



Back on Track? Intercity Passenger Rail Options for Tennessee



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Back on Track? Intercity Passenger Rail Options for Tennessee

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Cliff Lippard, Executive Director

June 28, 2023

The Honorable Randy McNally
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The Honorable Cameron Sexton
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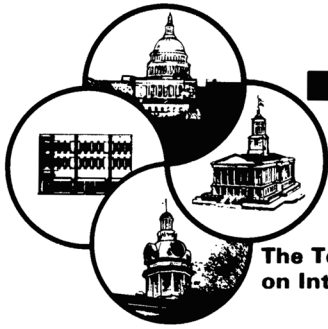
Ladies and Gentlemen:

Transmitted herewith is TACIR's report on its study of intercity passenger rail service and mobility, prepared in response to Public Chapter 1114, Acts of 2022, and Public Chapter 1124, Acts of 2022. In its review of other states that have successfully developed intercity rail services in recent years, in combination with analysis from the Southeast Corridor Commission and the Midwest Interstate Passenger Rail Commission, TACIR finds intercity passenger rail service could help increase connectivity and facilitate tourism and other economic development initiatives in Tennessee. TACIR recommends TDOT submit the required supporting data and documentation to the Federal Railroad Administration's Corridor ID program in support of the joint application already made by local governments for routes connecting Nashville to Chattanooga to Atlanta and Memphis to Nashville. Additionally, at the next funding opportunity, TACIR recommends TDOT apply for a Chattanooga to Knoxville to Bristol route and consider submitting applications for two additional routes. Further, the Commission recommends TDOT collaborate with the Virginia Department of Rail and Public Transportation to identify opportunities to maximize the viability of both the Chattanooga to Bristol corridor and Virginia's effort to connect Bristol to the Amtrak Northeast Regional passenger rail corridor. Finally, TACIR recommends the state create an office of rail and public transportation within TDOT and evaluate intercity bus service options along certain key routes in coordination with the goals of the Transportation Modernization Act.

Respectfully yours,

Senator Ken Yager
Chairman

Cliff Lippard
Executive Director



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MEMORANDUM

TO: Commission Members

FROM: Cliff Lippard 
Executive Director

DATE: 28 June 2023

SUBJECT: Passenger Rail and Mobility—Draft Report for Review and Tentative Approval

The attached Commission report is submitted for your review and tentative approval. It was prepared in response to Public Chapter 1114, Acts of 2022, and Public Chapter 1124, Acts of 2022, which direct the Commission to study and make recommendations regarding the potential for passenger rail service or other suitable alternatives for linking the major cities in the state's grand divisions. Based on the study directives, the draft focuses on *intercity* passenger rail, which is distinct from *commuter* rail:

- Commuter rail, like other transit-oriented transportation services (e.g., city buses), moves individuals into, out of, and around individual metropolitan areas, often by connecting passengers from suburban areas to urban areas, and primarily runs in conjunction with normal working hours. Tennessee's lone commuter rail is the WeGo Star, which runs from Lebanon to Nashville.¹
- Intercity passenger rail, in contrast, connects passengers to destinations in different metropolitan areas. It best suits the needs of those traveling medium to long distances as the schedules of these trains often don't align with commuting times and may provide just a few trains per day. The state's lone intercity route, the City of New Orleans Amtrak route, runs from Chicago to New Orleans and stops in Memphis and Newbern, with one train in each direction daily.

¹ Similarly, light rail usually connects passengers to areas within a single city. There is no light rail in Tennessee, although the Memphis Area Transit Authority Trolley operates in a similar fashion in Memphis.

In recent years, other states such as North Carolina, Virginia, and Pennsylvania have successfully initiated new intercity passenger rail services. Through interviews with stakeholders from these states, Commission staff identified several key factors contributing to the successes of intercity passenger rail, which are

- a solid commitment to funding from the state,
- positive working relationships with freight rail companies,
- strong support at the local level, and
- a dedicated state rail office to manage project development.

Based on the experiences of other states and analysis conducted by the Southeast Corridor Commission and the Midwest Interstate Passenger Rail Commission, the draft report finds intercity passenger rail service could help increase connectivity and facilitate tourism and other economic development initiatives in Tennessee, thereby supplementing the existing public- and private-sector efforts to address the state's transportation needs. But the state would almost certainly have to subsidize any new passenger rail service through capital investment and ongoing operating cost support. The cost to taxpayers of establishing and operating service on any given rail corridor cannot be known without more detailed engineering and technical analysis than Commission staff can provide. But federal funding that could be used for these types of studies is available through the Federal Railroad Administration's Corridor ID program, which includes \$500,000 grants that can be used for these detailed route studies or other purposes.

For these reasons, the draft recommends the Tennessee Department of Transportation (TDOT) determine the cost, engineering, and any other requirements needed to implement passenger rail service on the following corridors, in order of priority according to the following tiers, with Tier 1 being the highest:

- **Tier 1**
 - **Nashville to Chattanooga to Atlanta, GA**
- **Tier 2**
 - **Memphis to Nashville**
 - **Chattanooga to Knoxville to Bristol**
- **Tier 3**
 - **Memphis to Carbondale, IL, to Chicago**
 - **Nashville to Louisville, KY**

The draft recommends TDOT submit the required supporting data and documentation to the Federal Railroad Administration’s Corridor ID program in support of the joint application already made by local governments for the Nashville to Chattanooga to Atlanta and Memphis to Nashville routes. Additionally, at the next funding opportunity, the draft recommends TDOT submit an application for the Chattanooga to Knoxville to Bristol route and consider submitting applications for the two Tier 3 routes. Further, the draft recommends TDOT collaborate with the Virginia Department of Rail and Public Transportation – as the twin cities of Bristol, Tennessee, and Bristol, Virginia, often do – to identify opportunities to maximize the viability of both the Chattanooga to Bristol corridor and Virginia’s effort to connect Bristol to the Amtrak Northeast Regional passenger rail corridor.

And the draft recommends the creation of an office of rail and public transportation within TDOT to develop, implement, and manage any future passenger rail projects in the state, similar to offices created by other states that have successfully implemented passenger rail.

While passenger rail projects can take decades to implement and require extensive initial and ongoing investment, intercity bus service can be implemented in less time and for less money. And some communities that need transportation options would not be served by potential passenger rail routes. Furthermore, the expansion of intercity bus service in Tennessee has the potential to work in tandem with the Transportation Modernization Act to improve the state’s transportation system in an effort to ensure continued economic growth and the success of the state’s residents and businesses. For example, incentivizing intercity buses to use choice lanes developed under the Transportation Modernization Act by exempting them from fees for using those lanes – as is already the case for city buses and other public transit vehicles – could lower trip times, reduce congestion, and increase intercity mobility.

As a result, the draft recommends that the state evaluate

- **establishing intercity bus service along the US-64 corridor connecting Memphis and Nashville via currently unserved communities as recommended by stakeholders in TDOT’s 2021 intercity bus needs assessment;**
- **increasing intercity bus service along the I-40 and I-81 corridor connecting Memphis, Nashville, Knoxville, and Bristol; and**
- **opportunities for intercity bus service to support the goals of the Transportation Modernization Act.**

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Summary and Recommendations: Passenger Rail and Other Mobility Options May Improve Quality of Life and Economic Opportunity in Tennessee

It takes two or three hours to drive from Nashville to Chattanooga, Knoxville, or Memphis today. But what if traffic added an hour to each of those trips—the equivalent of extending your drive from Nashville to Knoxville up to Greeneville—and what if that three- to four-hour trip was the new norm? That’s the prospect raised by the Tennessee Department of Transportation (TDOT), which found that trip times between Tennessee’s most populous cities could increase by up to an hour in coming years. Congestion, in short, is a looming problem.

Oddly enough, the success of Tennessee’s existing road network contributes to the problem. The state’s roads are routinely ranked as some of the best in the country. As the backbone of transportation in Tennessee, the road network is the primary means for moving people and goods into, out of, and across the state, contributing to economic growth, community development, and quality of life. But the increasing number of residents, visitors, and freight using our roads is straining the system. As described by TDOT in its “Build with Us” initiative,

Due to Tennessee’s success as a great place to live, work and play, traffic congestion is becoming more prominent throughout the state, and not just in urban areas. Rural Tennesseans are experiencing significant changes in the reliability of their travel times. Tennessee also lies at the crossroads of some of the most significant freight corridors in the country, which are forecast to grow significantly in the future.

Recognizing the importance of the state’s road network, the General Assembly and Governor Lee enacted the Transportation Modernization Act (Public Chapter 159, Acts of 2023). The Act invests an additional \$3.3 billion into Tennessee’s roads, authorizes the use of expedited processes to complete road projects faster, and authorizes TDOT to partner with private companies to develop price-managed lanes—publicly referred to as choice lanes—in urban areas in an effort to reduce congestion by pricing access to those lanes based on traffic conditions.

Additionally, some legislators have asked whether other modes of transportation could be used to supplement improvements to the state’s road network and potentially decrease travel times, spur economic development, and enhance tourism. Intercity passenger rail, in particular, has been discussed, given the experiences of other states and the federal

Tennessee’s roads are experiencing an increasing number of residents, visitors, and freight, putting a strain on the roadway network.

Recognizing the importance of the state’s road network, the General Assembly and Governor Lee enacted the Transportation Modernization Act, which invests \$3.3 billion into Tennessee’s roads.

funding available for passenger rail included in the federal Infrastructure Investment and Jobs Act. The General Assembly passed Public Chapter 1114, Acts of 2022, and Public Chapter 1124, Acts of 2022, which direct the Tennessee Advisory Commission on Intergovernmental Relations to study and make recommendations regarding the potential for passenger rail service or other suitable alternatives for linking the major cities in each of the grand divisions of the state (see appendix A). The study must

- identify the alignment, condition, and ownership of tracks;
- define an integrated network for intercity rail travel;
- provide alternatives for intermodal connections between the affected airports and passenger rail services; and
- survey projects initiated over the past 10 years involving the initiation of new state-sponsored Amtrak intercity passenger rail.

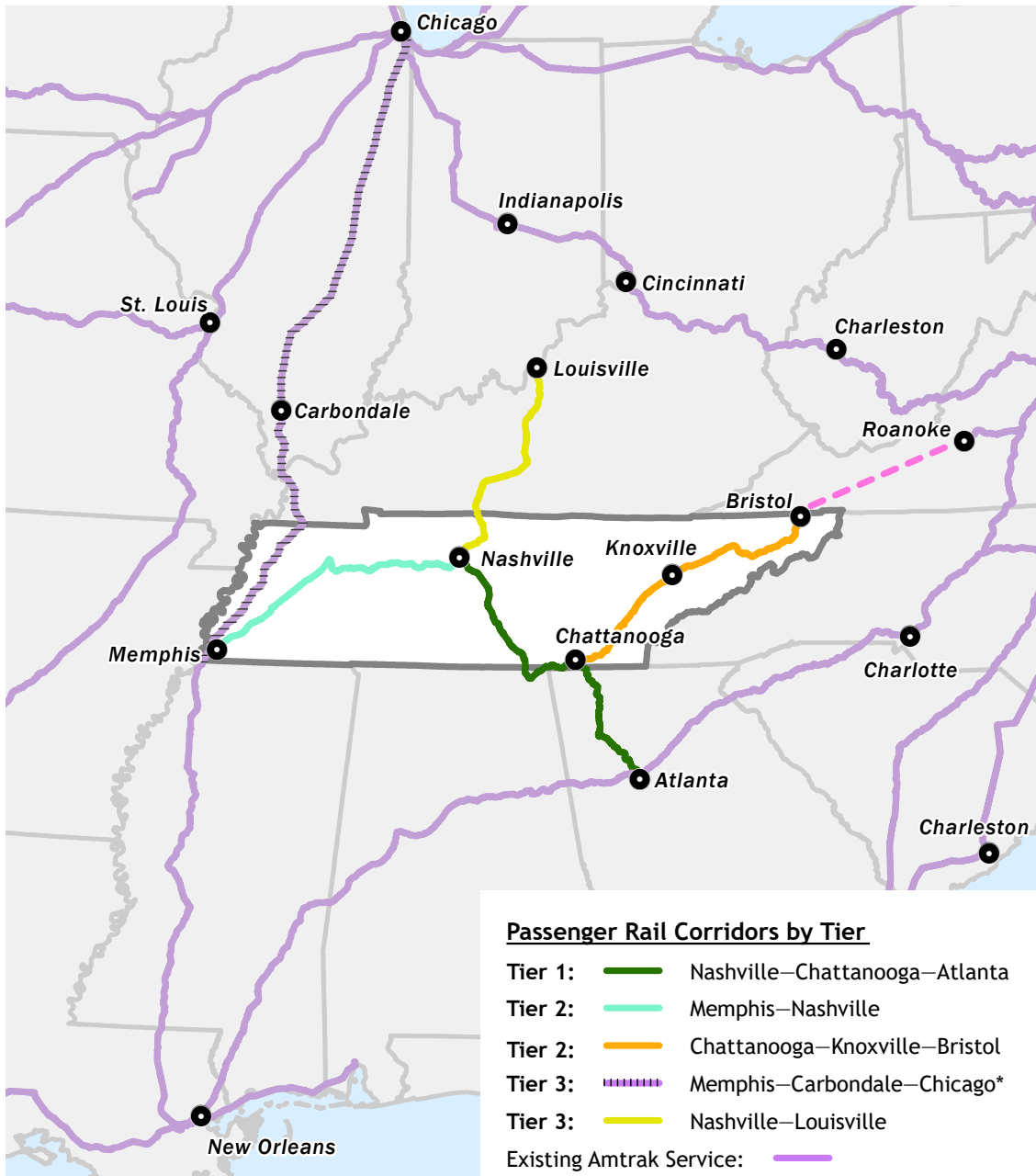
The public chapters direct the Commission to collect information from at least three state departments of transportation that have successfully initiated or are in the process of initiating a new Amtrak intercity passenger rail service. This information must include the stakeholders involved, the process by which the new service was negotiated among the stakeholders, all costs related to establishing the new service, ridership estimates, and other matters that will inform the General Assembly of the successful launching of the surveyed service. The public chapters further direct that stakeholders include state departments of transportation, host railroads, Amtrak, and any state-created entities tasked with sponsoring and managing the new intercity passenger rail service. Applicable costs must include operational feasibility studies, rights-of-way, and property acquisitions, new and upgraded operations, passenger stations, equipment acquisition, and ongoing operating costs.

The Commission, finding that intercity passenger rail has the potential to improve mobility and the state's economy, has identified five potential rail routes for further study and grouped them into tiers based on priority, with Tier 1 being the highest (see map 1):

- Tier 1 (one route)—Nashville to Chattanooga to Atlanta, GA
- Tier 2 (two routes)—Memphis to Nashville; and Chattanooga to Knoxville to Bristol
- Tier 3 (two routes)—Memphis to Carbondale, IL, to Chicago; and Nashville to Louisville, KY

The Commission has identified factors that would make the success of these routes more likely, and it has identified other opportunities to improve intercity mobility that should be considered in addition to and potentially as either interim or permanent alternatives to passenger rail.

Map 1. Intercity Passenger Rail Routes Proposed for Further Study, by Tier



Proposed Roanoke–Bristol Extension under consideration by the Virginia Department of Rail and Public Transportation.

* Existing Amtrak service on the Memphis–Chicago corridor includes the *City of New Orleans* route. The Carbondale–Chicago portion of the corridor is also served by the *Illini* and *Saluki* routes.

Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

Intercity passenger rail connects passengers to destinations in different cities, while commuter rail typically operates within a metropolitan area, connecting passengers from suburban areas to urban areas.

Intercity passenger rail serves people traveling between cities and is separate from commuter rail or light rail.

Intercity travel generally refers to travel between cities and is distinct from commuting and transit-related travel, which focus more on moving individuals into, out of, and around individual metropolitan areas. In this context, intercity passenger rail connects passengers to destinations in different cities. It best suits the needs of those traveling medium to long distances as the schedules of these trains often don't align with commuting times and may provide just a few trains per day. The state's lone intercity route, the City of New Orleans Amtrak route, runs from Chicago to New Orleans and stops in Memphis and Newbern, with one train in each direction daily. In contrast, commuter rail typically operates within a metropolitan area, connecting passengers from suburban areas to urban areas, and primarily runs in conjunction with normal working hours—Tennessee's lone commuter rail is the WeGo Star, which runs from Lebanon to Nashville. Similarly, light rail usually connects passengers to areas within a single city. There is no light rail in Tennessee, although the Memphis Area Transit Authority Trolley operates in a similar fashion in Memphis.

This study primarily focuses on intercity passenger rail, while considering other modes for intercity travel, in particular bus.

Passenger rail could benefit both the state's economy and Tennesseans' mobility, though realizing these benefits is uncertain.

Passenger rail offers a variety of potential advantages and efficiencies over other modes of transportation, but the possibility that it can yield economic gains while improving mobility for Tennesseans is the most significant. For example, the Southeast Corridor Commission estimated that a Nashville to Atlanta route could potentially produce a total economic output of \$18.2 billion. That includes direct economic benefits in the form of local jobs and spending on capital projects—the route might support over 17,000 construction-related jobs during its development—but the potential economic benefits of any given passenger rail service go beyond direct investment. With passenger rail, travelers gain an alternative means of transportation to connect them to other communities, whether for business, leisure, or tourism. Exchanging a several-hour drive for a train ride can free travelers to do other things as they are on the move and, because of that, can mean a net savings in time—the Nashville to Atlanta route might achieve \$1.8 million annually in time savings for passengers, for instance. Equally, when travelers opt for rail over the highway, it can alleviate congestion on the state's roadways, improving transportation for road users and reducing the costs associated with congestion delays. In a national sample, 53% of Amtrak riders reported that if the train were

unavailable, they would have driven to their destination instead, likely adding to road congestion.

Another 8% of Amtrak riders reported that without the train, they would not have traveled at all. As an alternative mode of transportation, passenger rail can enable travel that otherwise might not occur. That could help Tennesseans who, for whatever reason, may not be able to drive to a destination, but it could also benefit tourism. According to a 2022 report from the Tennessee Department of Tourist Development, visitors to Tennessee spent \$24.2 billion in 2021, a 44% increase from 2019 visitor spending. The top 10 states where Tennessee visitors originate include Georgia, Kentucky, Illinois, and Virginia, all of which could be connected to Tennessee by passenger rail. Primary destinations for tourists include Nashville, Memphis, Knoxville, Chattanooga, and the Tri-Cities, all of which are included on the potential passenger rail routes identified for further consideration in this report. A 2020 study conducted for the Southern Rail Commission found the effect of intercity passenger rail on Alabama's economy could be significant. The report projected the economic effect of adding intercity passenger rail service from Birmingham to Montgomery would likely result in an increase of \$11.8 million to \$223.8 million in tourism spending because of new visitors.

As rail brings people to their destinations, it can catalyze economic development in surrounding areas. Past research has linked rail service of all types with population and economic growth, greater property values for surrounding real estate, and more spending on nearby businesses and services. In southern Florida, for example, four million square feet of real estate development has proceeded around three stations owned by the private rail developer Brightline, while in Virginia, passenger rail is expected to stimulate \$24.4 million more household spending through 2030 just in the Richmond area alone.

The realization of some benefits, however, is potentially uncertain. For example, according to a 2001 analysis by the US Government Accountability Office, the potential for passenger rail to reduce congestion and improve air quality is limited because intercity passenger rail represents about 0.3% of intercity travel across all modes of transportation (i.e., personal vehicle, bus, air travel, etc.); therefore, even if intercity passenger rail travel quadrupled, it would account for only about 1% of the nation's travelers. And while the ability to choose from different modes of travel can be seen as a benefit of providing intercity passenger rail as an alternative to automobile, bus, or air travel, a particular mode must be comparable to and competitive with others to be a viable choice. Each mode must take travelers where they want to go, be available at convenient times, be competitive in price and travel time, and meet travelers' expectations for safety, reliability, and comfort. Therefore, travelers must view a rail system favorably when choosing between modes, which may require

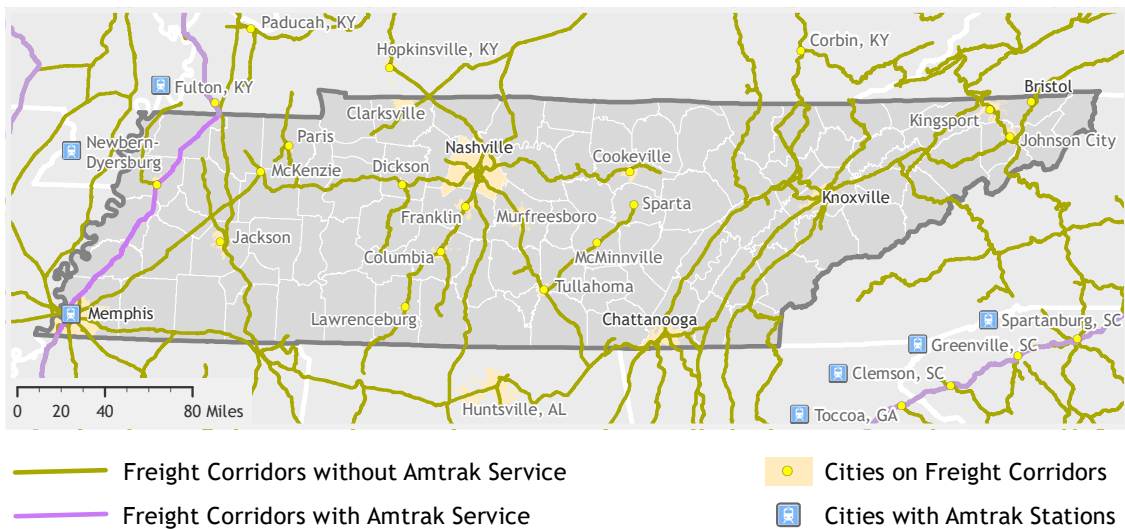
Intercity passenger rail has the potential to improve mobility and the state's economy.

passenger rail service to offer multiple daily trips and have a schedule with departures and arrivals during convenient hours.

Barriers to implementing new intercity passenger rail service can be costly.

The barriers to implementing intercity passenger rail stem primarily from the need for infrastructure and the likelihood that operational subsidies from the state will be necessary to support service. Infrastructure needs can include new infrastructure or upgrades to existing infrastructure. Although building entirely new tracks and developing passenger-rail-specific corridors is a potential option, most intercity passenger rail services operate on tracks owned by private freight companies in existing rail corridors. Existing freight rail corridors in Tennessee already connect the state’s largest cities (see map 2).

Map 2. Existing Freight Rail Corridors in Tennessee



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

Using existing tracks eliminates some of the need for new infrastructure associated with developing entirely new rail corridors. But taking existing corridors and making them capable of supporting freight and passenger service still requires infrastructure upgrades. Freight rail companies point out that introducing passenger rail on their tracks with no improvements to infrastructure could disrupt their operations. And any disruption to freight rail services could disrupt supply chains and, therefore, the operations of many businesses within Tennessee. Infrastructure improvements—including but not limited to the construction of double-track to facilitate passing and the elimination of at-grade crossings to increase train speed—enhance the existing capacity of freight rail corridors

and would almost certainly be necessary for establishing passenger service on them. Moreover, building new passenger stations and intermodal freight terminals may be required.

Geography can also contribute to infrastructure needs. The mountainous geography in East Tennessee is challenging to maneuver by train and may mean slower passenger train speeds or additional infrastructure improvements. For instance, rather than running up and over the Cumberland Mountains, the existing freight rail corridor between Nashville and Chattanooga uses the Cowan Tunnel, a single-track tunnel built in 1852 near Cowan, Tennessee. The narrow tunnel does not appear wide enough to support double-tracking and could create delays for freight and passenger rail.

Cowan Tunnel, Franklin County, Tennessee



Source: Photo by Bryan MacKinnon, image unaltered and use licensed under Creative Commons Attribution-Share Alike 4.0 International.

For Amtrak routes longer than 750 miles, the federal government is responsible for the up-front costs associated with the need for new or upgraded infrastructure, while routes shorter than 750 are the responsibility of states.

