alabama and Gulf Coast	AGR	Genesee & Wyoming	54	1%
AN Railway, LLC	AN	Genesee & Wyoming	115	3%
Bay Line Railroad, LLC	BAYL	Genesee & Wyoming	96	3%
First Coast Railroad, LLC	FCRD	Genesee & Wyoming	26	1%
Florida Central	FCEN	Pinsly Railroad Co.	81	2%
Florida Midland	FMID	Pinsly Railroad Co.	34	1%
Florida Northern	FNOR	Pinsly Railroad Co.	86	2%
Georgia and Florida	GFRR	OmniTRAX	46	1%
Seminole Gulf	SGLR	Independent	113	3%
South Central Florida Express	SCXF	U.S. Sugar	168	4%
TOTALS			819	21%

Notes:

(a) Standard Carrier Alpha Code, an industry standard two-to-four letter abbreviation.

(b) Includes mainline, siding, spur, connector, yard, and storage miles. Route miles shown elsewhere refer to aggregate length, excluding yard tracks, sidings, and parallel lines.

(c) Percent of total rail mileage in Florida, not of short line railroad mileage.

Switching and terminal railroads are not included in the table. Talleyrand Terminal (TTR), a Genesee and Wyoming carrier, is one such railroad and serves the Port of Jacksonville's Talleyrand marine terminal. Three others in state are St. Johns Terminal Railway (included in NS mileage), and port operations Port of Palm Beach and Port Manatee, which switch port terminals. Additional railroads not included in the table are utilities and private companies such as Duke Energy, Georgia – Pacific, Orlando Utilities Commission, and U.S. Sugar.

Alabama and Gulf Coast Railway (AGR)

This Class III carrier operates the former BNSF Railway line between Pensacola and Columbus, Mississippi, and between Kimbrough, Alabama and Mobile, Alabama. Forty-five of those miles are located in Florida running from the Alabama-Florida State Line to a terminus in Pensacola. Originally operated by the States Rail organization, it is now part of Genesee and Wyoming, Inc. The major commodities transported in Florida are lumber and wood products, as well as, pulp, paper, and allied products. It interchanges traffic with CSX at Cantonment.

AN Railway, L.L.C. (AN)

The Class III AN Railway operated entirely within the State of Florida between Chattahoochee and Port St. Joe. Major commodity groups transported are chemicals, lumber and wood products. It connects and interchanges with CSX in Chattahoochee and serves the Port of St. Joe. Genesee and Wyoming acquired the railroad in 2005. While AN Railway is not currently operating, the City of Port St. Joe has been pursuing efforts to revive this line.

Bay Line Railroad, L.L.C. (BAYL)

The Bay Line (formerly Atlanta and St. Andrews Bay Railway Company) operates from Panama City to Dothan, Alabama where it connects with both CSX and the Norfolk Southern Railway. The Class III line is approximately 63 route miles. Major commodities are non-metallic minerals, lumber and wood products, steel and scrap, chemicals, food and feed products. It has been owned and operated by Genesee and Wyoming since 2005.

First Coast Railroad, L.L.C. (FCRD)

This member of the Genesee and Wyoming group operates 26 miles of track in Florida. Its two lines run from a connection with CSX at Yulee to Fernandina Beach, where it serves the Port of Fernandina Beach, and to the Georgia-Florida State Line en route to Kingsland, Georgia. Principal commodities consist of chemicals, as well as forest, pulp/paper and petroleum products.

Florida Central Railroad (FCEN)

This short line, formed in 1986 from former CSX branch lines, is located northwest of Orlando. The approximately 73 track miles operated by the Class III railroad are comprised of its 41-mile main track between Orlando and Umatilla and branches from Tavares to Sorrento (11 miles) and from Toronto to Winter Garden (11 miles). However, six miles of the Tavares to Sorrento branch are out of service. It also operates over 10 miles of trackage rights through Orlando to Taft Yard for interchange with CSX. The railroad is one of three operated by the Pinsly Railroad Company in Florida. Principal commodities handled by the railroad consist of food or kindred products, lumber and wood products, chemicals, automobiles, and nonmetallic minerals. An excursion train is operated between Tavares and Mt. Dora by another party.

Bay Line Train Hauling Large Diameter Pipe



Source: Genesee and Wyoming, Inc.

Florida Midland Railroad (FMID)

Another member of the Pinsky group, formed after the Florida Central (1987), this Class III carrier operates two disconnected lines, also CSX spin-offs, in central Florida: West Lake Wales to Frostproof (17 miles) and Winter Haven to Bartow Air Base (6 miles). The two-line segments connect with 10 miles of trackage rights over CSX. FMID transports nonmetallic minerals, food and kindred products, lumber or wood products, and chemicals or allied products.

Florida Northern Railroad (FNOR)

The third carrier of the Pinsky Railroad Company, FNOR, runs from Lowell to Candler (24 miles) and from High Springs to Red Level Junction (76 miles). FNOR passes through Ocala where it crosses and connects with the CSX main line and operates industrial track, and interchanges with CSX at Newberry. Major commodities transported are nonmetallic minerals, steel and scrap, lumber and wood products, food and kindred products, coal and chemicals.

Georgia and Florida Railway (GFRR)

The GFRR operates trackage spun off by NS predecessors running from the Georgia-Florida State Line, near Ashville, to Perry and Foley (51 miles). It also operates a number of lines in South Georgia. It is one of many railroads operated by OmniTRAX, Inc. In Florida, it transports principally wood products, aggregates, and pulp, paper and allied products. It interchanges with both NS and CSX, the latter having trackage rights over the line.

Seminole Gulf Railway, L.P. (SGLR)

Since 1987, the 94-mile Class III SGLR operates two separate lines formerly operated by CSX, Oneco to Bee Ridge (16 miles), and Arcadia to Bonita Springs just inside the Collier County Line (78 miles). It interchanges with CSX at Oneco and Arcadia, respectively. The Seminole Gulf management is also associated with the Bay Colony Railroad of Massachusetts. Major commodity groups associated with the lines are lumber or wood products, food and kindred products, LP gas, steel and scrap, and nonmetallic minerals. The railroad also operates a dinner train on the Fort Myers line segment and a five-mile long industrial track in Sarasota.

South Central Florida Express (SCXF)

This Class III rail carrier operates approximately track (some former CSX) running from Sebring to the sugar cane fields and refineries south of Lake Okeechobee, with branches to Cana and Okeelanta, the former leased from FEC. In addition, it has a haulage agreement with FEC to Jacksonville. The railroad is a subsidiary of U.S. Sugar, Inc. and connects with the company's private internal railroad. Major commodities are sugar cane and products, chemicals, and plastics. It interchanges traffic with CSX, FEC and NS, the latter via haulage rights.

Switching and Terminal Companies

There are various switching and terminal railroads in the state: Talleyrand Terminal Railroad (TTR), St. Johns River Terminal Company; Port Manatee, Manatee County Port Authority; and, Port of Palm Beach District Railway. The latter two port railroads perform on-terminal switching and connect with CSX and FEC, respectively.

TTR is operated by Watco and serves the Talleyrand Marine Terminal of the Jacksonville Port Authority. It connects with both CSX and NS. St. John's River Terminal Company is a member of the Norfolk Southern Railway corporate family. Lastly, the Orlando Utilities Commission Railroad's (OUC) Stanton Spur is a spur

line running east from FDOT's Central Florida Rail Corridor (a former section of the CSX A Line between Poinciana and DeLand) near Sand Lake Road, south the Orlando International Airport, and northwest to the Curtis H. Stanton Energy Center northeast of the crossing of SR 417 and SR 528. CSX serves the line, delivering coal trains.

Additional detail on these short lines is found in **Appendix D**.

Abandoned and Rail Banked Lines

Abandonments, Discontinuances, and Service Cessation

49 U.S.C. Statute 10903 governs the filing and procedure for common carrier application to abandon or discontinue rail operations over any part of its railroad lines as detailed in 49 CFR Part 1152. Abandonment or discontinuation requires a federal Surface Transportation Board (STB) finding "that the present or future public convenience and necessity require or permit the abandonment or discontinuance." The STB procedures require evidence from the railroad that continued operation on the line in question would burden it. This evidence can be challenged by shippers who feel that they will be harmed by the abandonment. 260.0161, Florida Statutes (2018) discusses coordination with the Department of Transportation on abandoned and to-be-abandoned railroad rights-of-way.

The principal requirements for discontinuance or abandonment are that the railroad certify that no local traffic has moved over the line for two years, that any overhead traffic can be routed over other lines, and that no formal complaint is filed by a rail service user.

Rail Banking

Rail banking is a process established under federal law that allows public entities to preserve railroad rights-of-way for future reactivation of rail service, to protect rail transportation corridors, and to encourage energy efficient transportation use. Many rail banked lines have been converted to recreational trail uses.

Since the 2010 *Florida Rail System Plan*, just over 13 miles have been the subject of potential abandonments or rail banking, as noted in **Table 2-3**. There are no lines in the process of being abandoned.

Table 2-3: Railroad Abandonments in Florida since 2010

Railroad Name	Section	Status
CSX Transportation	Branch Line in Alachua County (11.62 miles) between Newberry and High Springs; line leased to Florida Northern, which no longer operates the line.	CSX consummated abandonment of this line in August 2015 (STB Docket AB 55 718X).
CSX Transportation	Miami Subdivision in Miami-Dade County (0.95 miles).	CSX consummated abandonment of the line in October 2011 (STB Docket AB 55 717X).
CSX Transportation	Clearwater Subdivision in Pinellas County (0.45 miles).	CSX consummated its abandonment of the line in May 2011 (STB Docket AB 55 705X).
Total Abandonments	13.02 miles	

Amtrak Intercity Passenger Network

The state is served by three long-distance Amtrak trains, the *Silver Meteor*, *Silver Star*, and the *Amtrak Auto Train*, operates to and from Sanford. There is currently no intercity corridor service provided in the state, either by Amtrak or by other operators. Amtrak operates entirely over Class I railroad-owned and commuter rail trackage (owned by FDOT). Except for the *Auto Train*, Amtrak's frequency of service on its routes through Florida has remained relatively static over the years. *Auto Train* rolling stock include bi-level passenger cars and auto carriers.

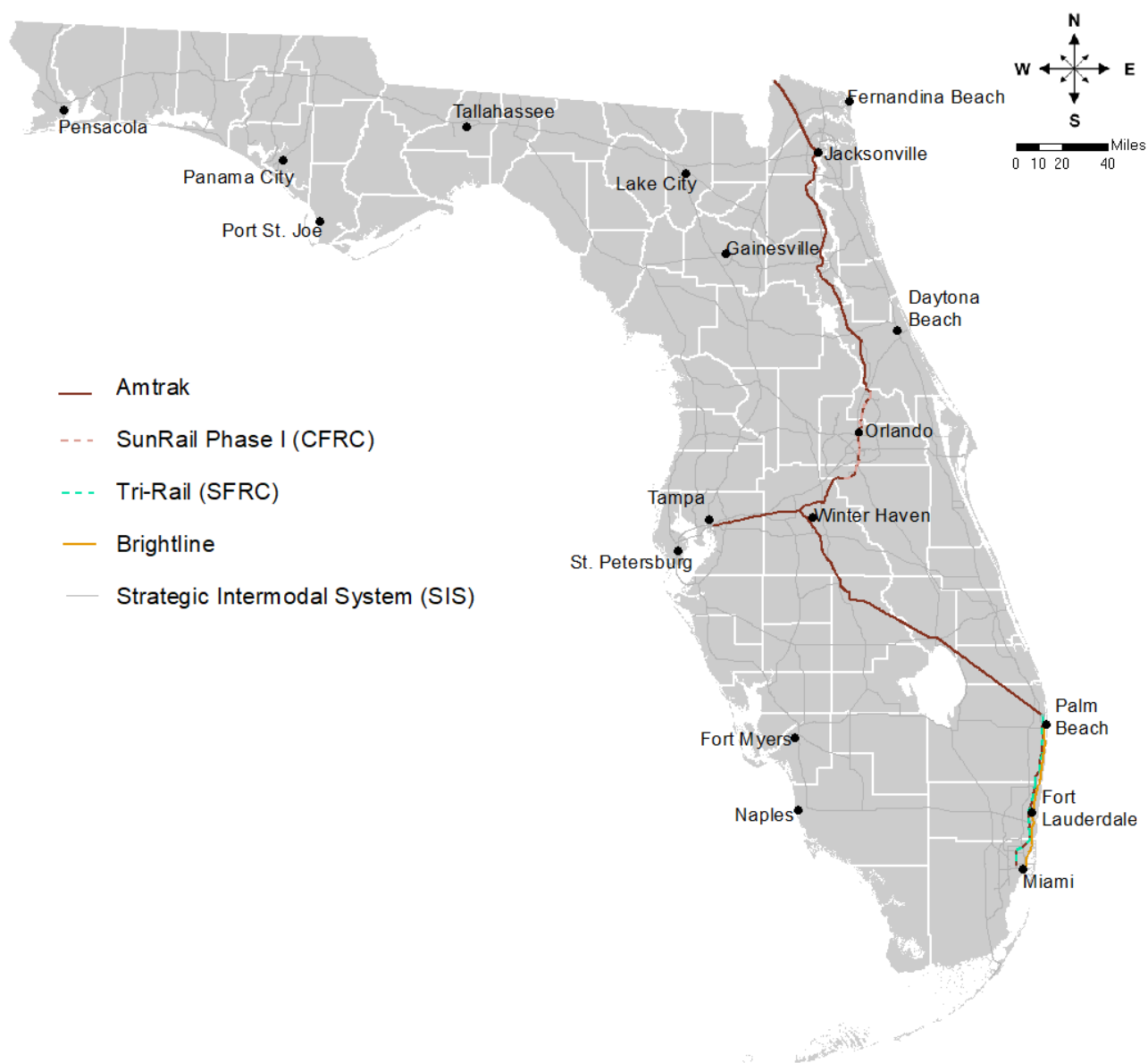
The *Silver Meteor* and *Silver Star* operate with single-level equipment due to limited tunnel clearances between Washington and New York. The two trains are operated with coaches, sleeping cars, a diner, and a lounge car. The financial and operating performance of Amtrak trains is discussed in Section 2.1.4.

Amtrak routes in Florida, including over trackage shared with commuter railroads Tri-Rail in South Florida and SunRail in the Orlando area, appear in **Figure 2-3**. Additional detail on Amtrak services, including connecting Thruway bus services, appear in **Appendices E and F**.



Source: Amtrak, 2017
(Not all stops are shown)

Figure 2-3: Florida's Passenger Rail System



Commuter Railroads

Tri-Rail System Overview

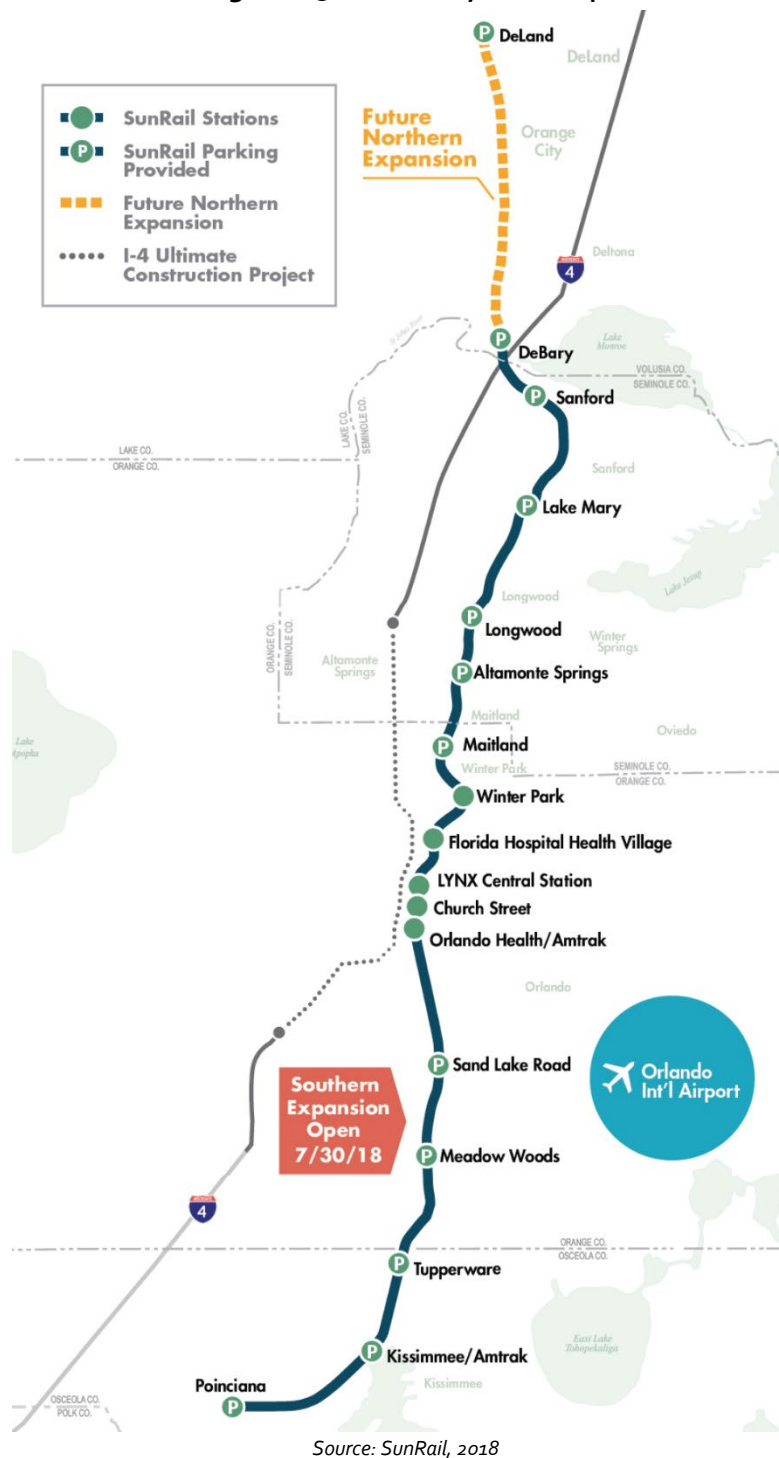
Tri-Rail is a commuter rail service connecting Palm Beach County in the north and Miami-Dade County in south Florida. Current operations are shown in **Figure 2-3** and enlarged in **Figure 2-4**. Service is provided between Miami Intermodal Center (MIC) in the south and Mangonia Park Station in the north, and service runs on the former CSX Miami Subdivision between Hialeah Market Station in Miami and the Mangonia Park Station. The line has shuttle connections to the two area international airports, Ft. Lauderdale and West Palm Beach, and an automated People Mover connection from the MIC to Miami International Airport. More detail on Tri-Rail appears in **Appendix E**.

Figure 2-4: Tri-Rail System



Source: Tri-Rail, 2016

Figure 2-5: SunRail System Map



SunRail System Overview

SunRail is a commuter rail service connecting Volusia County in the north, Orange County, and Osceola County in the south through downtown Orlando. Phase 1 operations are confined to one line which is 49 miles, with 16 stations. The Southern Expansion, which opened on July 30, 2018, connects Sand Lake Road in Orange County to Poinciana in Osceola County. This 17.2-mile segment features 4 additional

stations, as shown in **Figure 2-3** and enlarged in **Figure 2-5**. The commuter service operates on the former CSX A line. More detail on SunRail appears in **Appendix B**.

Tourist Railroads

There are four tourist railroads in Florida, offering trips that showcase scenic or historic areas of the state. These rail trips offer a glimpse of an activity that was once part of daily life. The railroads also serve to preserve equipment, buildings, artifacts and industrial skills from earlier eras.

In addition to preserving railroad history, tourist railroads attract visitors, generating income not only for these railroads but also for restaurants, hotels and other visitor service establishments. Tourist railroads can provide an opportunity to introduce the general public to the contemporary rail industry and its key role in the state's economy.

The four tourist railroads in the state are:

- The Florida Railroad Museum, in Parrish (Manatee County);
- The Gold Coast Railroad Museum, in Miami;
- The Seminole Gulf Railroad, in Fort Myers; and,
- The Orlando & Northwestern Railway, in Tavares (Lake County)

Detail on the four tourist railroads appears in **Appendix E**.

Proposed Passenger Services

In recent years, several new service concepts have been proposed for Florida, as noted below:

- A federally designated high-speed rail corridor linking Jacksonville with Atlanta. This concept was explored by the Georgia Department of Transportation in 2012.
- A privately funded initiative to provide higher-speed rail service between Miami, Orlando and potentially Tampa. Known today as All Aboard Florida's (AAF) *Brightline* service, the portions between West Palm Beach, Ft. Lauderdale, and Miami are currently operational.
- Restoration of Amtrak's Gulf Coast service between New Orleans and Jacksonville. Various alternatives have been identified. Amtrak's *Sunset Limited* ran across the state's northern tier until Hurricane Katrina in 2005. The train runs three times a week between New Orleans and Los Angeles. The PRRRA which was part of the FAST Act passed in 2015, required a study to identify a preferred option and prioritized capital projects for Gulf Coast service restoration.
- Expansions of the Tri-Rail commuter network north to Jupiter and south to Miami on the FEC (Tri-Rail Coastal Link).
- Expansions of the SunRail commuter rail system north to Deland in addition to the recent expansion south to Poinciana, as well as to the Orlando International Airport's South Terminal and Intermodal Center.
- A new commuter rail service in northeast Florida centering on Jacksonville. The First Coast Commuter Rail Feasibility Study was completed in 2009.

MAJOR FREIGHT AND PASSENGER FACILITIES

Yards

Yards provide for the making and breaking up of trains, classification of cars, and car storage. Many also provide auxiliary services such as car repair, locomotive maintenance and servicing as a home for intermodal facilities. The role of large or major yards has decreased over time as the railroads have increased the use of unit trains. Unit trains do not need intermediate classification and, other than periodic servicing and crew changes, do not need to stop between origin and destination.

There are six major yards in Florida: three CSX, one NS and two FEC. Four of the yards are in Jacksonville, which is a major junction of CSX lines, the end of the line for NS and FEC, and a major interchange point for all three. In addition, the Jacksonville area is a major generator of rail traffic and a rail connection point for two seaports. The other major yard for CSX is in Tampa. It represents a connection point for several CSX subdivisions and provides support to the Tampa Bay region, a significant generator of rail traffic due in large part to the Port of Tampa and a significant number of private terminals located on Tampa Bay. The FEC yard in Miami (Hialeah) is the southern end of the railroad and serves a major port and other large generators of traffic such as local limestone producers. Major rail yard characteristics are summarized in **Table 2-4**.

Table 2-4: Major Rail Yards in Florida

RR	Yard Location	Facilities on Yard Property				
		Car Repair	Locomotive Servicing	COFC/TOFC ^(a)	Auto	Transload
CSX	Moncrief (Jacksonville)		✓			
	Baldwin (Jacksonville)	✓				
	Uceta/Yeoman (Tampa)	✓	✓	✓		
NS	Simpson (Jacksonville)	✓	✓	✓		✓
FEC	Bowden (Jacksonville)	✓	✓	✓		
	Hialeah (Miami)	✓	✓	✓	✓	

Notes: (a) container on flatcar / trailer on flatcar
NS Simpson Yard COFC/TOFC also includes a "Triple Crown" RoadRailer® operation.

FEC Hialeah Yard



Source: Florida East Coast Railway

Freight Rail Intermodal Facilities

Typically freight intermodal is thought of as rail transport of containers and trailers, but in the true definition it can be any modal transfer. The various types of intermodal facilities in Florida are discussed and listed in the following paragraphs.

Trailers/Containers

All three major carriers in Florida have facilities to transfer trailers and containers both between rail and trucks, and rail and vessels. FEC leads with seven such facilities, CSX with three and NS with two. All three have facilities in Jacksonville. The Ft. Lauderdale facility is a new one (opened in 2014), near-dock at Port Everglades; and one of the two in Miami is also new, on-dock at the Port of Miami. Characteristics of each facility are shown in **Table 2-5**.

Table 2-5: Intermodal Facilities

Railroad	Location	Load/Unload Tracks	Total Length (1,000 Ft.)	Lift Equip.	Trailers/Containers	Comments
CSX	Jacksonville	2	11.4	RTG	T/C	Duval Yard
	Tampa	2	5	SL	C	Uceta/Yeoman Yard
	Winter Haven	6	18.6	RMG	C	Wide Span Cranes
FEC	Jacksonville	6	1.8	SL		Bowden Yard
	Ft. Pierce	1	1.2	SL		
	West Palm Beach	1	1.3	SL		Reopened 2013
	Port Everglades	3	9	RTG	C	Near-dock
	Ft. Lauderdale	2	2.4	RTG		To be repurposed
	Miami (Hialeah)	3	13.5	RTG		Hialeah Yard
	Port of Miami	3	9	SL	T/C	On-dock
NS	Jacksonville	2	5.7	RTG	T/C	Simpson Yard
	Triple Crown (JAX)	2	3.1	NA	T	RoadRailer® equipment

Notes:
RTG - Rubber Tired Gantry Crane, RMG - Rail Mounted Gantry Crane, SL - Side Loader

Intermodal Yard Railcar Loading Operation



Source: Florida East Coast Railway

Bulk Transfer

Both Class I railroads have a network of railroad-owned or private transloading facilities. The CSX-owned network is entitled TransFlow, and the NS-owned network is entitled Thoroughbred Bulk Terminals (TBT). The FEC does not have any railroad-owned facilities but has a network of private operations. See **Table 2-6** for an inventory of the larger facilities

Table 2-6: Transloading Facilities

Railroad	Location	Car Spots	Liquid/ Dry Bulk	Laydown (Ac.)	Warehouse (Sq. Ft.)
CSX (TransFlow)	Jacksonville	49	L/D	No	No
	Ft. Lauderdale	55	L/D	No	No
	Sanford	33	L/D	No	No
NS (Thoroughbred Bulk Terminals)	Jacksonville	65	L/D	3	5,000
	Miami (on FEC)	82	L/D	1	3,000
FEC	Cocoa	54	D	13	none
	Ft. Pierce	26	D	9	25,000
	Pompano Beach	75	D	10	25,000
	Ft. Lauderdale	20	D	3	10,000

Rock Distribution Terminals

Aggregates comprise one of FEC's major commodities, with 62,700 carloads in 2012. It serves six rock distribution centers located in Jacksonville, St. Augustine, Daytona, Cocoa, Ft. Pierce, and Miami.

Rockport Terminals

CSX owns and operates a major terminal on Tampa Bay for exporting phosphate mined just east of Tampa in the Bone Valley. In 2013, CSX acquired an adjacent facility, Eastern Associated Terminal. The two terminals together comprise a site of 300 acres with warehousing and state-of-the-art handling systems, and over 25 miles of track are located on the site.

Automobile Distribution

All three major carriers have automobile distribution facilities. CSX has 43 facilities system-wide in its TDSI Vehicle Handling System, and six are in Florida. Florida has two of the 31 NS terminals, both of which are on the east coast, as is the single FEC facility. All terminals are listed in **Table 2-7** along with selected features of each.

Table 2-7: Automobile Distribution Facilities

RR	Location	Size (Ac.)	No. Tracks	Car Spots	Volume (1,000)
CSX	Jacksonville	68	9	140	3.6
	Blount Island	350	6	50	17.5
	Orlando	49	3	30	3.6
	Palm Center (near West Palm Beach)	55	5	30	2.3
	Tampa	75	7	60	3.9
	Winter Haven	100	4	120	10.0
NS	Jacksonville	35	4	36	NA
	Titusville	11	4	45	NA
FEC	Miami (Hialeah)	13	1	17	NA

JAXPORT Automobile Distribution Offloading



Source: Florida Department of Transportation

Seaport Freight Terminals

Florida's 15 public seaports are recognized as significant contributors to the dynamic growth of the state's economy and significant facilitators of the movement of container and bulk cargo. Of these, eleven handled bulk and other general cargoes and ten handled containerized cargo in FY 2015-2016. Nine seaports have active rail service, two have inactive rail service, and one port has offsite rail service. Port Canaveral is currently without direct rail access, using drayage trucks to move cargo to/from offsite rail terminals.

Seaport Cargo Tonnage Volumes

Cargo tonnage volumes for the eleven (11) cargo-handling seaports are displayed in the following two tables for FY 2011/2012 to FY2015/2016. Florida Seaport Cargo is shown in order by greatest to least with Port Tampa Bay leading at 37.5 million tons. Total tonnage in FY 2015/2016 was 107.4 million tons which is highest level since FY 2007/2008 and over 4% increase from FY 2014/2015.

Table 2-8: Florida Seaport Cargo Tonnage (FY 2010/2011 to FY 2015/2016)

Port	FY 2010/2011	FY 2011/2012	FY 2012/2013	FY 2013/2014	FY 2014/2015	FY 2015/2016
Port Tampa Bay	34,252,712	33,907,564	34,940,655	36,217,443	37,374,291	37,525,453
Port Everglades	22,087,515	21,868,900	22,452,473	23,985,882	24,001,663	24,681,331
JAXPORT	19,424,444	21,879,311	18,556,178	16,932,989	17,704,738	19,017,794
PortMiami	8,221,756	8,108,070	7,980,527	7,699,886	8,613,739	8,777,974
Port Manatee	7,247,449	6,837,811	7,197,430	6,403,414	6,517,733	6,888,757
Port Canaveral	4,547,724	3,904,986	3,874,266	3,362,282	4,151,726	5,524,478
Port of Palm Beach	1,953,893	2,005,461	2,145,864	2,150,804	2,094,069	2,519,255
Port Panama City	1,412,000	1,420,665	1,776,509	1,575,223	2,032,426	1,880,401
Port of Fernandina	647,074	384,499	275,198	228,262	303,981	296,874
Port of Pensacola	262,591	224,159	215,441	185,318	217,695	201,009
Port of Fort Pierce	243,560	95,623	0	0	0	56,600
Annual All Port Totals	100,300,718	100,637,049	99,414,541	98,741,503	103,012,061	107,369,926

Note: No cargo reported or projected for ports of Citrus, Key West, St. Joe or St. Petersburg at this time.

Sources: FDOT Seaport Office, 2017; Five-Year Florida Seaport Mission Plan, Florida Ports Council, 2016

Table 2-9 displays seaport tonnages broken down by imports, exports, domestic, and total tonnage by fiscal year. In FY 2015/2016, Seaports imported 40.5 million tons, exported 16.3 million tons and handled domestic cargo movements inbound and outbound of 50.6 million tons.

Table 2-9: Imports, Exports, and Domestic Tonnages with Total Statewide Seaport Tonnage (FY 2011/2012 to FY 2015/2016)

Port	Imports	Exports	Domestic	Total
FY 2015/2016	40,503,439	16,287,415	50,579,072	107,369,926
FY 2014/2015	40,458,288	18,989,078	43,564,694	103,012,060
FY 2013/2014	36,590,914	18,656,294	43,498,295	98,745,503
FY 2012/2013	36,376,367	19,539,122	43,499,053	99,414,542
FY 2011/2012	37,336,914	20,143,671	43,156,464	100,637,049
FY 2010/2011	35,932,270	19,796,557	44,224,029	100,300,718
6 Year Total	227,198,192	113,412,137	268,521,607	609,479,798

Note: No cargo reported or projected for ports of Citrus, Key West, St. Joe or St. Petersburg at this time.

Sources: FDOT Seaport Office, 2017; Five-Year Florida Seaport Mission Plan, Florida Ports Council, 2016

Seaport Container Volumes

The number of containers at Florida Seaports for FY 2011/2012 to FY 2015/2016 is expressed in twenty-foot equivalents (TEUs), in Error! Reference source not found.. The table provides annual totals for the ten ports currently providing container service and includes annual statewide totals at the bottom. During the six-year period there has been 15.4% growth in container traffic at Florida seaports. The top three seaports have exceeded one million TEUs for the past two years. The other seven seaports moved a combined 384,055 TEUs.

