ATLANTA-CHATTANOOGA
HIGH SPEED GROUND TRANSPORTATION PROJECT

TIER 1 DRAFT ENVIRONMENTAL IMPACT STATEMENT

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

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ATLANTA-CHATTANOOGA
HIGH SPEED GROUND TRANSPORTATION PROJECT

Tier 1 Draft Environmental Impact Statement and
Preliminary Section 4(f) Evaluation

Pursuant to:
National Environmental Policy Act of 1969 (42 U.S.C. §4321 et seq.)
Federal Railroad Administration, Procedures for Considering Environmental Impacts (64 FR 28545)

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Date: July 15, 2016

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Abstract: This Tier 1 Draft Environmental Impact Statement (DEIS) describes and summarizes the potential environmental impacts of implementing high speed ground transportation connecting Atlanta, Georgia to Chattanooga, Tennessee. Four Alternatives were considered: 1) No-Build Alternative; 2) I-75 Corridor Alternative; 3) East Corridor Alternative; and 4) I-75/East Corridor Alternative. The need to improve the transportation infrastructure between Atlanta and Chattanooga is directly related to the population and employment growth and increased intercity travel demand expected over the next 30 years and beyond. Increased congestion and travel delays on the region's highway system and at airports caused by this growth are expected. Potential environmental impacts include increased noise and vibration, impacts on historic and archaeological resources, impacts and benefits to existing communities, impacts on parks and recreation resources, and impacts on sensitive biological resources and wetlands. Site-specific impacts of the selected program will be determined, and avoidance options and mitigation measures to minimize impacts will be further defined in Tier 2 evaluations.

Comments on this Tier 1 DEIS are due by November 22, 2016 and should be sent to GDOT at the above address. Public meetings will be held. Locations and times will be posted on the Project website. Notice will be mailed to interested parties and published in newspapers of general circulation. FRA will issue a single document that consists of the Final Environmental Impact Statement and Record of Decision pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless FRA determines that statutory criteria or practicability considerations preclude issuance of such a combined document.

0.0 EXECUTIVE SUMMARY

0.1 Overview

The Federal Railroad Administration (FRA), in cooperation with the Georgia Department of Transportation (GDOT) and the Tennessee Department of Transportation (TDOT), prepared this Tier 1 Draft Environmental Impact Statement (DEIS) for the proposed Atlanta – Chattanooga High Speed Ground Transportation (HSGT) Project (Project).[1] The Project is a proposed, new high-speed intercity passenger service connecting Atlanta, Georgia and Chattanooga, Tennessee.

This Tier 1 Draft Environmental Impact Statement (DEIS) is a program-level document. A program-level Tier 1 Environmental Impact Statement (EIS) is prepared when large geographic areas are being addressed for proposed improvements, allowing the project sponsor to review reasonable HSGT corridors, general environmental conditions, and potential impacts. This Tier 1 DEIS states the purpose and need for the Project; assesses all reasonable corridor alternatives for the proposed action, including a No-Build Alternative; provides a broad overview of the potential transportation, natural, and human impacts; and presents the outcomes of public and agency coordination that were considered in the assessment and decision-making processes.

FRA, GDOT and TDOT have developed this Tier 1 DEIS in accordance with the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU); Moving Ahead for Progress in the 21st Century Act (MAP-21); and FRA's *Procedures for Considering Environmental Impacts* (64 Federal Register [FR] 28545). Following the Tier 1 EIS process, GDOT will advance the selected Preferred Alternative for further study. If a Corridor Alternative is selected, GDOT will advance it to the Tier 2 NEPA process wherein more detailed environmental analyses will be conducted, potential alignments within the Preferred Alternative will be configured, exact station locations will be identified, a storage and maintenance facility site will be evaluated, and an HSGT technology will be selected.

The Atlanta – Chattanooga HSGT Project Tier 1 DEIS began with FRA's publication of the Notice of Intent (NOI) (see **Appendix A**) in the Federal Register on August 22, 2007. The NOI announced the intent to prepare a Tier 1 EIS. Following the NOI, a scoping process was undertaken to inform the public, interest groups, and involved agencies about the proposed Project, corridor alternatives, and issues for public and agency review and input. Comments and recommendations received during the scoping meetings by the public, stakeholders and agencies were used to refine the Project's Purpose and Need Statement, corridor alternatives, and the scope of the environmental analysis to be included in this Tier 1 DEIS. A summary of the scoping process, the public and agency coordination efforts, and the input received is documented in the *Scoping Summary Report* (GDOT 2008) and **Chapter 7.0** of this Tier 1 DEIS. The corridors emerging from the scoping process that were carried forward into the screening phase are detailed in **Chapter 2.0**.

0.1.1 Project Area Description

For the purpose of this Tier 1 DEIS, GDOT defined a broad geographic Project Area for study that is contained, wholly or in part, in the following counties: Fulton, Cobb, Cherokee, Floyd, Bartow, Murray, Whitfield, Gordon, Chattooga, Catoosa, Clayton, Douglas, Paulding, Polk, and Walker counties of Georgia; and Hamilton County of Tennessee. The Project Area is shown in **Figure 0-1**.

[1] FRA defines HSGT as a self-guided intercity passenger ground transportation - by steel-wheel railroad or magnetic levitation (Maglev) - that is time competitive with air and/or auto for travel markets in the approximate range of 100 to 500 miles. A 'market' is a city pair - two metropolitan areas and markets that, by their proximity and configuration, lend themselves to efficient service by ground transportation.

0.1.2 Purpose and Need

0.1.2.1 Project Purpose

The purpose of the Project is to enhance intercity mobility and economic growth throughout the Project Area between the metropolitan areas and the airports of Atlanta, Georgia, and Chattanooga, Tennessee, by providing faster and more reliable ground transportation service to the public as an alternative to highway, intercity bus, and air travel in a manner that is safe and cost-effective, while avoiding, minimizing, and mitigating impacts on the human and natural environment. This purpose is supported by the Long Range Transportation Plans (LRTPs) of the Metropolitan Planning Organizations (MPOs) in the Project Area and the GDOT's and TDOT's State Implementation Plans.

0.1.2.2 Need for the Project

Commuters traveling in the Project Area primarily rely on automobiles for intercity travel since there is very limited intercity bus service and no intercity HSGT service. Currently, the highway system within the Project Area is operating at or near capacity during commuting hours, especially within the metropolitan areas of Atlanta, Rome, Dalton, and Chattanooga (as reported by Transportation Demand Models for Atlanta Regional Commission (ARC), Greater Dalton MPO, Chattanooga-Hamilton County Regional Planning Agency, and Rome-Floyd County MPOs 2013, and TDOT 2014). Traffic congestion will persist in the future as a result of increasing passenger travel demand from population, tourism, employment, and business growth.

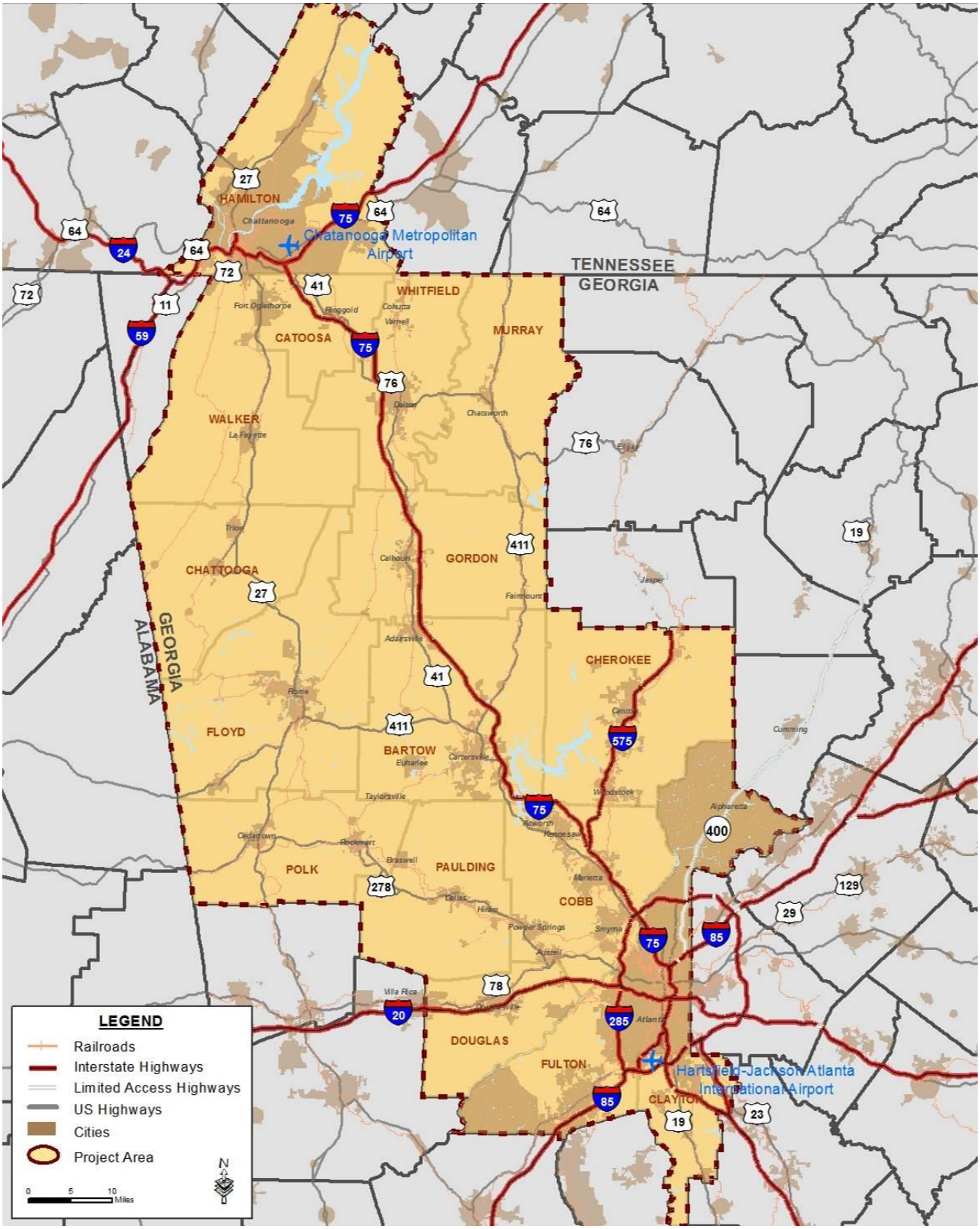
Between the years 2000 and 2012, the population of Georgia increased 19 percent and the population of Tennessee increased 12 percent. The populations of 11 of the 16 counties within the Project Area during the same period grew by 10 percent or more including increases of 52 percent in Cherokee County and about 74 percent in Paulding County. The metropolitan Atlanta population is forecasted to increase from 5.4 million people in 2010 to 8.3 million by the year 2040 (ARC 2010).

Employment in the Project Area grew by over 40 percent from 1990 to 2012. ARC forecasts employment in metropolitan Atlanta will increase over 40 percent between 2010 and 2040, and the Chattanooga-Hamilton County Regional Planning Agency (CHCRPA) reports that employment is forecasted to increase 40 percent between 2007 and 2035.

The *Georgia Interstate System Plan* (GDOT 2004) reported that roadway travel demand along the majority of I-75, north of Atlanta, is projected to exceed capacity by 2030. Travel demand on US 41, US 411, and US 27, the other north-south routes between Atlanta and Chattanooga, is expected to equal or exceed capacity within the next 30 years notwithstanding planned highway improvement projects. Given the projected increases in travel demand throughout the Project Area, additional alternatives to address existing and future travel demand are needed.

Therefore, to maintain and enhance the economic vitality of the two anchor cities and throughout the Project Area, the mobility of those traveling within the Project Area requires improvement. With greater regional mobility connections to Atlanta and Hartsfield-Jackson Atlanta International Airport (HJAIA), a connection to the national and global economy would be realized for Chattanooga and Northwest Georgia.

Figure 0-1: Project Area Map



In this Tier 1 DEIS, FRA, GDOT, and TDOT are considering actions to address transportation needs stemming from increasing travel demand and forecast population and employment growth. Specifically, the needs for the Project include:

- 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 Minimize Environmental Impacts

0.1.3 Corridor Alternatives Considered

0.1.3.1 Scoping

One of the initial steps the agencies took in preparing this Tier 1 DEIS was the development and implementation of a public involvement program and public scoping process to solicit issues, concerns, and ideas regarding a proposed HSGT Project and the corresponding assessment of environmental impacts in the Project vicinity. During the formal scoping process, the public, stakeholders, and government agencies provided input on the following subject areas:

- The Project's purpose and need;
- Potential mode technologies;
- Potential proposed project corridors and station stop locations;
- The scope of the assessment of potential environmental impacts for the Project;
- Methodology for selecting the corridors for further study; and
- Opportunities for public involvement.

0.1.3.2 High Speed Ground Transportation Technologies

In the scoping process, several HSGT train technologies were identified. HSGT is a mode of transportation that can travel at greater speeds than traditional rail technology and can provide improved passenger mobility and reduce travel times in the Project Area. For the purposes of this proposed project, HSGT is defined as trains having the ability to travel at speeds at or above 180 miles per hour (mph) and as an intercity passenger transportation mode that is time-competitive with air and highway travel for trips of 100 to 500 miles. The train technologies that were considered included: diesel multiple unit, commuter rail, intercity rail, "Low" High Speed Intercity Rail, and Very High Speed Rail (VHS), which consists of steel-wheeled and magnetic levitation (Maglev) technologies.

0.1.3.3 Identification and Screening of Corridors

During the scoping process, GDOT identified 15 unique corridors extending from HJAIA to downtown Chattanooga. Following scoping, the 15 corridors were subjected to a screening process as part of the development process for the corridor alternatives. The screening process was undertaken to identify the reasonable corridor alternatives to be evaluated in this Tier 1 DEIS. The

screening process assessed the relative attributes of the potential HSGT corridors. The screening process included the following tasks:

- Development of measures of effectiveness (MOEs)*;*
- Application of MOEs to assess how well each corridor meets the Project's purpose and need. Screening sought to advance the best performing corridor(s) based on the criterion of transportation mobility; and
- Involvement of FRA, GDOT, TDOT, participating agencies, stakeholders, and the public in the screening process.

The Project Team (FRA, GDOT, and TDOT) advanced the three corridor alternatives listed below for further evaluation in the Tier 1 DEIS since they most closely met the Project purpose and need. The three Norfolk Southern (NS) corridors (I-75 Southern Crescent NS, East Southern Crescent NS, and I-75/Rome Southern Crescent NS) were also retained, but detailed analyses of the three NS corridors were deferred to future studies as design options for the Atlanta area:

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

0.1.3.4 Alternatives Evaluated in this Tier 1 DEIS

Based on the results of screening (described in detail in **Appendix B**), the three corridors listed above were advanced in this Tier 1 DEIS to evaluate their potential environmental impacts. A No-Build Alternative was also analyzed in this Tier 1 DEIS. Both the No-Build Alternatives and the Corridor Alternatives are described in the following sections.

No-Build Alternative

Federal regulations require that a No-Build Alternative be evaluated in an EIS. The No-Build Alternative includes the existing transportation system and assumes that there would be no new HSGT improvements in the Project Area. The No-Build Alternative assumes that all transportation system improvements that are currently listed in local, regional, and state transportation plans and that have identified funds for implementation will be implemented. Thus, the No-Build Alternative represents the Project Area's transportation system as it is anticipated to be in the planning horizon year 2040. The system includes highway and transit projects in each of the MPO's transportation plans within the Project Area as well as aviation projects identified in the Master Plans of the two airports, HJAIA, and Chattanooga Metropolitan Airport (CMA), which currently provide passenger carrier service to the Project Area. The existing transportation system serving the Project Area can be summarized as follows:

- The highway system consists primarily of Interstate highways I-75, I-285, and I-24, and of highways US 27, US 411, and US 41.
- The Intercity bus transit service is provided by Greyhound and Megabus. Regional bus transit service is provided within metropolitan Atlanta by Metropolitan Atlanta Rapid Transit Authority (MARTA), Cobb Community Transit (CCT), and Gwinnett County Transit (GCT). The Georgia Regional Transportation Authority (GRTA) provides regional commuter "Xpress" bus service. Local bus service is provided by the Chattanooga Area Regional Transportation Authority (CARTA), MARTA, and the City of Rome Transit Department (RTD). MARTA also includes a 48-mile heavy rail transit system with 38 stations within metropolitan Atlanta.
- The aviation system consists of two airports that currently provide passenger carrier service to the region: HJAIA and CMA.

Corridor Alternatives

Like the No-Build Alternative, the Corridor Alternatives also assume the implementation of the transportation system improvements that are currently listed in local, regional, and state transportation plans and that are funded for construction. The three corridors that advanced from the screening process to become Corridor Alternatives are I-75 Southern Crescent, East Southern Crescent, and I-75/Rome Southern Crescent as illustrated in **Figure 2-16**. To streamline the naming convention used in this Tier 1 DEIS, the phrase "Southern Crescent" will be omitted as it applies equally to all.

For this Tier 1 DEIS, the Corridor Alternatives are examined within corridors 1,000 feet in width, which allows for variation in the horizontal alignments to be determined during the Tier 2 NEPA phase and is sufficiently wide to evaluate the potential environmental issues associated with the alternatives. No alignments have been defined in this Tier 1 DEIS. The vertical alignments, also to be determined during the Tier 2 NEPA phase, would vary along the corridors between at-grade, elevated structure, and tunnel, depending on the topographic conditions and existing development within each corridor alternative. All Corridor Alternatives would be constructed as exclusive facilities that do not share track with other trains and are grade separated when crossing roadways or rail lines.

In this Tier 1 DEIS, the Corridor Alternatives are considering both steel-wheeled and Maglev technologies. The potential station locations presented are conceptual and are intended to indicate general areas to be served by the alternative, not specific sites of stations. Exact locations of potential stations will be determined during the Tier 2 NEPA phase.

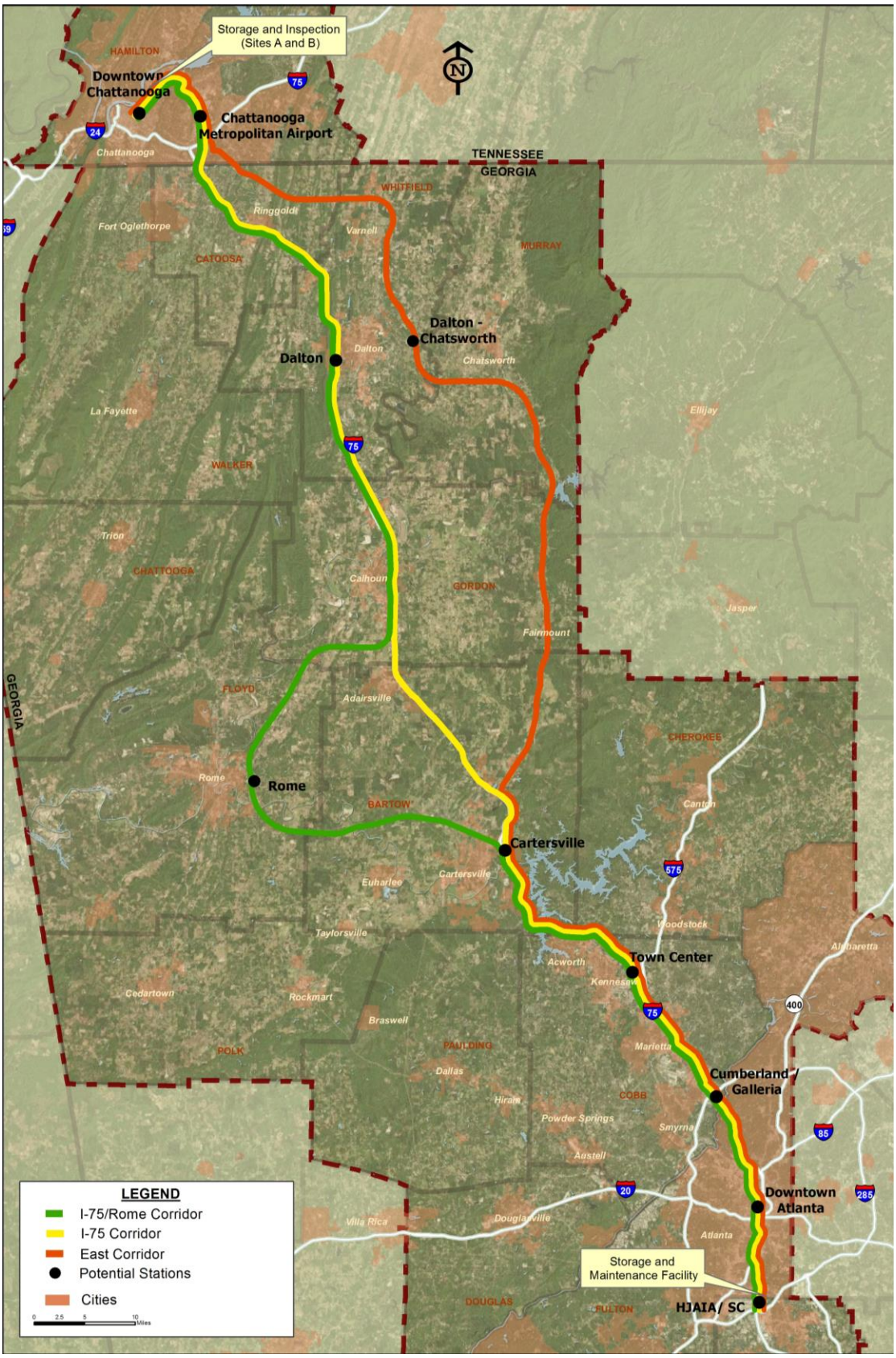
I-75 Corridor Alternative: The I-75 Corridor Alternative begins on the east side of HJAIA at the proposed HJAIA/Southern Crescent (HJAIA/SC) station, immediately adjacent to I-75, and follows I-75 to a point south of the proposed downtown Atlanta station. The corridor continues north underground through downtown Atlanta to I-75 north and uses the I-75 right-of-way (ROW) to the proposed Cumberland/Galleria station. It continues north along the I-75 ROW to the proposed Town Center, Cartersville, and Dalton stations. North of I-24 in Tennessee, the corridor continues along an existing CSX rail ROW to proposed stations at CMA and in downtown Chattanooga.

East Corridor Alternative: The East Corridor Alternative follows the same alignment as the I-75 corridor to the proposed Cartersville station. North of the Cartersville station, the corridor deviates from I-75 and continues along existing CSX ROW generally parallel to US 411, stops at the Dalton-Chatsworth and CMA stations, and continues to the proposed downtown Chattanooga station.

I-75/Rome Corridor Alternative: The I-75/Rome Corridor Alternative follows the same path as the I-75 and East corridors to the proposed Cartersville station. From the proposed Cartersville station, the corridor follows US 411 to Rome, continues north along an existing CSX rail ROW to rejoin I-75 between the proposed Cartersville and Dalton stations. The corridor continues north along the I-75 ROW to the proposed stations at Dalton and CMA and in downtown Chattanooga.

Each of the Corridor Alternatives includes proposed areas for stations. Stations would provide park-and-ride facilities with direct pedestrian connections to the stations. The station type, configuration, and exact location of the proposed station will be developed during the Tier 2 NEPA phase if a Corridor Alternative is selected as a Preferred Alternative to be further evaluated.

Figure 0-2: Corridor Alternatives



General areas for a potential storage, maintenance and inspection facility are identified in **Figure 0-2**. Exact locations for the storage, maintenance and inspection facilities have not been identified nor were they evaluated in this Tier 1 DEIS. Storage yard capacity requirements would be based on the required fleet and the operating plan. For the purpose of this Tier 1 DEIS, it is assumed the proposed Project would include:

- A storage and heavy maintenance facility near the southern terminus in the vicinity of HJAIA. This facility also would include the command center for all systems and train wash facilities; and
- A storage and inspection yard near the northern terminus within the Chattanooga area. It would provide facilities for running inspections, light duty repairs on equipment, as needed, and train storage. This yard also would include a control tower to control access to and within the yard.

Table 0-1 presents key attributes of each Corridor Alternative.

Table 0-1: Corridor Alternatives Attribute Comparison

Corridor Alternative (Potential Number of stations)	Length of Alternative (miles)	Projected 2040 Total Daily Ridership* (passengers)	Time to Travel Corridor End to End (minutes)
I-75 (8)	128	11,725	88
East (8)	139	8,556	95
I-75/Rome (9)	150	13,204	102

* Appendix D provides Travel Demand Modeling information.

0.2 Summary of Key Environmental Findings

The Tier 1 analysis of environmental consequences described in this chapter determined that the Project as well as the No-Build Alternative projects (see Section 0.1.3.4) have the potential to impact the human and natural environment.

No-Build Alternative: The extent to which the projects in the No-Build Alternative would avoid or minimize impacts on the human and natural environment can only be determined through environmental analysis to be undertaken by the sponsors of those projects. Key findings of this Tier 1 assessment are that the No-Build Alternative:

- Would increase capacity and expand service in selected portions of the Project Area transportation network, but would not enhance passenger mobility throughout the Project Area between the metropolitan areas and airports of Atlanta and Chattanooga;
- Would not adequately address the transportation needs of projected population and employment growth in the Project Area, would not increase transportation options, would not increase airport and intermodal connections, would not fully address transportation limitations on economic growth, and would not provide faster and more reliable ground transportation service as an alternative to highway, intercity bus and air travel;
- Would not improve air quality because it would not reduce the quantity or the growth rate of mobile source emissions resulting from vehicle miles traveled on the highway network in the Project Area; and
- Potentially would have impacts on communities, parks, wildlife refuges and recreational areas, cultural resources, water and biological resources.

Corridor Alternatives: Key findings of the Tier 1 assessment are that the Corridor Alternatives:

- Would enhance regional mobility and accessibility in the Project Area;
- Would help address the transportation needs of projected population and employment growth in the Project Area, particularly in terms of increasing transportation options, increasing airport access and intermodal connections, address transportation limitations on economic growth, and provide faster and more reliable ground transportation as an alternative to highway, intercity bus and air travel;
- Would improve air quality by providing a transportation option that does not increase the quantity or the growth rate of mobile source emissions resulting from vehicle miles traveled on the highway network in the Project Area; and
- Potentially would have impacts on communities, parks, wildlife refuges and recreational areas, cultural resources, water and biological resources.

In regard to potential human and natural environment impacts, the Tier 1 analysis revealed several differences among the Corridor Alternatives:

- Ridership: The I-75/Rome Corridor Alternative would have the highest ridership, followed by the I-75 Corridor Alternative; the East Corridor Alternative would have the lowest ridership.
- Travel time: End to end travel times vary among the Corridor Alternatives with the I-75 Corridor Alternative being the shortest at 88 minutes, the East Corridor Alternative at 95 minutes, and the I-75/Rome Corridor Alternative at 102 minutes.
- Transportation: The I-75 Corridor Alternative would use the most existing transportation ROW, followed by the I-75/Rome Corridor Alternative. The East Corridor Alternative would use the least existing transportation ROW, thereby having the highest potential for adverse effects according to this measure.
- Air quality: All Corridor Alternatives would result in reduced emissions. The I-75/Rome Corridor Alternative has the highest potential to transfer trips from the highway system to the HSGT and, thereby, reduce vehicular emissions. This finding is based solely on ridership.
- Noise and Vibration: All Corridor Alternatives would have potential noise and vibration impact. The I-75 Corridor Alternative is the best performing for both noise and vibration sensitive land uses within their respective screening distances. This may be attributed to the fact that a longer length of the I-75 Corridor Alternative is adjacent to the interstate highway system, whereas the other two alternatives deviate from the interstate and travel along U.S. highways (which tend to have more development located closer to the roadway than interstate highways).
- Population and Employment Access: County-based 2010 U.S. Census data demonstrate that the more urbanized areas typically have higher densities of minority and low-income populations compared with rural areas. The ratio of environmental justice (EJ) areas to non-EJ areas within each Corridor Alternative when measured by linear mile along each corridor is 0.6:1 for the I-75 Corridor Alternative and 0.5:1 for the East and I-75/Rome Corridor Alternatives. Moreover, not all Corridor Alternatives serve the same proposed station locations or the same EJ populations. For example, only the I-75/Rome Corridor Alternative would serve the proposed Rome station area. Similarly, only the East Corridor Alternative would serve the proposed Dalton-Chatsworth station area. Therefore, depending on the Corridor Alternative, some EJ populations in the study area would be served and some would not.
- Parklands and wildlife refuges: The difference between the Corridor Alternatives in terms of total acreage of potentially affected parkland and wildlife refuges is insignificant; however, there is distinguishable difference in the number of individual parks or refuges that could be affected.

The I-75/Rome Corridor has the highest number of potential parklands that could be affected and the East Corridor has the least.

- Historic resources: The East Corridor Alternative has twice the number of known historic resources as the I-75 or I-75/Rome Corridor Alternatives. The higher number is due to the East Corridor Alternative using a lower percentage of existing transportation rights-of-way. This differentiating factor suggests the potential for a higher number of Project impacts on known historic resources if the East Corridor Alternative is advanced.
- Wetlands, streams and floodplains: The I-75/Rome Corridor Alternative has more acres of wetlands and stream crossings than the other Corridor Alternatives. This difference suggests the potential for a higher number of Project impacts on wetlands and streams if the I-75/Rome Corridor Alternative is advanced. The East Corridor Alternative has a considerably higher acreage of floodplains compared with the other alternatives.
- Known threatened and endangered species habitats: The East Corridor Alternative has a larger number of known threatened and endangered species habitats than the I-75 and I-75/Rome Corridor Alternatives. This differentiating factor suggests the potential for a higher number of Project impacts on known threatened and endangered species habitats if the East Corridor Alternative is advanced.

Table 0-2 summarizes the data findings for the Corridor Alternatives; these data are discussed in the remaining sections of this chapter.

In summary, despite the differences among the Corridor Alternatives, each Corridor Alternative demonstrates some level of achievement of the Project purpose based on the data available at this Tier 1 level of study and shown in **Table 0-2**. The East Corridor Alternative has the highest potential for impacts on known historic resources and floodplains, while the I-75/Rome Corridor Alternative has the highest potential to impact wetlands and stream crossings. Compared to the other Corridor Alternatives, the I-75 Corridor Alternative has the lowest potential for impact on known historic resources, streams, and floodplains; impacts on wetlands are similar to the East Corridor Alternative.

Table 0-2: Comparative Summary of the Corridor Alternatives

Needs	Measures	Corridor Alternative		
		I-75	East	I-75/Rome
Enhance regional transportation mobility and accessibility	Time to Travel Alternative End to End (minutes)	88	95	102
	Population within 10 miles of Proposed Station Locations (millions)	2.85	2.86	2.95
	Employment within 5 Miles of Proposed Station Locations (thousands)	869	870	894
	Daily Ridership (number of boardings)	11,725	8,556	13,204
Spur economic growth and regional vitality	Capital Cost (2014$ millions)	$8,760	$10,420	$9,811
Provide safe, efficient, reliable transportation	Provide passenger HSGT service on exclusive guideway	Yes	Yes	Yes
Enhance airport access and intermodal connections	Provide access to HJAIA and CMA; connect to MARTA, GRTA and CCT service areas	Yes	Yes	Yes
Improve air quality nonattainment areas and minimize environmental impacts	Proportion of Corridor Alternative within Existing Transportation Corridor (percent)	76%	31%	53%
	Ratio of EJ areas to overall corridor (based on linear miles)	0.6:1	0.5:1	0.5:1
	Noise-sensitive Land Uses (acres)	5,914	7,519	8,425
	Vibration-sensitive Land Uses (acres)	891	1,695	1,372
	Ratio of Station Areas with and without EJ populations	6:2	6:2	6:2
	Parklands and Wildlife Refuges (acres)	443	447	442
	Parklands and Wildlife Refuges (number)	25	19	30
	Known Archaeological Resources (number)	32	46	38
	Known Historic Resources (number)	26	66	33
	Cemeteries (number)	4	3	5
	Wetlands (acres)	205	205	251
	Stream Crossings (number)	21	18	35
	Floodplains (acres)	1,563	2,576	1,689
	Known Threatened and Endangered Species Habitats (number)	21	38	21
	Known Threatened and Endangered Species Habitats (acres)	1,907	2,158	1,817

0.3 Evaluation of Alternatives

GDOT and TDOT have striven to avoid or minimize effects during Tier 1 analysis by aligning the Corridor Alternatives primarily along existing transportation corridors as opposed to creating wholly new corridors. The buffer areas provide opportunities to avoid or minimize impacts in future design. Yet some potential effects may not be avoidable given the developed character of some communities the Project is intended to serve, the design requirements of the Project, and the need to avoid adversely affecting future operations of the existing transportation facilities. Consequently,

the decision to advance one alternative to the next phase of study involves recognizing and understanding that GDOT and TDOT are working to balance the trade-offs between the benefits and effects of the alternatives.