The need for new or upgraded infrastructure—whether to build new tracks, minimize disruptions to freight service, or overcome geographic barriers—drives the up-front capital costs for establishing passenger service. Determining what infrastructure improvements are needed and the cost of implementing them for any particular route requires engineering and technical analysis that Commission staff are unable to provide. But the experience of other states suggests that costs can range from the hundreds of millions of dollars for more straightforward passenger rail projects to billions of dollars for more intensive projects. For example, Virginia estimates spending \$4.1 billion on capital projects over 10 years.

Under federal law, the federal government is responsible for these up-front costs *only* for Amtrak routes longer than 750 miles—commonly referred to as long-distance routes—Tennessee’s lone existing passenger rail service, the City of New Orleans route, is a long-distance route. For all new routes shorter than that threshold—known as state-supported routes—states are responsible. While the state might be able to negotiate cost-sharing agreements with private-sector partners, the far more likely scenario is that the state will cover these costs through its own revenue sources or with funding won through federal grant programs.

The amount of time needed to complete needed engineering and technical analysis and make necessary infrastructure upgrades is itself a potential barrier to establishing passenger rail. Projects will likely take a decade or more to complete and, as a result, span multiple government administrations. According to interviews with staff from the Louisiana Department of Transportation, fluctuating support for passenger rail from one governor to the next has hindered Louisiana’s ability to establish new passenger service.

Beyond the need for infrastructure improvements, the likelihood that recurring operating losses will need to be covered by the state is a potential barrier to establishing passenger rail. Few existing Amtrak routes have received enough ticket revenue to cover their operating and maintenance costs annually. Similar to infrastructure costs, the federal government is responsible for covering any operating losses *only* for Amtrak long-distance routes. Shorter routes are, again, the responsibility of states. Annual operating subsidies on these state-supported routes typically range from millions of dollars to tens of millions of dollars per route. According to North Carolina’s 2015 State Rail Plan, the annual projected operating subsidies for the state’s two state-supported Amtrak routes in the state between 2015 and 2019 range from \$13.9 million to \$16.9 million per year combined. As a result, Tennessee state government would likely be responsible not only for a significant portion of the up-front capital costs to establish passenger rail but also for recurring subsidies needed to operate any new service in the state.

There are ways to overcome the barriers to establishing intercity passenger rail service.

Although the barriers to intercity passenger rail service are costly, they are not insurmountable. The state effectively manages similar obstacles regarding roadway construction, operation, and maintenance. Like passenger rail projects, road projects can take decades to complete and cost hundreds of millions of dollars, requiring complex engineering studies. Tennessee has historically dedicated the funding and staffing resources necessary to overcome these barriers and, as a result, has a first-class road network. The experience of other states demonstrates that a similar approach can be used to overcome the barriers to establishing passenger rail. In recent years, states such as North Carolina, Virginia, and Pennsylvania have successfully initiated new Amtrak intercity passenger rail services. Through interviews with stakeholders from these states, Commission staff identified several key factors contributing to the successes of intercity passenger rail: a solid commitment to funding from the state, positive working relationships with freight rail companies, strong support at the local level, and a dedicated state rail office to manage project development.

Commitment to State Funding

A strong commitment to funding passenger rail ensures future projects can be implemented and any operational shortfalls can be covered. Virginia, for example, established a Rail Enhancement Fund in 2006 to allocate dedicated funds for rail capital projects, and since 2009 it has launched a number of new and expanded routes to Norfolk, Richmond, and Roanoke. Through the state's Commonwealth Transportation Fund, which has since replaced the Rail Enhancement Fund, the state's rail office will receive over \$1 billion in state revenues over 10 years. North Carolina's net appropriation for its rail program—including both passenger and freight rail—totaled \$273 million from fiscal year 2017-18 through fiscal year 2022-23. In some cases, states have also successfully sought or used available federal funding for rail projects. North Carolina funded a capital improvement program that saw the construction of 13 bridges, four station renovations, added track and crossings, new and refurbished train cars, and more using a \$520 million grant from the Federal Rail Administration (FRA) under the American Recovery and Reinvestment Act of 2009.

As noted above, federal grant funding for passenger rail was included in the Infrastructure Investment and Jobs Act. The Infrastructure Act established the FRA's Corridor Identification and Development (Corridor ID) program, which provides funding for the planning and development stages of rail projects. Funding available through the Corridor ID program includes \$500,000 grants that can be used for the types of engineering and technical studies discussed above that are needed to determine necessary

Through interviews with stakeholders in North Carolina, Virginia, and Pennsylvania, key factors that can make passenger rail successful include: a solid commitment to funding from the state, positive working relationships with freight rail companies, strong support at the local level, and a dedicated state rail office to manage project development.

Fostering positive relationships with host freight railroad companies can ease the tension created by adding passenger rail onto existing tracks.

Engaging local communities throughout a passenger rail project can create local buy-in and bolster project support.

infrastructure improvements and costs associated with implementing new passenger rail service. See appendix D.

Positive Relationships with Freight Railroads

Fostering positive relationships with host freight railroad companies can ease the tension created by adding passenger rail onto existing tracks. Although freight companies are required by the federal Rail Passenger Service Act of 1970 to allow Amtrak to use their tracks for passenger service, enforcing access to freight corridors through this Act involves a federal arbitration process that is potentially lengthy and costly. For example, disagreements stemming from the restart of Amtrak’s Gulf Coast route caused Amtrak and freight rail companies to go before the federal Surface Transportation Board, the entity that oversees rail disputes, for mediation that lasted several months. Other states have found it is essential to establish strong working relationships with freight rail companies and negotiate agreements over needed infrastructure improvements and who pays for them. In interviews, Pennsylvania rail staff stressed the importance of collaborative working relationships with both freight railroads and Amtrak to the state’s success in expanding passenger service. Virginia’s Transforming Rail in Virginia initiative includes funds to acquire right-of-way from freight rail companies in some areas and acquire tracks in other areas to separate freight and passenger rail. North Carolina has invested in freight rail facilities that don’t involve passenger rail to show commitment to advancing freight and passenger rail together. Communicating frequently with freight railroads regarding potential changes can also help foster such a relationship.

Local Support

Engaging local communities throughout a passenger rail project can create local buy-in and bolster project support. Officials interviewed from the North Carolina Department of Transportation (NCDOT) said that having local champions for passenger rail projects is a key to success. NCDOT also created customized “game plans” for several of the state’s small towns in rural areas along a newly created route between North Carolina and Virginia. The game plans outline how these communities can take advantage of rail projects coming through their respective towns through improvements such as transportation-oriented development and restructuring zoning.

In Tennessee, several local governments and other stakeholders have already expressed strong interest in passenger rail service. In particular, Chattanooga, Nashville, and Memphis together with Atlanta, Georgia, submitted a joint application to the FRA’s Corridor ID program for new passenger service connecting those four cities (see appendix F). Community leaders in Bristol and Knoxville have expressed interest in rail service as

well, with Bristol hoping to connect to a proposed route across the border in Bristol, Virginia.

State Rail Office

Creating a rail office to oversee the implementation of passenger rail projects—as other states have done—is vital for managing the complex processes and relationships needed to establish passenger rail. Dedicated staff to administer these projects can help secure state and federal funding through grants, communicate with freight railroads, and engage with local communities. In 2020, Virginia created the Virginia Passenger Rail Authority under the state’s Department of Rail and Public Transportation to establish an independent agency and the Commonwealth Rail Fund to further support new initiatives. In North Carolina, NCDOT’s Rail Division handles passenger rail projects and includes a staff of 80 employees. But a state rail office doesn’t necessarily need to be that large. Pennsylvania’s rail team within the state’s transportation department is not large, consisting of only a few staff, although they have increased their emphasis on passenger rail over time. In general, they strive to balance the demands of freight and passenger rail services on shared tracks and have, in the past, collaborated in providing capital improvements to tracks, such as electrification or enhanced signaling systems, that benefit both freight and passenger trains.

The Commission identified five potential passenger rail routes in Tennessee.

To identify potential passenger rail routes, Commission staff began with the findings of the Southeast and Midwest rail plans. These plans—produced by the Southeast Corridor Commission and the Midwest Interstate Passenger Rail Commission, respectively, in partnership with the FRA—identified and evaluated potential passenger rail routes in the Southeast and Midwest using the FRA’s Conceptual Networks Connections Tool (CONNECT).

CONNECT, as described in the Southeast Rail Plan, “is not a substitute for detailed corridor and network planning and does not produce investment-grade results.” But “CONNECT provides high-level forecasts informed by” desired speeds, frequency of service, size of communities served, and reliability. And it produces “estimates for ridership, revenue, capital and O&M [operation and maintenance] costs, and other performance outputs that enable the user to understand relative differences in service and frequency options for various corridor and network configurations.” As a result, CONNECT “helps stakeholders in the early stages of the planning process identify the most compelling options from a wide range of configurations before proceeding to more in-depth and detailed analysis on specific alignments.”

Virginia, North Carolina, and Pennsylvania have dedicated staff to oversee and administer rail projects.

The Southeast Corridor Commission and the Midwest Interstate Passenger Rail Commission identified and evaluated potential passenger rail routes in the Southeast and Midwest.

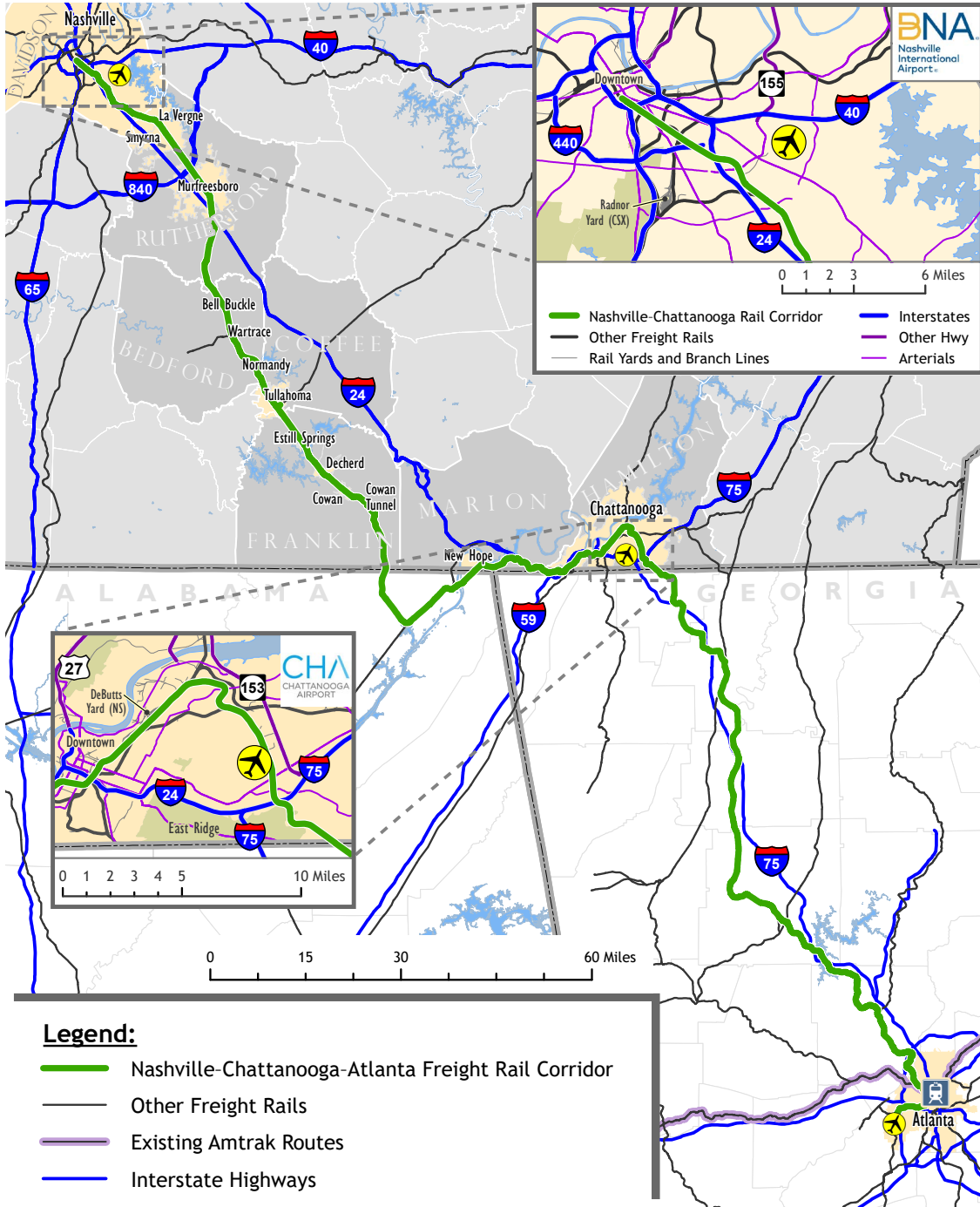
Although five potential routes were identified that could increase connectivity in Tennessee, Commission staff were unable to comprehensively evaluate the routes to determine their viability, however the FRA's Corridor ID program includes \$500,000 grants that can be used for detailed route studies.

Staff supplemented their review of these plans by evaluating potential routes based on the existing freight rail network, interviews with stakeholders, and the extent to which each route would link the most populated cities in the state's grand divisions with each other and with population centers in other states, and whether the route would connect to the existing national rail network, per the requirements of Public Chapter 1114 and Public Chapter 1124. The Commission was unable to comprehensively evaluate the routes to determine their viability. To do so would have required engineering and technical analysis beyond the scope of the Commission's capabilities and resources—but as noted above, the FRA's Corridor ID program includes \$500,000 grants that can be used for these detailed route studies or other purposes.

The Commission identified the following routes for further consideration:

- **Nashville to Chattanooga to Atlanta, GA (see map 3):** Using CONNECT, the Southeast Rail Plan found that the corridor from Nashville to Chattanooga to Atlanta showed the potential for significant ridership and indicated that this is the most viable Tennessee route. With large populations in Nashville and Atlanta, this route would also connect to the greater Amtrak network as several long-distance routes pass through Atlanta to destinations such as New York City and New Orleans. Existing tracks on the proposed route directly connect to airports in Atlanta and Chattanooga, and the long-term plan for Nashville's airport includes an intermodal terminal that could potentially be used for connecting to rail service. The state of Georgia has shown interest in this route. The Georgia Department of Transportation (GDOT), along with TDOT, prepared an Environmental Impact Statement in 2017 to evaluate any environmental or related impacts of constructing a high-speed rail route from Atlanta to Chattanooga—though this study didn't analyze the potential for high-speed rail from Chattanooga to Nashville. The Nashville to Chattanooga to Atlanta corridor is included in the joint application that Chattanooga, Memphis, Nashville, and Atlanta submitted to the FRA's Corridor ID program (see appendix F), and TDOT has submitted a letter of support for the application (see appendix G).

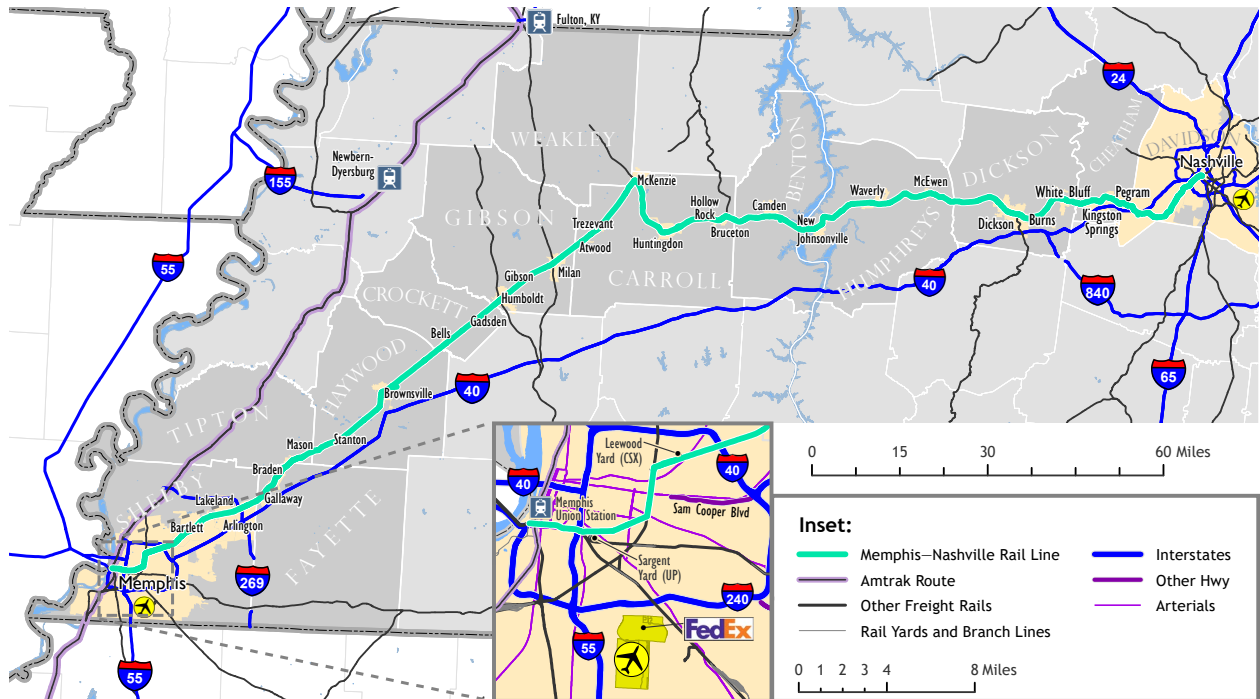
Map 3. Nashville to Chattanooga to Atlanta, GA



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

- Memphis to Nashville (see map 4):** This route was included in the Southeast Rail Plan but was not given the same priority as a Nashville to Atlanta route. But the route would connect Tennessee’s two largest cities, and connecting areas with large populations is often a key to success for passenger rail projects, although neither of these cities has as many people as Atlanta. Additionally, this route would provide Nashville and other communities with stops along the route with a rail connection to Chicago and New Orleans via the existing Amtrak service that runs through Memphis. In a 2022 study, the Memphis Urban Area Metropolitan Planning Organization, in partnership with TDOT, found that the freight rail corridor between Memphis and Nashville currently has a lower freight volume than other major rail routes in the state, suggesting infrastructure improvements needed to prevent disruptions to freight rail may be less than for other corridors. And this route lacks some of the geographic barriers that affect other routes. The Memphis to Nashville corridor is also included in the joint application—supported by TDOT—that Chattanooga, Memphis, Nashville, and Atlanta submitted to the FRA’s Corridor ID program (see appendixes F and G).

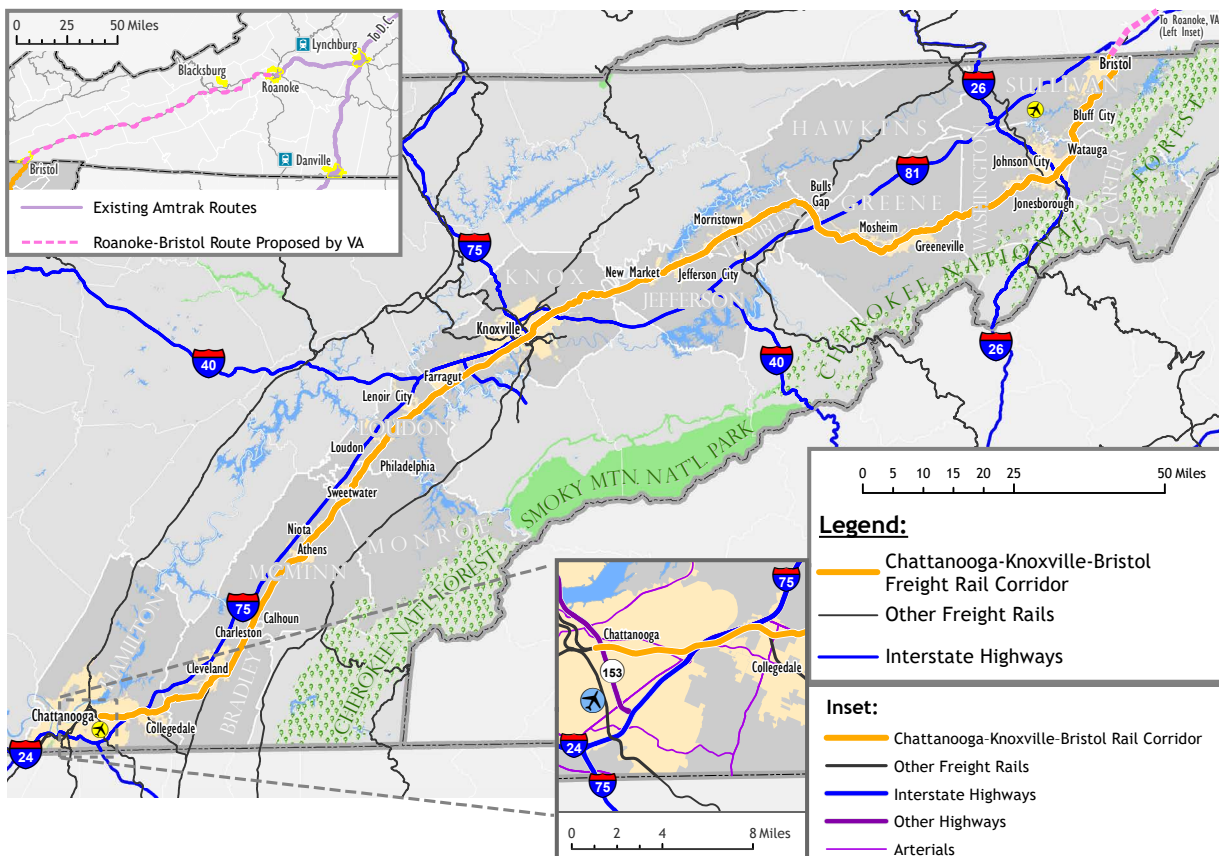
Map 4. Memphis to Nashville



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

- Chattanooga to Knoxville to Bristol (see map 5):** This route was analyzed in the Southeast Rail Plan and given a lower priority than the Nashville to Atlanta or Memphis to Nashville routes. But Virginia has shown interest in extending a passenger rail line from Roanoke, Virginia, to Bristol—there is an existing station in Bristol, Virginia, located next to the border with Bristol, Tennessee. If this extension is completed, a route from Chattanooga to Bristol could provide Tennesseans with a rail connection to Washington, DC, and the Northeast corridor. Similarly, Virginia has indicated that the viability of the Roanoke to Bristol extension depends in part on service extending beyond Bristol, Virginia, into Tennessee. Because of this, it would likely benefit both routes if Tennessee and Virginia were to coordinate their efforts to maximize the potential of these two routes. Moreover, if the Chattanooga to Bristol route is explored in conjunction with a route from Nashville to Chattanooga to Atlanta, this route would also expand connectivity south to Atlanta for East Tennesseans. Local officials in Bristol, Chattanooga, and Knoxville have expressed interest in passenger rail.