Table 2-10: Containers in TEUs at Florida Seaports (FY 2010/2011 to FY 2015/2016)

Port	FY 2010/2011	FY 2011/2012	FY 2012/2013	FY 2013/2014	FY 2014/2015	FY 2015/2016
JAXPORT	900,433	923,660	1,028,541	1,081,528	1,076,252	1,124,742
Port Everglades	880,999	923,600	927,572	1,013,344	1,060,507	1,037,226
PortMiami	906,607	909,197	901,454	876,708	1,007,782	1,028,156
Port of Palm Beach	206,537	223,463	254,664	262,805	271,277	267,280
Port Tampa Bay	39,632	39,882	42,198	47,265	56,742	49,716
Port Panama City	41,900	41,456	39,716	37,310	34,304	29,954
Port Manatee	14,576	12,610	9,621	14,078	25,778	26,210
Port of Fernandina	22,005	14,092	11,239	9,652	8,059	8,133
Port Canaveral	646	253	580	388	751	2,745
Port of Pensacola	168	76	116	116	74	17
Port of Ft. Pierce	11,853	6,156	0	0	0	0
Total	3,025,356	3,094,445	3,215,701	3,343,194	3,541,526	3,574,179

Note: No cargo reported or projected for ports of Citrus, Key West, St. Joe or St. Petersburg at this time.

Sources: FDOT Seaport Office, 2017; Five-Year Florida Seaport Mission Plan, Florida Ports Council, 2016

Seaport-Rail Service Providers

As stated earlier, eleven seaports have rail service. The seaports and service providers are the subject of **Table 2-11** Four seaports including Port of Palm Beach, Port Panama City, Port Everglades and Port Manatee operate their own railroads performing switching, storage, and staging throughout port terminals.

Table 2-11: Seaport Rail Service

Seaport	Service Provider(s)			Port Owned Track (LF)
	Class I	Class II	Class III or Port	
Port of Fernandina	CSX		FCRD (G&W)	1,200
JAXPORT	CSX, NS			113,218
PortMiami		FEC		9,000
Port of Palm Beach		FEC	PPBD	15,840
Port Panama City	CSX		BAYL (G&W), PCRR	31,239
Port of Pensacola	CSX		AGR (G&W)	1,200
Port Everglades		FEC	PERR	8,987
Port Manatee	CSX		MAUP	39,600
Port of Fort Pierce		FEC		
Port Tampa Bay	CSX			
Port of Port St. Joe	CSX		AN (G&W)	

Notes: Rail service at Port of Port Joe is inactive. Port Citrus, Port of Key West, Port of St. Petersburg and Port Canaveral do not currently have direct rail service. Port Canaveral uses trucks to dray to off-site rail yards.

Amtrak Stations

In addition to serving as gateways to rail services, passenger rail stations are also gateways to and from the cities served by trains. Rail stations can serve as centers for activity and foster economic development, commercial endeavors, tourism, cultural activities, civic pride, and historic preservation in their cities.

Amtrak trains stop at 18 stations in Florida, as seen in **Figure 2-3**. The stations and their services are noted in **Table 2-12**.

Table 2-12: Amtrak Station Stops in Florida by Service

Station	Silver Star	Silver Meteor	Auto Train
Deerfield Beach	✓	✓	
Deland	✓	✓	
Delray Beach	✓	✓	
Fort Lauderdale	✓	✓	
Hollywood	✓	✓	
Jacksonville	✓	✓	
Kissimmee	✓	✓	
Lakeland	✓		
Miami	✓	✓	
Okeechobee	✓		
Orlando	✓	✓	
Palatka	✓	✓	
Sanford			✓
Sebring	✓	✓	
Tampa	✓		
West Palm Beach	✓	✓	
Winter Haven	✓	✓	
Winter Park	✓	✓	

Most of these stations are only used by Amtrak, and many serve both the *Silver Star* and *Silver Meteor*. A typical example of stations is the historic Kissimmee Station shown in **Figure 2-6**. Amtrak shares stations with Tri-Rail and SunRail commuter rail systems at some locations. An example of a shared station is Winter Park, shown in **Figure 2-7**, which Amtrak shares with the Orlando area SunRail commuter rail system. An inventory of Amtrak stations appears in **Appendix F**.

Tri-Rail Stations

There are 18 Tri-Rail stations between Mangonia Park and Miami Intermodal Center. All of them are served by local transit. Six stations are also Amtrak Silver Service (*Silver Meteor* and *Silver Star*) stops. Three stations offer convenient access to international or regional airports (Miami International Airport, Fort Lauderdale/Hollywood International Airport, and Palm Beach International Airport). Additional details on Tri-Rail stations appear in **Appendix E**.

SunRail Stations

There are 16 SunRail Stations between DeBary and Poinciana. Three stations, Winter Park, Orlando, and Kissimmee are also Amtrak stops. All of them are served by local transit. Additional details on SunRail stations appear in **Appendix E**.

Figure 2-6: Historic Kissimmee Station



Figure 2-7: Winter Park Amtrak / SunRail Shared-Use Station



Source: Florida Department of Transportation

OBJECTIVES FOR PASSENGER RAIL SERVICE

Current intercity passenger rail services in Florida are long-distance trains operated by Amtrak on rail lines mostly owned by CSX; therefore, limiting the state's ability to directly impact specific service levels. At this point, there are no plans for changes in the frequency or routes of Amtrak services in Florida.

FDOT was instrumental in establishing Tri-Rail and SunRail commuter rail services in the state. In fact, Florida owns the trackage on which these services operate. The trackage also hosts all three Amtrak trains. FDOT continues coordinating planning with passenger rail sponsors on potential services and facilities – both intercity and commuter – as needed.

Support of Existing Passenger Rail Services

In the near term, Florida will continue to carry out its role of preserving services, monitoring service quality, and being an advocate for the safety of its existing intercity rail passenger services.

Section 207 of the PRIIA of 2008 established performance and service quality goals for intercity passenger rail service. These metrics, reported quarterly, require a continuous year-over-year improvement in financial performance (revenue / cost ratio: total revenues divided by operating costs), maintaining or improving current schedule run times, satisfactory on-time performance (85% for long-distance trains), no more than 900 minutes of delay per 10,000 train miles by host railroad, and Customer Satisfaction Scores of 90% by FY2014. Amendments to PRIIA in 2015 included the FAST Act Title XI did not include changes to Section 207.

Furthermore, many Florida Amtrak stations need improvements to ensure both ADA compliance and a state of good repair. Several of these stations are shared with commuter rail services. FDOT has a role in helping to obtain funds for realizing these improvements.

Tri-Rail today is managed by a local agency, South Florida Regional Transportation Authority, a tri-county public transit authority based in Pompano Beach. Still, Tri-Rail operates over trackage owned by the state, known as the South Florida Rail Corridor. Improvements to the corridor will require the active coordination of both the regional agency and FDOT, with the objective of making Tri-Rail self-sufficient.

FDOT also owns the trackage over which SunRail operates, known as the Central Florida Rail Corridor. Improvements to the corridor will also require the active coordination of local sponsors of the commuter service sponsors (including Volusia County, Seminole County, Orange County, the City of Orlando, and Osceola County) and FDOT. While this plan includes projects supporting SunRail's expansions, FDOT's longer term objective will be to see SunRail become self-sufficient as well, and expects the local agency to take full responsibility for operations as required by May 2021.

Coordination on Potential New Passenger Rail Services

Both Tri-Rail and SunRail commuter rail services have considered major expansions. Tri-Rail's potential expansions include the FEC corridor to Jupiter, and south from Jupiter on the FEC to Miami (the Coastal link). SunRail's plans include expansions north to Deland and later potential connection to the Orlando Airport's Intermodal Center. FDOT's coordination in realizing these expansion goals is essential as state trackage assets will continue to be the basic routes of these systems.

All Aboard Florida is continuing to move forward with its *Brightline* higher-speed rail service between Orlando and Miami. Although unique due to private ownership, any efforts of this scale should be done in coordination with FDOT.

In 2012, the Georgia Department of Transportation undertook a study of various intercity routes, including one route linking Jacksonville with Atlanta. Any progress on implementation of this route will require the support of FDOT.

Freight Railroad Participation

Given the CSX volume of freight traffic remaining on both the South Florida and Central Florida Rail Corridors, a key priority for FDOT, as well as SunRail and Tri-Rail, is a close working relationship with CSX. The freight railroad must not only be a partner but also an advocate of any proposed improvements. CSX's traffic and capacity needs must also be a key element in developing any passenger rail expansion plans. FDOT will strive for a similar partnership effort should Tri-Rail service ever extend to FEC.

Multi-Jurisdictional Partnerships

Intercity passenger rail routes could potentially extend outside the boundaries of Florida, and commuter rail expansion proposals could involve several counties. It is imperative that Florida maintain and enhance strong partnerships and working relationships between state partners, counties, municipalities, freight railroads, and public entities responsible for jointly overseeing passenger rail services. To this end, FDOT participated in the development of the Federal Railroad Administration (FRA) Southeast Regional Rail Planning Study.

Multimodal Integration and Transit-Oriented Development

An improved rail passenger service is only one part of a complete intermodal passenger transportation offering. Other key factors are transit, taxi connections, auto access, pedestrian and bicycle access, and transit-oriented development (TOD).⁶ By using the rail station as a development tool, TOD builds rail ridership and builds communities. The Miami Intermodal Center (MIC), a Tri-Rail station served also by the Miami Metrorail Orange Line and other local transit, including shuttles to the Miami International Airport, is an example of such an effort. Amtrak trains will reach this station as well, as will intercity bus services.

Route Analysis

Planning for any proposed passenger route includes defining key markets, ridership and ticket revenue forecasts, assumptions of service frequency, schedule run times, stations served, pricing, on-board services, and accommodations offered. Forecasted ridership levels and schedule run times will determine train capacity and the amount of equipment needed. Operational analysis of the rail line will determine the capacity required to operate proposed services. Utilizing the ridership forecast, estimated revenue generated and capacity investments required, a cost estimate can be developed enabling the economic viability of the proposed service to be determined. Much of this work has already been done for the proposed AAF, the Gulf Coast restoration options, and the Atlanta – Jacksonville services. The findings for these initiatives, as well as the Tri-Rail and SunRail commuter extensions, are discussed in the following section.

⁶ In common parlance, TOD generally refers to a mix of residential and commercial development near transit stations and intermodal facilities.

PERFORMANCE EVALUATION OF PASSENGER RAIL SERVICES

This section provides an overview of the metrics associated with intercity and commuter rail operations in Florida. Where information is available it describes the ridership, operating and financial results for these services. As the Amtrak services operate through multiple states, route-level statistics are reported.

Performance of Amtrak Services

As was noted earlier Amtrak operates three long-distance intercity trains through Florida. The performance characteristics for these trains are outlined below. This section constitutes the extent of FDOT's monitoring of Amtrak's performance.

Ridership and Passenger-Miles

Amtrak compiles and reports the ridership, financial performance, on-time performance and customer satisfaction of its trains on a route basis. **Table 2-13** provides an overview of the ridership results for Amtrak routes serving Florida from Fiscal Year 2012 through Fiscal Year 2017. The *Auto Train* steadily gained riders through a high in FY 2015, and the *Silver Service* ridership has steadily declined since FY 2012, until FY 2017.

**Table 2-13: Amtrak Riders, Routes Serving Florida
FY2012 through FY2017**

Route	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017 ^(a)
<i>Silver Meteor</i>	375,164	373,162	348,581	346,097	339,407	341,000
<i>Silver Star</i>	425,794	414,077	405,695	383,347	364,271	373,000
<i>Auto Train</i>	264,096	265,274	274,445	271,622	238,446	229,000
<i>Notes (a) Preliminary unaudited ridership</i>						

Source: Amtrak Monthly Performance Reports

Passenger-miles per train-mile, is a measure of utilization generated by dividing service passenger-miles⁷ by route train-miles⁸. The *Auto Train* eclipses both the *Silver Star* and *Silver Meteor* by wide margins, as seen in **Table 2-14**.

Table 2-14: Passenger-Miles per Train-Mile

Route	October 2014 - September 2016	October 2015 - September 2017
<i>Silver Meteor</i>	215	211
<i>Silver Star</i>	174	169
<i>Auto Train</i>	358	338

Source: FRA Quarterly Report on the Performance and Service Quality of Intercity Passenger Train Operations

⁷ Moving one passenger one mile is one passenger-mile

⁸ Moving a train one mile is one train-mile

Financial Performance

Like ridership, FY2013 financial performance was negatively impacted by Hurricane Sandy and train cancellations due to track work. Revenue performance for *Auto Train* increased markedly in 2014 due to higher fares. It consistently comes close to paying for itself with a farebox recovery ratio near 100%.

Table 2-15: Percentage of Fully Allocated Operating Costs Covered by Passenger Related Revenue

Route	October 2014 - September 2016	October 2015 - September 2017
<i>Silver Meteor</i>	53%	54%
<i>Silver Star</i>	47%	50%
<i>Auto Train</i>	99%	95%

Notes: Same including or excluding State Revenue. Fully Allocated Costs exclude Depreciation, Interest and Other Post-Employment Benefits. Fully Allocated Costs include allocations of substantial Common and Joint Costs that would continue to be incurred by Amtrak if a route was discontinued. These continuing costs would then be allocated to other routes if the route were discontinued.

Source: FRA Quarterly Report on the Performance and Service Quality of Intercity Passenger Train Operations

On-Time Performance

Amtrak defines On-Time Performance (OTP) as the total number of trains arriving on-time at a station divided by the total number of trains operated on that route. A train is considered on-time if it arrives at its final destination within an allowed number of minutes, or tolerance, of its scheduled arrival time. Trains are allowed a certain tolerance based on how far they travel. A consistent and high on-time performance makes the rail service more attractive to riders, especially those traveling shorter distances. The on-time performance of the three Amtrak services in Florida is shown in **Table 2-16**.

**Table 2-16: On-Time Performance, Routes Serving Florida
FY2012 through FY2017**

Route	FY2012	FY2013	FY 2014	FY2015	FY2016	FY2017
<i>Silver Meteor</i>	65.8%	56.2%	52.9%	57.8%	48.3%	44.0%
<i>Silver Star</i>	66.8%	60.1%	54.2%	48.1%	42.5%	38.6%
<i>Auto Train</i>	86.5%	81.2%	74.2%	72.1%	57.7%	53.3%

Source: Amtrak Monthly Performance Reports

On-time performance has deteriorated over the period, possibly a residual effect of track work and growing freight traffic. The on-time performance standard for long-distance trains established by the Passenger Rail Investment and Improvement Act of 2008 is 80%. Causes for Amtrak train delays can be attributed to several reasons including the host railroad, Amtrak itself, or other delays such as grade-crossing collisions. These represent the key reasons for delays that negatively impact OTP.

- **Train Interference Delays** are related to other train movements in the area. These can be delays from freight trains as well as other Amtrak trains.
- **Passenger Operating Delays** are related to equipment turning and servicing, engine failures, passenger train holds for connecting trains and buses, crewing, and detours.
- **Slow Orders** are delays from reduced speeds to allow safe operation due to track problems.
- **Freight Railroad Operational Delays** are all other freight railroad delays and delays related to the railroad infrastructure and/or maintenance work being done on the tracks or signaling systems.
- **All Other Delays** could include delays caused by the weather and non-railroad third-party factors such as customs and immigration, a bridge opening for waterway traffic, police activity, grade-crossing accidents, or loss of power due to a utility company failure.

Table 2-17 shows the leading causes of delay, by percentage of delay minutes, for routes through Florida. For instance, the largest cause for delay for the *Auto Train* is train interference. The train has no intermediate stops to pick up and drop off passengers, and thus it has minimal passenger operations-related delays.

Table 2-17: Causes of Delay to Amtrak Trains Serving Florida, September 2016

Causes of Delay	Routes		
	<i>Silver Meteor</i>	<i>Silver Star</i>	<i>Auto Train</i>
Train Interference ^(a)	24.6%	24.1%	24.8%
Passenger Operations Related Delays	30.5%	21.6%	17.4%
Slow Orders	13.9%	18.5%	22.2%
All other Freight Railroad Operational Delays	15.5%	22.7%	16.1%
All Other Delays	15.5%	13.1%	19.6%
Total	100.0%	100.0%	100.0%

Notes: (a) Includes delays due to host railroad freight and Northeast Corridor commuter and intercity trains

Source: Amtrak Monthly Performance Reports

Customer Satisfaction Indicator

Amtrak's Customer Service Indicator (CSI) scores measure the satisfaction by passengers, on an 11-point scale, on aspects of their trip. For example, a CSI score of 80 means 80% of respondents rated the aspect of their trip in the top three boxes of the 11 steps of the scale. Measures rated include:

- **Overall Service** is the measure for the respondents rating for their overall trip experience.
- **Amtrak Personnel** is the measure for the respondents rating Amtrak reservations personnel, station personnel, train crew and on-board service crew.
- **Information Given** is the measure for the respondents rating all information they received pertaining to their trip.
- **On-Board Comfort** is the measure for the respondents rating seat or sleeping compartment comfort, air temperature and ride quality.
- **On-Board Cleanliness** is the measure for the respondents rating the cleanliness of the train and on-board restrooms.
- **On-Board Food Service** is the measure for the respondents rating the quality of the food and snacks purchased on-board the train.

Table 2-18 shows the Customer Satisfaction Indicator (CSI) scores⁹. The highest scores were in Personnel.

**Table 2-18: Customer Satisfaction Index Scores for Amtrak Trains Serving Florida
4th Quarter FY2017**

Service Metric	Amtrak Standard	Routes		
		<i>Silver Meteor</i>	<i>Silver Star</i>	<i>Auto Train</i>
Overall Service	82	65	64	80
Amtrak Personnel	80	77	79	90
Information Given	80	61	61	85
On-Board Comfort	80	53	62	78
On-Board Cleanliness	80	70	72	72
On-Board Food Service	80	60	57	75

Source: FRA Quarterly Report on the Performance and Service Quality of Intercity Passenger Train Operations

⁹ The scores are an average of the four quarterly scores of the fiscal year.

Performance of Tri-Rail Service

Tri-Rail ridership is presently about 14,000 one-way (unlinked) trips per weekday for its regular commuter service. **Table 2-19** shows annual ridership and on-time performance (OTP) for Tri-Rail trains. Ridership increased 0.3% and on-time performance went up 1.4%. Historically, from FY 2009 through FY 2016, Tri-Rail recorded its highest ridership in FY 2014 (4,400,274), and it's lowest in FY 2010 (3,604,526).

Table 2-19: Tri-Rail Operations Performance Metrics

Fiscal Year	2016	2017
Ridership	4,240,698	4,251,777
OTP End-to-End	83.5%	84.7%

Source: SFRTA Forward

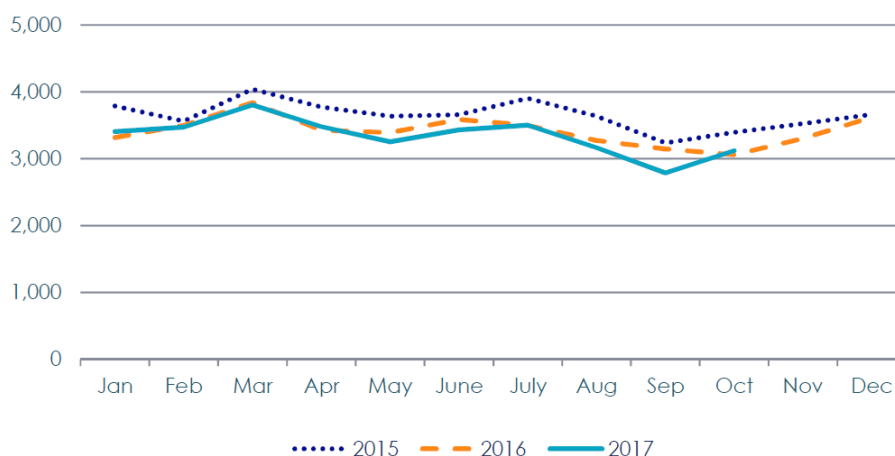
The customer service department improved its average customer inquiry response time from 11.5 days in FY 2016 to 9 days in FY 2017, and staff met or exceeded 95% satisfaction in several categories¹⁰.

In 2016 Tri-Rail's fare box recovery (fare revenue divided by costs related solely to operations) was 21.07%, down slightly from 2015.¹¹

Performance of SunRail Service

On-time performance of SunRail trains averaged 96% between May 2014 and October 2017, exceeding the goal of 95%. As shown in **Figure 2-8**, average daily riders have generally fallen into a range from 3,000 to 4,000. In a Cleanliness Text Survey executed in October 2017, 164 responses rated stations, trains, and onboard restrooms at least 4 out of 5 stars¹².

Figure 2-8: SunRail Average Daily Riders by Month



Source: SunRail

¹⁰ Per SFRTA Forward

¹¹ Per SFRTA Forward

¹² Per Central Florida Commuter Rail Commission (CFCRC) meeting materials.

PUBLIC FINANCING FOR RAIL PROJECTS AND SERVICES

Florida has utilized both federal and state transportation funding programs for rail infrastructure improvements where eligible and appropriate. The following is a short summary of state and federal rail funding resources used in the recent past.

State Sponsored Rail Funding

State funding for transportation projects in Florida is generated from the State Transportation Trust Fund (STTF). The STTF is funded through several revenue sources that include, but are not limited to, the statewide fuel tax, state motor fuel excise tax, state comprehensive enhanced transportation tax, aviation fuel tax, initial vehicle registration fees, vehicle title fees, document stamps and rental car fees.

FDOT administers several financing and funding programs from the funding available through the STTF and other trust funds and resources including federal, local, and private funds for transportation projects within the state.

The following is a summary of state funding programs for which rail improvements are eligible. The designation criteria for these programs include rail improvement eligibility as of February 2017; however, designation criteria evolve annually.

State Infrastructure Bank (SIB)

The SIB is a revolving loan and credit enhancement program. The program can provide loans and other assistance to public and private entities implementing or proposing to implement projects eligible for assistance under state and federal law. Projects must be on the State Highway System or provide for intermodal connectivity with airports, seaports, rail facilities, transportation terminals, and other intermodal options for increased accessibility and movement of people, cargo and freight.

Strategic Intermodal System Program (SIS)

Eligible projects for this program must have been identified as either Strategic Intermodal System or Emerging Strategic Intermodal System elements and be consistent with the established SIS goals of preservation, maintenance, safety, and capacity. Typical rail-related projects eligible for the program could include expansion of capacity through double-tracking of a rail corridor, grade separation between modes, separation of freight and passenger traffic, passing sidings, track upgrades to handle maximum loaded car weights of the 286,000-pound standard.

Transportation Regional Incentive Program (TRIP)

TRIP was created to improve regionally significant transportation facilities by focusing on "regional transportation areas." State funds are available to provide incentives for local governments and the private sector to help pay for critically needed projects that benefit regional travel and commerce. Projects must be part of an integrated transportation system, consistent with the Strategic Intermodal System, and identified in the Statewide Transportation Improvement Plan (STIP) or MPO long-range plans and Transportation Improvement Plans (TIP).

Economic Development Transportation Fund (EDTF)

The EDTF program is an incentive tool designed to alleviate transportation problems that adversely impact a specific company's location or expansion decision. The elimination of the problem must serve as inducement

for a prospective business location, an existing business retention, or expansion project in Florida and create or retain job opportunities. Up to \$3 million may be provided to a local government to implement improvements with the actual amount based on specific job creation or retention.

Intermodal Logistics Center Infrastructure Support Program

Eligible intermodal facility projects must serve a strategic state interest, facilitate the cost-effective and efficient movement of goods, and demonstrate a contribution to economic activity including job creation, increased wages, and revenues. Projects must also interact with and support the transportation network and be consistent with MPO plans and local government comprehensive plans.

Intermodal Development Program

This program was created to provide for major capital investments in public rail and fixed-guideway transportation systems, road, intercity rail or bus service to/from or between seaports, airports and other transportation terminals, and to provide for the construction of intermodal or multimodal terminals or otherwise facilitate the intermodal or multimodal movement of people and goods.

Highway-Rail Grade Crossing Safety Improvement Program

Eligible grade crossing improvement projects are identified by District Rail Coordinators based on a grade crossing safety index ranking determined by a crash prediction algorithm. Crossing candidates are evaluated considering several factors including the grade crossing safety index, project cost, incident history, corridor emphasis, diagnostic observations, upgrading crossings from passive to active devices, and input from local governments and railroad partners. The current funding allotment is approximately \$9 million annually, which allows approximately 55 to 60 crossings to be improved. Funding is from the federal Highway Safety Improvement Program discussed below, and may include railroad sources.

Highway-Rail Grade Crossing Construction and Maintenance Program

This highway-rail grade crossing program is dedicated to new construction, reconstruction, widening, and/or resurfacing of a road at or near the right-of-way of a grade crossing. Close coordination with District Railroad Coordinators is required to ensure use of railroad property and their resources are available for warning device relocation and flagging services.

Rural Economic Development Initiative (REDI)

This program is administered through the Florida Department of Economic Opportunity. REDI is a multi-agency endeavor that coordinates the efforts of regional, state and federal agencies to address the problems that affect the fiscal, economic, and community viability of Florida's distressed rural communities.

Federal Rail-Related Programs and Funding

In 2008, PRIIA and related appropriation bills provided funds directly to states for intercity rail passenger investments. In early 2009, the American Recovery and Reinvestment Act (ARRA) also provided flexible transportation funding to states for rail capital projects as well as funding for passenger rail development. Most recently, the Passenger Rail Reform and Investment Act of 2015 (PRRIA) was part of the FAST Act passed in 2015.

The following section provides a brief history of these programs and federal budget appropriations which were specifically available for rail assistance as well as programs that may be eligible for selected rail-related applications.

PRIIA Rail Capital Assistance Programs

This legislation authorized over \$13 billion between 2009 and 2013 for Amtrak and promoted the development of new and improved intercity rail passenger services. The act also established an intercity passenger rail capital grant program for states. These funds were to be provided to states, on a competitive basis, for up to 50% of the capital cost of improving intercity rail passenger service. States were required to identify passenger rail corridor improvement projects in their state rail plans.

Federal funding authorized under PRIIA or other authorization programs were required to be appropriated in annual budget or other legislative bills. Funding, however, was only appropriated in FFYs 2009 and 2010 and no appropriations for high-speed rail grants were included in the FFY 2011 through 2014 budgets. PRIIA funding authorizations expired on September 30, 2013.

Florida was appropriated \$2.4 billion through this program for construction of a high-speed rail link between Tampa and Orlando. In February 2011, Governor Scott returned these funds to the federal government due to projected cost overruns that could result in a \$3 billion cost to the state and prospective future subsidies necessary to retain operations.

Federal Surface Transportation Rail-Related Programs

Federal transportation funding to states is periodically authorized through Federal Surface Transportation Acts. Transportation funding is provided to states through apportionment by formula or discretionary funding for various programs.

The Moving Ahead for Progress in the 21st Century Act (MAP-21) was passed into law in July 2012. The law originally authorized funding through September 2014 but was extended through December 2015. On December 4, 2015, the Fixing America's Surface Transportation (FAST) Act was signed into law. The FAST Act authorizes federal highway, highway safety, transit, and rail programs for five years through federal fiscal year 2020.

The following paragraphs contain a brief description of rail-eligible programs available through past and current Federal Surface Transportation Acts and Florida's participation where applicable.

Highway Safety Improvement Program (HSIP)

This program is a core federal-aid funding program with the goal of achieving a significant reduction in traffic fatalities and serious injuries on all public roads. Funding from this program can be set aside for the purpose of reducing the number of incidents at public highway-rail crossings through the elimination of hazards and / or the installation / upgrade of protective devices at crossings.

The federal funding share for this program is 90%. Florida receives approximately \$80 million annually through this program. Only a minor fraction of this amount is going toward the state Highway-Rail Grade Crossing Safety Improvement Program.

In 2009, a federal law was passed by the Federal Rail Administration (FRA) mandating that the top 10 states with the most at-grade crossing collisions on average, produce a Highway-Railroad Grade Crossing State Action Plan (SAP). Now, the FAST Act requires that every state complete a SAP. Florida's most recent SAP is in progress; It evaluates existing safety practices used at highway-railroad grade crossings, provides data analysis, strategies, and suggested improvement projects, and will also provide plans to implement safety improvements in the short and long term.

Rail Rehabilitation and Improvement Financing (RRIF)

This program provides loans and credit assistance to both public and private sponsors of rail and intermodal projects. Eligible projects include acquisition, development, improvement, or rehabilitation of intermodal or rail equipment and facilities. Direct loans can fund up to 100% of a capital project with repayment terms of up to 25 years and interest rates equal to the cost of borrowing to the government. A total of \$35 billion was authorized under SAFETEA-LU, the previous transportation funding act, for this program, of which \$7 billion was directed to short line and regional railroads. No additional authorizations were included in MAP-21.

Eligible borrowers include railroads, state and local governments, government sponsored authorities, corporations, and joint ventures that include at least one railroad. The Georgia and Florida Railway received an \$8.1 million federal loan under this program in 2009.

Federal Transit Administration (FTA) Programs

As previously noted, Title XI of the FAST Act, also known as the Passenger Rail Reform and Investment Act of 2015 (PRRIA), provides for \$5.5 billion to be spent on the national intercity rail network outside of the Northeast Corridor. Dependent on Congressional budget appropriations, it also authorizes provides for another \$2.2 billion in FRA grant programs over the next five years. Specific rail and rail-transit related programs include the following:

- **New Starts** – The Federal Transit Administration's (FTA) discretionary New Starts program is the federal government's primary financial resource for supporting locally-planned, implemented, and operated transit "guideway" capital investments, including commuter rail. An eligible New Starts project has project cost greater than \$250 million, and total new Starts funding sought equals or exceeds \$75 million. Types of New Starts projects relevant to Florida could include a new commuter rail system or an extension of an existing system.
- **Small Starts** – An eligible Small Starts project has a total project cost less than \$250 million, and total Small Starts funding sought is less than \$74 million. This program could be used for commuter rail. Types of Small Starts programs relevant to Florida could include a new commuter rail system or an extension of an existing system.
- **Core Capacity** – An eligible core capacity project (1) must be located in a corridor that is at or over capacity or will be in five years, (2) will increase capacity by 10%, and (3) does not include elements designed to maintain a state of good repair.

Federal Surface Transportation Programs with Selected Rail Applications

In addition to the above programs, a number of other programs, although primarily intended for highway use, are eligible for rail projects at the discretion of states and with the approval of the administering federal agency. These programs include:

National Highway System Program (NHS)

This program can be utilized to improve designated highway intermodal connectors between the National Highway System (NHS) and intermodal facilities, such as truck-rail transfer facilities. The federal share of NHS funding is 80%.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

This program funds transportation projects and programs that improve air quality by reducing transportation-related emissions in non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter. Examples of Congestion Mitigation and Air Quality (CMAQ)-funded rail projects include the construction of intermodal facilities, rail track rehabilitation, diesel engine retrofits and idle-reduction projects in rail yards, and new rail sidings.

CMAQ funds are disbursed to and within a state based on levels of pollution within an area, with the state or the region utilizing the funds to implement projects that reduce congestion or improve air quality. Projects must be included in MPO transportation plans and transportation improvement programs (TIPs) or the current state transportation improvement program (STIP) in areas without an MPO. The federal matching share for these funds is 80%.

Surface Transportation Program (STP)

The Surface Transportation Program (STP) is a general grant program available for improvements on any Federal-Aid highway, bridge, or transit capital project. Eligible rail improvements include lengthening or increasing vertical clearance of bridges, crossing eliminations, and improving intermodal connectors. Project funding decisions are made by states with approval from the Federal Highway Administration (FHWA). The federal share for these funds is 80%.

Transportation Infrastructure Finance and Innovation Act (TIFIA)

This program provides credit assistance to large-scale projects (over \$50 million or one-third of a state's annual federal-aid funds) of regional or national significance that might otherwise be delayed or not constructed because of risk, complexity, or cost. A wide variety of intermodal and rail infrastructure projects are eligible and can include equipment, facilities, track, bridges, yards, buildings, and shops. Eligible recipients for TIFIA funds include state and local governments, transit agencies, railroad companies, special authorities or districts, and private entities. The interest rate for TIFIA loans is the U.S. Treasury rate, and the debt must be repaid within 35 years.

