# Georgia Department of Transportation

**ATLANTA-CHATTANOOGA**
**HIGH SPEED GROUND TRANSPORTATION PROJECT**

# TIER 1 DRAFT ENVIRONMENTAL IMPACT STATEMENT
# Appendices

**Prepared by:**


Federal Railroad Administration (FRA)
Georgia Department of Transportation (GDOT)
Tennessee Department of Transportation (TDOT)



**September 2016**

**PTSCO - 0023-00-002**

**PI: No. T001684**

# Contents

# Georgia Department of Transportation

**ATLANTA-CHATTANOOGA**
**HIGH SPEED GROUND TRANSPORTATION PROJECT**

# TIER 1 DRAFT ENVIRONMENTAL IMPACT STATEMENT
# Appendix A – Notice of Intent

**Prepared by:**

Federal Railroad Administration (FRA)
Georgia Department of Transportation (GDOT)
Tennessee Department of Transportation (TDOT)

**September 2016**

**PTSCO - 0023-00-002**
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# Environmental Impact Statement: High-Speed Ground Transportation from Atlanta, GA to Chattanooga, TN

Note: EPA no longer updates this information, but it may be useful as a reference or resource.

[Federal Register: August 22, 2007 (Volume 72, Number 162)]
[Notices]
[Page 47121-47122]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr22au07-181]

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DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
Federal Railroad Administration

Environmental Impact Statement: High-Speed Ground Transportation from Atlanta, GA to Chattanooga, TN

AGENCIES: Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), Department of Transportation (DOT).
ACTION: Notice of Intent to Prepare an Environmental Impact Statement.

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SUMMARY: FRA and FHWA are issuing this notice to advise the public that they will jointly prepare a Tier I Environmental Impact Statement (EIS) with the Georgia Department of Transportation (GDOT) and the Tennessee Department of Transportation (TDOT) to evaluate the environmental and related impacts of constructing and operating high-speed ground transportation (HSGT) service between Atlanta, Georgia and Chattanooga, Tennessee. FRA and FHWA are also issuing this notice to solicit public and agency input into the development of the scope of the EIS and to advise the public that outreach activities conducted by GDOT and its representatives will be considered in the preparation of the EIS.

DATES: Written comments on the scope of the EIS should be provided to GDOT by October 4, 2007. Comments may also be provided orally or in writing at the scoping meetings scheduled at the following locations:

Agency Scoping Meetings--Both From 10:30 a.m. to 12 p.m. Eastern Daylight Time

1. Tuesday, September 18, 2007, Georgia Department of Transportation, Office of Environment/Location, 3993 Aviation Circle, Atlanta, Georgia.

2. Thursday, September 20, 2007, Chattanooga Hamilton County Bicentennial Library, 1001 Broad Street, Chattanooga, Tennessee.

Public Scoping Meetings--All Three From 5 p.m. to 7:30 p.m. Eastern Daylight Time

1. Tuesday, September 18, 2007, McEachern High School, 2400 New Macland Road, Powder Springs, Georgia.

2. Wednesday, September 19, 2007, Rome Civic Center, 400 Civic Center Drive, Rome, Georgia.

3. Thursday, September 20, 2007, Chattanooga Hamilton County Bicentennial Library, 1001 Broad Street, Chattanooga, Tennessee.

ADDRESSES: Written comments on the scope should be sent to Mr. Glenn Bowman, P.E., State Environmental/Location Engineer, Georgia Department of Transportation, 3993 Aviation Circle, Atlanta, GA 30336, telephone (404) 699-4401.

FOR FURTHER INFORMATION CONTACT: Mr. David Valenstein, Environmental Program Manager, Federal Railroad Administration, 1120 Vermont Avenue, NW., Mail Stop 20, Washington, DC 20590, telephone (202) 493-6368; Mr. Wayne Fedora, P.E., Major Projects Engineer, Federal Highway Administration, Georgia Division, 61 Forsyth Street, Suite 17T100, Atlanta, GA 30303, telephone (404) 562-3651; Mr. George Coleman, Transportation Specialist, Tennessee Department of Transportation, 505 Deadrick Street, Suite 1800, Nashville, TN 37243, telephone (615) 741-1341; or Mr. Bowman of GDOT at the above address.

SUPPLEMENTARY INFORMATION: FRA and FHWA, in cooperation with the GDOT and the TDOT, will prepare a Tier I EIS for a HSGT system in the 110-mile corridor between Hartsfield International Airport and Atlanta, in Georgia, and Chattanooga, Tennessee. The EIS will evaluate environmental impacts of a HSGT system in the Atlanta to Chattanooga corridor.

This corridor has seen significant growth, both in population and employment, during the past few decades. It continues to be one of the fastest growing areas in the country. Future growth is projected to result in increased travel demand for both goods and people. The existing highway, transit, and aviation transportation infrastructure that would serve this demand are all projected to be at or above capacity. GDOT and TDOT believe that HSGT could provide a transportation alternative, thereby reducing congestion and travel time within the corridor, and could provide safe and reliable transportation for passengers between Hartsfield International Airport, Chattanooga

[[Page 47122]]

airport and metropolitan area, and points in between.

The Tier I EIS will be carried out in accordance with Council on Environmental Quality (CEQ) regulations (40 CFR part 1500 et seq.) implementing the National Environmental Policy Act (NEPA), FRA's Procedures for Considering Environmental Impacts (64 FR 28545; May 26, 1999), and FHWA regulations (23 CFR part 771 et seq.).

In addition to NEPA, the Tier I EIS will address other applicable statutes, regulations, and executive orders, including the 1990 Clean Air Act Amendments, Section 404 of the Clean Water Act, the National Historic Preservation Act of 1966, Section 4(f) of the Department of Transportation Act, the Endangered Species Act, and Executive Order 12898 on Environmental Justice.

The goals of the EIS are to: (1) Examine the regional transportation implications of the project concept; (2) evaluate the modal and technology alternatives available to provide HSGT between the two cities; (3) develop and evaluate location alternatives; and (4) determine the logical segments to be carried forward for detailed evaluation in subsequent (Tier II) environmental documents.

In a Tier I EIS, alternatives will be evaluated at a broad level of analysis. Proposed alternatives include a No-Build Alternative (used as a baseline for comparison of all alternatives), HSGT in a corridor that roughly parallels Interstate-75, one or more corridors utilizing a portion of an existing CSX transportation rail line, and a corridor that roughly parallels U.S. Route 411. Other possible corridor locations are expected to be identified during the alternatives development phase of the study.

GDOT will contact appropriate federal, state, and local agencies, as well as other organizations and individuals who have previously expressed interest, or are known to be interested, in this proposal to describe the proposed scope and solicit comments. Formal scoping meetings have been scheduled as indicated above.

Additional public information meetings and public hearings will be held during the development of the Tier I EIS. Public notice will be given of the times and locations of scoping meetings, public information meetings, and public hearings. The Draft Tier I EIS will be made available for review and comment prior to the public hearings.

To ensure that the full range of issues related to this proposed action are addressed and all significant issues are identified, comments and suggestions are invited from all interested parties. Comments or questions concerning this proposed action and the Tier I EIS should be directed to GDOT at the addresses provided above.

Issued in Washington, DC on August 16, 2007.

Rodney Barry, P.E.,
Division Administrator, Federal Highway Administration, Atlanta, GA.
Mark E. Yachmetz,
Associate Administrator for Railroad Development, Federal Railroad Administration, Washington, DC.

[FR Doc. 07-4109 Filed 8-21-07; 8:45 am]
BILLING CODE 4910-06-P



| Notices For | | | | | | | |
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| 2009 | 2008 | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 |
| 2001 | 2000 | 1999 | 1998 | 1997 | 1996 | 1995 | 1994 |

# Georgia Department of Transportation

**ATLANTA-CHATTANOOGA**
**HIGH SPEED GROUND TRANSPORTATION PROJECT**

# TIER 1 DRAFT ENVIRONMENTAL IMPACT STATEMENT
# Appendix B – Corridor Screening Process & Results


**Prepared by:**

Federal Railroad Administration (FRA)
Georgia Department of Transportation (GDOT)
Tennessee Department of Transportation (TDOT)



**September 2016**

**PTSCO - 0023-00-002**
**PI: No. T001684**

# Table of Contents

## List of Tables



## List of Figures

# 1.0 INTRODUCTION

The Georgia Department of Transportation (GDOT) is preparing a Tier 1 Environmental impact Statement (EIS) for the proposed Atlanta – Chattanooga High Speed Ground Transportation (HSGT) Project (Project). In accordance with the National Environmental Policy Act (NEPA), a Tier 1 EIS addresses the proposed development of new HSGT between Atlanta, Georgia and Chattanooga, Tennessee. High-speed ground transportation is a mode of transportation that travels at greater speeds than traditional rail technology. The Federal Railroad Administration (FRA) defines HSGT as having the ability to travel at a speed of greater than 110 mph. For the purposes of this Project, HSGT is defined as having the ability to travel at speeds at or above 180 mph. The technology is most often used to move passengers rather than freight. HSGT is a self-guided intercity passenger transportation mode that is time-competitive with air and auto for trips of 100 to 500 miles.

SAFETEA-LU requires the identification of Lead, Cooperating, and Participating Agencies in the development of an EIS. Under SAFETEA-LU, Lead Agencies must perform the functions that they have traditionally performed in preparing an EIS in accord with 23 CFR 771 and 40 CFR parts 1500-1508. FRA and FHWA are designated as the joint lead federal agencies for the HSGT Tier 1 EIS. According to the NOI, FRA and FHWA will jointly prepare a Tier 1 EIS in cooperation with GDOT and TDOT.

This Tier 1 EIS is intended to ensure that all reasonable corridor Build Alternatives for the proposed action are evaluated, including a No-Build Alternative; that all substantial transportation, social, economic, and environmental impacts are assessed; and that public involvement and comments are solicited to assist the decision-making process. This Tier 1 EIS evaluates potential HSGT corridors, which includes station locations, and identifies the attributes of the HSGT technologies (Steel-Wheeled and Magnetic Levitation {Maglev}). This Tier 1 EIS is prepared at a conceptual level of engineering and environmental detail appropriate for this type of study. It provides the FRA, FHWA, GDOT, and TDOT with sufficient information to determine a general corridor, general station locations, and defines the general operating and capital requirements of an Atlanta – Chattanooga HSGT system. A decision on technology will not be included in the Tier 1 Record of Decision.

For the purpose of this Tier 1 EIS, a broad geographic Project area has been defined that is contained, wholly or in part, in the following counties: Hamilton County, Tennessee; and Fulton, Cobb, Cherokee, Floyd, Bartow, Murray, Whitfield, Gordon, Chattooga, Catoosa, Clayton, Douglas, Paulding, Polk, and Walker Counties, Georgia (See Figure 1-1 Atlanta – Chattanooga Project Area).

## 1.1 Project Purpose and Need

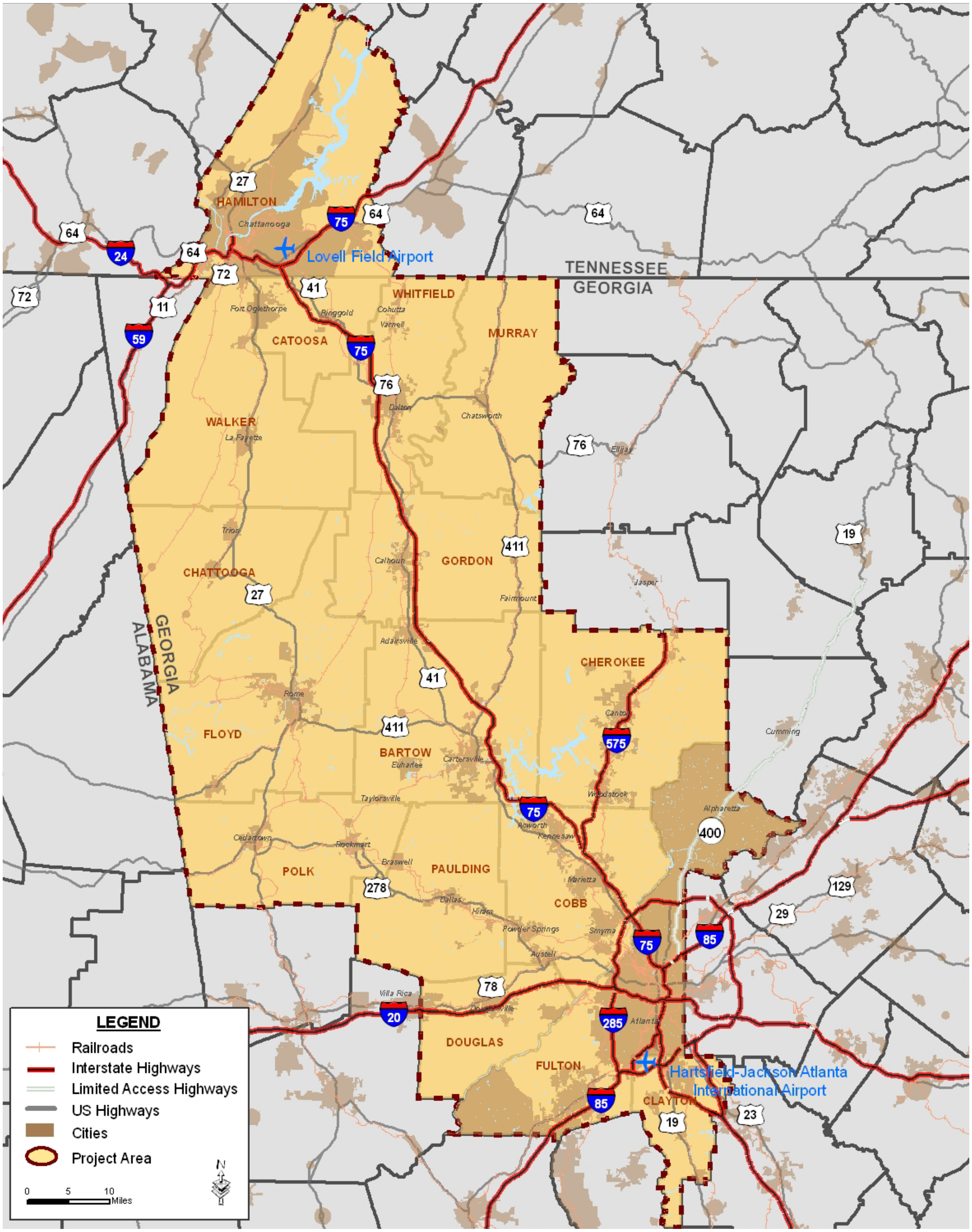
Transportation demand and travel growth, prompted by population growth and economic development, is outpacing existing and planned roadway capacity. Currently, the state and interstate highway systems within the Project area are operating at or near capacity, especially within and adjacent to the major metropolitan areas of Atlanta, Rome, Dalton, and Chattanooga. Although capacity improvements to the state and interstate highway systems within the Project area are underway or planned for the near future, they are interim measures that will not sufficiently address future capacity and mobility needs of the region.