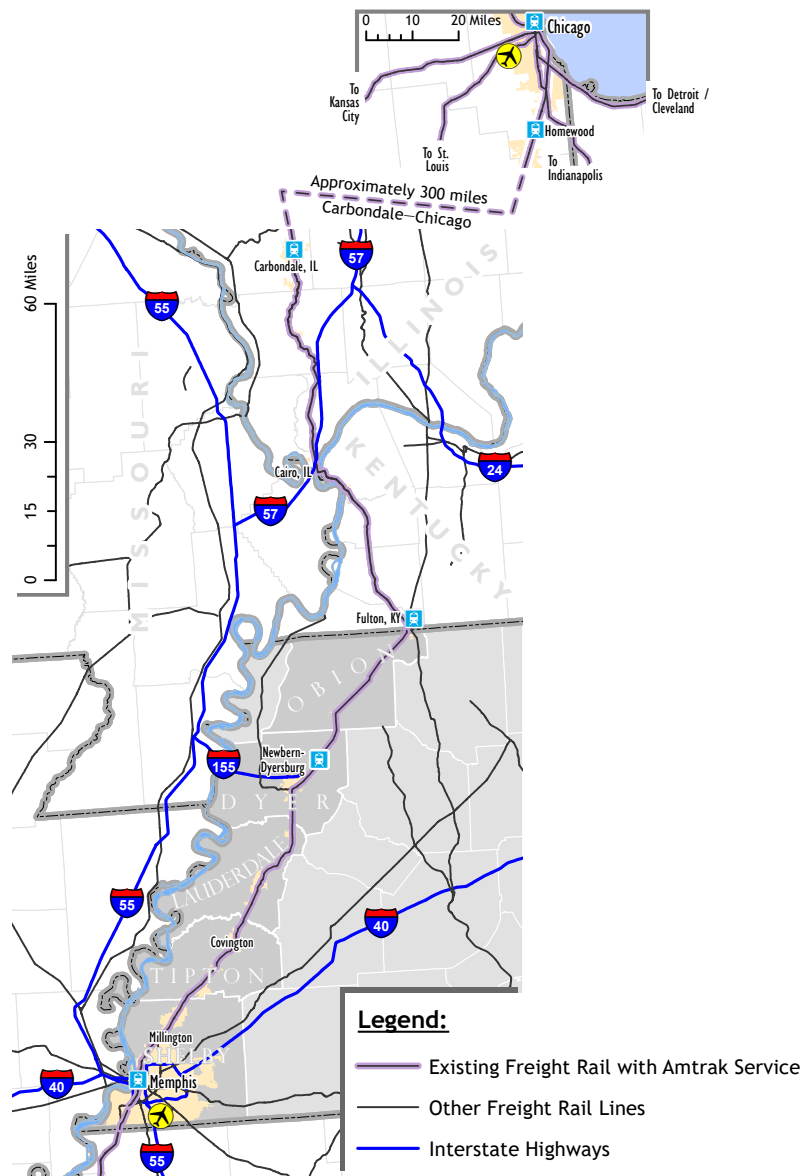
Map 5. Chattanooga to Knoxville to Bristol



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

- Memphis to Carbondale, IL, to Chicago (see map 6):** This route was included in the Midwest Regional Rail Plan but was not given a high priority. Although Amtrak’s City of New Orleans route connects Memphis to Chicago, extending the existing Illini and Saluki Amtrak routes to Memphis, would provide a greater and more convenient frequency of service to Chicago—the Illini and Saluki routes currently connect Chicago and Carbondale, Illinois. The route would use a rail corridor that already hosts passenger rail, and staff with the Illinois Department of Transportation expressed interest in the route.

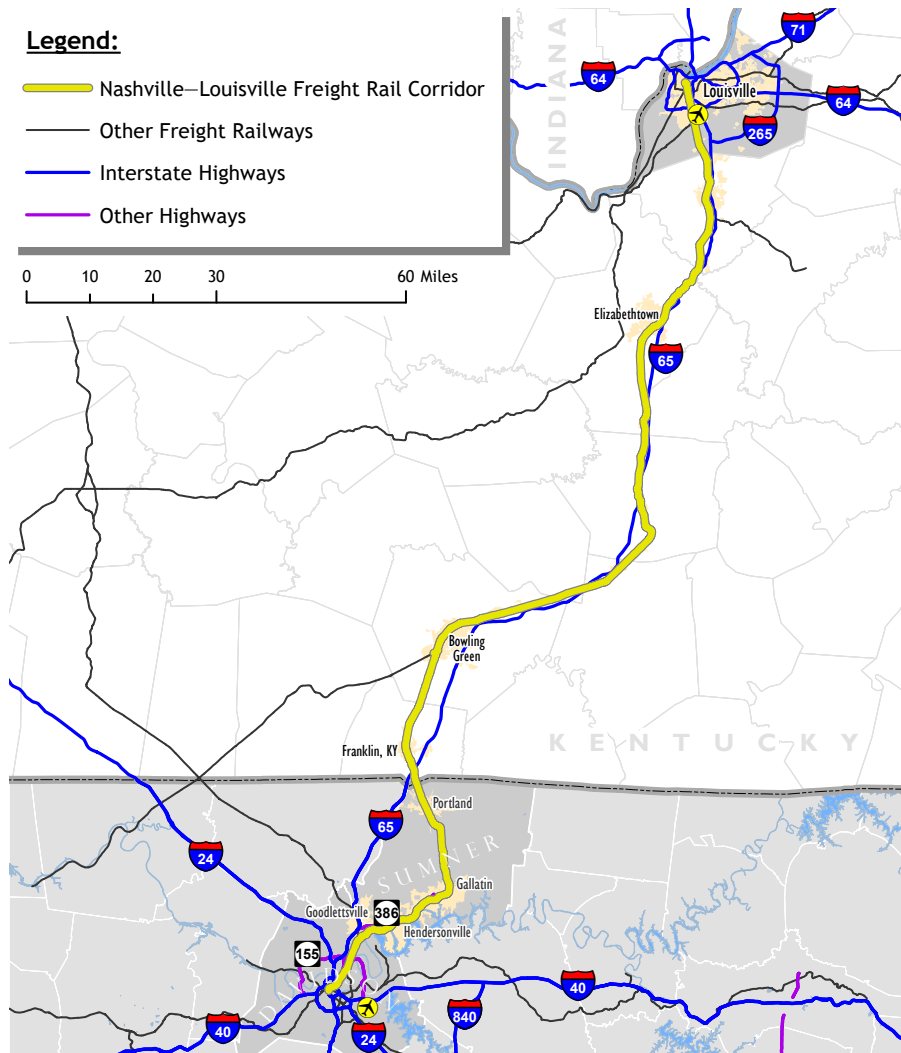
Map 6. Memphis to Carbondale, IL, to Chicago



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

- Nashville to Louisville, KY (see map 7):** This route was included in the Midwest Regional Rail Plan and given a higher priority than a Memphis to Chicago route. Louisville officials have expressed interest in the route, but officials from the Kentucky Transportation Cabinet said the state has other transportation priorities and is taking a “wait and see” approach to passenger rail. Additionally, the FRA is evaluating the restoration of all discontinued daily, long-distance Amtrak routes. This evaluation includes the potential restoration of the Floridian route, including a segment between Nashville and Louisville. If the FRA determines this route is feasible, it will likely be part of the federally funded, long-distance service, which includes all routes longer than 750 miles. As noted above, long-distance routes are fully funded by Amtrak and the federal government.

Map 7. Nashville to Louisville, KY



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

Intercity passenger rail service could help increase connectivity and facilitate tourism and other economic development initiatives in Tennessee.

Based on the experiences of other states and analysis conducted by the Southeast Corridor Commission and the Midwest Interstate Passenger Rail Commission, intercity passenger rail service could help increase connectivity and facilitate tourism and other economic development initiatives in Tennessee, thereby supplementing the existing public- and private-sector efforts to address the state’s transportation needs. But the state would almost certainly have to subsidize any new passenger rail service through capital investment and ongoing operating cost support. The cost to taxpayers of establishing and operating service on any given rail corridor cannot be known without more detailed engineering and technical analysis than Commission staff can provide. However, federal funding that could be used for these types of studies is available through the FRA’s Corridor ID program.

For these reasons, the Commission recommends the Tennessee Department of Transportation (TDOT) determine the cost, engineering, and any other requirements needed to implement passenger rail service on the following corridors, in order of priority according to the following tiers, with Tier 1 being the highest (see map 1 reposted):

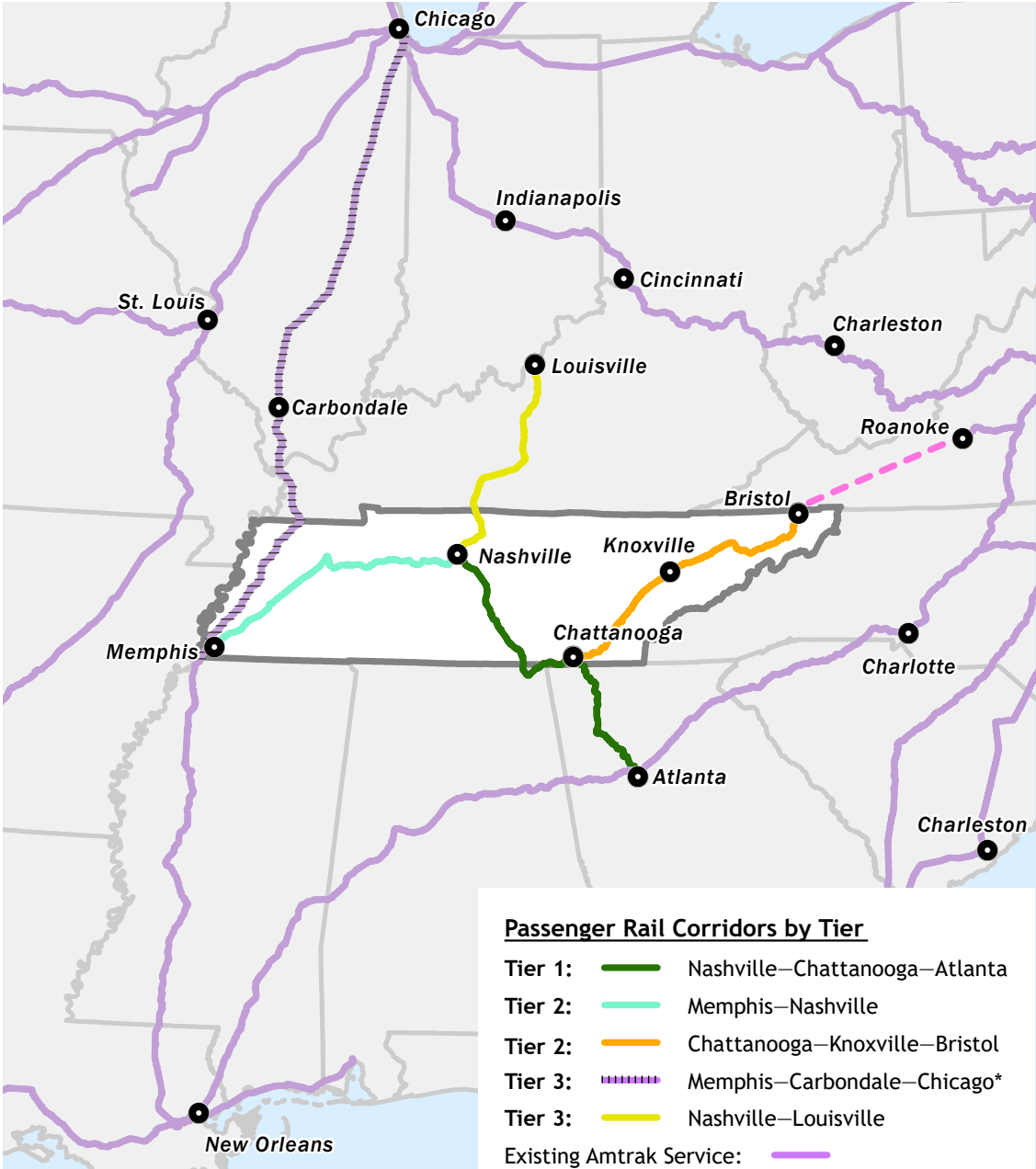
- **Tier 1**
 - » **Nashville to Chattanooga to Atlanta, GA**
- **Tier 2**
 - » **Memphis to Nashville**
 - » **Chattanooga to Knoxville to Bristol**
- **Tier 3**
 - » **Memphis to Carbondale, IL, to Chicago**
 - » **Nashville to Louisville, KY**

The Commission recommends TDOT submit the required supporting data and documentation to the Federal Railroad Administration’s Corridor ID program in support of the joint application already made by local governments for the Nashville to Chattanooga to Atlanta and Memphis to Nashville routes.

Additionally, at the next funding opportunity, the Commission recommends TDOT submit an application for the Chattanooga to Knoxville to Bristol route and consider submitting applications for the two Tier 3 routes. Further, the Commission recommends TDOT collaborate with the Virginia Department of Rail and Public Transportation—as the twin cities of Bristol, Tennessee, and Bristol, Virginia, often do—to identify opportunities to maximize the viability of both the Chattanooga to Bristol corridor and Virginia’s effort to connect Bristol to the Amtrak Northeast Regional passenger rail corridor.

And the Commission recommends the creation of an office of rail and public transportation within TDOT to develop, implement, and manage any future passenger rail projects in the state, similar to offices created by other states that have successfully implemented passenger rail.

Map 1 (reposted). Intercity Passenger Rail Routes Proposed for Further Study, by Tier



Proposed Roanoke-Bristol Extension under consideration by the Virginia Department of Rail and Public Transportation.

* Existing Amtrak service on the Memphis-Chicago corridor includes the *City of New Orleans* route. The Carbondale-Chicago portion of the corridor is also served by the *Illini* and *Saluki* routes.

Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

Additional transportation alternatives, such as transportation system operations and management, travel demand management, airplanes, and intercity buses, can also promote intercity mobility.

There are additional alternatives to promote intercity mobility beyond personal vehicles and passenger rail.

Alternatives for improving intercity mobility in Tennessee in addition to personal vehicles and passenger rail service include transportation system operations and management, travel demand management, airplanes, and intercity buses. Transportation system operations and management strategies improve mobility even when capacity is constrained. Examples include traffic incident management through help trucks and dynamic message boards, traffic signal coordination, ramp metering, and pricing tools. Travel demand management strategies create capacity when alternatives to travel are viable. Examples include multimodal alternatives such as bike and pedestrian facilities, working with area employers to encourage flexible work schedules, compressed workweeks, telecommuting, and satellite work centers to reduce the need to travel.

Tennessee also has six commercial airports in Nashville, Memphis, Knoxville, Chattanooga, the Tri-Cities area, and Jackson, along with 71 other smaller facilities known as general aviation airports. A significant amount of freight that would otherwise enter the state through road or rail passes through the state’s largest airports. But none of Tennessee’s six commercial airports has direct commercial flights to other cities in the state, and most of their flights are to destinations outside the Southeast region. New technologies in air travel, such as electric air taxis that would transport passengers between cities quickly, while using smaller, regional airports, are also currently in early stages of development.

Private intercity bus operators currently cover several routes connecting the state’s largest cities. TDOT routinely evaluates the adequacy of intercity bus service in Tennessee, pursuant to Section 5311(f) funding requirements of the Federal Transit Administration (FTA), which provides financial and technical assistance to local public transit systems and intercity bus service even though this service operates longer routes than most transit operations. TDOT’s most recent intercity bus needs assessment was completed in June 2021. According to the report, some form of public transportation is available in all 95 counties of Tennessee, and over 80% of Tennessee residents live within 25 miles of an intercity bus station. After surveying public transit providers and private bus operators and soliciting input from other stakeholders, TDOT determined that intercity bus service needs across Tennessee are being adequately met.

But recommendations within TDOT’s assessment indicate opportunities to better coordinate with city governments to ensure access to airports and partner with other stakeholders to provide last-mile connections between intercity bus stops and destinations. Additionally, the assessment illustrates that intercity bus service is essential to connecting rural areas and urban centers. And some Tennesseans responded to TDOT’s

solicitation for comments and suggested that from their perspective, there are unmet needs that new intercity bus service could fill. In particular, there is stakeholder interest in establishing new and expanded bus service in east-west corridors across the state.

Augmenting more traditional bus lines, luxury bus operators have begun to expand in Tennessee, offering connections from Nashville to cities like Washington, DC, Atlanta, and Memphis, using buses equipped with amenities such as first-class style seating or lie-flat beds. But these luxury operators don't directly serve the state's rural communities. States such as Colorado, Ohio, Oregon, Virginia, and Washington offer state-supported bus services to fill gaps in existing intercity bus systems. These services are typically designed to connect rural areas to major cities and often show greater ridership than expected.

In Virginia, for example, the Department of Rail and Public Transportation (DRPT) conducted an expanded public consultation process as part of its federally required intercity bus service needs assessment. Virginia found unmet needs and used demographic data and public input to identify service gaps, according to DRPT officials. Ultimately, this study led Virginia to launch its first state-sponsored intercity bus service—the Virginia Breeze—along the I-81 corridor, which has been quite successful, with annual ridership projected to be 7,128 passengers and actual annual ridership of 21,708 passengers. Since then, DRPT completed two expansion studies, leading to new routes being deployed. The current Virginia Breeze service includes four routes.

Information provided by DRPT officials shows that the upfront investment needed for the Virginia Breeze's first year of service was \$1.1 million. Ticket sales typically cover approximately 83% of annual operating and maintenance costs. The most recent yearly shortfall of \$182,674 was covered entirely by FTA 5311(f) program funds, meaning the intercity mobility needs were met for significantly less than typical intercity passenger rail service, without issues related to geography and long time-horizons for service launch and with minimal cost to Virginia.

While passenger rail projects can take decades to implement and require extensive initial and ongoing investment, intercity bus service can be implemented in less time and for less money. And some communities that need transportation options would not be served by potential passenger rail routes. Furthermore, the expansion of intercity bus service in Tennessee has the potential to work in tandem with the Transportation Modernization Act to improve the state's transportation system in an effort to ensure continued economic growth and the success of the state's residents and businesses. For example, incentivizing intercity buses to use choice lanes developed under the Transportation Modernization Act by exempting them from fees for using those lanes—as is already the case for

Intercity bus projects can be implemented in less time and for less money than rail projects.

city buses and other public transit vehicles—could lower trip times, reduce congestion, and increase intercity mobility.

As a result, the Commission recommends that the state evaluate

- **establishing intercity bus service along the US-64 corridor connecting Memphis and Nashville via currently unserved communities as recommended by stakeholders in TDOT’s 2021 intercity bus needs assessment;**
- **increasing intercity bus service along the I-40 and I-81 corridor connecting Memphis, Nashville, Knoxville, and Bristol; and**
- **opportunities for intercity bus service to support the goals of the Transportation Modernization Act.**

Analysis: The Potential for Intercity Passenger Rail Expansion in Tennessee

Congestion is a looming problem statewide in Tennessee. According to the Tennessee Department of Transportation (TDOT), travel times between major Tennessee cities will increase by up to one hour without improvements to the state’s existing transportation infrastructure.¹ This means that driving from Nashville to Knoxville would increase from a three-hour trip to a four-hour trip, and a drive from Memphis to Chattanooga would increase from a five-hour trip to a six-hour trip. To put that in perspective, it’s the equivalent of extending your drive from Nashville to Knoxville up to Greenville or taking your drive from Memphis to Chattanooga and extending it to Calhoun, Georgia—almost halfway to Atlanta. See map 8.

Map 8. Current and Future (2045) Congestion



Notes:

- 1) Future Roadway Network Includes IMPROVE Act Projects
- 2) Red Indicates Locations Where Trip Reliability is Severely Impacted

Source: Tennessee Department of Transportation 2023c.

The state’s looming congestion problem is a function of the success of its existing road network. The state’s roads are routinely ranked as some of the best in the country.² As the backbone of transportation in Tennessee, the road network is the primary means for moving people and goods into,

¹ Tennessee Department of Transportation 2023c.

² Flessner 2022.

Since the 2010 Census, Tennessee’s population has grown by more than 700,000, to a total of more than seven million, with 140,000 people moving to the state in the last two years alone.

out of, and across the state, contributing to economic growth, community development, and quality of life. But the increasing number of residents, visitors, and freight using our roads is straining the system. As described by TDOT in its “Build with Us” initiative,

Due to Tennessee’s success as a great place to live, work and play, traffic congestion is becoming more prominent throughout the state, and not just in urban areas. Rural Tennesseans are experiencing significant changes in the reliability of their travel times. Tennessee also lies at the crossroads of some of the most significant freight corridors in the country, which are forecast to grow significantly in the future.³

Growth in population, tourism, and freight are likely to continue. Since the 2010 Census, Tennessee’s population has grown by more than 700,000 (11.1%), to a total of more than seven million, with 140,000 people moving to the state in the last two years alone. We are now the 15th-most populous state, surpassing Massachusetts.⁴ Researchers at the University of Virginia project an additional 14.0% growth for Tennessee from 2020 to 2040.⁵

Tennessee is centrally located in the eastern United States, meaning it is within easy driving distance for most out-of-state tourists—Tennessee is within a day’s drive of 60% of the US population.⁶ Combined with the state’s many natural and cultural resources, this makes Tennessee a prime destination for vacationers. Tourism in Tennessee generated a record \$24 billion in domestic travel spending in 2021, marking the largest amount of visitor spending in Tennessee’s history.⁷ Currently, Nashville alone accounts for approximately 30% of Tennessee’s annual revenue from tourism, but the Tennessee Department of Tourist Development uses a hub-and-spoke marketing strategy, attracting visitors to the state’s urban areas then marketing additional attractions in rural areas to expand the benefits of tourism.⁸

Moreover, Tennessee sits at the heart of the fast-growing Southeast region, only increasing the likelihood that more visitors from out of state will travel to Tennessee by car. Covering an area of more than 542,000 square miles, the Southeast is home to over 85 million people—over 25% of the

³ Tennessee Department of Transportation “Congestion.”

⁴ US Census Bureau 2011; and US Census Bureau 2022a.

⁵ University of Virginia Weldon Cooper Center 2018.

⁶ Flessner 2023.

⁷ TN Vacation “Research.”

⁸ Interview with Mark Ezell, commissioner, and Melanie Beauchamp, assistant commissioner of rural tourism and outreach, Tennessee Department of Tourist Development, January 23, 2023.

nation’s population.⁹ From 2010 to 2022, populations in six of the 11 states in the region—including Tennessee—grew faster than the nation’s as a whole, with Florida being the 4th-fastest growing and 3rd-most populous US state.¹⁰ These states are expected to remain among the fastest-growing through 2040, with the region projected to grow by another 17%.¹¹ See table 1 and maps 9 and 10.

Table 1. Population Data for Selected Southeast States

State	2022 Population (Census estimate)	Change 2010-2022	Projected 2040 Population	Projected Change 2022-2040
Florida	22,244,823	18.3%	28,886,983	29.9%
South Carolina	5,282,634	14.2%	6,352,502	20.3%
North Carolina	10,698,973	12.2%	12,658,927	18.3%
Georgia	10,912,876	12.6%	12,820,271	17.5%
Virginia	8,683,619	8.5%	9,876,728	13.7%
Tennessee	7,051,339	11.1%	7,823,662	11.0%
Louisiana	4,590,241	1.3%	5,062,780	10.3%
Arkansas	3,045,637	4.4%	3,217,535	5.6%
Kentucky	4,512,310	4.0%	4,714,761	4.5%
Mississippi	2,940,057	-0.9%	2,962,160	0.8%
Alabama	5,074,296	6.2%	5,056,796	-0.3%
Region Total	85,036,805	11.1%	99,433,105	16.9%

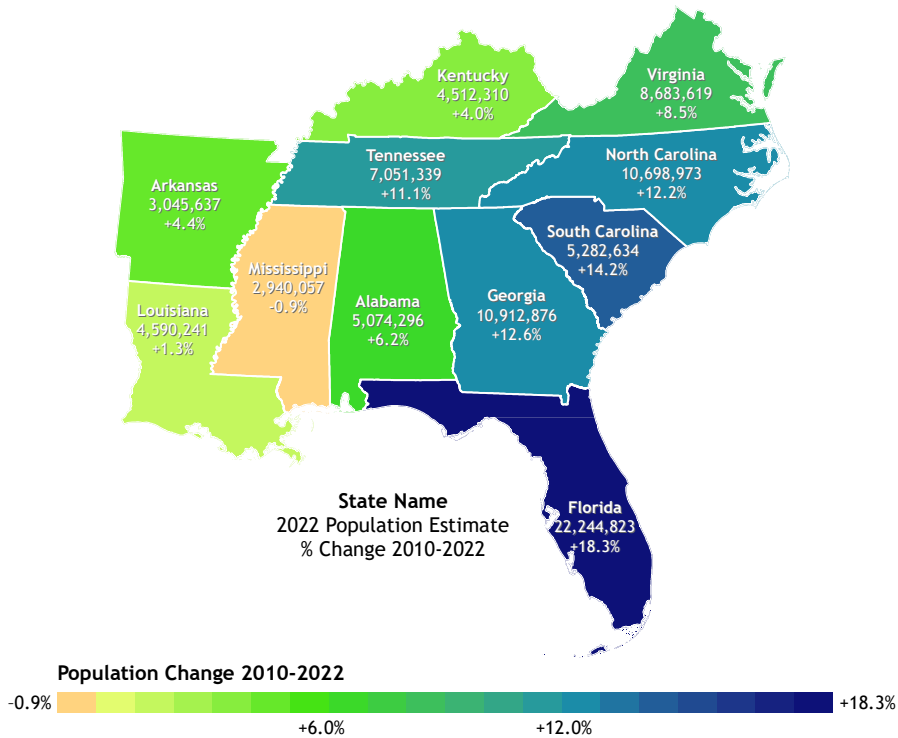
Source: US Census Bureau 2011; US Census Bureau 2022a; and University of Virginia Weldon Cooper Center 2018.