Transportation Alternatives Program

This program, which replaced the SAFETEA-LU Transportation Enhancement Program, offers funding opportunities to expand transportation choices and enhance the transportation experience through 12 eligible activities related to surface transportation. Rail related eligible activities include the rehabilitation of historic transportation buildings or facilities, the preservation of abandoned rail corridors, and the establishment of transportation museums. The federal share of project costs is 80%.

The FAST Act places major emphasis on freight improvements to be supported by the Highway Trust Fund by creating a new National Highway Freight Program (NHFP) at an average of \$1.2 billion per year and distributed to the states by formula. NHFP funds are eligible to be used on certain non-highway projects, such as costs associated with rail and intermodal connectors and rail-highway separation projects.

In addition, the new Nationally Significant Freight and Highway Projects discretionary program provides federal financial assistance for projects of national or regional significance. Eligible freight projects include rail and intermodal facilities, highway-rail separation projects, and highway-rail grade crossing projects.

Other Federal Programs Available for Rail-Related Funding

In addition to transportation programs available under the Transportation Authorization bill, other programs are administered by federal agencies for which rail-related capital projects are eligible. These programs include:

U.S. Department of Commerce Economic Development Administration

The U.S. Department of Commerce provides Economic Development Administration (EDA) grants for projects in economically distressed industrial sites that promote job creation or retention. Eligible projects must be located within EDA-designated redevelopment areas or economic development centers. Eligible rail projects include railroad spurs and sidings. EDA also provides disaster recovery grants. Grant assistance is available for up to 50% of the project, although EDA could provide up to 80% for projects in severely depressed areas.

U.S. Department of Agriculture Programs

The U.S. Department of Agriculture (USDA) Community Facility Program and Rural Development Program provide grant or loan funding mechanisms to fund construction, enlargement, extension, or improvement of community facilities providing essential services in rural areas and towns. Grant assistance is available for up to 75% of the project cost. Eligible rail-related community facilities include transportation infrastructure for industrial parks and municipal docks.

The 45G Short Line Railroad Tax Credit

Originally enacted in 2004, the Railroad Track Maintenance Tax Credit, also known as the Section 45G Tax Credit, was a federal income tax credit for track maintenance conducted by short lines and regional railroads in the U.S. Section 45G to the Tax Code leveraged private sector investment in rail infrastructure by providing a tax credit of 50 cents for every dollar spent on qualified track maintenance expenditures or other qualifying railroad infrastructure projects. The credit was capped based on a mileage-based formula; the maximum amount allowable was \$3,500 per mile of track. The credit created a strong incentive for short line and regional railroads to invest private sector dollars on freight railroad track rehabilitation. Per Section 45G, qualifying railroad structures improvements include: grading; other right-of-way expenditures; tunnels and subways; bridges, trestles, and culverts; elevated structures; ties; rails and other track material; ballast; fences, snow sheds, and signs; signals and interlockers; public improvements and construction. Qualified railroad track maintenance expenditures are expenditures for maintaining the qualifying railroad infrastructures owned by short line and regional railroads.

ONGOING PROGRAMS AND PROJECTS TO IMPROVE SAFETY AND SECURITY

Rail safety is a priority for railroads and state departments of transportation as it has an impact not only on the public, but also on the efficiency of railroad operations. Rail security has seen increased attention due to: the potential for terrorists using the rail mode to disrupt transportation or to harm large numbers of citizens; and the increased transportation of some hazardous materials by rail, such as the movement of crude oil. This section describes rail safety and security efforts in Florida.

Rail Safety Programs in Florida

Rail safety requirements are provided through a combination of federal and state laws. Most safety-related rules and regulations fall under the jurisdiction of the FRA, as outlined in the Rail Safety Act of 1970 and other legislation, such as the most recent Rail Safety Improvement Act of 2008. FRA's rail safety regulations can generally be found in Title 49 Code of Federal Regulations Parts 200-299.

FDOT has an extensive State Rail Safety Inspection Program. The Freight & Multimodal Operations Office Inspection Program Manager is the primary liaison with FRA on safety inspection issues, coordinates with FRA inspectors who cover areas throughout the southeastern U.S., coordinates the training of new inspectors, prepares performance data on inspection activities, and oversees the inspection of citizen complaints on rail issues.

All state rail inspectors are certified by FRA and perform safety inspections on railroads within their respective disciplines to determine compliance with federal regulations, investigate complaints, respond to rail-related technical requests from districts and the central office, evaluate contract compliance and assist in federal agencies in investigating rail incidents. Safety-related disciplines overseen by state inspectors include: track; operating practices; signal and train control; hazardous materials; and motive power and equipment.

In addition, the Florida Highway-Railroad Grade Crossing State Action Plan provides an overview of the leading safety concerns in the state regarding highway-railroad grade crossings. This plan is a powerful tool used to comprehensively assess and address rail safety through data, analysis, and measurable goals.

Florida Rail Incident Statistics

The following is a statistical review of rail safety in Florida over the past decade. It addresses the rail incident trends and provides details as to the type of rail incidents, those affected and causes. More information discussing rail incident data can be found in Florida's Highway-Railroad Grade Crossing State Action Plan.

Table 2-20: Total Incidents in Florida (2008-2017)

Rail Injury Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Incidents	259	231	255	239	254	322	337	326	343	409
Deaths	51	29	44	32	30	35	34	44	44	64
Injuries	167	173	185	179	222	224	251	247	267	298

Source: FRA Office of Safety

Train incidents include train derailments, collisions, and other events involving on-track rail equipment that result in fatalities, injuries or monetary damage above a threshold set by FRA.

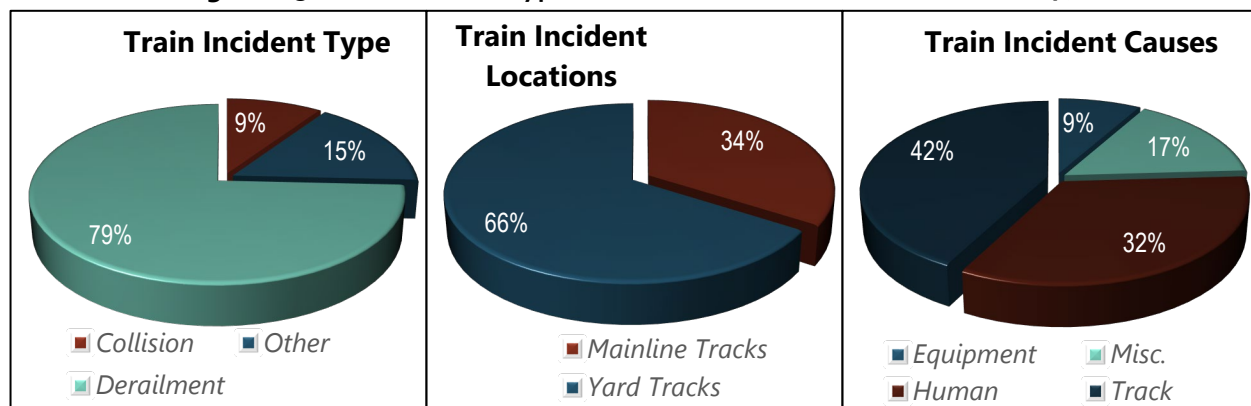
Table 2-21: Total Train Incidents in Florida (2008-2017)

Train Accidents	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Incidents	22	16	16	18	23	32	23	21	29	24
Deaths	0	0	0	0	0	0	0	0	0	1
Injuries	0	1	0	19	0	0	0	8	1	0

Source: FRA Office of Safety

The charts in **Figure 2.9** provide more detailed information regarding the type, location, and causes of the train incidents over the past decade.

Figure 2-9: Train Incident Type/Locations/Causes in Florida (2008-2017)



Source: FRA Office of Safety

In the leftmost chart, train derailments are shown to have been the dominant type of rail incidents in the state over the past ten years. As shown in the middle figure above, most rail incidents occurred on yard tracks as opposed to main line tracks. Human error and track defects were the leading causes of train incidents, while equipment defects and miscellaneous causes comprised lesser shares of rail incidents in the state.

Other rail incidents include events other than train incidents or crossing incidents that caused a death or injury to any person. Most fatalities in this category are due to rail trespassers. Other events which generally lead to injuries in this category include activities such as getting on or off equipment, doing maintenance work, throwing switches, setting handbrakes, falling, etc. Rail passenger-related casualties can include boarding or alighting from standing trains or platforms. Statistics for this category of rail incidents are shown in **Table 2-22**.

Table 2-22: Other Rail Incidents 2008-2017

Other Rail Incidents	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Incidents	161	164	172	169	172	225	227	225	227	277
Deaths	26	19	33	25	18	27	25	33	29	42
Injuries	137	147	144	145	159	205	207	194	211	244

Source: FRA Office of Safety

Highway-Rail At-Grade Crossing Safety in Florida

A total of 4,931 at-grade highway-rail crossings exist in Florida. Of these, 3,678 at-grade crossings are on public roads with the remaining considered private crossings. Public at-grade crossings in the state have various levels of grade crossing warning devices. **Table 2-23** shows the type of warning equipment and the number of crossings equipped with each. The warning devices are shown in a decreasing order of warning effectiveness.

Table 2-23: Types of Warning Devices at Florida Public At-Grade Crossings

Warning Device Type	Gates	Flashing Lights	Bells	Special Warning	Stop Signs	Cross Bucks	Other	None
No. of Crossings	2,469	354	11	27	170	564	2	23

Note: "Gates" include traditional two quadrant gates as well as four quadrant gates.

Source: FRA Office of Safety Analysis

These figures show that almost 78% of all public at-grade crossings in the state have what are considered active warning devices such as gates, flashing lights, bells or special warning arrangements (e.g., flagmen). Many of these crossings with passive systems or no warning systems are low-volume and rural in nature.

At-Grade Crossing Incidents in Florida

The table below shows the number of highway-rail grade crossing incidents, fatalities, and injuries which have occurred at all at-grade crossings over the past decade.

Table 2-24: Highway-Rail Incidents in Florida (2008-2017)

Highway-Rail Incidents	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Incidents	76	51	67	52	59	65	87	80	86	79
Deaths	25	10	11	7	12	8	9	11	15	15
Injuries	30	25	41	15	63	19	44	45	52	30

Source: FRA Office of Safety

These volumes show a general decrease in the number of deaths comparing the initial and latter year segments, with the average deaths decreasing 40% by 2017. The average number of injuries varied over the ten-year period largely due to upticks in 2010, 2012 and 2016.

Incidents Involving Hazardous Materials in Florida

Rail incidents involving hazardous materials in Florida has followed the trend of decreasing rail-related incidents, except for a slight uptick in 2014. The average number of rail cars involved in hazardous material incidents in the latter three as compared to the first three years of this ten-year period has remained the same, despite a steady increase of cars carrying hazardous materials.

Table 2-25: Rail Incidents Involving Hazardous Materials in Florida (2008-2017)

Rail Incidents	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cars Carrying Hazmat	87	101	80	13	96	134	114	157	143	14
Hazmat Cars Damaged or Derailed	11	5	0	1	14	14	70	3	11	0
Cars Releasing Hazmat	0	1	0	0	1	3	4	0	0	0

Source: FRA Office of Safety

Positive Train Control

Positive Train Control (PTC) refers to communication/processor-based technologies designed to automatically stop or slow a train before certain accidents can occur. PTC is designed to prevent collisions between trains and derailments caused by excessive speed, by trains operating beyond their limits of authority, incursions by trains on tracks under repair, and trains moving over switches left in the wrong position. PTC systems are designed to determine the location and speed of trains, warn train operators of potential problems, and take action if operators do not respond to a warning.

The system is also required to be a nationally interoperable system and installed on:

- All rail main lines over which regularly scheduled commuter or intercity passenger trains operate; and,
- All Class I railroad main lines transporting over 5 million gross ton-miles per mile annually over which any amount of toxic/poison-by-inhalation hazardous materials is handled.

The mandate for PTC excludes all Class II (regional) and III (short line) railroads regardless of tonnage or number of toxic/poison cars handled unless passenger trains travel over the lines.

Signed into law following a deadly head-on collision of a commuter train and freight train near Los Angeles, the Rail Safety Improvement Act of 2008 (RSIA) required railroads to place PTC systems in service by December 31, 2015. In late 2015, the deadline for implementation was pushed back to December 31, 2018. Complicating installation schedules was a Federal Communications Commission ruling in 2013 regarding the installation of radio towers that delayed construction of 22,000 towers; however, an agreement on the issue was reached in 2014. Both of Florida's Class I's proceeded with the equipping locomotives with necessary PTC gear and upgrading signals during the dispute. In Florida, all corridors serving Amtrak and commuter operations (Tri-Rail and SunRail) will require PTC installation.

Rail Security

The focus of rail security has changed significantly over the past decade. In response to potential terrorist threats to the transportation system, new federal and state agencies have been established to oversee and provide assistance in addressing the security of transportation modes. The following subsection addresses specific rail security issues and Florida's involvement in rail security procedures.

Federal and State Roles in Rail Security

The principal agencies responsible for security related to transportation modes in Florida are the U.S. Department of Homeland Security and Florida Division of Emergency Management. The two agencies, coordinating with other federal and state agencies, have addressed transportation security largely through identifying critical infrastructure assets, developing protection strategies for these assets, and developing emergency management plans.

The U.S. Department of Homeland Security approaches rail system security through the following means:

- Training and deploying manpower and assets for high risk areas;
- Developing and testing new security technologies;
- Performing security assessments of systems across the country; and,
- Providing funding to state and local partners.

The Association of American Railroads (AAR), working with the U.S. Department of Homeland Security and other federal agencies, has organized the Rail Security Task Force. This task force developed a comprehensive risk analysis and security plan for the rail system that includes:

- A database of critical railroad assets;
- Assessments of railroad vulnerabilities;
- Analysis of the terrorism threat; and,
- Calculation of risks and identification of countermeasures.

The railroad sector maintains communications with the U.S. Department of Defense, the U.S. Department of Homeland Security, the USDOT, the Federal Bureau of Investigation, and state and local law enforcement agencies on all aspects of rail security. Furthermore, CSX, NS and FEC have their own police departments.

The Florida Division of Emergency Management plans for and responds to natural and man-made disasters. The Division prepares and implements a statewide Comprehensive Emergency Management Plan, and routinely conducts extensive exercises to test state and county emergency response capabilities. The Division is the state's liaison with federal and state agencies, including FDOT, on emergencies of all kinds. Division staff members provide technical assistance to local governments as they prepare emergency plans and procedures. They also conduct emergency operations training for state and local government agencies.

ECONOMIC AND ENVIRONMENTAL IMPACTS

Economic impacts of rail activity in Florida emanate from firms providing rail transportation services, industries that use such services to trade goods, and passenger users (visitors to Florida via rail). Of these activities, freight-users generate the most significant impacts.

In terms of freight rail-related impacts, transport providers (CSX, NS, FEC and the short lines) and users (Florida rail shippers) create direct economic impacts through rail operations. Further, indirect impacts associated with suppliers, and induced impacts associated with the re-spending of income, are also quantified. The indirect and induced impacts are collectively known as multiplier effects.

Combined, the direct, indirect, and induced impacts comprise total economic impacts, with each measured in terms of employment (full-time equivalent jobs), income (wages and salaries), value-added (i.e., net economic activity or Gross State Product), output (total sales value associated with all levels of economic activity), and taxes (including federal and state taxes as well as fines, fees, licenses, permits, etc.).

Freight Service Provision Impacts

Freight rail service provision-related impacts constitute about two to three percent of total Florida freight rail transport impacts.

- *Direct* – Freight rail providers yield a direct impact of 4,990 jobs, earning \$539 million in labor income, producing \$668 million in value-added activity, which equates to \$1.6 billion in economic output, with taxes on such direct output equating to \$11 million.
- *Total* – Including the Florida multiplier effects, transport service-related activity impacts total 16,230 jobs, earning \$1.1 billion in labor income, which produce \$1.5 billion in economic value-added, which equates to a total economic output of \$3.1 billion, and yields a tax impact of \$91 million to the state and federal governments.

Freight User Impacts

Many consignees and shippers heavily rely on freight rail services to receive and/or ship freight; in doing so, they generate significant impacts. While these firms/industries are not entirely dependent on rail for shipping freight (as alternative modes are available, such as trucking), it is hard to envision continued operations without such access.

- *Direct* – Freight rail users yield a direct subtotal impact of 351,820 jobs, earning \$16.4 billion in labor income, producing \$27.6 billion in value-added activity, which equates to \$65.8 billion in economic output, with taxes on such direct output equating to \$2.9 billion.
- *Total* – Including the multiplier effects, freight user activity impacts total 722,610 jobs, earning \$33.1 billion in labor income, which produce \$56.4 billion in economic value-added, which equates to a total economic output of \$117.9 billion, and yields a tax impact of \$5.7 billion to the state and federal governments.

Total Freight Rail Activity Impacts

While the basic provision of freight rail services generates a modest 4,990 direct jobs (16,230 including multipliers), freight rail users generate 351,820 direct jobs.

- *Direct* – Combining the freight rail-related activities (service provision and users) yields a direct impact of 356,810 jobs, earning \$17.0 billion in labor income, producing \$28.4 billion in value-added activity, which equates to \$67.4 billion in economic output, with taxes on such direct output equating to \$2.9 billion.
- *Total* – Including the multiplier effects, the freight provision and use impacts total 738,840 jobs, earning \$34.2 billion in labor income, which produce \$57.9 billion in economic value-added, which equates to a total economic output of \$121.0 billion, and yields a tax impact of \$5.7 billion.

Impacts as Percentage of Economy

Total economic impacts associated with freight rail in Florida range between 7.0% (employment) to 8.7% (economic output) of the statewide economy, depending on measure.

Table 2-26: Florida Economic Measures, 2013

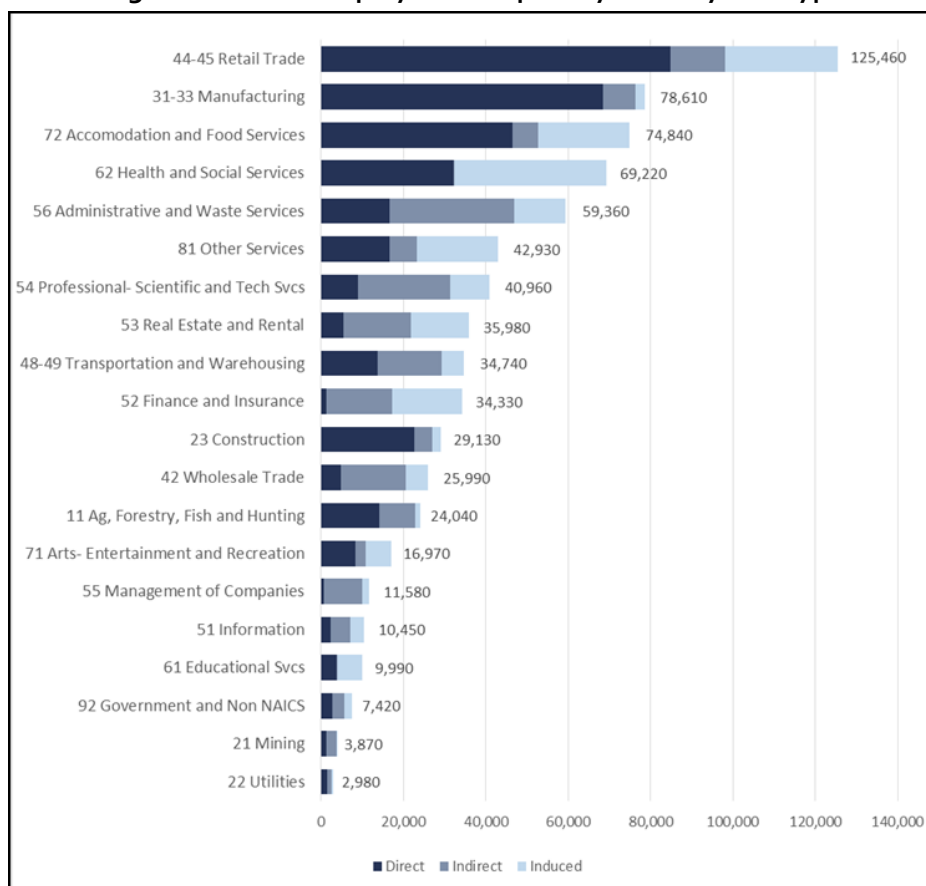
Economic Measure	State Value	Total Impacts	
		Value	Perc. of State
Employment	10,569,943	738,840	7.0%
Labor Income ¹	\$487,082	\$34,165	7.0%
Total Value Added ¹	\$796,733	\$57,879	7.3%
Output ¹	\$1,392,532	\$121,012	8.7%
Tax on Production and Imports ¹	\$66,194	\$5,745	8.7%
¹ in millions of 2013 dollars			
Source: IMPLAN®			

Employment Impacts by Industry

Freight rail impacts total nearly 739,000 total jobs across Florida, reflecting both the provision and user activities and impact types (direct plus multipliers). Industry breakdown of aggregate jobs enables perspective of how rail freight affects the state economy. Nearly half of the job impacts are direct, led by

Retail Trade and Manufacturing. The other indirect and induced (i.e., multiplier) jobs reflect the supplier impacts and the re-spending of earnings. These annual job impacts are shown by industry and impact type in **Figure 2-10**. The key point is that rail transport impacts industries differently. Whereas some are directly impacted (Retail and Manufacturing), others are primarily impacted indirectly (Administration and Waste Services) or through the re-spending of income (i.e., Health and Social Services).

Figure 2-10: Rail Employment Impact by Industry and Type



Source: IMPLAN®

More detail on the economic impacts and how they were calculated appears in **Appendix D**.

Socio-Environmental / Livability Impacts

Impacts associated with rail transport go far beyond the quantifiable jobs, income, output, and metrics for the economy of Florida. Other social-environmental impacts arise concerning how rail affects “livability” in Florida.

Land Use and Economic Development Impacts

The rail mode of transportation is less land intensive than most other freight-related modes. Each line of rail track offers far more capacity than a highway lane. New train control systems often allow rail capacity to be expanded without the need for additional track. Expansion may require one additional track or the addition of passing sidings and most rail rights-of-way are typically wide enough to allow tracks to be added without requiring adjacent land.

Freight improvements can further economic development. More efficient access to the freight rail system, such as provided by new intermodal facilities and improved short lines, can lower transportation costs for shippers. The presence of short line railroads can help keep trucking costs down, because they provide an option to businesses that are currently using trucks but would switch to rail if trucking costs increase. Benefits resulting from freight rail investments can thus enhance the competitiveness of the state and the region. Short lines can provide businesses in rural areas access to the national and international markets via their connections with the Class I networks. These benefits will serve to help retain existing work forces and business and attract new ones, thus bolstering economic development.

Risk Mitigation, Sustainable Land Use

As a result of the devastation from hurricanes and tropical storms in the southeast in the last few decades, risks for transportation infrastructure, including to the rail system, have received increased attention. Several states have expanded planning to address the risks, with the intent to reduce the vulnerability from extreme weather events. The vision is for sustainable development that protects coastal wetlands, promoting development away from high risk areas (i.e., flood plains and unprotected areas subject to storm surge) to areas in and around existing communities. Supporting this effort could include additional investments in flood / storm surge protection for the transportation system, such as elevating roadways and railways where needed to maintain resistance to flooding.

Energy Use and Costs

The American Association of State Highway Officials noted that for each 1% of long haul freight currently moving by truck, if moved by rail instead, fuel savings would be approximately 111 million gallons per year, and annual greenhouse gas (GHG) emissions would fall by 12 million tons. If 10% of truck traffic went by rail – via intermodal movements involving both railroads and trucks – the cumulative estimated GHG reductions from 2007 to 2020 would be 210 million tons. Shifting of traffic to rail transport will reduce the energy intensity of transportation and potentially insulate users from dramatic changes in fuel prices.

As seen in **Table 2-27**, the energy transport costs of rail transport are approximately 30% of truck transport, based on a \$4 price per gallon of diesel fuel. The rail transport cost comparisons are even greater when one considers: (1) labor costs; (2) operation and management costs associated with both vehicles and the infrastructure; and (3) safety and environmental costs.

Table 2-27: Ton Transport Distance and Energy Cost per Gallon of Fuel

Mode	Ton-Miles	\$ / Ton-mile
Tug Barge	616	0.0065
Rail Locomotive	478	0.0084
Truck	150	0.0270
<i>Assume \$4.00 cost per gallon.</i>		

*Source: National Waterway Foundation and Texas Transportation Institute;
<http://www.nationalwaterwaysfoundation.org/study/public%20study.pdf>*

Air Quality

Table 2-28 portrays the relative tons of emissions and related damages for various greenhouse gases for each mode of transportation. Freight transport by rail and water vessels generate significantly less negative air quality impacts and costs than truck transport.

Table 2-28: Environmental Damages and Costs per Million Ton-Miles, by Mode

	Trucks	Rail Locomotives	Waterborne Vessels
Ton Miles (Millions) ¹	2,040,000	1,819,633	274,367
PM_{2.5} Emissions			
Tons (Total)	229,754	28,690	3,520
Tons per Million Ton-Miles	0.1126	0.0158	0.0128
Damages per Ton	\$251,466	\$251,466	\$251,466
Damages per Million Ton-Miles	na	na	na
NO_x Emissions			
Tons (Total)	5,824,060	1,083,320	141,865
Tons per Million Ton-Miles	2.8549	0.5954	0.5171
Damages per Ton	\$4,610	\$4,610	\$4,610
Damages per Million Ton-Miles (\$000)	\$13,160	\$2,740	\$2,380
CO₂ Emissions			
Tons (Total)	468,702,800	52,690,500	5,286,600
Tons per Million Ton-Miles	229.76	28.96	19.27
Damages per Ton ²	na	na	na
Damages per Million Ton-Miles (\$000)	na	na	na
Summary Damages per Million Ton-Miles ³	\$41,480	\$6,710	\$5,610

Monetary values in 2010 dollars.

¹Trucks and Locomotives reflect 2007 ton-miles, versus year 2005 for waterborne vessels.

²Damages per ton not available.

³Excludes CO₂ damages.

Source: Surface Freight Transportation: A Comparison of the Costs of Road, Rail, and Waterways Freight Shipments That Are Not Passed on to Consumers; GAO, January 2011; <http://www.gao.gov/new.items/d11134.pdf>

Safety Impacts

Freight rail transportation is relatively safe, however there can be external costs associated with freight transport include accidents. Comparisons of injuries to ton-miles indicate an even greater external cost savings benefit associated with rail and water transport versus that of truck.

Table 2-29: Incidents and Costs per Billion Ton-Miles, by Mode

	Trucks	Rail	Waterborne
Incidents	5,069	683	7
Injuries	111,800	5,747	26
Ton-Miles (Billion)	1,997	1,739	587
Injuries per Ton-Miles (Billion)	56.05	3.32	0.05
Costs per ton-mile (in 2010 \$)	0.11 to 2.15	0.24	n/a

Note: figures represent averages between 2003-2007.

Source: Surface Freight Transportation; A Comparison of the Costs of Road, Rail, and Waterways Freight Shipments That Are Not Passed on to Consumers; GAO, January 2011; <http://www.gao.gov/new.items/d11134.pdf>

Livable and Sustainable Communities

Livability is the combination of various attributes which define how attractive a given place is to live. The transportation system's ability to efficiently and safely move people and goods, without negatively impacting the environment in which it operates, plays a crucial role in how people view and rate the livability

and sustainability of an area. The following is a discussion of the positive benefits of passenger and freight rail on local community livability / sustainability.

- **Pollution** – Train air pollution and noise can deteriorate the quality of life of communities along rail lines. The rail industry has made significant progress in making diesel locomotives more efficient and burning cleaner diesel fuels. Railroads are also implementing “genset” locomotives primarily used for switching operations and assembling trains in rail yards. The genset locomotive has two or three smaller engine-generators that are programmed to start up only when needed. Other technology improvements in both the fuels and locomotive technology are also aimed at mitigating the worst effects of train-related air pollution.
- **Noise** – A leading means of combating train horn noise is the implementation of railroad quiet zones. These are zones involving one or more highway-rail crossings where the locomotive engineer is not obligated to blow their horn approaching the crossing(s).¹³ The procedures whereby a community can implement a quiet zone are specified by the Federal Railroad Administration.¹⁴ Typically, improvements need to be made at the crossings to enhance safety at the crossings. Improvements can include four-quadrant gates, medians on approaches along with gates at the crossings, street closures, etc. Once the improvement designs are reviewed by the FRA and implemented, a quiet zone can be established.
- **Freight Rail and Sustainable Communities** – Freight rail also plays a role in the livability and sustainability of a community. The ability to efficiently transport goods and create access to economic centers is critical to the overall success of a region’s economy. The efficiency of rail freight is especially important in rural areas where agriculture, local industries and communities rely on freight shipping. A revitalized rail line can lower shipping costs, provide pricing power for local industries and agriculture, provide redundancy in the transportation network, and shield local industries and agriculture from potential increases in the cost of fossil fuel.

Roadway Congestion Benefits

Roadway congestion relief from fewer cars and trucks due to shifts onto rail means improved free-flow traffic and less congestion-related issues. Consequently, societal benefits transpire in terms of travel time, vehicle operating, accident, and emissions-related cost savings. Connections between rail and truck typically occur at ports or intermodal facilities, and the local roadway system must function as the link to first and last mile.

Roadway Maintenance Savings

Rail services provide an alternative surface transportation mode to roadway transportation, and in doing so, shifts both goods and people away from the pavement and onto the tracks. In shifting people and goods onto rail, the reduced demands on the roadway network result in reductions in necessary roadway maintenance to maintain pavement condition.

¹³ Federal regulations specify that trains horns be sounded while trains approach and enter highway-rail crossings.

¹⁴ <http://www.fra.dot.gov/rpd/freight/1318.shtml>

TRENDS AND FORECASTS

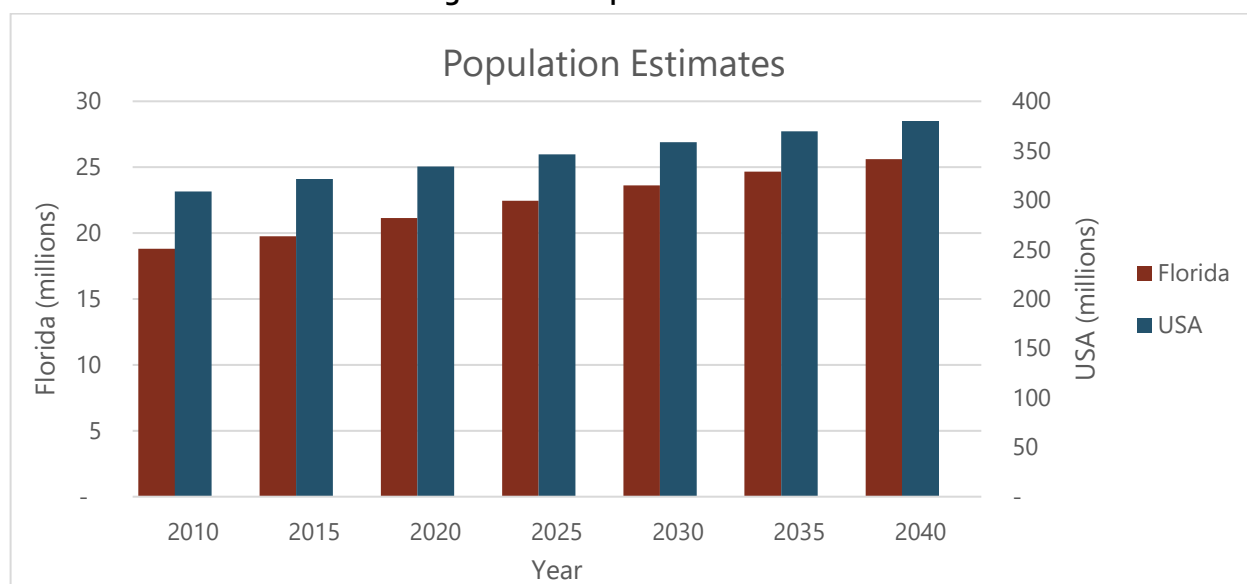
The purpose of this section is to describe trends that could affect rail needs for the state of Florida in the future. Trends which impact both passenger and freight rail include factors such as demographic and economic growth, transportation system congestion, and the future land use outlook.