The purpose of the Atlanta – Chattanooga HSGT Project is to enhance intercity passenger mobility and economic growth between the metropolitan areas and airports of Atlanta, Georgia and the Chattanooga, Tennessee by providing new, HSGT passenger service. The Project is also intended to provide faster and more reliable intercity travel in the corridor by providing an alternative to highway, intercity bus, and air travel in a manner that is safe, reliable, and cost-effective, while avoiding, minimizing, and mitigating impacts on the human and natural environment.

The needs for the HSGT Project are summarized as follows:

- Enhance regional transportation mobility and accessibility
    - Population and employment growth
    - Congested transportation corridor with increasing demand
    - Limited transportation options
- Spur economic growth and regional vitality
- Provide safe, efficient, reliable transportation
- Enhance airport access and intermodal connections
- Improve air quality nonattainment areas and protect the environment

**Figure 1-1: Atlanta – Chattanooga HSGT Project Area**



## 1.2 Purpose of Screening Results

The purpose of the process was to identify those corridors to advance in the Tier 1 DEIS for further evaluation as Build Alternatives. This was accomplished by assessing the relative merits of potential HSGT corridors. The purpose of this *Atlanta – Chattanooga High Speed Ground Transportation Tier 1 EIS Screening Results* is to document that screening process.

The Tier 1 EIS screening includes the following basic steps:

- Summary of the outcomes from the Scoping Process[1]
- Definition and description of corridors screened
- Development of corridor screening measures of effectiveness (MOEs[2])
- Application of screening MOEs to assess how well each corridor met the Project's transportation mobility needs outlined in the *Purpose and Need Statement*
- Documentation of results and findings within this *Atlanta – Chattanooga High Speed Ground Transportation Tier 1 EIS Screening Results*
- Involvement of FRA, FHWA, GDOT, TDOT, participating agencies, stakeholders and the public through the screening process

The result of screening was the recommendation of potential HSGT corridors to advance into additional, refined evaluations and environmental analysis of Build Alternatives in this Tier 1 EIS.

[1] Project Scoping took place in fall 2007. Scoping was used to identify reasonable and feasible concepts to be evaluated in the EIS, to determine environmental impacts to be assessed, and to gain insight on how stakeholders would like to be involved throughout the study.

[2] MOEs – Measures of effectiveness were used to provide a greater level of detail for comparison of the corridors.

# 2.0 SCOPING

This section summarizes the results from previous studies and the Tier 1 EIS Scoping Process held in the fall of 2007.

## 2.1 Background

The potential HSGT corridors were developed from two primary sources: previous studies and the Scoping Process conducted at the start of the Tier 1 EIS process. These previous efforts, described in this section, helped determine the needs, objectives, resources, and constraints within the Project area. Tools and techniques implemented included a variety of meetings with different focus groups, open houses, fact sheets, newsletters, and staffed information booths at events within the Project area. A Project website was created to enable the public to keep up to date on the progress of the Project between meetings and events, and the website allowed people to give input on any aspect of the Project and review documents as they were posted.

The Scoping Process included outreach to federal, state, and local agencies, stakeholders in the Project area, and the general public. Outreach to these groups included meetings to provide information on the Project and to receive input. The culmination of this outreach process was the holding of public meetings known as Scoping Meetings, where comments and suggestions were solicited regarding potential HSGT corridors and technologies to be evaluated as part of this Project.

### 2.1.1 Previous Studies Considered

The following previously completed studies provided relevant input on defining the Project area, initial concept, modes of technology, and potential HSGT corridors.

In the 1997 *Intercity Rail Plan*, GDOT studied possible connections between Atlanta and Chattanooga. Following that, the Atlanta Regional Commission (ARC) analyzed the Atlanta – Chattanooga area over a four-year period from 1999 to 2003, exploring mobility options and the opportunity for high-speed passenger service. In 2003, TDOT prepared a statewide rail plan, which recommended HSGT connectivity with neighboring states. The key initial documents included are as follows:

**Atlanta to Chattanooga Maglev Deployment Study and Project Description**

The FRA initiated the Magnetic Levitation Transportation Technology Deployment Program in an effort to demonstrate the feasibility of Maglev technology in the United States. In a national competition, the FRA selected ARC to be one of seven entities in the United States to administer a study demonstrating the feasibility of Maglev technology.

Completed in June 2000, the final report for the *Atlanta to Chattanooga Maglev Deployment Study and Project Description* indicated that the Atlanta – Chattanooga Project met all applicable FRA criteria established for Maglev technology. Although the Atlanta – Chattanooga Project was not selected for full funding for an EIS and Preliminary Engineering, it was made eligible for additional funding for further study of the segment from the Town Center area of Cobb County, Georgia north to Chattanooga, entitled *Atlanta to Chattanooga Maglev Deployment Study Phase II*.

**Atlanta to Chattanooga Maglev Deployment Study Phase II**

In mid 2001, the ARC received funding for additional environmental and planning work. The additional work studied potential HSGT alignments and train technologies in detail between Town Center and the Chattanooga Metropolitan Airport (CMA), using Maglev technology as the baseline. Other technologies studied were Accelerail 150 and New High Speed Rail. Both technologies were steel-wheeled trains capable of reaching speeds of at least 150 miles per hour and operating in dedicated right-of-way (ROW) or share tracks with other railroad uses.

The potential HSGT alignments were assessed based on their capital costs and financial performance relative to ridership projections and cost recovery based on the capabilities of the various technologies. A preferred alignment, which generally follows I-75, was recommended due to several factors including optimal grades necessary to achieve top Maglev design speeds while maximizing potential ridership and revenue. Because Hartsfield-Jackson Atlanta International Airport (HJAIA) would generate significant ridership, the study concluded that the route must offer service to HJAIA.

Maglev technology was recommended as the “preferred technology” due to its ability to attract a higher number of passengers (because of theoretically faster travel times) and a greater ability to self-fund, including capital leases and potential for joint development.

**Atlanta to Chattanooga Maglev Deployment Study Phase II Addendum**

The *Atlanta to Chattanooga Maglev Deployment Study Phase II Addendum* summarized the findings of the *Atlanta to Chattanooga Maglev Deployment Study Phase II* planning and environmental study and provided more detailed alignment maps and station plans as well as operating and cost comparisons between alignments. The final chapter of the addendum explores a timeline for Maglev implementation. The addendum document focused on the segment between HJAIA and Town Center.

## 2.2 Scoping HSGT Segments and Corridors

For the scoping process, a series of potential HSGT “segments” were developed that could be combined in various configurations to connect HJAIA and downtown Atlanta to CMA and downtown Chattanooga. These segments were generated from previous studies. Each segment[3] represents a potential connection that could be made between key destinations in Georgia and Tennessee. For instance, a segment connected Atlanta to Cartersville (two logical destinations), and the next segment connected Cartersville to Rome, followed by a Cartersville to Dalton/Chatsworth segment, and so on. Segments either connected to serve various activity centers along I-75 or extended to key destinations in rural areas.

These segments were reviewed, analyzed, and developed into full-length corridors during the Scoping Process using input from the public and participating agencies as per the final federal rules of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in the Code of Federal Regulations (23 CFR 450.210) and the CEQ Regulations for Implementing NEPA (40 CFR Parts 1500-1508). Each corridor identified in Section 2.2.1 includes segments and potential stations.

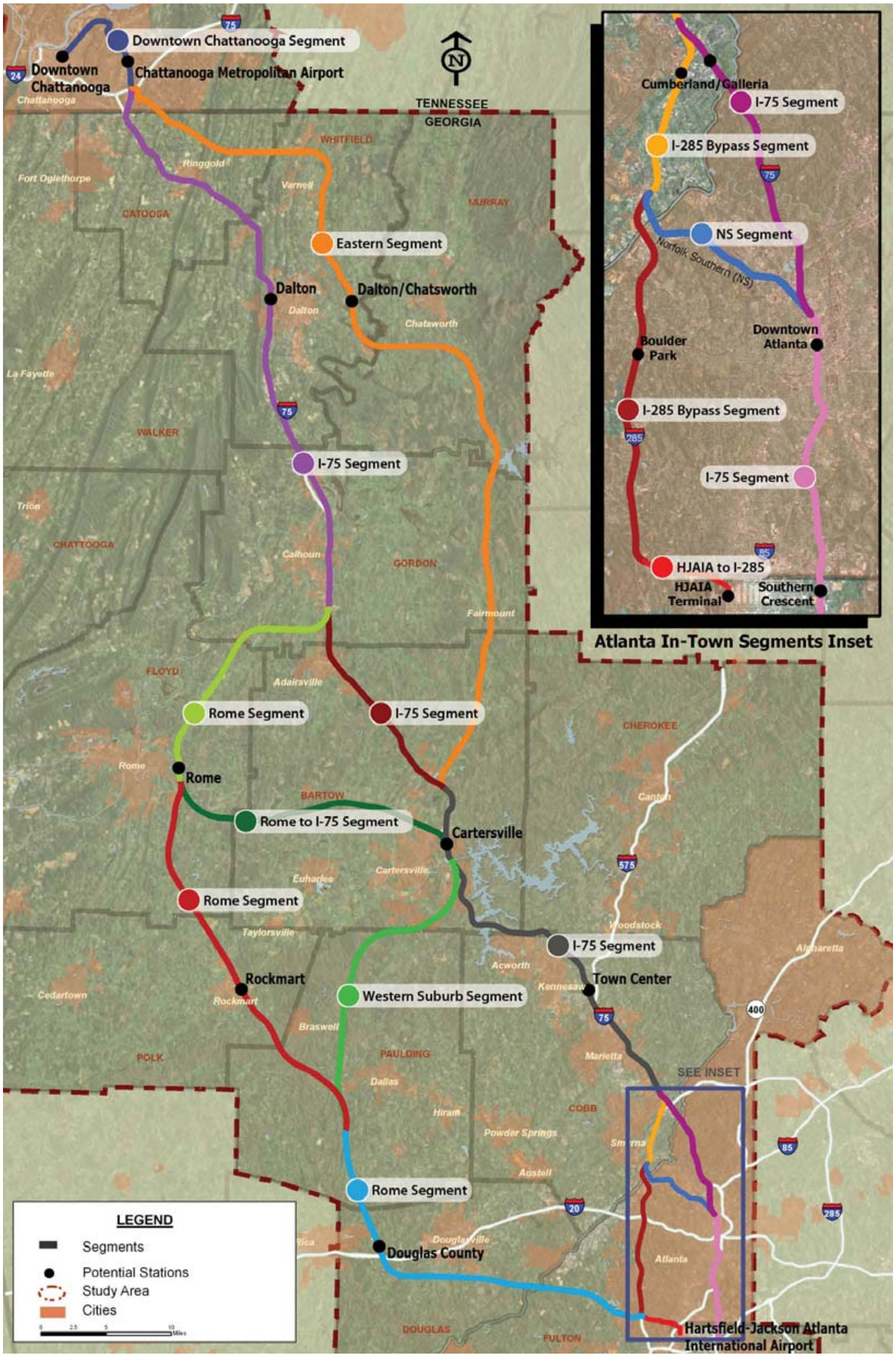
[3] Within this context, “segments” are not to be construed as minimum operating segments, initial operating segments, or any form of train service operating independently of a corridor extending the entire distance between HJAIA and downtown Chattanooga.

This section describes the individual segments and resulting corridors developed during the Scoping Process. The individual segments identified during the Scoping Process are listed below, generally from south to north, and illustrated on Figure 2-1.

- **I-75 Segment(s)**: The I-75 segments generally follow the I-75 ROW. The segments begin in the area to the east of HJAIA, known as the "Southern Crescent[4]," to the Tennessee border.
- **NS Segment**: A connection in the Atlanta urban area which follows I-75 to an existing Norfolk Southern (NS) railroad ROW and a portion of I-285 to just south of the I-75/I-285 junction rather than continuing on I-75.
- **HJAIA to I-285 Segment**: A connection in the Atlanta urban area that starts at the main terminal of HJAIA and continues along Camp Creek Parkway to I-285.
- **I-285 Bypass Segment(s)**: Segments using I-285 to bypass I-75 in the Atlanta area.
- **Rome Segment(s)**: Segments that provide options to connect to the city of Rome. Options allow for connecting back to I-75 or bypassing the dense I-75 corridor in the southwest section of the Project area by traveling through Rockmart and Douglas County, Georgia. It follows parts of Camp Creek Parkway and utility corridors in rural areas.
- **Western Suburb Segment**: A connection in the southern half of the Project area, which travels from a point just north of Douglasville to Cartersville, Georgia.
- **Rome to I-75 Segment**: Provides a connection to Rome, Georgia from I-75 near Cartersville.
- **Eastern Segment**: A connection in the northern half of the Project area that follows an existing freight rail corridor. It leaves the I-75 corridor north of Cartersville and generally follows the Chessie Seaboard Multiplier (CSX) railroad corridor to the CMA vicinity in Chattanooga, Tennessee.
- **Downtown Chattanooga Segment**: A connection from CMA to downtown Chattanooga following an existing freight railroad corridor.