⁹ US Census Bureau 2022a. States included in the Southeast for this section: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. US population: 333,287,557 (2022 Census Bureau estimate). Commission staff chose these states for their proximity and economic connections to Tennessee, as well as their potential for passenger rail connectivity and inclusion in other passenger rail plans.

¹⁰ US Census Bureau 2011; and US Census Bureau 2022a. The US population grew by 8.0% from 2010 to 2022.

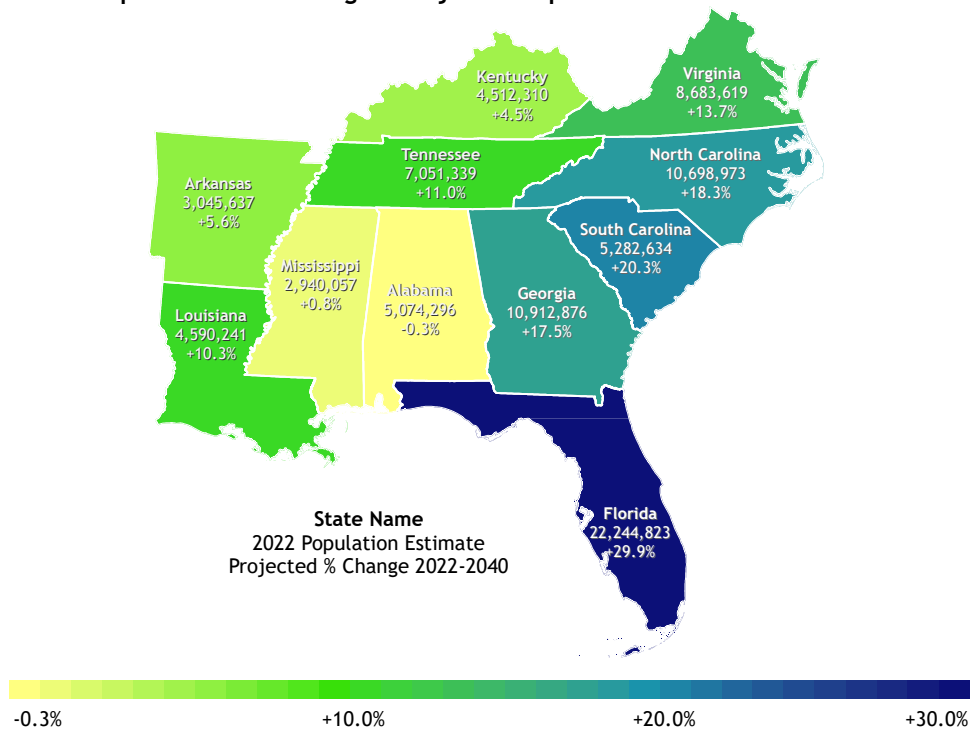
¹¹ University of Virginia Weldon Cooper Center 2018.

Map 9. Southeast Region Population and Growth 2010 to 2022



Source: Commission staff based on US Census Bureau 2011 and US Census Bureau 2022a.

Map 10. Southeast Region Projected Population Growth 2022 to 2040



Source: Commission staff based on US Census Bureau 2022a and University of Virginia Weldon Cooper Center 2018.

Tennessee “also lies at the crossroads of some of the most significant freight corridors in the country, which are forecasted to grow significantly in the future,” according to TDOT (see maps 11 and 12).¹² Almost 40% of Tennessee’s gross domestic product (GDP) is directly related to the freight transportation sector. Tennessee ranks 20th for total freight tonnage movement by state, while the state ranks 13th for the value of freight moved, and most of this freight is moved by truck. Truck-flow data show that freight from Memphis and Nashville can reach many major domestic markets and coastal ports across the US, as well as international destinations, in less than three days.¹³

Map 11. Long-Haul Truck Traffic 2012



Source: Tennessee Department of Transportation 2023c.

¹² Tennessee Department of Transportation 2023b.

¹³ Tennessee Department of Transportation “25-Year Long-Range Transportation Policy Plan Freight Logistics and Planning Policy Paper.”

Map 12. Long-Haul Truck Traffic 2040



Source: Tennessee Department of Transportation 2023c.

Congestion has several negative consequences.¹⁴ It can increase the cost of delivering goods and services as truck operators can experience longer travel times and less reliable pick-up and delivery times, the costs of which can be passed onto consumers.¹⁵ It also increases fuel consumption, the number of automobile crashes, and tailpipe pollutants that are harmful to humans.¹⁶ According to the Texas A&M Transportation Institute’s 2021 Urban Mobility Report, an average driver in Nashville spent 66 hours in traffic in 2019, resulting in 29 gallons of excess fuel consumption. Combining the time lost and excess fuel consumed, this cost the average driver approximately \$1,465. On average, a driver in Memphis spent 54 hours in traffic in 2019, resulting in 21 gallons of excess fuel consumption, and costing \$806.¹⁷

Recognizing the need to address the state’s transportation needs, the General Assembly and Governor Lee enacted the Transportation Modernization Act (Public Chapter 159, Acts of 2023). The Act invests an additional \$3.3

¹⁴ Federal Highway Administration 2020.

¹⁵ Ibid.

¹⁶ Falcocchio and Levinson 2015.

¹⁷ Texas A&M Transportation Institute 2021.

billion into Tennessee’s roads, authorizes the use of expedited processes to complete road projects faster, and authorizes TDOT to partner with private companies to develop price-managed lanes—publicly referred to as choice lanes—in urban areas in an effort to reduce congestion by pricing access to those lanes based on traffic conditions.¹⁸

Additionally, some legislators have asked whether other modes of transportation could be used to supplement improvements to the state’s road network and potentially decrease travel times, spur economic development, and enhance tourism.

Public Chapters 1114 and 1124, Acts of 2022, direct the Commission to study the potential for passenger rail service in Tennessee.

The General Assembly passed Public Chapter 1114, Acts of 2022, and Public Chapter 1124, Acts of 2022, which direct the Tennessee Advisory Commission on Intergovernmental Relations to study and make recommendations regarding the potential for passenger rail service or other suitable alternatives for linking the major cities in each of the grand divisions of the state (see appendix A). The study must

- identify the alignment, condition, and ownership of tracks;
- define an integrated network for intercity rail travel;
- provide alternatives for intermodal connections between the affected airports and passenger rail services; and
- survey projects initiated over the past 10 years involving the initiation of new state-sponsored Amtrak intercity passenger rail.

The public chapters direct the Commission to collect information from at least three state departments of transportation that have successfully initiated or are in the process of initiating a new Amtrak intercity passenger rail service. This information must include the stakeholders involved, the process by which the new service was negotiated among the stakeholders, all costs related to establishing the new service, ridership estimates, and other matters that will inform the General Assembly of the successful launching of the surveyed service. The public chapters further direct that information concerning stakeholders include state departments of transportation, host railroads, Amtrak, and any state-created entities tasked with sponsoring and managing the new intercity passenger rail service. Applicable costs must include operational feasibility studies, rights-of-way, and property acquisitions, new and upgraded operations, passenger stations, equipment acquisition, and ongoing operating expenses. The first step in analyzing the potential for passenger rail or

Passenger rail can supplement the billions of dollars invested in Tennessee’s roads.

¹⁸ Public Chapter 159, Acts of 2023; and Tennessee Department of Transportation 2023c.

In 2021 alone, personal and freight vehicles accounted for more than 82.5 billion miles driven on Tennessee roads.

other alternatives for improving intercity travel in Tennessee is looking at the state's existing transportation network.

Tennessee's existing transportation network includes roadways, airways, waterways, and railways for moving both people and freight.

Tennessee's transportation network provides mobility for residents and visitors and facilitates freight movement. In doing so, it helps meet the needs of individuals and encourages economic and community development. The network includes a combination of travel modes, though the extent to which each currently supports passenger travel and freight varies.

Roadways

The mainstay of transportation in Tennessee is the road network, with over 96,000 miles of roads stitching together all corners of the state.¹⁹ In 2021 alone, personal and freight vehicles accounted for more than 82.5 billion miles driven on Tennessee roads,²⁰ and Tennessee ranks first in the nation for its road quality.²¹ When it comes to moving people, the system supports both private vehicle use and buses,²² and in the absence of either passenger rail or air travel, it may be the only means available for some intercity journeys. While the state relies heavily on personal vehicles, it's important to note that 5.4% of households in the state do not have access to a vehicle,²³ eliminating one option for intercity travel for these households. See map 13 and table 2 for a description of Tennessee's highway network.

¹⁹ Tennessee Department of Transportation "Transportation System Overview"; and Tennessee Department of Transportation 2021b.

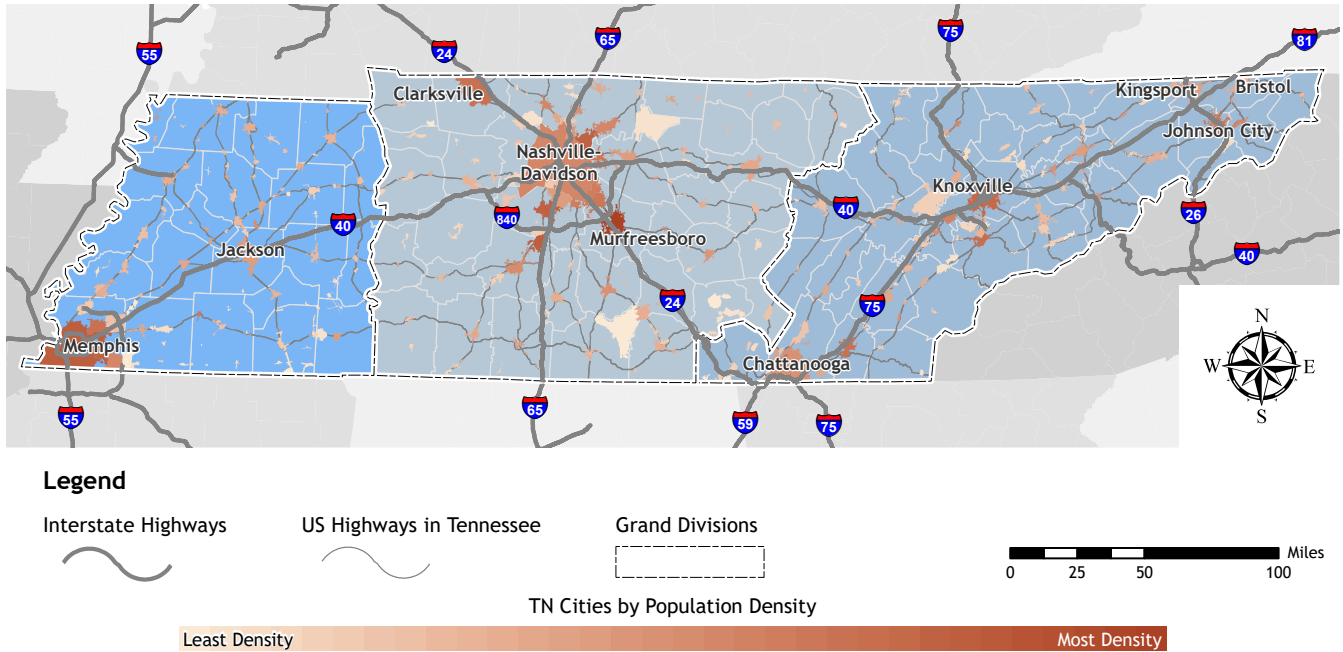
²⁰ Tennessee Department of Transportation 2021b.

²¹ US News & World Report "Road Quality."

²² Tennessee Department of Transportation "Transportation System Overview."

²³ US Census Bureau 2022b.

Map 13. Interstates and US Highways in Tennessee



Source: Commission staff based on US Census Bureau 2022c and US Census Bureau 2023a.

Table 2. Tennessee’s Primary Interstate Highways

Highway	Major Cities Served in Tennessee	Mileage in Tennessee	Directions and Description
I-24	Clarksville, Nashville, Murfreesboro, Chattanooga	180	East-West Connects I-57 in Illinois to I-75 in Chattanooga.
I-26	Kingsport and Johnson City (Tri-cities area)	54	East-West (but follows US-23 north/south in Tennessee) From Kingsport, TN, I-26 crosses North Carolina through Asheville and ends at Charleston, South Carolina.
I-40	Memphis, Jackson, Nashville, Knoxville; I-840 beltway connects to Murfreesboro	455	East-West Third-longest interstate in the country. Crosses parts of California, Arizona, New Mexico, Texas, Oklahoma, Arkansas, Tennessee, and North Carolina.
I-65	Nashville	122	North-South Connects Gary, Indiana (near Chicago), to Mobile, Alabama. Crosses Indiana, Kentucky, Tennessee, and Alabama.
I-75	Knoxville, Chattanooga	162	North-South Second-longest north-south interstate in the country. Crosses parts of Florida, Georgia, Tennessee, Kentucky, Ohio, and Michigan.
I-81	Knoxville, Bristol	76	North-South Begins at the Canadian border in upstate New York, crosses parts of Pennsylvania, Maryland, West Virginia, and Virginia, ending at I-40 in Jefferson County, Tennessee.

Source: Federal Highway Administration 2022.

Intercity bus services with stops in Tennessee are offered by several private operators—these intercity bus services are distinct from the transit-oriented bus services (see box) that operate within the state. In addition to providing opportunities for those who wouldn't otherwise be able to travel by road because they lack access to personal vehicles, intercity bus service may appeal to some travelers by freeing them from driving, giving them time for other activities while en route. And in doing so, it can have an effect, albeit small, on congestion by taking some personal vehicles off the road.²⁴

Transit-Oriented Public Transportation Service in Tennessee

Tennessee has a variety of transit-oriented public transportation options that serve communities around the state. Not counting the WeGo Star commuter rail, there are 27 transit systems in Tennessee, according to TDOT. They include systems that serve the state's large urban areas, several that serve smaller urban areas and towns, and the state's human resource agencies, which provide service for rural communities.

Other examples of transportation assistance include services for older adults through programs such as the MyRide TN program, where people volunteer to use their personal vehicles to drive older Tennesseans to their intended destination.

As demands on Tennessee's transportation system continue to grow in step with the population and economy, some locales that are marked out for major economic development projects, such as Ford's BlueOval City in West Tennessee, are exploring transit and commuter options to transport employees in and out of worksites. For more information on BlueOval City, see appendix B.

Source: Tennessee Department of Transportation "Transportation System Overview"; Tennessee Department of Transportation "Public Transit Services"; and Tennessee Commission on Aging and Disability "Transportation Assistance."

TDOT identified 18 cities in Tennessee served by intercity bus routes. These bus routes total 100 daily trips, and many include destinations out of state. But intercity bus operators have reduced service over the years. For example, Greyhound still operates throughout the state, with stops in 13 cities ranging from Memphis to Bristol, but it has eliminated one location since 2017 and reduced daily trips.²⁵ And although Megabus used to serve Tennessee cities such as Nashville and Knoxville, it currently only offers service in Memphis.²⁶

TDOT also identified three feeder routes in its 2017 Intercity Bus Needs Assessment. These routes help connect some smaller communities in Middle Tennessee to Nashville and Murfreesboro. The routes include the Nashville I-40 Express and I-24 Express, operated by Upper Cumberland Human Resources Agency, and the Lawrenceburg South Central Area

²⁴ Mobility Lab 2019.

²⁵ Tennessee Department of Transportation 2021a.

²⁶ Megabus. "Megabus."

Transit Service (SCATS) routes to Nashville and Murfreesboro operated by South Central Tennessee Development District.²⁷ The Nashville I-40 Express offers three daily round trips from the Cookeville Greyhound Station to the Nashville Greyhound Station, stopping at the Nashville International Airport.²⁸ The I-24 Express offers two daily round trips from McMinnville to downtown Nashville, also stopping at the Nashville International Airport.²⁹ And the Lawrenceburg SCATS routes offer service from Lawrence County, Perry County, and Lincoln County to Nashville and Murfreesboro.³⁰ Additional rural transit services are provided by the state’s regional human resources agencies; these are primarily on-demand transportation services, but they can be used as feeder services to connect to local intercity bus terminals.³¹

Other operators that serve communities in Tennessee might not be captured in TDOT’s analysis in part because they don’t offer scheduled intercity travel linking cities *within* the state. Tornado Bus Company is a long-distance bus service operating out of Dallas, Texas, and serving the central and eastern regions of the United States as well as various locations in Mexico. With one stop in Tennessee serving the greater Nashville area, Tornado Bus Company provides multiple routes to out-of-state locations connecting Nashville with cities in Arkansas, Florida, Georgia, Illinois, Indiana, Kansas, North Carolina, and Texas. Although seven other Tennessee cities are listed on their website, there are no scheduled stops; Tornado Bus Company does not offer direct city-to-city travel within Tennessee.³²

Recently, some new intercity bus services have been introduced that market themselves as luxury or business-oriented services. Examples include Napaway, which offers overnight buses from Nashville to Washington, DC, or Vonlane, which provides bus service from Nashville to Memphis and Atlanta.³³ Because these services are still new, it is too early to evaluate their effect on travel in Tennessee.

The state’s road network also facilitates freight movement. As noted above, most of the freight in Tennessee—67.8% by weight—is moved by truck,³⁴ and data show that freight from Tennessee can reach many major markets in less than three days.³⁵

Most of the freight in Tennessee—67.8% by weight—is moved by truck, and data show that freight from Tennessee can reach many major markets in less than three days.

²⁷ Tennessee Department of Transportation 2017; and Tennessee Department of Transportation 2021a.

²⁸ UC Public Transit “UCHRA Express | I-40 Express Bus.”

²⁹ UC Public Transit “UCHRA I-24 Express.”

³⁰ South Central Tennessee Development District “The Connection and SCATS Routes.”

³¹ Tennessee Department of Transportation 2021a.

³² Tornado Bus Company “About Us”; and Tornado Bus Company “Buy Tickets.”

³³ Napaway “Washington DC – Nashville (VIA Knoxville)”; and Vonlane “Vonlane Private Jet on Wheels.”

³⁴ Tennessee Department of Transportation 2019a.

³⁵ Tennessee Department of Transportation “25-Year Long-Range Transportation Policy Plan Freight Logistics and Planning Policy Paper.”

There are six commercial airports in Tennessee, although none of them have direct commercial flights to other cities in the state.

Airways

Air travel is the fastest and often only practical option over long distances, though it is not traditionally well-suited or even available for shorter-range travel. As the Federal Highway Administration points out, travelers' choice of transportation leans towards air travel only when the distances involved are relatively long; in general, a journey has to be 700 miles or more before air travel becomes the dominant choice for the average business traveler or 1,100 miles or more for the average leisure traveler.³⁶

Tennessee has six commercial airports located in Nashville, Memphis, Knoxville, Chattanooga, Jackson, and the Tri-Cities area—Bristol, Johnson City, and Kingsport—along with 71 other smaller facilities known as general aviation airports,³⁷ which by definition serve no more than 2,500 passengers per year.³⁸ Among all six of the state's commercial airports, there were 10.9 million passenger boardings in 2021, roughly 70% of these in Nashville.³⁹

Collectively, these airports move people into and out of Tennessee, but the reach and distribution of their services are uneven, particularly for in-state travel. For example, none of the six commercial airports has direct commercial flights connecting to other cities in the state, and most of their flights are to destinations outside of the Southeast region.⁴⁰ While there have been discussions with air carriers to expand shorter-range services within the state,⁴¹ none has done so, and the profitability for very short-haul flights—typically those shorter than one hour—can be decidedly challenging for airlines to support because travelers more readily opt for other travel modes when they are available.⁴²

Recently, there has been investment to augment the services of some of Tennessee's airports. The Nashville International Airport, for example, has undertaken a \$1.4 billion plan to expand its terminals in anticipation of serving millions more passengers annually within the next 10 years,⁴³ and the Memphis International Airport received a Federal Aviation Administration award of \$14.8 million for terminal renovations and expansion.⁴⁴ Meanwhile, the General Assembly included a recurring \$56.3

³⁶ Federal Highway Administration 2015.

³⁷ Tennessee Department of Transportation "Transportation System Overview."

³⁸ General aviation airports are defined by 49 US Code § 47102(8).

³⁹ Commission staff analysis of data from Federal Aviation Administration 2022.

⁴⁰ Metropolitan Nashville Airport Authority "Nonstop Flights"; Memphis Shelby County Airport Authority "Memphis the Ultimate Guide"; and Metropolitan Knoxville Airport Authority "Arrivals and Departures."

⁴¹ Interview with Mark Ezell, commissioner, and Melanie Beauchamp, assistant commissioner of rural tourism and outreach, Tennessee Department of Tourist Development, January 23, 2023.

⁴² IATA 2008.

⁴³ Nashville International Airport "BNA Vision"; and Nashville International Airport "Pandemic Slowed Travel."

⁴⁴ Memphis Shelby County Airport Authority 2023.

million in general fund subsidies for air carriers and another \$20.5 million for general aviation in the Appropriations Act for fiscal year 2023-24.⁴⁵

There have been some innovations in recent years regarding regional air travel. Companies such as Whisper Aero are developing electric aircraft that are better suited for travel between smaller general aviation airports. For example, Whisper Aero’s nine-seat electric aircraft could take passengers from Crossville to Nashville in 15 minutes—what would normally be a two-hour drive—according to the company.⁴⁶ While electric aircraft like those being developed by Whisper Aero have the potential to enhance transportation networks in the future, they are still early in development.

In addition to people, Tennessee’s airports help move freight into and out of Tennessee. For example, Memphis’s airport is notable for its cargo rather than its passenger traffic. It is the world’s second most active air freight hub by metric tonnage.⁴⁷

Waterways

Waterways provide another transportation option for freight, though only limited passenger travel. There are 976 main channel miles of commercially navigable waterways in Tennessee. And 93% of those miles can be found on three of the state’s major rivers: the Tennessee (401 miles), the Cumberland (310 miles), and the Mississippi (176 miles). Overall, 3.9% of freight tonnage and 2.9% of freight by value in Tennessee is moved on waterways.⁴⁸ As for passenger service, the state operates two ferries: the Benton-Houston ferry, which runs across the Tennessee River between Benton and Houston Counties, and the Cumberland City ferry, which operates across the Cumberland River.⁴⁹

Railways

Passenger rail travel in the state is currently limited. In general, passenger rail service can be divided into three categories: commuter rail, light rail, and intercity rail.

- Commuter rail, like other transit-oriented transportation services (e.g., city buses), moves individuals into, out of, and around individual metropolitan areas, often by connecting passengers from suburban areas to urban areas, and primarily runs in

⁴⁵ Public Chapter 418, Acts of 2023.

⁴⁶ Mark Moore, CEO, Whisper Aero, presentation to Senate Transportation and Safety Committee, Tennessee General Assembly, January 19, 2022.

⁴⁷ Airports Council International 2023.

⁴⁸ Tennessee Department of Transportation 2019a; and Tennessee Department of Transportation “Transportation System Overview.”

⁴⁹ Tennessee Department of Transportation “Ferry Services.”

Innovative air travel solutions have the potential to enhance transportation networks in the future, but are still early in development.