DEMOGRAPHIC AND ECONOMIC GROWTH FACTORS

Population

The Florida Bureau of Economic and Business Research and the U.S. Census Bureau provide future population projections for public use. Florida's information is provided to year 2040, while the U.S. Census projects to the year 2060. Population projections in five-year increments were used for both the state and country. The estimated population for Florida in 2015 was 20,271,272, which ranked 3rd among the U.S. states. From 2010 to 2013, Florida's population increased by 7.8%, which is above the 4.1% population growth for the U.S. as a whole.¹⁵ It is projected that between 2010 and 2040 the state's population will increase by more than 36%, reaching a total of 25.6 million people, shown below in **Figure 2-11**.¹⁶ In comparison to the entire United States, which is projected to grow by around 23% from 2010 to 2040, Florida's growth will outpace the expected growth of the country by more than 13%, which indicates that Florida will continue to be one of the fastest growing states in the country. Florida's projected growth shows the expectation that the state will continue to attract more people and grow more quickly than the U.S.

Figure 2-11: Population Estimates



Based on information from the Census Bureau's American FactFinder, which is sourced from information gathered for the American Community Survey (ACS), the median age for the state of Florida is 41.0 years, which is substantially above the national median age of 37.2 years. Among the state's population over 25 years of age, 86.1% graduated from high school and 26.4% received a bachelor's degree or higher; these are

¹⁵ U.S. Census Bureau.

¹⁶ Population forecast based on U.S. Census Bureau population estimates.

around and slightly below the national averages of 85.7% and 28.5%, respectively. Florida's working age population (aged 18 to 65 years) was about 61.2% of the overall population, which is somewhat below the country's 62.9% of the population; this shows that the state skews older than the rest of the country. In fact, 17.8% of the population in Florida is older than the age of 65, whereas only 13.4% of the U.S. population is older than 65; the state is popular with many retirees, which is reflected in the census data.

Employment

The most current wage and salary employment (i.e., base employment) figures indicate that around 7.99 million people were employed in the state as of February 2015, based on information from the Florida Department of Economic Opportunity (FDEO).¹⁷ This data excludes agricultural-related employment numbers. The state's overall labor force pool, as of 2013, totaled 11.7 million people, which refers to all people between ages 18 and 65.

The Florida Department of Economic Opportunity projects that 2022 base employment will increase to about 9.51 million people, a 12.4% increase when compared to the 2014 base employment estimate of around 8.46 million.¹⁸ Using this information, the state's base employment is projected to increase by almost 29% to nearly 11.9 million in year 2040.

Florida's unemployment rate over the past few years has changed dramatically as a result of changing regional and national economic conditions. Unemployment rates have fluctuated tremendously, ranging from a low of 3.1% in March and April 2006 to a peak of 11.2% in November and December 2009. Since 2010, rates have dropped annually from 9.8% in 2011 to 8.3% in 2012 and 7.0% in 2013. As of February 2015, the seasonally adjusted unemployment rate for the state was 5.6%. This rate is nearly identical to the national average rate of 5.5%, which itself has dropped substantially from its recent high of 10.0% in October 2009. Overall, Florida's unemployment rate varies more substantially than the country's, indicating the higher volatility that the state experiences.

Florida is the headquarters for 16 Fortune 500 companies including Publix Super Markets, CSX Corporation (parent of CSX Transportation), and Darden Restaurants. Important sectors to the state's economy include tourism, agriculture, aerospace/defense, and logistics.

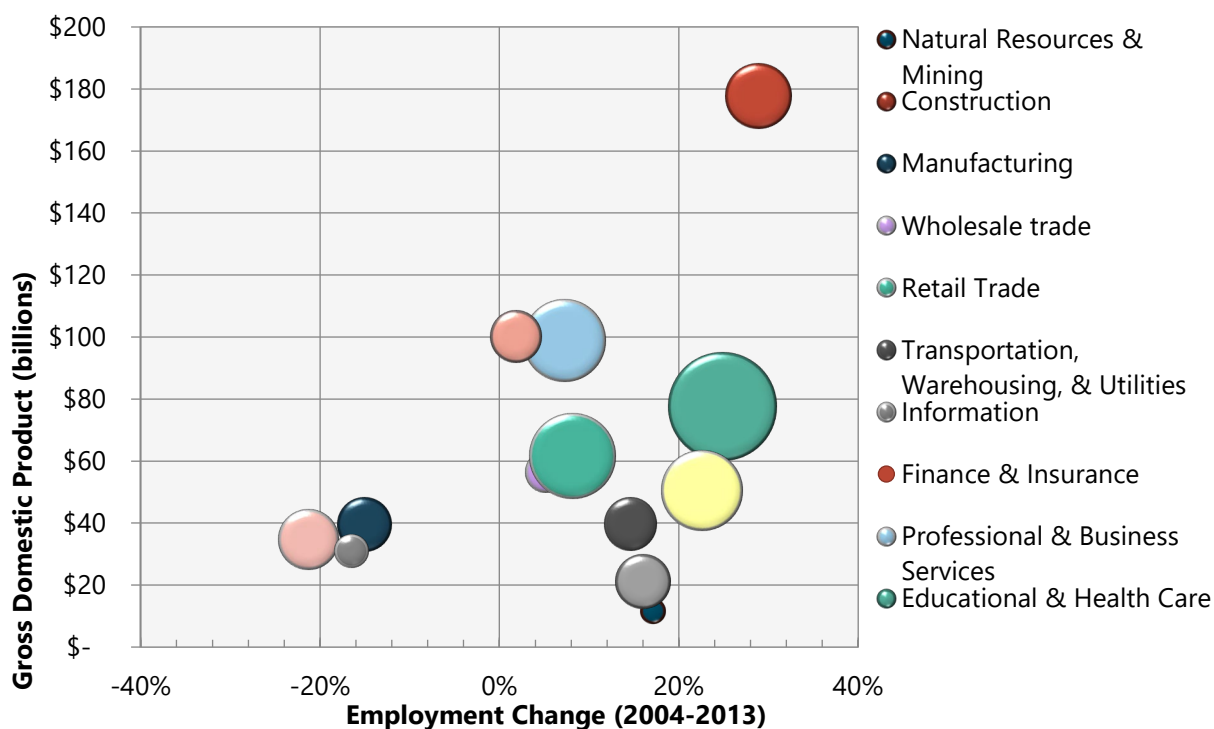
Figure 2-12 displays the employment change from 2003 to 2013 against the Gross Domestic Product (GDP) by employment sector in 2013. The graph highlights sectors with the largest impact on the Florida economy and the changes in those sectors recently in terms of available jobs. The size of the bubble for each employment sector represents the number of jobs in that sector compared against all other sectors. Education and healthcare ranks as the top employment sectors for the state, with retail trade and professional/business services closely behind. Education and healthcare employment has shown to be a growing employment area since 2003, while retail trade and professional/business employment has increased steadily; the finance/insurance and leisure/hospitality/tourism employment sectors have increased by more than 20% since 2003, while construction and manufacturing jobs have decreased by more than

¹⁷ Florida's Nonagricultural Employment – February 2015, Seasonally Adjusted, based on NAICS. Florida Department of Economic Opportunity. http://lmsresources.labormarketinfo.com/charts/nonag_employment.asp. Accessed on April 8, 2015.

¹⁸ FDEO employment projections are based on separate data methodologies and do not match up with to-date employment statistics. Projections include agricultural and self-employed/unpaid family workers.

15%.¹⁹ In terms of GDP, the finance and insurance sector, public administration, and professional and business services create the highest GDP for the state of Florida.

Figure 2-12: Employment Growth and GDP by Size of Employment Sector (2013)



Personal Income

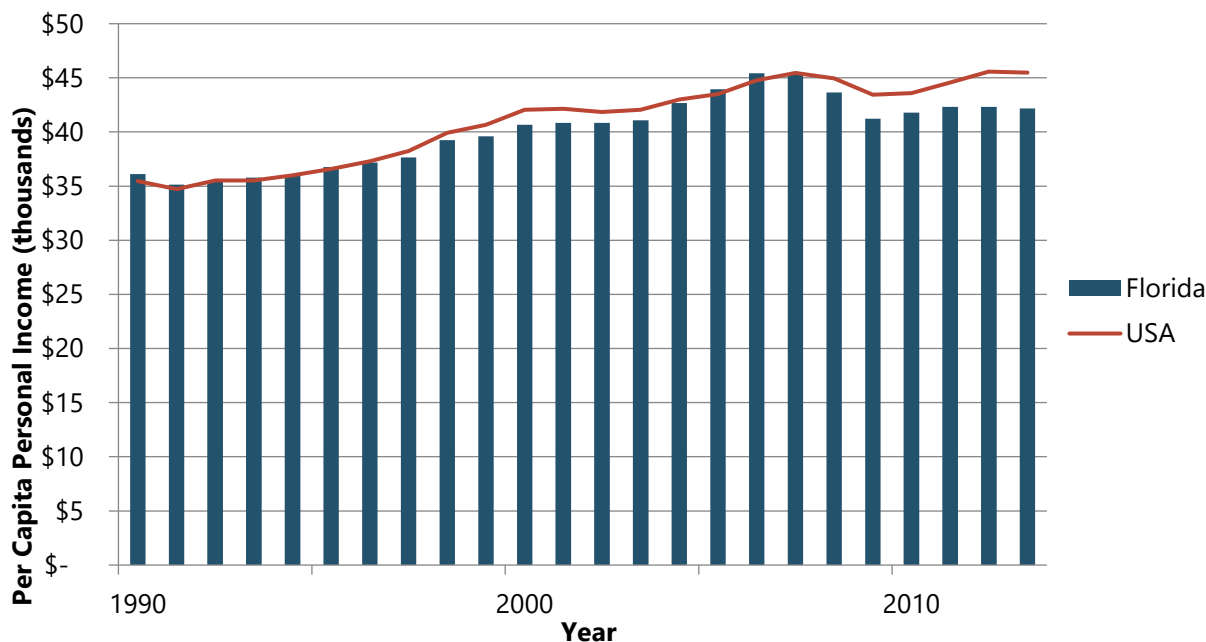
Florida's per capita personal income in 2014 was \$42,645, which ranked 29th within the United States and was 92.4% of the national average (\$46,129).²⁰ In continuous 2014 dollars (adjusted for inflation using the Consumer Price Index) the per capita personal income since 1990 has grown by 16.7%, below the national income growth of 28.2%. Since 2000, Florida's per capita personal income growth rate has significantly trailed the country's rate, with only a slight increase of 3.7%, whereas the country's rate has grown by about 8.2%. This limited growth in the past decade both in Florida and nationally can be attributed to factors related to the recent economic recession and to increases in lower paying service sector jobs. Florida both historically and currently remains below the U.S. personal income average. Per capita personal income has grown by 40.3% since 2000, which is below the national growth of 46.4%. Historical per capita personal income from 1990 to present day is shown in **Figure 2-13**.²¹ Note that for a period of time prior to the 2008 recession, income nearly matched the national average; however, since then, Florida's personal income has not recovered nearly as quickly in comparison.

¹⁹ U.S. Census Bureau and the Bureau of Economic Analysis.

²⁰ Bureau of Economic Analysis, BEARFACTS, State of Florida. Accessed on April 11, 2015. <http://www.bea.gov/regional/bearfacts/action.cfm?geoType=3&fips=12000&areatype=12000>

²¹ Bureau of Economic Analysis, adjusted by the national CPI into 2014 U.S. dollars.

Figure 2-13: Historical Per Capita Personal Income



Outlook by Industrial Sector

The subsequent section discusses commodities from, to, within and through Florida. In 2013, rail-borne commodities totaled to 89.1 million tons. By 2040, that volume will rise to 115.4 million tons. The industrial sector with the largest volume in that year will be manufacturing, as seen in **Table 2-30**. Inbound manufactured projects alone will account for 18% of total rail shipments in 2040. More on specific commodities' future volume is also presented in the following section.

Table 2-30: Forecasted Tonnage by Industrial Sector for 2040

Industrial Sector	Outbound	Inbound	Intra	Through	Total
Agriculture, Forestry, Fishing and Hunting	155,605	1,573,959	28,050	111,520	1,869,134
Mining	73,910	16,872,600	16,274,297	17,485	33,238,294
Manufacturing	13,195,701	21,350,413	6,164,999	1,864,262	42,575,374
Other Miscellaneous Sectors	21,399,398	9,857,229	6,396,072	80,401	37,733,101
Total	34,824,614	49,654,201	28,863,418	2,073,668	115,415,903

Source: prepared by CDM Smith, based on STB WAYBILL 2013 and TRANSEARCH CAGR 2011-'40

FREIGHT DEMAND AND GROWTH

Current Freight Rail

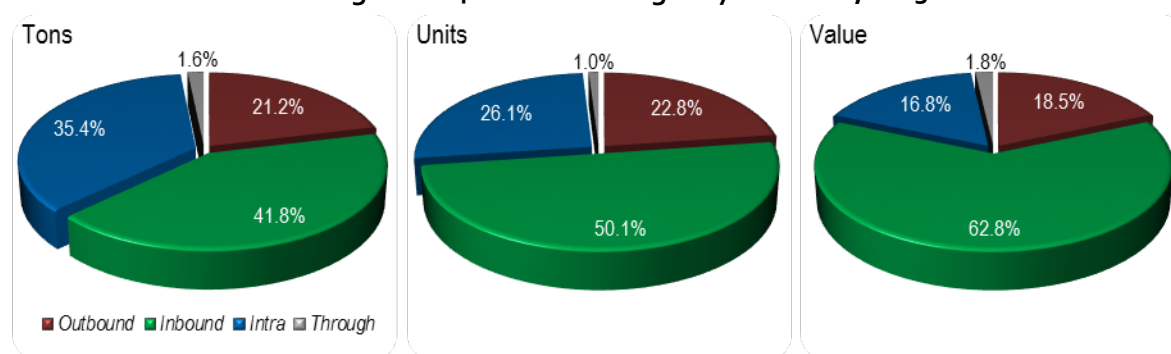
The following presents year 2013 movements by direction (outbound, inbound, intrastate, and through) and terms (tons, units [carloads and trailers/containers], and values), derived from the STB WAYBILL database. Each subsection summarizes rail movements by direction and term, and identifies the top commodity movements. Data is mostly presented graphically for ease of visually identifying important commodity movements and related observations, with the supporting tabulated comprehensive data located in the Appendices. Florida rail movements in 2013 totaled 89.2 million tons, valued at \$93.9 billion (equating to \$1,054/ton), and transported in 1.7 million units. Inbound rail is the dominant movement: 41.8% of total tonnage, 50.1% of units, and 62.8% of value. Given that Florida is a peninsula, it is not surprising that through movements constitute a marginal proportion of the total Florida-related rail movements.

Table 2-31: Rail Freight by Direction, 2013

Direction	Tons		Units		Value (in millions)		Average Value/Ton
	Amount	Percent	Amount	Percent	Amount	Percent	
Outbound	18,914,481	21.2%	388,454	22.8%	\$17,405	18.5%	\$920
Inbound	37,222,277	41.8%	853,896	50.1%	\$59,036	62.8%	\$1,586
Intra	31,549,885	35.4%	446,005	26.1%	\$15,778	16.8%	\$500
Through	1,465,660	1.6%	17,413	1.0%	\$1,724	1.8%	\$1,176
Total	89,152,303	100.0%	1,705,768	100.0%	\$93,943	100.0%	\$1,054

Source: prepared by CDM Smith, based on the STB WAYBILL Sample data for 2013

Figure 2-14: Rail Percentages by Direction, 2013



Source: prepared by CDM Smith, based on the STB WAYBILL Sample data for 2013

The largest single commodity moved by rail in Florida is nonmetallic minerals, comprising 33.8% of total tonnage. These are mostly phosphate movements from Bone Valley for fertilizer manufacturing and for export from Tampa Bay port facilities. The largest outbound movement is empty shipping containers being repositioned outside Florida, comprising 35.0% of total outbound tonnage. This movement represents an opportunity for possibly capturing northbound freight, like empty truck backhauls.

The largest inbound commodity is coal, comprising 26.7% of total inbound tonnage. Intrastate movements are dominated by nonmetallic minerals, comprising 72.6% of total intrastate tonnage. Through traffic consists mostly of chemicals and allied products, comprising 58.4% of total tonnage. This traffic moves on the CSX Transportation main line through the northern tier of the state.

Freight Traffic Forecast

Freight rail tonnage forecasts for year 2040 were made using directional commodity growth estimates from the IHS Global Insight 2011 TRANSEARCH® database, applied to the 2013 STB CARLOAD WAYBILL tonnage movements. The TRANSEARCH® database provides year 2011 actual volumes and year 2040 forecast volumes by direction and Standard Transportation Commodity Code (STCC) commodity. Compound annual growth rates (CAGR) between 2011 and 2040 by two-digit STCC directional movements were applied to the more recent year 2013 movements from the WAYBILL. In Appendix E, Table 10 presents the two-digit STCC commodity average annual growth rates from TRANSEARCH®, and Table 11 provides the directional commodity forecasts for 2040 derived from the growth rates.

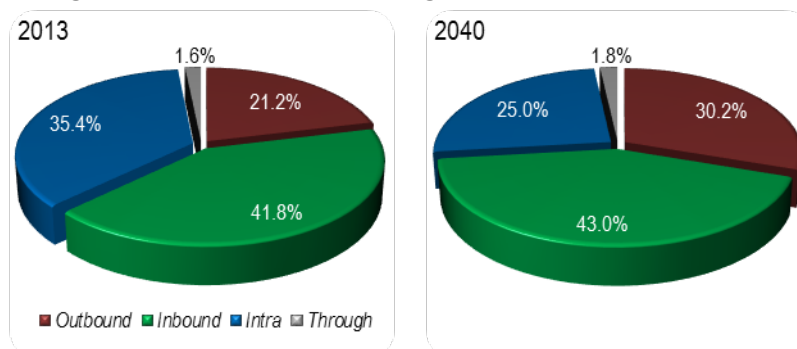
Summary Forecasts – In applying the TRANSEARCH®-derived growth rates to the STB WAYBILL tonnage movements, Florida freight rail movements would increase from 89.2 million tons in 2013 to 115.4 million, an average annual increase of 1.0%, as seen in **Table 2-32**. Both inbound and through movements are forecast to appreciate at a comparable rate to the total movements, at 1.1% and 1.3%, respectively. The directional composition would not change appreciably, but some of the intrastate movements are projected to decline, giving way to an increase in relative share by outbound movements, which are projected to grow relatively faster than the other directions. Shares for the two years are shown graphically in **Figure 2-15**.

Table 2-32: Rail Tonnage Forecast Summary, 2013-2040

Direction	2013		2040		Change	
	Amount	Percent	Amount	Percent	Total	CAGR
Outbound	18,914,481	21.2%	34,824,614	30.2%	84.12%	2.3%
Inbound	37,222,277	41.8%	49,654,203	43.0%	33.40%	1.1%
Intra	31,549,885	35.4%	28,863,418	25.0%	-8.51%	-0.3%
Through	1,465,660	1.6%	2,073,669	1.8%	41.48%	1.3%
Total	89,152,303	100.0%	115,415,904	100.0%	29.46%	1.0%

Source: prepared by CDM Smith, based on STB WAYBILL 2013 and TRANSEARCH CAGR 2011-'40

Figure 2-15: Rail Ton Percentages by Year, 2013 and 2040



Source: prepared by CDM Smith, based on the STB WAYBILL Sample data for 2013

PASSENGER DEMAND AND GROWTH

Vehicles Miles Traveled

Over the 15-year period between 1999 and 2014, daily vehicle miles traveled (DVMT) on all roads in the state grew at more than one and a half times the growth in the state's population. The growth in annual transit trips has followed a similar trend in outpacing population growth. However, in the most recent 10-year period, DVMT growth has been minimal, while transit trips grew at almost twice the rate of the state population.

Table 2-33: Daily Vehicle Miles Traveled, Population, and Annual Transit Passenger Trips

Year	Period	VMT State Roads	VMT All Roads	Population	Transit Riders
1999		254,114	388,775	15,322,000	184,004,705
2004		292,398	536,732	17,516,500	226,976,211
2014		296,263	550,796	19,507,500	277,464,779
Growth 1999-2014	15 yrs.	16.6%	41.7%	27.3%	50.8%
Growth 2004-2014	10 yrs.	1.3%	2.6%	11.4%	22.2%
Growth 2009-2014	5 yrs.	3.3%	2.4%	2.4%	6.1%
Growth 2013-2014	1 yr.	2.9%	4.3%	1.3%	-0.27%

Source: Florida Department of Transportation

While transit demand demonstrated over the 10- and 15-year periods has been robust, ridership held steady in 2014 compared to 2013. During that one-year period, DVMT growth on all roads was greater than DVMT for the previous five-year and 10-year periods. Transit riders reflects ridership for urban fixed-routes in Florida. Commuter rail ridership is included but not Amtrak riders. Note that the 2015 state population, provided by FDOT, differs slightly from that shown in Population section above, which was obtained from the U.S. Census due to different sources.

Ridership Projections of Existing Systems

Amtrak

The basis for forecasting Amtrak riders at Florida stations was to project population growth in Florida within a 30-mile radius of stations.²² Station ridership changes were calculated based upon the growth rate of each county served by the station. The exception is Sanford, which, because of its association with the *Auto Train*, attracts riders and their cars from greater distances. Sanford's growth is pegged at 2% per year, based on its performance between 2008 and 2013.

It is important to note that actual future ridership performance will be based not only on population growth but also by changes in income growth, changes in the number of train frequencies and train schedule times at the station (day versus night), changes in Amtrak fares versus other modes, changes in tourism venues (e.g., expansion of theme parks), and changes in the quality of Amtrak service (i.e., on-time performance).

Population around Florida's Amtrak stations shows growth overall, with the strongest growth at stations in and around Orlando.

²² Source: Florida Demographic Estimating Conference, February 2014 and the University of Florida, Bureau of Economic and Business Research, Florida Population Studies, Bulletin 168, April 2014.

Table 2-34: Intercity Ridership Forecast by Station

Station	2013	2040	Change 2013-40	Annual Growth
Deerfield Beach	30,048	36,066	20.0%	0.7%
Deland	26,502	38,793	46.4%	1.4%
Delray Beach	13,280	15,940	20.0%	0.7%
Fort Lauderdale	53,955	66,324	22.9%	0.8%
Hollywood	34,869	42,349	21.5%	0.7%
Jacksonville	94,277	132,197	40.2%	1.3%
Kissimmee	44,906	68,336	52.2%	1.6%
Lakeland	22,829	34,428	50.8%	1.5%
Miami	84,293	102,374	21.5%	0.7%
Okeechobee	3,851	5,476	42.2%	1.3%
Orlando	160,442	233,263	45.4%	1.4%
Palatka	12,749	18,283	43.4%	1.3%
Sanford	265,274	452,792	70.7%	2.0%
Sebring	17,111	23,611	38.0%	1.2%
Tampa	139,412	187,909	34.8%	1.1%
West Palm Beach	64,994	82,625	27.1%	0.9%
Winter Haven	22,025	33,530	52.2%	1.6%
Winter Park	30,142	42,298	40.3%	1.3%
Total	1,120,959	1,616,594	44.2%	1.4%

Tri-Rail

As noted previously, Tri-Rail's ridership has grown 22% over the five-year period, ending in 2014. The average annual growth rate is just over 4%. It is likely, given the rising popularity of transit services also discussed previously, that Tri-Rail's ridership will continue to see strong growth. An official forecast of ridership from Tri-Rail, however, was not available for this plan.

SunRail

SunRail projects 2030 ridership at 14,500 per day for the expanded 49-mile system from Deland to Poinciana, almost five times the current ridership.

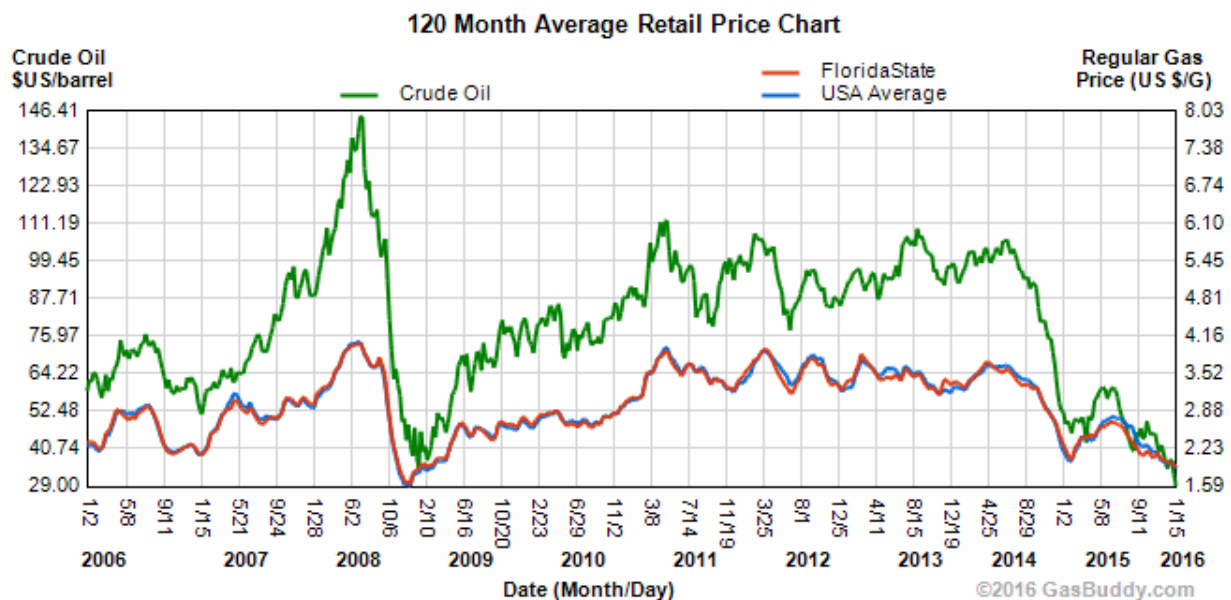
FUEL COST TRENDS

Trends in fuel costs (crude oil and regular gasoline) over the last ten years are shown in **Figure 2-16**. The average retail gas price trends in the state of Florida and the U.S. track closely to each other.

Recent drops in fuel costs are the result of actions by the Organization of Petroleum Exporting Countries (OPEC) that have increased supplies and reduced per-barrel costs below \$40. This trend is not likely to continue into the long term.

Highway diesel fuel costs over the past ten years for both East Coast areas and the more specific Lower Atlantic region have also not varied substantially from the nationwide average, according to the U.S. Energy Information Administration (EIA). The price of diesel fuel in 2005 in the Lower Atlantic was \$2.36 per gallon, increasing to around \$3.81 per gallon in 2008. Following the economic recession, diesel fuel prices dropped to \$2.44 per gallon. However, compared to gasoline, diesel fuel prices have recovered from the recent recession and have equaled or surpassed the cost of diesel in 2008, to an average of about \$3.77 per gallon in 2014 and \$2.86 per gallon from January through May 2015 in the Lower Atlantic region. Since then prices fell sharply. As of January 2016, diesel fuel costs \$2.10 per gallon in the region.

Figure 2-16: Fuel Price Trends from 2006 to 2016



RAIL CONGESTION TRENDS

Rail congestion can negatively impact rail service and hurt rail shippers. To assess the level of congestion on major Class I and II main lines, or main lines having the higher rail traffic volumes, a planning level evaluation was conducted. No major capacity constraints were found.

CSX Transportation

For CSX, the main lines investigated are listed below. The lines noted below can be traced on **Figure 2-17**.

- East-west line running from Flomation, Alabama to Pensacola (PD Subdivision), thence to Chattahoochee (P&A Subdivision), thence to Baldwin (Tallahassee Subdivision), thence to Beaver Street in Jacksonville (Jacksonville Terminal Subdivision); train volumes have increased on this line in recent history due to an internal shift in freight out of Georgia;
- North-south line from Folkston, Georgia to Dinsmore (Nahunta Subdivision), thence to Beaver Street in Jacksonville (Jacksonville Terminal Subdivision);
- North-south line from Callahan to Baldwin (Callahan Subdivision, thence via Vitis to Zephyrhills (Wildwood Subdivision), thence via Plant City and Valrico to South Tampa/YN (Yeoman Subdivision), thence to Gary (Tampa Terminal Subdivision), thence to TN just east of Tampa (Clearwater Subdivision, connecting with the Lakeland Subdivision);
- North-south line from Vitis to Lakeland (Vitis Subdivision), thence to South End Mango (Lakeland Subdivision), thence via TN to Tampa (Tampa Terminal Subdivision); and,
- East-west line from Lakeland to Auburndale (Carters Subdivision).
- Lines to South Florida have lesser volumes and thus were not investigated.

Figure 2-17: CSX Lines Studied for Capacity Analysis



Table 2-35: Major Rail Line Capacity Evaluation

Between		Division	Subdivision	Control System	Tracks	Practical Capacity	Trains per Day	Capacity Constraint?
CSX TRANSPORTATION								
Flomation, AL	Pensacola	Atlanta	PD	DTC	1	16-20	5-10	No
Pensacola	Chattahoochee	Jacksonville	P&A	DTC	1	16-20	5-10	No
Chattahoochee	Tallahassee	Jacksonville	Tallahassee	DTC	1	16-25	5-10	No
Tallahassee	Baldwin	Jacksonville	Tallahassee	TCS	1	30-48	5-10	No
Baldwin	Beaver St.	Jacksonville	Jacks. Terminal	TCS	1	30-48	0-20	No
Folkston, GA	Dinsmore	Jacksonville	Nahunta	TCS	2	75-100	20-50+	No
Dinsmore	Beaver St.	Jacksonville	Jacks. Terminal	TCS	2	75-100	20-50+	No
Callahan	Baldwin	Jacksonville	Callahan	TCS	2	75-100	20-40	No
Baldwin	Zephyrhills	Jacksonville	Wildwood	TCS	1	30-48	10-25	No
Zephyrhills	So. Tampa/YN	Jacksonville	Yeoman	TCS	1	30-48	5-20	No
So. Tampa/YN	Gary	Jacksonville	Tampa Terminal	TCS	1	30-48	0-5	No
Gary	TN	Jacksonville	Clearwater	TCS	1	30-48	0-3	No
Vitis	Lakeland	Jacksonville	Vitis	TCS	1	30-48	5-20	No
Lakeland	So. End Mango	Jacksonville	Lakeland	TCS	1	30-48	3-20	No
So. End Mango	Tampa	Jacksonville	Tampa Terminal	TCS	1	30-48	0-5	No
Lakeland	Auburndale	Jacksonville	Carters	TCS	1	30-48	3-20	No
Norfolk Southern								
St. George, GA	Jacksonville	Georgia	Valdosta	ABS	1+	18-25	9	No
Florida East Coast								
Jacksonville	Hialeah Yard	Main Line	Main Line	CTC	1	30-48	14	No

The evaluation compared volumes of freight trains per day (derived from recent year train density information stated in millions of gross tons)²³ to the practical capacity of the line, as determined by the control systems (e.g., Direct Train Control [DTC],²⁴ Train Control System [TCS],²⁵ Centralized Traffic Control [CTC], and Automatic Block Signals [ABS])²⁶ on the line and the track configurations (single track [1]; one and two main tracks with sidings [1+]; two main tracks [2]). The practical capacity limits for the respective control systems and track configurations were taken from the *National Rail Freight Infrastructure Capacity and Investment Study, 2007*, prepared for the Association of American Railroads. The evaluation identified no CSX subdivisions where the estimated higher end train volumes exceed the lower end of the practical capacity range. Accordingly, no CSX subdivision appears to have an obvious capacity constraint.

²³ While railroad line densities, measured in millions of gross tons (MGT) handled across line segments per year, are generally available, trains-per-day information is not. Therefore, a conversion was performed to estimate trains per day. Per the conversion formula, for example, 20 MGTs per year converts to a daily train volume of roughly 10 trains. The conversion formula is based on a review of trains per day and MTG figures reported in the 1996 Union Pacific-Southern Pacific railroad merger application and other industry data.