[4] The "Southern Crescent" area is located on the east side of HJAIA, just east of I-75. The location is proposed as a regional transit terminal that could include various transit modes such as MARTA rail and bus, regional commuter rail, and other transit services.

**Figure 2-1: Segments**



### 2.2.1 Identification of Corridors

Combinations of the individual segments listed previously were combined to form a number of unique corridors extending from HJAIA to downtown Chattanooga. Segments were assembled based on logical connections between key destinations, paying special attention to minimizing the corridor length, utilizing available transportation ROW, and connecting population and employment centers within the Project area. Table 2-1 lists the full-length corridors generated from the scoping process. Figure 2-2 depicts the corridors.

**Table 2-1: Corridors**

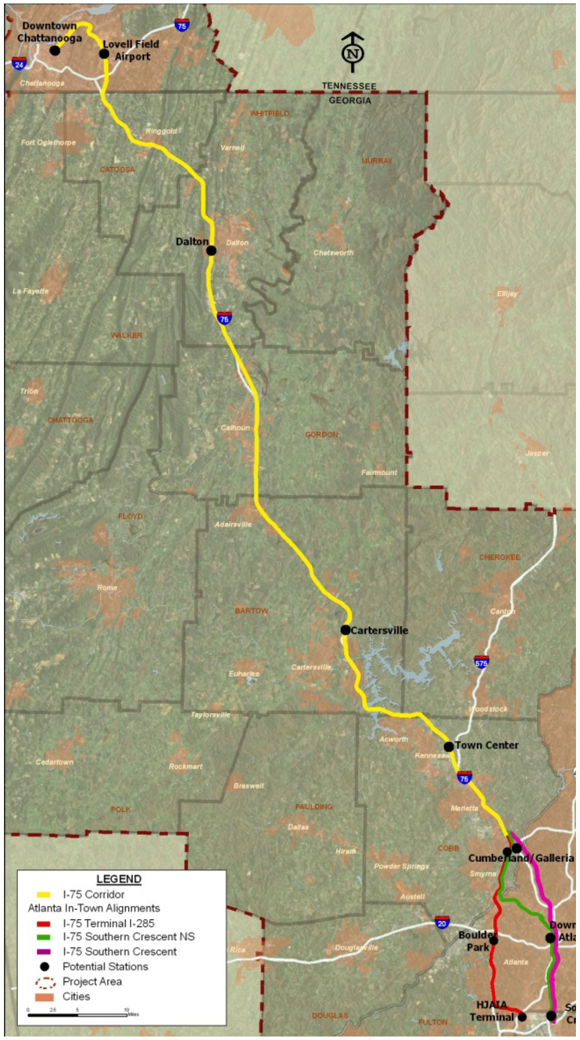
| Corridor | Total Length (miles) | Number of Stations | Stations | |
|---|---|---|---|---|
| **I-75 Terminal I-285** – HJAIA terminal to I-285 Bypass via Camp Creek Parkway, to I-75 north to CMA and downtown Chattanooga | 129 | 8 | • HJAIA Terminal<br>• Boulder Park<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Dalton<br>• CMA<br>• Downtown Chattanooga |
| **I-75 Southern Crescent NS** – Southern Crescent through downtown Atlanta along I-75, west on NS to I-285 Bypass, reconnect to I-75 north to CMA and downtown Chattanooga | 131 | 8 | • Southern Crescent<br>• Downtown Atlanta<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Dalton<br>• CMA<br>• Downtown Chattanooga |
| **I-75 Southern Crescent** – Southern Crescent through downtown Atlanta along I-75 north to CMA and downtown Chattanooga | 128 | 8 | • Southern Crescent<br>• Downtown Atlanta<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Dalton<br>• CMA<br>• Downtown Chattanooga |
| **East Terminal I-285** – HJAIA Terminal to I-285 Bypass via Camp Creek Parkway to I-75, traverse the Eastern Segment up to CMA and downtown Chattanooga | 144 | 8 | • HJAIA Terminal<br>• Boulder Park<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Dalton<br>• CMA<br>• Downtown Chattanooga |
| **East Southern Crescent NS** – Southern Crescent through downtown Atlanta along I-75, west on NS to the I-285 Bypass, reconnect to the I-75, traverse the Eastern Segment, north to CMA and downtown Chattanooga | 141 | 8 | • Southern Crescent<br>• Downtown Atlanta<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Dalton-Chatsworth<br>• CMA<br>• Downtown Chattanooga |
| **East Southern Crescent** – Southern Crescent through downtown Atlanta along I-75, traverse the Eastern Segment up to CMA and downtown Chattanooga | 139 | 8 | • Southern Crescent<br>• Downtown Atlanta<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Dalton-Chatsworth<br>• CMA<br>• Downtown Chattanooga |
| **I-75/West** – HJAIA Terminal to I-285 Bypass, traverse the Rome Segment to the Western Suburb Segment, connect to I-75 north to CMA and downtown Chattanooga | 141 | 6 | • HJAIA Terminal<br>• Douglas County<br>• Cartersville<br>• Dalton | • CMA<br>• Downtown Chattanooga |

**Table 2-1: Corridors (continued)**

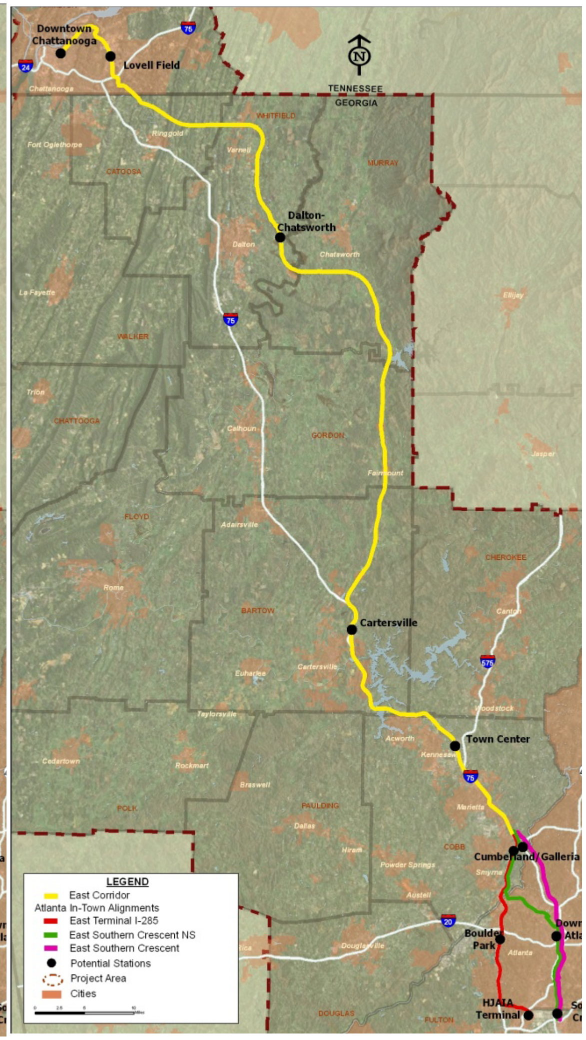
| Corridor | Total Length (miles) | Number of Stations | Stations | |
|---|---|---|---|---|
| **I-75/Rome Split** – HJAIA Terminal to I-285 Bypass, traverse the Rome Segment to the Western Suburb Segment, west on the Rome to I-75 Segment, traverse back east on Rome Segment to I-75 and north to CMA and downtown Chattanooga | 162 | 7 | • HJAIA Terminal<br>• Douglas County<br>• Cartersville<br>• Rome | • Dalton<br>• CMA<br>• Downtown Chattanooga |
| **I-75/Rome Terminal I-285** – HJAIA Terminal to I-285 Bypass via Camp Creek Parkway to I-75, west on the Rome to I-75 Segment, traverse back east on Rome Segment to I-75, north to CMA and downtown Chattanooga | 150 | 9 | • HJAIA Terminal<br>• Boulder Park<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Rome<br>• Dalton<br>• CMA<br>• Downtown Chattanooga |
| **I-75/Rome Southern Crescent NS** – Southern Crescent through downtown Atlanta along I-75, west on NS to the I-285 Bypass, reconnect to I-75, west on the Rome to I-75 Segment, traverse back east on Rome Segment to I-75, north to CMA and downtown Chattanooga | 152 | 9 | • Southern Crescent<br>• Downtown Atlanta<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Rome<br>• Dalton<br>• CMA<br>• Downtown Chattanooga |
| **I-75/Rome Southern Crescent** – Southern Crescent through downtown Atlanta along I-75, west on the Rome connector, traverse back east to reconnect to I-75 up to CMA and downtown Chattanooga | 150 | 9 | • Southern Crescent<br>• Downtown Atlanta<br>• Cumberland/Galleria<br>• Town Center<br>• Cartersville | • Rome<br>• Dalton<br>• CMA<br>• Downtown Chattanooga |
| **West** – HJAIA Terminal to I-285 Bypass, traverse the Rome segment to I-75 up to CMA and downtown Chattanooga | 148 | 7 | • HJAIA Terminal<br>• Douglas County<br>• Rockmart<br>• Rome | • Dalton<br>• CMA<br>• Downtown Chattanooga |
| **West Connector** – HJAIA Terminal to I-285 Bypass, traverse the Rome segment, east on the Rome connector, connect to I-75 up to CMA and downtown Chattanooga | 174 | 8 | • HJAIA Terminal<br>• Douglas County<br>• Rockmart<br>• Rome<br>• Cartersville | • Dalton<br>• CMA<br>• Downtown Chattanooga |
| **West/East** – HJAIA Terminal to I-285 Bypass, traverse the Rome segment to the Western Suburb segment, connect to the Eastern segment up to CMA and downtown Chattanooga | 151 | 6 | • HJAIA Terminal<br>• Douglas County<br>• Cartersville<br>• Dalton-Chatsworth | • CMA<br>• Downtown Chattanooga |
| **West/East Connector** – HJAIA Terminal to I-285 Bypass, traverse the Rome segment, east on the Rome connector, connect to the Eastern segment up to CMA and downtown Chattanooga | 181 | 8 | • HJAIA Terminal<br>• Douglas County<br>• Rockmart<br>• Rome<br>• Cartersville | • Dalton-Chatsworth<br>• CMA<br>• Downtown Chattanooga |

**Figure 2-2: Corridors**

**I-75 Terminal I-285**
**I-75 Southern Crescent NS**
**I-75 Southern Crescent**




**East Terminal I-285**
**East Southern Crescent NS**
**East Southern Crescent**




**I-75/West Corridor**

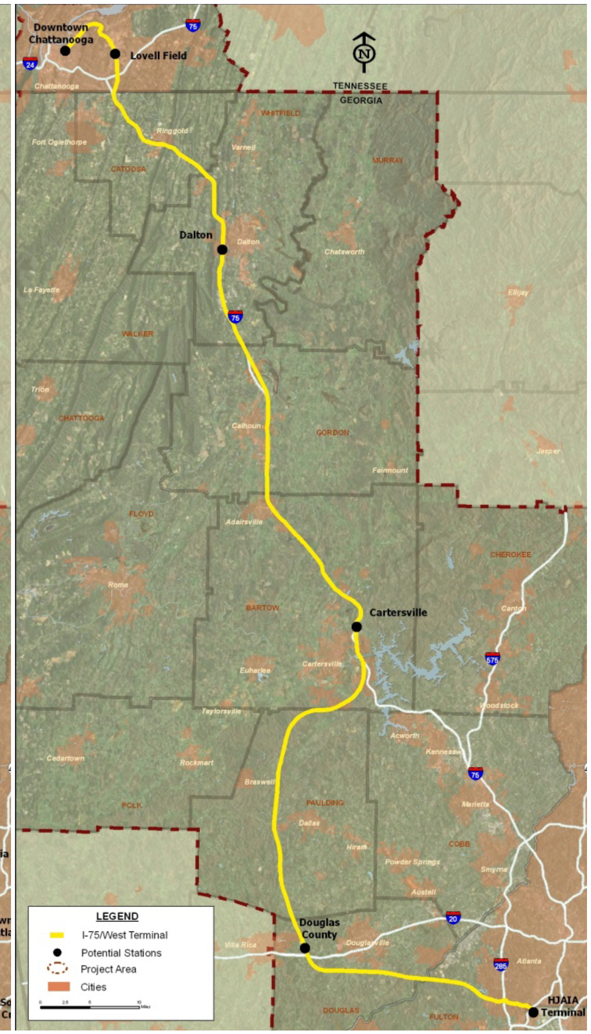
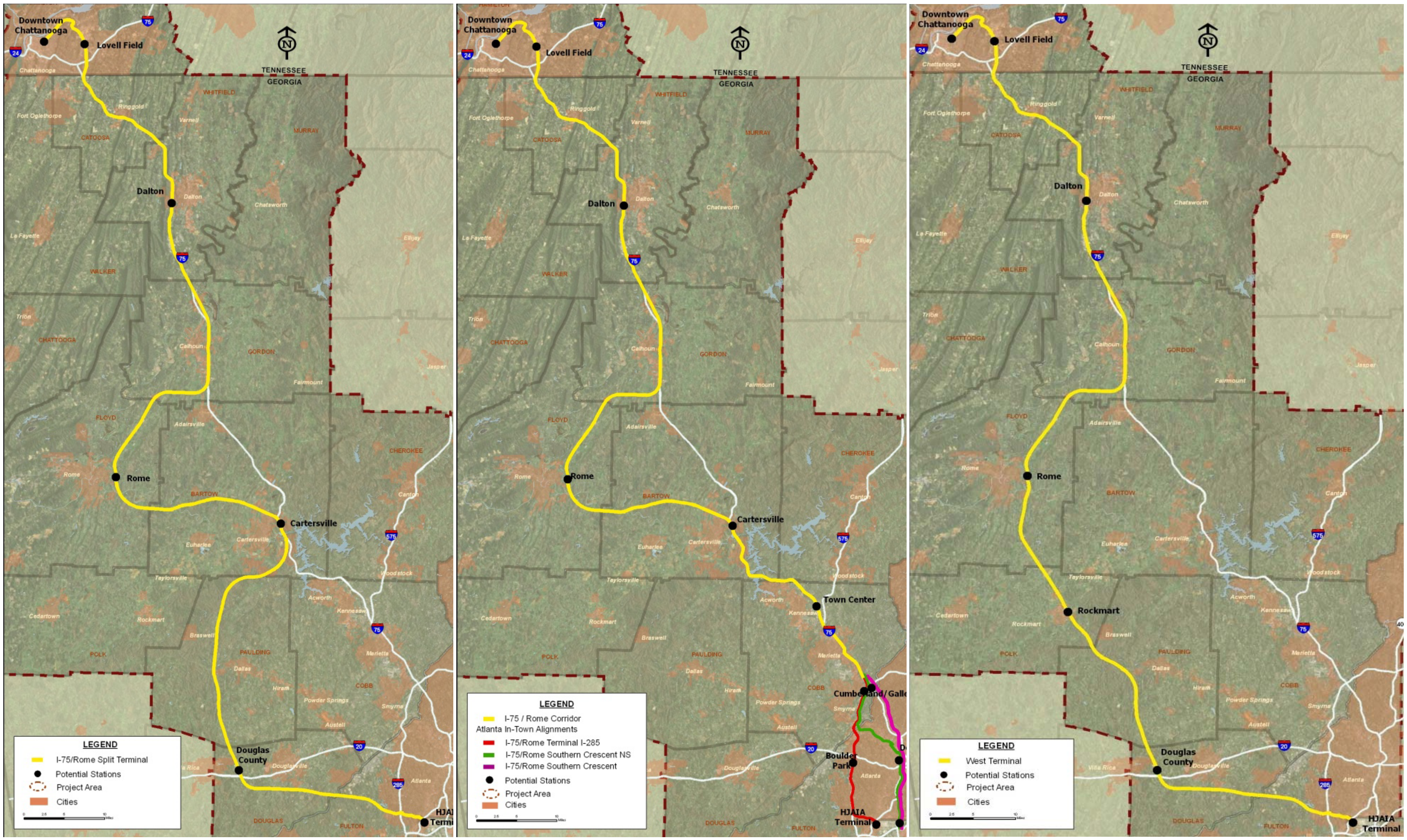