Waterways provide another transportation option for freight, though only limited passenger travel.

conjunction with normal working hours. Tennessee's lone commuter rail is the WeGo Star, which runs from Lebanon to Nashville with stops in Donelson, Hermitage, Mt. Juliet, Martha, and Hamilton Springs. In 2022, it had a ridership of 92,100.⁵⁰

- Light rail, similar to commuter rail, usually connects passengers to areas within a single city. There is no light rail in Tennessee, although the Memphis Area Transit Authority Trolley operates in a similar fashion in Memphis.
- Intercity passenger rail, in contrast, connects passengers to destinations in different metropolitan areas. It best suits the needs of those traveling medium to long distances because the schedules of these trains often don't align with commuting times and may provide just a few trains per day. The state's lone intercity route, the City of New Orleans Amtrak route, runs from Chicago to New Orleans and stops in Memphis and Newbern, with one train in each direction daily. The route stops in Newbern at 3:56 AM and 12:20 AM and stops in Memphis at 6:27 AM and 10:20 PM. The route had an annual ridership of 155,618 in federal fiscal year 2021-22, up from 100,816 in federal fiscal year 2020-21.⁵¹

Federal Oversight and Assistance for Trains and Buses: The Federal Railroad Administration and the Federal Transit Administration

Federal Railroad Administration (FRA): Passenger rail service comes in different forms based on technology, frequency, travel speed, route distance, and station spacing. Intercity passenger rail—but not commuter or light rail—is overseen by the FRA, which also oversees freight movement by rail. FRA's \$2.8 billion budget for federal fiscal year 2021-22 funded about 900 staff, safety and compliance activities, grant oversight and development, research and technology, and operating, capital, and debt service assistance to the National Railroad Passenger Corporation (Amtrak). Today, FRA regulates approximately 800 railroads.

Federal Transit Administration (FTA): The FTA is responsible for administering and providing financial assistance to public transit systems across the United States. This includes not only commuter rail and light rail but also bus service, including both intercity bus and transit systems (e.g., city buses). Its mission is to improve public transportation and mobility by providing funding, technical assistance, and regulatory guidance to transit agencies.

Source: Federal Railroad Administration 2022b; and Federal Transit Administration "About FTA."

While passenger rail service in Tennessee is limited, the state has an extensive freight rail network. With 2,940 miles of freight railroad track, freight companies transport goods throughout the state by rail. According to TDOT, 240.2 million tons of commodities were moved through the state by rail in 2012, representing 28.3% of total commodities moved through

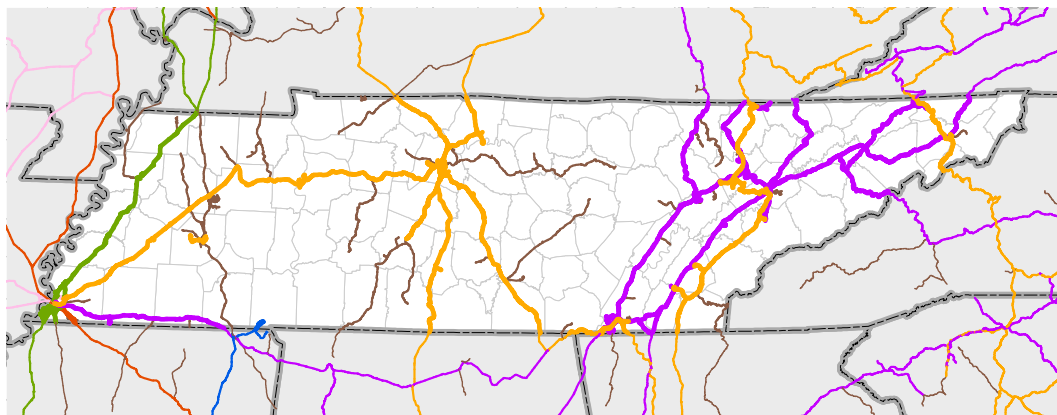
⁵⁰ American Public Transportation Association 2023; and WeGo Public Transit "WeGo Star."

⁵¹ Amtrak 2022d; and Amtrak "City of New Orleans: Available Trips."

the state.⁵² Coal represents 90 million of the tons moved by rail, most of which is moved through the state from states to the north like Kentucky and West Virginia to states south of Tennessee.⁵³

Norfolk Southern and CSX own most of the railroad tracks in Tennessee based on mileage. CSX owns 827 miles, most of which are located in East and Middle Tennessee. Norfolk Southern owns 662 miles, with most of their tracks located in East Tennessee.⁵⁴ Of particular importance when it comes to expanding intercity passenger rail in Tennessee, the existing freight rail corridors generally connect the major population centers in the state. See map 14 for an overview of the freight railroads in Tennessee.

Map 14. Freight Railroads in Tennessee



Track Ownership by Railroad Companies

- Burlington Northern Santa Fe (BNSF)
- Canadian National (CN)
- CSX Transportation (CSX)
- Kansas City Southern (KCS)
- Norfolk Southern (NS)
- Union Pacific (UP)
- Other Railroads

Source: Commission staff based on data from Bureau of Transportation Statistics 2023. Includes main lines only (excludes abandoned tracks, industrial leads, passing sidings, and yard tracks).

Commission staff have identified five potential passenger rail routes for further study.

To identify potential passenger rail routes, Commission staff began with the findings of the Southeast and Midwest rail plans. In partnership with the Federal Railroad Administration (FRA), these plans—produced by the Southeast Corridor Commission and the Midwest Interstate Passenger Rail Commission, respectively—identified and evaluated potential passenger

⁵² Tennessee Department of Transportation 2019a; and Tennessee Department of Transportation 2019b.

⁵³ Tennessee Department of Transportation 2019a.

⁵⁴ Tennessee Department of Transportation 2019b.

Commission staff identified five potential passenger rail routes in Tennessee.

rail routes in the Southeast and Midwest using the FRA’s Conceptual Networks Connections Tool (CONNECT).⁵⁵

CONNECT, as described in the Southeast Rail Plan, “is not a substitute for detailed corridor and network planning and does not produce investment-grade results.” But “CONNECT provides high-level forecasts informed by” desired speeds, frequency of service, size of communities served, and reliability. And it produces “estimates for ridership, revenue, capital and O&M [operation and maintenance] costs, and other performance outputs that enable the user to understand relative differences in service and frequency options for various corridor and network configurations.” As a result, CONNECT “helps stakeholders in the early stages of the planning process identify the most compelling options from a wide range of configurations before proceeding to a more in-depth and detailed analysis of specific alignments.”⁵⁶ Commission staff requested the underlying data used in the Southeast and Midwest rail plans but did not receive the data prior to publication (see appendix C).

Staff supplemented their review of these plans by evaluating potential routes based on the existing freight rail network, interviews with stakeholders, the extent to which each route would link the most populated cities in the state’s grand divisions with each other and with population centers in other states, and whether the route would connect to the existing national rail network, per the requirements of Public Chapter 1114, Acts of 2022, and Public Chapter 1124, Acts of 2022 (see appendix A). The Commission was unable to comprehensively evaluate the routes to determine their viability. To do so would have required engineering and technical analyses beyond the scope of the Commission’s capabilities and resources—but the FRA’s Corridor Identification and Development (Corridor ID) program includes \$500,000 grants that can be used for them (see appendix D).⁵⁷ On behalf of the State of Tennessee, TDOT Commissioner, and Deputy Governor Howard Eley submitted an Expression of Interest Letter (EIL) for the Corridor ID program to the FRA on December 15, 2022 (see appendix E), outlining a general interest in passenger rail as a potential solution to roadway congestion in Tennessee. TDOT committed to evaluating the Commission’s report and coordinating with state lawmakers to determine the next steps regarding passenger rail service.⁵⁸

The Commission identified the following routes for further consideration:

- Nashville to Chattanooga to Atlanta, GA
- Memphis to Nashville
- Chattanooga to Knoxville to Bristol

⁵⁵ Southeast Rail Commission 2020.

⁵⁶ Ibid.

⁵⁷ Federal Railroad Administration 2023b.

⁵⁸ Tennessee Department of Transportation “Build with Us.”

- Memphis to Carbondale, IL, to Chicago
- Nashville to Louisville, KY

Nashville to Chattanooga to Atlanta, GA

The Southeast Rail Plan found the Nashville to Chattanooga to Atlanta route to be the most viable of any route in Tennessee. According to the Plan, “The Atlanta-Nashville Corridor scored very highly . . . showing a significant demand between Nashville, Chattanooga, and Atlanta.” The plan estimated that this route would have an operating cost recovery ratio of 2.10, meaning revenue would be more than double the operating costs. The rail plan also noted the potential for Nashville and Chattanooga to provide a key linkage between the Southeast and Midwest regions, connecting to cities such as St. Louis, Chicago, Louisville, and Indianapolis.⁵⁹

The Nashville to Chattanooga to Atlanta route scores highly in part because it connects major population centers. The population on the route was 7.8 million in 2015⁶⁰—when taking into consideration the metropolitan statistical areas (MSAs) of Nashville, Chattanooga, and Atlanta, the combined population increases to 8.8 million.⁶¹ It is expected to grow by 73% to 13.6 million by 2055.⁶² In Tennessee, the route connects three of the six most populated cities in the state—Nashville, Chattanooga, and Murfreesboro—and it also connects these communities to Atlanta, one of the most populous cities in the South. This route also has the potential to provide connections to airports in Nashville, Chattanooga, and Atlanta. Existing tracks on the proposed route directly connect to airports in Atlanta and Chattanooga—Hartsfield-Jackson Atlanta International Airport served 94 million passengers in 2022, making it the single busiest airport in the world.⁶³ The main terminal at Nashville International Airport is approximately four miles from the railway, but the long-term plan for Nashville’s airport released in 2016 includes an intermodal terminal that could potentially be used for connecting to rail service.⁶⁴

In Amtrak’s 2021 ConnectsUs plan, a comprehensive plan for the future expansion of passenger rail in the US, this route was included and was found to have a projected annual economic impact of \$464 million, along with \$20 billion in economic activity from one-time capital investments.⁶⁵ The plan also envisioned that the route would have two daily round trips and a travel time of six hours and 34 minutes.⁶⁶ By contrast, this same trip

The Southeast Rail Plan found the Nashville to Chattanooga to Atlanta route to be the most viable of any route in Tennessee.

⁵⁹ Southeast Corridor Commission 2020.

⁶⁰ Ibid.

⁶¹ US Census Bureau 2023c.

⁶² Southeast Corridor Commission 2020.

⁶³ Airports Council International 2023.

⁶⁴ Nashville International Airport 2016.

⁶⁵ Amtrak “Atlanta – Nashville.”

⁶⁶ Ibid.

The Cities of Chattanooga, Memphis, Nashville, and Atlanta have submitted a joint application for federal funding to study the viability of the full route from Memphis to Nashville to Chattanooga to Atlanta.

by car typically takes from three hours and 40 minutes to four hours and 20 minutes.

Stakeholders have also demonstrated interest in this route. The Cities of Chattanooga, Memphis, Nashville, and Atlanta have submitted a joint application for federal funding to study the viability of the full route from Memphis to Nashville to Chattanooga to Atlanta through FRA’s Corridor ID program (see appendix F).⁶⁷ TDOT submitted a letter of support to FRA for the application (see appendix G), and according to Amtrak CEO Stephen Gardner, the full route from Memphis to Nashville to Chattanooga to Atlanta “holds a lot of promise.”⁶⁸ Additionally, the state of Georgia has shown interest in this route. The Georgia Department of Transportation (GDOT), along with TDOT, prepared an Environmental Impact Statement in 2017 to evaluate any environmental or related impacts of constructing a high-speed rail route from Atlanta to Chattanooga—though this study didn’t analyze the potential for high-speed rail from Chattanooga to Nashville.⁶⁹

The railway connecting Nashville and Chattanooga is approximately 160 miles long—27 miles are in Alabama and Georgia. It is owned entirely by CSX, although some segments in Chattanooga and Alabama are shared with Norfolk Southern. Maximum authorized speeds for freight trains are 50 to 60 miles per hour, although some portions are restricted to as little as 25 miles per hour.⁷⁰ The maximum allowable passenger train speeds may be higher. Approximately 19 miles are double-tracked—3.6 miles in Nashville and the rest near or in Chattanooga. There are 10 passing sidings on this route; their combined lengths are approximately nine miles in total. See map 15.

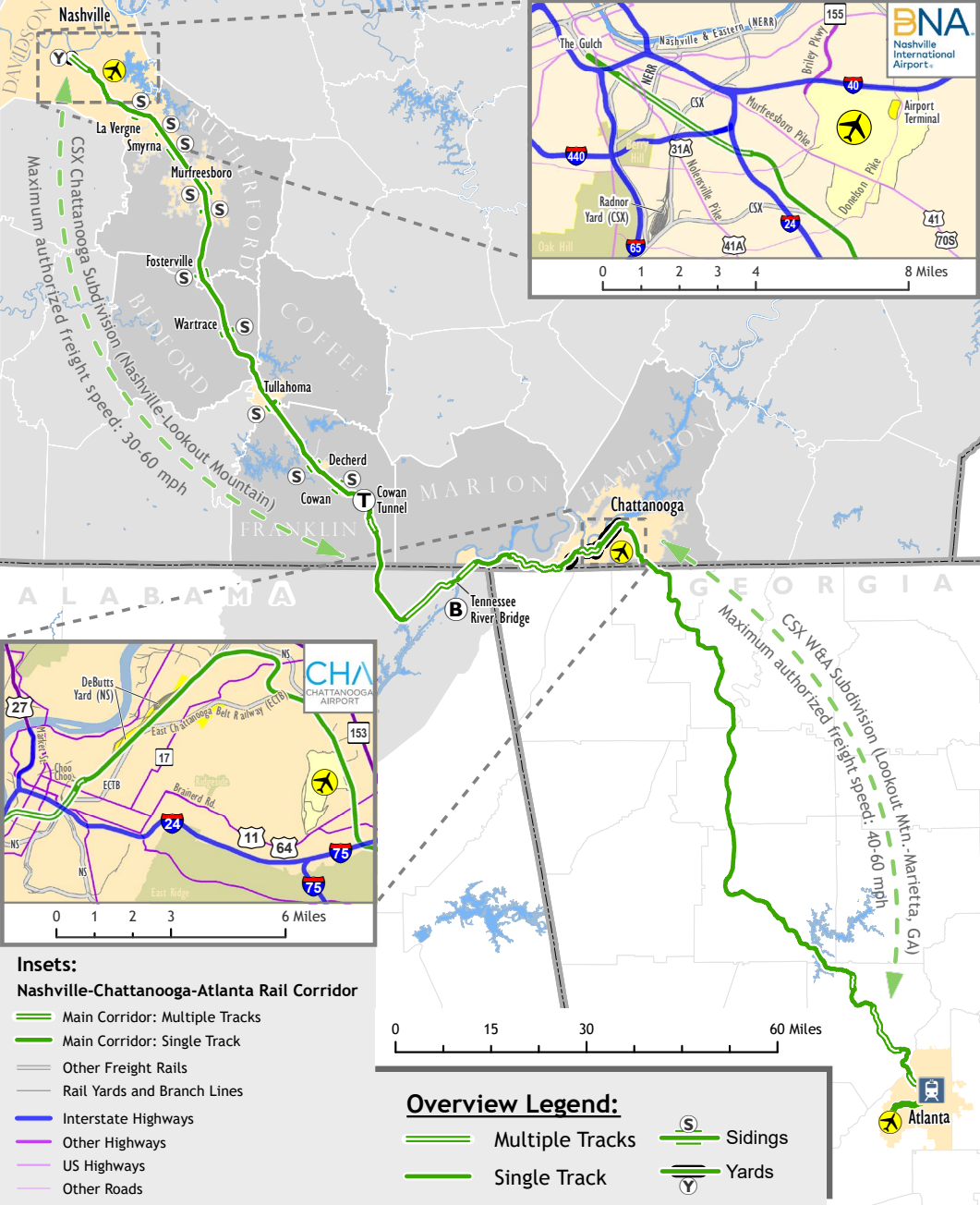
⁶⁷ Schwartz 2023.

⁶⁸ O’Brien 2023.

⁶⁹ Georgia Department of Transportation 2017.

⁷⁰ Tennessee Department of Transportation 2019b.

Map 15. Nashville to Chattanooga to Atlanta, GA



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

A Nashville to Memphis route would provide Nashville and other Tennessee communities with a rail connection to Chicago and New Orleans via the existing Amtrak service that runs through Memphis.

Memphis to Nashville

The Memphis to Nashville route is included in the Southeast Rail Plan but was given a lower priority in the plan than the Nashville to Atlanta route. The Southeast Rail Plan indicated that the Memphis to Nashville route scored as moderately favorable in the plan's initial analysis, but more detail was not given, and the analysis was performed with the route extending to Louisville, Kentucky.⁷¹ The rail plan found that connections from Nashville and Memphis were best suited for providing links to cities in the Midwest. There is local support for this corridor: It was included in the joint application submitted by Chattanooga, Memphis, Nashville, and Atlanta to the FRA's Corridor ID program (see appendix E).⁷²

The route would provide Nashville and other Tennessee communities with a rail connection to Chicago and New Orleans via the existing Amtrak service that runs through Memphis.⁷³ In a 2022 study, the Memphis Urban Area Metropolitan Planning Organization, in partnership with TDOT, found that the freight rail corridor between Memphis and Nashville currently has a lower freight volume than other major rail routes in the state, suggesting infrastructure improvements needed to prevent disruptions to freight rail may be less than for other corridors.⁷⁴ And this route also lacks some of the geographic barriers that affect other routes.

While the Memphis to Nashville route would serve a smaller population than the Nashville to Atlanta route, it would still connect Tennessee's two largest cities, with a combined population of 1.3 million, and a combined MSA population of 3.4 million (2022 estimates).⁷⁵ Twenty-nine cities in between add another 171,360 people, with Dickson (16,343) being the largest city outside of Nashville and Shelby County (2022 estimates).⁷⁶ The 13 counties connected by the railway have a population of two million (2022 estimates).⁷⁷ The passenger terminal at Memphis International Airport is approximately seven miles south of the railway. Bus service from the Memphis Area Transit Authority links the existing Amtrak station to Greyhound and the airport. The passenger terminal at Nashville International Airport is approximately four miles from the railway, nine miles southeast of downtown Nashville. But as noted in the discussion of the Nashville to Chattanooga to Atlanta route, the long-term plan for Nashville's airport includes an intermodal terminal that could connect to rail service.

⁷¹ Southeast Corridor Commission 2020.

⁷² Schwartz 2023.

⁷³ Amtrak "City of New Orleans."

⁷⁴ Memphis Urban Area Metropolitan Planning Organization 2023.

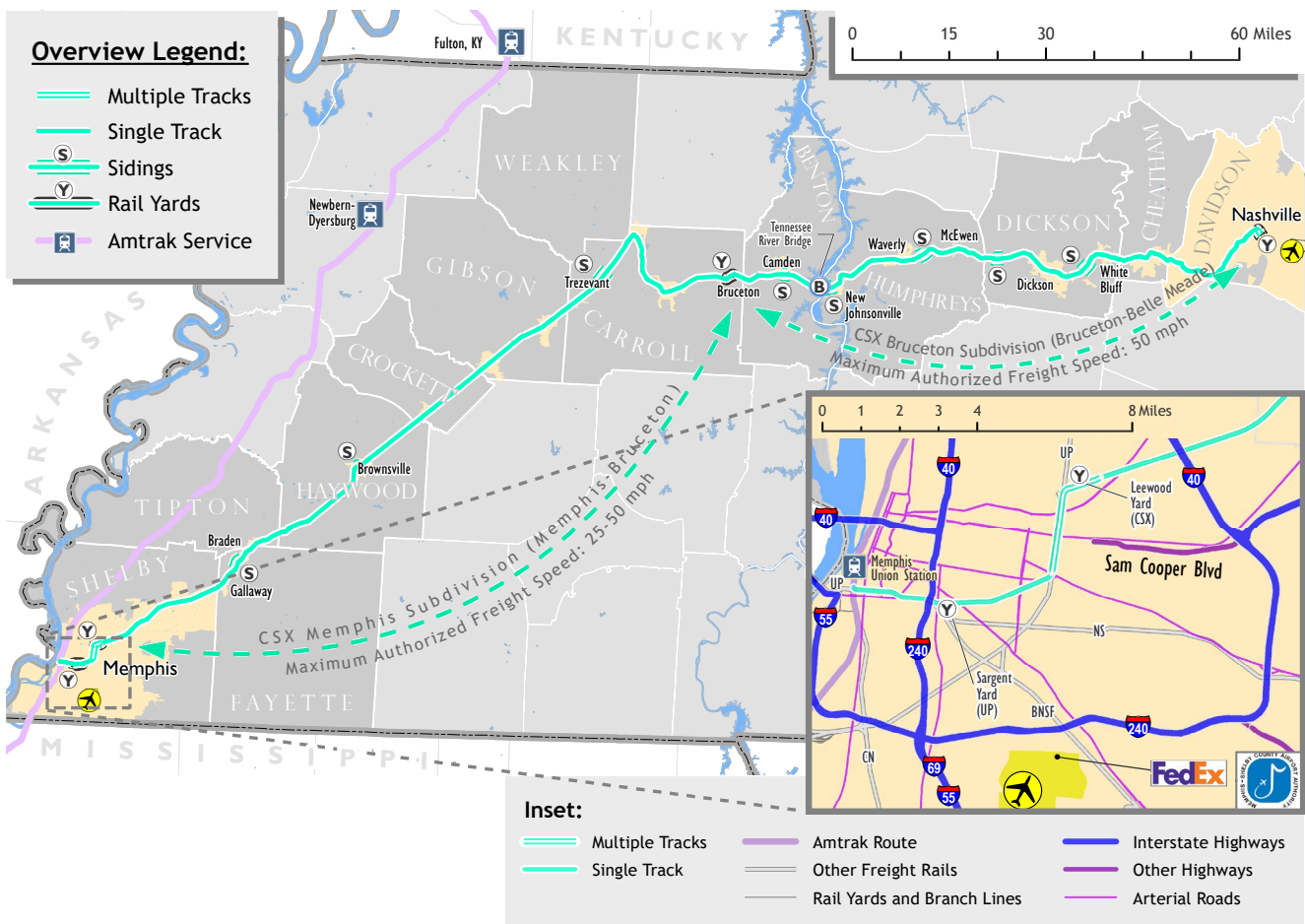
⁷⁵ US Census Bureau 2023a; and US Census Bureau 2023c.

⁷⁶ US Census Bureau 2023a.

⁷⁷ US Census Bureau 2023b.

The railway that connects Memphis and Nashville is approximately 234 miles long. CSX owns the entire length, although it shares track rights with the Canadian National Railway and Union Pacific on some segments in Memphis. Maximum authorized freight train speeds are 50 miles per hour, although some portions are restricted to 25 miles per hour.⁷⁸ The maximum allowable passenger train speeds may be higher. It is almost exclusively a single-track railway, except for approximately two miles at each end and eight passing sidings ranging from one-half mile to two miles each (12 miles total). See map 16.

Map 16. Memphis to Nashville



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

⁷⁸ Tennessee Department of Transportation 2019b.

Chattanooga to Knoxville to Bristol

This route was analyzed in the Southeast Rail Plan and given a lower priority than the Nashville to Atlanta and Memphis to Nashville routes. According to the Southeast Rail Plan, the route showed low potential annual ridership and low recovery costs.⁷⁹ But Virginia has shown interest in extending a passenger rail line from Roanoke, Virginia, to Bristol—there is an existing station in Bristol, Virginia, located next to the border with Bristol, Tennessee.⁸⁰ If this extension is completed, a route from Chattanooga to Bristol could provide Tennesseans with a rail connection to Washington, DC, and the Northeast corridor. Similarly, Virginia has indicated that the viability of the Roanoke to Bristol extension depends in part on service extending beyond Bristol, Virginia, into Tennessee.⁸¹ Because of this, it would likely benefit both routes if Tennessee and Virginia were to coordinate their efforts to maximize the potential of these two routes. Moreover, if the Chattanooga to Bristol route is explored in conjunction with a route from Nashville to Chattanooga to Atlanta, this route would also expand connectivity south to Atlanta for East Tennesseans. Local Bristol, Chattanooga, and Knoxville officials have expressed interest in passenger rail.⁸²

A route from Chattanooga to Bristol could provide Tennesseans with a rail connection to Washington, DC, and the Northeast corridor if an extension in Virginia is completed.