Each Corridor Alternative would enhance intercity mobility and economic growth throughout the Project Area by providing faster and more reliable ground transportation service between Atlanta, Georgia and Chattanooga, Tennessee. Each Corridor Alternative would provide a highway, intercity bus, or air travel option that would be safe and cost-effective, while avoiding, minimizing, and mitigating impacts on the human and natural environment. The extent to which each Corridor Alternative meets the Project purpose varies, as indicated in **Table 0-3**, which focuses on the 12 distinguishing performance measures.

Table 0-3: Summary of Distinguishing Performance Measures

Needs	Measures	Corridor Alternative		
		I-75	East	I-75/Rome
Enhance regional transportation mobility and accessibility	Time to Travel Corridor Alternative End to End (minutes)	88	95	102
	Daily Ridership (number of boardings)	11,725	8,556	13,204
Spur economic growth and regional vitality	Capital Cost (2014$ millions)	$8,760	$10,420	$9,811
Minimize environmental impacts	Proportion of Corridor Alternative within Existing Transportation Corridor	76%	31%	53%
	Noise-sensitive Land Uses (acres)	5,914	7,519	8,425
	Vibration-sensitive Land Uses (acres)	891	1,695	1,372
	Known Historic Resources (number)	26	66	33
	Wetlands (acres)	205	205	251
	Stream Crossings (number)	21	18	35
	Floodplains (acres)	1,563	2,576	1,689
	Parks & Wildlife Refuges (number)	25	19	30
	Known Threatened and Endangered Species Habitats (number)	21	38	21

Notes:
High
Medium
Low

The I-75 Corridor Alternative is the best performing Corridor Alternative. It rates High for most performance measures, including travel time, capital cost, use of existing transportation corridors, potential noise and vibration impacts, and potential impacts to known historic resources, wetlands, floodplains, and known threatened and endangered species habitats. It rates Medium for ridership and stream crossings. The I-75 Corridor Alternative does not rate Low for any of the distinguishing measures.

The East Corridor Alternative rates High in terms of potential impacts on wetlands and stream crossings, and rates Medium with regard to travel time and potential impacts to known threatened and endangered species habitats. The East Corridor Alternative has more noise-sensitive land uses than the I-75 Corridor Alternative, and it has the most vibration-sensitive land uses of the three Corridor Alternatives. The East Corridor Alternative performs least well among the Corridor Alternatives in the areas of ridership, capital cost, and potential impacts to known historic resources and floodplains.

The I-75/Rome Corridor Alternative rates High for ridership and potential impacts to known threatened and endangered species habitats. It rates Medium with regard to use of existing

transportation corridors and potential impacts to known historic resources and it rates Low for travel time, potential noise impacts, and potential impacts to wetlands and stream crossings.

The No-Build Alternative projects would provide some improvements in roadway and transit operations within the Project Area, by increasing capacity and expanding service in selected portions of the Project Area transportation network. It is reasonable to expect that these planned improvements would reduce travel time and congestion of roadways in the Project Area, and increase transit ridership where new or expanded transit services are proposed. However, none of the No-Build Alternative projects alone or in aggregate will enhance passenger mobility throughout the Project Area between the metropolitan areas and airports of Atlanta and Chattanooga as specified in the Project purpose. For this reason, the No-Build Alternative does not achieve the Project purpose.

The projects in the No-Build Alternative would incur costs and potential effects on the human and natural environment that would be determined by the sponsors of those projects. As the geographic scope and nature of the No-Build Alternative projects is limited, the potential effects of the projects are likely to be limited. Thus, the No-Build Alternative has the potential to cause fewer effects on the human and natural environment than the Corridor Alternatives.

The findings of this analysis indicate that the decision to be made by the Tier 1 Final EIS/Record of Decision (ROD) involves examining the trade-offs between the benefits and potential effects of the Corridor and No-Build Alternatives. Given the use of 1,000 feet wide study areas for the Corridor Alternatives, opportunity exists to avoid or minimize effects on the human and natural environment as the Project advances in Tier 2 NEPA analysis. Because most environmental impacts can be reasonably avoided/minimized, cost-effectiveness criteria provide a more distinguishing comparison between alternatives at the corridor level.

If a Corridor Alternative is selected, FRA, GDOT, and TDOT would work to preserve existing and planned transportation operations in the existing corridors they affect as well as avoid or minimize impacts on the human and natural environments. If a Corridor Alternative is selected, GDOT and TDOT will coordinate with regulatory agencies in Tier 2 to identify and refine alignments that avoid or minimize adverse effects. Likewise in the Tier 2 phase of the project, GDOT and TDOT will work with affected stakeholders and the communities to avoid or minimize adverse effects of alignments they develop during Tier 2 study.

0.4 Coordination with Agencies, Stakeholders, and the Public

In accordance with the *Agency and Stakeholder Involvement Plan* (ASIP) (GDOT 2014) and SAFETEA-LU requirements, between 2007 and 2013, GDOT and TDOT held meetings with participating agencies, Project stakeholders, and the public. The outcome of these meetings indicated support by attendees for the construction and operation of the Project. Public involvement activities were ongoing throughout the process and included the following:

Agency Scoping **-** The environmental planning and review process for the Project began with early coordination and an agency scoping process with participating agencies, which are defined by SAFETEA-LU as those with an interest in the Project. A list of participating agencies for the Project is provided in **Appendix E - Agency Coordination and Public Outreach**. The Project Team, which includes GDOT and TDOT, decided to defer the identification of cooperating agencies to the Tier 2 NEPA phase when a corridor alternative is selected. The scoping process began on August 22, 2007 and ended on October 4, 2007 during which two Agency Scoping Meetings were held. The scoping process was used to identify the range of mode technologies and corridors to be studied, the potential impacts to the human and natural environments, and the issues and concerns to be addressed in the Tier 1 analysis.

Interagency Coordination –GDOT and TDOT held meetings between federal and state lead agencies on a monthly basis. These meetings provided opportunity for ongoing coordination and discussion of the Project process, products, and issues. In addition, GDOT and TDOT held meetings with participating agencies to review the key Tier 1 NEPA milestones. Participating agencies were involved in, and participated in, the review of the Project's purpose and need; the identification of the potential corridors and mode technologies; the corridor alternative screening and corridor alternative development; and the scope of the environmental impact assessment of the Tier 1 DEIS. GDOT and TDOT conducted agency coordination periodically between 2011 and 2013.

HSGT Steering Committee - This is a sub-committee of the Georgia State Transportation Board's Intermodal Committee (the Georgia Board) that supported the development of the Tier 1 DEIS. GDOT and TDOT provided regular briefings to the Steering Committee throughout the development of this Tier 1 DEIS. The Steering Committee also provided input to GDOT and TDOT project management staff at key points.

Native American Tribes – Since Native American Tribes may have interests regarding natural and cultural resources that could be in the Project Area, during the Scoping Process in 2007, GDOT contacted potentially affected tribes and the Georgia Natural Heritage Program (GNHP) via letter to notify them of the Project and to invite them to participate in the planning process. GDOT and TDOT will continue to coordinate with Native American Tribes and GNHP throughout Project development[2].

Stakeholders - GDOT and TDOT engaged stakeholders, identified as any agency, organization, or group with an interest in the Project, but not designated as a participating agency, on an ongoing basis to provide timely and ongoing feedback.

In the early stages of the Tier 1 DEIS between January and June 2008, local government stakeholders were involved in 19 meetings held with local planning and technical staff in the Project Area. More than 60 local government representatives participated. From July to September 2008 over 20 stakeholder meetings were held with community, neighborhood, and business organizations. To support the corridor screening and alternative development process, nine additional stakeholder meetings were held in October and November 2010.

Public Involvement - There have been two major decision points where significant involvement from the public was solicited:

- In 2007, Public Scoping Meetings were held in three different locations during September to develop the purpose and need, and the range of potential corridors and mode technologies to be evaluated in the Tier 1 DEIS. These Public Scoping Meetings were advertised in local newspapers such as the *Atlanta Journal Constitution*, the *Rome-News Tribune, the Daily Tribune-News of Cartersville*, and the *Chattanooga Times-Free Press*. Meetings were also announced on the Project website (https://www.dot.ga.gov/travelingingeorgia/rail/Pages/Atl-Chatt.aspx); and
- In 2010, Public Information Open House Meetings were held in four different locations in November to review the corridor screening and alternative development process and results. Advertisement for the public information open house meetings appeared on the Project website and the GDOT website, a Project flyer was distributed to those listed in the contact database, and notices were sent to chambers of commerce and other agencies in the Project Area. Public service announcements were sent to local radio stations and meeting announcements were sent to online calendars. Press releases were distributed to GDOT's media contact list. The chambers

[2] The coordination should not be considered full consultation under Section 106 of the National Historic Preservation Act. Section 106 consultation will be conducted during the Tier 2 NEPA phase.

of commerce in each city assisted in promoting the meetings by distributing flyers by email and posting on their websites.

In accordance with NEPA and FRA's procedures, once the Tier 1 DEIS is made available for public review, there will be a minimum 45 day public comment period. During that time, FRA, GDOT and TDOT will hold a public meeting to provide interested parties to learn more about the Project, submit comments on the Project, and obtain feedback from the Project team on the Tier 1 DEIS. After the close of the meeting and public comment period, FRA, GDOT and TDOT will consider the public and agency input as well as the findings of the Tier 1 DEIS.

0.5 Next Steps

After FRA publishes the Tier 1 DEIS and the public comment period is completed, GDOT and TDOT will prepare a combined Tier 1 Final EIS (FEIS) and Record of Decision (ROD) wherein the Preferred Corridor Alternative will be identified.[3] FRA will sign the combined FEIS/ROD, thereby selecting the Preferred Corridor Alternative. Should funding for further study become available, FRA, GDOT, and TDOT will then evaluate potential alignments configurations within the Preferred Corridor Alternative in the Tier 2 NEPA process.

Since there will be no selection of a preferred technology as part of this Tier 1 DEIS, both Maglev and steel-wheel technologies would advance for consideration with the Preferred Corridor Alternative. When a technology is selected, the selected alignment will be refined to optimize the operation of the selected technology.

[3] Pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b), FRA will issue a combined FEIS/ROD, unless FRA determines that statutory criteria or practicability considerations preclude issuance of such a combined document.

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Introduction

The Federal Railroad Administration (FRA), in cooperation with the Georgia Department of Transportation (GDOT) and the Tennessee Department of Transportation (TDOT), prepared this Tier 1 Draft Environmental Impact Statement (DEIS) for the proposed Atlanta – Chattanooga High Speed Ground Transportation (HSGT) Project (Project). An Environmental Impact Statement (EIS) is required when a major federal action is likely to have a significant impact upon the quality of the human and/or natural environment. GDOT anticipates that if the Project were advanced, major federal actions would be required to support Project implementation. The Project is a proposed, new high-speed intercity passenger service connecting Atlanta, Georgia and Chattanooga, Tennessee. HSGT is a self-guided intercity passenger ground transportation - by steel-wheel railroad or magnetic levitation (Maglev) - that is time competitive with air and/or auto for travel markets in the approximate range of 100 to 500 miles. The 'market' for HSGT is a city pair - two metropolitan areas and markets that, by their proximity and configuration, lend themselves to efficient service by ground transportation (FRA 1997). HSGT technology is a self-guided intercity passenger transportation mode that is time-competitive with air and auto for trips of 100 to 500 miles in length. It should be noted that the technology for the Project has not been selected; therefore, certain technologies such as steel-wheel trains or Maglev are still in consideration. FRA, GDOT, and TDOT have deferred evaluation and selection of the technology component of the Project to the Tier 2 National Environmental Policy Act (NEPA) phase.

GDOT defined a broad geographic Project Area for study that is contained, wholly or in part, in the following counties: Fulton, Cobb, Cherokee, Floyd, Bartow, Murray, Whitfield, Gordon, Chattooga, Catoosa, Clayton, Douglas, Paulding, Polk, and Walker counties of Georgia; and Hamilton County of Tennessee. Implementation of HSGT in the Project Area would have independent utility and it could form part of a larger transportation system. A project has independent utility “if it will result, upon completion, in the creation of new or substantially improved High-Speed Rail/Intercity Passenger Rail service, and will provide tangible and measurable benefits even if no additional investments in the same High-Speed Rail/Intercity Passenger Rail service are made” (FRA 2009).

The FRA is the federal lead agency for this Tier 1 DEIS and GDOT and TDOT are the joint lead state agencies. FRA, an operating administration within the United States Department of Transportation (USDOT), has partially funded the preparation of this Tier 1 DEIS under the Transportation Equity Act for the 21st Century (TEA-21) through fiscal year (FY) 2004 Appropriation. Further, FRA has jurisdiction over the safety of railroad operations nationwide and is responsible for administering the High-speed Intercity Passenger Rail (HSIPR) Program. GDOT is leading the preparation of this Tier 1 DEIS, and TDOT is assisting in those efforts. GDOT is referred to in this Tier 1 DEIS as the “Project Sponsor.” FRA, GDOT, and TDOT have developed this Tier 1 DEIS pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] § 4332 et seq.), and implementing regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); 49 USC § 303 (formerly Department of Transportation Act of 1966, Section 4(f)); National Historic Preservation Act (16 USC § 470); Clean Air Act as amended (42 USC §7401); the Endangered Species Act of 1973 (16 USC § 1531-1544); the Clean Water Act (33 USC § 1251-1387); the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 USC § 4601); Executive Order 12898 (Environmental Justice); Executive Order 11990 (Protection of Wetlands); Executive Order 13988 (Floodplain Management); FRA’s Procedures for Considering Environmental Impacts (64 Federal Register [FR] 28545), as well as the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59; SAFETEA-LU); Moving Ahead for Progress in the 21st Century (MAP-21); and Fixing America's Surface Transportation Act (FAST Act)

1.2 Tiering Process

The NEPA process for the Project began with the FRA's publication of a Notice of Intent (NOI) in the Federal Register on August 22, 2007 (see **Appendix A**) to advise the public and other agencies that a Tier 1 DEIS would be prepared for the Project.

The FRA, GDOT, and TDOT are using a tiered process, as provided for in 40 CFR 1508.28, to complete the NEPA environmental review of the Project. "Tiering" is a staged environmental review process applied to environmental reviews of complex projects covering large geographic areas. For the Atlanta – Chattanooga HSGT Project, Tier 1 will select a preferred corridor (generalized area of travel, such as 'I-75' or 'I-75/Rome'); whereas Tier 2 will evaluate specific alignment routes within the preferred corridor selected in Tier 1.This Tier 1 DEIS states the purpose and needs for the Project; provides a broad assessment of the potential transportation, social, economic, and environmental impacts of the No Build Alternative and the alternative corridors for the Project; and presents the outcomes of public and agency coordination that were considered in the Tier 1 assessment and decision-making processes. After completing the Tier 1 DEIS process, including the public involvement period, FRA, GDOT, and TDOT may prepare a combined Tier 1 Final EIS (FEIS)/Record of Decision (ROD), which will identify a Preferred Corridor Alternative.

In this Tier 1 DEIS, exact locations of stations and potential maintenance and storage facilities sites were not determined. Likewise, a preferred technology for the Project will not be selected. Following FRA's Tier 1 ROD, GDOT and TDOT will determine whether and how to move forward to implement a HSGT Project in the region. If the decision is made to move forward, and if sufficient funding is secured,[4] FRA, GDOT, and TDOT will prepare Tier 2 project-specific NEPA documents that examine potential impacts of the proposed action. FRA, in coordination with GDOT and TDOT, will determine the type of Tier 2 NEPA documents to be prepared at that time. The Tier 2 NEPA documents could include any of the following of three types based upon the proposed action:

- Categorical Exclusions (CEs) for actions that do not individually or cumulatively have a significant environmental effect.
- Environmental Assessments (EAs) for actions in which the significance of the environmental impact is not clearly established. EAs can lead to the development of EIS documents or a Finding of No Significant Impact (FONSI).
- Environmental Impact Statements (EISs) for projects where it is known that the action will have significant environmental effect.

The Tier 2 studies will be detailed in nature, as appropriate to the action, and will continue the public involvement effort that began in the Tier 1 process. The detailed environmental analyses in the Tier 2 phase will assess the environmental impacts of each action and identify ways to avoid, minimize and mitigate impacts. FRA, GDOT, TDOT, and any invited cooperating federal agencies will use the Tier 2 NEPA phase to determine the exact location and magnitude of each action, such as types of structures, proposed station locations and configurations, storage and maintenance facility sites, routing within existing right-of-way, bypasses, flyovers, tunnels, etc. As Tier 2 NEPA documents are completed, the permitting process (as appropriate) will be initiated and completed, and the construction process could proceed.

1.3 Project Background and Planning History

For the purpose of this Tier 1 DEIS, GDOT and TDOT defined a broad geographic Project Area for study that is contained, wholly or in part, in the following counties: Fulton, Cobb, Cherokee, Floyd,

[4] In September 2009, FRA awarded the Project approximately $13.8 million, authorized under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). FRA has determined, however, that those funds may only be spent on a Maglev project. The award letter is in Appendix E

Bartow, Murray, Whitfield, Gordon, Chattooga, Catoosa, Clayton, Douglas, Paulding, Polk, and Walker Counties of Georgia; and Hamilton County of Tennessee. The Project Area extends approximately 128 to 150 miles longitudinally, and up to 75 miles laterally. The Project Area is shown in **Figure 1-1**.

The concept of HSGT service between Atlanta, Georgia and Chattanooga, Tennessee has been studied for several years. Connections between Atlanta and Chattanooga were first studied by GDOT as a part of the 1997 *Intercity Rail Plan*. Between 1999 and 2003, the proposed project was considered for HSGT service as part of the FRA's Maglev Deployment Program to demonstrate Maglev train technology in the United States. In a national competition, the FRA selected the Atlanta Regional Commission (ARC) to be one of seven entities in the United States to administer a study demonstrating the feasibility of Maglev technology. The ARC, in association with GDOT and the Georgia Regional Transportation Authority (GRTA), analyzed the proposed Project Area to explore the feasibility and opportunity for HSGT service.

The *Atlanta to Chattanooga Maglev Deployment Study and Project Description* (ARC 2000) studied the southern end of the proposed Project Area between Hartsfield-Jackson Atlanta International Airport (HJAIA) and Town Center in north Cobb County. The study indicated that the proposed Project Area met all applicable FRA criteria established for Maglev technology. Although the Atlanta – Chattanooga Maglev Project was not selected for full funding for an EIS and Preliminary Engineering (PE), the segment from Town Center north to Chattanooga became eligible for funding for further study.

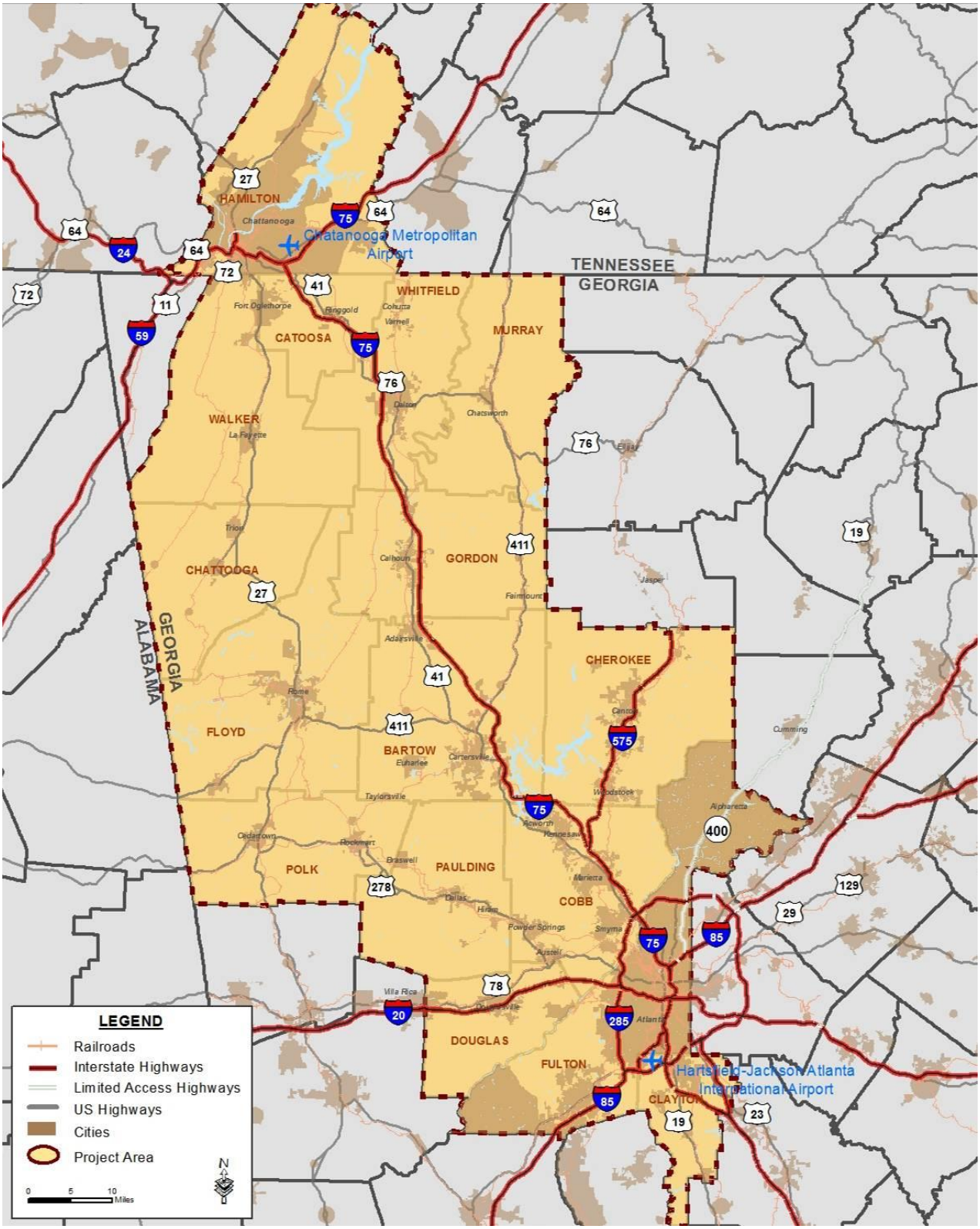
In 2001, ARC received funding to conduct the *Atlanta to Chattanooga Maglev Deployment Study Phase II* (ARC 2002). Potential HSGT alignments and train technologies were studied in the proposed Project Area between Town Center and the Chattanooga Metropolitan Airport (CMA). The potential HSGT alignments were assessed based on capital costs and financial performance relative to ridership projections and cost recovery based on the capabilities of the various technologies. Because HJAIA would generate significant ridership, the study concluded that the route must offer service to HJAIA.

The *Atlanta to Chattanooga Maglev Deployment Study Phase II Addendum (*ARC 2002) focused on the segment between HJAIA and Town Center. The addendum summarized the findings of *the Atlanta to Chattanooga Maglev Deployment Study Phase II* (ARC 2002), planning and environmental study, provided more detailed alignment maps and station plans, and provided operating and cost comparisons between alignments. The final chapter of the addendum explored a timeline for Maglev implementation.

Following these studies, additional TEA-21 federal earmark funds and Section 115 Surface Transportation Program (STP) funds were appropriated to the Federal Highway Administration (FHWA) to support the development of a Tier 1 EIS for HSGT service in the Atlanta – Chattanooga Project Area. These funds were later transferred to FRA for the continued study of development of a HSGT system on the Atlanta-Chattanooga corridor. Under the current cooperative agreement, FRA agreed to re-obligate the remaining un-expended funds to complete the Tier 1 EIS, and therefore is the lead agency.

The Long Range Transportation Plans (LRTPs) of Metropolitan Planning Organizations (MPOs) and the state DOTs in the Project Area incorporate references to the HSGT Project as follows:

Figure 1-1: Project Area Map



The *Greater Dalton Metropolitan Planning Organization 2035 Long Range Transportation Plan* (2010), includes six rail transportation strategies. One of these is to encourage the construction of the High Speed Maglev Train from Chattanooga to Atlanta. The plan states:

> *High-speed rail service from Chattanooga to Atlanta along I-75 through Whitfield County could greatly reduce the volume of traffic on I-75 and would greatly improve the integration and interconnections on a regional basis of a variety of modes of travel, particularly automobile and air travel. Other benefits of the High-speed Maglev train would include the potential for new business developments and employment opportunities at a yet to be determined, proposed new Dalton Station site and along the corridors to serve passengers and local residents alike. This alternative mode of travel to and through the region would provide transportation choices for citizens of diverse income levels while improving the travel time, comfort and convenience for business travelers and tourists in the region.*

Chattanooga Hamilton County North Georgia Long-Range Transportation Plan, Volume 1 2040 LRTP Update (2014), prepared by the Chattanooga-Hamilton County Regional Planning Agency (CHCRPA), has a number of strategic planning concepts that support development of a more sustainable, multimodal, and cost-effective transportation program. These concepts include, by reference, the HSGT proposal.

> *Federal funding has been appropriated, though not yet authorized, for the continuation of project development for the Atlanta-Chattanooga-Nashville high speed rail corridor. It is anticipated that these funds will be released in the near future. Funding for implementation of the Project is expected to come from various sources including, but not limited to Federal Rail Administration, Federal Highway Administration, and Federal Transit Administration as well as state and local partners. Funding for this project will be included in a future RTP [Regional Transportation Plan] update given the status of the appropriations and likelihood the Project will move forward in the future.*

The Rome-Floyd County Planning Department *Long Range Transportation Plan 2040 (2012)* contains a rail section. The plan states that:

> *In 2009, GDOT carried out studies to construct a high speed passenger rail system between the Atlanta Hartsfield-Jackson Airport and the Chattanooga Airport. The current preferred route for that system would not include service in Floyd County. However, it would include a station in Cartersville that Floyd County residents would no doubt use in order to avoid the road congestion and parking issues associated with driving passenger vehicles to these airports.*

Under the Needs section it states that:

> *The railway lines and facilities in the Floyd-Rome Urban Transportation Study (FRUTS) area are privately owned and operated. The local governments will continue to work with the railroad companies to assure efficient movement of freight while having minimal negative impact on the safe, efficient movement of motorize vehicles and pedestrians. The community encourages the state and federal governments to proceed with construction of intermodal projects that would provide passenger rail service to Atlanta, Chattanooga, and other destinations.*

The purpose of the Project also has been identified as a potential rail initiative in TDOT's *2035 Long Range Transportation Plan Amendment Modal Needs Final Report*; which states that the HSGT Project will be monitored in coordination with the State of Georgia as it develops its concept for the Project (2007).

GDOT's *2005-2035 Statewide Transportation Plan* (2006) does not specifically reference this Project; however, passenger rail as a mode is an identified recommendation for its multimodal and intermodal initiatives.

TDOT prepared a statewide rail plan in 2003 that recommended intercity passenger service with neighboring states, including Georgia. A future connection to Nashville, Tennessee also was noted as a possibility. With intercity passenger service corridors in the planning stages to the east, west, and south of the Atlanta – Chattanooga Project Area, the Project could be part of an HSGT network serving the Southeast.

1.4 Purpose

The purpose of the Project is to enhance intercity mobility and economic growth throughout the Project Area between the metropolitan areas and the airports of Atlanta, Georgia, and Chattanooga, Tennessee, by providing faster and more reliable ground transportation service to the public as an alternative to highway, intercity bus, and air travel, in a manner that is safe and cost-effective, while avoiding, minimizing, and mitigating impacts on the human and natural environment. This purpose is supported by the LRTPs of MPOs in the Project Area and the state DOTs as discussed in **Section 1.3**.

1.5 Needs

In this Tier 1 DEIS, FRA, GDOT, and TDOT are considering actions to address transportation needs stemming from increasing travel demand and forecast population and employment growth. Specifically, the needs for the Project include:

- 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 Minimize Environmental Impacts

1.5.1 Enhance Regional Transportation Mobility and Accessibility

Travel times between Chattanooga and Atlanta are:

- Air – 120 minutes (includes 60 minutes arrival prior to departure and airport gate to gate)
- Intercity bus – 125 to 185 minutes
- Automobile (on I-75) – 110 minutes (non-peak)

The Texas Transportation Institute reported in their *2011 Urban Mobility Report* that the Atlanta region is the 13th most congested area in the United States with an average of 43 hours lost per person annually in travel (TTI 2011). As roadway congestion increases, intercity bus and automobile travel speeds on the roadway network will decrease, and travel times will increase. Because of these factors, the time it takes to travel between destinations, particularly by public transit that operates in mixed roadway traffic will become increasingly unreliable. Thus, there is a need for faster, more reliable transportation options in the Project Area.

1.5.1.1 Population and Employment Growth

Between the years 2000 and 2012, the population of Georgia was the seventh fastest growing in the nation increasing from 8.1 million to 9.7 million, or 19 percent. During the same period, the Tennessee population grew 12 percent from 5.6 million to 6.4 million. As shown in **Table 1-1**, the populations of 11 of the 16 counties within the Project Area between the years 2000 and 2012 grew by 10 percent or more, including increases of 52 percent in Cherokee County and 74 percent in Paulding County. The metropolitan Atlanta population is forecasted to increase from 5.4 million people in 2010 to 8.3 million by the year 2040 (ARC 2010).

Table 1-1: Project Area Population Growth 1990 to 2012

County	1990	2000	2012	% Change 1990-2000	% Change 2000-2012	% Change 1990-2012
Bartow, GA	55,915	76,019	99,872	36%	31%	79%
Catoosa, GA	42,464	53,282	64,226	25%	21%	51%
Chattooga, GA	22,242	25,470	25,905	15%	2%	16%
Cherokee, GA	90,204	141,903	215,014	57%	52%	138%
Clayton, GA	182,052	236,517	262,066	30%	11%	44%
Cobb, GA	447,745	607,751	691,820	36%	14%	55%
Douglas, GA	71,120	92,174	132,124	30%	43%	86%
Floyd, GA	81,251	90,565	96,204	11%	6%	18%
Fulton, GA	648,776	816,006	929,535	26%	14%	43%
Gordon, GA	35,067	44,104	55,192	26%	25%	57%
Murray, GA	26,147	36,506	39,635	40%	9%	52%
Paulding, GA	41,611	81,678	141,846	96%	74%	241%
Polk, GA	33,815	38,127	41,350	13%	8%	22%
Walker, GA	58,340	61,053	68,463	5%	12%	17%
Whitfield, GA	72,462	83,525	102,152	15%	22%	41%
Hamilton. TN	211,000	307,896	337,023	46%	9%	60%
Total Project Area	**2,120,211**	**2,792,576**	**3,302,427**	**32%**	**18%**	**56%**
Georgia Total	**6,478,216**	**8,186,453**	**9,714,569**	**26%**	**19%**	**50%**
Tennessee Total	**4,877,185**	**5,689,283**	**6,353,226**	**17%**	**12%**	**30%**

Source: U.S. Census Bureau, Census 1990 and 2000, and American Community Survey 2012.

ARC forecasts regional employment will increase over 40 percent from 2.7 million jobs in 2010 to 4.5 million in 2040 in metropolitan Atlanta, and the three leading sectors will be Health Care/Social Assistance adding some 276,000 jobs between 2005 and 2040, Professional and Technical services adding 257,000 jobs, and Real Estate adding 150,000 jobs. CHCRPA reports employment grew almost 18 percent between 1990 and 2012 and is forecasted to increase 40 percent from 218,612 in the year 2007 to 305,061 in 2035. As shown in **Table 1-2**, employment in the Project Area grew by over 40 percent from 1990 to 2012.

Table 1-2: Project Area Employment Growth 1990 to 2012

County	1990	2000	2012	% Change 1990-2000	% Change 2000-2012	% Change 1990-2012
Bartow, GA	13,875	22,874	42,991	64.9%	87.9%	209.8%
Catoosa, GA	20,146	27,154	29,467	34.8%	8.5%	46.3%
Chattooga, GA	9,868	10,722	9,487	8.7%	-11.5%	-3.9%
Cherokee, GA	48,237	75,316	105,797	56.1%	40.5%	119.3%
Clayton, GA	96,580	114,468	114,093	18.5%	-0.3%	18.1%
Cobb, GA	253,096	329,136	353,496	30.0%	7.4%	39.7%
Douglas, GA	37,431	46,944	59,497	25.4%	26.7%	59.0%
Floyd, GA	38,308	40,403	39,587	5.5%	-2.0%	3.3%
Fulton, GA	320,149	392,627	447,421	22.6%	14.0%	39.8%
Gordon, GA	17,439	22,451	23,399	28.7%	4.2%	34.2%
Murray, GA	13,247	17,802	15,499	34.4%	-12.9%	17.0%
Paulding, GA	20,732	41,472	66,571	100.0%	60.5%	221.1%
Polk, GA	14,385	15,904	16,213	10.6%	1.9%	12.7%
Walker, GA	26,571	27,753	27,652	4.4%	-0.4%	4.1%
Whitfield, GA	37,932	39,593	44,421	4.4%	12.2%	17.1%
Hamilton. TN	134,440	149,166	158,569	11.0%	6.3%	17.9%
Total Project Area	**1,104,426**	**1,375,785**	**1,556,172**	**24.6%**	**13.1%**	**40.9%**
Georgia Total	**3,090,276**	**3,839,756**	**4,277,991**	**24.3%**	**11.4%**	**38.4%**
Tennessee Total	**2,250,842**	**2,651,638**	**2,815,491**	**17.8%**	**6.2%**	**25.1%**

Source: U.S. Census Bureau, Census 1990 and 2000, and American Community Survey 2012.