**Figure 2-2: Corridors (cont.)**

**I-75/Rome Split Corridor**

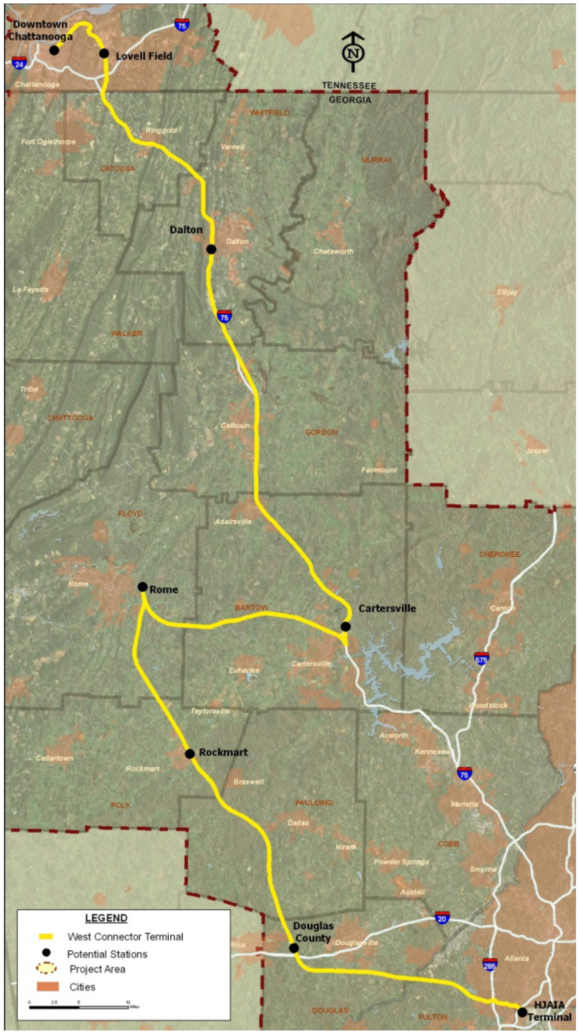
**I-75/Rome Terminal I-285**
**I-75/Rome Southern Crescent NS**
**I-75/Rome Southern Crescent**

**West Corridor**

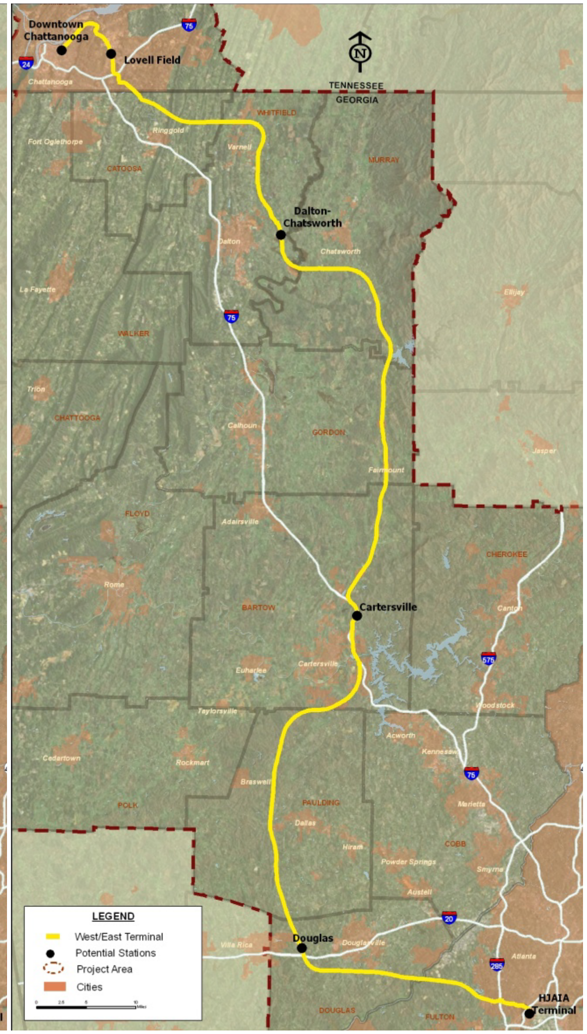


## Figure 2-2: Corridors (cont.)

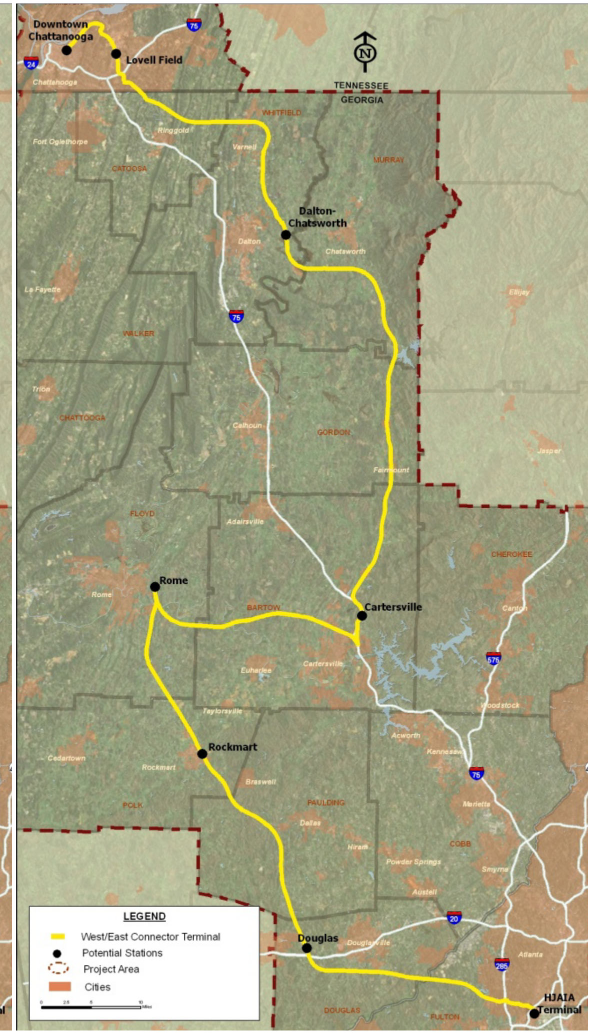
### West Connector Corridor




### West/East Corridor




### West/East Connector Corridor



### 2.2.2 Identification of Station Locations

Potential station locations were identified along each corridor and placed in the vicinity of major points of interest, clusters of population and employment centers, and locations easily accessible by other modes of transit (such as an airport, city centers, or major interstate highways). Station location choices were also based upon the results of scoping and extensive coordination with local city and county officials. Station locations were preliminary and conceptual in nature at this point in the process. Station configurations and layouts will be refined to a greater level of precision during future analysis. Identifying conceptual and potential station locations during this Tier 1 EIS enables initial analysis of various impacts. Table 2-1 lists the potential station locations and Figure 2-2 provides a depiction for each corridor.

# 3.0 SCREENING PROCESS

The screening process was the basis for evaluation of the corridors developed as a result of the Tier 1 EIS Scoping Process. It identified those corridors that should be further assessed in the Tier 1 EIS. The screening process was applied to the 15 corridors listed in Section 2.2.1 to identify the best performing corridors with respect to the transportation mobility element of the Project's *Purpose and Need Statement*. It is imperative that a corridor effectively serve the transportation mobility elements of the *Purpose and Need Statement.* If a corridor did not serve this baseline need, it did not advance to become a Build Alternative evaluated in this Tier1 DEIS.

Screening evaluated the corridors for consistency with the Project's *Purpose and Need Statement* specifically as it relates to transportation mobility. *Purpose and Need Statement* objectives that fall under the improving regional mobility goal include:

- Enhance Project area and intercity mobility
- Provide an alternative mode to auto travel and ease regional traffic congestion
- Provide a reduction in travel time within and between the major metropolitan areas of Atlanta and Chattanooga
- Provide intercity travel capacity to supplement over-used interstate highways
- Meet future intercity travel demand that will be unmet by existing transportation systems, and increase capacity for intercity mobility
- Maximize intermodal connections with local transit, major airports and highways
- Support population and employment growth through improved access to HSGT service

The participating agencies reviewed and provided input on the screening methodology and criteria. Meetings held in September and October 2010 indicated their input supported the use of transportation mobility as the priority for corridor screening, and consideration of connectivity to existing transit services.

## 3.1 Measures of Effectiveness

Transportation mobility was a minimum performance factor in determining whether a corridor was reasonable, by providing desirable HSGT travel time and adequate service access to population and employment centers. The three MOEs used to evaluate each corridor's transportation mobility included: (1) travel time, (2) population access, and (3) employment access. These MOEs were considered quantifiable and captured the overarching mobility needs of the Project for travel efficiency and accessibility to a significant portion of potential users.

Corridors having faster travel times for trips between HJAIA and downtown Chattanooga scored higher. Corridors with a greater amount of population residing within 10 miles of each of its stations scored higher. Finally, corridors with a greater amount of employment located within five miles of its stations scored higher. Each of the screening MOEs are described in further detail, and applied, in Section 3.2. Those corridors scoring at or above a defined threshold score advanced for further analysis.

The screening MOEs are identified in Table 3-1, which also links each MOE to specific *Purpose and Need Statement* objectives. A description of each MOE, the methodology used to assess the corridors, the data sources referenced, and the screening results are provided in the following subsections.

**Table 3-1: Screening Criteria and MOEs**

| Measure of Effectiveness | Unit of Measurement | Geographic Range | Relationship to Purpose and Need Statement |
|---|---|---|---|
| Travel time | Minutes | Time to travel full corridor length (end to end) | Enhance Project area and intercity mobility and accessibility<br>Provide a reduction in travel time within and between the major metropolitan areas of Atlanta and Chattanooga |
| Population access | Number of persons | 10-mile radius of proposed station locations | Support population and employment growth through improved access to HSGT service |
| Employment access | Number of jobs | 5-mile radius of proposed station locations | Support population and employment growth through improved access to HSGT service |

## 3.2 Scoring and Rating

The screening process utilized a simple, un-weighted five-point scoring system, with a score of "5.0" rating the best, and a score of "1.0" rating the poorest. Scoring was assigned based upon how a corridor performed relative to the Project need to enhance regional transportation mobility and accessibility. Each corridor was quantitatively measured using the three screening MOEs. A corridor that performed the best was given a score of "5.0" for the particular MOE, and all of the other corridors were scored relative to the best performing. Table 3-2 shows the scoring system.

**Table 3-2: Screening Criteria Scoring and Rating System**

| Score | Rating | Performance Relative to the Best Performing Corridor * for Each MOE |
|---|---|---|
| 4.1 – 5.0 | Best | Between 100 and 91% of best performing corridor (including the best performing corridor) |
| 3.1 – 4.0 | Very Good | Between 90 and 81% of best performing corridor |
| 2.1 – 3.0 | Good | Between 80 and 71% of best performing corridor |
| 1.1 – 2.0 | Fair | Between 70 and 61% of best performing corridor |
| 0.0 – 1.0 | Poor | 60% or less of best performing corridor |

* There can be more than one best performing corridor

Using this screening approach enabled comparison between corridors and the selection and advancement of the best performing corridors while eliminating those that underperformed.

Section 3.0 describes in further detail the screening process, the criteria used in the screening, and how the results of the screening were measured.

**Calculation of Scores**

Two methods were applied to arrive at the percentages used to measure the performance of a corridor relative to the highest score. The methods vary depending on whether the MOE was measuring a maximizing impact, in which the highest number was the best, or a minimizing impact in which the lowest score was the best.

- When quantitatively analyzing MOEs in which the highest number was the best performing option, the following method was used.

  ***d / D*** *= Performance percentage based on a percent increase*

  *D – being the largest number (the best performing corridor)*
  *d – being the lower number (corridor that is below the best performing)*

  Based on the formula above, the lower number was divided by the largest number (best performing) to get the performance percentage for the lower performing corridor.