²⁴ DTC is a system whereby the train dispatcher in a remote location routes trains across a segment or block by radio; no wayside signal systems are used; which allowing trains to enter and exit sides are manually set by train crews.

²⁵ TCS and CTC are essentially the same type of system, by which the train dispatcher routes trains over a segment using wayside signals; switches allowing trains to enter and exit sidings are powered.

²⁶ ABS is a train control system controls the movement of trains between the blocks using automatic signals. ABS operation is designed to allow trains operating in the same direction to follow each other in a safe manner without risk of rear end collision. Movement of trains operating against the established flow of traffic would still require train orders or other special manual protections to prevent a collision.

The lower end of the practical capacity range of a line applies if the railroad were to operate a mix of different kinds of trains on the line. With a more homogeneous traffic flow, higher capacities can be achieved providing a higher end of the range of practical capacity.

Norfolk Southern

The single NS line investigated was the north-south line from St. George, Georgia to Jacksonville (Valdosta District). As the recent year daily volume of trains shown in the table is below the lower range of the line's practical daily capacity, there is no obvious congestion issue on the line.

Florida East Coast

The FEC's 351-mile main line from Jacksonville to Hialeah Yard was also investigated. As the recent year daily volume of trains shown in the table is below the lower range of the line's practical daily capacity, there is no obvious congestion issue on the line. At the same time, All Aboard Florida (AAF) is planning to initiate new passenger service on the line between Orlando, Cocoa and Miami; the trains would run on the FEC line between Cocoa and Miami. To ensure fluid freight and passenger rail service on the FEC line, AAF is planning to install a second main track between Cocoa and Miami.

HIGHWAY CONGESTION TRENDS

Highway congestion may be a factor diverting truck traffic to rail. Congestion on Florida highways is discussed through three metrics. These are:

- Vehicle hours of delay – the number of hours (thousands) per year occurring on Florida freeways during the peak period;
- Person hours of delay – the number of hours (in thousands) per year occurring on Florida freeways during the peak period; including delays experienced by drivers and passengers; and,
- Average travel speed – the average speed on Florida freeways during the peak hour and the peak period.

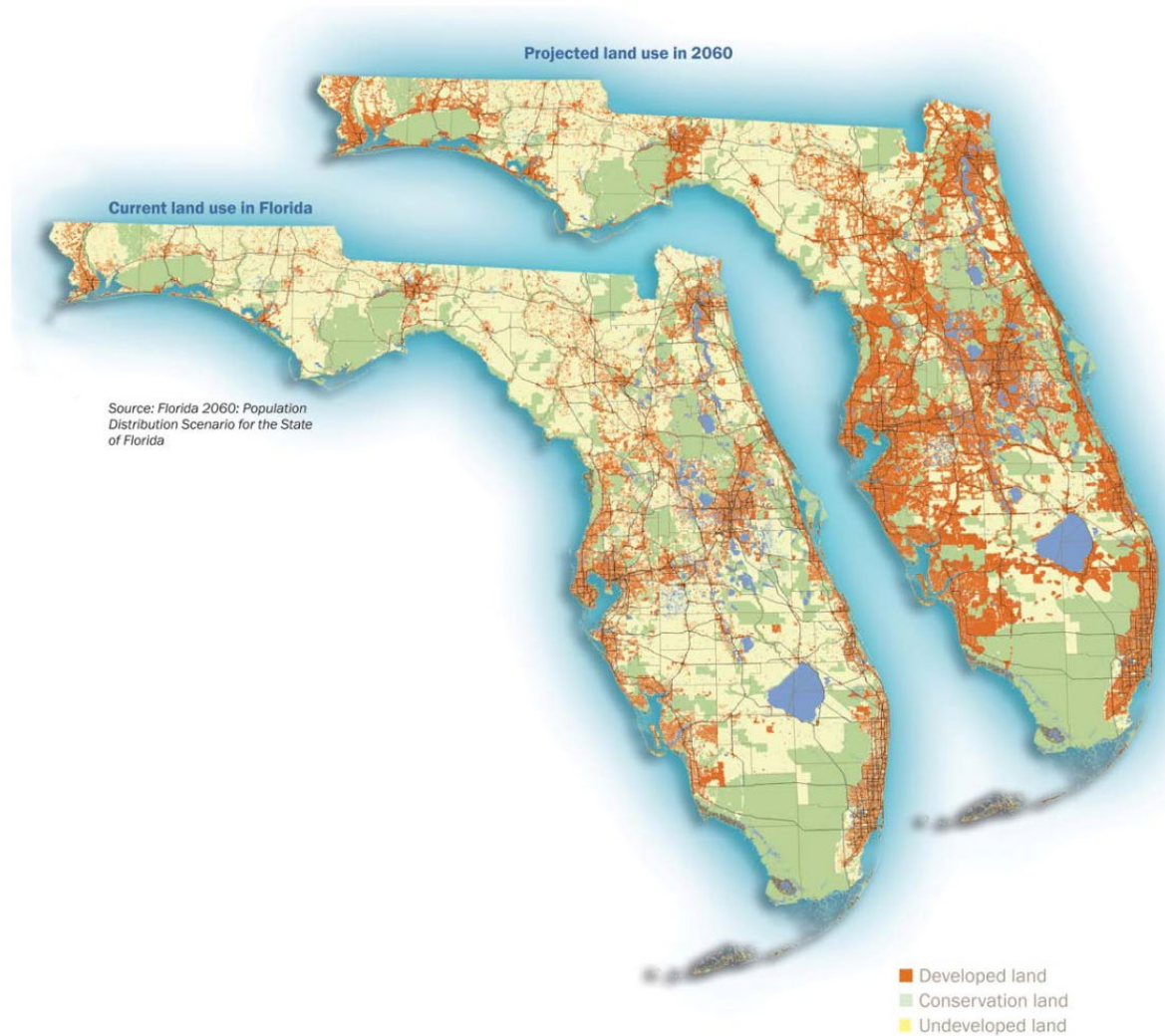
Table 2-36 shows these metrics for the 10-year period from 2004 through 2013. While FDOT collects these metrics for State Highway System, the Strategic Intermodal System Corridors, the SIS Connectors, and non-freeways, the focus here is on freeways in the seven largest counties in the state, the assumption being these are the freeways that most commuters in the state most commonly used for their commute trips.

The figures for vehicle hours of delay show a major drop in 2008 continuing through 2013. The decline coincides with the onset of the Great Recession in that year. It is reasonable to assume that, with unemployment rising from 2008, fewer workers were on the freeways. In more recent years, unemployment rates have dropped and vehicle delays began to rise again. This pattern is repeated in person hours of delay. The relationship of person hours of delay to vehicle hours of delay is constant, averaging 1.65 over the period.

Table 2-36: Florida Freeway Congestion Metrics for 10 Years (2004 - 2013)

Year	Vehicle Hours of Delay (thousands) Peak Period	Person Hours of Delay (thousands) Peak Period	Average Travel Speed Peak Hour/Peak Period
2004	50.1	84.3	58.1
2005	46.7	77.4	58.5
2006	45.0	75.3	58.6
2007	48.7	80.9	58.5
2008	49.0	80.3	58.5
2009	32.9	54.6	60.5
2010	30.0	49.3	60.8
2011	37.9	63.3	60.2
2012	33.5	55.3	60.6
2013	38.9	63.7	60.1

Source: Florida Transportation Data Source Book, Florida Department of Transportation

Figure 2-18: Current Florida Urbanization Patterns / Land Area Expected to Become Urbanized

Source: Florida Department of Transportation

LAND USE TRENDS

Urbanization in Florida is concentrated along the east and west coasts, and along the I-4 corridor. Per a recent FDOT report on the relationship between transportation and land use,²⁷ Florida and national trends mostly point to a continuing expansion of the state's urbanized areas, and the nature of that expansion in turn points to the future transportation needs. **Figure 2-18** shows current land use in Florida along with projected land use in 2060, if current trends continue.

RAIL SERVICE OPPORTUNITIES, NEEDS, AND INVESTMENTS

This section identifies the opportunities for, and needs of, the freight and passenger rail system in Florida. Included are specific rail projects identified by Florida's railroads and ports to address their needs.

FREIGHT RAIL OPPORTUNITIES

Appearing below are discussions of factors that are contributing to the growth of freight rail traffic in Florida and the southeastern region generally.

Containerization and Intermodalism

The Class I railroads are increasingly focused on growing their intermodal container business. Ports in Jacksonville and South Florida are major players in international container cargo. However, it is only in the last ten years or so that the railroads have moved aggressively to grow their domestic intermodal container business. They have done this by offering speed of service and strategically located intermodal container facilities, diminishing the need for truckers to drive long-haul distances. The domestic intermodal service uses larger size containers than used in ocean shipping. The containers matched instead to standard highway trailer sizes that are up to 53 feet long and taller and wider than a standard 40-foot long international ocean container.

Shifting International Trade Patterns

China's economy has evolved quickly with inflation and wage increase pressures that have raised production costs. China's leaders also are shifting their attention on China's economic development more towards domestic market growth than manufacturing chiefly for export to other countries. At the same time, other developing countries in Asia as well as in Latin America have become relatively more cost competitive. This has resulted in China beginning to lose its market share of trade with the United States. Commodities such as apparel and footwear are now increasingly sourced from other Southeast Asian countries with lower labor and other production costs.

Return of Domestic Manufacturing

A convergence of factors is leading to new manufacturing opportunities in the U.S. and thus the potential for more domestic rail freight shipments. Domestic oil and gas production levels are providing opportunities for new competitive manufacturing in the U.S. Petrochemicals production is now often cheaper in the U.S. than other countries with higher energy costs. The manufacture of chemicals and many other products cited as

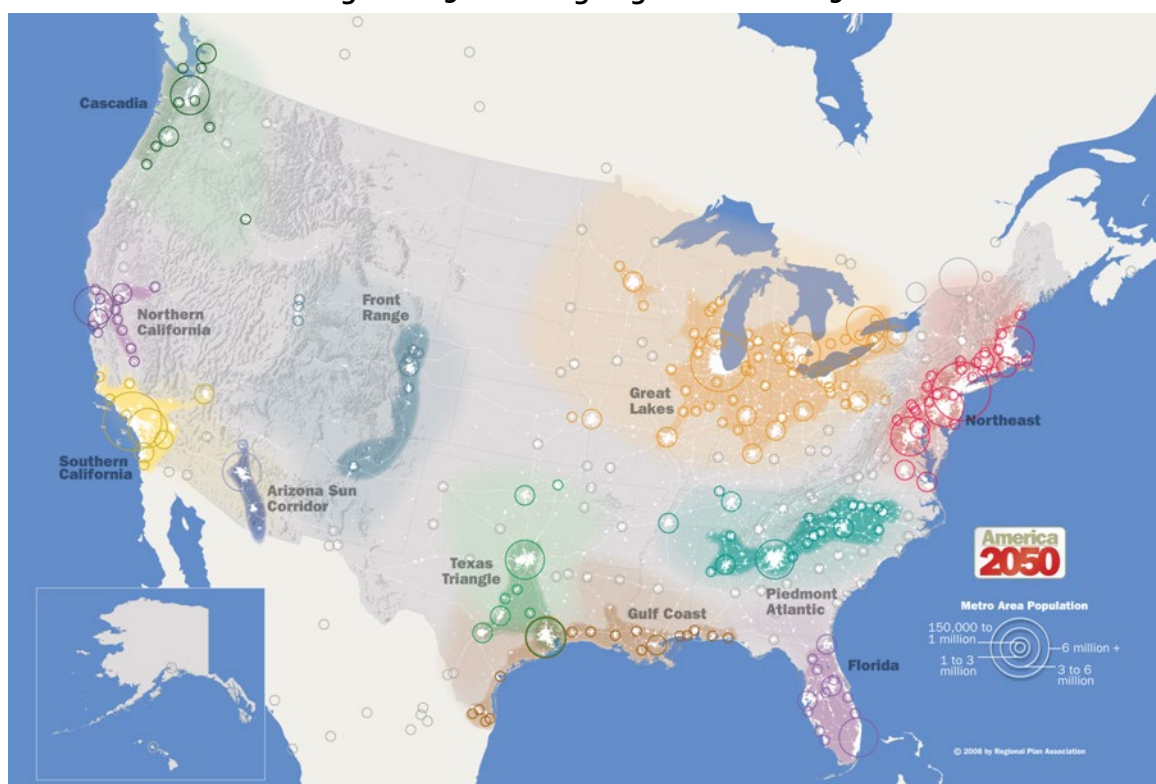
²⁷ Florida Transportation Trends and Conditions, Impact of Transportation, Transportation and Land Use, Florida Department of Transportation, June 2014.

candidates for revitalization in the U.S. is capital intensive, not labor intensive. With current low interest rates and available investment capital, manufacturing that depends on relatively few skilled operators of advanced equipment, or on automation, is the most likely type of manufacturing to return to the U.S.

Panama Canal Widening

The Panama Canal Authority recently expanded the canal with a much larger, third set of locks. Completed in 2016, this project increased the throughput capacity of the canal by allowing much larger vessels to transit the locks, potentially providing savings from greater economies of scale for shippers on Panama Canal trade routes. The canal's capacity for container vessels was limited to 4,500 Twenty-foot Equivalent Units (TEU) ships, increased to container vessels of 12,500 TEU capacity. The greater capacity of the locks permits larger dry bulk and tanker vessels to use the canal as well. This expansion project creates an opportunity for Florida ports to capture additional ocean container trade with countries in Asian and on the West Coast of South America – traffic that previously by-passed Atlantic ports and traveled between U.S. West Coast ports and the Southeast by truck or rail.

Figure 2-19: U.S. Megaregions in Year 2050



PASSENGER RAIL OPPORTUNITIES

Population and Economic Growth

As noted in preceding sections, Florida's population and economy are poised for growth. As seen in **Figure 2-19**, most of Florida is within its own Florida megaregion. A megaregion is a network of metropolitan areas linked by geography, settlement patterns, shared environment, infrastructure systems, economics and

trade, shared culture and history. Florida's Panhandle is in the Piedmont megaregion as is southern Georgia. The western edge of the Panhandle is adjacent to the Gulf Coast megaregion.

According to the 2006 *America 2050* report, most of the nation's population and economic expansion is expected to occur in these emerging megaregions. The consequent increase in traffic will strain existing infrastructure beyond capacity and require additional capacity and travel options to avoid gridlock.

New intercity services or expansions of Tri-Rail and SunRail commuter services could help enable mobility in corridors that already experience chronic congestion.

Changes in the Intercity Passenger Network

Over the past two decades there has been a substantial restructuring of airline and intercity motor coach service. Regional airline markets have seen a substantial impact in terms of availability and affordability, while smaller cities in rural areas have seen a loss or reduction in both air and bus service. Airline service has shifted exclusively to a hub and spoke network. The air carriers, focusing on yields, have managed their fares and capacity to give priority to longer distance travelers which generate the highest total fare. So, while air travelers have an extensive and affordable airline system for flights throughout the U.S. and around the world, local regional flights (e.g., Tallahassee – Atlanta, Jacksonville – Atlanta, etc.) are expensive, and airline service has been discontinued to smaller cities. A recent USDOT study projected a continuation of this trend – reduced service to small cities and high fares in short-distance markets.²⁸ In many cases auto travel has become the only affordable option, particularly vehicle travel to connect with larger airports with higher amounts of service.

Regularly scheduled motor coach service has also seen major changes. The once extensive network of through routes from the Northeast and Midwest to Florida that provided service to small and intermediate cities has been substantially reduced. Greyhound Lines and new start-up carriers are now focused on larger short-haul markets, offering limited stop or express service between these major cities. With the motor coach networks being a series of corridors linked at major cities (hubs), longer trips often require one or more transfers. The motor coach industry has reinvented itself and traffic is growing, but many cities, especially in rural areas, now have limited or no intercity public transportation service.

Added to changes in the airline and motor coach industries, auto drivers are faced with increased highway traffic, additional truck traffic and increasing delays. Higher airfares (especially at smaller airports) combined with increasing highway congestion provide an opportunity for both long-distance and regional intercity passenger rail to provide a unique product and valuable transportation capacity.

Transportation Trends among the Millennial Generation

Several recent studies indicate a substantial change in transportation/lifestyle choices by the Millennial Generation. Over the past decade the new generation of young adults has received driver's licenses at a much slower pace than previous generations. Many are foregoing a license altogether – in 2011 only 67% of 16 to 24-year-olds held a driver's license compared to a high of almost 85% in 1983. Among Millennials holding driver's licenses, the average vehicle miles driven has dropped by 23%. Millennials increasingly are becoming users of public transportation, including intercity and commuter rail.

²⁸ "Aviation Industry Performance, A Review of the Aviation Industry, 2008-2011", Office of the Inspector General, USDOT.

Transportation Trends among the Baby Boomers

Baby Boomers are generally defined as Americans born between the years 1945 and 1965. In the year following the end of World War II, 3.4 million babies were born, 20% more than in 1945. By the time the Baby Boom ended, there were 76.4 million Baby Boomers in the U.S. An archetypal trend among Boomers was to buy a car and move to the suburbs, which increased commutes and vehicle miles traveled. However, patterns are changing. Boomers are increasingly entering the retirement stages of their lives, typified by lower overall travel rates. While vehicle travel for Boomers increased in the 1980s and early 1990s, it has declined since 1995.²⁹ At the same time Boomer use of transit is on the increase. Florida is a well-known destination for retirees. It is reasonable to foresee increasing demand for transit and public transportation, including commuter rail and intercity rail, in the state.

Transit-Oriented Development (TOD)

Over the past several years many cities and private developers have embraced “New Urbanism” and “Transit-Oriented Development” (TOD). These developments focus on city centers, older suburbs, or new developments. New urbanism, or traditional neighborhood development, refers to creating pedestrian-friendly, walkable neighborhoods radiating away from the train station on an interconnected street grid that includes a mix of development (shops, offices, housing, etc.). TOD refers to higher density, mixed-use, compact development (generally in major cities) that is oriented around rail/transit stations.

The resulting land use resembles a traditional downtown with mixed-use development featuring a central core of denser development (offices, retail, multi-family housing) radiating out to lower density development with an integrated mobility system and a pedestrian-friendly environment. Passenger rail stations provide major opportunities for this focused growth, especially in urban areas. These stations can function as local connection points for other feeder modes and create downtown transportation hubs for the community. This pedestrian-friendly development pattern enables a higher number of trips to be made by transit and walking, thus reducing fuel use and air pollution. Higher density, walkable cityscapes with improved transit links serve to greatly benefit passenger rail ridership and make expanded rail networks more feasible.

Multimodal Integration

Coordinating various modes of transportation is critical if public transportation is to be a viable substitute for the private automobile. Stations should be planned and designed to accommodate and connect intercity rail, intercity motor coach, and regional transit. The Miami Intermodal Center is an example of such multimodal integration. The area around the station needs to offer walkable origins/destinations. Where possible the intercity motor coach and rail schedules should connect; and coach operators should offer through fares similar to those offered on current Amtrak Thruway bus routes. Expanded intercity passenger rail service offers the opportunity of increased mobility by planning and building these key hub stations.

Tourist Railroads and Other Venues

Continued population growth and economic growth will help build leisure market growth. So, while the tourist railroads' visitor share of the leisure market will remain small, the market base will increase substantially. One key opportunity is additional international visitors. While interest from Europe will remain

²⁹ “Impact of Baby Boomers on U.S. Travel, 1969 to 2009, American Association of Retired Persons, October 2012.

important, the tourist railroads can also look at Latin America and Asia. Economies in these areas are expanding, and the regions have young growing populations.

FREIGHT RAIL NEEDS

In order to take advantage of new rail traffic opportunities, freight railroads need to ease the constraints on the existing system. These constraints work against efficient train movement and diminish shipper access to the national rail system. Listed below are discussions of responses to these challenges pertaining to Florida.

Investments in Corridors

Increasing carload volumes is enabled through investments in main line capacity. Larger rail systems are making investments in networks connecting key regional markets. In doing so, railroads have even branded these investments as named corridors, such as:

- NS Crescent Corridor, between New Orleans and New York
- CSX National Gateway, between mid-Atlantic ports and the Midwest
- The NS Heartland Corridor, between Hampton Roads, Virginia and Chicago
- The BNSF Railway's Transcon, between Chicago and Los Angeles

These corridors enable the carriers to concentrate their investment to make the most of new freight flows, which may increasingly become comprised principally of international intermodal traffic. Both CSX and NS have made corridor improvement investments that have involved public financial assistance, typically justified based on the public benefits. Such benefits are derived from reducing traffic congestion and improving air quality by reducing truck traffic on portions of highway network due to improved rail service.

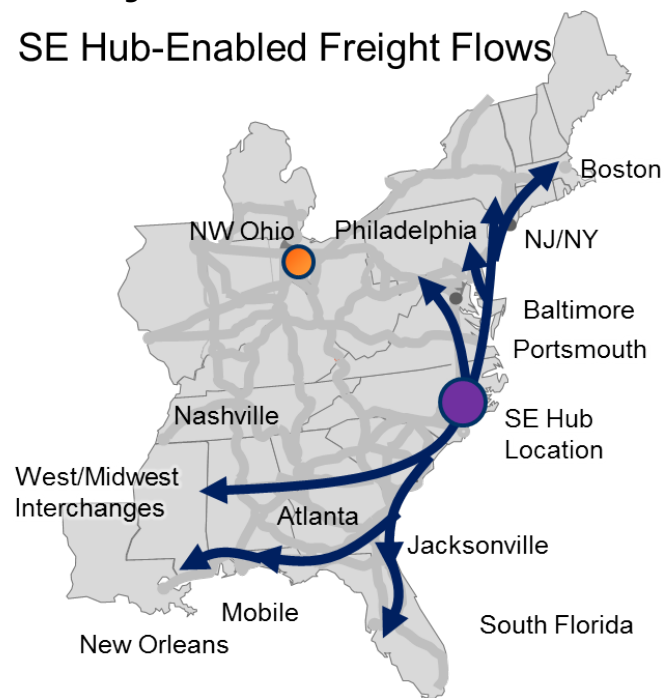
CSX Southeast Rail Corridor

CSX is in the process of developing a Southeast freight rail corridor that will be centered on a new intermodal container transfer facility hub in North Carolina. **(Figure 2-20)** This new hub and corridor will take advantage of freight movement along I-95 and I-85 and provide an expanded connection with the CSX National Gateway Corridor. This new corridor will provide a linkage from the CSX Northwest Ohio ICTF to the new ICTF in North Carolina, and provide direct intermodal rail access and new service offerings to markets including New York/New Jersey, the Midwest, West Coast and the Southeast, including Florida. The transition to Precision Scheduled Railroading (PSR) has impacted operations, but CSX continues to provide service to lanes that include Florida.

FEC Corridor

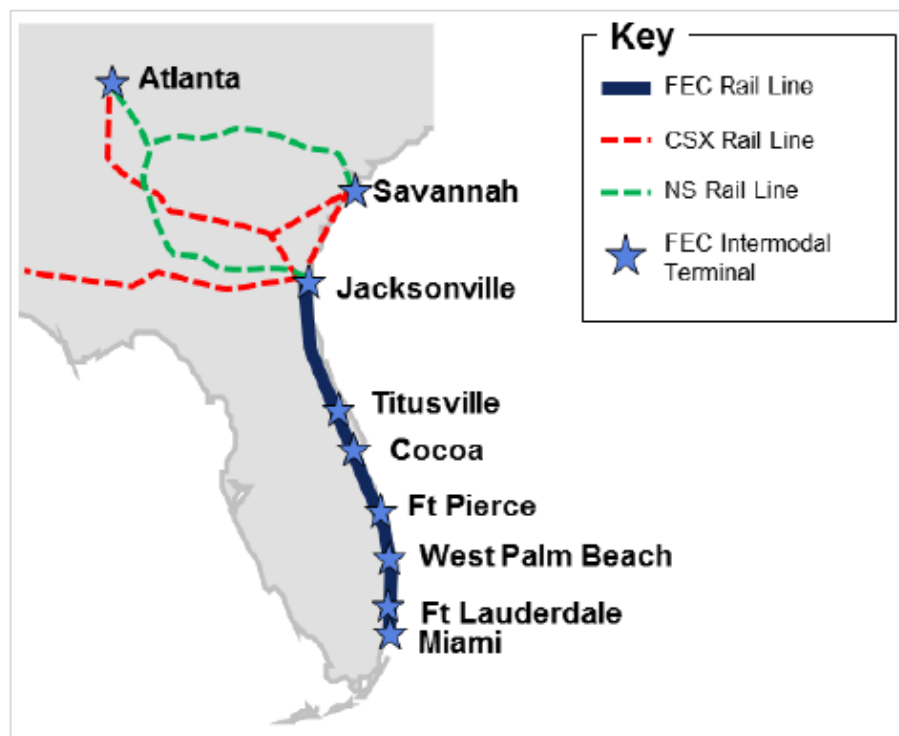
The Florida East Coast Railway (FEC) is a major regional railroad with a 351-mile network running north and south along Florida's East Coast. **(Figure 2-21)** It connects the ports and businesses in South Florida, through interchange at Jacksonville, with rail service via the CSX and NS to reach the national rail network. In addition, FEC operates truck drayage services connecting the Atlanta market to its corridor in Jacksonville. Intermodal rail service is the primary business of the FEC, which has been investing in improvements to its intermodal terminal network in pursuit of diverting additional truck traffic to rail. The FEC has invested in intermodal container terminal facilities and supporting South Florida container ports, such as the Port of Miami, that are competing with other Atlantic Coast ports. The FEC corridor is also used by shippers with containers handled at the Port of Savannah via the FEC's "Savannah Relay" service connecting at Jacksonville.

Figure 2-20: CSX Southeast Rail Corridor
SE Hub-Enabled Freight Flows



Source: HDR Engineering

Figure 2-21: FEC Corridor and Connections



Source: FEC Railway

Upgrades of Short Line Track and Structures

A number of short line railroads in the state identified the need to upgrade track and bridges to increase capacity and / or accommodate heavier 286,000-pound railcars (load plus car weight), among other needs. The ability to handle maximum car weights of 286,000-pounds is of importance to short line shippers to compete with firms served by Class I and other railways whose lines have this capacity. These railroad-served shippers can load more cargo per car and thus enjoy a transportation cost savings relative to short line shippers whose serving railroad cannot handle the heavier loaded car weights. There is also a need for tie and rail infrastructure improvements for speed increases to provide for timelier, truck competitive service.

Port-Rail Improvements

The major opportunity for Florida's ports is the potential represented by the widening of the Panama Canal as well as other structural changes such as the shift in manufacturing from China to other Asian countries and Latin America, as noted in discussions earlier. Part of the ability to take advantage of the opportunity is ensuring that rail links to and from the ports are capable of handling the increased rail traffic. The *Freight Mobility and Trade Plan* noted these types of potential rail bottlenecks:

- On-dock rail needs, i.e. rail improvements facilitating rail-ship intermodals transfers at marine terminals;
- Rail access to port terminals and major Class I rail lines; and,
- Intermodal container transfer facilities (ICTF), permitting intermodal rail-truck transfers, mostly near port terminals.

Resolving port-rail bottlenecks will help position Florida's 15 public ports to maximize any gains resulting from the opportunities.

PASSENGER RAIL NEEDS

Improvements to Current Amtrak Performance

Current Amtrak service is limited, both in terms of frequency and network. On-time performance and Customer Service measures fall short of goals. Passenger capacity and fleet age reflect the limited level of capital investment over past decades. Often Amtrak stations, especially platforms, fall short of current standards. These factors reduce ridership and revenue growth, hindering efforts to improve the revenue/cost ratio of existing service.

Capacity

Given current rail freight and rail passenger growth trends and proposals to add new intercity and commuter rail passenger service, additional rail line capacity may eventually need to be constructed. Freight railroads' traffic and capacity needs must be a key element in developing any passenger rail development or expansion plans. Early coordination on operations analysis and capacity simulation should be the first step in planning any service improvement. An additional issue for the freight railroads is that even though public investment may build sufficient capacity to operate passenger trains without delay to freight trains, the passenger investment may consume valuable right-of-way that results in future privately funded freight capacity investment being dramatically more expensive.

Partnerships

Partnerships are critical for the expansion of rail passenger service in Florida. In most cases, additional intercity rail passenger service will be in partnership with other states. With any proposed Atlanta – Jacksonville service, the partner would be the state of Georgia. Often contentious is the need to construct the core segments first, even if investment in another member state is delayed many years. For commuter rail service, the counties and municipalities served are critical partners.

Tourist Railroads and Other Venues

There are several key issues for Florida's tourist railroads and museums. Funding for track and bridge state of good repair or improvement is a priority. The increasing cost of fuel, equipment maintenance, insurance and steam locomotive inspections is also a concern especially given that operators do not have a great deal of pricing power for family-oriented leisure activities. Tourist train trips and visits to railroad museums are highly discretionary, and are therefore subject to the ebbs and flows of economic and income growth.

Longer term, attracting volunteers is also a challenge. Maintaining and building replacement parts and operating historic equipment are expensive and may require skills, tools and materials often no longer available. Fifty to 100-year-old operating locomotives and cars undergo stresses and high maintenance costs that static museum pieces do not have. Finding skilled replacements is critical.

Another challenge is changing demographics. The groups of visitors that worked or rode on rural railways in their youth are passing away. Most potential visitors have no connection to railroading. Tourist railroads also face competition from other recreation venues for the recreation dollar. This competition is vigorous and increasing. Many of these competitors offer extreme, high-tech amusements, often adding the video format familiar to today's traveler, designed to be adrenalin-pumping adventures.

The tourist railroad industry faces the challenge of connecting women and the new, emerging demographic groups to the historical railroad experience and making it interesting to a new generation of potential visitors. The industry also needs to explain the importance that the daily train represented to an older generation in "offering a gateway to the world" to a generation who now holds the world in their hand with their smart phones.



CHAPTER 3 PROPOSED PASSENGER RAIL IMPROVEMENTS & INVESTMENTS

Highlighted below are the proposed improvements of passenger operators. They are categorized as short-range improvements, i.e. those that because of ease of implementation, available funding, and political support could be realized within the next four years; and long-range improvements, whose timing and funding and extent of support have yet to be determined. The section concludes with the description of a concept to link Florida with an emerging high-speed rail system reaching to Atlanta and via Savannah to the Carolinas, Washington, DC, New York, and Boston.

SHORT-RANGE IMPROVEMENTS

These are projects that are either scheduled for completion within the next four years, or have secured funding and thus are expected to be implemented in the short term.

AMTRAK

New Equipment

In 2010 Amtrak ordered 130 new intercity passenger cars for use on the *Silver Meteor* and *Silver Star*. This order included baggage/dormitory cars, dining cars and sleeping cars. Some of these cars will allow for the retirement of 60 (plus)-year-old equipment now in service on the trains serving Florida. This should reduce maintenance costs, improve reliability and result in improved customer satisfaction. The new dining cars, reflecting current food service technology, will result in more efficient food service. Supplementing the current Viewliner fleet, the new sleeping car capacity will increase revenues. In addition, passenger capacity and revenue will also increase as the result of shifting on-board, off-duty service crews from the passenger sleeping cars to the baggage/dormitory cars.

PASSENGER RAIL INVESTMENT AND IMPROVEMENT ACT OF 2008 (PRIIA) STUDIES

Silver Service Improvements

As required by Section 210 of the Passenger Rail Investment and Improvement Act of 2008, Amtrak undertook analysis of its long-distance trains in an effort to develop strategies to improve the metrics of the service. Included in these studies were the Atlantic Coast Services and the *Crescent* (does not serve Florida).³⁰

A list of improvements common to the routes, and with specific improvements for each route, was developed. Initiatives undertaken were:

³⁰ PRIIA Section 210 FY11 Performance Improvement Plan, *Crescent*, Lake Shore Limited, *Silver Service*, Amtrak, September 2011.