1.5.1.2 Congested Transportation Corridor with Increasing Demand

The current and projected levels of congestion on the existing roadway network in 2010 and under the No-Build condition in 2040 are summarized in **Table 1-3.** The Levels of Service (LOS) and average daily traffic (ADT) are illustrated in **Figures 1-2** and **1-3**. Congestion is shown by LOS at representative points on the roadway network between Atlanta and Chattanooga based on a capacity analyses. LOS is a rating ranging from “A” through “F”. LOS A is the best, and represents free flow travel with no traffic congestion, while LOS F reflects conditions where traffic demand exceeds capacity and extreme delays occur. ADT is the total traffic volume during a given time period, ranging from 2 to 364 consecutive days, divided by the number of days in that time period, and expressed in vehicles per day.

According to the analyses, with the exception of six roadway segments mostly located in rural areas, I-75 would operate at LOS D or worse in 2040 throughout the Project Area. Of the 18 segments analyzed along I-75, eight would experience LOS F. All eight segments are in metropolitan Atlanta. US 411, with the exception of one segment, would operate at D or worse in 2040 at all points studied. As LOS degrades and congestion becomes more widespread, travel times on the Project Area highway network will become longer. Base and future year LOS trends on US 41 are generally the same. The LOS varies where it is a LOS D or worse at the southern end of the Project Area until near I-20 where it is at a LOS A. The LOS begins to deteriorate further north of I-285 in Cobb County with a LOS E and begins to improve to LOS A in the Bartow County limits all the way to the Tennessee state line. Additional discussion regarding congestion on the highway network is found in **Section 3.3**.

The *Georgia Interstate System Plan* (GDOT 2004) reported that roadway travel demand along the majority of I-75, north of Atlanta, is projected to exceed capacity by 2030. Travel demand on US 41, US 411, and US 27, the other north-south routes between Atlanta and Chattanooga, also is expected to equal or exceed capacity within the next 30 years notwithstanding planned highway improvement projects. One proposed solution, the US 411 Connector, would provide a direct connection between I-75 and US 411 at its interchange with US 41 west of Cartersville. The Connector is intended to relieve congestion along the existing US 411/SR 20 to the I-75 corridor.

Given the projected increases in travel demand throughout the Project Area, additional solutions to existing and future travel demand are needed.

Table 1-3: LOS on Major Routes in the Project Area (2010 and 2040)

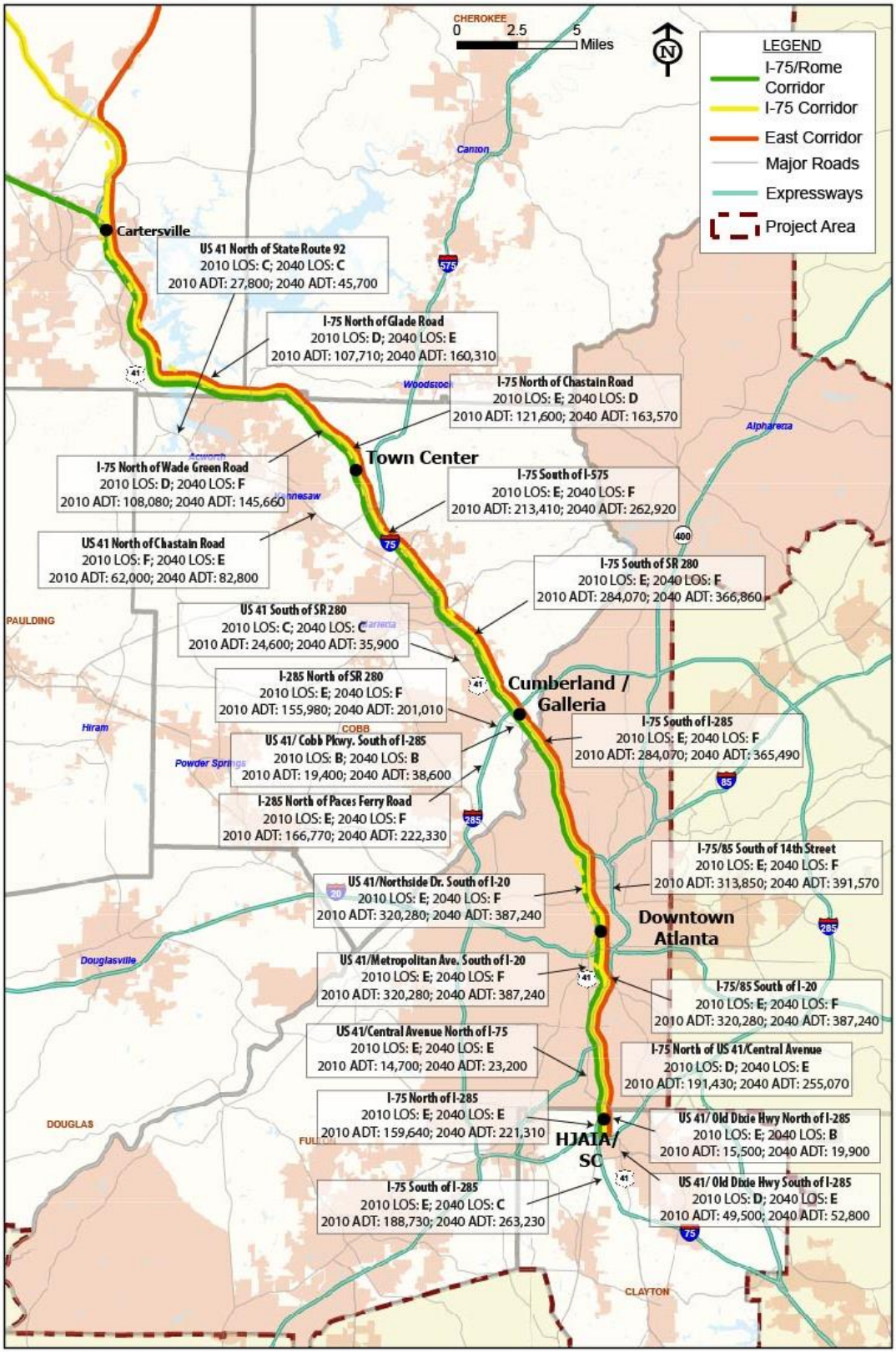
Roadway	Analysis Points	LOS		Roadway	Analysis Points	LOS	
		2010	2040			2010	2040
I-75	South of I-285 (Clayton County)	E	C[1]	US 41	North of I-75	E	E
I-75	North of I-285	E	E[1]	US 41	South of I-20	B	B
I-75	North of US 41	D	E	US 41	South of 14th St.	E	C
I-75 /I-85	South of I-20	E	**F**	US 41	South of I-285 (Cobb County)	B	B
I-75 /I-85	South of 14th Street	E	**F**	US 41	South of SR 280	C	C
I-75	South of I-285 (Fulton County)	E[1]	**F**[1]	US 41	North of Chastain Road	**F**	E
I-75	South of SR 280	E	**F**	US 41	North of SR 92	C	C
I-75	South of I-575	E	**F**	US 41	South of SR 53	A	A
I-75	North of Chastain Road	E	D[1]	US 41	North of SR 136	C	C
I-75	North of Wade Green Road	D	**F**	US 41	North of Carbondale Rd.	A[2]	C[2]
I-75	North of Glade Road	D	E	US 41	North of SR 201	A[2]	A[2]
I-75	South of SR 140	B	C	US 41	North of SR 146	A	A
I-75	South of SR 53	C	D	US 411	East of SR 1 Loop	C[2]	D[2]
I-75	North of SR 136	E	E	US 411	East of Biddy Road	B[2]	D[2]
I-75	North of Carbondale Road	C[2]	C[2]	US 411	East of Alford Road	C	D
I-75	North of SR 201	D[2]	C[2]	US 411	East of Harden Bridge Road	C	D
I-75	North of US 41 / SR 3	E	E	US 411	South of Falling Springs Road	D	E
I-75	North of SR 146	E	E	US 411	North of Salacoa Road	D	E
I-285	North of SR 280	E	**F**	US 411	North of SR 136	C	D
I-285	North of Paces Ferry Road	E	**F**	US 411	South of SR 2	A	A
US 41	South of I-285 (Clayton County)	D	E	US 76	West of US 411	A	A
US 41	North of I-285 (Clayton County)	E	B				

[1]Denotes sections of roadway network with proposed Managed Lanes system.

[2]LOS represents roadway segments provided by MPOs that have a base year different than 2010 or a future year different than 2040. The base year and future year for the Greater Dalton MPO is 2006 and 2035, respectively, and 2009 and 2040, respectively for the Rome Floyd-County MPO.

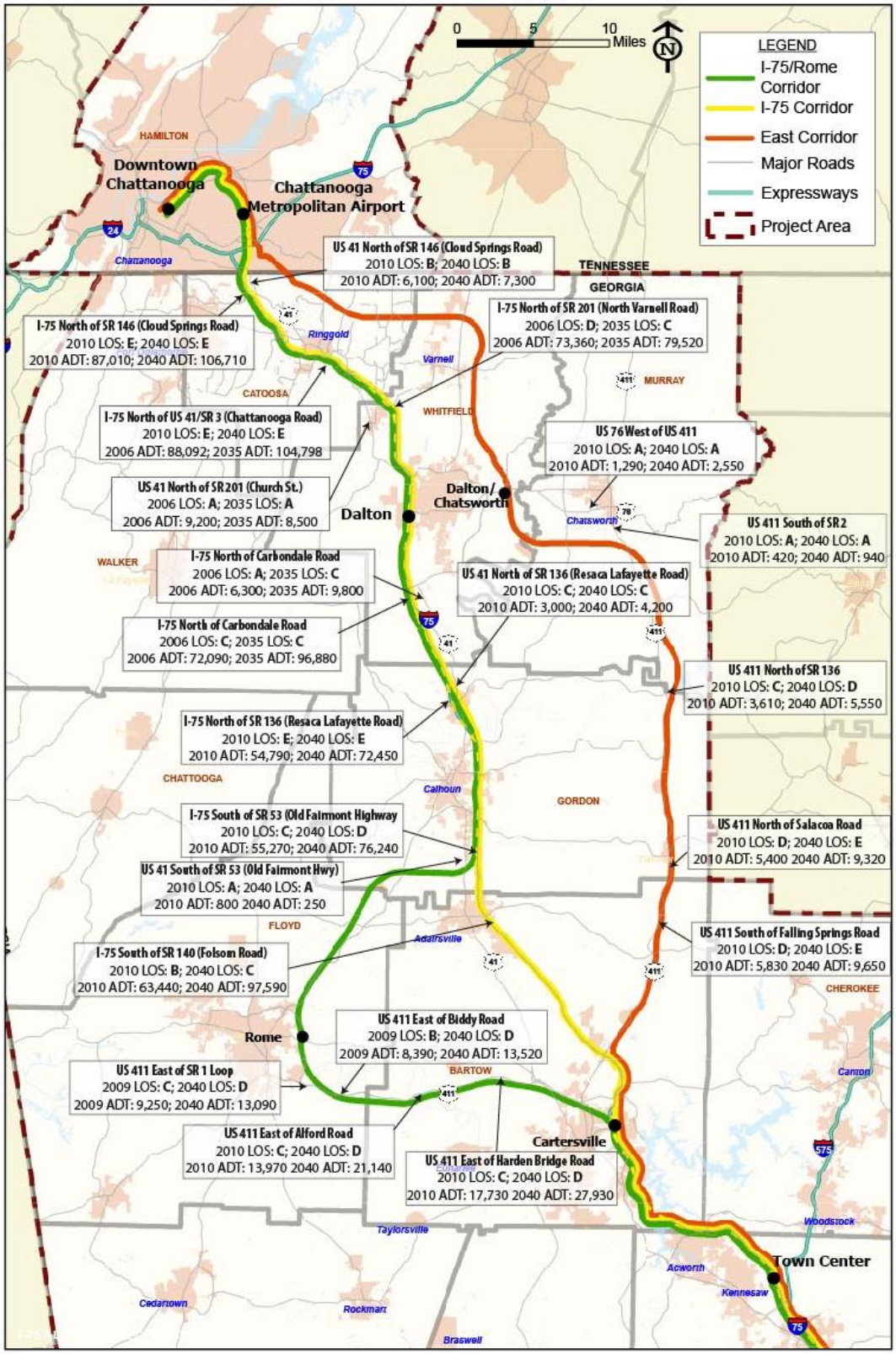
Sources: Transportation Demand Models for ARC, Greater Dalton MPO, Chattanooga-Hamilton County Regional Planning Agency, and Rome-Floyd County MPOs 2013 and TDOT 2014

Figure 1-2: Roadway Level of Service (LOS) and Average Daily Traffic (ADT) – South



Sources: Transportation Demand Models for ARC, Greater Dalton MPO, Chattanooga-Hamilton County Regional Planning Agency, and Rome-Floyd County MPOs 2013 and TDOT 2014

Figure 1-3: Roadway Level of Service (LOS) and Average Daily Traffic (ADT) – North



Sources: Transportation Demand Models for ARC, Greater Dalton MPO, Chattanooga-Hamilton County Regional Planning Agency, and Rome-Floyd County MPOs 2013 and TDOT 2014

1.5.1.3 Limited Transportation Options

Intercity travel between Atlanta and Chattanooga is primarily by private automobile with only limited intercity bus service and no intercity rail service. Air shuttle flights are available between the cities, but this option is not always economical or competitive with auto travel time. Delta is the only airline that operates direct flights to Chattanooga from Atlanta. All other airlines require at least one stop before arriving to Chattanooga. Depending on when flights are reserved, fares can range from $200 to over $600 (Delta 2014). In-flight travel time for direct flights is approximately 40 minutes. This time does not include travel to the airport or time necessary to process security, gate, and/or baggage checks.

Private intra-city bus and transit services are available within the Atlanta region, Chattanooga and Rome, but do not serve the entire Project Area. For example, Groome Transportation provides a van airport shuttle service hourly, seven days a week for patrons traveling between HJAIA and Chattanooga (Groom Transportation 2014). It provides service between Chattanooga and Atlanta only in Dalton, Calhoun, and Marietta.

Greyhound and Megabus operate limited intercity bus service between Atlanta and Chattanooga. Greyhound offers six to eight daily departures, while Megabus provides approximately four daily departures (Greyhound and Megabus 2014). During off peak travel times, direct bus service travel time is approximately 2½ hours between downtown Atlanta and downtown Chattanooga.

These findings demonstrate that Project Area transportation options are limited. In some cases, private automobile travel is the only transportation option. Thus, there is a need to increase transportation options in the Project Area.

1.5.2 Enhance Airport Access and Intermodal Connections

HJAIA serves not only the Atlanta region, but also much of Georgia, for commercial air travel. HJAIA has been ranked as the world's busiest airport since 1998. In 2013, it remained the world's busiest passenger airport with over 94 million enplaning and deplaning passengers and over 900,000 take offs and landings as reported by Airports Council International (Airports Council International 2013).

As air travel at HJAIA increases and roadways become more congested and travel times more unreliable, there is a need for improved access to the airport. Currently, MARTA provides public transit access to HJAIA within its service area. The GRTA Xpress bus and Cobb Community Transit (CCT) services provide some connections to HJAIA from Cobb and Cherokee counties. Groome Transportation provides a van airport shuttle service hourly between HJAIA and Chattanooga with service stops in the cities of Dalton, Calhoun, and Marietta (GRTA and CCT 2014). However, Groome makes no other stops between Chattanooga and Atlanta (Groome 2014). Greyhound and Megabus bus provide service between Atlanta and Chattanooga, but not all parts of the Project Area are served (Greyhound and Megabus 2014). Thus, there is a need to enhance transportation access to HJAIA in the Project Area.

CMA is a commercial airport that serves the Chattanooga area as well as south-central Tennessee, northeastern Alabama, and northwestern Georgia. Delta Connection provides nine flights per day between CMA and HJAIA, accounting for 28 percent of CMA's total daily commercial aircraft traffic (CMA 2014). The 2010 CMA plan, *Master Plan Update Chattanooga Metropolitan Airport*, identifies the need to increase the airport's "catchment area" from which their passengers are drawn. The plan states that CMA captures only 55 percent of the region's prospective enplanements. Airports in Nashville, Knoxville, Atlanta, Birmingham, and Huntsville capture the other 45 percent of the region's prospective enplanements.

The need for another airport serving the Atlanta region, encompassing the Project Area, has been under discussion for decades. As HJAIA approaches capacity in 2020, and roadways become more congested and travel times more unreliable, providing additional air service at CMA and improved

ground access to CMA, could become an attractive option for air travelers originating in the Project Area. Thus, there is a need to enhance transportation access to CMA in the Project Area.

In addition to airport access, connections to other transportation modes are needed. For example, a connection to MARTA would provide passengers access to a large number of Atlanta destinations within the MARTA service area. Likewise, intermodal connections to GRTA and CCT would provide access to destinations in those service areas.

1.5.3 Spur Economic Growth and Vitality

Economic growth and development is critically important for the long-term vitality of the people and communities in the Project Area. Economic growth in terms of employment and tourism has been, and continues to be, forecast in Atlanta and to a lesser extent Chattanooga. For example, Atlanta and Chattanooga combined have approximately 45 million visitors annually. Atlanta has become one of the nation's leading tourist destinations, both for Americans and international visitors, with 42 million visitors in 2012 (Atlanta Convention & Visitors Bureau 2014). Chattanooga also has grown as a tourist attraction and on average hosts approximately three million visitors annually (Beise 2014).

Employment and tourism will continue to be important aspects affecting growth of the entire project area. Between 1990 and 2012, employment increased by almost 40 percent in both Atlanta and in the portion of the Project Area within Georgia. In Chattanooga for the same period, the increase was 25 percent. The recent growth in tourism within the Project Area is reported by the U.S. Travel Association in *2012 Travel Economic Impact on Georgia State, Counties and Regions,* and *The Economic Impact of Travel on Tennessee Counties 2012*. On average, every $99,205 spent in Georgia and every $110,524 spent in Tennessee by domestic and international travelers generated one job in 2012. In 2012, domestic and international travelers' spending in Georgia directly supported 241,800 travel industry jobs, an increase of 1.4 percent compared to 2011, and 146,200 jobs in Tennessee, an increase of 1.6 percent.

In the Atlanta metro region, 2012 expenditures by domestic and international travelers totaled $13.0 billion or 54 percent of the statewide total. Fulton ranked number one in expenditures, Cobb ranked second, and Clayton ranked fourth. Hamilton, the only Tennessee county in the Project Area, ranks fourth among Tennessee counties. It had 2012 expenditures of $916.6 million or 16 percent of the statewide total, an increase of 4 percent over 2011. The impact of tourism in Georgia and Tennessee employment is summarized in **Table 1-4**.

Table 1-4: Economic Impact of Tourism in Georgia and Tennessee 2011 compared to 2010

Measure	2011 experience in billions of 2011 dollars	Change from 2010 (percent)
Georgia		
Expenditures by domestic and international travelers	22.7	8.0
Earnings of travel industry employees	7.3	5.6
Tennessee		
Expenditures by domestic and international travelers	25.1	8.6
Earnings of travel industry employees	9.2	4.8

Source: U.S. Travel Association 2011

Among Atlanta's economic competitive advantages are its international airport, rail connections and interstate highway access. These transportation facilities attract and enable residents and visitors to contribute to the local economy. Yet, traffic congestion and delay compound the cost of doing business in the Atlanta and Chattanooga regions and reduce their competitive positions. While transportation is only one element in the formula for economic growth and vitality of an area, it is a substantial one. Outside Atlanta, where fewer transportation options are available, economic growth is metered by the ability of people to access jobs and destinations, both in and outside the Project

Area. Thus, there is a need to address the transportation limitations that hinder economic growth and vitality.

1.5.4 Provide Safe, Efficient, Reliable Transportation

Projected growth in regional travel by truck, rail, auto, transit, and air over the next two decades underscores the need to provide safe transportation. Safety is a paramount consideration in expanding transportation options, with the focus on reducing or eliminating potential conflicts between people and vehicles.

The National Highway Traffic Safety Administration notes that motor vehicle fatalities account for more than 90 percent of all transportation-related fatalities (2012). For the years 2010 through 2012, 3,665 people died in motor vehicle crashes in Georgia, and 2,983 people died in motor vehicle crashes in Tennessee (National Highway Traffic Safety Administration 2013). In a highly-travelled highway corridor such as I-75 between Chattanooga and Atlanta, motor vehicle fatalities and accidents are a concern. Analysis of 2010-2013 crash data for I-75 within the Project Area shows an annual trend of over 4,300 crashes, 1,000 injuries, and over 15 fatalities (Georgia Highway Safety 2014). The majority of these crashes, injuries and fatalities on I-75 occurred within the Atlanta metropolitan area.

In stark contrast, recent FRA statistics indicate that passenger rail travel is one of the safest modes of transportation in terms of crashes and fatalities, particularly compared to highway travel. Nationally, passenger rail is one of the safest ways to travel, especially for intercity transport. Freight and passenger railroad safety in the U.S. has steadily improved over the past several decades and has remained one of the safest modes of intercity transport. In 2011, the number of U.S. fatalities on passenger trains was six passengers or under 1 percent of all transportation fatalities in comparison to autos, which were 32,367, or approximately 94 percent (FRA 2011). Thus, there is a need for a transportation service that is relatively safer than auto travel.

1.5.5 Improve Air Quality Nonattainment Areas and Minimize Environmental Impacts

Through the Clean Air Act (CAA) of 1970 and the CAA Amendments, the U.S. Environmental Protection Agency (USEPA) has issued National Ambient Air Quality Standards to protect the public health and welfare. Regions that do not meet the standards are designated as Nonattainment Areas. The counties within the Georgia portion of the proposed Project Area are designated as a Non-Attainment Area for 8-hour ozone standard and the $PM_{2.5}$ standard. The 1-hour ozone standard has been revoked for the 13-County Atlanta metro area (part of the 20-County area) as of June 15, 2005. Hamilton County, Tennessee is designated as a Non-Attainment Area for the 1997 $PM_{2.5}$ standard. One contributor to poor air quality in the Project Area is the dominance of road-based travel and the exhaust emissions that result. Thus, there is a need to consider means to improve air quality and not exacerbate air quality problems when implementing a new transportation project. There also is a need to protect the natural and built environment in the proposed Project Area.

1.6 Project Goals and Objectives

The goals and objectives for the Project support the purpose and need and were identified through Scoping (see Section 2.1), including stakeholder and public outreach activities. These goals and objectives relate to the avoidance, minimization, and mitigation of environmental impacts and support of economic growth in the Project Area that is consistent with local, regional, statewide and national land use and transportation planning. The following goals define the purpose of the Project and are further defined with individual objectives:

- Improve regional mobility;

- Support and ensure consistency with national, state, and local transportation planning initiatives;
- Avoid or minimize environmental impacts; and
- Promote financial and economic growth.

1.6.1 Improve Regional Mobility

Greater regional passenger mobility enhancement and options are needed to address current and future travel demand and population growth in the Atlanta – Chattanooga Project Area. The following objectives outline this goal:

- Enhance Project Area and intercity mobility;
- Provide an alternative mode to auto travel;
- 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 existing transportation systems cannot accommodate, and increase capacity for intercity mobility;
- Maximize intermodal connections with local transit, major airports, and highways; and
- Support population and employment growth by providing access to HSGT service.

1.6.2 Support and Ensure Consistency with National, State, and Local Transportation Planning Initiatives

An efficient and effective transportation system is one that is coordinated with land use and development decisions. Integrating land use decisions with transportation infrastructure investment is the best approach to address the proposed Project Area's challenges, and promote healthy, sustainable economic development and desirable communities.

Effective transportation links among important Project Area activity centers and major business development areas provide for worker access to jobs, business access to markets, and resident access to services. In addition, passenger stations have the potential to influence and support denser development patterns. This may occur directly through joint development opportunities and indirectly by enhancing land values around proposed station locations.

On a larger scale, GDOT and TDOT have a goal to implement and support federal transportation policies encouraging public transportation investments that increase national productivity and domestic and international competition, as well as improve social and environmental conditions. These policies encourage investments that:

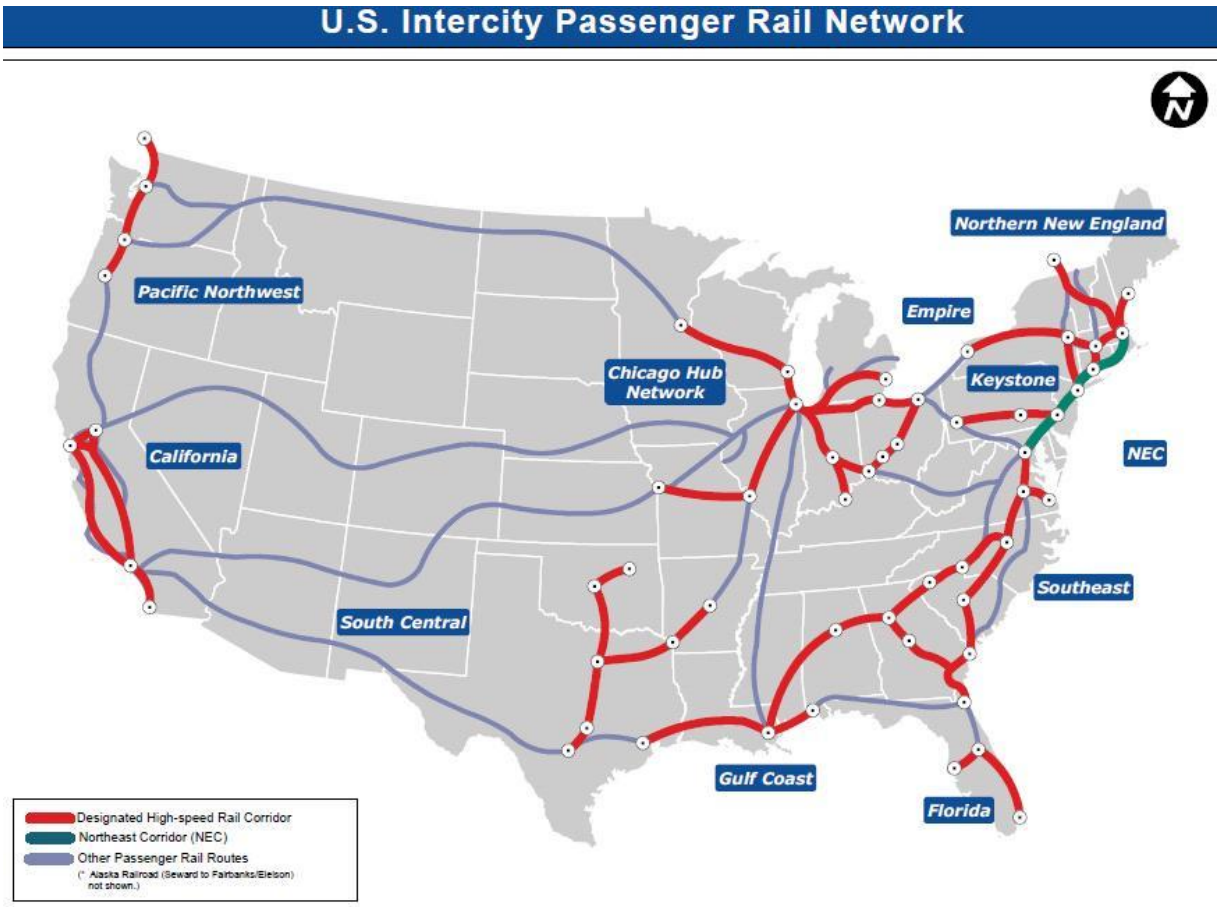
- Reduce energy consumption;
- Link all modes of transportation; and
- Improve public transportation systems and services.

1.6.2.1 National Transportation Planning

Several USDOT sponsored high-speed rail corridors in the planning stages would utilize Atlanta as a key hub, including: a westward corridor to Birmingham, AL; a northeastward corridor to Greenville and Charlotte, NC; and a southward corridor to Macon, GA and Jacksonville, FL (see **Figure 1-4** for the USDOT High Speed Intercity Passenger Rail Program Map). Network linkages are important to the planning and success of the regional HSGT system. The *Tennessee Rail System Plan* (TDOT

2003) notes that the existing passenger rail network in the eastern United States bypasses Tennessee. Likewise, a review of federally-designated high-speed rail (HSR) corridors shows little connectivity between the system in the Southeast region and the designated system in the Midwest. As noted in the Georgia Rail Plan, the Atlanta-Chattanooga-Louisville corridor is under consideration, and that corridor could serve as an important link in connecting the systems in the Southeast and Midwest. Thus, there is a need to provide this critical link in the future regional HSGT network (2009).

Figure 1-4: USDOT High Speed Intercity Passenger Rail Program



Source: FRA. 2009. *Vision for High Speed Rail in America*

1.6.2.2 State and Local Planning

As noted in **Section 1.3**, Project Area MPOs have discussed this Project in their long range transportation plans. At the state level, GDOT first studied the proposed Project Area as part of an *Intercity Rail Plan* (1997). HSGT and destinations along the proposed Project Area also have been noted in GDOT's *2005-2035 Statewide Transportation Plan,* GDOT's *FY 2015-2018 State Transportation Improvement Program (STIP)* (2014), and subsequent *State Rail Plan* (2009), and TDOT's *Tennessee Rail System Plan* (2003).

GDOT's *2005-2035 Statewide Transportation Plan* did not include specific projects. Instead, it generally assessed the transportation system and identified goals for future transportation infrastructure development. Among others, these goals included the following:

- Support the economic viability of Georgia and the U.S. by enabling global competiveness, productivity, and efficiency;

- Increase the safety of transportation infrastructure for motorized and non-motorized users;
- Increase the mobility of people and freight
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns; and
- Enhance the integration and connectivity of the transportation system, across and between modes throughout Georgia, for people and freight.

Georgia's *State Rail Plan* (GDOT 2009) was prepared in accordance with federal requirements established in the Passenger Rail Investment and Improvement Act (PRIIA) of 2008. The plan notes the vision for rail transportation in Georgia and includes the following tenets:

- Serve Georgians well for both passenger and freight services;
- Provide a preferred choice for intra-state travelers and shippers;
- Provide seamless and energy-efficient intermodal connections; and
- Provide a system that supports economic growth and development.

The plan includes a discussion of past studies conducted by GDOT for passenger rail, including Amtrak, intercity passenger services, and HSR. A policy statement is included in the plan that commits GDOT to:

> *Take an active leadership role in the incremental development and implementation of high-speed passenger rail service with efforts to realize 200 mph service in the future* (GDOT 2009).

It also notes that three federally-designated HSR corridors are present in Georgia – the Gulf Coast Corridor and the central and Atlantic branches of the Southeast High Speed Rail Corridor. The fact that two of these corridors connect to Atlanta, making it a hub for HSGT in the southeast, demonstrates the goal that the decisions arising from this NEPA process would be consistent with GDOT's plan.

TDOT's *Tennessee Rail System Plan* (2003) notes that based on projected ridership and costs, the Louisville-Nashville-Chattanooga corridor would be the best for initial passenger service in Tennessee. The first step in the plan is to extend service from Louisville to Nashville, then to Chattanooga and Atlanta. Thus, the decisions arising from this NEPA process would demonstrate consistency with TDOT's plan.

1.6.3 Avoid or Minimize Environmental Impacts

Through the NEPA and design processes, GDOT and TDOT will strive to avoid or minimize environmental impacts, and provide mitigation for unavoidable impacts. Critical environmental objectives include:

- Maximize the use of existing transportation corridors and rights-of-way to the extent practicable;
- Avoid and minimize adverse impacts to historic and archaeological properties, cemeteries, parks, and wildlife refuges;
- Avoid, minimize and mitigate impacts to wetlands, lakes, streams, floodplains and critical threatened and endangered species habitat; and
- Improve regional air quality of the proposed Project Area and help reduce vehicle emissions exacerbating regional Nonattainment Areas.

1.6.4 Promote Financial and Economic Growth

From a financial perspective, an action arising from this NEPA process should be a cost-effective transportation investment in terms of providing a reasonable balance between the estimated cost of the action and its ability to meet the purpose and need. Critical financial objectives include:

- Provide a cost-effective transportation investment and minimize capital costs where possible; and
- Develop a practical and economically viable transportation system.

GDOT and TDOT have a goal to enhance transportation options that support economic growth, enhance the tourism industry and help bolster economic development throughout the proposed Project Area. Critical economic objectives include:

- Improve population and employment access to improved transit service;
- Enhance mobility and attractiveness of Project Area to encourage job growth and tax base increase;
- Support population and employment growth through access to HSGT service; and
- Enhance transportation options that support economic growth, enhance the tourism industry and help bolster economic development.