  The following is an example for finding the performance percentage when calculating the maximum positive effect of population access.

  *Corridor A – accesses a population of 6,000 (best performing)*
  *Corridor B – accesses a population of 5,000*

  In this case, Corridor A was the "best performing" because it positively affected the greatest population. So, Corridor B, and any other corridors must be compared to Corridor A.

  *5,000 / 6,000 = .83 or 83%*

  Following the above calculations, Corridor B only accessed 83 percent of the population compared with Corridor A. Based on Table 3-2, a rating of 83 percent meant that Corridor B scored a 3.3.

- When analyzing MOEs in which the lowest number was the best performing corridor, as in the fastest travel time, the following method was used.

  ***1 – (D – d / d)*** *= Performance percentage based on a percent decrease*

  *D – being the larger number (corridor that is over the best performing)*
  *d – being the lowest number (the best performing* corridor*)*

  Based on the formula above, the difference between the lowest number (best performing) and the higher number was calculated first. Then the percentage of that difference based on the best performing number was determined, which was also known as the percent decrease. Finally, that percent decrease was subtracted from 100 percent (1) to give the performance percentage.

  The following is an example of finding the performance percentage when calculating the negative effect of increased travel time.

Corridor *A – has a travel time of 77 minutes (best performing)*
Corridor *B – has a travel time of 83 minutes*

In this case, Corridor A is the "best performing" because it has the lowest travel time. So, Corridor B, and any additional corridor, must be compared to Corridor A.

$$1 - [(83 - 77) / 77] = .92 \text{ or } 92\%$$

Following the above calculations, Corridor B has a travel time of 6 minutes greater than Corridor A, therefore the percent decrease is eight percent. That percent decrease is subtracted from the best performing 100 percent to get a measurement of 92 percent for Corridor B when compared to Corridor A. Based on Table 3-2 in the example above, Corridor B would score a 4.2.

### 3.2.1 Travel Time

For travel time, the desire was to minimize the amount of time required to get from Point A to Point B. The MOE measured the time it takes to travel the length of the corridor from end to end. Travel times were estimated for each of the corridors based upon alignment geometry, the number of station stops, speed assumptions, and general train performance characteristics. A maximum speed of 180 mph was assumed for each corridor to ensure an equitable comparison of corridors. Differentiation between Steel-Wheeled and Maglev technologies' travel times were not made within this MOE since technology selection was not the intent of the screening process. Assessing the time required to travel between HJAIA (southern Project terminus) and downtown Chattanooga (northern Project terminus) provided a means to determine the directness of each corridor. Corridors that used routes that were more direct and able to accommodate alignments with faster speeds scored the highest.

Travel times were calculated from the airport station in Atlanta (either HJAIA or Southern Crescent) to downtown Chattanooga (see Appendix I). Travel time included all local stops, plus a dwell time at terminal stations of 1.5 minutes and 3 minutes at each intermediate station. The travel times indicated the time it takes to travel end to end for the corridor. The shorter the travel time for a corridor resulted in that corridor scoring higher than other corridors with longer travel times. As shown in Table 3-3, the end-to-end travel times varied from a minimum of 77 minutes to a maximum of 130 minutes.

**Table 3-3: Travel Time by Corridor**

| Corridor (# of stations) | Time to Travel Corridor End to End (minutes) | Performance Relative to Best Performing (percent) | | | | | Score |
|---|---|---|---|---|---|---|---|
| | | Poor (0-60%) | Fair (61-70%) | Good (71-80%) | Very Good (81-90%) | Best (91-100%) | |
| I-75 Terminal I-285 (8) | 83 | | | | | 92% | 4.2 |
| I-75 Southern Crescent NS (8) | 86 | | | | 88% | | 3.9 |
| I-75 Southern Crescent (8) | 84 | | | | | 91% | 4.0 |
| East Terminal I-285 (8) | 92 | | | | 81% | | 3.1 |
| East Southern Crescent NS (8) | 95 | | | 77% | | | 2.7 |
| East Southern Crescent (8) | 93 | | | 79% | | | 2.9 |
| I-75/West (6) | 77 | | | | | 100% | 5.0 |
| I-75/Rome Split (7) | 90 | | | | 83% | | 3.3 |
| I-75/Rome Terminal I-285 (9) | 101 | | 69% | | | | 2.0 |
| I-75/Rome Southern Crescent NS (9) | 104 | | 65% | | | | 1.6 |
| I-75/Rome Southern Crescent (9) | 102 | | 68% | | | | 2.0 |
| West (7) | 81 | | | | | 95% | 4.4 |
| West Connector (8) | 126 | 36% | | | | | 1.0 |
| West/East (6) | 81 | | | | | 95% | 4.4 |
| West/East Connector (8) | 130 | 31% | | | | | 1.0 |

### 3.2.2 Population Access

The population captured within a 10-mile radius of a proposed station location measured population access. A 10-mile radius was used at this level of screening as a conservative estimate of the approximate distance users are willing to travel to access HSGT service.[5] Corridors that captured greater population concentrations received higher scores. The population served by all stations along a corridor provided the corridor population value.

[5] The purpose for measuring population and employment access was to provide a high-level estimation of each corridor's ability to provide access to population and employment concentrations. While proximity to population and employment centers was related to ridership, forecasting of ridership was measured separately.

A 10-mile radius was identified as a conservative limit that a repeat user will be willing to travel to access the HSGT service from a home based origin trip. Many of the proposed station locations are in communities with moderate congestion. Therefore the travel time associated with a 10-mile trip was estimated to be no more than 20 minutes. The capture area methodology assumes any trips requiring longer than 20 minutes to access a station would be unattractive for a repeat user.

Population data was collected by Traffic Analysis Zone (TAZ) for the relevant counties in the Project area. TAZ data is typically available in those areas that are part of Regional Planning Councils (RPCs) and have Metropolitan Planning Organizations (MPOs), or areas that have developed travel demand models. The most recent TAZ data available was used for this analysis. The MPOs are inclusive of the following regions: Atlanta, Floyd, Whitfield, Dalton, and Chattanooga. Small portions of the Project area fell outside the purview of an MPO or RPC; in these areas Census Tract level U.S. Census data was utilized. These areas included portions of Murray, Walker, and Polk Counties. As shown in Table 3-4, the number of people within 10 miles of potential station locations ranged from a minimum of 1.26 million people to a maximum of 2.42 million people. Appendix II depicts each corridor's station areas and provides population data, as well as source data.

**Table 3-4: Population Access by Corridor**

| Corridor | Population Within 10-miles of All Stations (millions) | Performance Relative to Best Performing (percent) | | | | | Score |
|---|---|---|---|---|---|---|---|
| | | Poor (0-60%) | Fair (61-70%) | Good (71-80%) | Very Good (81-90%) | Best (91-100%) | |
| I-75 Terminal I-285 | 2.13 | | | | 88% | | 3.9 |
| I-75 Southern Crescent NS | 2.34 | | | | | 96% | 4.6 |
| I-75 Southern Crescent | 2.34 | | | | | 96% | 4.6 |
| East Terminal I-285 | 2.14 | | | | 88% | | 3.9 |
| East Southern Crescent NS | 2.34 | | | | | 97% | 4.6 |
| East Southern Crescent | 2.34 | | | | | 97% | 4.6 |
| I-75/West | 1.26 | 52% | | | | | 1.0 |
| I-75/Rome Split | 1.36 | 56% | | | | | 1.0 |
| I-75/Rome Terminal I-285 | 2.22 | | | | | 92% | 4.2 |
| I-75/Rome Southern Crescent NS | 2.42 | | | | | 100% | 5.0 |
| I-75/Rome Southern Crescent | 2.43 | | | | | 100% | 5.0 |
| West | 1.29 | 53% | | | | | 1.0 |
| West Connector | 1.38 | 57% | | | | | 1.0 |
| West/East | 1.27 | 52% | | | | | 1.0 |
| West/East Connector | 1.39 | 57% | | | | | 1.0 |

### 3.2.3 Employment Access

Whereas population access captured the ability to provide transportation for home based trips, employment access addressed the ability to provide transportation to employment centers. The employment catchment MOE used a 5-mile radius around proposed station locations to evaluate the potential to serve job centers in the Project area. The 5-mile radius being applied to employment access was less than the 10-mile radius applied to population access due to passengers not having an automobile available at the employment destination trip end and, frequently, minimal access to local transit services.[6] Corridors that captured greater employment concentrations received higher scores. The employment served for all stations within a corridor determined the corridor employment value.

Similar to population data, employment data was collected by TAZ for the relevant counties in the Project area. TAZ data is typically available in those areas that are part of RPCs and have MPO, or areas that have developed travel demand models. The most recent TAZ data available was used for this analysis. The MPOs are inclusive of the following regions: Atlanta, Floyd, Whitfield, Dalton, and Chattanooga. Small portions of the Project area fall outside the purview of an MPO or RPC; in these areas Census tract level U.S. Census data was utilized. These areas included portions of Murray, Walker, and Polk Counties. Similar to population access, the higher the number for population access means the more people having access to the corridor and the better the score. As shown in Table 3-5, the number of jobs within five miles of potential station locations ranged from a minimum of 403,000 to a maximum of 960,000. Appendix III depicts each corridor's station areas and provides employment data, as well as source data.

[6] The purpose for measuring population and employment access was to provide a high-level estimation of each corridor's ability to provide access to population and employment concentrations. While proximity to population and employment centers was related to ridership, forecasting of ridership was measured separately.

A 5-mile radius was applied to employment access due to the lack of access to personal vehicles at the destination trip end. At the destination stations, the mobility options will include, pedestrian facilities, transit, and for-hire vehicles. The methodology assumes that 5 miles is the maximum distance a user will be will to pay for car service, or use transit.

**Table 3-5: Employment Access by Corridor**

| Corridor | Employment Within 5-miles of All Stations (thousands) | Performance Relative to Best Performing (percent) | | | | | Score |
|---|---|---|---|---|---|---|---|
| | | Poor (0-60%) | Fair (61-70%) | Good (71-80%) | Very Good (81-90%) | Best (91-100%) | |
| I-75 Terminal I-285 | 714 | | | 73% | | | 2.3 |
| I-75 Southern Crescent NS | 960 | | | | | 98% | 4.8 |
| I-75 Southern Crescent | 960 | | | | | 98% | 4.8 |
| East Terminal I-285 | 702 | | | 71% | | | 2.1 |
| East Southern Crescent NS | 948 | | | | | 96% | 4.6 |
| East Southern Crescent | 948 | | | | | 96% | 4.6 |
| I-75/West | 410 | 42% | | | | | 1.0 |
| I-75/Rome Split | 435 | 44% | | | | | 1.0 |
| I-75/Rome Terminal I-285 | 738 | | | 75% | | | 2.5 |
| I-75/Rome Southern Crescent NS | 983 | | | | | 100% | 5.0 |
| I-75/Rome Southern Crescent | 983 | | | | | 100% | 5.0 |
| West | 419 | 43% | | | | | 1.0 |
| West Connector | 438 | 45% | | | | | 1.0 |
| West/East | 403 | 41% | | | | | 1.0 |
| West/East Connector | 422 | 43% | | | | | 1.0 |

# 4.0 SCREENING RESULTS

## 4.1 Results Based upon MOE Analysis

The results of screening indicated performance distinctions among the corridors. Table 4-1 lists the scores for each corridor. A score of "3.1" and above was considered a "very good" rating, and any corridor that scored below a "3.0," shown in a shaded row, was considered to underperform. With an average MOE score of over 3.5 out of a possible five, seven corridors performed the best of the 15 corridors in relation to the transportation mobility needs of the Project, including:

- I-75 Terminal I-285;
- I-75 Southern Crescent NS;
- I-75 Southern Crescent;
- East Southern Crescent NS;
- East Southern Crescent;
- I-75/Rome Southern Crescent NS; and
- I-75/Rome Southern Crescent NS.

The remaining corridors significantly underperformed, each having an average MOE score of 3.0 or lower. The low scores put the remaining eight corridors below a "very good" rating of "3.1"; therefore, they do not advance.

## 4.2 Corridors Not Advanced

Several corridors did not advance due to their poor performance relative to the mobility MOEs (travel time, and population and employment access), not meeting the Project's *Purpose and Need,* and/or based on stakeholder feedback subsequent to the scoping and screening processes. The quantitative screening process indicated performance distinctions among the corridors with regard to the mobility MOEs. The I-75/West, I-75/Rome Split, West, West Connector, West/East, and West/East Connector Corridors demonstrated the lowest performance with regard to the mobility MOEs and were not recommended for advancement for further Tier 1 EIS analysis. These corridors were deemed as not reasonable per CEQ requirements and were eliminated from further consideration. The more prudent and reasonable corridors advanced from screening provided greater mobility improvements.

### 4.2.1 Corridor Variations within Atlanta Not Advanced

Of the seven remaining corridors that performed best with regard to the mobility MOE's, there were variations amongst them within Atlanta. Once inside Atlanta, the corridors followed either I-285, NS ROW, or I-75 to a terminus at HJAIA.