The route would pass through 13 counties in Tennessee with a combined population of 1.7 million, which include the cities of Chattanooga (184,086) and Knoxville (195,889)—if the full MSAs for these cities are included, the combined population is 1.8 million.⁸³ Chattanooga Metropolitan Airport is located approximately 2.5 miles south of the railway that leads to Knoxville and Bristol. It is, however, directly adjacent to a railway leading south from Chattanooga towards Atlanta.

The railway from Chattanooga to Bristol is about 235 miles long, owned entirely by Norfolk-Southern. Maximum authorized freight train speeds are 40 to 50 miles per hour, although some portions are restricted to 10 miles per hour.⁸⁴ The maximum allowable passenger train speeds may be higher. There are 12 passing sidings along the route, with a total combined length of approximately 18 miles. An eight-mile segment between Chattanooga and Collegedale is double-tracked, as are seven miles in Knoxville, 2.4 miles elsewhere in Knox County, 10 miles in Jefferson County, and five

⁷⁹ Southeast Corridor Commission 2020.

⁸⁰ Interview with Beth Rhinehart, president and CEO, and Natalie Rhodes, government relations manager, Bristol Chamber of Commerce, January 13, 2023.

⁸¹ Interview with Jennifer DeBruhl, director, and Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 30, 2023.

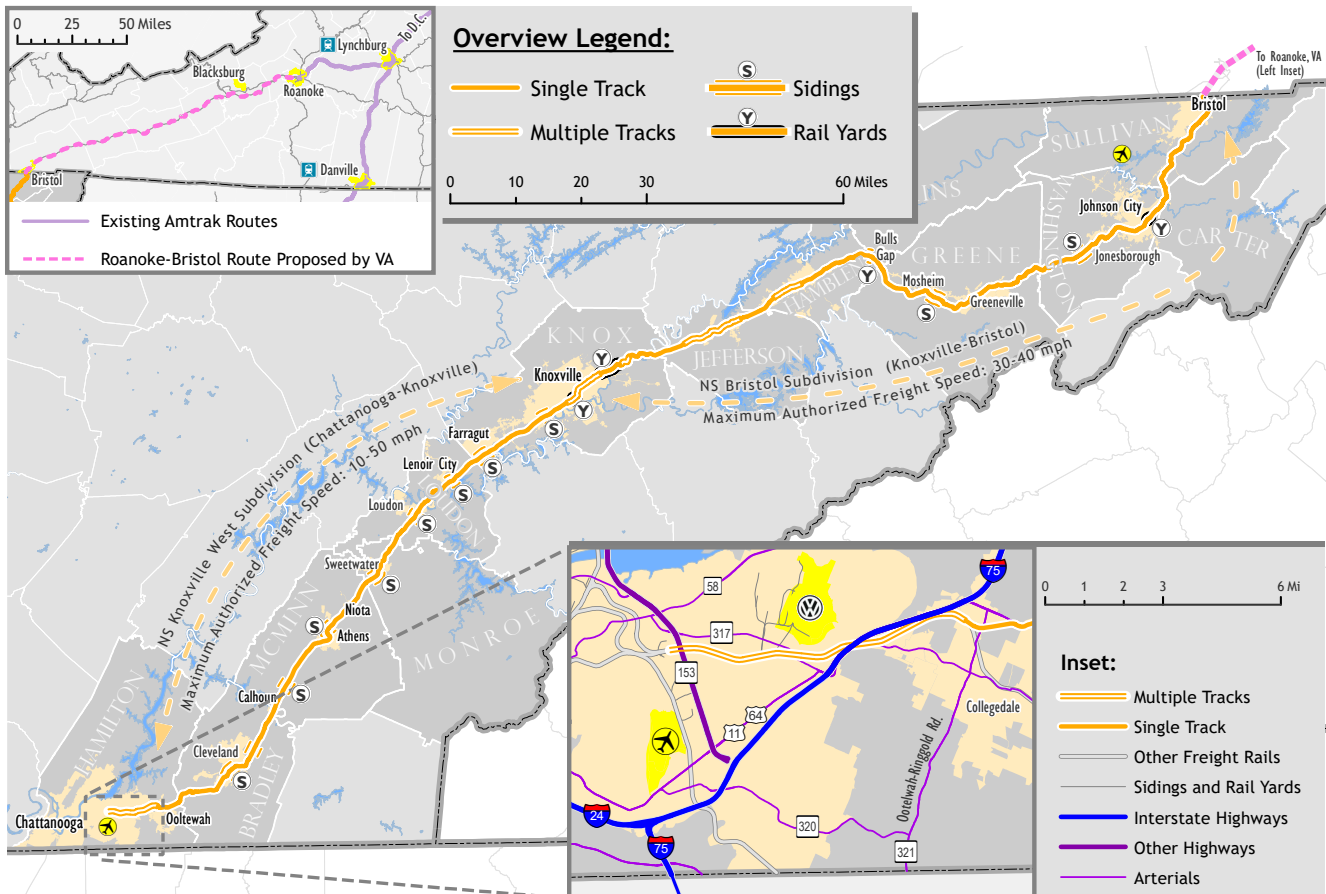
⁸² Interview with Beth Rhinehart, president and CEO, and Natalie Rhodes, government relations manager, Bristol Chamber of Commerce, January 13, 2023; interview with Tim Kelly, mayor, and Joda Thongnopnua, chief of staff, Chattanooga, November 19, 2022; and interview with Indya Kincannon, mayor, Erin Gill, chief policy officer, Isaac Thorne, transit director, Brian Blackmon, sustainability director, and Fiona McAnally, legislative director, Knoxville, December 9, 2022.

⁸³ US Census Bureau 2023a; US Census Bureau 2023b; and US Census Bureau 2023c.

⁸⁴ Tennessee Department of Transportation 2019b.

miles in Hamblen County. Otherwise, the route is all single-tracked. See map 17.

Map 17. Chattanooga to Knoxville to Bristol



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

Memphis to Carbondale, IL, to Chicago

This route was included in the Midwest Regional Rail Plan and was not given a high priority.⁸⁵ Currently, the Memphis to Chicago corridor is already served by the City of New Orleans route, which provides one train in each direction daily. But extending Amtrak’s existing Illini or Saluki routes or both—each run daily from Carbondale, Illinois, to Chicago⁸⁶—south to Memphis would provide a greater frequency of service on the

⁸⁵ Federal Railroad Administration 2021.

⁸⁶ The Saluki train departs Carbondale, Illinois, at 7:30 AM to arrive in Chicago at 1:00 PM, with the return trip departing Chicago at 8:15 AM and arriving in Carbondale at 1:45 PM. The Illini departs Carbondale at 4:15 PM to arrive in Chicago at 9:45 PM, with the return trip departing Chicago at 4:05 PM and arriving in Carbondale at 9:35 PM.

Extending Amtrak's existing Illini or Saluki routes or both—each run daily from Carbondale, Illinois, to Chicago—south to Memphis would provide a greater frequency of service on the Memphis to Chicago corridor.

Memphis to Chicago corridor. Stakeholders have said they support expanding service in this corridor. For example, Amtrak officials and the Memphis City Council have expressed interest in extending the Illini and Saluki routes south to Memphis. And transportation officials from the Illinois Department of Transportation interviewed by Commission staff indicated a willingness to collaborate with Tennessee on a possible extension.

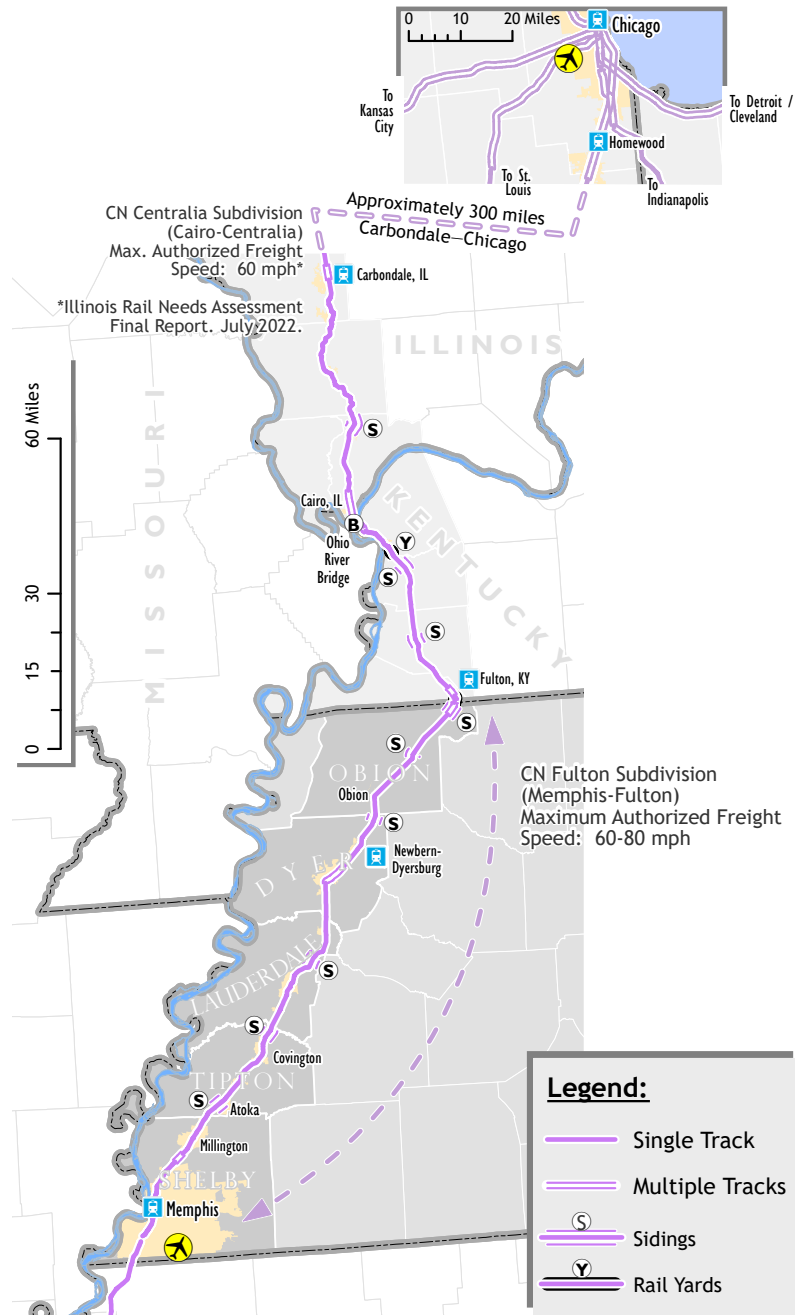
The combined populations in Memphis and Chicago total nearly 3.3 million people—though when taking the combined population of the MSAs on the route the population is 10.9 million.⁸⁷ The passenger terminal at Memphis International Airport is approximately seven miles south of the railway. Bus service connects the existing Amtrak station to Greyhound and the airport. And Chicago's train station, Union Station, is connected to Chicago O'Hare International Airport and Chicago Midway International Airport via Chicago's subway system—known as the L—and bus systems.

The tracks on which Amtrak currently runs the City of New Orleans route are owned by the Canadian National Railway. There are approximately 121 miles of track from Memphis Central Station to the Kentucky state line. Segments with multiple tracks include a 2.2-mile portion between Memphis and Millington, 4.8 miles in Dyersburg, 2.7 miles at the Kentucky state line, and five sidings ranging from 0.8 to 2.3 miles. The FRA also shows 25 freight stations along the route. Maximum authorized freight train speeds are 60 to 80 miles per hour.⁸⁸ There are another 101 miles of track running from the Kentucky state line to the Carbondale Amtrak station in Illinois. Canadian National owns this railway, but Norfolk Southern also has track rights. There are 2.1 miles of double-track near the Fulton Amtrak station and another 8.4 miles on either side of where the railway crosses the Ohio River at Cairo, Illinois, although the bridge is single-track. See map 18.

⁸⁷ US Census Bureau 2023a; and US Census Bureau 2023c.

⁸⁸ Tennessee Department of Transportation 2019b.

Map 18. Memphis to Carbondale, IL, to Chicago



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

The Federal Railroad Administration is evaluating the potential restoration of discontinued long-distance routes, including a route that runs through Nashville and Louisville, KY.

Nashville to Louisville, KY

This route was included in the Midwest Regional Rail Plan, which noted Nashville’s potential to provide a gateway to Atlanta, and the route was given a higher priority than a Memphis to Chicago route. But the route analyzed in the Plan included an extension to Indianapolis.⁸⁹ Although Louisville officials have expressed interest in the route, Kentucky Transportation Cabinet officials said in interviews with Commission staff that the state has other transportation priorities and is taking a “wait and see” approach to passenger rail.⁹⁰

Additionally, any potential role that Tennessee might play in establishing passenger rail service between Nashville and Louisville might change as a result of ongoing work by the FRA, which is evaluating the restoration of all discontinued daily, long-distance Amtrak routes. This includes the potential restoration of the Floridian route, which last operated in 1979 and provided service between Nashville and Louisville as part of its full route between Chicago and Miami.⁹¹ If the FRA determines the Floridian route is feasible, it will likely be part of the federally funded, long-distance service, which includes all routes longer than 750 miles. Amtrak and the federal government fully fund long-distance routes.⁹²

The populations of Nashville and Louisville—the most populous cities on the Nashville to Louisville route—total more than 1.3 million people. The population of the combined MSAs of Nashville and Louisville is 3.3 million.⁹³ Any Amtrak connection to Nashville would have the potential to connect to the Nashville International Airport. While the exact Amtrak station location in Louisville is unknown, Louisville’s bus system currently offers connections to the Louisville Muhammad Ali International Airport.

The rail route from Nashville to Louisville, which CSX owns, is approximately 188 miles long—46 miles in Tennessee and 142 in Kentucky. On the Tennessee portion of the route, there are 10 miles of double-track from Nashville to Hendersonville. Sumner County also has a 1.4-mile siding between Gallatin and Portland and a 0.7-mile siding near the Kentucky state line. Maximum authorized freight train speeds are 50 to 60 miles per hour.⁹⁴ See map 19.

⁸⁹ Federal Railroad Administration 2021.

⁹⁰ Interview with Jeremy Edgeworth, freight, rail, and waterways coordinator, Kentucky Transportation Cabinet, October 25, 2022.

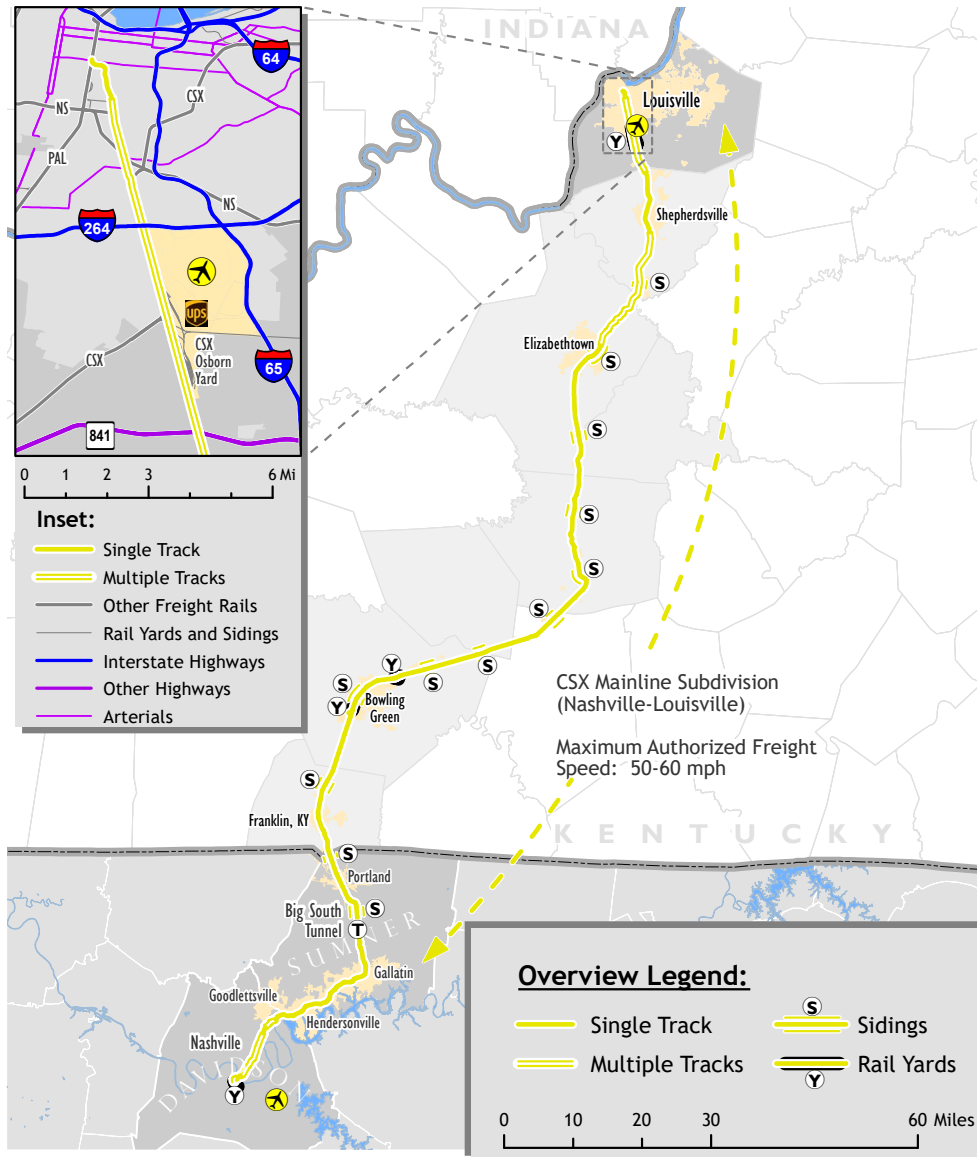
⁹¹ Amtrak 2014b.

⁹² Federal Railroad Administration 2023a.

⁹³ US Census Bureau 2023a; and US Census Bureau 2023c.

⁹⁴ Tennessee Department of Transportation 2019b.

Map 19. Nashville to Louisville, KY



Source: Commission staff based on data from Bureau of Transportation Statistics 2023.

Benefits of passenger rail include safety, economic gains, improved mobility, and greater efficiency.

Passenger rail could benefit both the state’s economy and Tennesseans’ mobility, though realizing these benefits is uncertain.

Among all the means of moving people from one city to another, passenger rail provides some unique potential benefits, including safety, economic gains, improved mobility, and greater efficiency. Compared to driving, for example, passenger rail is statistically safer. Despite some high-profile cases of freight train derailments within the past year—most notably the East Palestine, Ohio, derailment of a Norfolk Southern freight train—serious accidents and fatalities are still less common with rail than highway transportation, and when standardizing for the number of fatalities per passenger-mile traveled, automobile travel is roughly 17 times more dangerous than rail.⁹⁵ Rail travel also delivers certain other efficiencies, using less energy per passenger-mile and producing fewer emissions than other major modes of transportation. As of 2019, for example, Amtrak intercity rail used only 64% as much energy per passenger-mile as air travel and 54% as much as highway travel by light car.⁹⁶ That energy efficiency can also translate to lower carbon emissions, with even diesel-powered intercity trains producing as little as one-quarter or less of the emissions per passenger-mile as either cars or air travel.⁹⁷ Travelers also seem to opt for rail whenever it is made available to them as a viable option, and for intercity trips of three hours or less, it tends to be preferred over air travel.⁹⁸

But perhaps most significant is that passenger rail can generate economic and mobility benefits, which can manifest in the form of new jobs, increased Amtrak procurement spending within a region, reduced congestion on highways, increased travel options for business and tourism, new local development, and more. In federal fiscal year 2020-21, even while running only a single route through Tennessee with two stops, Amtrak’s procurement spending in the state totaled \$18.8 million, combined with \$1.4 million in wages for a small in-state staff of 10 people.⁹⁹ Those figures could potentially be much greater if more routes were added. The Southeast Corridor Commission estimated that a Nashville to Atlanta route alone could produce a total economic output of \$18.2 billion.¹⁰⁰ That includes direct economic benefits in the form of local jobs and spending on capital projects—the route might support over 17,000 construction-related jobs during its development¹⁰¹—but the potential economic benefits of any given passenger rail service go beyond direct investment. With passenger rail, travelers gain an alternative means of transportation to connect them

⁹⁵ National Safety Council “Deaths by Transportation Mode”; and US Government Accountability Office 2011.

⁹⁶ Commission staff calculations based on data in Davis and Boundy 2022.

⁹⁷ Federal Railroad Administration 2022a. See table 8, diesel train values versus car and air travel, particularly St. Louis to Chicago route.

⁹⁸ US Government Accountability Office 2003.

⁹⁹ Amtrak 2022c.

¹⁰⁰ Southeast Corridor Commission 2021.

¹⁰¹ Ibid.

to other communities, whether for business, leisure, or tourism and exchanging a several-hour drive for a train ride can free travelers to do other things while they are on the move. That can mean a net savings in time—the Nashville to Atlanta route might ultimately achieve a net gain of \$1.8 million annually in time savings for passengers, for instance.¹⁰²

One other basic advantage of passenger rail is that, all else being equal, it can move more people than other modes of transportation; in real-world scenarios, train cars regularly carry an order of magnitude more people than automobiles.¹⁰³ In part, that means that when travelers choose rail over the highway, it can alleviate congestion on roadways—or in other words, part of the benefits of rail go to those who continue to drive. In a national sample, 53% of Amtrak riders reported that if the train were unavailable, they would have driven to their destination instead, likely adding to road congestion.¹⁰⁴ And congestion has direct and indirect economic costs; idling in traffic, after all, means lost time for workers and businesses, as well as wasted fuel. The Texas A&M Transportation Institute has estimated annual congestion costs to Tennessee drivers in a sample of cities, with those costs ranging from \$388 to \$1,465 for the average driver as of 2019.¹⁰⁵ To whatever extent passenger rail can divert at least some travelers away from highways, it could alleviate congestion. For instance, an Atlanta to Nashville rail service could divert 286,000 car trips and 179,000 flights annually.¹⁰⁶

But rail might also generate travel that would otherwise not occur. Another 8% of Amtrak riders have reported that were rail service not available, they would not have traveled at all.¹⁰⁷ As an additional form of mobility, rail could be especially helpful to those Tennesseans who, for whatever reason, may not be able to drive to their destination; 5.4% of Tennessee households do not have access to a car, while another 30.7% have only one—which may need to be shared among several people.¹⁰⁸

Inasmuch as rail might enable and encourage more travel, it could also benefit tourism. According to a 2022 report from the Tennessee Department of Tourist Development, visitors to Tennessee spent \$24.2 billion in 2021, a 44% increase from 2019 visitor spending.¹⁰⁹ The top 10 states where Tennessee visitors originate include Georgia, Kentucky, Illinois, and Virginia, all of which could be connected to Tennessee by passenger rail. Primary destinations for tourists include Nashville, Memphis, Knoxville, Chattanooga, and the Tri-Cities, all of which are included on the potential passenger rail routes identified for further study in this report. And as a

The Texas A&M Transportation Institute has estimated annual congestion costs to Tennessee drivers in a sample of cities, with those costs ranging from \$388 to \$1,465 for the average driver in 2019.

¹⁰² Ibid.

¹⁰³ Davis and Boundy 2022.

¹⁰⁴ Amtrak 2014a.

¹⁰⁵ Texas A&M Transportation Institute 2021.

¹⁰⁶ Southeast Corridor Commission 2021.

¹⁰⁷ Amtrak 2014a.

¹⁰⁸ US Census Bureau “Why We Ask Questions.”