2.0 ALTERNATIVES CONSIDERED

A wide range of high speed ground transportation (HSGT) mode technologies and alignments have been examined throughout the history of this Project. This chapter describes the process by which technologies and a range of reasonable corridor alternatives, including the No-Build Alternative, were considered. The evaluation processes that were used comply with guidelines of the NEPA; the Safe, Accountable, Flexible, and Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU); the Moving Ahead for Progress in the 21st Century Act (MAP-21), and Fixing America's Surface Transportation Act (FAST Act). The alternatives evaluated in this Tier 1 DEIS are also described.

2.1 Scoping

Scoping for the proposed project was an important part of the initial alternatives definition. Scoping is the first step in the environmental review process under NEPA. At this stage, agencies, organizations, and the public help to determine the scope of issues to be addressed in the Tier 1 DEIS, and identify the significant issues related to the proposed action. The input received during scoping helps to identify the appropriate alternatives and the depth and breadth of environmental analysis to be completed. The formal public scoping process for the Project began with FRA's publication of the Notice of Intent (NOI) to prepare a Tier 1 DEIS, in the *Federal Register* on August 22, 2007, (see **Appendix A**) and ended October 4, 2007. During the scoping process, the public, stakeholders, and government agencies provided input on:

- The purpose and need for the proposed Project;
- Potential mode technologies;
- Potential corridors and station or stop locations;
- Potential environmental issues;
- Methodology for selecting the corridors for further study; and
- Opportunities for public involvement.

The public scoping process for the Project was conducted in accordance with 23 CFR 771.123 and 40 CFR 1501.7. [5] **Chapter 7** provides further information pertaining to agency, stakeholder, and public coordination efforts.

2.1.1 High Speed Ground Transportation Train Technologies

The scoping process identified several potential HSGT train technologies to serve the Project Area. HSGT is a mode of transportation that can travel at greater speeds than traditional rail technology and can provide improved passenger mobility and reduce travel times in the Project Area. For this proposed project, HSGT is defined as trains that can operate at speeds fast enough to provide trip times that are competitive with air, intercity bus, and highway travel. Train technologies that are competitive with air, intercity bus, and highway travel for trips of 100 to 500 miles would meet the Project's purpose and need.

Train technologies considered for this Project included: diesel multiple unit, diesel steel-wheel, diesel –electric steel-wheel, electric steel-wheel, and magnetic levitation (Maglev).

The following provides summary descriptions of the train technologies considered for this project:

- **Diesel Multiple Unit (DMU)** – These diesel-powered vehicles are steel wheel on steel rail trains providing regional, intra-city passenger service mainly in Europe and formerly in the United States (see **Figure 2-1**). The service routes of these vehicles are typically 30 to 35 miles long.

[5] When the Project began, FHWA was a co-Lead Agency for the project. As such, FHWA regulations as well as FRA regulations were referenced.

Trains can achieve a maximum speed of approximately 90 miles per hour (mph), but average 35 mph due to stopping patterns that requires closely spaced stations to support the intra-city, commuter service this technology typically provides. This technology is suited for regional, intra-city travel from outer-ring suburbs to the urban core; however, it is not fit for high-speed interstate and intercity travel due to its slower speeds.

Figure 2-1: Diesel Multiple Unit

Source: Alstom Transport, *http://www.alstom.com/products-services/product-catalogue/rail-systems/trains/products/coradia-lint-regional-train/*

- **Diesel Steel-Wheel** – These diesel-powered vehicles are steel wheel on steel rail trains typically used for commuter and intercity trips ranging from 30 miles to 75 miles. Trains can achieve speeds ranging from 79 to 110 mph. In typical operations, passenger trains utilizing this technology share track with freight rail traffic. Stations are closely spaced (7 to 10 miles apart) and trains tend to average 59 to 69 mph or less due to station stopping patterns. This train technology is in operation in several locations around the United States as a regional transportation alternative to the automobile or bus service. It is best suited for regional, intra-city travel from outer-ring suburbs to an urban core, and is less appropriate for high-speed interstate and intercity travel due to its slower operating speeds. **Figure 2-2** provides an example of diesel-powered steel wheel train in Chicago, Illinois.

Figure 2-2: Diesel Steel-Wheel Metra Commuter Rail, Chicago, Illinois

Source: Wikimedia Commons 2014

- **Diesel-Electric Steel-Wheel** – These electric- and/or diesel-powered vehicles are steel wheel on steel rail trains utilized for long distances. Electric-powered vehicles are in use in the Northeast Corridor of the United States between Boston and Washington, DC with service provided by Amtrak. This technology often operates on exclusive track and does not have to compete with freight rail traffic. Trains can achieve speeds ranging up to 150 mph, but because stations are typically spaced about 30 to 40 miles apart, trains tend to average about 90 mph. **Figure 2-3** shows a typical Amtrak train.

Figure 2-3: Diesel – Electric Steel-Wheel Amtrak Train set, Northeast Corridor

Source: Wikimedia Commons 2014

- **Electric Steel-Wheel** – This train technology utilizes electric-powered vehicles that receive energy from overhead wires (see **Figure 2-4**). The vehicles are steel wheel on steel rail and usually operate on a grade-separated right-of-way (ROW) to eliminate potential points of conflict with pedestrians, motor vehicles, and other rail lines. Per 49 CFR 213.347, there shall be no at-grade (level) highway crossings, public or private, or rail-to-rail crossings at-grade on Class 8 and 9 tracks.[6] FRA limits the maximum allowable operating speed for trains on class 8 track to

[6] 49 CFR Part 213. https://www.gpo.gov/fdsys/pkg/CFR-2011-title49-vol4/pdf/CFR-2011-title49-vol4-part213.pdf

160 mph and 220 mph for class 9 tracks.[7] FRA limits class 7 track to 125 mph operations and there can be at-grade crossings, but when activated a warning/barrier system must be in place to provide physical separation between roads and tracks. In addition, passenger rail operating at speeds above 125 mph do not share track with freight service due to safety concerns and operational efficiently. Therefore, higher speeds and reliable passenger schedules can be met. Vehicle speeds of up to 220 mph are possible. With the exception of portions of the Northeast Corridor where electrified Amtrak Acela trains operate at speeds up to approximately 150 mph; this technology is not in use in the United States. However, Europe and Asia use it quite extensively. This technology is well suited for intercity travel, and previous studies (*Intercity Rail Plan,* GDOT 1997 *and Scoping Summary Report,* GDOT 2008*)* conducted in the Atlanta to Chattanooga corridor documented the ability of this technology to provide a travel time competitive with automobile travel within the corridor (See **Section 1.2**).

Figure 2-4: Electric Steel-wheel Train, Alta Velocidad Espanola (AVE), Toledo, Spain

Source: AECOM 2014

- **Magnetic Levitation (Maglev)** – Maglev utilizes magnetic forces to lift and propel the train along a guideway. Maglev allows the vehicles to hover or float a small distance above the guideway, thereby eliminating friction and rolling resistance. The power is supplied to the magnets through the guideway. Maglev vehicles are capable of speeds of over 300 mph. Maglev requires its own guideway and it can be at-grade, elevated or placed in tunnels. However, Maglev guideways are incompatible with at-grade roadway crossings. Maglev would not rely upon at-grade roadway crossings and, therefore, avoids that particular safety concern. Higher train speeds is an added benefit of Maglev being completely grade separated. Design characteristics of the guideway could affect average speeds, station spacing, and the number of stations. While there are currently no Maglev systems that provide intercity HSGT service, the German Transrapid system is in commercial operation in China on a track over 20 miles long between downtown Shanghai and the Pudong Airport (see **Figure 2-5**). Maglev is also in operation in central Japan and another system is under construction in Beijing. This technology is appropriate for intercity travel, and previous studies (GDOT 1997 and GDOT 2008*)* conducted in the Atlanta to Chattanooga corridor documented the ability of this high-speed technology to provide a travel time competitive with automobile travel within the corridor (See **Section 1.3**).

[7] FRA. 2014. https://www.fra.dot.gov/Elib/Document/3020

Figure 2-5: The Shanghai Transrapid Maglev Train

Source: Wikimedia Commons 2014

Table 2-1 provides estimated travel times for each of the train technologies described above. For comparison, the table also includes auto, air and intercity bus travel times. All travel times presented are end to end (HJAIA to Chattanooga) estimations and based on average speeds of each technology.

Table 2-1: Travel Times by Train Technology and Transportation Mode

Transportation Mode	Approximate Travel Time[1] (minutes)
Train Technology	
DMU	113-129
Diesel Steel-Wheel	76-87
Diesel-Electric Steel-Wheel	59-68
Electric Steel-Wheel	44-50
Maglev	36-41
Existing Travel Modes	
Automobile	110
Intercity Bus	125-185
Air[2]	120

[1]Estimated travel time measured during optimal travel conditions.
[2]Includes 60 minutes arrival prior to departure and airport gate to gate.

As indicated in the table above, even under optimal conditions, DMU travel times are at best comparable to those for air[8] and automobile, and may be worse. DMU technology generally performs better than intercity bus under most travel conditions, although in some instances, intercity bus may be marginally faster. Overall, however, unlike the other train technologies, DMU travel times do not offer much or any improvement over travel times for existing modes. Therefore, DMU was eliminated from further consideration since it would not meet the project's purpose and need; specifically, the need to "enhance regional transportation mobility and accessibility" to provide HSGT service that is time-competitive with air-, intercity bus-, and auto-travel along the corridor.

An HSGT train technology will not be selected until the Tier 2 NEPA phase in which a more detailed level of environmental analysis and engineering will occur. The feasibility of diesel steel-wheel, diesel-electric, electric, and Maglev train technologies, will be considered in more detail and a technology selection will be made during the Tier 2 NEPA process.

2.1.2 HSGT Segments and Corridors

In preparation for the scoping process, the Project Team developed a series of potential HSGT "segments" that could be combined in various configurations to connect HJAIA, Chattanooga Metropolitan Airport (CMA), and the downtowns of Atlanta and Chattanooga. 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 length of HJAIA to downtown Chattanooga. These segments were generated from a review of previous studies that analyzed transportation improvements within the I-75 corridor between Atlanta and Chattanooga. The following studies were reviewed and used to develop the HSGT segments:

- Georgia Intercity Rail Plan Final Report (March 1997);
- Atlanta to Chattanooga Maglev Deployment Study Environmental Assessment (February 2000);
- Concept Design Report for the Multimodal Passenger Terminal (February 2002);
- Atlanta to Chattanooga Maglev Deployment Study, Phase II (March 2002);
- High Speed Trains Nashville – Chattanooga – Atlanta (November 2003);
- Chattanooga Hamilton County/North Georgia Comprehensive Transportation Plan 2030, Long Range Transportation Plan (LRTP) (June 2005); and
- ARC Envision 6/Mobility 2030 Regional Transportation Plan (RTP) (May 2006).

Each segment represents a potential connection that could be made between key destinations in Georgia and Tennessee. For instance, a segment can connect Atlanta to Cartersville (two logical destinations), and the next segment can connect Cartersville to Rome or Cartersville to Dalton-Chatsworth, and so on. 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 SAFETEA-LU, FRA's Procedures For Considering Environmental Impacts (64 FR 28545), and the Council Environmental Quality (CEQ) Regulations for Implementing NEPA (40 CFR Parts 1500-1508). The individual segments identified during the scoping process are listed below, generally from south to north, and illustrated on **Figure 2-6**.

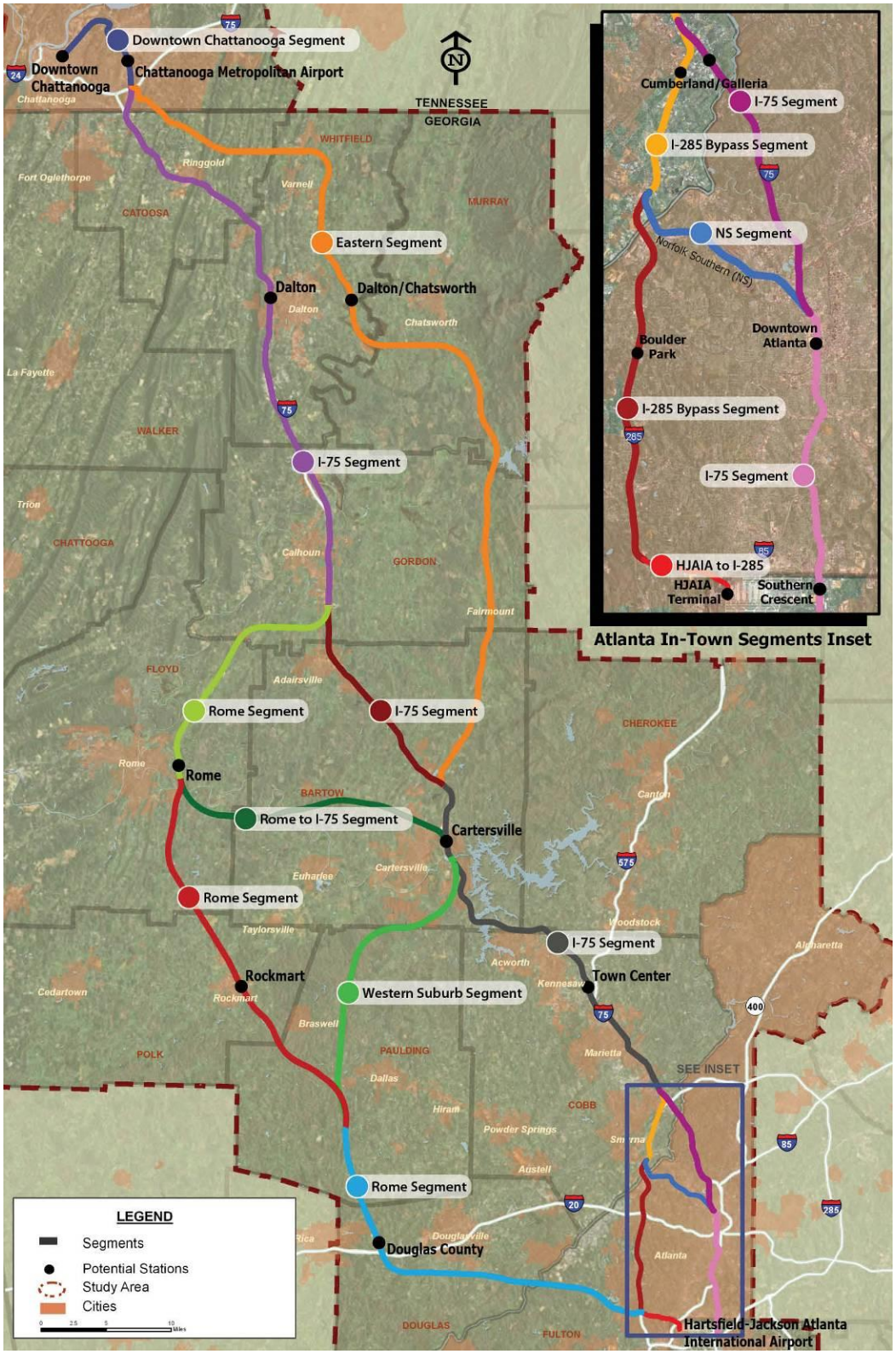
- **I-75 Segment(s)**: The Interstate 75 (I-75) segments generally follow the I-75 ROW from the area to the east of HJAIA, known as the "Southern Crescent" located on the east side of HJAIA, just east of I-75[9], to the Tennessee border;

[8] The calculation for travel time for air travel includes 60 minutes arrival prior to departure and airport gate to gate.

[9] 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 Metropolitan Atlanta Rapid Transit Authority (MARTA) rail and bus, regional commuter rail, and other transit services. Although no specific plan has been adopted, the concept for access to HJAIA from the Southern Crescent would be the construction of an Automatic People Mover (APM) using the median of the new international terminal roadway.

- **NS Segment**: A connection within metropolitan Atlanta, 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 within metropolitan Atlanta from the Main Terminal of HJAIA along Camp Creek Parkway to Interstate 285 (I-285);
- **I-285 Bypass Segment(s)**: Segments using I-285 to bypass I-75 within metropolitan Atlanta;
- **Rome Segment(s)**: Segments that provide options to connect to the city of Rome and back to I-75, bypassing the dense I-75 Corridor in the southwest section of the Project Area by traveling through Rockmart and Douglas County. It follows parts of Camp Creek Parkway and utility corridors in rural areas;
- **Rome to I-75 Segment**: Provides a connection directly to Rome from I-75 near Cartersville;
- **Western Suburb Segment**: A connection in the southern half of the Project Area, which travels from a point just north of Douglasville to Cartersville;
- **Eastern Segment**: A connection in the northern half of the Project Area that follows an existing rail corridor. It leaves the I-75 corridor north of Cartersville and generally follows the Chessie Seaboard Express (CSX) railroad corridor to the CMA vicinity in Chattanooga, TN; and
- **Downtown Chattanooga Segment**: A connection from CMA to downtown Chattanooga following an existing CSX rail line ROW

Figure 2-6: Segments



2.1.2.1 Identification of Corridors and Stations

The Project Team combined the individual segments listed above to form 15 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 fulfilling the needs of the populations to reach key destinations within the Project Area. **Table 2-2** lists the full-length corridors that were generated from the scoping process. **Figure 2-7** through **Figure 2-15** depict the corridors. Note that more than one corridor is shown on some maps.

Potential station locations were identified along each corridor alternative in areas that would serve clusters of higher population and employment densities and that would be accessible by other transportation modes such as airports, city centers, major interstate highways, or major points of interest. Potential station location choices also were based upon the results of scoping and coordination with local city and county officials. The potential station locations, configurations, and layouts will be refined during the Tier 2 NEPA phase. Identifying potential station locations during this Tier 1 stage enables initial analysis of various impacts. **Table 2-2** lists the potential station locations for each corridor. Subsequent Tier 2 analysis will utilize FRA's *Station Area Planning for High-Speed and Intercity Passenger Rail* (2011).

Table 2-2: HSGT Project Corridors and Potential Station Locations Considered

Corridor	Total Length (miles)	Number of Stations	Potential Station Locations	
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 • Boulder Park • Cumberland/Galleria • Town Center • Cartersville	• Dalton • CMA • 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 • Downtown Atlanta • Cumberland/Galleria • Town Center • Cartersville	• Dalton • CMA • Downtown Chattanooga
I-75 Southern Crescent – Southern Crescent through downtown Atlanta along I-75 north to CMA and downtown Chattanooga	128	8	• Southern Crescent • Downtown Atlanta • Cumberland/Galleria • Town Center • Cartersville	• Dalton • CMA • 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 • Boulder Park • Cumberland/Galleria • Town Center • Cartersville	• Dalton • CMA • 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 • Downtown Atlanta • Cumberland/Galleria • Town Center • Cartersville	• Dalton-Chatsworth • CMA • 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 • Downtown Atlanta • Cumberland/Galleria • Town Center • Cartersville	• Dalton-Chatsworth • CMA • 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 • Douglas County • Cartersville • Dalton	• CMA • Downtown Chattanooga

Corridor	Total Length (miles)	Number of Stations	Potential Station Locations	
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 • Douglas County • Cartersville • Rome	• Dalton • CMA • 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 • Boulder Park • Cumberland/Galleria • Town Center • Cartersville	• Rome • Dalton • CMA • 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 • Downtown Atlanta • Cumberland/Galleria • Town Center • Cartersville	• Rome • Dalton • CMA • Downtown Chattanooga

Table 2-2: HSGT Project Corridors and Potential Station Locations Considered (continued)

Corridor	Total Length (miles)	Number of Stations	Stations	
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 • Downtown Atlanta • Cumberland/Galleria • Town Center • Cartersville	• Rome • Dalton • CMA • 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 • Douglas County • Rockmart • Rome	• Dalton • CMA • 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 • Douglas County • Rockmart • Rome • Cartersville	• Dalton • CMA • 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 • Douglas County • Cartersville • Dalton-Chatsworth	• CMA • 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 • Douglas County • Rockmart • Rome • Cartersville	• Dalton-Chatsworth • CMA • Downtown Chattanooga

Figure 2-7: I-75 Terminal I-285, I-75 Southern Crescent NS, I-75 Southern Crescent Corridor

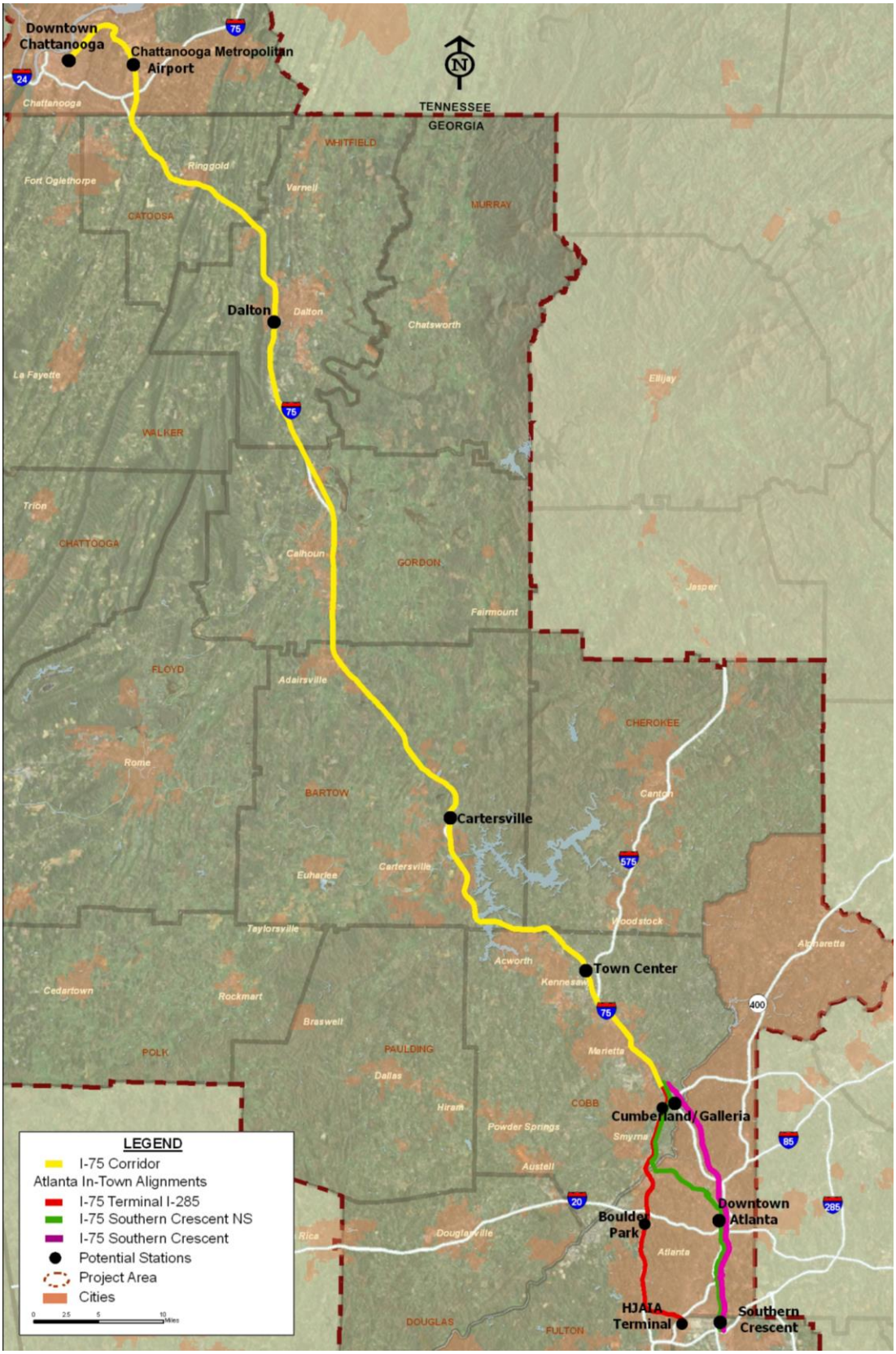


Figure 2-8: East Terminal I-285, East Southern Crescent NS, East Southern Crescent Corridor

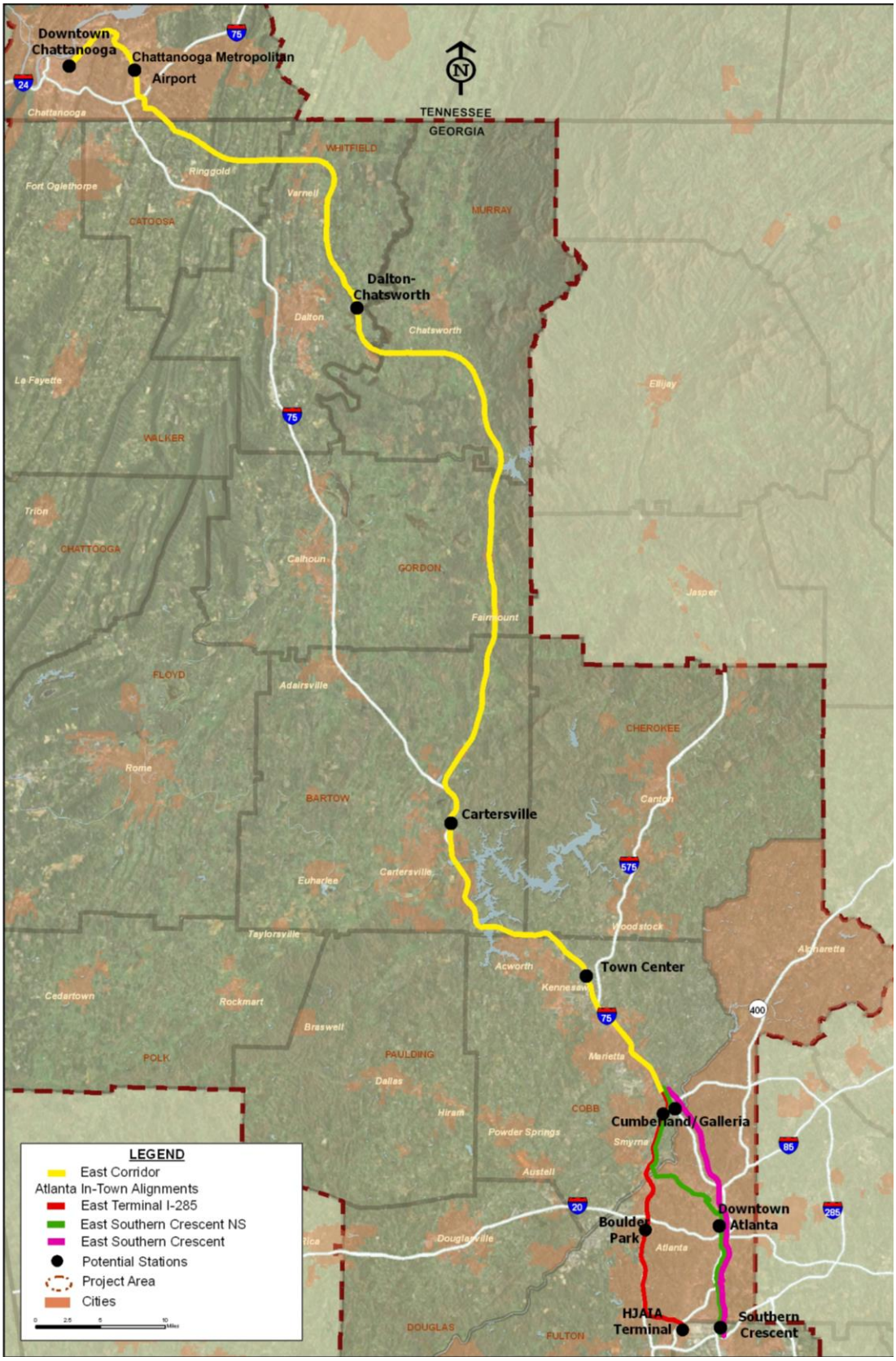


Figure 2-9: I-75/West Corridor

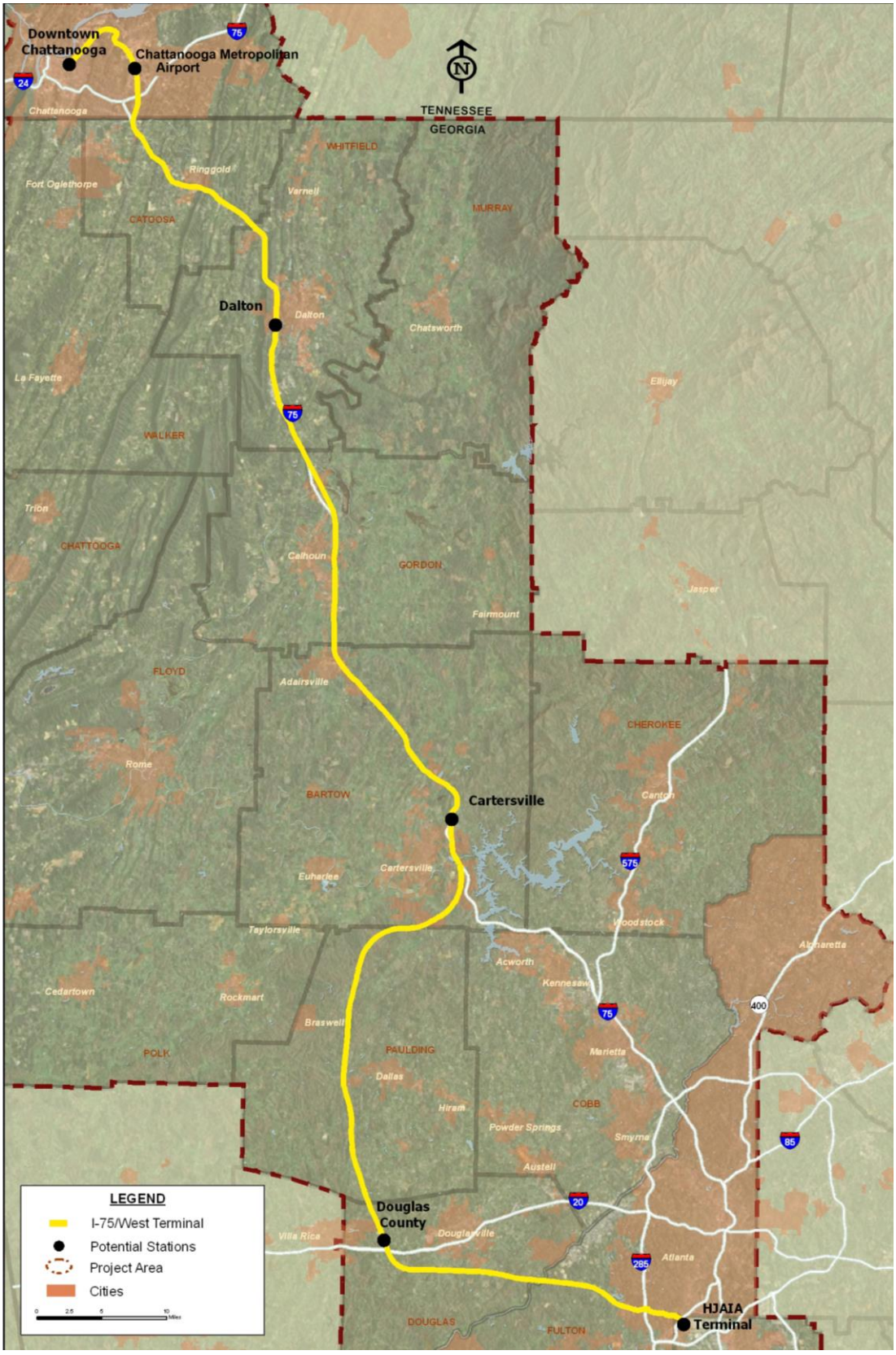


Figure 2-10: I-75/Rome Split Corridor

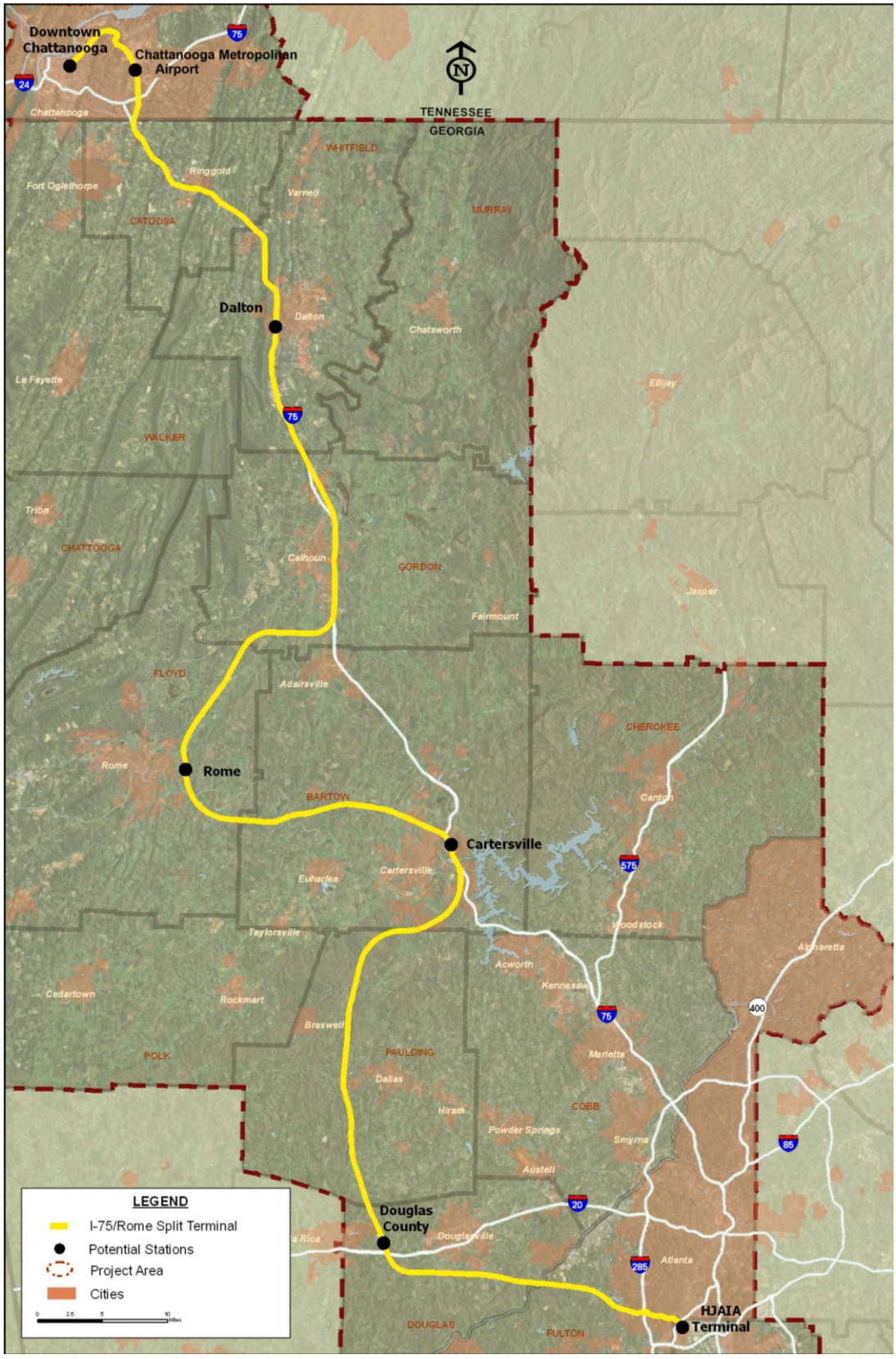


Figure 2-11: I-75/Rome Terminal I-285, I-75/Rome Southern Crescent NS, I-75/Rome Southern Crescent Corridor