- **Provide cleaner restrooms** – Improved restroom and window cleanliness;
- **Provide on-board maintenance crews** – Provision of a guide for on-board crews to address *en route* mechanical problems (especially air temperature);
- **Improve PA systems** – Improved testing of train public address (PA) systems to identify problems while the train is still in the pre-departure servicing facility;
- **Relocate baggage car** – Relocation of the baggage car for improved ride quality;
- **Offer Comfort Kits for sale** – Provision of “Comfort Kits” containing an inflatable pillow, light blanket, eye shade and ear plugs available for purchase by overnight coach passengers;
- **Enhance food service productivity** – Introduction of point of sale technology and better stock control procedures to improve productivity in food service cars and to better track inventories; and,
- **Improve food selection** – Continuation of efforts to modify food service selections to match market preferences, take advantage of new food service technologies, and create items more appealing to customers.

Initiatives undertaken for the Atlantic Coast Services were additional Amtrak Thruway routes in North Carolina and an additional Thruway bus stop in Florida at The Villages (stop added between Wildwood and Ocala), increased coach capacity during the summer on the *Silver Meteor* and a focus on station safety and state of good repair projects (see Section 6.4.1.2.4 and Appendix C). Even though some improvements are outside of Florida, any improvements in the revenue/cost ratio of a route help to assure continuation of Amtrak service in Florida.

Auto Train Improvements

Another report responsive to PRIIA Section 209 concerned *Auto Train*, the *City of New Orleans*, the *Coast Starlight*, the *Empire Builder* and the *Southwest Chief*.³¹ As regards specific initiatives for *Auto Train*, seven were identified. There were:

- **Expand consist size** – This initiative was identified as having the potential to increase service revenues by \$2 million to \$3 million per year. However, the risk of engine failure as a result of hauling more cars, and concerns related to breaking in train consists of more than 50 cars, were factors persuading management to focus on a series of customer service and added value revenue enhancement as outlined below.
- **Implement priority off-loading** – Amtrak determined that there is an opportunity to generate additional revenue by offering all customers the opportunity for an expedited receipt of their vehicle, through a priority process for which Amtrak would charge a fee.
- **Eliminate smoking on board** – *Auto Train* is the only train in Amtrak’s system that allows smoking, which results in a number of adverse impacts, not least of which is trying to mitigate the smell of cigarette smoke with special filters, which do not fully address the problem.

³¹ PRIIA Section 210, FY12 Performance Improvement Plan, Auto Train, City of New Orleans, Coast Starlight, Empire Builder, Southwest Chief, Amtrak, September 2012.

- **Implement a DVD entertainment system** - DVD kiosks located at Lorton and Sanford would offer passengers the opportunity to rent, for a very nominal fee, movies for their trip and then turn them in upon arrival at their destination. Movies are offered in lounge cars now.
- **Improve the quality of the existing wine tasting feature** – Wine is currently made available for passengers to take back to the room. The improvement would upgrade this experience by having the sleeping car attendants offer the tasting in the room, thereby personalizing the experience and ensuring that it is more consistent with other tasting programs on long distance trains.
- **Offer Comfort Kits for sale** – These kits consist of a pillow and a blanket that would be available for sale in the lounge car to all passengers.
- **Auto Train Service Enhancement Projects** – Initiatives implemented included station window tinting, satellite radio and public-address system upgrades, on-board air quality improvements, updating of route collateral including menus and signage, and the refreshment of a number of interior elements.

Improvements Common to All Atlantic Service Trains

The following are initiatives common for the *Silver Meteor*, *Silver Star* and *Auto Train*, as noted in the two PRIIA studies.

- **Modify the seat pitch on Superliner Coaches** – The concept is to reduce seat pitch from 50-52 inches to 46-48 inches, allowing for 4 or 6 additional seats, and thus generating more revenue.
- **Modify the current Superliner Transition Sleeping Car** – This concept is to convert a largely unused lounge space on the lower level into a fully functional sleeping area with an additional four roomettes, Family Bedroom and Accessible Bedroom. Rooms that have been used for crew would be made available for passengers. The conversion would increase the number of sleeping car rooms available for sale by 10.
- **Customer Service Performance Metrics Integrator Program** – This program is a business intelligence system that tracks information on an individual crew and train level, with monthly reports that compare a route's performance by crew and crew member. The goal is to encourage positive competition between crew couplets, build teamwork, and identify crew couplets needing management coaching. The ultimate goal is an improvement in the personnel-related CSI scores.

Stations

Amtrak's 2009 *A Report on Accessibility and Compliance with the Americans with Disabilities Act of 1990* identified \$29.8 million in ADA-compliance and State of Good Repair needs at Amtrak stations in Florida. Since that time, improvements have been, or are being made, at Orlando, Sanford and Winter Park. Improvements at Winter Park coincided with the implementation of SunRail commuter rails service there.

Once the Miami Intermodal Center is completed (presently under construction) near Miami International Airport, Amtrak will transfer its terminal operation in Miami there. Amtrak's existing Miami Station will be converted to a support role for Amtrak operations in Florida. Specific station projects are noted in **Appendix F**.

While some of the station needs identified in the 2009 Amtrak study have been addressed, others remain undone. Further, the stations will need repair on an ongoing basis. Accordingly, this Plan assumes \$20 million in short-range improvements at Amtrak stations for ADA and state-of-good-repair needs.

ALL ABOARD FLORIDA

All Aboard Florida (AAF) is a privately owned and operated intercity passenger rail service that will link Orlando International Airport and Miami with hourly bi-directional service operating through most of the day and with a run time of a little over 3 hours. The *Brightline* service will utilize a new rail corridor between Orlando and Cocoa and the existing FEC corridor between Cocoa and Miami. The AAF route would be 232 miles long. The first phase of the service, between Miami and West Palm Beach, began in 2018.

The service concept is detailed in the August 2015 *All Aboard Florida Final Environmental Impact Statement and Section 4(f) Evaluation* (FEIS), prepared by the Federal Railroad Administration. The FEIS followed the Draft EIS, which was produced in September 2014. The FEIS builds on the October 2012 *Environmental Assessment and Section 4(f) Evaluation for the All Aboard Florida Passenger Rail Project West Palm Beach to Miami* and a Finding of No Significant Impact (FONSI) (AAF 2012; FRA 2013a), which authorized AAF to construct the Phase I component of the project (West Palm Beach to Miami). Phase II of the project would extend the service to Orlando.

Given that AAF operations would cover the full corridor from the Orlando airport to Miami, the DEIS analyzes the cumulative effect of completing both phases of the project. The estimated cost for the project is \$2.4 billion. The AAF route concept is shown in **Figure 3-1**.

In June 2018, AAF confirmed it is pursuing an Orlando to Tampa route as a natural extension for the service in the future. More details are discussed in the Long-Range Improvements section.

Purpose and Need for a Rail Alternative between Orlando and Miami

The *All Aboard Florida Final Environmental Impact Statement and Section 4(f) Evaluation* (FEIS) cited the purpose of the AAF project as providing reliable and convenient intercity passenger rail transportation between Orlando and Miami. The proposed service “would offer a safe and efficient alternative to automobile travel on congested highway corridors, add transportation capacity within those corridors (particularly Interstate 95), and encourage connectivity with other modes of transportation such as light rail, commuter rail, and air transportation.” An additional purpose of Phase I of the project is to enhance intercity rail service in South Florida “by providing a transportation alternative for Floridians and tourists, supporting economic development, creating jobs, and improving air quality.”

The document indicated the project was needed to provide a fast, sustainable, and reliable means of travel that responds to the transportation needs of Floridians now as well as in the future. Factors driving the need included: “increasing congestion on highway corridors, longer travel times, limited existing capacity, limited and constrained opportunities for corridor expansion, limited alternative modes of transportation, and increasing travel demand generated by growth in population and tourism.”

AAF Service Concept

According to the FEIS, there would be 16 revenue round-trips leaving hourly in each direction from 5:00 AM to 9:00 PM between Orlando and Miami. Trains would stop at the two intermediate stations in West Palm

Beach and Ft. Lauderdale. The last scheduled northbound revenue train would arrive in Orlando at 12:10 AM, and the last schedule southbound would arrive in Miami at 11:10 PM.

Run times for trains between terminal stations would be 3 hours and 10 minutes. Trains would operate at a maximum of 125 MPH between Orlando and Cocoa; a maximum of 110 MPH between Cocoa and West Palm Beach; and a maximum of 79 MPH between West Palm Beach, Ft. Lauderdale and Miami.

Between the Orlando airport and Cocoa, trains would operate on a dedicated track, thus allowing for higher speeds. Between Cocoa and Miami, trains would share track with FEC freight train operations, and thus run at slower speeds.

Per comment provided separately by AAF, the target market for the service is two-fold: business travelers and tourists.

Ridership Projections

Ridership will reach a steady volume by 2019, per projections cited in *All Aboard Florida Final Environmental Impact Statement and Section 4(f) Evaluation* (FEIS). A total of 3.5 million annual riders are expected in 2019. Of these, about 2 million annual riders would be making short distance trips during Phase I of the project (with service between West Palm Beach, Fort Lauderdale, and Miami). Another 1.5 million riders will come from the Phase II expansion (between West Palm Beach and Orlando). By 2030, total ridership on AAF is expected to exceed 4 million.

However, the May 2015 *All Aboard Florida Ridership and Revenue Study*, prepared by Louis Berger Group, revised these projections upward. The study forecasted 2020 ridership at 5.4 million, growing to just over 7 million by 2030.

Figure 3-1: All Aboard Florida's *Brightline* Route Concept

Rolling Stock

Train sets consist of new diesel-electric locomotives and single-level coach trains, which are being constructed by Siemens in Sacramento, California. There would be ten train sets. Of these, eight sets would be needed to provide the daily scheduled service. Per the *All Aboard Florida Final Environmental Impact Statement and Section 4(f) Evaluation* (FEIS), each set would have two locomotives, one on each end, allowing trains to operate in a push/pull mode and ensuring reliability and smooth operations at speeds of up to 125 MPH. Each set would have seven single level passenger cars, inclusive of two Business Cars, a Café/Economy Car, and four Economy Coach Cars. The double locomotive configuration would allow two more passenger cars per train set. AAF separately reported that trains sets might actually range from four to eight cars and that Business Class cars will enter service only with Phase II implementation.

Five of the train sets would be stored at the Vehicle Maintenance Facility (VMF) near the Orlando International Airport, and the remaining five at either the West Palm Beach Station or Miami Station. Brightline noted in a press release that the fifth trainset had been delivered in October 2017.

Level Boarding

The floor height of the passenger cars would be the same as the station platforms, allowing for level boarding. That is, passenger will not have to step up and into cars as they do today at Amtrak, Tri-Rail and SunRail stations. Besides removing a barrier for people with physical disabilities, level boarding speeds the boarding and alighting of trains, thus contributing to on-time train performance.

Vehicle Maintenance

Train sets would be maintained at the Vehicle Maintenance Facility near the planned Orlando International Airport's South Terminal station.

Track and Structure Improvements

The new track and structures envisioned to implement AAF intercity rail service are shown in **Table 3-1**. Three build alternatives were explored in the FEIS. All three are identical in terms of cost, stations, and the assumptions about the vehicle maintenance near the Orlando airport's planned South Terminal rail station. The table shows the specifics for the preferred alternative, i.e., Alternative E. The new East-West Corridor between Orlando and Cocoa will be single track with some double track segments; the FEC Corridor between Orlando and Miami will be double track.

Table 3-1: Track and Structure Improvements for AAF Preferred Alternative

Segments	End Points/Location	Improvements
Orlando International Airport	Between airport station and SR 417	4.5-mile new rail corridor
East-West Corridor	Between SR 417 and SR 520 in Cocoa	A new 34-mile corridor comprised of: 1.5-mile new rail corridor west of Narcoossee Road; 17.5-mile new rail corridor either within, along boundary of, or 100' south of current SR 528 ROW; 15-mile new rail corridor within FDOT and utility ROWs; and 5 new bridges over water
North-South Corridor	Between Cocoa and West Palm Beach	Existing 128.5-mile corridor; 3-mile track improvements north of Cocoa connection; add second track, straighten curves; reconstruct 18 bridges
West Palm Beach - Miami	Between West Palm Beach and Miami	Existing 66.5-mile corridor; add second track; reconstruct 7 bridges
Vehicle Maintenance Facility (VMF)	On south portion of Orlando airport property	New VMF; Construct 1 new bridge
New Stations	West Palm Beach, Fort Lauderdale, Miami	Construct three stations; Orlando airport station (Intermodal Center) will be part of South Terminal development
<i>Source: August 2015 All Aboard Florida Final Environmental Impact Statement and Section 4(f) Evaluation (DEIS), prepared by the Federal Railroad Administration</i>		

Route Alternatives

There are three Action Alternatives to be further evaluated. The Action Alternatives (Alternative A, Alternative C, and Alternative E) differ only in the location of the proposed tracks in the 17.5-mile segment of the East-West Corridor parallel to SR 528 between the interchanges with SR 417 and SR 520. All other elements of the Action Alternatives are identical.

Stations

There are only four stations selected at this time. There are the Orlando International Airport's planned South Terminal and Intermodal Center, West Palm Beach, Ft. Lauderdale, and Miami. In 2018, meetings and discussions have begun regarding potential station concepts in the Treasure Coast.

Public Comment on AAF Concept

The FRA held eight public meetings along the AAF route to answer questions and solicit public input on the Draft Environmental Impact Statement in October and November 2014. Opposition to the project was voiced at the public meetings. Issues raised include concerns for safety at crossings, delays to emergency vehicles at crossings, and disproportionately negative impacts to minority and low-income populations along the route. The proposal has faced opposition from groups like Citizens Against Rail Expansion and Not All Aboard based in West Palm Beach.

FRA provided a comment period totaling 75 days. The comment period ended in early December 2014. During the comment period, the FRA received approximately 15,400 comments. About 39% of submittals general supported the project, and 61% were generally opposed. The 2015 FEIS included additional operating and economic details, was produced in August.

TRI-RAIL

Pompano Beach Station Improvements

Tri-Rail has near term plans to create a “Green Demonstration Station” project at its Pompano Beach Station. The project will feature an upgrade of numerous station facilities, including canopies, circulation and bus/shuttle access.

New Northern Layover and Light Maintenance Facility

Tri-Rail is planning a new Northern Layover and Light Maintenance Facility in Palm Beach County north of the Mangonia Park Station. The facility will provide a more efficient end-of-line location for some equipment maintenance, fueling, cleaning, and additional storage capacity. Heavy equipment maintenance will still be performed at the Hialeah maintenance facility, which Tri-Rail shares with Amtrak. A cost estimate for the facility is \$36.1 million.

The Hialeah facility has no room for expansion, constraining its ability to maintain more train sets. The crowded conditions contributed to the decision to move ahead with the new northern facility. Another factor contributing to the decision was the potential to reduce deadheading (non-revenue moves) of equipment from Mangonia Park to Hialeah for storage and maintenance, thus reducing expenses and increasing operating efficiency. The new facility, which would be located in an industrial area, will have storage capacity for four train sets. The facility is to be surrounded with sound walls to mitigate noise impacts.

Federal environmental clearance was received in late 2013, and key funding support has been forthcoming from the Palm Beach Metropolitan Planning Organization.

CSX – FEC Rail Connections

Between Miami and West Palm Beach several east-west rail connections between the South Florida Rail Corridor and the FEC main line have been proposed to provide operating flexibility between the two corridors. The project received funding through a USDOT Transportation Investment Generating Economic Recovery (TIGER) grant award and a multi-agency, public-private partnership. The Miami (Iris) connection and the West Palm Beach connection (Northwood) will be completed by June 2019. These connections will allow for an integrated freight and passenger rail network, and will enable Tri-Rail operations on the FEC, as discussed below. A third connection at Pompano Beach is discussed in the long-range improvements section (see Section 6.4.2.3). The three connections are shown **Figure 3-2**.

Tri-Rail Coastal Link - Interim Jupiter Extension Service

Both the development of the Northern Layover and Light Maintenance Facility and the Northwood connection between the SFRC and the FEC will facilitate expansion of Tri-Rail service on the FEC between West Palm Beach and Jupiter. This concept is called the Tri-Rail Coastal Link, and it is shown in **Figure 3-2**. Going north from the existing Tri-Rail Palm Beach station, the Jupiter Extension will have stations on the FEC

at West Palm Beach, Riviera Beach, Lake Park, Palm Gardens and Jupiter. Start-up of Jupiter Extension service is expected in the 2017-18 timeframe. Full implementation of Tri-Rail service from Jupiter to Miami on the FEC line is proposed for the longer term (see Section 6.4.2.2.2).

Tri-Rail Coastal Link – Interim Downtown Miami Extension Service

The Iris connection between the SFRC and the FEC will facilitate the expansion of Tri-Rail service on the FEC between its existing Metrorail Transfer Station and downtown Miami. With this improvement, Tri-Rail could begin its proposed Tri-Rail Coastal Link – Interim Downtown Miami Extension Service.

Golden Glades Intermodal Center Improvements

This project will provide a new 1,000-space parking deck, a new intermodal center with bus bays and facilities, a new pedestrian bridge from the intermodal center to Tri-Rail, and improved circulation. The estimated cost of the project is \$48.6 million. Most of the project elements are now included in the Miami-Dade MPO *Transportation Improvement Plan* (TIP).

New Tri-Rail Station in Boca Raton

This project involves a new Tri-Rail station near Glades Road, serving the Boca Town Center Mall area. Shuttle bus, pedestrian, and limited parking facilities would be included. The project has a cost estimate of \$18.5 million. It is included in the Palm Beach MPO TIP.

Opa-locka Tri-Rail Station Improvements

This project is for a surface parking lot expansion along with pedestrian, bus circulation, shelter, and bike improvements. Construction of the \$2.3 million project began in 2015.

Figure 3-2: CSX and FEC Rail Connections



Source: Tri-Rail

Complete Missing Double Track Section at the Miami River

The double tracking project that was completed in 2007 left one section of SFRC single track in the vicinity of the Miami River. This project will fill in the gap, adding capacity and addressing an operational bottleneck for Tri-Rail, Amtrak and CSX freight operations. It will also improve access to the MIC. An Environmental Assessment of alternatives was completed, and a locally preferred alternative has been selected for double-tracking and to replace the bridge. The ultimate solution must address the existing single-track Miami River Bridge, which is a protected historical resource. The cost estimate for the project is \$49.2 million. Most project phases are now included in the Miami-Dade MPO TIP.

SUNRAIL

Phase 2 of SunRail's implementation has extended the commuter rail system south to Poinciana, and will extend north to DeLand. The north extension will add 12 miles and one additional stations to current operations. The southern leg was implemented first, extending service south linking Sand Lake Road in Orange County to Poinciana in Osceola County, and was completed in July 2018. Phase 2 North will extend north to Deland from Debary. A cost estimate for the north and south Phase 2 expansion is \$258 million.

Other short range capital projects will be:

- Acquisition of additional vehicles at an estimated cost of \$50 million;
- Construction of a vehicle maintenance facility to obviate SunRail's reliance on Amtrak's Sanford facility; while SunRail did not provide a cost estimate, this Plan assumes a \$50 million lump sum for this project based on costs for comparable projects elsewhere;
- Implementation of positive train control (PTC) at an estimated cost of \$20 million; and,
- Safety upgrades costing an estimated \$8 million.

LONG-RANGE IMPROVEMENTS

AMTRAK

Amtrak reported no specific plans for long-range improvements for its Atlantic Coast Service. This Plan assumes \$10 million for ADA-compliance and state-of-good-repair projects at Florida stations. A potential long-range improvement may be the restoration of Gulf Coast service. The Gulf Coast Working Group Report on the subject was submitted to Congress in July 2017.

TRI-RAIL

Tri-Rail reported multiple potential long-range projects, inclusive of full implementation of the Coastal Link, two other service extensions, and several station improvements.

CSX – FEC Rail Connection at Pompano Beach

A third east-west connection between the FEC and SFRC will be at Pompano Beach, as shown in **Figure 3-2**. The connection will provide for freight rail rationalization to/from Port Everglades, resolve a SFRC

bottleneck, and facilitate the full implementation of the Tri-Rail Coastal Link concept. The cost for the improvement is estimated at \$29 million.

Full Tri-Rail Coastal Link Implementation

The Tri-Rail Coastal Link would provide more than 80 miles of new commuter rail service on the FEC corridor, from Downtown Miami to Jupiter, and would be fully integrated with the expansion of Tri-Rail. It would add 20 to 25 new stations linking dozens of municipalities and major destinations throughout the region. It will share existing and new tracks with FEC freight trains and the planned All Aboard Florida *Brightline* intercity service. The capital cost estimate for this concept is \$800 million.

CSX Corridor in Miami Dade County

A study has been proposed of the CSX's Homestead Subdivision (between Oleander Junction and Homestead/Florida City) and the CSX Lehigh Spur (parallel to SR 836/Dolphin Expressway) as potential passenger rail corridors southwest of Miami. Tri-Rail is seeking funding for the study to investigate a network of new passenger rail service on the corridors. The purchase cost of the CSX rights-of-way is unknown.

CSX-Tri-Rail Dolphin Extension Phase I

This project is Phase I of an extension of Tri-Rail service on 11.2 miles of CSX trackage west from the Miami Intermodal Center (MIC) along SR 836, ending just west of Florida's Turnpike. Phase I assumes minimal double tracking and basic station amenities. A study is to be performed by Miami-Dade MPO beginning in 2015. The project has a cost estimate of \$140 million.

Deerfield Beach Tri-Rail Station Improvements

This project calls for a new parking deck along with pedestrian, bus circulation, shelter, and bike improvements. The project has a cost estimate of \$12 million.

New Tri-Rail Station at Palm Beach International Airport

This project is for a new Tri-Rail station to be located in the vicinity of Southern Boulevard (SR 80). Depending on the exact station location, the facility may also include parking facilities to serve commuters from the western communities. The project has a cost estimate of \$22.5 million. It is included in the Palm Beach MPO 2040 L RTP *Cost Feasible Plan*.

Delray Beach Tri-Rail Station Improvements

This project involves a new parking deck with about 265 spaces, along with pedestrian, bus circulation, shelter, and bike improvements. The project has a cost estimate of \$6 million.

Boynton Beach Tri-Rail Station Improvements

This project involves a surface parking lot expansion on existing SFRTA right-of-way, along with pedestrian, bus circulation, shelter, and bike improvements. The project has a cost estimate of \$900,000.

Mangonia Park Tri-Rail Station Improvements

This project involves construction of a new parking deck, along with pedestrian, bus circulation, shelter, and bike improvements. The project has a cost estimate of \$10 million. It is included in the Palm Beach MPO 2040 L RTP *Cost Feasible Plan*.

Boca Raton Tri-Rail Station Improvements

The project involves a new parking deck, along with pedestrian, bus circulation, shelter, and bike improvements. The project has a cost estimate of \$11 million. It is included in the Palm Beach MPO 2040 L RTP *Cost Feasible Plan*.

Boca Raton Intermodal Center

For the longer term, this project involves construction of a new intermodal facility, at either the existing Tri-Rail station or a proposed new Boca Raton station near Glades Road. This project has a cost estimate of \$24.6 million. It is included in the Palm Beach MPO 2040 L RTP *Cost Feasible Plan*.

SUNRAIL

SunRail is investigating a possible Phase 3 extension, connecting to Orlando International Airport from the Sand Lake Road Station. The current connection between SunRail and the airport requires a bus transfer at the Sand Lake Road Station; however, a rail alternative is one of many potential alternatives being investigated. The route under investigation is via the Stanton Spur off the Central Florida Rail Corridor three miles south of the Sand Lake Road Station. The rail spur, which serves a power generating plant, runs east to the southern side of the airport. A new rail section would extend from the line and head north approaching the planned South Terminal on the east side of the airport. As noted in a preceding section, this is the same terminal AAF is planning to reach. The Phase 3 expansion is estimated to cost \$200 million.

Another longer-range project might be extension of SunRail service from DeLand northeast to Daytona Beach using the I-4 corridor. Volusia County and FDOT are funding a study to develop a preliminary design, a cost estimate and potential ridership. An Alternatives Analysis including commuter rail and BRT is currently ongoing.

OTHER POTENTIAL IMPROVEMENTS

Below are other concepts that would enhance passenger services and mobility options for Floridians. To this point, these concepts have not been adopted by the existing passenger carriers or public agencies.

AMTRAK

Thruway Bus Service

Thruway bus connections offer coordinated schedules, through fares and guaranteed connections to/from trains. Thruway connecting bus routes offer several transportation benefits to the core rail system. These are:

- Addition of more cities to the passenger rail network;

- Increased frequencies on corridor routes (through the addition of parallel schedules during off-peak times of the day); and,
- Provision of vital service to transit-dependent residents in rural areas.

A potential Thruway expansion concept would be to link Tallahassee with Valdosta (or Albany) and Macon, Georgia, with runs to and from Atlanta for connections to the *Crescent*. The length of the trip would be comparable to Thruway service provided today between Houston and Longview, Texas (a connection to the *Texas Eagle*).

Future Equipment Investments

While the oldest cars in the Amtrak fleet now operating on the *Silver Meteor* and *Silver Star* are being replaced, additional cost efficiencies and revenue growth is available through additional equipment investments. First, the locomotives used on Florida's trains are almost 20 years old and will soon require a major overhaul or replacement. Amtrak's *Viewliner* sleeping cars are almost 20 years old, and from the age and customer satisfaction/revenue perspective they should be overhauled with their interior accommodations matching the new sleeping car interiors. The Amfleet II coaches and Lounge cars are almost 35 years old and are not attractive long-distance equipment from the customer perspective. A follow-on order for new long-distance coaches and lounge cars, while the single level production line is still open, would yield construction cost savings and earlier revenue benefits. With all-new equipment on the *Silver Meteor* and *Silver Star*, these trains can be "re-launched" as Amtrak has done in the past on other routes, yielding major gains in awareness and passenger ridership. Currently, Amtrak's constrained capital budget limits this strategy and the realization of these benefits.

Restoration of Gulf Service

Amtrak's *Sunset Limited* provided intercity passenger rail service along the Gulf Coast until the destruction of main line trackage and bridges caused by Hurricane Katrina in August 2005 forced Amtrak to suspend the service east of New Orleans. Although the main lines have long been returned to freight service, passenger service remains suspended due to funding issues.

The loss of service eliminated intercity passenger rail service at stations not served by other Amtrak routes. The stations impacted, 50% of which are located in Florida, are listed below:

- Bay St. Louis, Mississippi
- Gulfport, Mississippi
- Biloxi, Mississippi
- Pascagoula, Mississippi
- Mobile, Alabama
- Atmore, Alabama
- Pensacola, Florida
- Crestview, Florida (Ft. Walton Beach)
- Chipley, Florida (Panama City)
- Tallahassee, Florida
- Madison, Florida
- Lake City, Florida

In July 2009, Amtrak issued its *Gulf Coast Service Plan Report*, in response to PRIIA Section 226. The report identified three preferred options for the restoration of the discontinued service.

- Option 1: Restore tri-weekly *Sunset Limited* service between Los Angeles, California and Orlando.
- Option 2: Extend the daily *City of New Orleans* service, which currently operates between Chicago, Illinois and New Orleans, Louisiana, east from New Orleans to Orlando.
- Option 3: Implement daily stand-alone overnight service between New Orleans, Louisiana and Orlando.

The three route options are shown in **Figure 3-3**. Key metrics for the three options are the subject of **Table 3-2**.

Table 3-2: Key Metrics for Options for Restoration of Gulf Coast Service

Projected Performance (dollar figures in millions)	Option 1 (Tri-Weekly <i>Sunset Limited</i>)	Option 2 (Daily <i>City of New Orleans</i> Extension)	Option 2 (Daily Stand- Alone Train)
Ridership	53,300	96,100	79,900
Revenue	\$6.0	\$9.2	\$5.6
Fare Box Recovery	56%	44%	23%
Capital/Mobilization Costs	\$32.7	\$57.6-\$96.6	\$57.6-\$96.6

Source: Amtrak's 2009 Gulf Coast Service Plan Report

Figure 3-3: Options for Restoration of Gulf Service through Northern Florida



Source: Amtrak's 2009 Gulf Coast Service Plan Report

Option 2, extension of the City of New Orleans, had the highest annual ridership and revenue projection. Its fare box recovery ratio, the percent of operating costs covered by fare revenues, is second best of the three options, but still below Amtrak's overall 50% fare box recovery ratio for its long-distance services in FY 2013. However, implementation costs (capital and mobilization) for Options 2 and 3 are well higher than Option 1, as both costs reflect daily versus tri-weekly operations.

Amtrak stopped short of recommending a single option for implementation. Rather, it recommended that federal and state policymakers determine if passenger rail service should be restored between New Orleans and Orlando; and if so:

- Identify the preferred option for service restoration; and,
- Provide the additional funding for capital and ongoing operating costs that will be required to implement that option.

Amtrak indicated it will move quickly to initiate the steps required for service restoration if the conditions can be satisfied.

At the request of the Southern Rail Commission, Amtrak restudied the options in 2015. In its *Potential Gulf Coast Service Restoration Options Report for the Southern Rail Commission*, Amtrak identified five options, summarized below:

- **Alternative A:** Extend the City of New Orleans (NOL) from New Orleans to Orlando (ORL) and operate a single state-supported round trip between New Orleans and Mobile. This alternative has the largest forecast of ridership.
- **Alternative A1:** Extend the City of New Orleans from New Orleans to Orlando without additional service between New Orleans and Mobile. This alternative had the lowest funding need (costs less revenue).
- **Alternative B:** Two daily state-supported round trips between New Orleans and Mobile.
- **Alternative B1:** Two daily state-supported round trips between New Orleans and Mobile, with a dedicated Amtrak Thruway bus connection between Mobile and Jacksonville (JAX).
- **Alternative C:** Stand-alone long distance train operated between New Orleans and Orlando. This alternative had less than half the riders forecast for Alternatives A and A1 and by far the highest funding need.

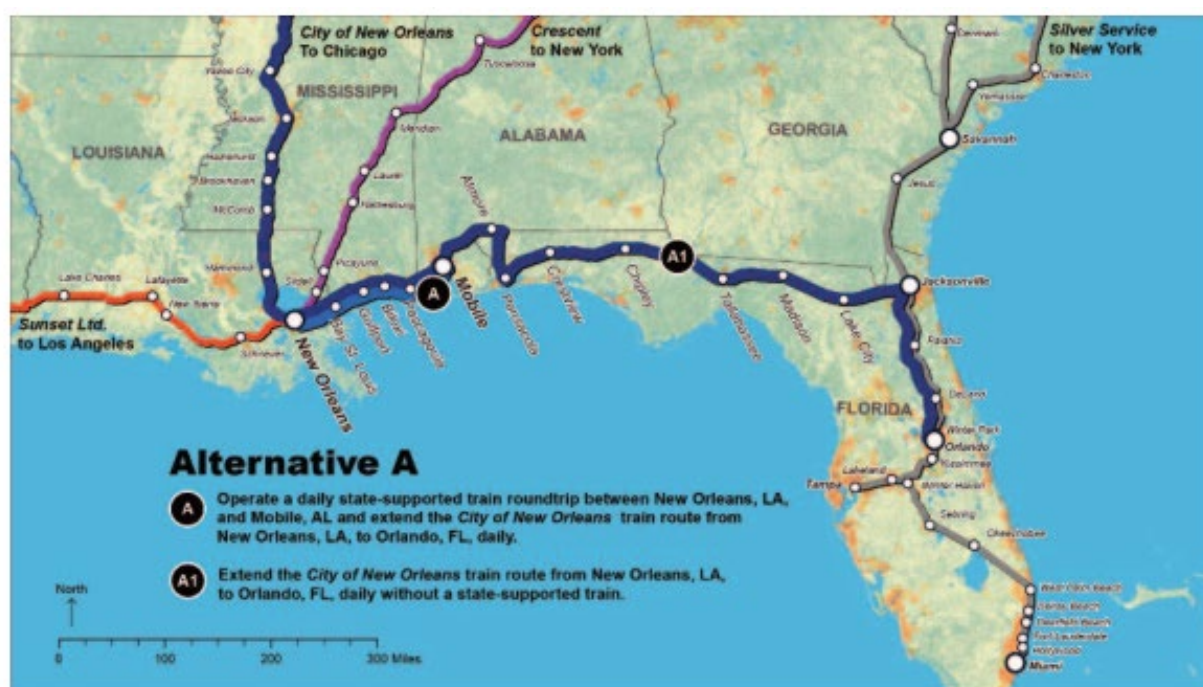
The summary results of the five alternatives appear in **Table 3-3**. The Amtrak analysis did not address capital costs for implementation. The routes of Alternatives A and A1 appear in **Figure 3-4**.