¹⁰⁹ Tennessee Department of Tourist Development 2022.

2020 study from the Southern Rail Commission looking at re-establishing rail service from Birmingham to Montgomery, Alabama, found, even if intercity passenger rail leads to only a modest increase in the number of tourists, it could still benefit local economies: If rail brought even just a 1% increase in the number of tourists to Alabama, for instance, it would generate an additional \$11.8 million. The benefit could be as large as \$223.8 million in increased tourism spending.¹¹⁰

Since its early days, passenger rail has also demonstrated an ability to catalyze economic development in surrounding areas by improving the value of nearby real estate and increasing spending at local businesses thanks to a greater concentration of potential customers.¹¹¹ In southern Florida, for example, four million square feet of real estate development has proceeded around three stations owned by the private rail developer Brightline.¹¹² In Virginia, passenger rail is expected to stimulate \$24.4 million more household spending through 2030 in Richmond alone.¹¹³ A study of the Heartland Flyer Amtrak route between Oklahoma City, Oklahoma, and Fort Worth, Texas, found that passengers spent a total of \$18 million on lodging, meals, shopping, and entertainment in communities along the route in 2009, generating a total sales tax revenue of nearly \$1.4

million.¹¹⁴ And several studies have found that commercial and residential properties within short distances of rail stations of various types tend to increase in value by anywhere between 4% and 24%.¹¹⁵ The Southeast Corridor Commission, meanwhile, projects that an Atlanta to Nashville route would lead to an additional 6.4 million square feet of commercial property each in Nashville and Chattanooga.¹¹⁶ In a 2021 study, the US Government Accountability Office (GAO) found that several prominent companies have chosen to locate along passenger rail corridors to draw on a larger workforce because transit promotes better mobility throughout the region.¹¹⁷

Charlotte Gateway Station Development, Charlotte, NC



Source: Photo by Adam Schultz in Brierton 2022.

¹¹⁰ Center for Economic Development and Business Research 2020.

¹¹¹ Levinson 2008.

¹¹² Weil 2017.

¹¹³ VCU Center for Urban and Regional Analysis 2022.

¹¹⁴ Sperry and Morgan 2010.

¹¹⁵ See for example Debrezion, Pels, and Rietveld 2007; and American Public Transportation Association 2019.

¹¹⁶ Southeast Corridor Commission 2021.

¹¹⁷ US Government Accountability Office 2021.

Rail Stations and Community Development in Tennessee

Although related to commuter rail rather than intercity rail, Tennessee has recent experience with how rail stations can affect development in the surrounding communities. In August 2018, the Regional Transportation Authority of Middle Tennessee (RTA) opened its first transit-oriented development station on the WeGo Star commuter rail system in Lebanon, Tennessee. According to RTA officials, the Hamilton Springs transit-oriented development includes 13,000 square feet of retail space, 396 luxury apartments, and a 260-unit complex designated for senior residents. The \$4.1 million station was the region's first joint public-private transit development project where a private developer provided the federal match funding. Since 2018, an additional three hundred-plus apartment units have been constructed adjacent to the Hamilton Springs station. The city's planning commission approved an additional 1,346 new housing units to be built within a mile of the station.

Source: US Government Accountability Office 2021.

When all costs are accounted for, passenger rail can sometimes be more cost-effective than other modes of transportation, at least in some contexts. Virginia, for example, found that adding one lane to one of its major Interstate corridors would cost \$12.6 billion, a total that is more than three times what the state plans to spend on its entire rail system expansion.¹¹⁸ In that case, Virginia found that further investment in rail would be a more efficient means of meeting transportation needs. From a total cost perspective, and despite its often sizable-upfront capital costs, passenger rail can have a lower cost per passenger-mile than other types of transportation. As of 2022, the cost of owning and operating a car—which includes not only fuel costs but the purchase cost or depreciation of the vehicle, insurance, registration fees, deferred maintenance, and so on—was, on average, about \$0.72 per mile,¹¹⁹ regardless of how many people it carried. An average of 1.5 people per vehicle yields a rough cost of \$0.48 per passenger-mile for travel by car. Among Amtrak's state-supported routes as of early 2023, some routes had costs greater than that level, but others were markedly lower. For example, the Piedmont and Carolinian routes in North Carolina achieved approximate costs per passenger-mile of \$0.33 and \$0.35, respectively.¹²⁰ In the first quarter of federal fiscal year 2019-20, before ridership

Hamilton Springs Transit-Oriented Development Lebanon, TN



Source: Hamilton Springs Development via Facebook.

¹¹⁸ Mike McLoughlin, chief operating officer, Virginia Passenger Rail Authority, presentation at TACIR Commission meeting on January 27, 2023.

¹¹⁹ Based on an average of 15,000 miles traveled per year. See AAA 2022; and Bureau of Transportation Statistics "Per-Mile Costs of Owning and Operating an Automobile."

¹²⁰ Amtrak 2023b and Commission staff calculations.

Although passenger rail can achieve substantial benefits over other modes of transportation, those benefits cannot always be guaranteed.

Passenger rail projects face barriers that can increase their upfront and ongoing costs and elongate project timelines.

was depressed by the COVID-19 pandemic, the average cost per passenger-mile for all Amtrak state-supported routes was \$0.40.¹²¹

Although passenger rail can achieve substantial benefits over other modes of transportation, those benefits cannot always be guaranteed. As Amtrak's data show, the cost-effectiveness of rail can hinge upon ridership levels, which can be challenging to predict and may be disrupted by outside factors. And as a 2001 analysis by the GAO noted, because intercity passenger rail accounts for only about 0.3% of intercity travel across all modes of transportation (i.e., personal vehicle, bus, air travel, etc.),¹²² rail ridership would need to be scaled up many times before its benefits had any serious effect in the overall intercity transportation market. Most of all, even though travelers may opt for rail over alternatives like cars, buses, or air travel in some conditions, to be an attractive option, it must be comparable and competitive to those other modes in convenience and availability. Whatever the mode of transportation, it must be able to take travelers where they want to go, be available at convenient times, be competitive in price and travel time, and meet travelers' expectations for safety, reliability, and comfort. Therefore, rail's benefits are not always guaranteed and may require significant investment before materializing. In a 2021 report on commuter rail, the GAO found considerable infrastructure and operational costs can make commuter rail more expensive than other transit modes. The GAO noted that if commuter rail service is provided in communities with lower population density, this has the potential to require governmental entities to subsidize operational costs where the ridership is not adequate to fund operating expenses.¹²³

Barriers exist that may significantly increase the costs of passenger rail.

Like any transportation project, passenger rail projects face barriers that increase their upfront and ongoing costs and elongate project timelines. Factors such as challenging geography, potential disruptions to freight rail activity, high capital and operating costs—which based on the experience of other states will require ongoing investment by the state—and long project timelines can impede the development of passenger rail.

Geography can be a substantial barrier for passenger rail projects because it contributes to the need for infrastructure improvements, thus increasing capital costs. For example, mountainous terrain, like that in East Tennessee, can make it difficult for trains to travel at high speeds because of steep grades. This can mean slower trains and longer trip times.¹²⁴ Historically,

¹²¹ Commission staff calculation based on Amtrak 2020.

¹²² US Government Accountability Office 2001.

¹²³ US Government Accountability Office 2021.

¹²⁴ Interview with Julie White, chair, Southeast Corridor Commission, and deputy secretary for multimodal transportation, North Carolina Department of Transportation, October 4, 2022.

one solution has been building tunnels through the mountains. When building the transcontinental railroad in the 19th century, workers drove spikes into the mountains, filled the holes with black powder, and blasted through the rock to build tracks through the Rocky Mountains.¹²⁵ In Tennessee, rather than running up and over the Cumberland Mountains, the existing freight rail corridor between Nashville and Chattanooga uses the Cowan Tunnel, built in 1852 near Cowan, Tennessee.

But the Cowan Tunnel is not only an example of an infrastructure-based solution to a geographic barrier; it is also a potential barrier in its own right. The tunnel is single-tracked and does not appear wide enough to be double-tracked. As a result, the tunnel could create a bottleneck for freight and passenger rail unless an alternate route through the Cumberland Mountains is built.

Geography, however, is only one contributor to infrastructure needs when developing passenger rail corridors. While the reasons for needed infrastructure improvements vary, the barriers to implementing intercity passenger rail stem primarily from the need for infrastructure, including but not limited to the construction of double-track to facilitate passing, the elimination of at-grade crossings to increase train speed, and the construction of new passenger stations and intermodal freight facilities.

Although building entirely new tracks and developing passenger-rail-specific corridors is a potential option, most intercity passenger rail services operate on tracks in existing rail corridors. According to the Association of American Railroads, more than 70% of train-miles operated by Amtrak are on tracks owned by other railroads.¹²⁶ Using existing tracks eliminates some of the need for new infrastructure associated with developing entirely new rail corridors. But taking existing corridors and making them capable of supporting freight and passenger service still requires infrastructure upgrades.

Private freight rail companies own most of the existing tracks in the US and control access to these rights-of-way.¹²⁷ These freight rail companies point out that introducing passenger rail on their tracks with no improvements to infrastructure could disrupt their operations. And any disruption

Cowan Tunnel Franklin County, Tennessee



Source: Photo by Bryan MacKinnon, image unaltered and use licensed under Creative Commons Attribution-Share Alike 4.0 International.

¹²⁵ Digital History "Building the Transcontinental Railroad."

¹²⁶ Association of American Railroads "Freight Railroads & Amtrak."

¹²⁷ Association of American Railroads 2023.

to freight rail services could disrupt supply chains and, therefore, the operations of many businesses within Tennessee.¹²⁸

Amtrak

The United States government established the National Railroad Passenger Corporation (Amtrak) in the National Passenger Rail Act of 1970. Amtrak is a nontraditional agency that embodies both governmental and private-sector characteristics. Amtrak must submit detailed annual operating reports for congressional oversight. Thus, Amtrak was created by the government, is controlled by the government, and operates under the FRA's direction. Amtrak operates more than 300 trains per day, covering 21,000 miles of track that span 46 states, Washington, DC, and three Canadian provinces. Its trains serve more than 500 destinations. See appendix H for a list of all Amtrak routes.

Source: Harvard Law Review 2015; and Amtrak, "Amtrak Facts."

Freight companies are required by the federal Rail Passenger Service Act of 1970 to allow Amtrak to use their tracks for passenger service. But if Amtrak, the state, and the freight companies disagree on the terms of track access, enforcing access to freight corridors through this Act involves a federal arbitration process that is potentially lengthy and costly. For example, disagreements stemming from the restart of Amtrak's Gulf Coast route and the portion of the Sunset Limited route that ran east of New Orleans caused Amtrak and freight rail companies to go before the federal Surface Transportation Board—the entity that oversees rail disputes—for mediation that lasted several months. All rail services had been suspended on the route in 2005 because of damage caused by Hurricane Katrina. While freight service was restored, passenger service was not.¹²⁹ When local mayors, businesses, and other stakeholders began to push for restoration of passenger service,¹³⁰ the freight railroads that owned the tracks—CSX and Norfolk Southern—argued that restoring passenger service would require Amtrak and other parties to make significant new capital improvements to their tracks, with CSX at one point citing a cost estimate of \$2.4 billion.¹³¹ Amtrak announced it intended to renew service along the route and that it was coordinating with CSX and Norfolk Southern to allow this,¹³² but negotiations broke down, and Amtrak filed an application with the Surface

¹²⁸ Interview with Jane Covington, director of CSX government affairs, Andy Daly, director of CSX passenger services, and Tausha Alexander, executive director of Tennessee Railroad Association, July 20, 2022; and interview with Elizabeth Lawlor, vice president of government relations, Norfolk Southern, John Edwards, general director of passenger policy, Norfolk Southern, and Holly Kirby, principal, Johnson Poss Kirby Government Relations, October 5, 2022.

¹²⁹ Progressive Railroading 2006.

¹³⁰ Gulf Coast Working Group 2017.

¹³¹ Interview with Dean Goodell, freight and passenger rail director, Office of Multimodal Commerce, Louisiana Department of Transportation and Development, October 10, 2022.

¹³² Sharp 2021.

Transportation Board in March 2021 to compel the freight railroads to meet their obligations to allow Amtrak trains passage.¹³³ A settlement was finally reached in November 2022,¹³⁴ and the current expectation is that some form of passenger service may be restored in 2023.

Whether agreements with freight railroads are reached through the federal arbitration process or through negotiations between the state and the railroads, the agreements are critical before passenger trains can operate on freight rail tracks. While officials from potential host railroads have expressed willingness to coordinate to share their tracks with passenger rail, any agreement will most likely include several needed infrastructure improvements to offset any disruption to freight caused by passenger rail.¹³⁵ Infrastructure improvements enhance the existing capacity of freight rail corridors and would almost certainly be necessary for establishing passenger service on them.

The time it takes to complete passenger rail projects, from planning to construction, can also be a barrier to the extent that projects span multiple government administrations. According to a Pennsylvania Department of Transportation (PennDOT) study, passenger rail projects typically take around seven years to complete.¹³⁶ However, some rail projects have taken 10 years or longer. California’s High-Speed Rail Project, a project to connect California’s major population centers with high-speed rail, was approved by voters in 2008, and the first phase of the project is expected to be completed in 2030.¹³⁷ Because projects can take a decade or more to complete, fluctuating support for passenger rail from one administration to the next can hinder the ability to establish new passenger service. For an overview of steps needed to complete a passenger rail project—including engineering and technical analyses, along with environmental and other planning studies needed before construction on a rail project can start—see figure.

Most intercity passenger rail services operate on tracks in existing rail corridors.

¹³³ Surface Transportation Board 2020.

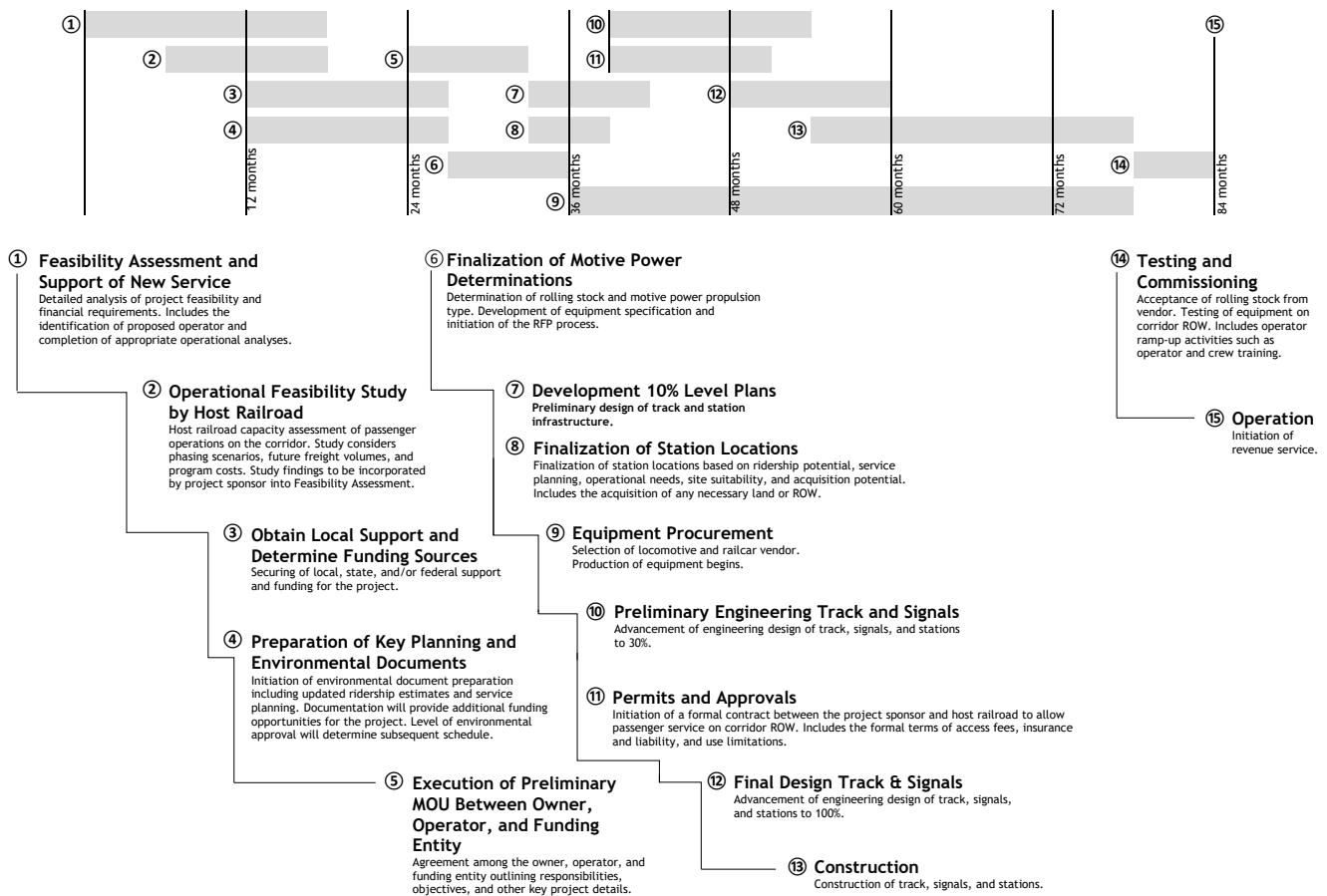
¹³⁴ Surface Transportation Board 2022.

¹³⁵ Interview with Jane Covington, director of CSX government affairs, Andy Daly, director of CSX passenger services, and Tausha Alexander, executive director of Tennessee Railroad Association, July 20, 2022; and interview with Elizabeth Lawlor, vice president of government relations, Norfolk Southern, John Edwards, general director of passenger policy, Norfolk Southern, and Holly Kirby, principal, Johnson Poss Kirby Government Relations, October 5, 2022.

¹³⁶ WSP 2020.

¹³⁷ California High-Speed Rail Authority 2023.

Figure. Passenger Rail Project Timeline



Source: Commission staff based on WSP 2020.

The need for new or upgraded infrastructure—whether to build new tracks, minimize disruptions to freight service, or overcome geographic barriers—drives the upfront capital costs for establishing passenger service. From double-tracking sections of rail to allow for adequate capacity for both freight and passenger service to laying new track on privately owned rights-of-way to allow for complete separation of freight and passenger rail, to eliminating at-grade crossings to mitigate safety concerns from the potential interactions of trains and automobiles, infrastructure improvements can add up to billions of dollars.¹³⁸ For example, Virginia is in the process of building a bridge over the Potomac River between Virginia and Washington, DC. The Long Bridge will add two extra train tracks to a heavily congested CSX-owned rail zone to separate freight and passenger rail operations traveling through that area. The 1.8-mile bridge

¹³⁸ Mike McLoughlin, chief operating officer, Virginia Passenger Rail Authority, presentation at TACIR Commission meeting on January 27, 2023.

is expected to cost over \$2 billion and take about 20 years from planning to operation.¹³⁹

The need for train stations, as well as intermodal terminals, can also increase capital costs. While some stations may already exist, stations along a new route or renovations to an existing station may be required to serve passenger rail travelers properly. In conjunction with the City of Charlotte, North Carolina’s Department of Transportation is building Charlotte Gateway Station, a comprehensive multimodal station designed to serve both long-distance and commuting travelers set to open in 2026.¹⁴⁰ Phase one of the three-phase project was completed in the fall of 2022 and cost approximately \$86 million, with phase two estimated to cost around \$52 million.¹⁴¹

Any passenger rail project in Tennessee would likely face high capital costs to improve infrastructure. But determining what specific infrastructure improvements are needed and the cost of implementing them for any particular route requires engineering and technical analysis that Commission staff are unable to provide. Other states’ experience suggests that costs can range from hundreds of millions of dollars for more straightforward passenger rail projects to billions of dollars for more intensive projects. For example, Virginia estimates spending \$4.1 billion on capital projects over 10 years.¹⁴²

Under federal law, the federal government is responsible for these costs *only* for Amtrak routes classified as long-distance routes—Tennessee’s lone existing passenger rail service, the City of New Orleans route, is a long-distance route. The federal Passenger Rail Investment and Improvement Act (PRIIA) of 2008 defines long-distance routes as those longer than 750 miles. FRA and Amtrak fund and manage these routes in partnership with private railroad companies that may host the long-distance passenger rail service.¹⁴³

All new routes of 750 miles or less are considered state-supported routes. Under PRIIA, Amtrak developed and implemented a single, nationwide standardized methodology for establishing and allocating intercity passenger rail service costs between the states and Amtrak. As a result, the state will be responsible for the capital costs of any state-supported

Determining what specific infrastructure improvements are needed and the cost of implementing them for any particular route requires engineering and technical analysis that Commission staff are unable to provide.

¹³⁹ Virginia Passenger Rail Authority “Long Bridge Project.”

¹⁴⁰ Charlotte Area Transit System “Charlotte Gateway Station”; and Julie White, chair, Southeast Corridor Commission, and deputy secretary for multimodal transportation, North Carolina Department of Transportation, presentation at TACIR Commission meeting on January 27, 2023.

¹⁴¹ Brierton 2022.

¹⁴² Mike McLoughlin, chief operating officer, Virginia Passenger Rail Authority, presentation at TACIR Commission meeting on January 27, 2023.

¹⁴³ Public Law No. 110-432; and interview with Jane Covington, director of CSX government affairs, Andy Daly, director of CSX passenger services, and Tausha Alexander, executive director of Tennessee Railroad Association, July 20, 2022.

Similar to other states, Tennessee would most likely be responsible for subsidizing annual operating costs on any route it chooses to implement.

route.¹⁴⁴ While the state might be able to negotiate cost-sharing agreements with private-sector partners, the far more likely scenario is that the state will cover these costs through its revenue sources or with funding won through federal grant programs.

Beyond the need for infrastructure improvements, the likelihood that recurring operating losses will need to be covered by the state is a potential barrier to establishing passenger rail. Like infrastructure costs, the federal government is responsible for covering operating losses *only* for Amtrak long-distance routes, under PRIIA.¹⁴⁵ Shorter routes are, again, the responsibility of states, and few existing Amtrak state-sponsored routes receive enough ticket revenue to cover operating costs.¹⁴⁶ As a result, Tennessee would most likely be responsible for subsidizing annual operating costs on any route it chooses to implement. While these costs are smaller than capital costs, they are recurring annually. According to North Carolina’s 2015 State Rail Plan, the annual projected operating subsidies to operate two state-supported Amtrak routes in the state between 2015 and 2019 range from \$13.9 million to \$16.9 million per year combined.¹⁴⁷ The state-sponsored routes in Virginia have a combined operating cost of \$126.7 million budgeted for fiscal year 2022-23, and it’s estimated that only 49% of this cost will be recovered through passenger revenue; the state is responsible for the remaining costs. For fiscal year 2023-24, operating costs are projected to be \$146.9 million, with 52% recovered through passenger revenue.¹⁴⁸

Other states such as North Carolina, Virginia, and Pennsylvania have successfully initiated new Amtrak intercity passenger rail services.

Although the barriers to intercity passenger rail service can be costly, they are not insurmountable. Tennessee effectively manages similar obstacles regarding roadway construction, operation, and maintenance. Like passenger rail projects, road projects can take decades to complete and cost hundreds of millions of dollars, requiring complex engineering studies. Tennessee has historically dedicated the funding and staffing resources necessary to manage large road projects and, as a result, has a first-class road network.

Moreover, some states have overcome the barriers to passenger rail and established successful rail service, including the establishment of new service in recent years. Several of these—namely North Carolina, Virginia, and Pennsylvania—serve as positive case studies and demonstrate some

¹⁴⁴ Federal Railroad Administration 2009.

¹⁴⁵ Public Law No. 110-432.

¹⁴⁶ Amtrak 2023b.

¹⁴⁷ North Carolina Department of Transportation 2015.