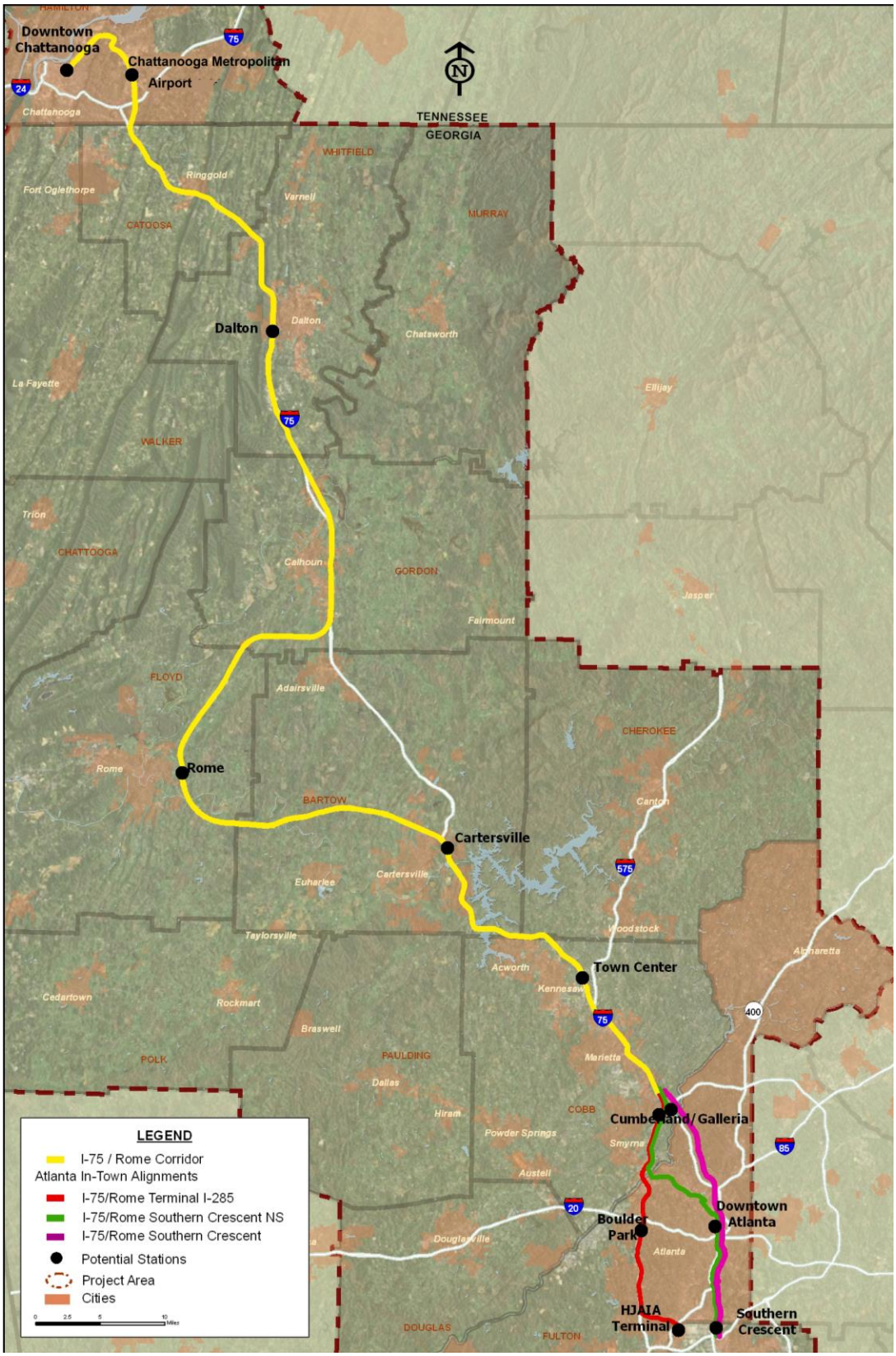


Figure 2-12: West Corridor

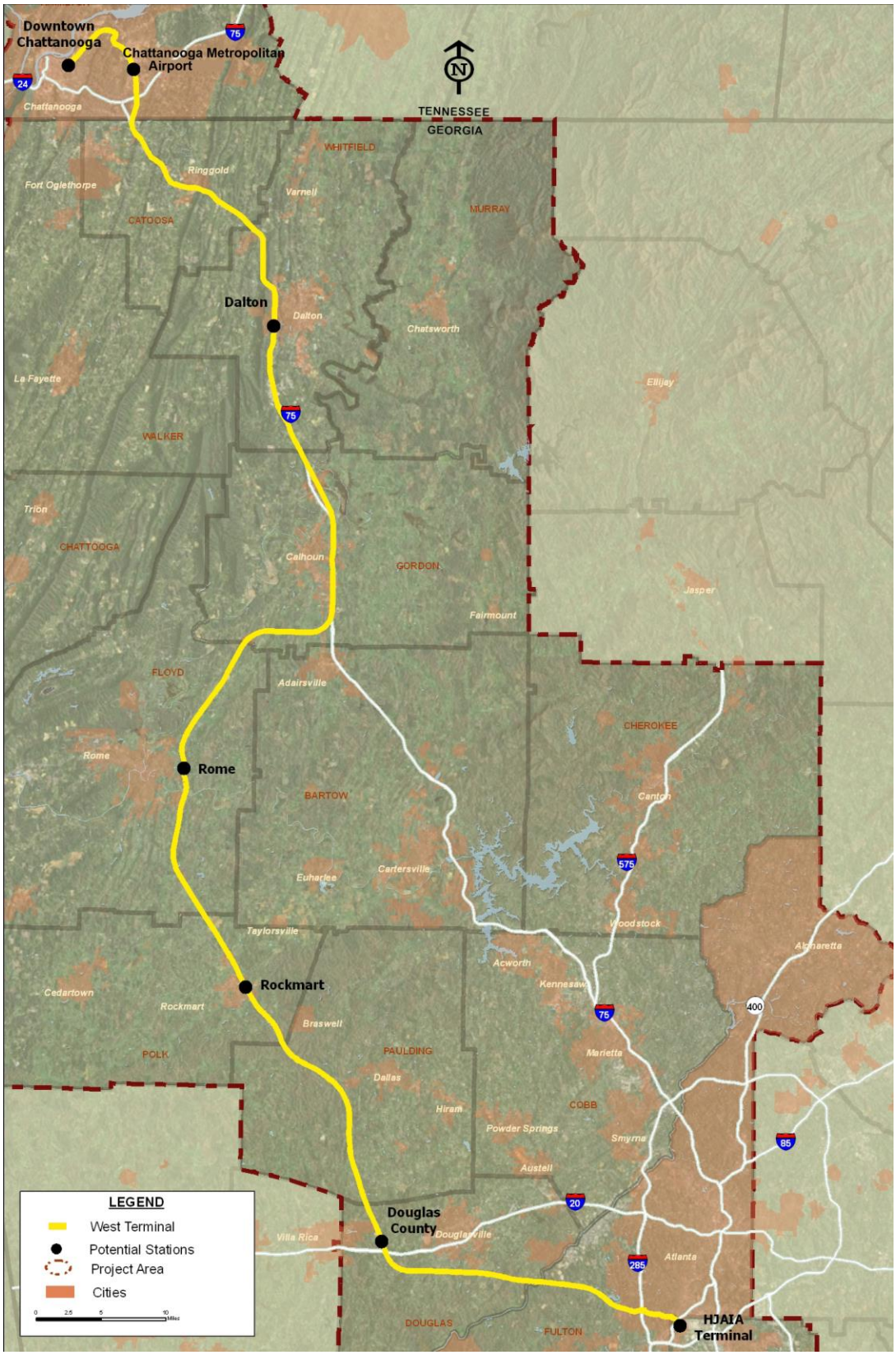


Figure 2-13: West Connector Corridor

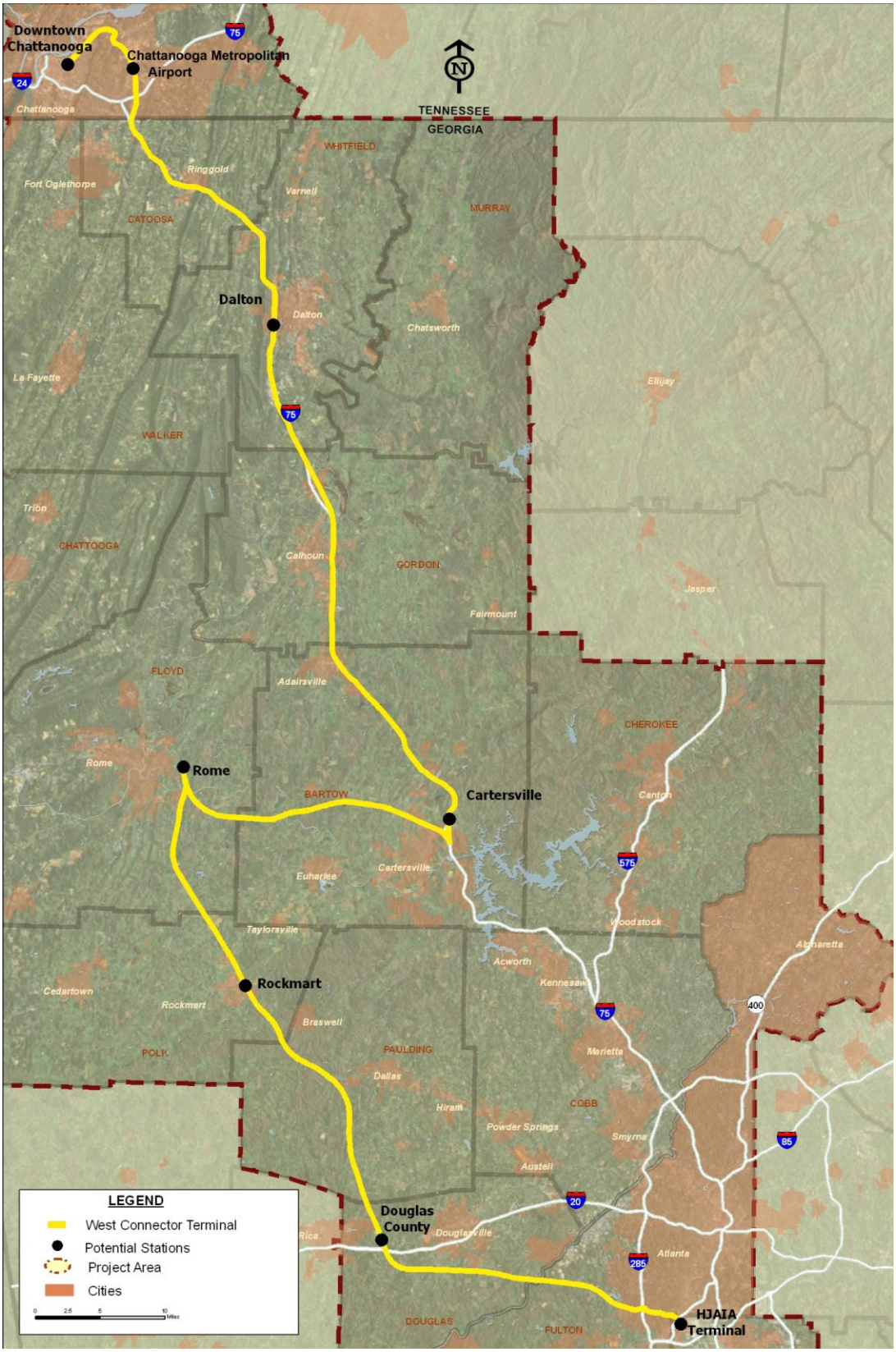


Figure 2-14: West/East Corridor

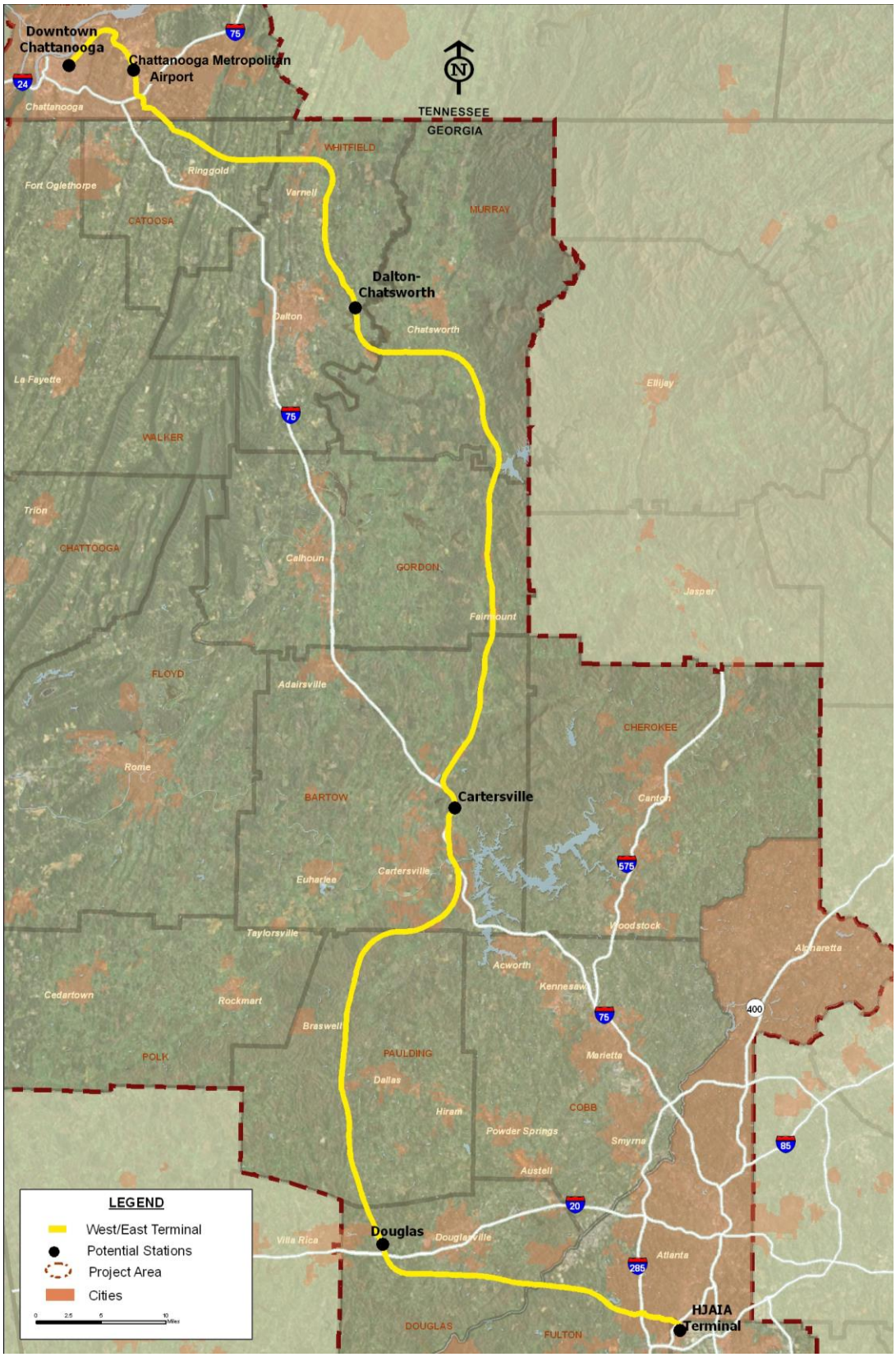
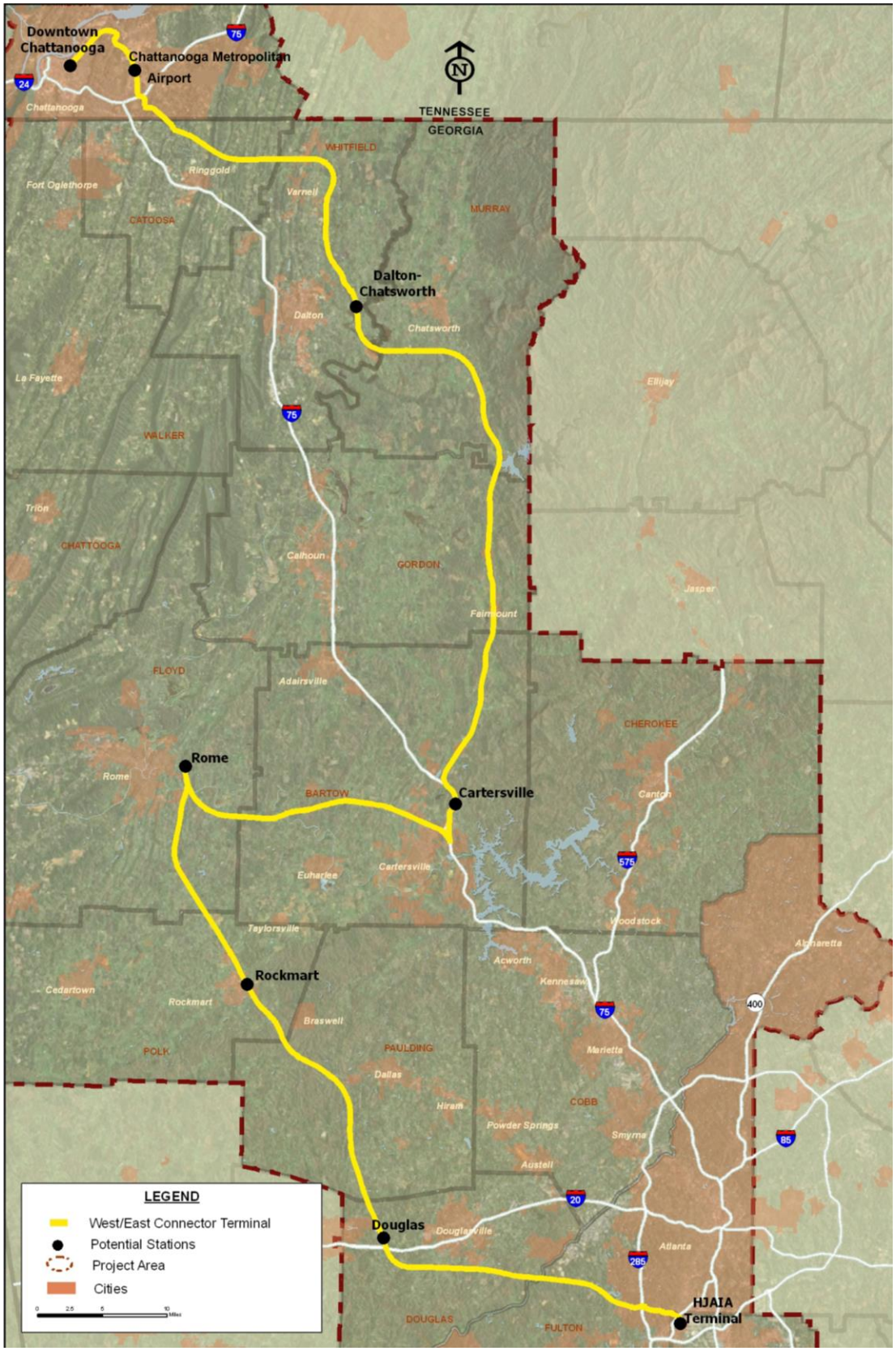


Figure 2-15: West/East Connector Corridor



2.2 Corridor Screening Process and Results

The screening process was the basis for evaluation of the 15 corridors developed during the Tier 1 EIS Scoping Process. The purpose of the screening process was to identify Corridor Alternatives to evaluate further in this Tier 1 DEIS. Corridor alternatives to be further evaluated in the Tier 1 process are those that meet the Project goal to Improve Regional Mobility without requiring actions that are beyond what is possible or achievable given acceptable practice and funding constraints. The objectives of the Improve Regional Mobility goal, as described in Section 1.6.1, at the time of screening were as follows:

- 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 Project Team evaluated corridor alternatives against criteria (or measures of effectiveness [MOEs]) that addressed the Project needs and goals listed above. A corridor was determined reasonable if it would provide improved mobility through competitive travel times and enhanced accessibility to population and employment centers in the Project Area. The Project Team considered these MOEs quantifiable and believed that they effectively captured the overarching mobility needs of the Project for travel efficiency and accessibility to a significant portion of potential users. The screening process utilized an un-weighted five-point scoring system, shown in **Table 2-3**. The scoring method was vetted and approved by the Project stakeholder committee, as well as the FRA. Scoring was assigned based upon how a corridor performed relative to the Project purpose and need. The Project Team assigned higher scores to those corridors: 1) with faster travel times for trips between HJAIA and downtown Chattanooga; 2) that contained a larger population within 10 miles of each proposed station; and 3) for which a larger number of jobs are located within 5 miles of each proposed station. **Table 2-4** shows the scores for each corridor evaluated. The Project Team advanced to Step 2 for further evaluation of all corridors that scored at or above 3.1, which indicated that the corridor sufficiently met the purpose and need of the Project to warrant additional study. See the *Corridor Screening Process & Results Report* in **Appendix B** for more information on the screening process.

Table 2-3: Corridor 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 may be more than one best performing corridor.

Table 2-4: Corridor Screening Results – Summary of Corridor Performance

Corridor	Mobility MOE Scores			Mobility MOEs Average Score	Advance to Step 2 Yes/No
	Travel Time	Population	Employment		
I-75 Terminal I-285	4.2	3.9	2.3	3.5	Yes
I-75 Southern Crescent NS	3.9	4.6	4.8	4.4	Yes
I-75 Southern Crescent	4.0	4.6	4.8	4.5	Yes
East Terminal I-285	***3.1***	***3.9***	***2.1***	***3.0***	***No***
East Southern Crescent NS	2.7	4.6	4.6	4.0	Yes
East Southern Crescent	2.9	4.6	4.6	4.0	Yes
I-75/West	***5.0***	***1.0***	***1.0***	***2.3***	***No***
I-75/Rome Split	***3.3***	***1.0***	***1.0***	***1.8***	***No***
I-75/Rome Terminal I-285	***2.0***	***4.2***	***2.5***	***2.9***	***No***
I-75/Rome Southern Crescent NS	1.6	5.0	5.0	3.9	Yes
I-75/Rome Southern Crescent	2.0	5.0	5.0	4.0	Yes
West	***4.4***	***1.0***	***1.0***	***2.1***	***No***
West Connector	***1.0***	***1.0***	***1.0***	***1.0***	***No***
West/East	***4.4***	***1.0***	***1.0***	***2.1***	***No***
West/East Connector	***1.0***	***1.0***	***1.0***	***1.0***	***No***

*Shaded rows with bold, italic text signifies corridors that did not advance to Step 2 because they did not score higher than 3.1

The following six corridors performed at or above 3.1 and advanced for further evaluation in the screening process:

- 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.

The Project Team eliminated the I-75 Terminal I-285 Corridor because it did not satisfy the purpose and need. Specifically, the I-75 Terminal I-285 Corridor would not:

- provide access to the major activity center of downtown Atlanta;
- provide rapid, convenient, and reliable transportation between major population and employment centers;
- provide an optimal connection to the existing MARTA heavy rail transit system at the Five Points Station; or
- connect to the planned multi-modal passenger terminal (MMPT) in downtown Atlanta including the planned commuter rail and bus services serving the MMPT.

The remaining, eight corridors did not advance because each had an average MOE score of 3.0 or lower and, therefore, did not sufficiently meet the Project's purpose and need. Moreover, stakeholder feedback provided subsequent to the scoping and screening processes included opposition to some of these corridors.

For reasons detailed later in this chapter, this Tier 1 DEIS retained the three NS corridors (I-75 Southern Crescent NS, East Southern Crescent NS, and I-75/Rome Southern Crescent NS), but

detailed analyses of the three NS corridors will be deferred to future studies as design options for the Atlanta area. See **Section 2.3.2** for a discussion of the NS design options.

In summary, the screening process identified three corridors that met the mobility and accessibility element of the purpose and need and are advanced in this Tier 1 DEIS for further analysis:

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

2.3 Definition of Alternatives

This section describes the alternatives that were evaluated in this Tier 1 DEIS.

2.3.1 No-Build Alternative

Federal regulations require that a No-Build Alternative be evaluated in an EIS (see 40 C.F.R. § 1502.14(d)). The No-Build Alternative is the set of baseline conditions against which the other alternatives are compared. The No-Build Alternative assumes that there would be no Project-related elements in the Project Area. However, the No-Build Alternative assumes that all transportation system improvements currently listed in local, regional, and state transportation plans and that have identified funds for implementation will be implemented, with the exception of the Project. Thus, the No-Build Alternative represents the Project Area's transportation system as it is anticipated to be in the 2035 and 2040 planning horizon years for each of the transportation plans for the individual MPOs within the Project Area. It includes the existing transportation system and assumes the implementation of highway and transit projects that are programmed and funded in the Transportation Improvement Program (TIP) element of the LRTP's listed below.

- Atlanta Regional Commission's *PLAN 2040* Regional Transportation Plan (2010)
- CHCRPA's *2040 Long-Range Transportation Plan* (2014)
- Rome/Floyd County MPO *Long Range Transportation Plan 2040* (2012)
- *Floyd-Rome Urban Transportation Study Urban Transportation Study* (2011)
- Greater Dalton MPO's 2035 Long Range Transportation Plan (2010)

As the airport development process is distinct from the surface transportation project development process documented in the TIPs, aviation projects considered as part of the No-Build Alternative were identified from the HJAIA 2015 Master Plan (HJAIA), Master Plan Update Chattanooga Metropolitan Airport (CMA 2010), and from local comprehensive transportation plans (CTPs) that include improvement and expansion projects for the local airports. The existing transportation system serving the Project Area can be summarized as follows:

- The highway system consists primarily of Interstate highways I-75, I-285, and I-24, and of highways US 27, US 411, and US 41.
- The Intercity bus transit service is provided by Greyhound and Megabus. Local and regional bus transit service is provided within metropolitan Atlanta by MARTA, Cobb Community Transit (CCT), and Gwinnett County Transit (GCT). The Georgia Regional Transportation Authority (GRTA) provides regional commuter "Xpress" bus service. Local bus service is provided by the Chattanooga Area Regional Transportation Authority (CARTA) and the City of Rome Transit Department (RTD). MARTA also includes a 48-mile heavy rail transit system with 38 stations.
- The aviation system consists of two airports that currently provide passenger carrier service to the region: HJAIA and CMA.

Tables 2-5 through **2-7** list the projects included in the No-Build Alternative and is divided into highway, transit, and aviation sections.

Table 2-5: Highway Projects

MPO / Project Identification Number	Project Number P.I. Number	Project Description	Model Year	Estimated Cost ($millions)
ARC / AT-076B	721750	US 41 (Northside Drive) Operations And Safety Improvements (North Ave. To Marietta Street)	2030	$4.1
ARC / AT-268	0007557	US 41 (Northside Drive) Scoping And Engineering Analysis (Whitehall St/I-20 To I-75)	2020	$8.0
ARC / AR-ML-930	0008256	Northwest Corridor Managed Lanes At Akers Mill Road To Hickory Grove Road On I-75 And From I-75 To Sixes Road On I-575	2020	$1,061.7
ARC / CO-041	0010510	US 41 From Windy Ridge Parkway To SR 120 Loop (North Marietta Parkway)	2030	$1.0
ARC / CO-443	0012607	US 41 (Cobb Parkway) Intersection Improvements @ SR 120	2020	$1.2
ARC / CO-444	0012608	US 41 (Cobb Parkway) Intersection Improvements @ SR 120	2020	$0.3
Dalton / 10 & 13	611180	I-75 At SR 201, Widen I-75	2016 to 2025	$1.5
Dalton / 3	631360	SR3/US 41 Widening	2016 to 2025	$22.7
CHCRPA / 47	NA	Widen I-75 from 6 lanes to 8 lanes from SR 146 to TN state line	2030	$31.5
CHCRPA / 48	NA	Widen I-75 from 6 lanes to 8 lanes from SR 2 to SR 146	2040	$105.2
CHCRPA / 114	NA	Widen I-75 6 to 8 lanes; fix structurally deficient bridge at southern portion of I-24 interchange	2030	$27.1
CHCRPA / 88	NA	US 27/I-24 Widen from 4 to 8 Lanes for 1.5 miles	CST scheduled for 2017	$97.6
Bartow County	661950	US 411Connector from SR 20 / SR 3/ US 41 to I-75 including I-75 Interchange – 7.31 miles of new roadway construction	N/A	N/A
Rome	632760	SR 101 Widening	2017	$4.3

Table 2-6: Transit Projects

MPO / Project Identification Number	Service Type	Project Description	Year	Estimated Cost ($millions)
ARC / CO-401	Bus Transit Facilities	Park and Ride Facilities for Xpress Bus Service serving north Cobb.	2020	$15.0
ARC / AR-400	Multi-modal Service	Georgia Multimodal Passenger Terminal (MMPT)	2030	$522.3
ARC / AR-480	Rail Service	Amtrak Station Relocation to Intersection of US 41 (Northside Drive) And 17th Street	2030	$35.0
ARC / AR-475	Transit – Premium Bus	Connect Cobb / Northwest Atlanta Transit Corridor Bus Rapid Transit - Phase 1	2040	$500.0
CHCRPA / 136	Local service	GA portion of new local bus service connecting Fort Oglethorpe, GA to Downtown Chattanooga via US 27.	2020	$9.3
CHCRPA / 138	Transit – Premium Bus	Extend CARTA Express Route 4 further north on I-75 to Lee Highway	2020	$3.0
CHCRPA / 139	Transit – Premium Bus	New Premium Bus express route connecting Ringgold, GA with Downtown Chattanooga via I-75 and I-24	2030	$49.2
CHCRPA / 137	Local service	New local bus service connecting East Ridge, TN to Downtown Chattanooga via US 41. Also goes slightly into North GA.	2040	$46.4

Table 2-7: Aviation Projects

Airport	Project Name	Project Description	Open Year	Estimated Cost ($millions)
HJAIA	South Gate Complex	70 additional aircraft gates with an APM connection to the expanded main terminal and an reconstruction of the existing terminal access roadway and the roadway extension south of I-285.	2015	$1,800.0
CMA	Runway 02 and Taxiway A Extension Design and Construction	A 1,199-foot extension to Runway 02/20 and the associated extension of parallel Taxiway A.	2013 – 2017	$11.5
CMA	North GA Apron Expansion Design and Construction	A 7,250 square yard expansion to the North GA (general aviation) apron.	2013 – 2017	$0.04
CMA	Terminal Concourse Expansion Design and Construction	A two-story extension of the terminal concourse. It includes the addition of three passenger-boarding bridges.	2013 – 2017	$14.8
CMA	Terminal Loop Road Widening Design and Construction	Widen the terminal loop road.	2013 – 2017	$0.1
CMA	Consolidated Rental Car QTA Design and Construction	A consolidated rental car Quick-Turn–Around (QTA) facility.	2013 – 2017	$3.3
CMA	Taxiway K Design and Construction	Widen Taxiway K from 50 feet to 75 feet.	2027	$0.4

2.3.2 Corridor Alternatives

Like the No-Build Alternative, the Corridor Alternatives also assume the implementation of the transportation system improvements that are currently listed in local, regional, and state transportation plans and that have identified funds for implementation. The three corridors that advanced to become Corridor Alternatives are I-75 Southern Crescent, East Southern Crescent, and I-75/Rome Southern Crescent, as illustrated in **Figure 2-16**. To streamline the naming convention used in subsequent chapters of this Tier 1 DEIS, the phrase "Southern Crescent" will be omitted as it applies equally to all.