**Table 4-1: Screening Results – Summary of Corridor Performance**

| Corridor | Mobility MOE Scores | | | Mobility MOEs Average Score |
|---|---|---|---|---|
| | Travel Time | Population | Employment | |
| I-75 Terminal I-285 | 4.2 | 3.9 | 2.3 | 3.5 |
| I-75 Southern Crescent NS | 3.9 | 4.6 | 4.8 | 4.4 |
| I-75 Southern Crescent | 4.0 | 4.6 | 4.8 | 4.5 |
| East Terminal I-285 | 3.1 | 3.9 | 2.1 | 3.0 |
| East Southern Crescent NS | 2.7 | 4.6 | 4.6 | 4.0 |
| East Southern Crescent | 2.9 | 4.6 | 4.6 | 4.0 |
| I-75/West | 5.0 | 1.0 | 1.0 | 2.3 |
| I-75/Rome Split | 3.3 | 1.0 | 1.0 | 1.8 |
| I-75/Rome Terminal I-285 | 2.0 | 4.2 | 2.5 | 2.9 |
| I-75/Rome Southern Crescent NS | 1.6 | 5.0 | 5.0 | 3.9 |
| I-75/Rome Southern Crescent | 2.0 | 5.0 | 5.0 | 4.0 |
| West | 4.4 | 1.0 | 1.0 | 2.1 |
| West Connector | 1.0 | 1.0 | 1.0 | 1.0 |
| West/East | 4.4 | 1.0 | 1.0 | 2.1 |
| West/East Connector | 1.0 | 1.0 | 1.0 | 1.0 |

The I-75 Terminal I-285 corridor was eliminated because it did not satisfy two elements of the Project Purpose and Need: (1) maximize intermodal connections with local transit, major airports and highways, and (2) provide rapid, convenient, and reliable transportation between major population and employment centers, as well as to HJAIA. A corridor following I-285 would not provide access to the major activity center of downtown Atlanta, would not provide an optimal connection to the existing Metropolitan Atlanta Rapid Transit Authority (MARTA) heavy rail transit system at the Five Points station, nor would it connect to the planned multi-modal passenger terminal (MMPT) in downtown Atlanta including the planned commuter rail and buses services serving the MMPT.

The three corridors traveling along the NS railroad's ROW near the Inman Yard were also eliminated due to written stakeholder/owner/operator opposition to using this corridor. Appendix IV provides documentation regarding NS's opposition to HSGT using their infrastructure or being constructed within or near their properties. As a result, devising a corridor parallel to but outside of NS property would require excessive and unreasonable property acquisitions.

Based on a lack of satisfying the Project's *Purpose and Need* and primary stakeholder opposition, the corridor using I-285 and the three corridors following NS have unreasonable shortcomings associated with the path they follow within Atlanta. For these reasons, the following corridors were not advanced to further Tier 1 EIS analysis.

I-285 Corridors

- I-75 Terminal I-285

NS Corridors

- I-75 Southern Crescent NS
- East Southern Crescent NS
- I-75/Rome Southern Crescent NS

## 4.3 Corridors Advanced

Each of the 15 corridors presented in Table 2-1 were evaluated relative to the need for transportation mobility, stakeholder input, and the Project's *Purpose and Need*. As a result, three corridors were selected as the best performing corridors and are presented below. The three corridors that advanced from the screening process for further evaluation in the Tier 1 EIS included the:

- I-75 Southern Crescent Corridor;
- East Southern Crescent Corridor; and
- I-75/Rome Southern Crescent Corridor.

These three corridors are deemed to be reasonable per CEQ requirements. These three corridors are presented in graphical detail in Appendix C of the Tier 1 DEIS.

## 4.4 Tier 1 EIS Next Steps

The recommended corridors emerging from this corridor screening process will be carried forward and further analyzed in the Tier 1 Draft EIS (DEIS).

The No-Build Alternative will be developed and analyzed during the Tier 1 DEIS, and each of the "Build" Alternatives will be compared to the No-Build Alternative. The No-Build Alternative includes all of the planned transportation improvements for the Project area that are listed in the regional and GDOT transportation plans, minus the Atlanta – Chattanooga HSGT Project.

# Georgia Department of Transportation

**ATLANTA-CHATTANOOGA**

**HIGH SPEED GROUND TRANSPORTATION PROJECT**

# TIER 1 DRAFT ENVIRONMENTAL IMPACT STATEMENT

# Appendix C – Ridership Forecasting Report


**Prepared by:**

Federal Railroad Administration (FRA)
Georgia Department of Transportation (GDOT)
Tennessee Department of Transportation (TDOT)



**September 2016**

**PTSCO - 0023-00-002**

**PI: No. T001684**

## Table of Contents



## List of Figures



## List of Tables

# I. OVERVIEW

This report discusses the methodology used to develop the travel demand forecasting model system for the Atlanta to Chattanooga High Speed Ground Transportation (HSGT) Study Tier 1 Environmental Impact Statement (EIS) and the results of the forecasting analysis. This modeling effort has produced ridership demand data for the three Tier 1 Draft EIS Corridor Build Alternatives (henceforth referred to as corridors), using updated data and assumptions, including a new 2040 forecast year, consistent with most of the MPO models[1] in the project study area and incorporating updated socioeconomic data from the 2010 US Census, a key data component of the Metropolitan Planning Organization (MPO) subarea models used to build the HSGT model. The corridors subject to this analysis include the I-75, I-75/Rome, and East corridors, as shown in **Figure 1** below.

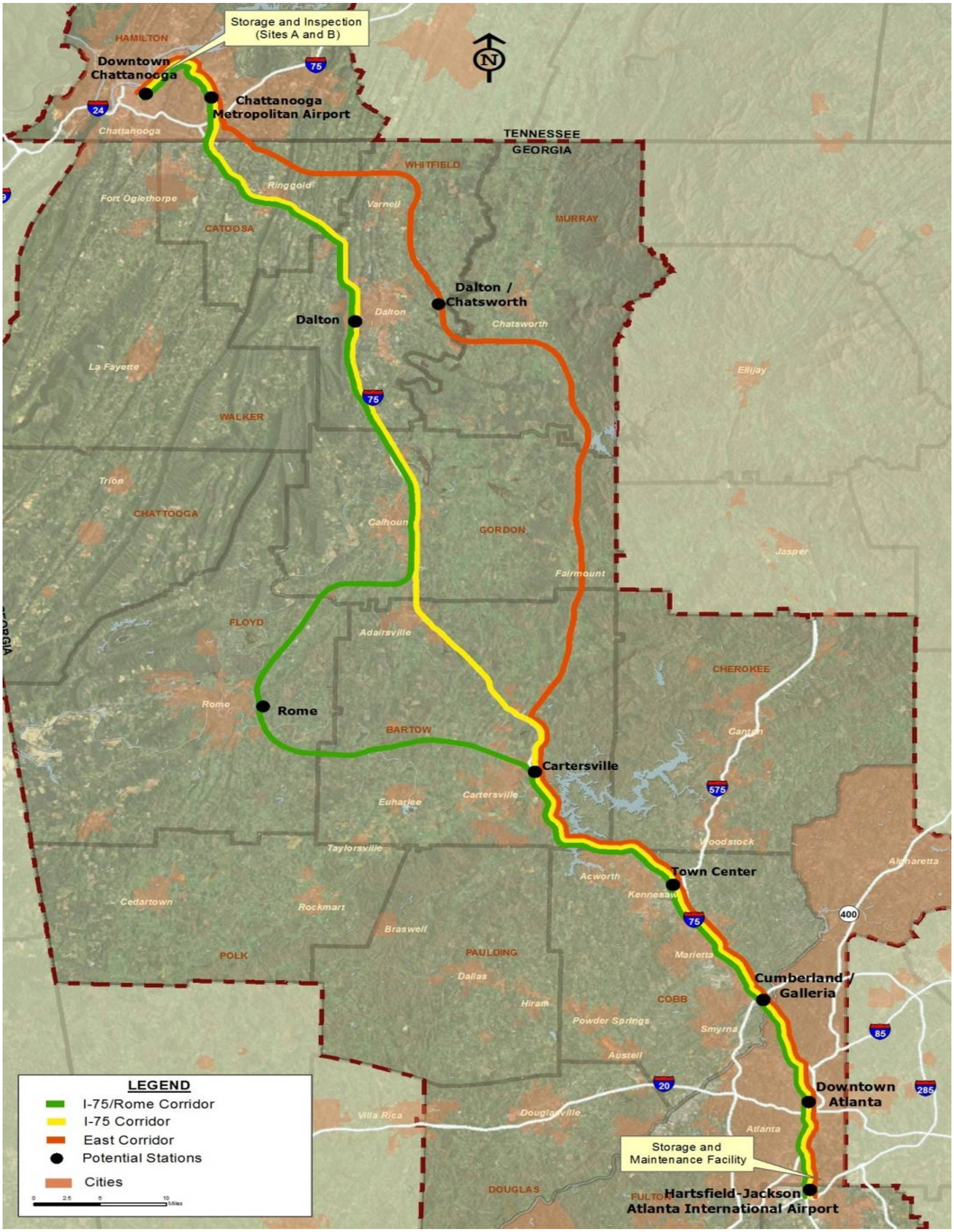
# II. RIDERSHIP MODELING METHODOLOGY

The Georgia Department of Transportation (GDOT) developed the initial Atlanta to Chattanooga HSGT travel demand forecasting model system beginning in 2007. The HSGT model system was developed to evaluate travel in four major geographic subareas, each of which currently has a MPO-level demand forecasting model:

- Atlanta Regional Commission (ARC) regional forecasting model, which covers a 20-county area around Atlanta;
- Greater Dalton MPO model, which covers the Dalton urban area and Whitfield County;
- Rome-Floyd County MPO model, which covers Rome and Floyd County; and
- Chattanooga-Hamilton County North Georgia (CHCNGA) Regional Planning Agency model, which is centered on the city of Chattanooga, Tennessee including all of Hamilton County, Tennessee and extending into portions of northwest Georgia (Walker, Dade and Catoosa Counties).

[1] The Greater Dalton MPO model uses 2035 as the forecast year.

**Figure 1: DEIS Build Alternatives**



# III. OVERVIEW OF THE THREE MODELING SEGMENTS

The HSGT modeling system is a diversion model that uses the number of automobile trips between each origin and destination pair from the MPO models and reallocates or diverts a percentage of the automobile trips to the new HSGT mode, based on existing modal characteristics within the travel corridor. The HSGT modeling system has three distinct model segments that apply different modeling approaches to estimate the diversion from auto trips to HSGT of from the following three travel markets:

- Inter-City: trips from one of the corridor's four major sub-areas to another sub-area
- Intra-Atlanta:
  - Main Intra-ARC (inside the Atlanta Regional Commission's (ARC) transportation planning area): trips from one location to another in the ARC region, excluding trips by air travelers to/from the Hartsfield-Jackson Atlanta International Airport (HJAIA)
  - Airport Access: trips by resident and non-resident air travelers in the ARC region to/from HJAIA
- Airport Choice: trips made by air travelers to/from the Chattanooga Metropolitan Airport (Lovell Field)

Data on the proposed station locations, estimated travel times, and proposed fare structure for each corridor, as well as updated data from the subarea models were used as inputs to the HSGT model. Each of the three model segments produced the number of trips diverted to HSGT, and the total diverted trips (from all three travel markets) are summarized by boardings and alightings at each proposed station, as well as corridor-level totals. In addition to ridership, fare revenue totals for each corridor were also calculated by the model system. The three model segments are described in detail in the following subsections.

## A. Inter-City Model Segment

As stated above, the Inter-City model calculates diversions of auto trips to HSGT made from one of the project area's major sub-areas to another. The methodology applied to forecast inter-city automobile trip diversions to HSGT is based on the Amtrak Northeast Corridor (NEC) ridership and revenue forecasting work developed for the US Department of Transportation's (DOT's) Office of Inspector General (OIG). It uses a two-mode (binary) diversion model that compares, for each inter-city origin-destination pair and for different types of travelers, the attractiveness of travel via HSGT versus automobile.To prepare the Inter-City model inputs, data from the four different sub-area models were combined to develop a representation of the highway network and intercity travel patterns in the project area. The ARC 4-Step Model, the Rome-Floyd County MPO Model, and the CHCNGA Model had 2040 forecasts available, while the Greater Dalton MPO Model has a forecast year of 2035. To develop the Dalton 2040 trip table, first the modeling team used the Dalton baseline forecast of 2006 and the 2035 forecast to develop annual growth factors by zone pairs, and applied them to the 2035 table, in order to obtain a comparable 2040 trip table for use in the Inter-City model. All internal trips were then removed from each of the sub-area trip tables, along with external trips which did not impact the corridor (i.e. trips to the area southeast of Atlanta). The 2040 trip tables were used to develop growth factors by sub-area, which were then applied to update the 2030 trip table to reflect the revised 2040 forecasts. The 2030 trip table was synthesized by appropriately connecting the internal-external and external-external volumes in the 2030 highway trip tables of the four model systems, making reference to US Census 2000 journey-to-work travel patterns, and using engineering judgment to fine-tune county-level travel flows. By using the 2040 forecasts in this manner ensured that the trip table was consistent with the procedures previously used, while incorporating current socio-economic forecasts and updated assumptions.

The 2040 sub-area networks were combined to create the Inter-City model network, This required a minor reconciliation between network coding conventions of the different model systems, and completion of the network in portions of the project area outside the four sub-areas.

## B. Intra-Atlanta Model Segment

The Intra-Atlanta model segment is split into two pieces: the main Intra-ARC model and the Airport Access model for trips to/from HJAIA. Each is described below.

### i. Main Intra-ARC Model

The Main Intra-ARC model forecasts HSGT trips internal to the 20-county ARC region built on the ARC four-step travel demand model. It includes a mode choice model that predicts, for each Atlanta region origin-destination pair and different trip types, the share of trips made by different modes. The ARC mode choice model has the ability to address a number of premium (express bus, BRT/streetcar, heavy/light rail and commuter rail) and standard (local bus, shuttle bus, arterial express bus and arterial BRT) transit modes, segmented by access mode (walk, park-and-ride, and kiss-and-ride).

In this analysis, HSGT is represented in the ARC model as a premium transit mode similar to commuter rail, but having the appropriate travel time and headway attributes. A new transit sub-mode choice model was added to the ARC model to predict the split of trips between HSGT and other premium transit modes. This analysis used the current ARC PLAN 2040 forecast, which updated all of the Main Intra-ARC model inputs to what is currently in use in the corridor.

### ii. Airport Access Model

For this analysis, a separate modeling approach was applied to forecast diversions to HSGT of air passengers traveling to/from HJAIA. It was based on the current ARC air passenger model, a nested logit model that forecasts the transportation mode used for airport access. Logit models are behavior-based models that have the ability to forecast individuals' choice based on the characteristics of the alternatives and the decision makers themselves. The nested logit model specifically has the ability to group similar choices (modes, in this case) to account for similarities and competition between choices (grouping all transit options separately from auto, for example). The transit nest (the model group that includes all transit options) was modified to include the HSGT option. The model was applied to all zones included in the ARC model area.