Table 3-3: 2015 Gulf Coast Service Options Explored by Amtrak

	Alt. A (extend <i>City of New Orleans</i> , 1 daily state train)	Alt. A1 (extend <i>City of New Orleans</i> , no state trains)	Alt. B (2 daily state-supported trains)	Alt. B1 (2 daily state trains with Thruway to JAX)	Alt. C (NOL-ORL standalone long distance train)
Endpoints	New Orleans-Orlando, 2 nd train New Orleans-Mobile	New Orleans-Orlando	New Orleans-Mobile	New Orleans-Mobile, Thruway to JAX	New Orleans-Orlando
Annual Ridership	153,900	138,300	38,400	43,400	69,100
Annual Total Revenue (\$ millions)	\$12.72	\$12.25	\$0.70	\$1.05	\$4.03
Annual Funding Need (\$ millions)	\$9.49	\$5.48	\$6.97	\$8.26	\$14.4

Source: Amtrak's 2015 Potential Gulf Coast Service Restoration Options Report for the Southern Rail Commission

Figure 3-4: Routes of Alternatives A and A1



Source: Amtrak's 2015 Potential Gulf Coast Service Restoration Options Report for the Southern Rail Commission

In December 2015 President Obama signed the Fixing America's Surface Transportation (FAST) Act. Among other things, FAST awards \$500,000 for FY 2016 and again for FY 2017 to be used to convene the Gulf Coast rail service working group, which required the Gulf Coast Working Group to evaluate all the options, select a preferred option, develop a prioritized capital investment program, and identify federal and non-federal funding sources required to restore the Gulf Coast service, including options for public-private partnerships.

The report identified the preferred option as restoring service between:

- New Orleans, LA and Orlando, FL via long-distance train for one daily round trip, and
- New Orleans, LA and Mobile, AL via state-supported train for one daily round trip.

This option consists of two of the five alternatives studied by Amtrak for its December 2015 report for the Southern Rail Commission (SRC). The report considered restoring passenger rail service at two investment levels:

- Minimum needed for passenger rail service, which is primarily station improvements, and
- Service level for ongoing operations – improvements that are intended to reduce trip times and enhance service reliability.

The minimum needed investment level did not include Positive Train Control. Host railroads were key stakeholders throughout the process, as were Amtrak and the SRC. CSX and NS expressed concerns with some of the details in the report³².

Route Restructuring

A reroute over the FEC has been suggested for the Silver Service trains. This route, historically a primary passenger route between Jacksonville and Miami, is shorter and faster than the current route via Orlando, and it serves significant intermediate population centers along Florida's east coast. Trains would be split into two sections in Jacksonville with one section traveling to Miami using the FEC, while the other section traveled via Orlando to Tampa. Amtrak's Section 210 PRIIA study found that the most promising initial service would involve splitting the *Silver Star*. Amtrak estimated that the FEC reroute of the *Silver Star* would generate 100,000 incremental riders and increase revenues by \$7.9 million annually. This increase in revenues would slightly exceed operating costs.

Promotion and Support of Current Service

Florida can help coordinate or assist in efforts to improve customer satisfaction and revenue performance by enhancing the quality of existing passenger rail services. For example, the promotion of existing rail service is the first step in building awareness and usage of the rail mode. Noting the availability of Amtrak service and offering a link to the Amtrak website on state and local travel websites is a key first step in promoting rail service. Joint promotions can be developed that link with Amtrak, local transit carriers, hotels and attractions. All of the participants in this program work together to provide detailed information on how to visit and enjoy Florida cities by rail.

Both the North Carolina Department of Transportation's Rail Division and California Department of Transportation's (Caltrans) Division of Rail have coordinated with passenger rail supporters in the development of a corps of interested volunteers to offer personalized service and information as travelers make their journeys. North Carolina has more than 100 volunteers in its Train and Station Host Association. Riding the *Piedmont* and the *Carolinian*, these train hosts serve as North Carolina goodwill ambassadors and add a welcoming dimension to the service. On board the train and in stations, the hosts assist passengers and provide information about passenger services, the train route, ground transportation, and area

³² *Gulf Coast Working Group Report to Congress, July 2017*

attractions. In California, on the *Capitol Corridor* and *San Joaquin* routes, volunteer station hosts assist passengers in locating the correct train or connecting motor coach, local transportation, and information about the local area. While the benefits of these programs cannot directly be tied to ridership performance, it should be noted that the *Piedmont*, *Capitol Corridor* and *San Joaquin* have some of the higher Customer Service Indicator Scores among Amtrak routes. Customer Satisfaction Indicator Scores (high or low) do influence repeat ridership.

Florida also can aid the National Park Service in expanding its Rails and Trails program. This program has been adopted as a major public outreach program by the National Park Service (NPS). With the Rails and Trails program NPS volunteer rangers provide programs on 10 Amtrak long-distance train routes. These programs provide Amtrak passengers with information and discussions about the scenery and historical sites that the long-distance trains pass, which help transform a long-distance train trip into a “Land Cruise.” NPS ranger staff is responsible for the oversight, training and management of the volunteer rangers. Additional state or private funding would enable an expansion of this program.

Perhaps the greatest opportunity for Rails and Trails program in Florida is with the Silver Services, having a terminus in Miami, and Everglades National Park. NPS could coordinate with Amtrak in the promotion to have riders visit the park once they alight in Miami.

ALL ABOARD FLORIDA

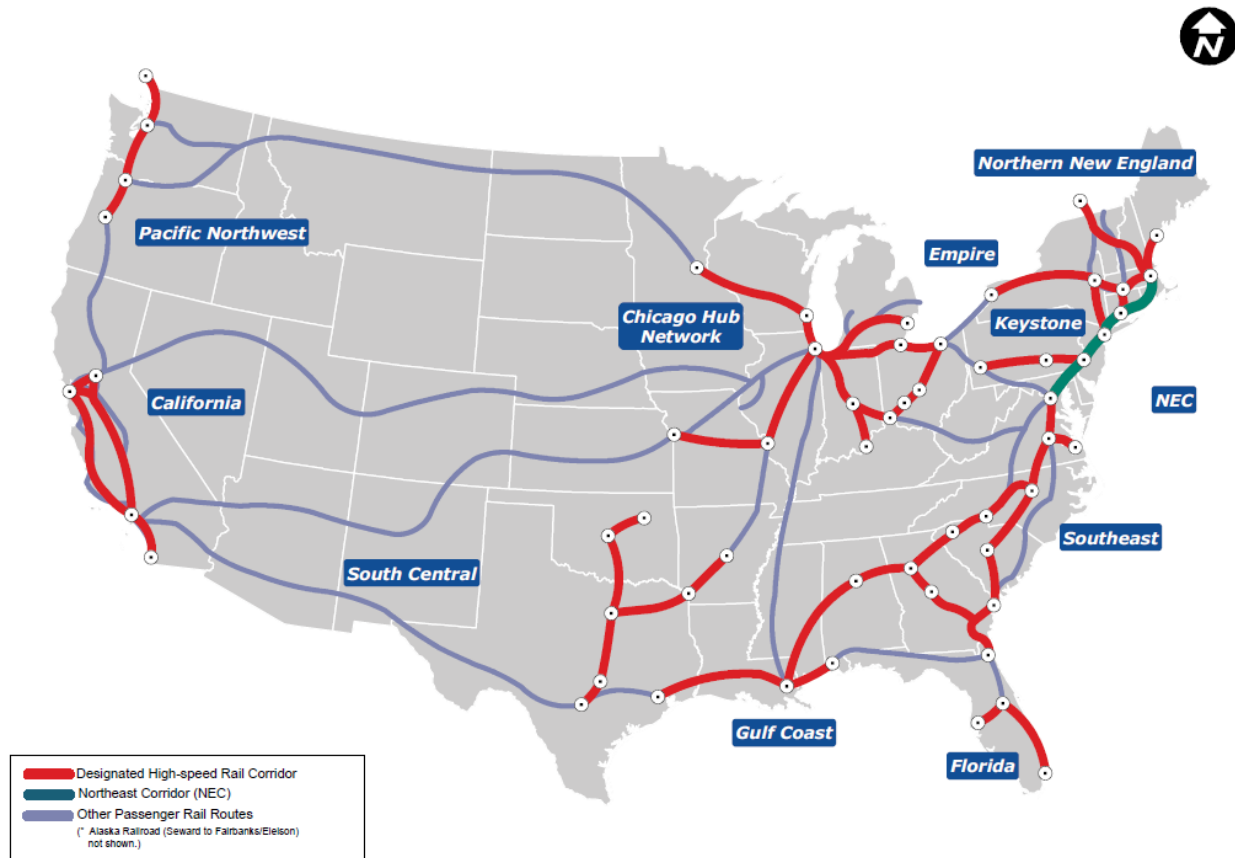
All Aboard Florida reported no specific improvement projects beyond what is required for the initiation of Phase I West Palm Beach – Miami service and the Phase II extension to Orlando International Airport.

As noted previously, in June 2018, AAF confirmed it is pursuing an Orlando to Tampa route as a natural extension for the service in the future. Based on the unsolicited proposal, FDOT is requesting proposals to lease rights of way owned by the Department and the Central Florida Expressway Authority (CFX), for the purposes of constructing and operating intercity passenger rail service between Orlando and Tampa, Florida.

ATLANTA – JACKSONVILLE CONNECTION

Florida could be served by two of the federally designated high-speed rail corridors: the Florida Corridor (Tampa – Orlando – Miami); and the Southeast Corridor: Washington, DC – Richmond – Charlotte – Atlanta – Macon – Savannah – Jacksonville (see **Figure 3-5**). Working with other public agencies, the Georgia Department of Transportation (GDOT) is the lead agency for segments of the Southeast Corridor: Atlanta – Savannah – Jacksonville (Southeast Corridor branch). Planning for the Florida Corridor has been assumed by All Aboard Florida, whose plans for an Orlando – Miami *Brightline* service are discussed above.

Figure 3-5: Federally Designated High-Speed Rail Corridors



Source: U.S. Department of Transportation, Federal Railroad Administration, *High-Speed Rail Strategic Plan*, 2009.

Atlanta – Jacksonville is the southern branch of the Southeast High-Speed Rail Corridor. For purposes of the March 2012 *High Speed Rail Planning Services, Final Report*, conducted by GDOT, a variation of the designated corridor routed via Savannah was studied. This variation increased potential ridership and revenue and facilitates the phasing of construction. The route begins at the proposed Atlanta Multi-Modal Passenger Terminal with stops at Hartsfield-Jackson Atlanta International Airport, Macon, Savannah, and Brunswick, terminating at the Jacksonville Regional Transportation Center.

The study investigated two options: use of existing track with maximum operating speeds of 90-110 MPH (shared-use); and a new dedicated high-speed rail right-of-way, with maximum track speeds of over 200 MPH (dedicated use). The basic parameters of the services appear in **Table 3-4**. The dedicated use option is both shorter and faster and can handle more trains per day.

**Table 3-4: Atlanta - Savannah - Jacksonville Distance, Travel Time
Average Speed and Frequencies**

Measures	Shared Use	Dedicated Use
Rail Distance (miles)	409	368
Travel Time (hour : minute)	5:18	2:49
Average Speed (MPH)	77	131
Frequency (RT per day)	8	14

Source: *High Speed Rail Planning Services, Final Report, HNTB, March 2012*

Conceptual construction cost estimates for the two options appear in **Table 3-5**.

Table 3-5: Atlanta - Jacksonville Total Capital Costs

Measures	Shared Use	Dedicated Use
Total Cost*	\$5 Billion	\$16.1 Billion
Average Cost per Mile*	\$11.5 Million	\$41.4 Million

Note: * In 2010 dollars.

Source: *High Speed Rail Planning Services, Final Report, HNTB, March 2012*

Table 3-6 captures the estimated operating performance for the trains in future years. Interestingly, the trains were envisioned to generate enough riders and revenue to over operating and maintenance (O&M) costs in almost all future years. The extent of the coverage is measured by the fare box recovery ratio, contrasting revenues against O&M costs; ratios in excess of 1.0 have revenues higher the O&M costs.

**Table 3-6: Atlanta - Savannah - Jacksonville Ridership, Revenues, Operating Cost and
Fare Box Recovery**

Measures	Shared Use			Dedicated Use		
	2010	2030	2040	2010	2030	2040
Ridership	2,011,000	2,353,000	2,732,000	2,355,000	2,745,000	3,178,000
Revenue*	\$109.8	\$33.9	\$160.7	\$181.2	\$218.5	\$260.0
O&M Costs*	\$95.7	\$98.5	\$101.2	\$190.1	\$194.8	\$199.6
Fare Box	1.15	1.36	1.58	0.95	1.12	1.25

Note: * In millions of 2010 dollars.

Source: *High Speed Rail Planning Services, Final Report, HNTB, March 2012*

As part of the *High Speed Planning Services Final Report* several scenarios and sensitivity analyses were conducted in addition to the baseline case (outlined above). Also investigated was a “Hybrid” option where diesel-electric tilting technology operates on a mix of shared and dedicated track segments. The report recommended that the Hybrid option be explored through the NEPA process.

The proposed Atlanta – Jacksonville passenger rail service could be introduced in phases: Atlanta – Macon, Macon – Savannah, and Savannah – Jacksonville. This kind of incremental approach could spread costs over time as interest in the full implementation of the service builds.

FIRST COAST COMMUTER RAIL

The 2009 *First Coast Commuter Rail Feasibility Study*, sponsored by the Jacksonville Transportation Authority (JTA), explored the potential for a commuter rail service centering on Jacksonville. The First Coast Commuter Rail concept envisioned three lines, all sharing a terminus in Jacksonville. The lines are seen in **Figure 3-6**.

- **North Corridor** would run north from Jacksonville Central Business District (CBD) along the abandoned section of the S-Line to the CSX Kingsland Subdivision, thence to Yule;
- **Southwest Corridor** would run from the CBD along the CSX Sanford Subdivision to Green Cove Springs; and,
- **Southeast Corridor** would run along the FEC southeast from the CBD to St. Augustine.

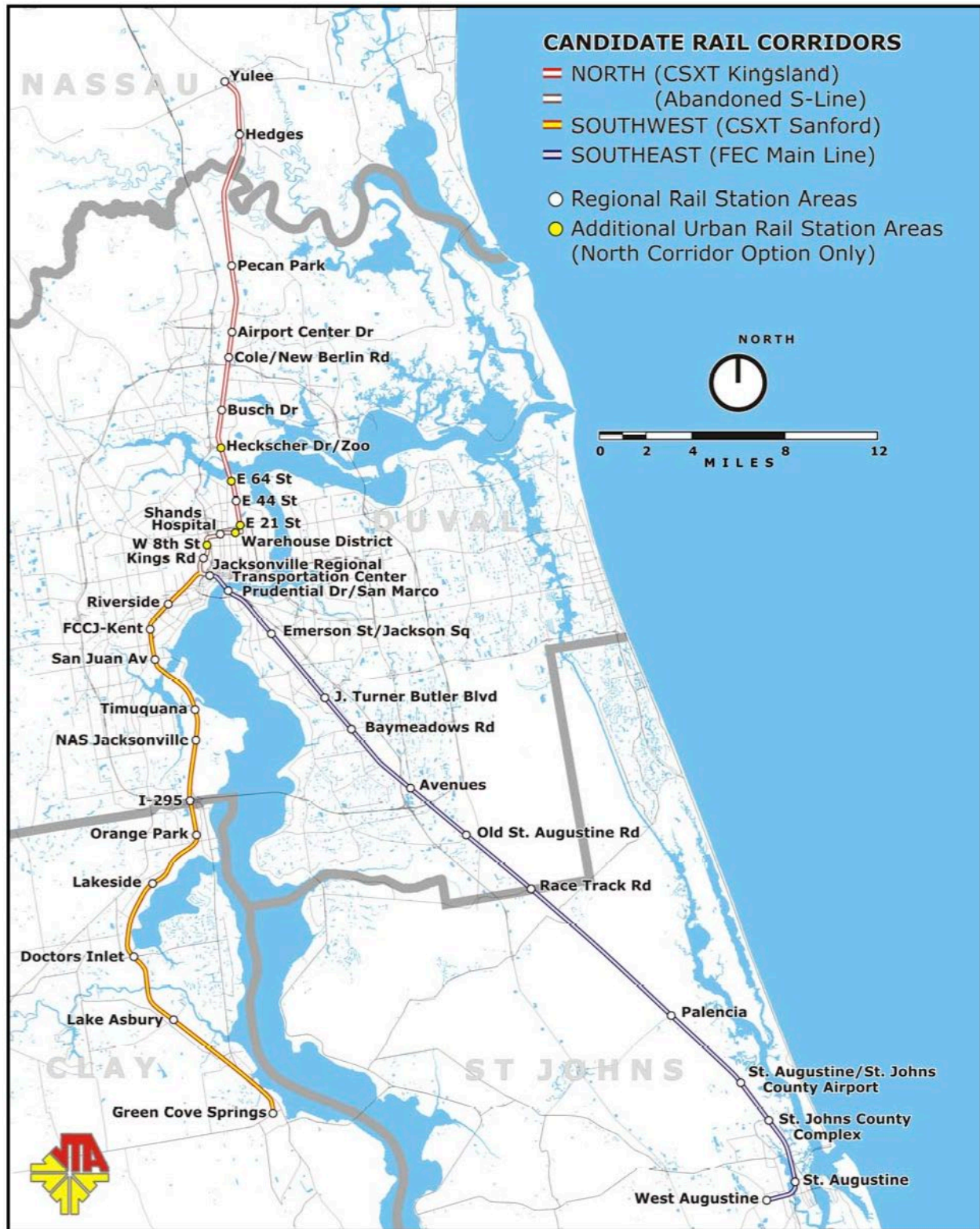
The cost to implement the 90-mile system was estimated at \$622 million. Weekday ridership was estimated in a range of 4,700 to 9,300 passenger trips. Operating and maintenance costs would be about \$40 million per year.

The Jacksonville terminus for commuter rail will be the Jacksonville Regional Transportation Center (JRTC). Plans for the JRTC have been evolving. The current concept calls for an intermodal facility adjacent to the Prime Osborn Convention Center in downtown. The facility would serve the proposed commuter rail system in addition to Amtrak (moving from its existing station at Clifford Lane), Greyhound and other intercity bus operators, JTA bus rapid transit (BRT), the JTA Skyway people mover, and local transit. Eventually JTA headquarters will be integrated into the center.

TAMPA COMMUTER RAIL

In the fall of 2015, CSX offered to open its 96-mile line connection St. Petersburg, Clearwater and Tampa for possible commuter rail service. The concept has yet to be evaluated, and it is unclear which government agency would sponsor such a service.

Figure 3-6: Proposed First Coast Commuter Rail Concept





CHAPTER 4 PROPOSED FREIGHT RAIL IMPROVEMENTS & INVESTMENTS

INTRODUCTION

Highlighted below are potential freight improvements. They are categorized as short-range improvements, i.e., those that because of ease of implementation, available funding, and political support could be realized within the next four years; and long-range improvements, whose timing and funding and extent of support have yet to be determined.

SHORT-RANGE IMPROVEMENTS - FREIGHT

CLASS I RAILROADS

CSX Transportation

CSX identified 20 projects for physical improvements through Year 2022 totaling \$73.2 million. Several of these projects are ongoing, and cost estimates may relate to investments planned in earlier years. The projects include yard rehabilitations and track changes, siding improvements, signalization improvements, main line crossovers (allowing trains to switch between tracks), among other things. The specific improvements appear in **Table 4-1**.

Table 4-1: CSX Short-Range Projects

Project Name	Estimated Cost
Eastport Yard - Install CPS/ABS from Grand Jct to SE Busch Yard	3,700,000
Welcome/Edison install CPS/ABS from Welcome to Edison	7,100,000
Jax Double Track install crossover at Dinsmore	1,800,000
Jax Double Track grand junction to Beaver St	12,100,000
Jax Double Track convert industrial and Chinatown leads to mainline	18,700,000
Jax Terminal Crossover at NE Amtrak Station	1,800,000
Intermodal Duval Yard Entrance additional track	9,600,000
TSC Valrico Sub to NE Welcome	4,000,000
Plant City Siding 8,000 ft of siding	5,800,000
TSC Plant City Sub to SE Welcome	5,400,000
Edison Yard extend and upgrade track	3,200,000
Total	\$73,200,000

Norfolk Southern Railway

NS reported that its Intermodal Group was working with FDOT in 2015 to secure partial funding (approximately \$15 million) towards a planned expansion of the Intermodal facility in Jacksonville. No other projects reported at this time.

CLASS II RAILROAD - FEC

Table 4-2 contains various improvement projects appearing in the *Freight Mobility and Trade Plan (FMTP)* or identified by FEC totaling over \$142 million. Projects include various yard improvements for capacity and efficiency, as well as siding extensions and double-tracking.

Table 4-2: FEC Short-Range Projects

Project Name	Estimated Cost
Port Everglades Auto Ramp	15,000,000
Bridge Rebuilds for Improved Velocity, Capacity & Weight	12,000,000
Bowden crane track #5	2,000,000
Bowden crane track #4	1,000,000
Bowden crane track #3	2,000,000
Bowden Intermodal Entrance	5,000,000
Medley Lead Siding	1,662,000
Hialeah Double Track New Yard Lead	510,000
Hialeah Yard Improvements (Automated Gate)	2,000,000
Andrews Avenue Yard Improvements	3,268,000
Upgrade and Replace Light Weight Rail	18,129,000
Expand or Build New Cocoa Intermodal Yard	30,000,000
Double Track Gifford to Indrio	39,790,000
Pineda Turnout	5,043,000
LNG Fueling Facility Enhancements	2,000,000
Hialeah North-end Auto Ramp	1,207,000
Hialeah Diesel Storage Tank Repurpose	410,000
Hialeah Auto Ramp Lead	500,000
Hialeah Staging Drainage	733,000
Hialeah Triangle Leveling	123,000
Total	\$142,375,000

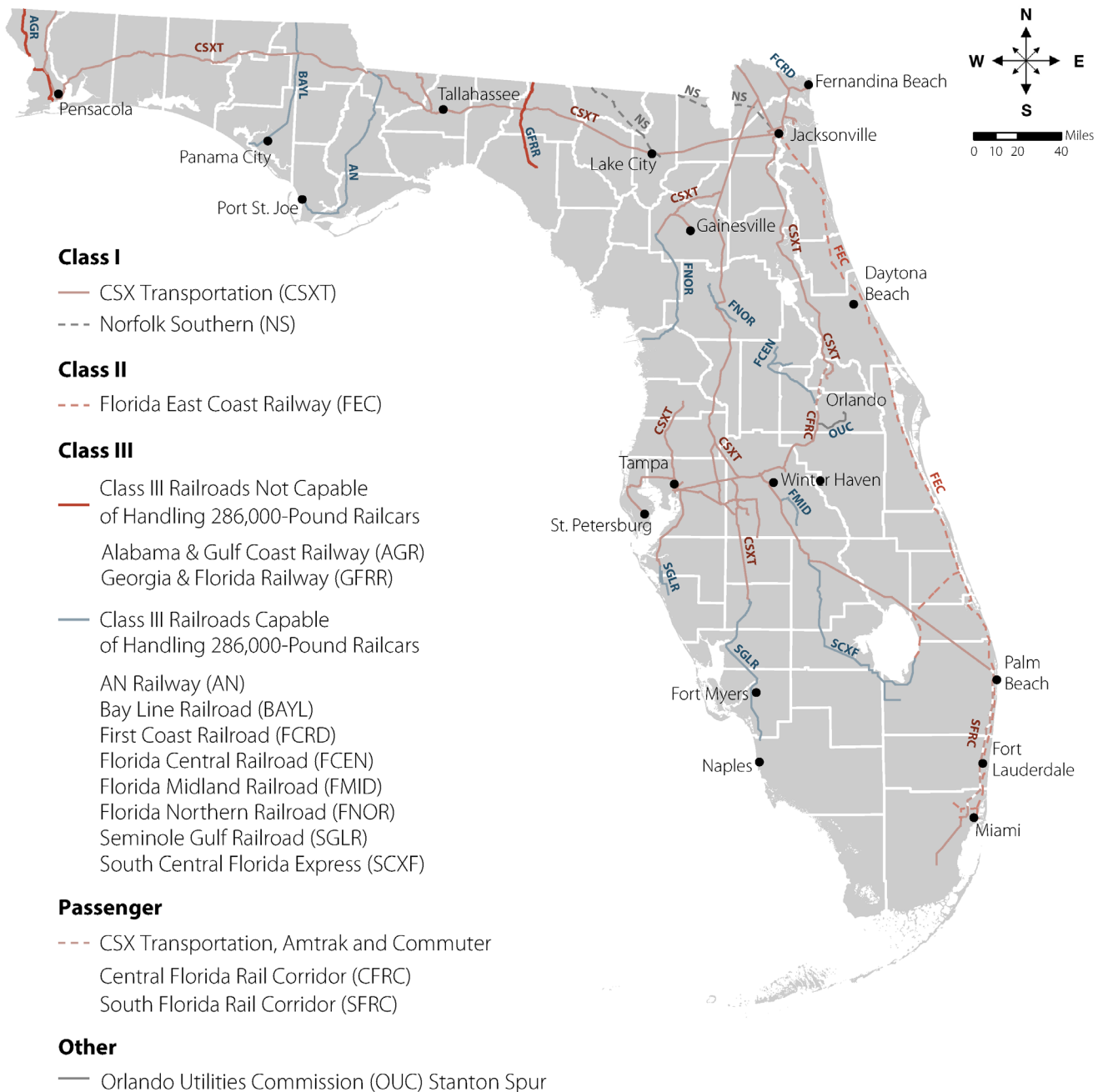
FEC related that several projects are dependent on improvements to be made by All Aboard Florida for implementation of its new intercity passenger service between Orlando and Miami.

CLASS III RAILROADS - SHORT LINES

Florida short lines reported the following projects:

- Florida Central Railroad (FCEN) identified a need for installation of welded rail from Toronto to Winter Garden, at a cost of \$7 million.
- The Florida Midland Railroad (FMID) identified a need for installation of install 28,000 crossties, 30 miles of welded rail, and 33 miles of surfacing, at a cost of \$18.5 million.
- Florida Northern Railroad (FNOC) identified a need for installation of 60,000 crossties, 35 miles of welded rail, and 87 miles of surfacing, at a cost of \$24 million.
- Georgia and Florida Railway (GFRR) identified a need for rehabilitation of 14 bridges, installation of 114,900 ties, track surfacing, and crossing improvements, totaling approximately \$17.3 million in the Fostering Advancements In Shipping And Transportation For The Long-Term Achievement Of National Efficiencies (FASTLANE) Grant Program.
- South Central Florida Express (SCXF) identified three projects totaling \$31.2 million. Included are upgrades of 26 bridges for handling 286,000-pound loaded car weights, rehabilitation of 15.5 miles of track to Class 3, and construction of two sidings. As of 2018, the upgrades to handle 286,000-pound loaded car weights have been completed. Track rehabilitation and additional sidings projects are underway.
- Seminole Gulf Railway (SGLR) identified a need for bridge and track improvements, at a cost of between \$1 million and \$4 million.

With the exception of SCXF, the projects noted above are more likely candidates to occur in the long-range program and accordingly are noted there. (**Figure 4-1**)

Figure 4-1: Class III Railroad Lines Not Capable of Handling 286,000-Pound Railcar Weights

SEAPORT RAILROAD CONNECTORS AND TERMINAL OPERATORS



Source: JAXPORT CSXT Interchange, FDOT Seaport Office, 2015

Rail is a key link in the logistics chain, providing an intermodal connection for port and truck transfers to move goods to/from Florida's seaports. Of the 15 seaports, 11 have rail connections, and one is currently exploring options to add rail service in the future. To emphasize the importance of rail to freight movements, of the 10 seaports that handled cargo in 2015, nine of them have on-port rail connections, and the sole active cargo seaport

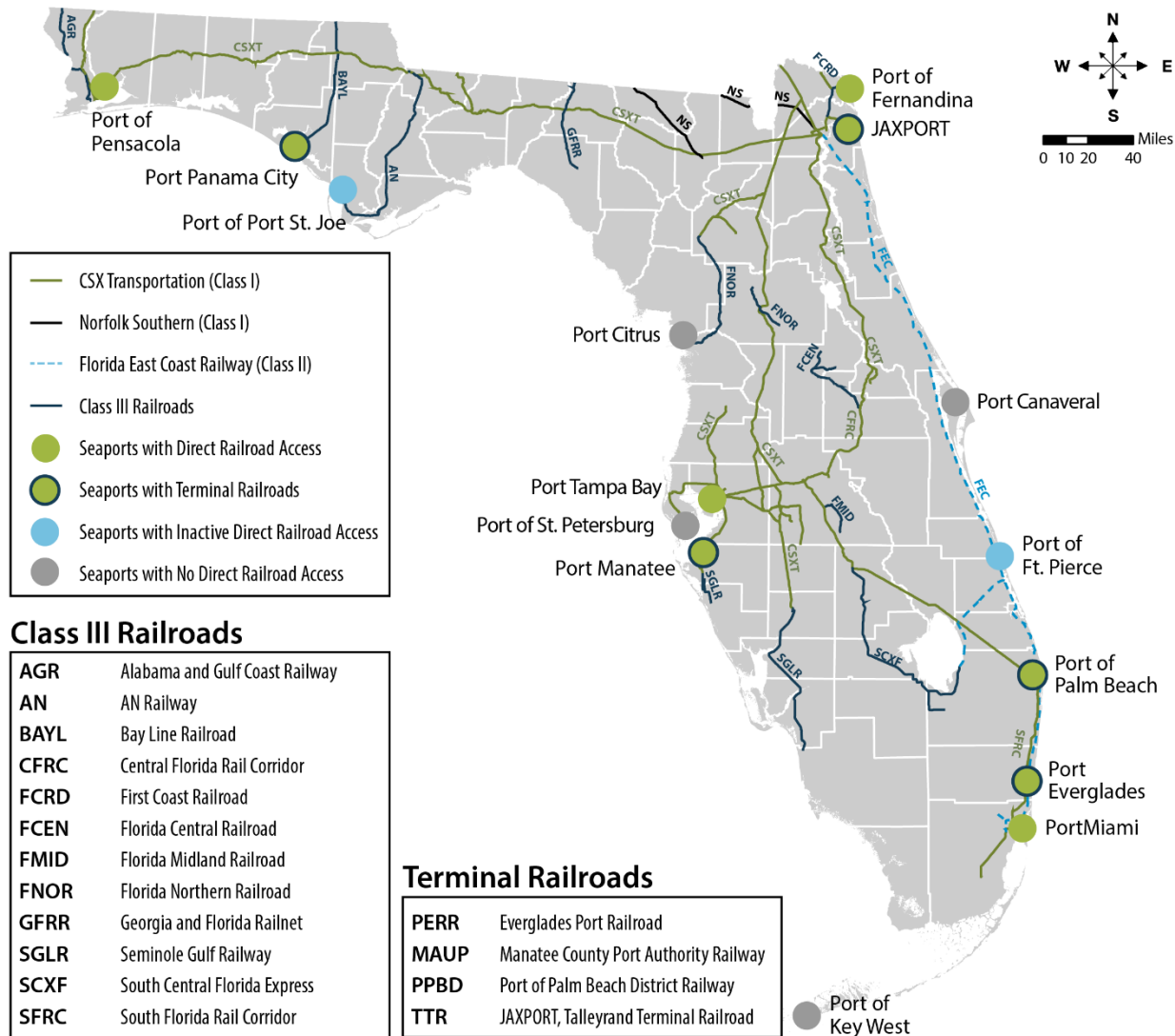
without direct rail connectivity, Port Canaveral, is considering rail alternatives. Additionally, five ports, Port Everglades, JAXPORT, Port Manatee, Port Panama City, and the Port of Palm Beach, have their own railroads or rail equipment to perform switching, on-port car movements, and on-dock-loading and off-loading. It should be noted that while the Port of Fort Pierce and the Port of Port St. Joe do have rail connections, these connections are currently inactive.