¹⁴⁸ Virginia Passenger Rail Authority “FY24 Recommended Budget.”

effective strategies for advancing passenger rail, while another, Louisiana, shows some of the pitfalls that can hold rail programs back. In brief, states that have succeeded with passenger rail have tended to create dedicated state rail offices to manage their project development, committed state funding for rail just as they have for other transportation services, coordinated with local governments and stakeholders to gain their support for routes and upgraded services, and fostered positive working relationships with the freight companies whose tracks they share. See appendix I for a list of all ongoing intercity passenger rail projects. See appendix J for a list of all intercity passenger rail routes by state.

North Carolina

North Carolina—in addition to four long-distance Amtrak routes cutting through the state—has two state-supported routes of its own, dubbed the Carolinian and the Piedmont.¹⁴⁹ The Carolinian runs from Charlotte to Raleigh and then up along the seaboard to New York, while the Piedmont is a more frequent train service that runs simply between Charlotte and Raleigh. The long-distance and state-supported Amtrak routes together reach 16 stations across North Carolina.¹⁵⁰

This passenger rail network results from several decades of investment and ongoing growth. The two state-supported Amtrak lines were launched in the 1990s, with accompanying route improvements and service expansions made in the following years.¹⁵¹ While the Carolinian currently runs once daily, the Piedmont has steadily increased its frequency from three daily trips to four and will soon be five.¹⁵² The Piedmont line, in particular, benefited from a focused capital improvement program that saw the construction of 13 bridges, four station renovations, added track and removed crossings, new and refurbished train cars, and more.¹⁵³ This was achieved entirely with a \$520 million grant from the FRA under the American Recovery and Reinvestment Act of 2009.¹⁵⁴ North Carolina also reports that ridership has been growing rapidly and has not only recovered from the initial drops seen during the COVID-19 pandemic but is continually setting new records monthly, totaling more than 522,000

States such as North Carolina, Virginia, and Pennsylvania serve as positive case studies and demonstrate some effective strategies for advancing passenger rail.

¹⁴⁹ The four long-distance Amtrak routes are the Crescent, Palmetto, Silver Meteor, and Silver Star services; see Amtrak 2022a.

¹⁵⁰ Amtrak 2022a.

¹⁵¹ Julie White, chair, Southeast Corridor Commission, and deputy secretary for multimodal transportation, North Carolina Department of Transportation, presentation at TACIR Commission meeting on January 27, 2023.

¹⁵² Ibid.

¹⁵³ North Carolina Department of Transportation 2020.

¹⁵⁴ North Carolina Department of Transportation 2020; and email from Peggy Powers, financial specialist, Mott MacDonald, April 27, 2023.

Since being established in the 1990s, the North Carolina Department of Transportation's Rail Division has benefited from consolidation, accumulated experience and expertise with rail projects, and coordinated more extensively with outside stakeholders.

riders in 2022.¹⁵⁵ North Carolina is currently moving forward with a host of applications to the Corridor ID program.¹⁵⁶

The administration of all of these new developments in rail is managed by the Rail Division within the North Carolina Department of Transportation (NCDOT), which has a staff of more than 80 employees.¹⁵⁷ Since being established in the 1990s, the Rail Division has benefited from consolidation, accumulated experience and expertise with rail projects, and coordinated more extensively with outside stakeholders.¹⁵⁸ North Carolina appropriated \$79 million to rail operations in fiscal year 2022-23—or 1.2% of the \$6.4 billion appropriated to NCDOT.¹⁵⁹ From fiscal year 2017-18 through fiscal year 2022-23, North Carolina's net appropriations for its rail program totaled \$273 million.¹⁶⁰ The Rail Division has also been active in engaging other stakeholders and cites the importance of having local champions who are receptive to rail. NCDOT created customized “game plans” for several of the state's small towns in rural areas along a newly created route between North Carolina and Virginia. The game plans outline how these communities can take advantage of rail projects coming through their respective towns through improvements such as transportation-oriented development and restructuring zoning.¹⁶¹

In addition to building local support, North Carolina Rail Division staff emphasized the importance of demonstrating a commitment to both freight and passenger rail to gain the support of freight railroad companies.¹⁶² In North Carolina's case, that included constructing an intermodal freight yard in support of CSX.¹⁶³

Virginia

Virginia has the most robust rail network in the Southeast, with eight Amtrak routes running through the state (four of them state-supported)

¹⁵⁵ Julie White, chair, Southeast Corridor Commission, and deputy secretary for multimodal transportation, North Carolina Department of Transportation, presentation at TACIR Commission meeting on January 27, 2023.

¹⁵⁶ Ibid.

¹⁵⁷ Interview with Julie White, chair, Southeast Corridor Commission, and deputy secretary for multimodal transportation, North Carolina Department of Transportation, October 4, 2022.

¹⁵⁸ Interview with Jason Orthner, director, Matthew B. Simmons, deputy director, and Edward McFalls, strategic initiatives consultant, Rail Division, North Carolina Department of Transportation, October 21, 2022.

¹⁵⁹ North Carolina Department of Transportation “Uses of 2022-23 NCDOT Appropriations.”

¹⁶⁰ North Carolina Office of State Budget and Management “Prior Certified Budgets.”

¹⁶¹ Julie White, chair, Southeast Corridor Commission, and deputy secretary for multimodal transportation, North Carolina Department of Transportation, presentation at TACIR Commission meeting on January 27, 2023.

¹⁶² Interview with Julie White, chair, Southeast Corridor Commission, and deputy secretary for multimodal transportation, North Carolina Department of Transportation, October 4, 2022.

¹⁶³ Interview with Jason Orthner, director, Matthew B. Simmons, deputy director, and Edward McFalls, strategic initiatives consultant, Rail Division, North Carolina Department of Transportation, October 21, 2022.

and connecting 21 stations,¹⁶⁴ as well as its own separate Virginia Railway Express (VRE) system, which offers commuter rail services across the northern part of the state. In part, this relatively extensive rail network may be thanks to its location, sitting adjacent to Washington, DC, and at the southern end of Amtrak’s heavily traveled Northeast Corridor, but Virginia also has extensive rail coverage throughout the rest of the state and reaching farther south. In 2006, Virginia established a Rail Enhancement Fund to allocate dedicated funds for rail capital projects,¹⁶⁵ later replaced by the Commonwealth Rail Fund.¹⁶⁶ Shortly after, in 2009, Virginia partnered with Amtrak to create several new state-supported routes, eventually including services to Norfolk, Richmond, Newport News, and Roanoke.¹⁶⁷

This investment in rail has only gathered steam in recent years. The Commonwealth Rail Fund is part of a complex, multi-layered funding structure for transportation in Virginia, supported by revenues from various taxes. In total, it receives about 3.7% of the state’s transportation funding¹⁶⁸—the majority of the state’s transportation funding, 51%, goes to the Highway Maintenance and Operating Fund.¹⁶⁹ The Commonwealth Rail Fund then supports not one but two agencies with a focus on rail transportation.¹⁷⁰ The first of these is the Virginia Department of Rail and Public Transportation, whose responsibilities are broader, including transit systems, and the second is the more recently created Virginia Passenger Rail Authority (VPRA), which was established in 2020 to act as a more specialized agency for passenger rail development and expansion.¹⁷¹

In 2021, the “Transforming Rail in Virginia” plan was finalized. The state will invest approximately \$3.9 billion from a combination of funding sources to acquire rail right-of-way, acquire existing tracks to separate freight and passenger rail, build new tracks and bridges, and increase

Arlington County Development, Arlington, VA



Source: Coalition for Smarter Growth.

Virginia’s commitment to funding and creation of a passenger rail office contribute to the success of its robust rail network.

¹⁶⁴ Amtrak 2023a.

¹⁶⁵ Mike McLoughlin, chief operating officer, Virginia Passenger Rail Authority, presentation at TACIR Commission meeting on January 27, 2023.

¹⁶⁶ Both the earlier and current funds are subsets of Virginia’s Transportation Trust Fund and draw revenues from a wide variety of state taxes. The current rail fund receives 7.5% of the total for the Transportation Trust Fund; Virginia Code Annotated, Section 33.2-1526.4.

¹⁶⁷ Mike McLoughlin, chief operating officer, Virginia Passenger Rail Authority, presentation at TACIR Commission meeting on January 27, 2023.

¹⁶⁸ Commission staff calculation based on information in Mike McLoughlin, chief operating officer, Virginia Passenger Rail Authority, presentation at TACIR Commission meeting on January 27, 2023.

¹⁶⁹ Virginia Department of Rail and Public Transportation 2022.

¹⁷⁰ Ibid.

¹⁷¹ Interview with DJ Stadler, executive director, Virginia Passenger Rail Authority, September 8, 2022.

Officials with Pennsylvania's Department of Transportation credit the passenger rail system in their state with providing benefits to both the economy and quality of life.

the frequency of existing Amtrak and VRE services.¹⁷² Within the coming years, Virginia anticipates more than doubling the number of roundtrips made by its state-supported Amtrak trains while also increasing train frequencies along the VRE's Fredericksburg line by 75%.¹⁷³ The VPRA is set to receive over \$1 billion in state revenues through Virginia's Commonwealth Transportation Fund.¹⁷⁴

Pennsylvania

Pennsylvania has a range of Amtrak routes, including the Northeast regional and Acela trains, seven long-distance routes, and four state-supported routes running through 24 stations.¹⁷⁵ There are also 13 regional or commuter train routes provided by the Southeastern Pennsylvania Transportation Authority (SEPTA), linking Philadelphia with nearby towns and cities, including those across the state border in New Jersey and Delaware.¹⁷⁶

In 2002, Pennsylvania embarked on the Keystone Corridor Improvement Project, a \$145.5 million program to upgrade a corridor between Philadelphia and Harrisburg so that trains could travel at up to 110 miles per hour with the funding being split between Amtrak and the Pennsylvania Department of Transportation. Of the state's roughly \$72.8 million share, 80% came from Federal Transit Administration (FTA) funding, making the state's actual contribution to the project about \$14.6 million.¹⁷⁷ That improvement to the track allowed the train to become competitive with automobile travel and led to an immediate jump in ridership of 18%, which continued to rise over the next several years, reaching 1.8 million per year just before the onset of the pandemic.¹⁷⁸ Officials with Pennsylvania's Department of Transportation credit the passenger rail system in the state with providing benefits to both the economy and quality of life. They say that not only has the Keystone Corridor become an attractive location for out-of-state businesses to relocate to, but they also report receiving notes from Pennsylvanians expressing gratitude for the service, as it helps them to access vital services, like healthcare, that they might not be able to reach otherwise.¹⁷⁹

¹⁷² Virginia Passenger Rail Authority "FAQs."

¹⁷³ Mike McLoughlin, chief operating officer, Virginia Passenger Rail Authority, presentation at TACIR Commission meeting on January 27, 2023.

¹⁷⁴ Ibid.

¹⁷⁵ Amtrak 2022b.

¹⁷⁶ SEPTA 2022.

¹⁷⁷ Interview with Steve Panko, rail planning manager, and Angela Watson, director, Bureau of Rail, Freight, Ports, and Waterways, Pennsylvania Department of Transportation, October 27, 2022; Pennsylvania Department of Transportation 2021.

¹⁷⁸ Pennsylvania Department of Transportation 2021.

¹⁷⁹ Interview with Steve Panko, rail planning manager, and Angela Watson, director, Bureau of Rail, Freight, Ports, and Waterways, Pennsylvania Department of Transportation, October 27, 2022.

Pennsylvania’s rail team within the state’s transportation department consists of only a few staff, although they have increased their emphasis on passenger rail—as opposed to just freight rail—over time.¹⁸⁰ They also tout the importance of collaborative working relationships with freight railroads and Amtrak to the state’s success in expanding passenger service.¹⁸¹ In general, they strive to balance the demands of freight and passenger rail services on shared tracks and have collaborated in the past to provide capital improvements to tracks, such as electrification or enhanced signaling systems, that benefit both freight and passenger trains.¹⁸²

Multi-State Efforts

Rail projects often span more than one state, and in the case of Virginia and North Carolina, several ongoing development projects may be best understood as joint efforts. One such plan is for the S-Line, an existing rail line owned by CSX that, in its complete form, stretches from Richmond, Virginia, to Tampa, Florida.¹⁸³ A key part of this line that is not currently in use reaches from Richmond to Raleigh, North Carolina, and offers a shorter and more direct alternative route to the main track now in service between those two cities. North Carolina and Virginia have together initiated a plan to redevelop this line for passenger use, aiming to convert it into a high-speed rail line that could reduce travel times by up to an hour and a half.¹⁸⁴ To that end, Virginia purchased 75 miles of right-of-way on the line from CSX in 2020,¹⁸⁵ and North Carolina used a \$47.5 million Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant from the Federal Railroad Administration to do the same on its side of the border.¹⁸⁶ The line is being developed, aided partly by a \$58 million grant from US Department of Transportation.¹⁸⁷

Louisiana

Not all states have had as much success with expanding passenger rail services in recent years, and one case study for the pitfalls that states may encounter is to be found in Louisiana. Louisiana had a modest investment in rail for years, with only one staff member in the state’s Department of Transportation responsible for rail issues.¹⁸⁸ Existing service was also hampered by a series of disasters like Hurricane Katrina, after which the

Multi-state collaboration efforts are often needed, as rail projects often span multiple states.

¹⁸⁰ Ibid.

¹⁸¹ Ibid.

¹⁸² Ibid.

¹⁸³ North Carolina Department of Transportation 2022.

¹⁸⁴ Southeast Corridor Commission “Raleigh to Richmond Project.”

¹⁸⁵ Virginia Passenger Rail Authority “Richmond to Raleigh Project.”

¹⁸⁶ Julie White, chair, Southeast Corridor Commission, and deputy secretary for multimodal transportation, North Carolina Department of Transportation, presentation at TACIR Commission meeting on January 27, 2023.

¹⁸⁷ Virginia Passenger Rail Authority 2022b.

¹⁸⁸ Interview with Dean Goodell, freight and passenger rail director, Office of Multimodal Commerce, Louisiana Department of Transportation and Development, October 10, 2022.

A series of disasters in Louisiana, such as Hurricane Katrina, as well as changes in administration, hampered existing service and support for passenger rail declined.

long-distance Amtrak Sunset Limited line—running from New Orleans to Los Angeles—was temporarily suspended in the state. But interest in expanding rail options began to grow, and the state assembled a plan for a small-scale service covering the roughly 80 miles between Baton Rouge and New Orleans, with the intention of running six to 10 round trips per day to provide adequate service and meet business needs. Initial cost estimates were \$380 million for capital improvements and \$19 million annually for operating subsidies. The service was conceived as being geared towards business travelers, but there was also an argument that it would provide an additional means of evacuation in the event of any future disasters like Hurricane Katrina.¹⁸⁹

With a change in governor in 2008, however, rail service, in general, was deprioritized. Consequently, plans for the Baton Rouge-New Orleans route languished. After several years, the plan was scaled down to offer only two round trips per day, with capital costs reduced to \$180 million and \$9 million for operations, but development of the route continued to stall.¹⁹⁰ In 2022, however, there were some steps forward, with the Louisiana Department of Transportation beginning an environmental review and developing plans to replace a bridge on the route, while Baton Rouge obtained a grant to begin planning train stations.¹⁹¹

Separately, Louisiana also suffered delays with plans for a line connecting Dallas, Texas, to Meridian, Mississippi, via Shreveport, which was partly intended to alleviate congestion on the I-20 corridor. The line was first proposed by Texas and was championed by the mayor of Shreveport with a feasibility study in 2014, but there was little progress, though various stakeholders remain invested in the plan.¹⁹²

Alternatives to personal vehicles and passenger rail exist to improve intercity mobility in Tennessee.

Alternatives for improving intercity mobility in Tennessee already exist, though they could be expanded in some cases. These alternatives include but are not necessarily limited to transportation system operations and management, travel demand management, and intercity bus service.

Transportation system operations and management strategies improve mobility even when capacity is constrained. Examples include traffic incident management through help trucks and dynamic message boards,

¹⁸⁹ Ibid.

¹⁹⁰ Ibid.

¹⁹¹ Southern Rail Commission “Project Overview: Baton Rouge to New Orleans.”

¹⁹² Interview with Dean Goodell, freight and passenger rail director, Office of Multimodal Commerce, Louisiana Department of Transportation and Development, October 10, 2022; and Southern Rail Commission “About | The SRC engages and inform public and private rail interests to support and influence Southeast rail initiatives.”

traffic signal coordination, ramp metering, and pricing tools.¹⁹³ Travel demand management strategies create capacity when alternatives to travel are viable. Examples include multimodal alternatives such as bike and pedestrian facilities, working with area employers to encourage flexible work schedules, compressed workweeks, telecommuting, and satellite work centers to reduce the need to travel.¹⁹⁴

Intercity bus service is another alternative to personal vehicle or passenger rail travel. Private intercity bus operators currently cover several routes connecting the state's largest cities. TDOT routinely evaluates the adequacy of intercity bus service in Tennessee, pursuant to Section 5311(f) funding requirements of the Federal Transit Administration, which provides financial and technical assistance to local public transit systems and intercity bus service even though this service operates longer routes than most transit operations. TDOT's most recent intercity bus needs assessment was completed in June 2021. According to the report, some form of public transportation is available in all 95 counties in Tennessee, and over 80% of Tennessee residents live within 25 miles of an intercity bus station. Public transit programs and private companies responded to TDOT's surveys regarding the potential demand for bus service. After surveying public transit providers and private bus operators and soliciting input from other stakeholders, TDOT determined that intercity bus service needs across Tennessee are being adequately met.¹⁹⁵

But recommendations within TDOT's assessment indicated opportunities to better coordinate with city governments to ensure access to airports and partner with other stakeholders to provide last-mile connections between intercity bus stops and destinations. Additionally, the assessment illustrates that intercity bus service is essential to connecting rural areas and urban centers. Some stakeholders who responded to TDOT's survey said that from their perspective, there are unmet needs that expanded intercity bus service could fill. Specifically, stakeholders are interested in establishing new and expanded bus services in east-west corridors across the state. For example, some stakeholders said that their communities, which they say are currently unserved, would benefit from establishing intercity bus service along the US-64 corridor connecting Memphis and Nashville.¹⁹⁶

Luxury bus operators have recently begun expanding service in Tennessee but don't directly serve the state's rural communities.¹⁹⁷ Colorado, Ohio, Oregon, Virginia, and Washington offer state-supported bus services to fill

Transportation system operations and management strategies improve mobility even when capacity is constrained.

According to TDOT's 2021 intercity bus needs assessment, some form of public transportation is available in all 95 counties in Tennessee, and over 80% of Tennessee residents live within 25 miles of an intercity bus station.

¹⁹³ Federal Highway Administration 2023a.

¹⁹⁴ Federal Highway Administration 2023b.

¹⁹⁵ Tennessee Department of Transportation 2021a.

¹⁹⁶ Ibid.

¹⁹⁷ Vonlane "Vonlane Private Jet on Wheels | Terminals | Nashville"; and Davis 2023.

While road and rail projects can take more than a decade to complete and often cost millions or billions, Virginia's experience shows that intercity bus service can be implemented in less time and for less money.

existing intercity bus system gaps.¹⁹⁸ These services are typically designed to connect rural areas to major cities and often show greater ridership than expected.¹⁹⁹

In Virginia, for example, the Department of Rail and Public Transportation (DRPT) conducted an expanded public consultation process as part of its federally required intercity bus service needs assessment. Virginia found unmet needs and used demographic data and public input to identify service gaps, according to DRPT officials. Ultimately, this study led Virginia to launch its first state-sponsored intercity bus service—the Virginia Breeze—along the I-81 corridor, which has been quite successful, with annual ridership projected to be 7,128 passengers and actual annual ridership of 21,708 passengers. Since then, DRPT completed two expansion studies, deploying new routes. The current Virginia Breeze service includes four routes.²⁰⁰

While road and rail projects can take more than a decade to complete and often cost millions or billions, Virginia's experience shows that intercity bus service can be implemented in less time and for less money. When Virginia's 2013 intercity bus service needs assessment revealed a gap in bus service, DRPT published a request for proposals and ultimately awarded a contract to Megabus to operate the state-sponsored intercity bus service, which was operational within two years of identifying the need.²⁰¹

Additionally, the service was implemented at a comparatively minimal cost to Virginia and is operated at no cost to the state. Information provided by DRPT officials shows that the upfront investment needed for the Virginia Breeze's first year of service was \$1.1 million. The service is fully funded by a combination of 5311(f) funding from the Federal Transit Administration and revenue from ticket sales.²⁰² Ticket sales typically cover approximately 83% of annual operating and maintenance costs. The most recent yearly shortfall of \$182,674 was covered entirely by FTA 5311(f) program funds, meaning the intercity mobility needs were met for significantly less than typical intercity passenger rail service, without issues related to geography

¹⁹⁸ McLeod 2022.

¹⁹⁹ Interview with Jennifer DeBruhl, director, and Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 30, 2023; and McLeod 2022.

²⁰⁰ Interview with Jennifer DeBruhl, director, and Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 30, 2023; and email from Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 8, 2023.

²⁰¹ Interview with Jennifer DeBruhl, director, and Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 30, 2023.

²⁰² Interview with Jennifer DeBruhl, director, and Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 30, 2023; and email from Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 8, 2023.

and long time-horizons for service launch and with minimal cost to Virginia.²⁰³

Virginia's Multimodal Approach to Improving Mobility

The Virginia Department of Transportation (VDOT) and the Virginia Department of Rail and Public Transportation (DRPT) are cabinet-level departments reporting to the governor. VDOT focuses on roadways, while DRPT administers railway and transit alternatives. Together these agencies engage in integrated multimodal transportation planning that includes the evaluation of mode alternatives such as bus service, passenger rail service, and road expansion. Officials from DRPT assert that a mixture of modes offers a more dynamic and cost-effective solution to mobility challenges than road expansion alone. This multimodal approach is evident in Virginia's simultaneous investment in bus service, passenger rail service, and road expansion along the I-81 corridor. This is one example where several modes were used to improve mobility.

Source: Interview with Jennifer DeBruhl, director, and Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 30, 2023.

Furthermore, the expansion of intercity bus service in Tennessee has the potential to work in tandem with the Transportation Modernization Act to improve the state's transportation system in an effort to ensure continued economic growth and the success of the state's residents and businesses. For example, incentivizing intercity buses to use choice lanes developed under the Transportation Modernization Act by exempting them from fees for using those lanes—as is already the case for city buses and other public transit vehicles²⁰⁴—could lower trip times, reduce congestion, and increase intercity mobility.

In consultation and coordination with TDOT, Governor Lee determined that prior initiatives, such as the 2017 IMPROVE Act funding program, have not provided adequate roadway congestion relief because of Tennessee's quickly expanding population and economy. Recognizing that traffic congestion is prominent in urban and rural areas, the administration worked with the General Assembly to pass the Transportation Modernization Act to provide innovative tools to address traffic congestion in urban areas while freeing up funding to invest in rural communities, all without raising the gas tax or incurring debt.²⁰⁵

²⁰³ Interview with Jennifer DeBruhl, director, and Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 30, 2023; and email from Grant Sparks, director of transit planning, Virginia Department of Rail and Public Transportation, May 8, 2023. For the 5311(f) program, see 49 US Code 5311(f).

²⁰⁴ Public Chapter 159, Acts of 2023.

²⁰⁵ Tennessee Department of Transportation "Build with Us"; and Public Chapter 159, Acts of 2023.

The Act allows TDOT to partner with the private sector to design, build, finance, operate, and maintain new price-managed lanes on existing interstates—called choice lanes—while the state retains road ownership. Tennessee drivers can choose whether to use the existing lanes or pay a user fee to enter the new additional lanes, which are priced and designed to guarantee a minimum travel speed.²⁰⁶ Overall, the Act is expected to provide benefits including additional road capacity, improved maintenance to rural roadways, improved travel speeds and trip times, and enhanced transit options proven to increase transit ridership.²⁰⁷

²⁰⁶ Tennessee Department of Transportation “Choice Lanes Frequently Asked Questions”; and Tennessee Department of Transportation “Transportation Modernization Act: Build with Us.”

²⁰⁷ Tennessee Department of Transportation “Transportation Modernization Act: Build with Us.”

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