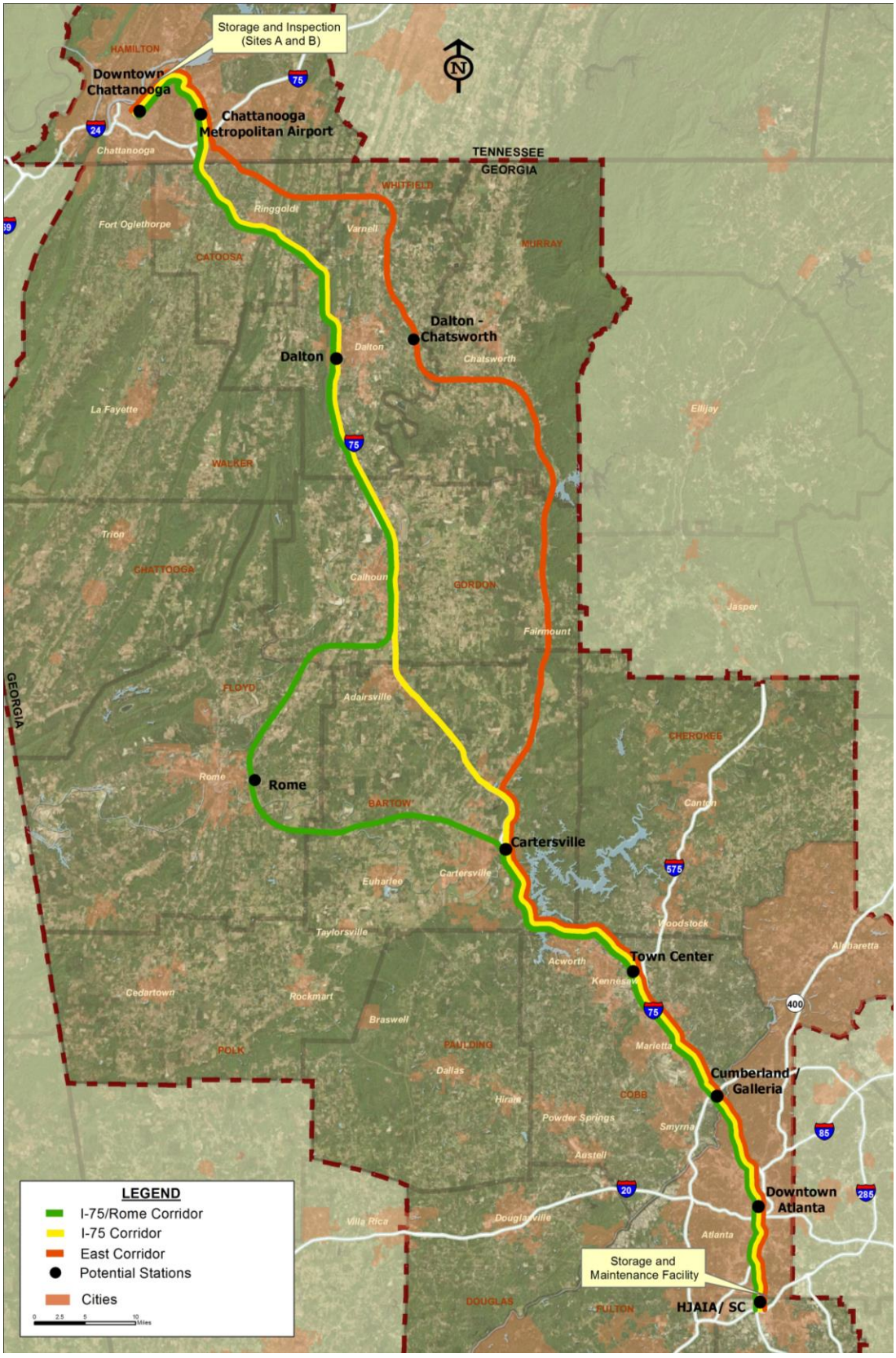
For this Tier 1 DEIS, the Corridor Alternatives are 1,000 feet in width. The buffer area allows for variation in the alignments to be determined during future analyses and is sufficiently wide enough to evaluate the potential environmental issues associated with the alternatives. The potential station locations presented are conceptual and are intended to indicate general areas to be served by the alternative, not specific sites of stations. Even at HJAIA and CMA, the specific location of stations in regards to the layout of these airports is not part of this analysis. Exact locations of potential stations will be determined during the Tier 2 NEPA process.

I-75 Corridor Alternative: The I-75 Corridor Alternative corridor begins on the east side of HJAIA at the proposed HJAIA/Southern Crescent station, immediately adjacent to I-75, and follows I-75 to a point south of the proposed downtown Atlanta station. The corridor continues north underground through downtown Atlanta to I-75 north and uses the I-75 ROW to the proposed Cumberland/Galleria station. The corridor continues north along the I-75 ROW to the proposed Town Center, Cartersville, and Dalton stations. North of I-24 in Tennessee, the corridor continues along the ROW of the W&A Line operated by CSX to proposed stations at CMA and in downtown Chattanooga. The configuration of a proposed alignment will be defined during the Tier 2 NEPA phase; formal coordination with CSX will be required for any proposed use of CSX ROW.

East Corridor Alternative: The East Corridor Alternative corridor follows the same alignment as the I-75 corridor to the proposed Cartersville station. North of the proposed Cartersville station, the corridor deviates from I-75 and continues along existing CSX rail ROW generally parallel to US 411, stops at the proposed Dalton-Chatsworth and CMA stations, and continues to the proposed downtown Chattanooga station. Specific configuration of the alignment will be defined during the Tier 2 NEPA phase and formal coordination with CSX will be required for any proposed use of CSX ROW.

I-75/Rome Corridor Alternative: The I-75/Rome Corridor Alternative corridor follows the same path as the I-75 and East corridors to the proposed Cartersville station. From the proposed Cartersville station, the corridor follows US 411 to Rome, continues north along the ROW of the H-Line operated by CSX to rejoin I-75 between the proposed Cartersville and Dalton stations. The corridor continues north along the I-75 ROW to the proposed stations at Dalton and CMA and in downtown Chattanooga. Specific configuration of the alignment will be defined during the Tier 2 NEPA phase and formal coordination with CSX will be required for any proposed use of CSX ROW.

Figure 2-16: Corridor Alternatives



Proposed Station Areas and Vehicle Storage, Maintenance, and Inspection Facilities

Each of the Corridor Alternatives includes potential station locations, and storage and maintenance facilities. Stations would provide park-and-ride facilities with direct pedestrian connections to the stations. The exact location, station type and configuration will be developed during the Tier 2 NEPA phase.

Sites for the storage, maintenance and inspection facilities have not been identified or studied as part of this Tier 1 DEIS. Depending on the fleet size, operating plan, and the services provided, a facility to support the proposed high-speed ground transportation in both Atlanta and Chattanooga could require approximately 100 acres for each site. For the purpose of this Tier 1 DEIS, it is assumed that the proposed project would include:

- A storage and heavy maintenance facility near the southern terminus in the vicinity of HJAIA. This facility also would include the command center for all systems and train wash facilities; and
- A storage and inspection yard near the northern terminus within the Chattanooga area. The storage and inspection yard would provide facilities for running inspections, light duty repairs on equipment, as needed, and train storage. This yard also would include a control tower to control access to and within the yard.

Corridor Attributes

The vertical alignments would vary along the routes of each Corridor Alternative between at-grade, elevated structure, and tunnel, depending on the topographic conditions and existing development within each Corridor Alternative. The exact alignment configuration will be defined during the Tier 2 NEPA process. All Corridor Alternatives would be exclusive facilities that do not share track with other trains and are grade separated when crossing roadways or rail lines. **Table 2-8** presents key attributes of each Corridor Alternative. In this Tier 1 DEIS, the Corridor Alternatives steel-wheel and Maglev technologies are assumed.

Table 2-8: Corridor Alternatives Attribute Comparison

Corridor Alternative (Potential Number of stations)	Length of Alternative (miles)	Projected 2040 Total Daily Ridership* (passengers)	Time to Travel Corridor End to End (minutes)**
I-75 (8)	128	11,725	88
East (8)	139	8,556	95
I-75/Rome (9)	150	13,204	102

* Appendix C, *Ridership Forecasting Report*, provides travel demand modeling information

** Based on a combination of Intercity, Intra-Atlanta, and Airport Choice models, as detailed in the *Ridership Forecasting Report*.

Atlanta In-Town Design Options

Within Atlanta, there are two optional ways to access the proposed Downtown Atlanta station, along the NS railroad corridor or I-75. Since the NS option would have virtually identical operational characteristics and potential environmental impacts as those following the I-75 segment within the city of Atlanta (as shown in **Table 2-9**), the Project Team has deferred the consideration of potential alignment configurations for the Downtown Atlanta Stations to the Tier 2 NEPA phase. **Figure 2-16** shows the NS design option within Atlanta. The NS option would have the same proposed station locations, ridership, capital costs, population, and employment would be virtually the same as the Corridor Alternatives described above. Per NEPA and FRA guidance, the goal of this Tier 1 DEIS is to identify a corridor in which to implement the proposed service and to evaluate potential

environmental impacts at a broad level. As such, folding in those corridor alternatives following the NS segment with those following the I-75 segment during this Tier 1 DEIS would not preclude the potential consideration of alignments following the NS segment during future, Tier 2 NEPA analyses.

Table 2-9: Characteristics of the Southern Crescent Corridors

Resource Area	I-75	I-75 NS	East	East NS	I-75/ Rome	I-75/ Rome NS
Time to Travel Corridor, End to End (minutes)	84	86	93	95	102	104
Alignment within an Existing Transportation Corridor (percent)	76	73	31	29	53	51
Parklands and Wildlife Refuges (acres)	443	400	447	398	442	392
Known Archaeological Resources (number)	24	24	44	44	39	39
Known Historic Resources (number)	22	23	57	58	31	32
National Register of Historic Places Sites (acres)	87	106	151	170	89	108
Known Civil War Battle Sites (acres)	3,670	3,899	2,350	2,550	3,834	4,034
Cemeteries (number)	3	3	2	2	4	4
Wetlands (acres)	205	205	205	205	251	251
Stream Crossings (number)	21	19	18	17		32
Floodplains (acres)	1,563	1,536	2,576	2,549	1,688	1,661
Known Threatened and Endangered Species Habitats (number)	21	21	38	38	21	21
Known Threatened and Endangered Species Habitat (acres)	1,907	1,907	2,158	2,158	1,817	1,817

SOURCES: AECOM; US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI); U.S. Census Topologically Integrated Geographic Encoding and Referencing (TIGER); Digital Flood Insurance Rate Map (DFIRM); Federal Emergency Management Agency (FEMA) Quadrangle 3 (Q3) data; National Register of Historic Places (NRHP) (USDOI NPS 2011); Georgia Department of Natural Resources (DNR) survey; Tennessee Historic Commission survey; Georgia's Natural Archaeological Historical Resources Geographical Information System (NAHRGIS) database; the Georgia Historic Bridge Survey (GHBS) (GDNR 2011);

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter describes the existing social, economic, and environmental conditions in the Project Area and describes the potential for permanent and temporary (construction-related) impacts of the Corridor and No-Build Alternatives. The assessment of impacts is primarily qualitative based on readily available data. Environmental consequences will be further defined in the Tier 2 NEPA process if a Preferred Corridor Alternative is selected for further evaluation. Secondary and cumulative effects are broadly described at the end of this chapter; in-depth analysis will occur during the Tier 2 NEPA process. This chapter also presents potential strategies to avoid or minimize and mitigate the effects of the Project. Specific mitigation commitments for the selected alternative will be determined during the Tier 2 NEPA phase.

The methodology FRA, GDOT and TDOT used in assessing the potential effects of the Corridor and No-Build Alternatives on the social, economic, and environmental resources that are reported in this Tier 1 DEIS is in accordance with federal regulations and guidelines.

The issues and resources listed below are the focus of this Tier 1 DEIS. These issues and resources were assessed in this Tier 1 DEIS for three reasons: they occur in the Project Area, a determination of Project effects on these resources can be made at the current program level of evaluation, and potential effects on these resources may vary among the alternatives and assist FRA, GDOT, and TDOT in selecting the best alternative to advance to further study.

- Transportation: ridership, existing transportation corridors, traffic
- Air Quality: overall air quality effects
- Noise and Vibration: noise and vibration effects
- Socioeconomics and Environmental Justice: population access, employment access, effects on minority and low-income populations
- Parklands, Recreational Areas, and Wildlife Refuges
- Cultural Resources: historic and archeological resources
- Water Resources: streams and lakes, floodplains, wetlands, water quality
- Biological Resources: threatened and endangered species and critical habitat

Do to the broad scope of this study and because they would not be a determining factor in the selection of a Preferred Corridor Alternative, the following resources were not evaluated in this Tier 1 EIS : solid waste disposal, energy, impacts to mobility of elderly and disabled, and public health and safety.

The issues and resources that will be assessed and analyzed in the Tier 2 NEPA phase will require a site-specific design and more precise discussion of the direct and indirect effects within the Project Area than is possible in a broad, corridor level assessment. During the Tier 2 NEPA analysis, and if a Corridor Alternative is selected, site-specific research, fieldwork, and effects analysis will be performed on all issues and resources in compliance with NEPA and FRA guidelines, and other federal and state laws.

Each section in this chapter describes the affected environment and potential consequences due to the Project. A “Subsequent Analysis” discussion describes the analysis that FRA, GDOT, and TDOT will undertake during the Tier 2 NEPA phase.

3.2 Summary of Key Findings

The Tier 1 analysis of environmental consequences described in this chapter determined that the Project, as well as the No-Build Alternative projects described in **Section 2.3.1**, have the potential to affect the human and natural environment.

No-Build Alternative: The extent to which the planned and funded projects in the No-Build Alternative would have impacts on the human and natural environment and whether those impacts could be avoided or minimized can only be determined through environmental analysis to be undertaken by the sponsors of those projects. See **Tables 2-5, 2-6**, and **2-7** for a list of the planned and funded projects. Key findings of this Tier 1 assessment are that the No-Build Alternative:

- Would increase capacity and expand service in selected portions of the Project Area transportation network, but would not enhance passenger mobility throughout the Project Area between the metropolitan areas and airports of Atlanta and Chattanooga;
- Would not adequately address the transportation needs of projected population and employment growth in the Project Area, would not increase transportation options, would not increase airport and intermodal connections, would not fully address transportation limitations on economic growth, and would not provide faster and more reliable ground transportation as an alternative to highway, intercity bus and air travel;
- Would not improve air quality because it would not reduce the quantity or the growth rate of mobile source emissions resulting from vehicle miles traveled on the highway network in the Project Area; and
- Potentially would have impacts on communities, parks, wildlife refuges and recreational areas, cultural resources, water and biological resources.

Corridor Alternatives: Key findings of the Tier 1 assessment are that the Corridor Alternatives:

- Would improve mobility and accessibility in the Project Area;
- Would address some of the transportation needs of projected population and employment growth in the Project Area, particularly in terms of increasing transportation options, increasing airport and intermodal connections, address transportation limitations on economic growth, provide faster and more reliable ground transportation as an alternative to highway, intercity bus and air travel;
- Would improve air quality by providing a transportation option that does not increase the quantity or the growth rate of mobile source emissions resulting from vehicle miles traveled on the highway network in the Project Area; and
- Would potentially have impacts on communities, parks, wildlife refuges and recreational areas, cultural resources, water resources, and biological resources.

In regard to potential human and natural environment impacts, the Tier 1 analysis revealed several differences among the Corridor Alternatives:

- Ridership: The I-75/Rome Corridor Alternative would have the highest ridership, followed by the I-75 Corridor Alternative; the East Corridor Alternative would have the lowest ridership.
- Travel Time: End to end travel times vary among the Corridor Alternatives with the I-75 Corridor Alternative being the shortest at 88 minutes, East Corridor Alternative at 95 minutes, and the I-75/Rome Corridor Alternative at 102 minutes.
- Transportation: The I-75 Corridor Alternative would use the most existing transportation right-of-way (ROW), followed by the I-75/Rome Corridor Alternative. The East Corridor Alternative would

use the least existing transportation ROW, thereby having the highest potential for effects according to this measure.

- Air Quality: The I-75/Rome Corridor Alternative has the highest potential to transfer trips from the highway system to the proposed HSGT and, thereby, reduce vehicular emissions. This finding is based solely on ridership. The I-75 Corridor Alternative would perform slightly less well, followed by the East Corridor Alternative having the lowest potential.
- Noise and Vibration: All Corridor Alternatives would have potential noise and vibration impact. The I-75 Corridor Alternative is the best performing for both noise and vibration on sensitive land uses within their respective screening distances. This may be attributed to the fact that a longer length of the I-75 Corridor Alternative is adjacent to the interstate highway system, whereas the other two alternatives deviate from the interstate and travel along U.S. highways (which tend to have more development located closer to the roadway than interstate highways).
- Population and Employment Access: County-based 2010 U.S. Census data demonstrate that the more urbanized areas typically have higher densities of minority and low-income populations compared with rural areas. The ratio of environmental justice (EJ) areas to non-EJ areas within each Corridor Alternative when measured by linear mile along each corridor is 0.6:1 for the I-75 Corridor Alternative and 0.5:1 for the East and I-75/Rome Corridor Alternatives. Moreover, not all Corridor Alternatives serve the same proposed station locations or the same EJ populations. For example, only the I-75/Rome Corridor Alternative would serve the proposed Rome station area. Similarly, only the East Corridor Alternative would serve the proposed Dalton-Chatsworth station area. Therefore, depending on the Corridor Alternative, some EJ populations in the study area would be served and some would not.
- Parklands and Wildlife Refuges: While the potential affected acreage for the Corridor Alternatives is relatively even, the number of Parks and Wildlife Refuges is different. I-75 East is the best performing, while I-75 and I-75/Rome Corridor Alternatives each have the potential to affect over 25 Parks and/or Wildlife Refuges each. Note that these numbers are based on very small portions of the 1000' buffer touching these parks. The main resources potentially affected are virtually identical.
- Historic Resources: The East Corridor Alternative has twice the number of known historic resources as the I-75 or I-75/Rome Corridor Alternatives. The higher number is due to the East Corridor Alternative using a lower percentage of existing transportation rights-of-way. This differentiating factor suggests the potential for a higher number of Project impacts on known historic resources if the East Corridor Alternative is advanced.
- Wetlands, Streams, and Floodplains: Also using a lower percentage of existing rights-of-way, the I-75/Rome Corridor Alternative would potentially affect more acres of wetlands and introduce new or expanded stream crossings than the other Corridor Alternatives. This difference suggests the potential for a higher number of Project impacts on wetlands, and streams if the I-75/Rome Corridor Alternative is advanced. The East Corridor Alternative has a considerably higher acreage of floodplains compared with the other alternatives.
- Known Threatened and Endangered Species Habitats: The East Corridor Alternative has a larger number of known threatened and endangered species habitats within the buffer area than the I-75 and I-75/Rome Corridor Alternatives. This differentiating factor suggests the potential for a higher number of Project impacts on known threatened and endangered species habitats if the East Corridor Alternative is advanced.

Table 3-1 summarizes the data findings for the Corridor Alternatives; these data are discussed in the remaining sections of this chapter.

Table 3-1: Comparative Summary of the Corridor Alternatives

Needs	Measures	Corridor Alternative		
		I-75	East	I-75/Rome
Enhance regional transportation mobility and accessibility	Time to Travel Alternative End to End (minutes)	88	95	102
	Population within 10 miles of Proposed Station Locations (millions)	2.85	2.86	2.95
	Employment within 5 Miles of Proposed Station Locations (thousands)	869	870	894
	Daily Ridership (number of boardings)	11,725	8,556	13,204
Spur economic growth and regional vitality	Capital Cost (2014$ millions)	$8,760	$10,420	$9,811
Provide safe, efficient, reliable transportation	Provide passenger rail service on exclusive rail/guideway	Yes	Yes	Yes
Enhance airport access and intermodal connections	Provide access to HJAIA and CMA; connect to MARTA, GRTA and CCT service areas	Yes	Yes	Yes
Improve air quality nonattainment areas and minimize environmental impacts	Proportion of Corridor Alternative within Existing Transportation Corridor (percent)	76%	31%	53%
	Noise-sensitive Land Uses (acres)	5,914	7,519	8,425
	Vibration-sensitive Land Uses (acres)	891	1,695	1,372
	Ratio of EJ areas to overall corridor (based on linear miles)	0.6:1	0.5:1	0.5:1
	Ratio of Station Areas with and without EJ populations	6:2	6:2	6:2
	Parklands and Wildlife Refuges (acres)	443	447	442
	Parklands and Wildlife Refuges (number)	25	19	30
	Known Archaeological Resources (number)	32	46	38
	Known Historic Resources (number)	26	66	33
	Cemeteries (number)	4	3	5
	Wetlands (acres)	205	205	251
	Stream Crossings (number)	21	18	35
	Floodplains (acres)	1,563	2,576	1,689
	Known Threatened and Endangered Species Habitats (number)	21	38	21
	Known Threatened and Endangered Species Habitats (acres)	1,907	2,158	1,817

In summary, despite the differences among the Corridor Alternatives, each Corridor Alternative demonstrates some level of achievement of the Project purpose based on the data available at this Tier 1 level of study. The East Corridor Alternative has the highest potential for impacts on known historic resources and floodplains, while the I-75/Rome Corridor Alternative has the highest potential to impact wetlands and stream crossings. Compared to the other Corridor Alternatives, the I-75 Corridor Alternative has the lowest potential for impact on known historic resources, streams, and floodplains; impacts on wetlands are similar to the East Corridor Alternative.

3.3 Transportation

This section describes the existing roadway, public transit, freight rail, and air transportation facilities and services within the Project Area, discusses the potential transportation effects of the corridor alternatives and the No-Build Alternative, and identifies potential measures to avoid, minimize, or mitigate these effects. Of the transportation factors considered, three are distinguishing factors among the alternatives: travel time, ridership, and the proportion of corridor alternative within an existing transportation corridor.

3.3.1 Legal and Regulatory Context

The effects of the alternatives on both passenger and freight transportation were broadly considered in this Tier 1 DEIS using FRA's Environmental Procedures as guidance.

3.3.2 Methodology

3.3.2.1 AutoTraffic Modeling

Existing traffic data represented by the level of service (LOS) and average daily traffic (ADT) of the roadway and airway corridors were obtained for 29 segments. Highway capacity analysis was conducted by GDOT and TDOT to determine the future LOS and roadway capacity requirements projected to 2040. LOS is a measure used to describe operational conditions within a traffic stream. There are six levels identified by the letters A through F. LOS A represents free flow traffic where drivers are virtually unaffected by the presence of other vehicles, while LOS F represents operating conditions in which demand exceeds capacity. The LOS and the ADT were determined for the base year 2010 and 2040.

The functional classification and the operating characteristics of segments of I-75 and US 411 were studied because portions of these roadway corridors would be used by the three Corridor Alternatives.

3.3.2.2 Transit Modeling

Ridership was forecast using a travel demand model to estimate the number of rail trips between stations (using general station locations only for modeling purposes) (See **Appendix C - *Ridership Forecasting Report*** for a detailed description of the methodology to estimate travel demand). The HSGT demand-forecasting model considered four distinct travel segments:

- Inter-City: trips from one of the corridor's four major sub-areas[10] 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 air travelers in the ARC region to/from HJAIA
- Airport Choice: trips by air travelers to/from the Chattanooga Metropolitan Airport (CMA)

For each Corridor Alternative, data on the areas where the stations are proposed (as described in **Section 2.3.2**), estimated travel times, proposed fare structure and demographic data were used as inputs to the HSGT Project model. The HSGT Project model produced the number of trips that would

[10] The four sub-areas include the four MPO-level travel demand forecasting model systems used to create the overall model: The ARC 20-county model, the Greater Dalton MPO model (Dalton and Whitfield Counties, GA) model, the Rome-Floyd MPO model, and the Chattanooga-Hamilton County-North Georgia (CHCNGA) area model.

be diverted to the proposed HSGT service from all three travel markets listed above. Travel time calculations include all proposed stops, plus a dwell time at terminal stations of 1.5 minutes and 3.0 minutes at each intermediate station.

3.3.3 Affected Environment

Roadways in Project Area

Table 3-2 lists the roadway segments and their functional classifications that generally parallel one or more of the Corridor Alternatives. According to the Federal Highway Administration (FHWA), "Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of traffic service that they are intended to provide. There are three highway functional classifications: arterial, collector, and local roads. All streets and highways are grouped into one of these classes, depending on the character of the traffic (i.e., local or long distance) and the degree of land access that they allow." (2012*)* The classifications are described below.

- **Arterial:** Provides the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control.
- **Collector:** Provides a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterials.
- **Local:** Consists of all roads not defined as arterials or collectors; primarily provides access to land with little or no through movement.

Table 3-2: Roadways that Generally Parallel the Corridor Alternatives

Roadway Segment	Functional Classification	Segment(s)
I-75	Urban Interstate Principal Arterial	Passes HJAIA in northwest Clayton County, continues through Fulton, Cobb, and Cherokee counties, as it enters Bartow County; within the urban limits of Calhoun, Dalton, and Ringgold, and in Hamilton County as it enters Tennessee.
	Rural Interstate Principal Arterial	Through Bartow, Gordon, Whitfield, and Catoosa Counties
US 41	Urban Minor Arterial	Atlanta region until it crosses Ralph David Abernathy Boulevard; From I-285 to Cartersville; within the urban limits of Calhoun, Dalton, and Ringgold.
	Urban Principal Arterial	From Ralph David Abernathy Boulevard to I-75; from the Cobb Parkway interchange to the north until it crosses I-285; within the limits of Cartersville; between US 76 and I-75 in Dalton and for a short section in Ringgold between the intersection of SR 146 and the state line
	Rural Minor Arterial	As it leaves Cartersville, it becomes and remains in this classification except within the urban limits of Calhoun, Dalton and Ringgold
US 411 west of Cartersville	Urban Interstate Principal Arterial	From its interchange with I-75 to the western side of the Cartersville urban limits; within the urban limits of Rome
	Rural Principal Arterial	To the west of the Cartersville urban limits and into Floyd County
US 411 north of Cartersville	Rural minor arterial	As it exits the urban limits of Cartersville and continues through Bartow, Gordon, and Murray counties until it joins US 78 in Murray County

Source: ARC 2010, Rome-Floyd County MPO 2012, and TDOT 2015

Current and Projected Highway Operating Characteristics

The current and projected levels of congestion on the existing roadway network in 2010 and 2040 are summarized in **Table 3-3**, which presents the LOS at representative points on the roadway network between Atlanta and Chattanooga.

Table 3-3: Level of Service on Major Routes in the Project Area (2010 and 2040)

Roadway	Analysis Points	LOS		Roadway	Analysis Points	LOS	
		2010	2040			2010	2040
I-75	South of I-285 (Clayton County)	E	C[1]	US 41	North of I-75	E	E
I-75	North of I-285	E	E[1]	US 41	South of I-20	B	B
I-75	North of US 41	D	E	US 41	South of 14th St.	E	C
I-75 /I-85	South of I-20	E	**F**	US 41	South of I-285 (Cobb County)	B	B
I-75 /I-85	South of 14th Street	E	**F**	US 41	South of SR 280	C	C
I-75	South of I-285 (Fulton County)	E[1]	**F**[1]	US 41	North of Chastain Road	**F**	E
I-75	South of SR 280	E	**F**	US 41	North of SR 92	C	C
I-75	South of I-575	E	**F**	US 41	South of SR 53	A	A
I-75	North of Chastain Road	E	D[1]	US 41	North of SR 136	C	C
I-75	North of Wade Green Road	D	**F**	US 41	North of Carbondale Rd.	A[2]	C[2]
I-75	North of Glade Road	D	E	US 41	North of SR 201	A[2]	A[2]
I-75	South of SR 140	B	C	US 41	North of SR 146	A	A
I-75	South of SR 53	C	D	US 411	East of SR 1 Loop	C[2]	D[2]
I-75	North of SR 136	E	E	US 411	East of Biddy Road	B[2]	D[2]
I-75	North of Carbondale Road	C[2]	C[2]	US 411	East of Alford Road	C	D
I-75	North of SR 201	D[2]	C[2]	US 411	East of Harden Bridge Road	C	D
I-75	North of US 41 / SR 3	E	E	US 411	South of Falling Springs Road	D	E
I-75	North of SR 146	E	E	US 411	North of Salacoa Road	D	E
I-285	North of SR 280	E	**F**	US 411	North of SR 136	C	D
I-285	North of Paces Ferry Road	E	**F**	US 411	South of SR 2	A	A
US 41	South of I-285 (Clayton County)	D	E	US 76	West of US 411	A	A
US 41	North of I-285 (Clayton County)	E	B				

[1]Denotes sections of roadway network with proposed Managed Lanes system.

[2]LOS represents roadway segments provided by MPOs that have a base year different than 2010 or a future year different than 2040. The base year and future year for the Greater Dalton MPO is 2006 and 2035, respectively, and 2009 and 2040, respectively for the Rome Floyd-County MPO.

Sources: Transportation Demand Models for ARC, Greater Dalton MPO, Chattanooga-Hamilton County Regional Planning Agency, and Rome-Floyd County MPOs 2013 and TDOT 2014

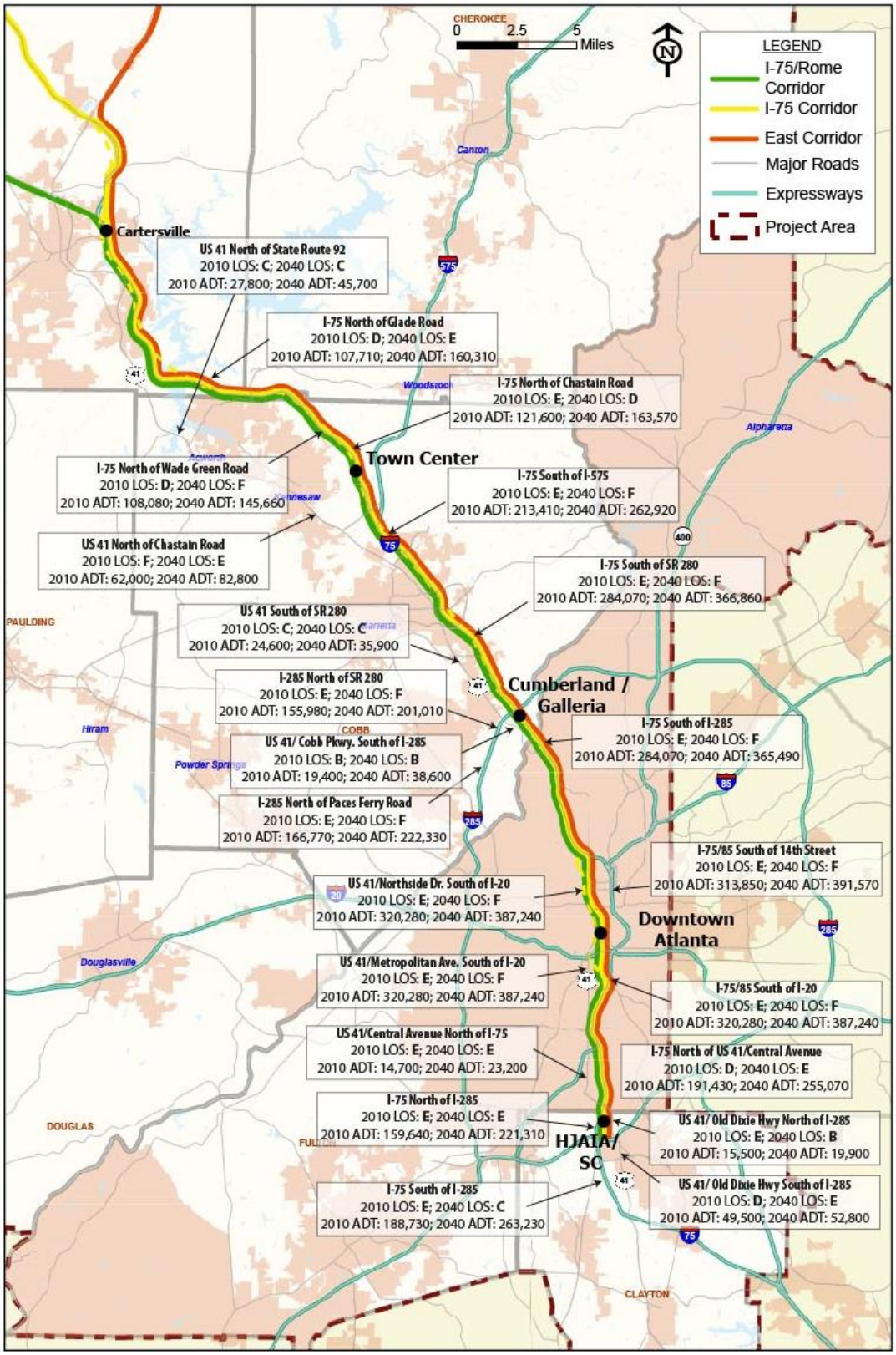
According to the analyses, with the exception of six roadway segments mostly located in rural areas, I-75 would operate at LOS D or worse in 2040 throughout the Project Area. The six more rural roadway segments are projected to have a LOS ranging from A to C. Of the 18 segments analyzed along I-75, six would experience LOS F. These six segments are in metropolitan Atlanta.