The Airport Access model used the forecast year (2040 for this analysis) volumes to/from HJAIA, by purpose and residence status, which are an output from the ARC four-step model. The Airport Access model was developed using the 2001 Atlanta Air Passenger Survey to obtain the shares of air travelers traveling to and from HJAIA, which is the most up-to-date data available and is what the ARC four-step model uses.

The first step of the model is a spreadsheet application that estimates average daily air passengers to and from the airport and allocates them to the ground side locations, based on zonal socioeconomic data including household, income group, and employment, which were updated to match the ARC PLAN 2040 assumptions. The second step of airport access model is the mode choice model based on the current ARC air passenger model, which estimates the mode of transportation used to access the airport based on the non-airport location of air passengers, including high-speed rail (HSR) as an option.

## C. Airport Choice Model Segment

The airport choice model was developed to forecast diversions of Chattanooga Metropolitan Airport (CMA) air passengers to HSGT and HJAIA. Without an HSGT connection between CMA and HJAIA, passengers would take direct flights to/from CMA or connecting flights to/from CMA via airport hubs (HJAIA or other). With the proposed HSGT, such travelers would have the option of taking it to/from HJAIA and the connections there. The choice depends on the end-to-end service characteristics of the different travel options. An ordered logit model using actual route shares and volumes representing essentially all air trips in and out of Lovell CMA was used. The HSGT mode to/from HJAIA was then introduced where appropriate as an additional routing alternative. This model was applied to each relevant origin-destination airport pair to calculate the diversion to HSGT based on the anticipated service level between CMA and HJAIA.

The Airport Choice model uses the HSGT alternative-specific schedule and air schedules as the inputs. The service characteristics of the three corridors to be tested and Federal Aviation Administration (FAA) data, which include on-time performance and Airline Origin and Destination Survey (DB1B)[2] origin and destination data, were used. The on-time performance data from March 27, 2012 was used for developing the air schedule inputs.

# IV. TIER 1 DRAFT EIS CORRIDOR BUILD ALTERNATIVE SERVICE CHARACTERISTICS AND KEY ASSUMPTIONS

This section describes the service characteristics of the three corridors which are the inputs for the modeling system, including travel time, distance, and fares. All other service characteristics such as frequency were held constant across the three corridor analyses, for comparison purposes.

## A. Station-to-station Travel Time

The travel time assumptions are displayed in **Table 1**.

[2] The Airline Origin and Destination Survey (DB1B) is a 10% sample of airline tickets from reporting carriers collected by the Office of Airline Information of the Bureau of Transportation Statistics. Data include origin, destination and other itinerary details of passengers transported. This database is used to determine air traffic patterns, air carrier market shares and passenger flows.

**Table 1 Station-to-Station Travel Time (in minutes) by Corridor**

| Station | I-75 | | I-75 / Rome | | East | |
|---|---|---|---|---|---|---|
| | Station -to- Station | Cumulative | Station -to- Station | Cumulative | Station-to-Station | Cumulative |
| Hartsfield - Jackson Atlanta International Airport | 0 | 0 | 0 | 0 | 0 | 0 |
| Downtown Atlanta | 11 | 11 | 11 | 11 | 11 | 11 |
| Cumberland/Galleria | 11 | 22 | 11 | 22 | 11 | 22 |
| Town Center | 9 | 31 | 9 | 31 | 9 | 31 |
| Cartersville | 15 | 46 | 15 | 46 | 15 | 46 |
| Rome | NA* | NA | 14 | 60 | NA | NA |
| Dalton | 17 | 63 | 17 | 77 | NA | NA |
| Dalton/Chatsworth | NA | NA | NA | NA | 20 | 66 |
| Chattanooga Metropolitan Airport | 14 | 77 | 14 | 91 | 18 | 84 |
| Downtown Chattanooga | 11 | 88 | 11 | 102 | 11 | 95 |

*NA – Not Applicable

## B. Station-to-station Travel Distance

The station-to-station travel distance assumptions for the ridership modeling update are displayed in **Table 2**.

**Table 2 Station-to-Station Travel Distance (in miles) by Corridor**

| Station | I-75 | | I-75 / Rome | | East | |
|---|---|---|---|---|---|---|
| | Station-to-Station | Cumulative | Station-to-Station | Cumulative | Station-to-Station | Cumulative |
| Hartsfield - Jackson Atlanta International Airport | 0 | 0 | 0 | 0 | 0 | 0 |
| Downtown Atlanta | 9 | 9 | 9 | 9 | 9 | 9 |
| Cumberland / Galleria | 10 | 19 | 10 | 19 | 10 | 19 |
| Town Center | 12 | 31 | 12 | 31 | 12 | 31 |
| Cartersville | 19 | 50 | 19 | 50 | 19 | 50 |
| Rome | NA* | NA | 24 | 74 | NA | NA |
| Dalton | 43 | 93 | 42 | 116 | NA | NA |
| Dalton/Chatsworth | NA | NA | NA | NA | 48 | 98 |
| Chattanooga Metropolitan Airport | 25 | 118 | 25 | 141 | 30 | 128 |
| Downtown Chattanooga | 10 | 128 | 10 | 151 | 10 | 138 |

*NA – Not Applicable

## C. Fare Structure

The fare structure used in this analysis matched that used in the original 2007 analysis, inflated to 2014 $. A distance-based fare of $0.85 per mile and a $14.22 boarding fee were assumed for inter-city (including airport-to-airport) service. For intra-Atlanta and airport access service, a $14.22 HSGT fare was assumed, with a $6.82 supplement for trips to/from the airport.

## D. Trip Assumptions

The growth factors used by region for the Inter-City model are found in **Table 3** below. The growth factors are based on the trips from each regional model, after excluding the intra-region trips. The Atlanta region experienced the greatest growth, while Dalton actually had a slight negative impact.

**Table 3 Inter-City Trip Table Growth Factors**

| Region | 2030 Daily Trips | 2040 Daily Trips | Growth Factor |
|---|---|---|---|
| Atlanta | 86,003 | 146,199 | 70.0% |
| Chattanooga | 67,699 | 94,205 | 39.2% |
| Dalton | 46,396 | 46,244 | -0.3% |
| Floyd | 40,978 | 55,391 | 35.2% |
| External | 53,662 | 76,132 | 41.9% |
| Total | 294,738 | 418,172 | 41.9% |

**Table 4** details the annual passengers between the Chattanooga Metropolitan Airport and the top twenty-five destinations, used in the airport choice segment of the model, along with the number of connection options available (not including HSGT). These annual trips were assumed by applying a growth rate of 69% between 2012 and 2040, which was obtained from FAA forecasts, to the DB1B data as described in the modeling methodology section above.

**Table 4 Annual Air Passengers for Top 25 Destinations from Chattanooga Metropolitan Airport**

| Origin | Destination | Annual Passengers (Both Directions) | Connection Options |
|---|---|---|---|
| CHA | ORD | 43,433 | 3 |
| CHA | DFW | 42,554 | 4 |
| CHA | LGA | 30,420 | 3 |
| CHA | CLT | 29,000 | 2 |
| CHA | BOS | 23,153 | 3 |
| CHA | MCO | 21,767 | 2 |
| CHA | DCA | 19,029 | 3 |
| CHA | IAH | 18,928 | 4 |
| CHA | LAS | 17,846 | 4 |
| CHA | DEN | 16,968 | 3 |
| CHA | PHL | 16,427 | 3 |
| CHA | LAX | 14,331 | 4 |
| CHA | RDU | 13,452 | 2 |
| CHA | SFO | 13,148 | 4 |
| CHA | EWR | 12,979 | 3 |
| CHA | FLL | 12,067 | 2 |
| CHA | PHX | 11,864 | 4 |
| CHA | MSP | 11,154 | 4 |
| CHA | PIT | 10,174 | 3 |
| CHA | TPA | 10,106 | 2 |
| CHA | SAT | 9,802 | 3 |
| CHA | MCI | 9,768 | 4 |
| CHA | BWI | 9,498 | 3 |
| CHA | SAN | 9,396 | 4 |
| CHA | SEA | 8,788 | 4 |

# V. RESULTS

The model system was run for all three corridors, and the ridership and revenue summaries are described in this section. **Table 5** contains the segment volumes, total boardings and total revenue for each corridor.

The I-75/Rome corridor has the greatest ridership and revenue projections, primarily due to the additional Rome station, which provides access to a larger population. The East corridor has the lowest forecasted ridership and revenue, which may be attributed to the Dalton/Chatsworth station not being in an area with a lower population density.

**Table 5 2040 Daily Segment Volumes, Total Boardings, and Total Revenue by Corridor**

| | Station A | Station B | I-75 | I-75 / Rome | East |
|---|---|---|---|---|---|
| Segment Volume | Hartsfield-Jackson Atlanta International Airport | Downtown Atlanta | 2,650 | 2,679 | 2,692 |
| | Downtown Atlanta | Cumberland / Galleria | 5,648 | 5,886 | 5,002 |
| | Cumberland / Galleria | Town Center | 6,422 | 6,922 | 4,934 |
| | Town Center | Cartersville | 4,625 | 5,088 | 2,785 |
| | Cartersville | Dalton | 4,268 | NA | NA |
| | Cartersville | Dalton / Chatsworth | NA* | NA | 1,973 |
| | Cartersville | Rome | NA | 4,663 | NA |
| | Rome | Dalton | NA | 3,682 | NA |
| | Dalton / Chatsworth | Chattanooga Metropolitan Airport | NA | NA | 1,977 |
| | Dalton | Chattanooga Metropolitan Airport | 3,344 | 3,383 | NA |
| | Chattanooga Metropolitan Airport | Downtown Chattanooga | 2,611 | 2,452 | 1,379 |
| Total Daily Boardings | | | 11,725 | 13,204 | 8,556 |
| Total Daily Revenue, in 2014$ | | | $ 641,566 | $ 773,728 | $ 382,105 |

*NA – Not Applicable

**Table 6** presents a more detailed look at the boardings and alightings at each station.

**Table 6 2040 Daily Station Boardings and Alightings by Corridor**

| | East | | I-75 | | I-75 / Rome | |
|---|---|---|---|---|---|---|
| | **Boardings** | **Alightings** | **Boardings** | **Alightings** | **Boardings** | **Alightings** |
| ***Northbound - Hartsfield to Chattanooga*** | | | | | | |
| Hartsfield - Jackson Atlanta International Airport | 2,176 | - | 2,157 | - | 2,170 | - |
| Downtown Atlanta | 436 | 1,911 | 821 | 1,911 | 926 | 1,911 |
| Cumberland/Galleria | 333 | 50 | 805 | 50 | 935 | 50 |
| Town Center | 221 | 324 | 421 | 324 | 391 | 324 |
| Cartersville | 289 | 6 | 546 | 6 | 583 | 84 |
| Rome | NA* | NA | NA | NA | 523 | 1,057 |
| Dalton | NA | NA | 543 | 1,026 | 544 | 681 |
| Dalton/Chatsworth | 35 | 35 | NA | NA | NA | NA |
| Chattanooga Metropolitan Airport | 46 | 394 | 45 | 473 | 46 | 581 |
| Downtown Chattanooga | - | 815 | - | 1,550 | - | 1,429 |
| ***Southbound - Chattanooga to Hartsfield*** | | | | | | |
| Downtown Chattanooga | 563 | - | 1,061 | - | 1,023 | - |
| Chattanooga Metropolitan Airport | 287 | 41 | 346 | 40 | 436 | 41 |
| Dalton/Chatsworth | 25 | 25 | NA | NA | NA | NA |
| Dalton | NA | NA | 834 | 392 | 554 | 393 |
| Rome | NA | NA | NA | NA | 928 | 481 |
| Cartersville | 1,292 | 197 | 1,292 | 395 | 1,292 | 367 |
| Town Center | 2,207 | 160 | 2,207 | 311 | 2,207 | 305 |
| Cumberland/Galleria | 580 | 230 | 580 | 599 | 580 | 731 |
| Downtown Atlanta | 66 | 3,853 | 66 | 4,154 | 66 | 4,260 |
| Hartsfield - Jackson Atlanta International Airport | - | 516 | - | 493 | - | 508 |
| Northbound Total | 3,536 | 3,536 | 5,340 | 5,340 | 6,118 | 6,118 |
| Southbound Total | 5,020 | 5,020 | 6,385 | 6,385 | 7,085 | 7,085 |
| Corridor Total | 8,556 | 8,556 | 11,725 | 11,725 | 13,204 | 13,204 |

*NA – Not Applicable

# VI. SUMMARY

Based on the updated HSGT modeling system, using a forecast year of 2040 and current socioeconomic assumptions, the I-75/Rome corridor produces the greatest ridership and revenue.

# Georgia Department of Transportation

**ATLANTA-CHATTANOOGA**
**HIGH SPEED GROUND TRANSPORTATION PROJECT**

# TIER 1 DRAFT ENVIRONMENTAL IMPACT STATEMENT
# Appendix D – Funding Sources


**Prepared by:**

Federal Railroad Administration (FRA)
Georgia Department of Transportation (GDOT)
Tennessee Department of Transportation (TDOT)



**September 2016**

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# Table of Contents

## Federal Capital Grant Programs

Historically, most states have relied on a variety of relatively small federal and state funding programs to enhance their state passenger rail systems. With the passage of the Passenger Rail Investment and Improvement Act (PRIIA) and the American Recovery and Reinvestment Act (ARRA), the federal funding picture has changed for passenger HSGT development.

This section highlights the major features of new federal funding programs as well as other federal funding programs available for this project.

### The Passenger Rail Investment and Improvement Act of 2008

In October of 2008, Congress passed the PRIIA. This legislation reauthorizes funding for Amtrak, but most importantly, provides a new statutory framework for a federal/state partnership to fund and develop U.S. high-speed and intercity passenger service using 80/20 federal/state capital grants. The PRIIA legislation authorizes $3.4 billion in capital grants over five years to states, groups of states, interstate compacts, public agencies, and in some cases Amtrak.