Florida's rail system provides essential links to and from Florida's seaports, connecting them to the national freight rail system. These links can be seen in Table 5-3 and in Figure 5-2.

Table 4-3: On Port Rail Service

Port	Service Provider
Port Everglades	PERR, FEC, CSXT
Port of Fernandina	FCRD, FEC, NS, CSXT
Port of Fort Pierce	FEC, CSXT
JAXPORT	TTR, NS, CSXT
Port Manatee	MAUP, CSXT
PortMiami	FEC, CSXT
Port of Palm Beach	PPBD, FEC, CSXT
Port Panama City	BAYL, NS, CSXT
Port of Pensacola	AGR, BNSF, CSXT
Port of Port St. Joe	AN, CSXT
Port Tampa Bay	CSXT

Figure 4-2: Florida Freight Rail Network Connections to Florida's Seaports



In recent years, several of Florida's major container ports, such as PortMiami, Port Everglades and JAXPORT, have diversified their container throughput options with plans and projects to move a larger percentage of containers by rail. Projects have been undertaken by these ports in partnership with FDOT to develop on-port and near-port Intermodal Container Transfer Facilities (ICTFs). These facilities enable the efficient transfer of container cargo to trains and allow for the efficient loading and handling of double stacked unit trains. Today, several of Florida's seaports have operating ICTFs and multipurpose rail terminals. Some of these facilities are highlighted in the next section.

Recent Rail Improvement Projects at or Near Florida Ports

PORTMIAMI INTERMODAL CONTAINER TRANSFER FACILITY

This on-dock ICTF reintroduced rail access to the port in 2014. FDOT, in partnership with PortMiami, Florida East Coast Railway (FEC), and the U.S. Department of Transportation (USDOT), invested \$50 million to reconnect the Port to the national rail network through FEC's Hialeah rail yard. Restoration of this service provides the Port with the opportunity to move goods throughout Florida and into the continental U.S., supporting the Port's efforts to become a global logistics hub with access to 70% of the American population in 1-4 days.³³



PORT EVERGLADES INTERMODAL CONTAINER TRANSFER FACILITY

This 42.5-acre Florida East Coast Railway ICTF facilitates the transfer of domestic and international containers, vehicles and equipment between ship and rail. It supports the Port's efforts to diversify its container handling capabilities between highway and rail. This facility has 18,000 linear feet of working track and can service trains up to 9,000 feet long. This ICTF provides shippers with viable options to move cargo to more than 70% of the U.S. population.³⁴

JAXPORT INTERMODAL CONTAINER TRANSFER FACILITY

The JAXPORT ICTF facilitates the direct transfer of containers between vessels and trains, speeding up the shipment process. One inbound and one outbound unit train can run each day, and can carry 200 containers each.³⁵



PORT TAMPA BAY LIQUID BULK GATEWAY RAIL FACILITY

This project provides Port Tampa Bay with a multipurpose rail terminal that has capacity for 100-car ethanol unit trains and also establishes on-dock unit train rail service to the Port's container terminal. This terminal adds 13,244 linear feet of rail infrastructure able to serve a range of general cargo needs along with major new capabilities in container handling with access to the CSXT intermodal network.³⁶

³³ PortMiami Intermodal/Freight Rail Restoration, <http://www.miamidade.gov/portmiami/rail-restoration.asp>.

³⁴ Port Everglades ICTF by Florida East Coast Railway, <http://www.porteverglades.net/expansion/ship-to-rail/>.

³⁵ JAXPORT ICTF, <http://www.JAXPORT.com/corporate/major-growth-projects/intermodal-container-transfer-facility>.

³⁶ Port Tampa Bay, <https://www.tampaport.com/Cargo/Container>.

HIGHWAY-RAIL CROSSING IMPROVEMENTS

The current funding level for highway-rail crossing safety enhancements is \$9 million per year, which allows approximately 55 to 60 crossings to be improved. To estimate the short-range improvements over the next four years, this annual estimate is multiplied by four to equal \$36 million for improvements to between 220 and 240 crossings.

LONG-RANGE IMPROVEMENTS – FREIGHT

CLASS I RAILROADS

CSX Transportation

CSX identified the need for a siding on the south end of the Central Florida Rail Corridor (the SunRail commuter rail operating territory), south of Sand Lake Road (six miles south of downtown Orlando), where it can stage its freight trains before entering the corridor on the railroad's midnight to 5 AM operating window.

CSX has also identified the need for a grade separation of Causeway Boulevard (US 41) and the Rockport lead in Tampa. Causeway Boulevard is busy with commuter traffic during peak hours, and it is a primary means for trucks to access terminals at the Port of Tampa. There are multiple trains daily on the Rockport lead, resulting in delays to commuter and truck traffic. A similar project would be the grade separation of the North 50th Street crossing of the Palmetto Subdivision, which CSX identified as a need in the *Hillsborough County MPO 2035 Long Range Transportation Plan Freight Mobility Technical Memorandum*.

Lastly, CSX noted that the turn from eastbound US 60 to northbound US 27 is too tight for trucks bound for the railroad's intermodal facility in Winter Haven. A project at this interchange is underway, with construction estimated for 2020.

Norfolk Southern Railway

NS suggested that some planned railroad rehabilitation and maintenance projects might be seen as public funding candidates. If FDOT is agreeable to matching funds, then NS will develop the concept and propose specific projects. Any rehab needs NS might have would most likely be on the Navair District.

Also, for the 2014 *Freight Mobility and Trade Plan* NS identified a need for a grade separation of its line near Simpson Yard-the cost estimated for this improvement is \$12 million.

CLASS II RAILROAD - FEC

FEC intends to build a new automobile handling facility in South Florida, replacing its existing facility in Hialeah Yard. The facility will be for unloading cars from multi-level auto carriers for both local and export markets. A location for the facility has yet to be identified. Estimated cost for the facility is \$50 million.

CLASS III RAILROADS - SHORT LINES

Five short line railroads reported having long-range improvement needs totaling up to \$76.8 million, as listed in **Table 4-3**. The needs are for bridge and track rehabilitation, the latter consisting of cross tie, rail, ballast, grade crossing renewal, and track surfacing depending on the individual need.

Table 4-4: Short Line Long-Range Needs

Railroad	Estimated Cost (\$ thousands)
FCEN	\$7,000
FMID	\$18,500
FNOC	\$24,000
GFRR	\$17,300
SGLR	\$4,000 to \$10,000
Totals	\$70,800 to \$76,800

SEAPORT-RAIL

Florida's seaports are intermodal and cross-modal freight hubs that provide interconnectivity with railroads throughout the state. Florida seaports have seen sustained growth since 2010 in container shipments. There has been a resurgence of bulk tonnage throughput occurring since 2014. The department has recently participated in many critical rail projects at Florida seaports to enhance connectivity, increase efficiency, and expand capacity. Many of these projects are intended to support on-going growth and potential demand from the growing population, expanded Panama Canal capacity, and increased seaport vessel capacity. Rail access to seaports, future capacity needs, and new rail services to ports should be explored to support throughput growth in container and bulk freight activities including, liquid bulk, break-bulk, dry bulk and automobiles.

Miami River Freight Improvement Plan

The Port of Miami River is an important element in the economy of Florida. Current shipping volumes are nearly 400,000 tons per year across its shallow draft shipping firms. The Miami River Freight Improvement Plan was conducted by the Florida Department of Transportation (District 6) with the goal of inventorying existing and future mobility issues and needs, evaluating the river's capacity, assessing the potential for short sea shipping, mitigating traffic congestion and safety issues, developing a prioritized list of improvement projects, and enhancing the viability of marine logistics on the Miami River.

An existing rail line ("Downtown Lead") runs alongside the Miami River cargo shipping terminals and recycling facilities on the North side of the Port of the Miami River. This Miami River rail/service and its potential for overall intermodal freight transportation connectivity are an important part of the plan. The projects involving the Downtown Lead include upgrading NW North River Drive railroad crossings and conducting crossing closures and repairs on the Downtown Lead rail spur.

HIGHWAY-RAIL CROSSING IMPROVEMENTS

For the long-range, state funded crossing improvements are assumed to continue at the rate of \$7.5 million per year in 2015 dollars. Over the 16 years, the total sums to \$120 million for improvements to between 560 and 720 crossings.

QUIET ZONES IMPROVEMENTS

This Plan assumes that quiet zones will continue to be desired by communities experiencing increased freight and passenger train volumes. In the past there was a limited amount of FDOT Quiet Zone Funding, however there is no future FDOT funding anticipated. Quiet Zones may be funded by the localities establishing them.

PROJECTS FROM SOUTHEAST FLORIDA REGIONAL FREIGHT PLAN

The 2014 *Southeast Florida Regional Freight Plan*³⁷ identified and prioritized 11 rail projects. These projects are shown in **Table 4-4**. Many of these projects are discussed in more detail in the needs section of the plan.

Table 4-5: 2014 Southeast Florida Regional Freight Plan Projects

Railroad	Project
CSX/FEC	CSX to FEC Pompano Connection
CSX/FEC	IRIS Connection from CSX Mainline to FEC Mainline
FEC	FEC Miami Freight Forwarding Yard
FEC	FEC N. Miami to Ojus Double Track
FEC	NE 203rd St and NE 215th St. Intersection Improvements between US-1 and W. Dixie Hwy
SFRC*	Miami River Miami Intermodal Center Double Track Last Mile of SFRC
FEC	FEC N. Miami to Little River Track Upgrade
SCXF	South Central Florida Express Cane Block
FEC	C-15 Hidden Valley Canal Rail Bridge (between Yamato and Linton)
CSX	CSX Positive Train Control
CSX	SFRC Railroad Bridge Over S. Fork of New River: Replace Existing Bridge
<i>Note: * South Florida Rail Corridor (SCXF), the Tri-Rail mainline</i>	

³⁷ Produced by the Broward MPO, the Miami-Dade MPO, the Palm Beach MPO, and FDOT.



CHAPTER 5 FLORIDA'S RAIL SERVICE AND INVESTMENT PROGRAM

INTRODUCTION

This chapter describes Florida's Freight Rail Service and Investment Program (FRSIP), which is comprised of three major parts. The first part is the state's long-term vision for rail service and its role in the statewide multimodal transportation system. The second is comprised of the specific projects, programs, policies, laws, and funding necessary to achieve Florida's Rail Vision. The FRSIP is organized in two time periods: short-range and long-range. Lastly, the FRSIP describes the related financial and physical impacts of the proposed program of projects.

FLORIDA'S RAIL VISION

The state Rail Vision was developed with input from a stakeholder outreach process (described in Chapter 6), and by a review of existing FDOT planning documents and state rail plans of other states. These efforts identified common themes relevant for setting a direction for rail planning in Florida.

Florida Rail Vision Statement

"A safe, secure, reliable, efficient and well-maintained passenger and freight rail system enhancing quality of life, environmental stewardship, mobility, and economic competitiveness for Floridians through sustainable investments."

RELATED RAIL GOALS

A review of existing FDOT planning documents (listed later in Section 5.2), along with comments obtained from the outreach process, as stated above, led to development of more specific goals in support of the broader Vision Statement. The resulting goals are aligned with the vision and consistent with comments received from public outreach.

The Goals are:

- **Safety and Security:** Identify and support rail and rail-highway safety improvements and coordinate with appropriate partners to identify and implement security and emergency response plans.
- **Agile, Resilient, Quality:** Maintain and preserve rail infrastructure and service, and modernize the rail system.
- **Efficient and Reliable Mobility:** Emphasize improvements in on-time performance of passenger trains and for fluidity of the state's rail system for handling freight and passenger rail traffic.
- **More Transportation Choices:** Aggressively pursue opportunities for funding rail projects in cooperation with leaders at the local, regional, state, and national levels.
- **Economic Competitiveness:** Invest in rail system capacity improvements to enhance the interstate and intrastate movement of people and goods when public benefit can be demonstrated.
- **Quality Places:** Integrate rail and land use planning will at the state, regional, and local levels.
- **Environment and Conserve Energy:** Integrate transportation and environmental decisions into the statewide, regional, and local planning processes.

RELATED RAIL OBJECTIVES

Supporting the seven Goals above are numerous objectives. While most of the objectives were stated earlier in the 2009 *Rail System Plan, Policy Element*, those pertaining to the reliability and efficient goal are new.

Table 5-1: Florida's Rail Goals and Objectives

Goal Areas	Objectives
Safety and Security	<ul style="list-style-type: none"> • Reduce incidents, accidents, and fatalities • Ensure the rail system is secure • Ensure the rail system can respond to emergencies
Agile, Resilient, Quality	<ul style="list-style-type: none"> • Preserve, maintain, and modernize the rail system when public benefit can be demonstrated
Efficient and Reliable Mobility	<ul style="list-style-type: none"> • Improve on-time performance of passenger trains • Eliminate rail bottlenecks where possible
More Transportation Choices	<ul style="list-style-type: none"> • Achieve broad public support for investments in the rail system • Maximize the use of state and federal funding programs • Identify new and alternative revenue sources and financial tools
Economic Competitiveness	<ul style="list-style-type: none"> • Invest in rail capacity improvements to enhance the interstate and intrastate movement of passengers and freight when public benefit can be demonstrated • Ensure rail investments to support and spur desired economic growth
Quality Places	<ul style="list-style-type: none"> • Support responsible land use strategies
Environment and Conserve Energy	<ul style="list-style-type: none"> • Support responsible environmental stewardship

Based on the Vision and supporting Goals and Objectives, specific rail improvement projects were developed for the *Florida Rail System Plan*.

PROGRAM COORDINATION: INTEGRATION OF THE RAIL VISION WITH OTHER TRANSPORTATION EFFORTS

INTEGRATION WITH OTHER STATE PLANNING EFFORTS

The *Florida Rail System Plan* is intended to integrate with and expand upon other Florida transportation plans including:

- Florida Rail System Plan, Policy Element, 2009
- Florida Transportation Plan (FTP), 2015
- Florida's Strategic Intermodal System (SIS) Policy Plan, 2016
- Freight Mobility and Trade Plan, Policy Element, 2013 & Investment Element, 2014

The 2009 *Rail System Plan* vision and goals mirrored the goals set forth in the 2015 *Florida Transportation Plan* (FTP). FDOT has continued to stress integration in the development of its various plans' visions and goals. Accordingly, the development of a State Rail Vision for the *Florida Rail System Plan* focused primarily on the goals of the FTP. Specifically, these goals were used to update the vision and goals of the 2009 *Florida Rail System Plan, Policy Element*.

In 2015, FDOT updated the *Florida Transportation Plan (FTP)*³⁸ and *Strategic Intermodal System (SIS) Policy Plan* concurrently. The FTP is the statewide long-range transportation plan for all of Florida.

The Vision Element describes the vision for Florida's transportation system over the next 50 years, based on input from state, regional, and local partners and the public. The Policy Element defines goals and objectives for Florida's transportation system over the next 25 years. Florida's goals for its multimodal transportation system are outlined in the *Florida Transportation Plan*.

These goals are:

- **Safety and security** for residents, visitors, and businesses
- **Agile, resilient, and quality** transportation infrastructure
- **Efficient and reliable mobility** for people and freight
- **More transportation choices** for people and freight
- Transportation solutions that support Florida's global **economic competitiveness**
- Transportation solutions that support **quality places** to live, learn, work, and play
- Transportation solutions that enhance Florida's **environment and conserve energy**



³⁸ <http://floridatransportationplan.com/>

The *SIS Policy Plan* identifies policies for planning and implementing Florida's Strategic Intermodal System, the statewide high-priority network of transportation facilities critical to Florida's economic competitiveness.

The *SIS Policy Plan* provides direction specific to the Strategic Intermodal System,³⁹ in order to address changing trends and take advantage of future opportunities. The Governor and Legislature established the SIS in 2003 to focus the state's limited transportation resources on the facilities most significant for interregional, interstate, and international travel.



The *SIS Policy Plan* builds on the *Florida Transportation Plan* with SIS Objectives:

- Ensure the efficiency and reliability of multimodal transportation connectivity between Florida's economic regions and between Florida and other states and nations
- Expand transportation choices and integrate modes for interregional trips
- Provide transportation systems to support Florida as a global hub for trade, tourism, talent, innovation, business, and investment

Signed into law in 2012, Florida House Bill 599 required FDOT to develop the Freight Mobility and Trade Plan with the following goals:

- Increasing the flow of domestic and international trade through the state's seaports and airports, including specific policies and investments that will recapture cargo currently shipped through seaports and airports located outside the state
- Increasing the development of intermodal logistic centers in the state, including specific strategies, policies, and investments that capitalize on the state's empty backhaul trucking and rail market
- Increasing the development of manufacturing industries in the state, including specific policies and investments in transportation facilities that will promote the successful development and expansion of manufacturing facilities
- Increasing the implementation of compressed natural gas (CNG), liquefied natural gas (LNG), and propane energy policies that reduce transportation costs for businesses and residents located in the state



Freight stakeholders helped craft objectives and strategies to further develop the policy framework. Multimodal freight objectives include the following:

³⁹ <http://www.dot.state.fl.us/planning/sis/>

- Capitalize on the Freight Transportation Advantages of Florida through Collaboration on Economic Development, Trade, and Logistics Program
- Increase Operational Efficiency of Goods Movement
- Minimize Costs in the Supply Chain
- Align Public and Private Efforts for Trade and Logistics
- Raise Awareness and Support for Freight Movement Investments
- Develop a Balanced Transportation Planning and Investment Model That Considers and Integrates All Forms of Transportation
- Transform the FDOT's Organizational Culture to Include Consideration of Supply Chain and Freight Movement Issues

NATIONAL AND REGIONAL RAIL PLANNING INTEGRATION

As Florida shares rail corridors and services with other states, it is essential to coordinate with other states through both direct interaction and through comprehensive review and analysis of state or regional rail plans prepared by or in cooperation with other states in the region. Florida will submit the draft plan to neighboring states for their review and comment.

The 2008 Passenger Rail Investment and Improvement Act directed FRA to develop a *Preliminary National Rail Plan* to address the rail needs of the U.S. The preliminary plan, published in October 2009, provided objectives for rail as a means of improving the performance of the nation's transportation system, which included:

- Increased passenger and freight rail performance;
- Integration of all transportation modes to form a more complementary transportation system;
- Identification of projects of national significance; and,
- Providing for increased public awareness

Since 2009, the concept of developing a federal national rail plan has evolved toward capturing state rail planning findings, and reflecting the issues and priorities addressed in various state rail plans. An outgrowth of this process is expected to be development of regional rail plans and multi-state corridor plans inclusive of solutions for freight and passenger service issues on a regional rather than state-by-state basis. FDOT will work with FRA and other states in the region to ensure that the regions' rail perspectives and issues are adequately addressed within the national rail planning process.

In 2016, the FRA began a Southeast Region Rail Plan study effort to articulate a vision for enhancing passenger rail services in the region, consisting of an integrated hierarchy of fast, new intercity passenger trains including Core Express, Regional, and Emerging services. Corridors will be identified and prioritized for implementation based on assessments of costs, benefits and funding strategies. An essential element to success will be finding the right governance structure for implementation and ongoing operation, that is, a structure that the key stakeholders, consisting primarily of the states to be served, will support.

Title XI of the FAST Act of 2015, also known as the Passenger Rail Reform and Investment Act (PRRIA), authorizes \$2.6 billion for Amtrak, and also provides for \$5.5 billion for improvements to the national intercity rail network outside of the Northeast Corridor. Projects could include improvements on Amtrak trains serving Florida. These trains – the *Silver Meteor*, the *Silver Star* and *Auto Train* – serve multiple states. Furthermore, the FAST Act authorized another \$2.2 billion over the next five years, subject to annual budget appropriations, for discretionary FRA grants to improve and initiate intercity rail passenger services. Success in securing FAST Act awards likely will require coordination and integration of planning efforts by the states served.

In addition to the need to coordinate Florida's *Rail System Plan* with a national rail plan process and the existing rail network, FDOT will also coordinate as necessary with the U.S. Military Surface Deployment and Distribution Command's Transportation Engineering Agency, which oversees the federal National Strategic Rail Corridor Network (STRACNET). The STRACNET is comprised of a 32,000-mile national, interconnected network of rail corridors and associated connector lines most important to national defense.

Figure 5-1 depicts the STRACNET system within Florida. In addition to providing main line corridor throughput capability, these lines provide access to major defense contractors, logistics sites and military facilities critical to national defense.

Figure 5-1: Strategic Rail Corridor Network in Florida (STRACNET)



RAIL AGENCIES: PROPOSED ORGANIZATIONAL, POLICY AND PROGRAM CHANGES

As previously noted, FDOT's FMO is primarily responsible for assisting in the development of Florida's rail system, both passenger and freight. The FMO office develops and implements FDOT's *Rail System Plan*, rail safety rail project development/management and the Strategic Intermodal System Program (SIS). This plan does not recommend any changes to the FMO's duties, nor does it recommend the creation or abolition of any other agencies or authorities.

INTENDED EFFECTS OF RAIL PROGRAM IMPLEMENTATION

FDOT's proposed program of projects, i.e. its Rail Service and Investment Program in **Chapter 5**, for the short-range (from 2015 to 2018) and for the long-range (from 2019 to 2040). Not included are:

- Class I railroad projects, as these railroads are considered sufficiently capable of funding their own improvements;
- Projects pertaining to All Aboard Florida, as this enterprise is a private operator;
- Tri-Rail, as the South Florida commuter operator is managed and supported locally; and
- Amtrak beyond Florida station improvements to ensure compliance with the Americans with Disabilities Act (ADA) of 1990 and a state of good repair

The projects proposed include improvements to Class II and III railroads operating in the state, improvements in rail infrastructure at ports, and highway-rail crossing safety improvements. These projects offer substantial potential public benefits, such as increased transportation competition resulting in lower cost to shippers, less highway congestion and damage, and reduced environmental and energy impacts.

By their nature highway-rail crossing improvement projects, as well as other rail-related improvements, also increase transportation safety. The passenger projects proposed include rail improvements that are based on preservation and improvement of existing service, the safety of passengers, and potential rail passenger service expansion. Impacts of freight and passenger rail transportation are discussed further in **Chapter 2**.

RAIL STUDIES AND REPORTS

During the outreach process, CSX suggested that the state consider a potential purchase of its Homestead Branch, running 16 miles southwest of Miami to Homestead. According to the railroad, freight traffic volumes (consisting of mostly aggregates) are declining to the point where the line is no longer economically sustainable from the carrier's perspective. The purchase could help preserve local rail service and infrastructure and enable the possible implementation of future passenger rail service.

FDOT also participated in the study regarding restoration of intercity passenger rail service along the Gulf Coast between New Orleans and Orlando, required by the FAST Act of 2015.

FLORIDA'S SHORT- AND LONG-RANGE RAIL PROGRAM OF CAPITAL PROJECTS

Table 5-2 provides a summary of Florida's Freight and Passenger Rail Service and Investment Program. It includes short and long-range projects and estimated costs for each. The projects are listed by category (e.g., freight railroad infrastructure improvements and safety improvements). Furthermore, they are prioritized in terms of short-range projects, that is, projects which will occur in the first four years; and long-range projects, Years 5 to 25.

The short-range projects include rail infrastructure needs of the state's railroads and highway-rail crossing improvements. The project costs total to \$266.6 million.

Long-range projects (5-25 years) also included railroad infrastructure projects and highway-rail crossing improvements. Total costs are estimated between \$190.8 million and \$196.8 million.

Table 5-2: FDOT's Freight Rail Service and Investment Program

Improvement	Estimated Cost (\$ millions)
SHORT-RANGE	
Railroad Infrastructure Needs	\$230.6
Highway-Rail Crossing Safety Program	\$36.0
Total	\$266.6
LONG-RANGE	
Railroad Infrastructure Needs	\$70.8 - \$76.8
Highway-Rail Crossings Safety Program	\$120.0
Total	\$190.8 - \$196.8
Total Program Needs	\$457.4 - \$463.4

Table 5-3 provides a summary of Florida's Passenger Rail Service and Investment Program. It includes short and long-range projects and estimated costs for each. The projects are listed by operator (e.g., station and safety improvements). Furthermore, they are prioritized in terms of short-range projects and long-range projects. The projects consist of improvements to Amtrak stations in Florida to ensure compliance with the Americans with Disabilities Act (ADA) of 1990 and for a state of good repair; and improvements to the Orlando area SunRail commuter system, which is operated by the State of Florida.

Table 5-3: FDOT's Passenger Rail Service and Investment Program

Improvement	Estimated Cost (\$ millions)
SHORT-RANGE	
Amtrak Station Improvements*	\$20
SunRail Phase 2 Expansion North	\$68
SunRail Additional Vehicles	\$50
SunRail Vehicle Maintenance Facility	\$50
SunRail PTC Implementation*	\$20
SunRail Safety Upgrades	\$8
Total	\$216
LONG-RANGE	
Amtrak Stations	\$10
SunRail Phase 3 Expansion	\$200
Total	\$210
Total Program Needs	\$426
<i>* indicates investments required under federal law</i>	

The financing of the freight and passenger rail projects will include a mix of funding sources, likely to include federal, state and local programs and matches. Potential funding state and federal funding sources are identified and discussed in **Chapter 2**.

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CHAPTER 6 COORDINATION AND REVIEW

INTRODUCTION

This chapter describes how rail stakeholders and the general public were involved in the development and coordination of the various components of the *Florida Rail System Plan*.

PUBLIC PARTICIPATION APPROACH

Stakeholder and public input to the plan came through various channels, as noted below. Each of these channels are described, with additional detail provided in Sections 7.3 and 7.4.

FDOT RAIL SYSTEM PLAN WEBSITE

To provide a medium for public review of project findings, the draft *Rail System Plan* was posted the rail page of FreightMovesFlorida.com, and referenced on the FDOT website, located at www.dot.state.fl.us/rail/publications.shtm.

STAKEHOLDER OUTREACH

Stakeholders are individuals and groups who are affected by or have an interest in a particular project or effort. An effective and direct method of determining issues or areas of concern regarding the rail network in Florida and soliciting the infrastructure, operational, policy, or other needs of these stakeholders with regard to rail operations is through interviews or surveys. During the analysis period of the plan, all freight and passenger railroads operating in the state were contacted to solicit various information.

COORDINATION WITH NEIGHBORING STATES

FDOT routinely interacts with neighboring states through involvement in national and regional transportation organizations and to address specific transportation issues as necessary. Rail coordinators in all neighboring states were provided an opportunity to review the draft *Rail System Plan*.

STAKEHOLDER INVOLVEMENT IN THE DEVELOPMENT OF THE STATE RAIL PLAN

Both public and private sector stakeholders played major roles in providing input into the plan. Actions taken to involve stakeholders are described in the following subsections.

RAIL SHIPPER OUTREACH

Private sector freight rail shippers in Florida served by Class I, Class II and short line railroads were contacted to provide their perspective on rail service in general and to solicit their input for the plan. A rail shipper is defined as a business or company that uses rail for shipping or receiving all or part of their freight transport needs.

Shippers were asked to comment as to problems or issues with rail service, potential infrastructure or operational improvements that could increase their rail use, and regulatory restrictions that impact rail service. Shippers were also asked their opinion as to means by which the public sector could assist or enhance rail service to local industries, and their general views as to the future of local rail freight service in the state.

The 14 shippers responding to the survey represented a large cross-section of the major commodities handled by rail in the state. These commodities included oil and oil products, sand and aggregates, building supplies, coal, limestone, intermodal containers, chemicals, phosphates and fertilizer, orange juice, propane gas, steel pipe, wood pellets, and recycled metals.

Issues Identified by Rail Shippers Freight

Florida shippers served by Class I railroads noted the importance of rail service in terms of transportation cost savings, especially regarding the movement of bulk commodities and shipments over long distances. Although most shippers claimed to receive good service from their carriers, some service related problems, primarily cited for Class I railroads, included shortages of motive power and train crews, interchange and delivery delays, high rates, and car availability.

With regard to improving the state's rail freight network, shippers noted a number of strategic priority areas. Foremost was the need for improved and increased intermodal facilities. Such facilities include additional bulk commodity terminal facilities to serve construction sites, a coal transfer facility at Pensacola, additional domestic container services and facilities, and expanded capacity at port facilities. Long-haul shippers also noted the need for increased capacity on Class I railroad main lines to reduce delays.

Projects Identified by Rail Shippers

In addition to the port and intermodal facility improvements noted above, a selected number of project improvements were proposed by shippers on short line railroads. Those identified included expanded yard facilities on the Bay Line Railroad.

Shipper Sentiment about the Future

The shippers surveyed were generally optimistic regarding future expansion of rail service in the state. This optimism was primarily based on the general economic viability of the state and increased demand for the commodities related to their business. They also noted economic development potential, especially on short line railroads, although land costs were noted as a possible drawback.

RAILROAD OUTREACH

All Class I, Class II and short line railroads operating within Florida were contacted to solicit input into the plan. All railroads participated. In addition to each describing its rail infrastructure and operations within the

state, they were asked to identify capital projects which would improve infrastructure and/or increase operational efficiency, and thus provide an improved level of service to its shippers.

All passenger rail carriers (intercity and commuter) operating within Florida were contacted to solicit input into the plan. In addition to describing their rail infrastructure and operations within the state, the railroads were also asked to identify past investments and potential capital projects which would increase operational efficiency, capacity, and provide an improved level of service to their passengers. Tourist railroads and museums were also contacted to obtain specifics of their operations.

STAKEHOLDER WRITTEN COMMENTS

FDOT received several comments by letter and e-mail during the course of the plan's development. Comments were provided by members of the public, railroads, adjacent state DOTs, and public transportation planners, among others.

ISSUES IDENTIFIED DURING THE RAIL PLAN PROCESS

Rail-related issues expressed during railroad and rail shipper outreach were utilized to complete a number of the *Rail System Plan* components. Feedback was utilized to develop and modify profile information as necessary, to identify infrastructure, operational, and regulatory issues, and to ascertain stakeholders' views on the effectiveness of the state's current involvement in rail planning and oversight as well as strategic roles the state could play in the future to address existing needs.

The concerns of large and small railroads alike pertained to maintaining or improving infrastructure in order to be responsive to market demands. They cited specific improvements to capital projects they plan to implement. Shippers generally are optimistic about the future, but also highlighted specific concerns such as access to intermodal facilities and capacity constraints of Class I main lines.

As a private enterprise, All Aboard Florida is primarily concerned with the start-up of its *Brightline* service between the Orlando International Airport, Cocoa, West Palm Beach, Ft. Lauderdale and Miami. The concept requires the purchase of rolling stock, construction of stations and adding double track on long sections for the FEC. The key issues for the two commuter rail operators largely pertain to the expansions of their franchises, which will require coordination with other passenger and freight operators on the shared-use corridors. Amtrak concerns center on improvements to its existing Atlantic Coast Service trains.

This railroad and shipper input on freight and passenger issues informed the development of FDOT's Rail Service and Improvement Program.

CONSIDERATION OF RECOMMENDATIONS IDENTIFIED DURING THE RAIL PLAN PROCESS

The comments and recommendations received through all aspects outreach process have been consolidated into potential studies and reports.

STATE RAIL PLANNING COORDINATION

As described previously, some aspect of rail planning is undertaken within a number of authorities or offices within the Florida Department of Transportation.

At the local level, FDOT and local staff work with the Regional Planning Councils and Metropolitan Planning Organizations to coordinate planning and development efforts regarding rail transportation. Many of these agencies have participated in the *Rail System Plan* development process and had the opportunity to provide further input through review and comment on the draft *Rail System Plan*.

Other state agencies with rail planning responsibilities include the South Florida Regional Transportation Commission, the operator of the Tri-Rail commuter rail service; and Florida Department of Economic Opportunity, which administers the Rural Economic Development Initiative (REDI), and leads and coordinates the efforts of state and regional agencies in assisting rural communities.

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