US 411, with the exception of one segment, would operate at D or worse in 2040 at all points studied; the one segment with a LOS better than D is the section south of SR 2. Base and future year LOS trends on US 41 are generally the same. Traffic volumes and corresponding LOS vary from the southern end of the Project Area in Atlanta to near the Tennessee state line. In the southern portion of the Atlanta metropolitan area and Clayton County south of I-285, volumes are just under 50,000 cars per day with a LOS E. Volumes drop significantly south of I-20 with just over 20,000 vehicles per day and a LOS A; however, volumes pick up significantly traveling further north all the way through the Cobb County area, north of I-285 with volumes over 76,000 vehicles per day and a LOS E. Volumes gradually drop traveling further north with a decrease in Bartow County with just under 3,000 vehicles per day and a LOS A. From there, volumes remain fairly low and constant to the Tennessee state line.

Figure 3-1 and **Figure 3-2** present the LOS and ADT at all points studied for the years 2010 and 2040. These data indicate that travel on Project Area roadways is affected by congestion in many locations. Travel times between Chattanooga and Atlanta are:

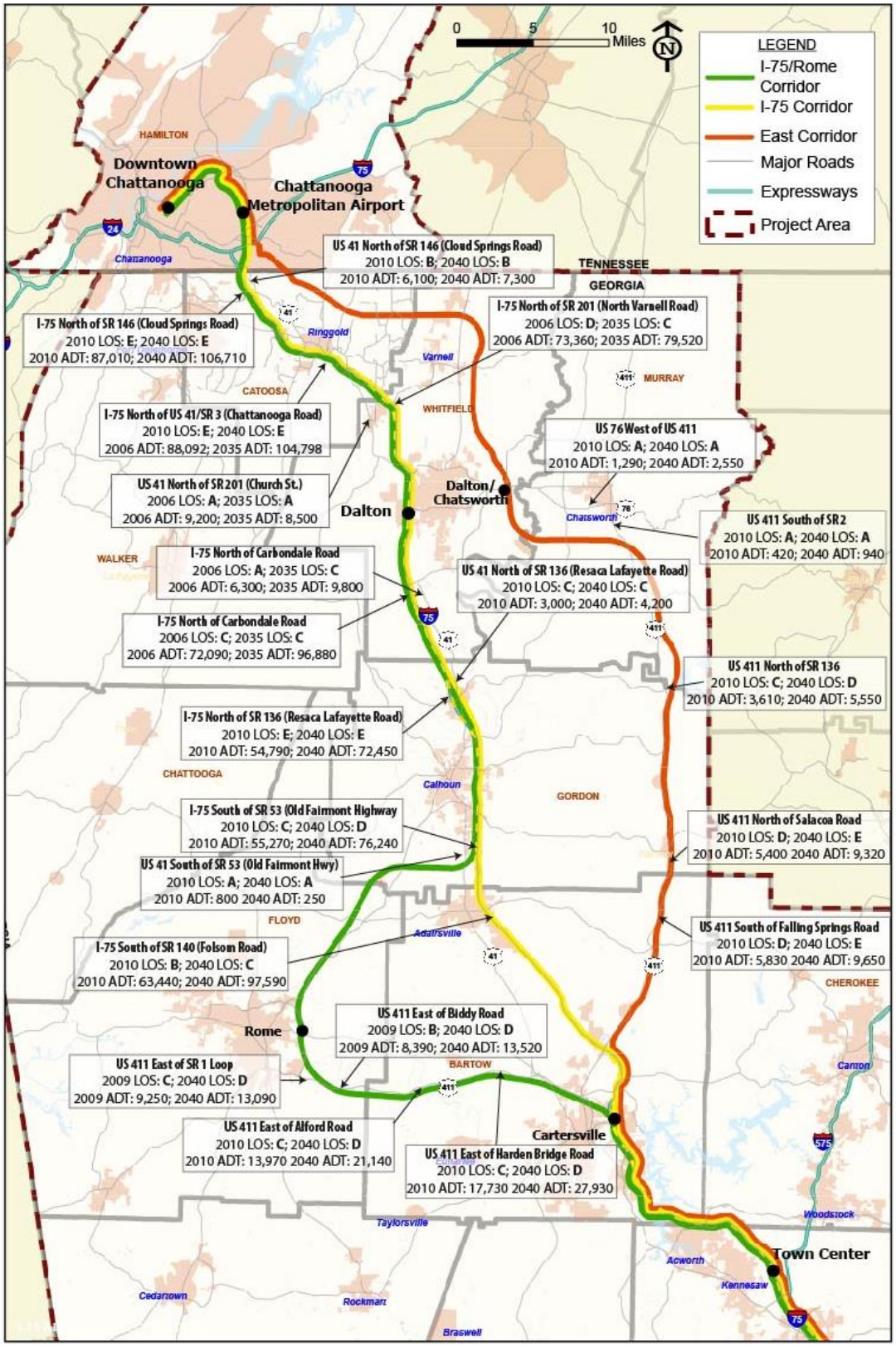
- Intercity bus – 125 to 185 minutes
- Automobile (on I-75) – 110 minutes (non-peak)

Figure 3-1: Roadway Level of Service and Average Daily Traffic – South



Sources: Transportation Demand Models for ARC, Greater Dalton MPO, Chattanooga-Hamilton County Regional Planning Agency, and Rome-Floyd County MPOs 2013 and TDOT 2014

Figure 3-2: Roadway Level of Service and Average Daily Traffic – North



Sources: Transportation Demand Models for ARC, Greater Dalton MPO, Chattanooga-Hamilton County Regional Planning Agency, and Rome-Floyd County MPOs 2013 and TDOT 2014

The Texas Transportation Institute reported in their *2011 Urban Mobility Report* that the Atlanta region is the 13th most congested area in the United States with an average of 43 hours lost per person annually in travel. As roadway congestion increases, intercity bus and automobile travel speeds on the roadway network will decrease, and travel times will increase. Because of these factors, the time it takes to travel between destinations, particularly by public transit that operates in mixed roadway traffic will become increasingly unreliable.

Existing Transit Services

The following local and regional rail and bus transit systems operate in the Project Area:

- **Metropolitan Atlanta Rapid Transit Authority (MARTA):** During FY 2013, MARTA provided approximately 130 million passenger trips on 91 fixed bus routes and over 48 miles of heavy rail through 38 rail stations in Fulton and DeKalb counties (MARTA 2014). Rail service operates 5:00 AM to 1:00 AM Monday through Friday, and weekends and holidays from 5:00 AM to 12:30 AM. Fixed routes bus service operates at various times seven days per week.
- **Georgia Regional Transportation Authority (GRTA):** In FY 2013, GRTA operated 175 buses with 2 million passenger boardings, 55 vanpools, and 4 demand response vehicles. GRTA Xpress is a partnership between GRTA and the counties of Clayton, Cherokee, Cobb, Coweta, DeKalb, Douglas, Forsyth, Fulton, Gwinnett, Henry, Paulding and Rockdale. GRTA Xpress operates 33 commuter express routes, which connects to MARTA and other transit systems. (GRTA 2014)
- **Cobb Community Transit (CCT):** In 2013, CCT operated 101 buses, including 18 routes with express service on I-75, and 30 demand response vehicles providing an estimated 3.6 million annual trips to its riders. The service is offered 4:00 AM to midnight Monday through Saturday, excluding holidays (CCT 2014).
- **City of Rome Transit Department (RTD):** RTD operates 24 buses and 4 demand response vehicles providing approximately 830,000 annual trips within the City of Rome. Its services include 5 mainline regular routes; 15 tripper routes, which serve other areas for students of Rome City Schools and other riders; paratransit service for Americans with Disabilities Act (ADA)-qualified riders; and charter service within Floyd County. Buses operate 5:40 AM to 6:30 PM Monday through Friday, excluding holidays (City of Rome RTD 2014).
- **Chattanooga Area Regional Transportation Authority (CARTA):** CARTA operates 49 buses and 12 demand response vehicles providing 2.5 million annual trips. CARTA also operates the Lookout Mountain Incline Railway, the Downtown Electric Shuttle, and Care-A-Van service for people with disabilities with 17 routes operating seven days per week in Hamilton County (CARTA 2014).

The following intercity bus services operate in the Project Area:

- **Greyhound:** Greyhound operates inter-city bus service between Atlanta and Chattanooga, with eight departures Monday through Saturday and six departures on Sundays. The trip takes between 1 hours 55 minutes and 2 hours 20 minutes. According to Greyhound, the standard adult fare is approximately $33.00 one-way and $66.00 round trip (2015). Ridership figures are not available.
- **Megabus:** Megabus operates inter-city bus service between Atlanta and Chattanooga, with four departures daily, including weekends. Each trip takes approximately 2 hours 5 minutes. The standard adult fare ranges from $5.00 to $11.00 each way. Ridership figures are not available.

As with automobile travel, bus travel times are affected by roadway congestion because buses operate with mixed traffic. As roadway congestion increases, intercity bus travel speeds on the roadway network will decrease, and travel times will increase. As a result of these factors, the time it

takes to travel between destinations, particularly by public transit that operates in mixed roadway traffic will become increasingly unreliable.

Existing Air Transportation

The two major airports serving the Project Area are Hartsfield-Jackson Atlanta International Airport (HJAIA) and Chattanooga Metropolitan Airport (CMA). They are briefly described below.

Hartsfield-Jackson Atlanta International Airport (HJAIA)

- **Aviation Travel Demand:** HJAIA currently ranks first in the world in passenger arrivals and departures as well as scheduled flights, and ranks 13th in air cargo volume. HJAIA serves 156 domestic destinations and more than 80 international destinations in 50 countries with 2,500 daily flights. It serves approximately 250,000 passengers a day, or about 91.3 million passengers per year (HJAIA 2014).
- **Airlines:** Domestic passenger service is provided by 22 airlines, international passenger service by 15 airlines, and cargo service by 19 airlines.
- **Capacity:** There are 29,550 public parking spaces, including 13,566 covered spaces, 7,800 economy lot spaces, and 8,184 airport park/ride spaces. Additional parking to support the International Terminal was completed in 2011.

Chattanooga Metropolitan Airport (CMA)

- **Aviation Travel Demand:** In 2013, about 618,000 passengers enplaned and deplaned at CMA. The top five origins and destinations of those passengers were Washington, D.C., New York, NY, Houston, TX, Philadelphia, PA and Boston, MA. CMA has non-stop flights to Atlanta, Charlotte, Chicago, Dallas, Detroit, Memphis, Washington DC, Orlando and Tampa / St. Petersburg. HJAIA is CMA's number one connecting hub, accounting for 28 percent of Chattanooga's local outbound travel. (CMA 2013)
- **Airlines:** Domestic passenger service is provided by four airlines. The airport does not offer international service.
- **Capacity:** CMA currently operates 5 commercial gates with plans to expand to 10 gates. The airport also has a general aviation facility operated by a fixed-base operator, with 16 acres of ready-to-build land available for general aviation expansion. The airport prepared a master plan update in 2010 (*Master Plan Update – Chattanooga Metropolitan Airport),* which calls for improvements in parking, general aviation, cargo, and hydrologic conditions. There are 1,226 public parking spaces, including 173 short-term spaces, 220 intermediate spaces, 739 long-term spaces, and the 94 employee spaces.

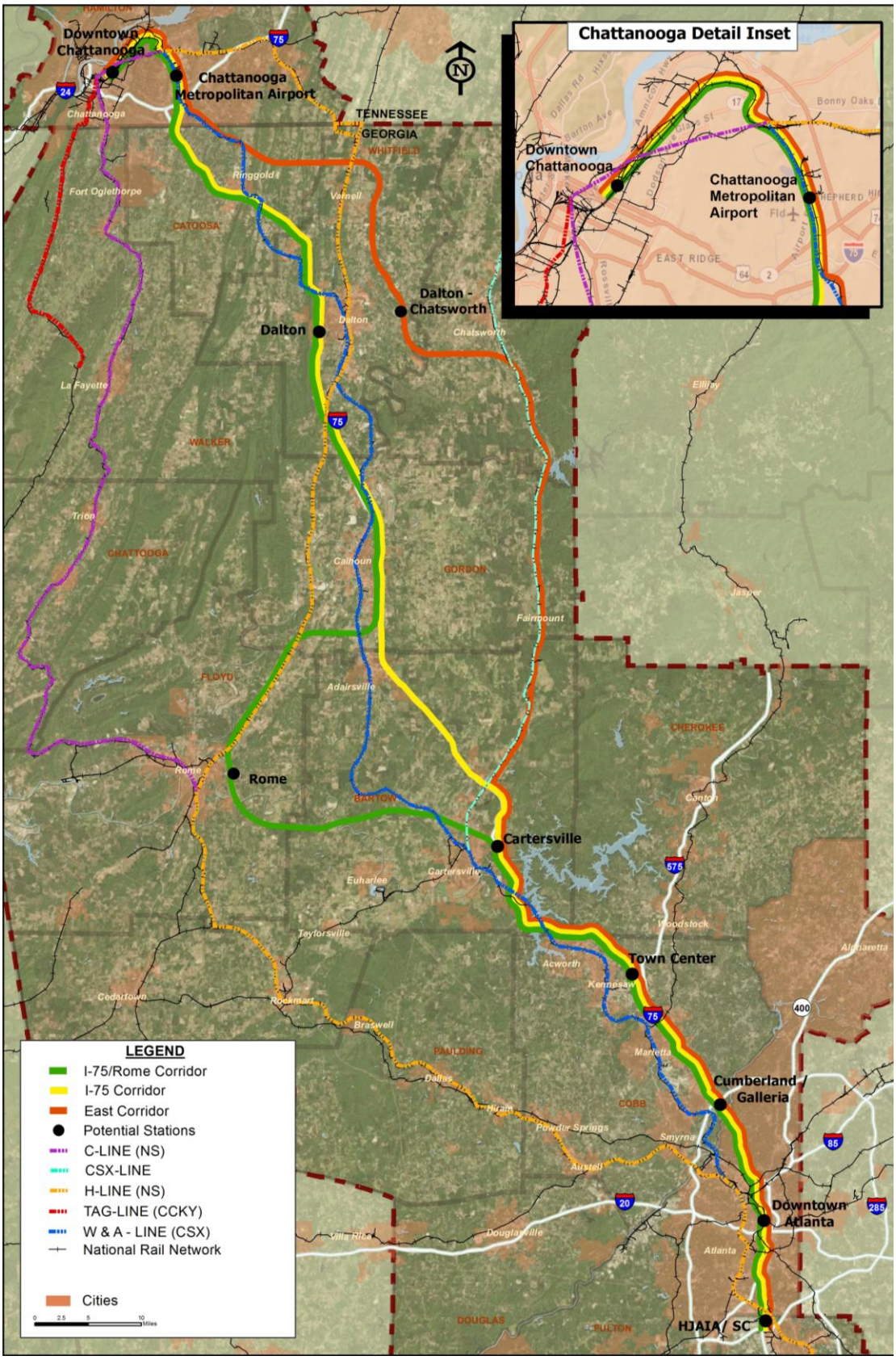
Air travel times between Chattanooga and Atlanta, including passenger ground time in the airports, is 120 minutes (airport gate to gate). Additional air passenger travel time depends on origin, destination, and airport processing.

Existing Rail Passenger and Freight Transportation

Within the Project Area, two freight railroads, CSX and Norfolk Southern (NS), connect the two cities; a third freight line connects Rome and Chattanooga; and a fourth line originally connected Chattanooga and Gadsden, Alabama. The freight railroads that provide connections between the Atlanta and Chattanooga regions are illustrated in **Figure 3-3** and are described below.

- **Western and Atlantic (W&A):** The most direct route connecting Atlanta and Chattanooga is the former W&A Railroad via Cartersville and Dalton. The W&A is owned by the State of Georgia and has been leased to CSX and its predecessors for over 100 years. This line is referred to as the W&A to distinguish it from other lines operated by CSX in northwestern Georgia.

Figure 3-3: Railroad Alignments within the HSGT Project Area



- **H-Line:** An NS line connects Atlanta and Chattanooga via Austell, Rome, and Dalton where it crosses CSX (W&A) at grade. This line is known as the H-Line to distinguish it from other NS lines in northwestern Georgia as its mileposts have an H-letter suffix. The line was completed between Rome and Atlanta as part of East Tennessee, Virginia and Georgia that was later merged into the Southern Railway.
- **C-Line:** The C-Line is a NS line connecting Rome to Chattanooga via Summerville. The line is known as the C-Line to distinguish it from other NS lines in northwestern Georgia as its mileposts have a C-letter prefix. The C-Line has been abandoned between Bone and Lyerly. The portion between Lyerly and Chattanooga is owned by the State of Georgia and is leased to the Chattooga and Chickamauga Railway (CCKY) by their West District.
- **TAG-Line:** The Tennessee, Alabama and Georgia Railroad Line (TAG) connects Chattanooga to Gadsden via Hedges. The portion of the line south of Hedges has been abandoned. The portion of the line between Chattanooga and Hedges is leased by NS to the CCKY and is operated at their East District. This line is referred to as the TAG-Line to distinguish it from the C-Line operated by the CCKY West District.

3.3.4 Environmental Consequences

3.3.4.1 No-Build Alternative

The No-Build Alternative assumes an HSGT system would not be built between Atlanta and Chattanooga. Passenger service between the two cities would consist of existing bus services, air travel, and continued automobile use along I-75, US 411, and US 41. The No-Build Alternative projects currently planned would increase roadway capacity, expand transit service, and improve transportation operations in selected portions of the Project Area transportation network, but would not enhance passenger mobility throughout the Project Area between the metropolitan areas and airports of Atlanta and Chattanooga. In comparison with the Corridor Alternatives, the No-Build Alternative projects would provide little benefit in the areas of:

- Increasing travel options;
- Reducing ground travel time;
- Increasing connections to existing transit services; and
- Increasing transit ridership.

The No-Build Alternative projects would not individually or collectively provide corridor-wide benefits in terms of faster and more reliable ground transportation service to the traveling public as an alternative to highway, intercity bus, and air travel.

3.3.4.2 Corridor Alternatives

Effects on Roadways

Travelers to destinations that would be served by the Project would have the option of using the proposed HSGT service as opposed to highway travel. In general, the Project is anticipated to benefit the Project Area roadway network as it would provide intercity travel capacity to supplement over-used interstate highways in the Project Area.

Regionally, rider choice to use HSGT service as opposed to the existing roadway network would change rider driving patterns to a focus on potential station locations. The local and regional effect on roadways due to the Project would be analyzed more fully in the Tier 2 NEPA phase. However, in general, the change in driving patterns would potentially affect roadway LOS, particularly in places where roadways already experience some congested time periods. Using the highway LOS as a measure of regional traffic operations, many locations along I-75 and its intersections with I-85 and I-

285 experience degraded LOS, as shown in **Table 3-3** and **Figures 3-1** and **3-2**. US 411 and the Folsom Road section of I-75 have generally better LOS operations. Considering the length of corridor where degraded LOS is a concern, the East Corridor Alternative and I-75/Rome Corridor Alternative may have less overall impact on regional travel than the I-75 Corridor Alternative.

Locally, the Project would change travel patterns in the vicinity of proposed stations as people travel to and from the stations. Localized roadway improvements may be required to accommodate roadway impacts resulting from the Project. Such improvements would relate to managing circulation, accommodating added traffic volume, and considering safety of pedestrians and bicyclists. Stations have the potential to induce re-zoning and development in the area around stations. For example, transit-oriented development (TOD), which increases the density of residential and commercial land uses, can change vehicular, transit, pedestrian and bicycle travel patterns. In coordination with local planning officials, GDOT and TDOT will examine each proposed station location during the Tier 2 NEPA phase and develop improvements as warranted and reasonably feasible.

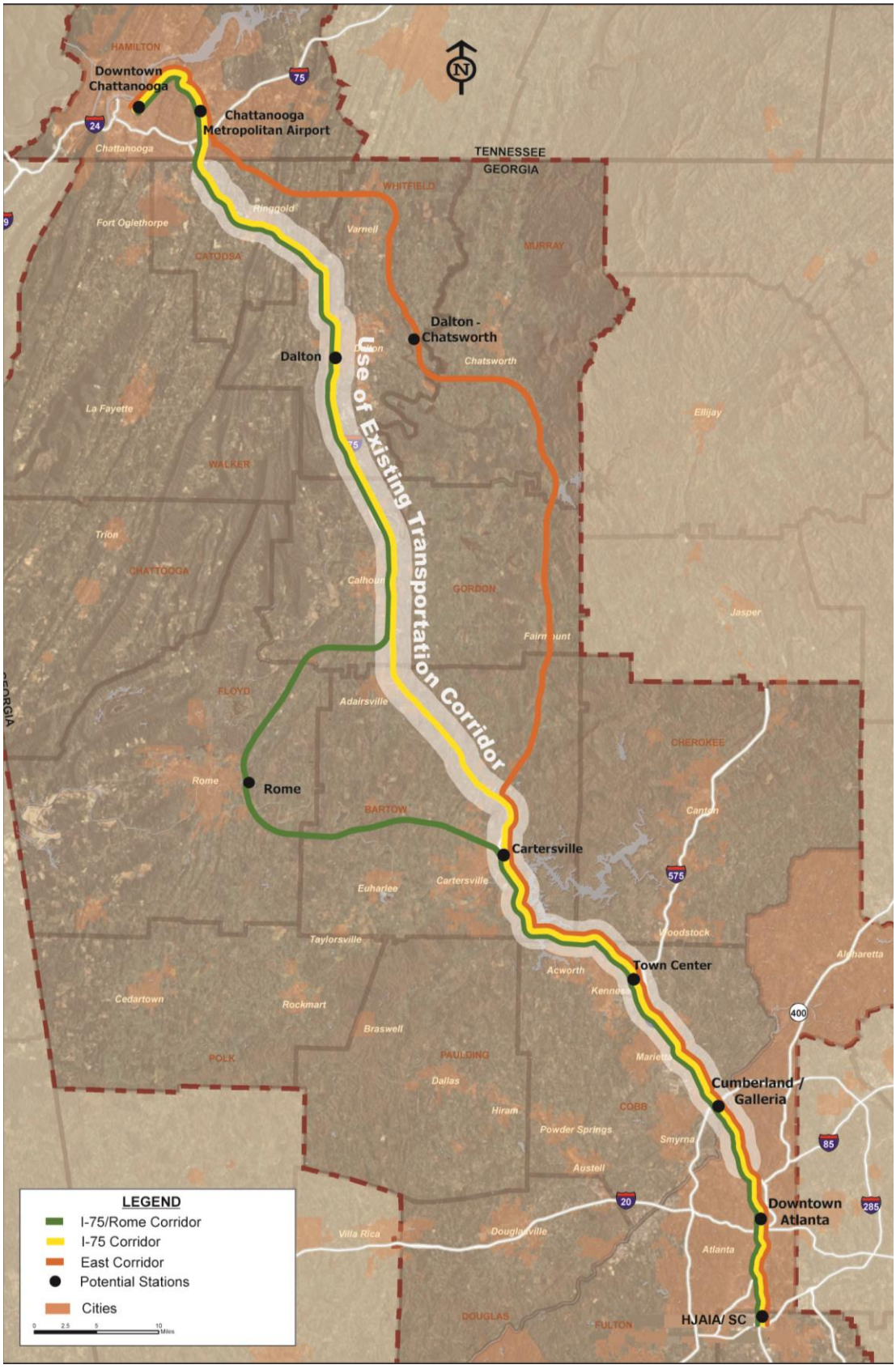
A large percentage of each Corridor Alternative would be within existing highway ROW. The approximate percentage that each Corridor Alternative would share existing highway ROW is shown in **Table 3-4** and illustrated on **Figure 3-4**. Use of existing highway ROW is intended to minimize additional ROW needs and impacts on the natural and built environment. GDOT and TDOT anticipate that the Project would not change the permanent number of highway travel lanes on the affected highways. The proposed HSGT operations would be grade separated as reasonably feasible. During the Tier 2 NEPA phase, the analysis will determine if potential crossings of roadways would be necessary and will evaluate potential road closures and/or realignments. The Project Team will coordinate with local government agencies to ensure input and feedback on potential solutions. The analysis that will be conducted in the Tier 2 NEPA phase will be based on costs, engineering constraints, and potential environmental impacts of the grade separation to determine feasibility. At no point is the HSGT envisioned to cross roadways at-grade. GDOT and TDOT's decision-making approach for roadway crossings would be guided by FRA's 2009 *Highway-Rail Grade Crossing Guidelines for High Speed Passenger Rail*. FRA's guidelines focus on issues such as safety, warning systems and traffic controls, train controls, barriers, and pedestrians.

Table 3-4: Proportion of Corridor Alternative within Existing ROW

Corridor Alternative	Approximate Percentage
I-75	76
East	31
I-75/Rome	53

During construction, the Project has the potential to temporarily affect roadway operations due to construction staging, access requirements, and other activities. These aspects would be examined in Tier 2 analysis.

Figure 3-4: Use of Existing Transportation Corridors



Effects on Existing Railroads

As shown on **Figure 3-3**, all corridor alternatives parallel the W&A Line and other rail alignments in the Chattanooga area and cross the W&A Line twice just south of Cartersville. Other potential effects would occur as follows:

- I-75 Corridor Alternative – Parallels W&A Line for short distances, one in Gordon County and one in Whitfield County; crosses the CSX Line in Bartow County and the W&A Line in Catoosa County;
- East Corridor Alternative – Parallels the CSX Line from when it departs from the I-75 corridor until it turns west just south of Chatsworth and the W&A Line in Catoosa County as it approaches the Tennessee border; crosses the CSX Line as it turns west and the H-Line in Whitfield County
- I-75/Rome Corridor Alternative – In the section that departs from the I-75 Corridor, parallels the H-Line between Rome and where it rejoins I-75; crosses both the CSX and W&A Lines in Bartow County.

The Project is not envisioned to share track with existing railroad freight service since railroads have a preference for distance between tracks used for freight and tracks used for passenger service. As such, GDOT and TDOT would avoid permanent and temporary Project-related effects on existing railroads where possible.

Effects on Existing Transit

The Project would add an intercity HSGT transportation option that does not currently exist in the Project Area. The provision of HSGT service in a dedicated guideway would enable ground travelers currently using a bus or automobile to avoid roadway congestion. In cases where private automobile travel is the only transportation option today, the proposed HSGT service would substantially increase transportation options. The proposed HSGT service would provide direct, competitive connections to local and regional destinations within the Project Area, as well as to HJAIA and CMA airports, and transit and rail services beyond the Project Area. Estimated end-to-end Project travel times are listed below along with existing travel times by mode for reference:

- I-75 Corridor Alternative – 88 minutes
- East Corridor Alternative – 95 minutes
- I-75/Rome Corridor Alternative – 102 minutes
- Air – 120 minutes (airport gate to gate; includes wait time 60 minutes arrival prior to departure and airport gate to gate)
- Intercity bus – 125 to 185 minutes
- Automobile (on I-75) – 110 minutes (non-peak)

These data indicate that each Corridor Alternative would reduce ground travel time and be competitive with air travel time. The I-75 Corridor Alternative would have the shortest time (88 minutes), followed by the East Corridor Alternative (95 minutes); the I-75/Rome Corridor Alternative would have the longest travel time (102 minutes). Travel time differences are largely a function of the length of each corridor. Beyond travel time, the nature of the Project as an HSGT service on dedicated guideway enables it to be operated on a predictable schedule. Reliability is a substantial benefit for travelers, particularly those making scheduled connections to other transportation services.

Connectivity of the Project with existing transit services is an important need for the Project; potential linkages will be studied during the Tier 2 NEPA process. In this Tier 1 DEIS, the Project Team is proposing a Project connection to the MARTA heavy rail system for each Corridor Alternative at either the Five Points station or the Dome/GWCC/Phillips Arena/CNN station. In addition, the Corridor Alternatives would introduce new train stations that may affect localized and regional bus

transit routes. Some bus routes may be changed to accommodate changes in traffic patterns resulting from the locations of stations. During construction, surface transit operations on roadways in the Project Area could be delayed, which could affect existing bus services.

Effects on Local Parking

The need for vehicular parking will be assessed during Tier 2 NEPA analysis, based on the selected station locations, the associated community planned land use, and existing parking availability.

Travel Time and Ridership

The effects of the Corridor Alternatives on the transportation system in the Project Area can be summarized by reviewing the mobility measures including travel time and forecast ridership. **Table 3-5** presents the ridership and both end-to-end and station-to-station travel times. The station areas listed in the table are representative of a typical station, and ridership is projected to these general locations in the travel demand model.

Table 3-5: Ridership and HSGT Travel Time

Corridor Alternative	Daily Ridership (2040)	End to End Travel Time (minutes)	Station Area to Station Area Travel Time (minutes)										
			HJAIA/SC to Downtown ATL	Downtown ATL to Cumberland / Galleria	Cumberland / Galleria to Town Center	Town Center to Cartersville	Cartersville to Rome	Rome to Dalton	Cartersville to Dalton	Cartersville to Dalton-Chatsworth	Dalton to CMA	Dalton - Chatsworth to CMA	CMA to Downtown Chattanooga
I-75	11,725	88	11	11	9	15	NA	NA	17	NA	14	NA	11
East	8,556	95	11	11	9	15	NA	NA	NA	20	NA	18	11
I-75/Rome	13,204	102	11	11	9	15	14	17	NA	NA	14	NA	11

Source: AECOM. 2014. Ridership model developed for this Project, See Appendix D.

The I-75 Corridor Alternative would have the shortest travel time and the second highest ridership. The East Corridor Alternative travel time would be longer than for I-75, but shorter than for I-75/Rome, and it would have the lowest ridership. The I-75/Rome Corridor Alternative would have the longest travel time, but it would have the highest ridership.

3.3.5 Potential Mitigation

Operations

If a Corridor Alternative is selected, efforts will be made to avoid or minimize impacts on transportation facilities as the Project advances. A number of potential mitigation strategies will be considered to offset impacts. Strategies that would mitigate the Project's impact on highways, local roads, transit operations, and parking vary depending on the nature of the impact. For example, near stations or where the selected Corridor Alternative crosses existing roadways on structures, physical improvements may need to be made to intersections or roadway cross-sections to facilitate access and safe circulation.

Station, parking, and maintenance facility designs could include operational and geometric improvements that maintain, wherever reasonably feasible, traffic conditions at acceptable levels of service. In general, mitigation could include the realignment of local traffic patterns and the creation of additional parking. Examples of roadway improvements to facilitate station access include turn

lanes at intersections, local roadway capacity improvements, traffic control measures, coordination with local transit operations, and improvements in pedestrian and bicycle access. Landscape and streetscape enhancements also could better integrate stations with adjacent land uses.

Construction

The temporary construction effects to roadways and surface transit would be addressed by Best Management Practices during construction.

It is anticipated that, to the extent possible, work would be staged during night-time, weekends, or off-peak hours to minimize service outages and disruptions to the traveling public. The contract specifications would require road closures and detours to be strictly coordinated so that traffic can take practical and short detour routes. Temporary closures and detours would be done in sequence as the project progresses geographically through a particular construction zone. During such closures and detours, the construction contractor would be required to post detours for traffic and implement other measures to ensure that traffic flow can be accommodated in an efficient manner as may be both practical and safe.

The Project Sponsors would also coordinate with local agencies regarding hauling of construction materials on public streets to identify acceptable routes and times of operation. Traffic would be managed by detailed traffic control plans. The contractor, with the Project Sponsors, would coordinate with potentially affected public services in planning traffic control measures. Construction activities that might substantially disrupt traffic would not likely be performed during peak travel periods to the maximum extent practicable. Access to all businesses and residences would be maintained.

Warning signs would be used as appropriate to provide notice of road hazards and other pertinent information to the traveling public. Signage and barricades would be used as part of the typical roadway construction traffic controls. Temporary traffic signal adjustments and/or temporary manual traffic control could be required when construction occurs at signalized intersections on adjacent arterials or roadways. The effectiveness of the traffic control measures would be monitored during construction and adjustments would be made, as necessary. The local news media would be notified in advance of road closures, detours, and other construction activities. Information would also be posted on the project website.