Congressional action is required each year to appropriate the amounts authorized. Section 301 of the Act provides grants for the Intercity Passenger Rail Service Capital Assistance. Section 501 provides capital grants for HSGT corridor development for federally designated corridors with planned speeds of 110 mph or greater. Section 302 Congestion Grants are focused on relieving rail congestion bottlenecks.

### The American Recovery and Reinvestment Act of 2009

In February of 2009, Congress passed the American Recovery and Reinvestment Act (ARRA) which appropriated $8 billion in 100 percent federal funding providing “capital assistance for high-speed corridors and intercity passenger service.” This program is based on the statutory framework provided by PRIIA and focuses funding on state sponsored projects.

The ARRA also provided $1.5 billion in 100 percent flexible multi-modal funding under the Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program. Since its inception, Congress has dedicated more than $4.1 billion for six rounds to fund projects that have a significant impact on the Nation, a region or a metropolitan area. The TIGER grant programs provide funding for both passenger and freight rail projects.

### The FRA High Speed and Intercity Passenger Rail Program

In developing guidance for ARRA grants as well as grants offered under subsequent PRIIA appropriations, a structure for the FRA’s High Speed and Intercity Passenger Rail (HSIPR) Program has evolved. The current structure is best reflected in the most recent notices of funding availability (NOFA) for FY 2011 appropriations issued in the Federal Register on March 16, 2011.

FRA will develop final guidance and regulations for the HSIPR Program; however, these interim guidance documents will provide the basic framework for the PRIIA grant program as well as for future funding programs. Under the FY 2011 appropriation for these programs, $2.4 billion was provided of which approximately $2.3 billion was solely for the state of Florida and $38 million available for other states. FRA will not allocate funding between Service Development Programs and Individual Projects in advance.

Instead, FRA will make awards based on the outcomes of the application. Eligibility requirements for specific program and project types can be accessed via the March 16, 2011 Federal Register[1].

## Federal Financing and Loan Programs

### FRA Railroad Rehabilitation and Improvement Financing Program

The Railroad Rehabilitation and Improvement Financing (RRIF) Program provides direct federal loans and loan guarantees to finance development of railroad infrastructure. The program was established by the Transportation Equity Act for the 21st Century of 1998 (TEA-21) and amended by the Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2005: A Legacy for Users (SAFETEA-LU). Under this program, the FRA authorizes direct loans and loan guarantees up to $35 billion. Up to $7 billion is reserved for projects benefiting freight railroads other than Class I carriers.

The funding may be used to acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track, track components, bridges, yards, buildings, and shops. In addition, the funding can be used to refinance outstanding debt incurred for the purposes listed above as well as for developing or establishing new intermodal or railroad facilities. While the program has been used largely for freight rail projects, HSGT projects also are eligible.

In the case of passenger projects, RRIF funding is only workable where investment grade revenue and operating cost forecasts show the project has the potential to provide a substantial revenue stream after a significant public investment is typically made in infrastructure and/or equipment. Typically, projects receiving RRIF credit assistance must obtain an investment grade rating from at least one nationally recognized credit rating agency. Direct loans can fund up to 100 percent of a railroad project, with repayment periods of up to 35 years and interest rates equal to the U.S. treasury rate. Eligible borrowers include railroads, state and local governments, government-sponsored authorities and corporations, joint ventures that include at least one railroad, and limited option freight shippers that intend to construct a new rail connection.

The RRIF program provides financing on favorable terms; however, the applicant must identify a viable revenue stream to make payments over the loan period. The FRA administers this program, and the USDOT Credit Council and the White House's Office of Management and Budget oversee final award decisions.

### USDOT Transportation Infrastructure Finance and Innovation Act

The USDOT's Transportation Infrastructure Finance and Innovation Act (TIFIA) administered by the FHWA, authorizes $10.6 billion in credit assistance on flexible terms in the form of secured loans, loan guarantees, and standby lines of credit. The TIFIA program was created in 1998 by TEA-21 and amended by SAFETEA-LU.

TIFIA financial assistance is provided directly to public-private sponsors of surface transportation projects of national significance. The TIFIA credit program's fundamental goal is to leverage federal funds by attracting substantial private and other non-federal investment in critical improvements to the nation's surface transportation system. TIFIA

[1] http://www.fra.dot.gov/eLib/details/L02744

can be used for both freight and passenger projects. A wide variety of intermodal and rail infrastructure projects including HSGT are eligible and can include equipment, facilities, track, bridges, yards, buildings, and shops.

TIFIA credit assistance provides improved access to capital markets, flexible repayment terms, and potentially more favorable interest rates than can be found in private capital markets for similar instruments. The interest rate for TIFIA loans is the U.S. Treasury rate and the debt must be repaid within 35 years. TIFIA can support up to 33 percent of a project's cost and is restricted to projects costing at least $50 million. TIFIA can help advance qualified, large-scale projects that otherwise might be delayed or deferred because of size, complexity, or uncertainty over the timing of revenues.

Similar to the RRIF program above, TIFIA is not a funding source, but a method of financing projects through assisted borrowing. In the case of passenger projects, RRIF financing is only workable where investment grade revenue and operating cost forecasts show the project has the potential to provide a substantial revenue stream after a significant public investment is typically made in infrastructure and/or equipment. Projects receiving TIFIA credit assistance must obtain an investment grade rating from at least one nationally recognized credit rating agency.

## State and Local Capital Match Funding

As discussed in the introduction, the major source of funding for HSGT development in the U.S. will continue to lie with the federal government. The PRIIA, as currently administered under the FRA HSIPR, provides the statutory framework for an 80/20 federal/state funding partnership that will continue for the foreseeable future. The States of Georgia and Tennessee will be responsible for assembling the 20 percent state grant share for this type of major transportation infrastructure project. Local governments typically have a lesser role in providing capital funding for HSGT development, and primarily only with regard to station development. A summary of each program follows.

### State General Fund Appropriations

The use of a General Fund Appropriation for an HSGT project offers the most flexibility in terms of the use of state tax revenues. The downside for an HSGT project, like other transportation infrastructure projects, is that the significant amount of funding typically required over multiple years is not easily obtained in a budgetary or political cycle given the many other recurring demands for state appropriations.

Funding for transportation projects in Georgia relies heavily upon the State Highway Account, or more specifically, segregated revenues from the Motor Fuel Tax. This account provides approximately 96 percent of “total revenues from State sources in GDOT’s budget for FY2009” (ARC 2010)[2]. However, state statutes do not allow for the Motor Fuel Tax to be used on any transportation projects other than roads and bridges, therefore, HSGT and transit projects in the State use General Fund Appropriations.

Similar to Georgia, Tennessee has implemented a Motor and Diesel Fuel Tax to fund three entities within the state: Cities and Counties, State General Fund, and TDOT. Tennessee differs from Georgia in that the Motor and Diesel Fuel Tax as well as Registration Fees are used to fund a variety of transportation projects and basic operations. Second to federal funding, the Highway User Tax is the largest portion of

[2] Atlanta Regional Commission. Bridging the Gap 2010: Investigating Solutions for Transportation Funding alternatives in the Atlanta Region. Atlanta, GA: 2010.

TDOT's annual budget and a majority of both sources fund highway projects. However, a portion of the department's budget is set aside for mass transit, planning and research, and air, water, and rail programs for a total of approximately $289.8 million for FY 2010-2011.

### State General Obligation and General Revenue Bonds

Both Georgia and Tennessee have the ability to issue state bonds for transportation purposes. State bonding has many advantages as a source of state capital funding to match federal grant funds. Bonding allows a state to spread funding for large capital projects with continuing benefits over long time periods (typically up to 20 years). The resulting effect on the state budget is relatively small in any one year.

General obligation (GO) bonds are backed with the legal pledge of all state revenues. On the other hand, state revenue bonds are backed by the pledge of revenues from a specific source such as a dedicated sales tax or in the case of an HSGT project, ticket revenues. Given the political and underwriting challenges in obtaining a dedicated and marketable revenue source, GO bonds have many advantages over revenue bonds.

Georgia offers GO and general revenue (GR) bond programs that can be used for a variety of uses including the financing of transportation improvements. Currently, there are no transportation projects being funded through GO or GR bonds and no allocations have been made to GDOT. The majority of GO and GR bonds are currently funding public safety and education projects and programs. However, funding for transportation projects can be requested through these bond programs for future projects.

Tennessee does not issue bonds for transportation projects under the current policy. Tennessee uses federal and state funds on a "pay-go" basis to fund its transportation program. The Tennessee Legislature authorizes bonds each year in an amount equal to multi-year project commitments. This allows contactors to enter into construction contracts, which are then funded from annual appropriations. No bonds are actually issued and the bond authorization is then canceled each year by the State Funding Board prior to the subsequent reauthorization.

### Freight Railroad Contributions

An HSGT project in shared-use freight rail corridors may have the opportunity to obtain capital funding from the host railroad where the project provides freight benefits. An example might include adding a double track on a congested single-track main line. The capacity benefits to the freight railroad may exceed the capacity consumed by the additional passenger service. Another example is the replacement of jointed rail with more reliable and higher performance continuous welded rail, which can reduce maintenance costs and increase freight rail speeds. The negotiations involved with the freight railroad in such an arrangement are critical and typically involve the use of sophisticated capacity models and other kinds of operations analysis. While this HSGT project is not proposed to share tracks with other railroad service, this funding source is relevant considering this project may share existing railroad corridors.

### Local General Fund Appropriations

Local municipalities have the option of using their general funds to help match federal funds or make improvements to HSGT stations and surrounding developments. This capital must be budgeted ahead of time and approval must be received from the county commissioners and/or councils. The use of local general fund appropriations for stations and similar improvements has the same considerations as State General Fund Appropriations discussed above.

### Local Bonding

As with the state bonds, local municipalities may issue bonds for transportation improvement projects such as HSGT. These bonds may be used as the local match for federal funds. The bonds, similar to the state bonds, will be repaid with future revenue or general tax money. The use of local GO bond funding for stations and similar improvements has the same considerations as state bonding discussed above.

### Other Local Funding Sources

Along with general fund appropriations and bonding, local municipalities have other innovative techniques to fund transportation infrastructure construction, operation, and maintenance. The most popular technique used in Georgia is the Special Purpose Local Option Sales Tax (SPLOST). This relies upon an increase in taxes to be used for a variety of purposes, including transportation, at the municipalities' discretion. Once the SPLOST gains voter approval, the municipality has the ability to raise sales taxes up to a maximum of two percent for five years. If more funding is needed after the five-year period, the SPLOST referendum may be put to vote again. Currently, the State of Georgia is working towards a regional Transportation SPLOST (TSPLOST) through House Bill 277, which would increase sales tax by one percent on a regional level for ten years throughout the state to solely fund transportation projects.

Other innovative sources of funding that may be used by local jurisdictions for the Atlanta to Chattanooga HSGT are generalized as "Value Capture Taxes". These taxes capture the increased value of adjacent property to a proposed project (e.g., transportation, real estate development, tourist attraction). There are five main taxation "tools" which include Land Value Taxes, Land Tax Increment Financing (TIF) (aka Tax Allocation Districts (TAD)), Community Improvement Districts (CID), Developer Impact Fees, and Air Rights.

For the purposes of this project, the sources most likely to be utilized are TIF and CID funds. TIF is currently used in both Georgia and Tennessee to fund projects. One of the main goals of the program is to help develop blighted areas. CIDs are relatively new and are used in Georgia. They rely on revenues generated by a system in which businesses and agencies agree to increase their property taxes to fund community projects. Of the 13 current CIDs in Georgia, three include portions of the three proposed HSGT alternatives.

### Joint Development

The establishment of an HSGT station offers opportunities for additional on-site real estate development beyond just the station. Other development opportunities can include commercial, office, hotel, and housing developments. Where such opportunities exist, developer financing can be a significant source of funding for station improvements in addition to public sources. The developer may also take on all property management responsibilities for the station, which can be a burden for either state or local government officials.

### Public Private Partnerships

Public Private Partnerships (P3s) are a relatively new venture in transportation projects. Private investors and public entities join together to allow for more private sector participation from both a delivery and financing standpoint. There are many types of P3 structures, which vary in responsibility and risk. Some of the options include Design-

Build, Design-Build-Operate, Design-Build-Finance-Operate, Long Term Lease, Lease-Develop-Operate, and Private Contract Fee Services.

The P3s allow for more flexible funding by including the private sector into the project. Private equity contributions, bonds, private activity bonds, flexible match, bank loans, Section 129 loans, and TIFIA Credit are some examples of P3 financing techniques.

Georgia currently has three P3 initiatives in the procurement phase, including the Atlanta Multi-Modal Passenger Terminal. No high-speed or intercity passenger HSGT programs have entered into P3 agreements. However, as can be seen in Table 1, HSGT is on the GDOT list of potential projects funded through the P3 program.

The Tennessee P3 program varies from the Georgia program. The program currently does not have any enabling legislation tied to the program. There are only two pilot projects classified as P3, both of which are tolling projects (one highway and one bridge). There has been no consideration of HSGT to date.

**Table 1: Potential Georgia P3 Project Initiatives**

| Project | Description |
|---|---|
| High-Speed Rail National Network – Georgia Corridors | High-speed intercity passenger service (HSGT) on the portions of Southeast and Southern national designated high-speed corridors. |
| Intercity Passenger Rail Program Projects | Development of intercity passenger service in strategic segments such as Atlanta to Macon. |
| Atlanta Multimodal Passenger Terminal | Development of a passenger facility to accommodate passenger rail services as well as bus service from local and regional providers. Transit-oriented development could be part of the project with overbuild possibilities. |
| Managed Lane System Plan Projects | Projects as developed through the Managed Lane System Plan. These projects include, but are not limited to I-75/575 (NW Corridor), I-75 in Henry County, and SR 400 in Fulton and Forsyth Counties. |
| Statewide Operations & Concessions for Welcome Centers & Rest Areas | Statewide private sector participation with state owned welcome centers and rest areas. |