3.3.6 Subsequent Analysis

The Tier 2 NEPA process will entail more detailed planning and engineering to address connections to existing transportation systems, as well as potential effects on capacity requirements of transportation facilities affected by the Project. For example, the Tier 2 NEPA process will examine a connection to the MARTA heavy rail system that is proposed for each Corridor Alternative at the proposed Five Points station or the proposed Dome/GWCC/Phillips Arena/CNN station. The process will also include detailed planning and engineering to establish connections to local and regional bus systems since they are non-fixed guideway modes and can be dynamically altered over time based upon shifting demands and trip-making behaviors. These inputs are harder to anticipate but easier to adjust once station locations are determined. The planning and development of local and regional bus routes and schedules will also be completed by the owners of the bus services after the Tier 2 NEPA process.

The effects and mitigation measures that could be taken to address the capacity requirements of local roadway, transit, and pedestrian and bicycle networks generated by stations and TOD will be undertaken in the Tier 2 NEPA process as well. A more in-depth discussion of the effects to, and resulting from, land use changes will be addressed in that process. The need for vehicular parking will also be assessed in the Tier 2 NEPA process, based on selected station locations and the

associated community planned land use and existing parking availability. All stations would be designed to comply with the Americans with Disabilities Act (ADA) of 1990, as amended by the ADA Amendment of 2008. A full range of necessary transportation-related mitigation commitments will be developed in the Tier 2 NEPA analysis.

In addition, when a Tier 1 Preferred Alternative is selected, more detailed analyses would be performed to analyze travel demand, which would include the development of an optimized HSGT operating timetable for the Preferred Alternative. The analysis would be an iterative process that would address optimal frequency and time of day requirements by market, while also considering the cost required to provide the service. The analysis would have implications on the Project's ridership, capital costs and operating costs. The timetable optimization process would be coordinated with other rail corridor initiatives within region. Additionally, depending on the amount of time that passes between the completion of this Tier 1 DEIS and additional analyses, updated travel market data, demographic data and forecasts may be required in the travel demand model. The update would include the latest Metropolitan Planning Organization (MPO) base year and future year highway networks; the latest MPO, statewide, and national socio-economic data and forecasts; and the latest air travel market data. The selected Preferred Alternative would also be subjected to the plan development processes of review and approvals by the States of Georgia and Tennessee, and the FRA.

3.4 Air Quality

This section describes the existing air quality of the Project Area and assesses the potential effect of the alternatives on air quality. Air quality would be a distinguishing factor among the alternatives in terms of reducing vehicular emissions by attracting ridership from other modes. However, there is no substantial difference among the alternatives. In addition, the technologies considered would both use electric power, which may come from coal-fired power generation plants. However, the source of the HSGT's electric power is beyond the scope of a Tier 1 analysis and was not a consideration in the determination of potential air quality impacts.

3.4.1 Legal and Regulatory Context

The federal agency that develops and enforces the regulations that help govern air quality is the USEPA. The CAA, as amended in 1990, led the USEPA to establish National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to protect the public from health hazards associated with air pollution. The six criteria air pollutants are: carbon monoxide (CO), ozone (O^3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). The sources of these pollutants, their effects on human health, and their concentrations in the atmosphere vary. **Table 3-6** shows the NAAQS for each criteria pollutant. The states of Georgia and Tennessee have adopted these standards as the State Ambient Air Quality Standards.

Table 3-6: National Ambient Air Quality Standards (NAAQS) for Criteria Pollutants

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 $\mu g/m^3$	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution Dec 14, 2012	$PM_{2.5}$	primary	Annual	12 $\mu g/m^3$	annual mean, averaged over 3 years
		secondary	Annual	15 $\mu g/m^3$	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per

µg/m3= micrograms per cubic meter ppm = parts per million
Source: USEPA. National Ambient Air Quality Standards, December 14, 2012 http://www.epa.gov/air/criteria.html

The USEPA delegates authority to the Georgia Department of Natural Resources Environmental Protection Division (GDNR EPD), Air Protection Branch for monitoring and enforcing air quality regulations in the State of Georgia. Similarly, the Department of Environment and Conservation, Air Pollution Control (APC) is responsible for monitoring and enforcing air quality regulations in the State of Tennessee. The Georgia *State Implementation Plan* (SIP) (USEPA 2005) and the Tennessee SIP (USEPA 2006), developed in accordance with the CAA, contain the major requirements with respect to air quality. Under the authority of the CAA, Federal entities are prohibited from taking actions in nonattainment or maintenance areas that do not conform to the SIP for the attainment and maintenance of the NAAQS. Conformity analyses ensure that Federal activities do not interfere with the budgets in the SIPs, that Federal activities do not cause or contribute to new violations, and that States achieve overall attainment and maintenance of the NAAQS. FRA actions are covered under General Conformity (58 FR 63214).

A project conforms to the SIP if it is included in a conforming metropolitan transportation plan. The HSGT Project is included in the Chattanooga - Hamilton County / North Georgia Regional Planning Agency (CHRPA) *Chattanooga Urban Area Transportation Improvement Program* and the *2035 Long Range Transportation Plan, Creating a Multi-modal Network* (CHRPA 2010). The Project is not included in the Atlanta Regional Commission (ARC) *PLAN 2040* RTP (2010); however, high-speed rail studies are included in GDOT's fiscal year (FY) 2010-2014 State Transportation Improvement Program (STIP) (2014). The U.S. DOT has concurred in the conformity determination for the CHRPA

plans; however, since the Project is not included in the ARC, Greater Dalton MPO, or Rome/Floyd CPC plans, it does not conform to the SIP and the Project must be approved by the U.S. DOT.

3.4.2 Methodology

A qualitative air quality analysis was performed for the Project. Data on existing air quality conditions were obtained from the GDNR EPD and Tennessee APC. Future planning phases of the Project will include hot spot analyses at the points in time and places where congestion is expected to be greatest or in areas of sensitive receptors.

3.4.3 Affected Environment

According to the GDNR EPD, Air Protection Branch, the following counties within the Georgia portion of the Project Area were designated as a Non-Attainment Area for 8-hour ozone standard and the $PM_{2.5}$ standard (2014):

- Clayton, GA
- Fulton, GA
- Cobb, GA
- Paulding, GA
- Douglas, GA
- Cherokee, GA
- Bartow, GA

The 1-hour ozone standard was revoked for the 13-County Atlanta metro area (part of the 20-County area) as of June 15, 2005. Hamilton County, Tennessee is designated as a Non-Attainment Area for the 1997 $PM_{2.5}$ standard. The Atlanta and Chattanooga areas both are in attainment for all other criteria pollutants. **Table 3-7** shows monitored ambient air quality in the Project are for 2012 and 2013.

Table 3-7: Monitored Ambient Air Quality in the Project Area

Pollutant	Monitor Location	County	Averaging Period	Concentrations	
				2012	2013
Nitrogen Dioxide (NO_2)	King Farm, 160 Ralph King Path, Rockmart, GA	Polk	1 Hour	24	27
Ozone (O_3)	GA National Guard, 1901 McCollum Parkway, Kennesaw, GA	Cobb	8 Hours	0.087 **3**	0.073 **0**
	935 East Confederate Ave., Atlanta, GA.	Fulton	8 Hours	0.101 **10**	0.096 **2**
	Fort Mountain, State Hwy 52, Cohutta Overlook, Chatsworth, GA	Murray	8 Hours	0.076 1	0.068 **0**
	Soddy Daisy H.S. 00618 Sequoyah Rd Soddy Daisy, TN	Hamilton	8 Hours	0.085 **5**	0.077 **0**
	6200 Bonny Oaks Drive Eastside Utility Filter Plant Chattanooga, TN	Hamilton	8 Hours	0.090 **4**	0.078 **0**
Particulate Matter ($PM_{2.5}$)	GA National Guard, 1901 McCollum Parkway, Kennesaw, GA	Cobb	24 Hours	26.0	23.5
	Coosa Elem. School, Hwy.20, Rome, GA	Floyd	24 Hours	31.9	22.7
	Fire Station #8, 1711 Marietta Blvd, Atlanta, GA	Fulton	24 Hours	21.7	23.5
	King Farm, 160 Ralph King Path, Rockmart, GA	Paulding	24 Hours	17.9	23
	601 Maple St, Lot#6, Rossville GA	Walker	24 Hours	23.8	27.5
	1517 Tombras Avenue, East Ridge, TN	Hamilton	24 Hours	23.0	24.1
	Soddy Daisy H.S. 00618 Sequoyah Rd Soddy Daisy, TN	Hamilton	24 Hours	23.9	19.7
	Riverside Substation 911 Siskin Dr, Chattanooga, TN Monitor 1	Hamilton	24 Hours	20.2	19.8
	Riverside Substation 911 Siskin Dr, Chattanooga, TN Monitor 2	Hamilton	24 Hours	19.4	19.5

Bold = Number of exceedances
Source: USEPA. 2014. http://www.epa.gov/airdata/ad_rep_mon.html

3.4.4 Environmental Consequences

3.4.4.1 No-Build Alternative

The No-Build Alternative assumes an HSGT system would not be built between Atlanta and Chattanooga. Passenger service between the two cities would consist of existing bus services, air travel, and continued automobile use along I-75, US 411, and US 41. The air quality pollutant concentrations related to auto, bus, and air could worsen under with the No-Build Alternative compared to the Corridor Alternatives, primarily due to emissions from heavier volumes of vehicular traffic in the future, though some emissions could be offset by increased use of more fuel efficient cars. In addition, construction of the projects under the No-Build Alternative could also have temporary air quality impacts.

3.4.4.2 Corridor Alternatives

Criteria air quality pollutants (defined in **Section 3.4.1**) can cause serious health effects. According to the USEPA, exposure to the pollutants could lead to variety of health problems, including heart or lung disease, heart attacks, arrhythmia, asthma, decreased lung function, and respiratory issues. Regardless of the HSGT technology selected, the Project Team does not anticipate the Corridor Alternatives to cause or contribute to a new violation of any NAAQS, increase the frequency or severity of any existing violations, or delay timely attainment of any NAAQS. In fact, all Corridor Alternatives could result in a net reduction of burdens of criteria pollutants in the Project Area, which wouldhave positive long-term health benefits for the region. The difference between Maglev and steel-wheel high-speed ground transportation will be determined in the Tier 2 NEPA phase. Each Corridor Alternative has the potential to positively affect regional air quality by attracting riders to the proposed HSGT service from other modes, particularly the widely-used automobile. The I-75/Rome Alternative has the highest potential to attract riders from other modes to the proposed HSGT service and, thereby reduce vehicular emissions. This finding is based solely on the alternative having the highest ridership. Reduced travel by single occupancy vehicle could directly reduce combustion engine emissions, thereby having a possible beneficial effect on regional air quality compared to the No-Build Alternative. In addition, since the proposed service would operate in a sealed corridor with no at-grade crossings traffic emissions would not increase due to idling vehicles.

Construction activities can result in short-term, localized effects on ambient air quality and generate a temporary increase in Mobile Source Air Toxics (MSAT) emissions. These potential effects include direct emissions from construction equipment and trucks, increased emissions from motor vehicles on the streets due to disruption of traffic flow, and fugitive dust emissions. Emissions from Project related construction equipment and trucks are expected to be much less than the total emissions from other industrial and transportation sources in the region, and therefore, are not expected to cause a violation of the NAAQS. Fugitive dust emissions could occur during demolition, ground excavation, material handling and storage, movement of equipment at the site, and transport of material to and from the site.

3.4.5 Potential Mitigation

Operations

Since the Corridor Alternatives are not anticipated to cause or contribute to any new violation of the NAAQS in Tennessee, mitigation measures would not be required for operations. In Georgia, an applicability analysis would have to be performed to determine if a general conformity analysis would be required because the project is not included in the ARC's *PLAN 2040* RTP (2010).

Construction

Temporary construction effects are anticipated. The Project would adhere to the GDNR EPD 2010 Fugitive Dust regulation 391-3-1-02(2)(n) and the *APC Regulation for Fugitive Dust* (Chapter 1200-

3-8). Project-level assessments that render a decision to pursue construction emission mitigation would benefit from a number of technologies and operational practices that should help lower short-term MSATs. In addition, SAFETEA-LU (Public Law 109-59, August 10, 2005) has emphasized a host of diesel retrofit technologies in the law's Congestion Mitigation and Air Quality Improvement Program (CMAQ) program provisions - technologies that are designed to lessen a number of MSATs. The USEPA has listed a number of approved diesel retrofit technologies; many of these can be deployed as emissions mitigation measures for equipment used in construction.

3.4.6 Subsequent Analysis

Subsequent analysis will include a detailed air quality assessment on the Preferred Alternative and the station and maintenance facilities locations are finalized. The analysis will evaluate Project's impact on motor vehicle emissions due to local traffic to and from stations and of locomotives and other sources operating in rail yards. Potential construction impacts also will be analyzed. If the Project is not included in the Georgia SIP, an applicability analysis will be performed to determine if a general conformity analysis is required.

3.5 Noise and Vibration

This section provides an overview of the potential noise and vibration effects of the Project.

3.5.1 Legal and Regulatory Context

FRA's guidelines published in *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (FRA 2012) form the basis for determining the potential noise and vibration effects associated with high-speed and conventional-speed rail Maglev transportation with train speeds of 90 to 250 miles per hour.

3.5.2 Methodology

Noise

The Project Team conducted a preliminary noise evaluation according to the FRA manual's Screening Procedure, which is the appropriate analysis level for project corridors where the technology and alignments have not been selected, and identifies noise-sensitive land uses. It is based on very general assumptions. It indicates whether any noise-sensitive land uses are close enough to the Corridor Alternatives for noise impacts to be possible. The Screening Procedure focuses on the potential noise impacts from high-speed trains passing near noise-sensitive land uses. Noise from ancillary sources, such as electrical substations, maintenance facilities, and increased roadway traffic near HSGT stations, is not assessed at this stage due to lack of detail and placement of these potential noise sources. The extent and severity of impact will be determined by a detailed noise assessment, as the project definition is refined in the Tier 2 NEPA phase, when specific alignments and associated HSGT infrastructure are evaluated.

For each of the Corridor Alternatives, the acreages of sensitive land uses were calculated within FRA-recommended screening distances for noise and vibration impacts. The types of land uses that are sensitive to noise impacts are listed in **Table 3-8**.

Table 3-8: FRA Noise-Sensitive Land Use Categories and Metrics for High-Speed Train Noise

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq}(h)$*	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as national historic landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(h)$*	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, and museums can also be considered to be in this category. Certain historical sites, parks, campgrounds, and recreational facilities area also included.

*L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity
Source: FRA. 2012. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*

For this screening, the acreages of each of the following land use types were determined:

- Residential
- Public/Institutional
- Parks, Recreation, and Conservation Areas

Although the Corridor Alternatives would use either steel-wheeled or Maglev technology, the screening distance for steel-wheel technology was applied in order to cover the widest area of analysis and potential impact. A screening distance of 1,100 feet from the corridor centerline was used for rural/suburban areas, while 600 feet from corridor centerline was used for suburban/urban areas based on FRA manual guidance for steel-wheel HSGT systems within highway environments. For the Atlanta-Chattanooga HSGT analysis, the suburban/urban screening distance (600 feet) was applied for the corridor in Clayton, Fulton, Cobb, and Hamilton Counties. The suburban/rural distance (1,100 feet) was used for Cherokee, Bartow, Floyd, Gordon, Murray, Whitfield, and Catoosa Counties.

Vibration

As with the noise analysis, a vibration screening procedure was conducted to determine whether vibration-sensitive land uses are close enough to the Corridor Alternative for potential ground-borne vibration impacts to be possible. The screening procedure does not require any specific knowledge about the vibration characteristics of the system or the geology of the area. More detailed vibration analysis will be done in the Tier 2 NEPA phase if any sensitive land uses exist within the screening distances. **Table 3-9** shows the land uses that are sensitive to ground borne vibration impacts.

Table 3-9: FRA Ground Borne Vibration Impact Criteria

Land Use Category	Ground-Borne Vibration Impact Criteria (VdB relative to 1 micro inch/second)	
	Frequent Events[a]	Infrequent Events[b]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB[c]	65 VdB[c]
Category 2: Residences and buildings where people normally sleep	72 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use	75 VdB	83 VdB

Source: FRA 2012.

[a] Frequent Events is defined as more than 70 vibration events per day.

[b] Infrequent Events is defined as fewer than 70 vibration events per day.

[c] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the heating, ventilating and air conditioning systems, and stiffened floors.

The screening distance is determined by the proposed train speed, frequency and land use type. This vibration screening analysis uses the widest screening distance for HSGT, which is 275 feet. This screening distance was applied to each of the corridor alternatives to determine acreage of residential and public/institutional land areas within the screening buffer.

3.5.3 Affected Environment

The Project Area contains noise- and vibration-sensitive land uses, which include residences, parks, schools, and institutional land uses where people spend time. The Project Area also includes urbanized areas where traffic and other activities already affect ambient noise, as well as agricultural and rural land where ambient noise would currently measure very low.

Table 3-10 shows the acreage of noise-sensitive land uses within the applied screening distance for each of the corridor alternatives. The I-75/Rome Corridor Alternative has the most noise-sensitive land acreage within its screening area, while I-75 has the least. This may be attributable to the fact that a greater length of the I-75 Corridor Alternative is adjacent to the interstate highway system, whereas the other two alternatives deviate from the interstate and travel along U.S. highways (which tend to have more development located closer to the roadway than interstate highways). Most of the noise-sensitive land uses along the three corridors is residential.

Table 3-10: Noise-Sensitive Land Use Acreage Within Screening Distance by Alternative

Land Use Type	Corridor Alternative		
	I-75	East	I-75/Rome
Parks/Recreation Areas/Conservancy Areas	805	689	878
Public/Institutional	542	915	851
Residential	4,567	5916	6,696
Total Area of Noise-Sensitive Land Uses	**5,914**	**7,520**	**8,425**

Sources: Atlanta Regional Commission: LandPro 2010; Northwest Georgia Regional Commission: Floyd County existing land use 2009, Gordon County existing land use 2007, Murray County existing land use 2005, Whitfield County existing land use 2010, Catoosa County existing land use 2010; Chattanooga-Hamilton County Regional Planning Agency: Hamilton County existing land use 2010.

Table 3-11 shows the acreage of vibration-sensitive land uses within the screening area of each corridor alternative, which is 275 feet from the centerline. The East Corridor Alternative has the most vibration-sensitive land uses within the screening distance, followed by the I-75/Rome Corridor Alternative and the I-75 Corridor Alternative. Similar to the noise analysis, the table shows that

residential land uses comprise the majority of the vibration-sensitive areas along the project corridors.

Table 3-11: Vibration-Sensitive Land Use Acreage Within Screen Distance by Alternative

Land Use Type	Corridor Alternative		
	I-75	East	I-75/Rome
Public/Institutional	146	291	231
Residential	746	1,404	1,140
Total Area of Vibration-Sensitive Land Uses	**892**	**1,695**	**1,371**

Sources: Atlanta Regional Commission: LandPro 2010; Northwest Georgia Regional Commission: Floyd County existing land use 2009, Gordon County existing land use 2007, Murray County existing land use 2005, Whitfield County existing land use 2010, Catoosa County existing land use 2010; Chattanooga-Hamilton County Regional Planning Agency: Hamilton County existing land use 2010.

3.5.4 Environmental Consequences

3.5.4.1 No-Build Alternative

The No-Build Alternative assumes an HSGT system would not be built between Atlanta and Chattanooga. Passenger service between the two cities would consist of existing bus services, air travel, and continued automobile use along I-75, US 411, and US 41. The No-Build Alternative projects would increase capacity and expand service in selected portions of the Project Area transportation network. However, no enhanced intercity passenger HSGT mobility would be provided in the Project Area. In general, the noise and vibration levels along the major highway corridors are likely to increase, primarily due to heavier volumes of vehicular traffic in the No-Build Alternative. As the geographic scope and nature of the No-Build Alternative projects is limited, the potential effects of the projects are likely to be contained to the area in which the individual projects would be constructed.

3.5.4.2 Corridor Alternatives

The screening shows that all three corridors have noise- and vibration-sensitive land uses that could be affected by HSGT operations. As described above, the I-75/Rome and East Corridor Alternatives have more acres of noise- and vibration-sensitive land uses located along the corridor than in the I-75 Corridor. This may be attributable to the fact that a greater length of the I-75 Corridor Alternative is adjacent to the interstate highway system. The I-75 and I-75/Rome Corridors also pass through more developed areas presenting a higher likelihood of noise and vibration effects. However, because the proposed service would be completely grade separated, impacts related to horn blows at grade crossings would not occur. Because steel-wheel vehicles produce greater noise and vibration than Maglev, the noise and vibration screening distances were based on steel-wheel technology (FRA 2012). If Maglev technology is chosen, there would likely be fewer noise and vibration impacts. The detailed analysis for noise and vibration performed during Tier 2 NEPA would also quantify the differences in impact between the two technologies.

Typical construction activities may include, but are not limited to track-laying and relocation, station construction and construction of parking facilities. Noise and vibration levels from construction activities for the Corridor Alternatives, although temporary, could create a nuisance condition at nearby sensitive receivers. The potential for exposure to construction-related noise and vibration levels varies depending on the types of construction activity and the types of equipment used for each stage of work.

3.5.5 Potential Mitigation

Operations

Noise

When a detailed noise analysis is conducted during the Tier 2 NEPA phase, potential noise effects will be quantified, strategies to avoid or minimize noise effects will be examined for feasibility and incorporated into the design, and strategies to mitigate the remaining unavoidable effects would be examined. Noise control and mitigation strategies that could be examined include:

- **Installation of noise barriers** - Depending on the height and location relative to the tracks, noise barriers can achieve between 5 and 15 dB (decibel) of noise reduction. The primary requirements for an effective noise barrier are that the barrier must (1) be high enough and long enough to break the line-of-sight between the sound source and the receiver, (2) be of an impervious material with a minimum surface density of 4 pounds per square foot, and (3) not have any gaps or holes between the panels or at the bottom. Because many materials meet these requirements, aesthetics, durability, cost, and maintenance considerations usually determine the selection of materials for noise barriers. Depending on the situation, noise barriers can become visually intrusive, which would have to be evaluated during the Tier 2 NEPA phase. Coordination with affected communities would be needed to determine the appropriateness of the material.

- **Building sound insulation -** Sound insulation of residences and institutional buildings to improve the outdoor-to-indoor noise reduction is a mitigation measure that can be provided when the use of noise barriers cannot provide a feasible level (5 to 7 dB) of noise reduction. Although this approach has no effect on noise in exterior areas, it can provide noise reduction for residential/institutional interiors, which can be especially important where noise barriers are not feasible or desirable and for buildings where indoor sensitivity is of most concern. Sound insulation will be further evaluated in Tier 2 based on noise impact analysis of the refined alignment and train technology, and in accordance with applicable GDOT, TDOT, and FRA policies on noise abatement.

- **Source Treatments –** Source treatments include measures to reduce noise through the train vehicles and rails, due to materials and quality of construction of wheels, the vehicle body type, propulsion and ventilation systems used, and materials and quality of construction of the vehicle guideway support. In the procurement of an HSGT vehicle technology, the proposed project can set performance limits for noise levels in order to reduce community noise effects throughout the corridor. The types of technology available and cost considerations will inform the potential to reduce the noise throughout the corridor through various vehicle and guideway design considerations; therefore potential source treatments will be further evaluated in Tier 2.

Vibration

Control of ground-borne vibration that exceeds the FRA effect criteria could be achieved using a resilient track design. Depending on the track design, there are different methods to control vibration. For steel-wheel slab track, resilient direct fixation fasteners could be used, and for ballast and tie track either shredded tire aggregate or rubber ballast mats. For Maglev, various damping control measures directed towards the secondary suspension can be applied.

Construction

During the construction phase, noise and vibration control measures may be required to ensure compliance with all federal, state, and local guidelines and noise limits. For example, noise specifications could require contractors to use properly maintained and operated equipment, including the use of exhaust mufflers according to the equipment manufacturer's specifications.

Additional noise control measures could be incorporated into the construction specification documents as determined to be necessary during final design. Several areas of potential noise control during construction include:

- Temporary noise barriers erected between noisy activities and noise-sensitive receptors;
- Use of sonic/vibratory pile-drivers rather than effect pile-driving near noise-sensitive receptors;
- Restrictions on hours of construction work to daytime hours, and adherence to any applicable county/municipal noise ordinances; and
- Rerouting construction traffic along roadways that minimize noise effects at nearby noise sensitive receivers.

Additionally, vibration specifications could require contractors to use alternative construction methods and equipment, including the use of vibratory pile drivers rather than effect pile drivers. Vibration control measures could be incorporated into the construction specification documents as determined to be necessary during final design. The areas for potential vibration control during construction include:

- Utilizing alternative construction methods that avoid pile driving near vibration-sensitive receivers, such as residences, schools and hospitals;
- Whenever possible, use of drilled piles or sonic/vibratory pile drivers to reduce excessive vibration;
- Rerouting truck traffic away from vibration-sensitive receptors; and
- Requiring contractors to use Best Available Control Technologies (BACT) to limit excessive vibration.

3.5.6 Subsequent Analysis

A detailed noise and vibration analysis will be conducted during the Tier 2 NEPA process when a Corridor Alternative is selected. In the Tier 2 NEPA process, the alignment within the preferred Corridor Alternative will be configured, a technology (steel-wheel or Maglev) will be chosen, exact station and maintenance facility locations will be identified, as well as other necessary infrastructure to accommodate the proposed service. The analysis will take into consideration the noise and vibration levels from new HSGT activity along the corridor, including the number of number of locomotives on each train or Maglev, the speed of each, and hours of operation, as well as potential effects related to electrical substations, HSGT passenger stations, and maintenance facility operations. Potential noise and vibration effects will be quantified, strategies to avoid or minimize the potential effects will be examined for feasibility and incorporated into the design, and strategies to mitigate the remaining effects will be identified. Noise and vibration control measures will comply with all applicable federal, state, and local construction regulations.

3.6 Socioeconomics and Environmental Justice

This section describes the socioeconomic conditions and environmental justice (EJ) populations within the Project Area. It also presents the potential effects of the Project on these conditions and populations. As the proposed station locations vary among the Corridor Alternatives, distinguishing factors potentially include the specific populations, employment areas and EJ populations in proximity to proposed station locations. In addition, the ratio of EJ populations to non-EJ in each Corridor Alternative varies. This section also broadly describes the potential effects to neighborhoods, community resources, and community cohesion; however, detailed impacts such as property acquisitions or displacements will be evaluated in the Tier 2 NEPA phase.

3.6.1 Legal and Regulatory Context

The Council on Environmental Quality's (CEQ's) Regulations for implementing the provision of NEPA (40 CFR 1500-1508) state that the "human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment." The following Executive Order, USDOT Order and guidance documents pertain to the assessment of effects on EJ populations.

- ***Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*** **(1994) –** requires all federal agencies to "develop an agency-wide environmental justice strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."
- ***U.S. DOT Order 5610.2 (a) – Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*** **(1997)** ***and Final DOT Environmental Justice Order*** **(2012) –** requires planning and programming activities that have the potential to have a disproportionately high and adverse effect on human health or the environment to include explicit consideration of the effects on minority populations and low-income populations.
- ***Environmental Justice: Guidance Under the National Environmental Policy Act*** **(1997)**, prepared by the CEQ, provides guidance for conducting environmental justice analysis under NEPA including the suggested elements for public involvement and outreach, development of the environmental justice analysis methodologies, environmental justice definitions, environmental justice criteria, and environmental resource evaluation criteria for the determination of disproportionately high and adverse human health and environmental effects.

3.6.2 Methodology

3.6.2.1 Socioeconomics

The defined study area for population access to the Project consists of a 10-mile radius around each proposed station location.[11] A 5-mile study area radius around each of the proposed station locations will be used to assess access to employment[12]. The purpose for measuring population and employment access is to provide a high-level estimation of each Corridor Alternative's ability to serve and be located in proximity to areas of greater relative population and employment concentrations. The information and data presented in this section were obtained from the U.S. Census 1990, 2000, and 2000 data, and the American Community Survey 2008-2012 Update.

3.6.2.2 Environmental Justice

The EJ analysis is based on identifying the presence of minority and low income populations within the defined study area. Minority populations include persons who are American Indian and Alaska Native, Asian, black or African American, Hispanic or Latino, Native Hawaiian, and other Pacific Islander. Low-income populations are defined as persons whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines. The study area for the EJ analysis is 1,000 feet wide centered on each corridor alternative. This 1,000-foot width is intended to encompass and account for the improvements that would be associated with the alternative including infrastructure improvements (such as embankments, aerial structures, track

[11] The use of a 10-mile radius was selected as an estimation of the alternatives' relative ability to serve areas having larger population centers.

[12] 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 would include, pedestrian facilities, transit, and for-hire vehicles. There is no industry standard, but the methodology uses a planning assumption that 5 miles is the maximum distance people are willing to travel to work without a personal vehicle after arriving at a destination via HSGT.

improvements), ancillary facilities (such as stations, substations, yards, and parking structures), or service changes.

Minority populations were identified using U.S. Census Bureau Census 2010 tract level data for race and ethnicity. Low-income populations were identified using the U.S. Census American Community Survey 5-Year Estimates (2008-2012) tract level data for persons living below the poverty level. The classification of census tracts was based on criteria provided in the CEQ's 1997 guidance on environmental justice analysis in NEPA documents. Based on this guidance, a tract in this study was categorized as having a high concentration of either minority or low-income population if:

- At least 50 percent of the population in the census tract is minority or low income; or
- The minority or low-income population in the tract is "meaningfully greater" than the average of the minority or low income population in the county in which the tract is located.

For this Tier 1 DEIS, a census tract meets the "meaningfully greater" threshold if the percentage of minority or low-income residents is 50 percent, or higher than the percentage in the corresponding county.

3.6.3 Affected Environment

3.6.3.1 Socioeconomics

The socioeconomic factors included in this section are population and employment and are presented in the following sections.

Population

Table 3-12 shows the populations and population growth for each Project Area county between 1990 and 2012. On the south end, the counties with the largest populations are Fulton and Cobb in the Atlanta metropolitan area, while at the north end Hamilton County had the greatest population growth. The counties with the highest growth between 2000 and 2012 were Paulding (74 percent) and Cherokee (52 percent). Within the Project Area, population grew by 56 percent between 2000 and 2012. The larger population densities are in the south and north ends of the Project Area, near Atlanta and Chattanooga as depicted in **Figure 3-5**.

According to the ARC, the population of metropolitan Atlanta is projected to increase from 5.3 million persons (2010) to 8.3 million persons by the year 2040, a 57 percent increase (ARC 2009). The Chattanooga and Dalton regions also are experiencing growth. In Tennessee, Hamilton County, has experienced a faster than expected rate of population growth, having a population of 337,023, which already surpasses the most recent 2009 population forecast of 329,365 for the year 2030.

Employment

Table 3-13 shows employment growth from 2000 to 2012 by county. Employment density for the Corridor Alternatives is depicted in **Figure 3-6**. The Atlanta metropolitan area is the economic engine of Georgia, representing two thirds of the state's economy. Between 2000 and 2012, Paulding, Cherokee, and Bartow counties saw the highest growth in employment at 61 percent, 41 percent, and 88 percent, respectively. In the Project Area, employment grew by 13 percent between 2000 and 2012.

According to the ARC, employment in the metropolitan Atlanta is projected to increase from 2.2 million persons (2010) to 3.7 million persons by the year 2040, a 68 percent increase (ARC 2009). No employment projections for Hamilton County were available at the time of writing.

Table 3-12: Overall Project Area Population Growth by County 2000-2012

County	1990	2000	2012	% Change 1990-2000	% Change 2000-2012	% Change 1990-2012
Bartow, GA	55,915	76,019	99,872	36	31	79
Catoosa, GA	42,464	53,282	64,226	25	21	51
Chattooga, GA	22,242	25,470	25,905	15	2	16
Cherokee, GA	90,204	141,903	215,014	57	52	138
Clayton, GA	182,052	236,517	262,066	30	11	44
Cobb, GA	447,745	607,751	691,820	36	14	55
Douglas, GA	71,120	92,174	132,124	30	43	86
Floyd, GA	81,251	90,565	96,204	11	6	18
Fulton, GA	648,776	816,006	929,535	26	14	43
Gordon, GA	35,067	44,104	55,192	26	25	57
Murray, GA	26,147	36,506	39,635	40	9	52
Paulding, GA	41,611	81,678	141,846	96	74	241
Polk, GA	33,815	38,127	41,350	13	8	22
Walker, GA	58,340	61,053	68,463	5	12	17
Whitfield, GA	72,462	83,525	102,152	15	22	41
Hamilton. TN	211,000	307,896	337,023	46	9	60
Total Project Area	**2,120,211**	**2,792,576**	**3,302,427**	**32**	**18**	**56**
Georgia Total	**6,478,216**	**8,186,453**	**9,714,569**	**26**	**19**	**50**
Tennessee Total	**4,877,185**	**5,689,283**	**6,353,226**	**17**	**12**	**30**

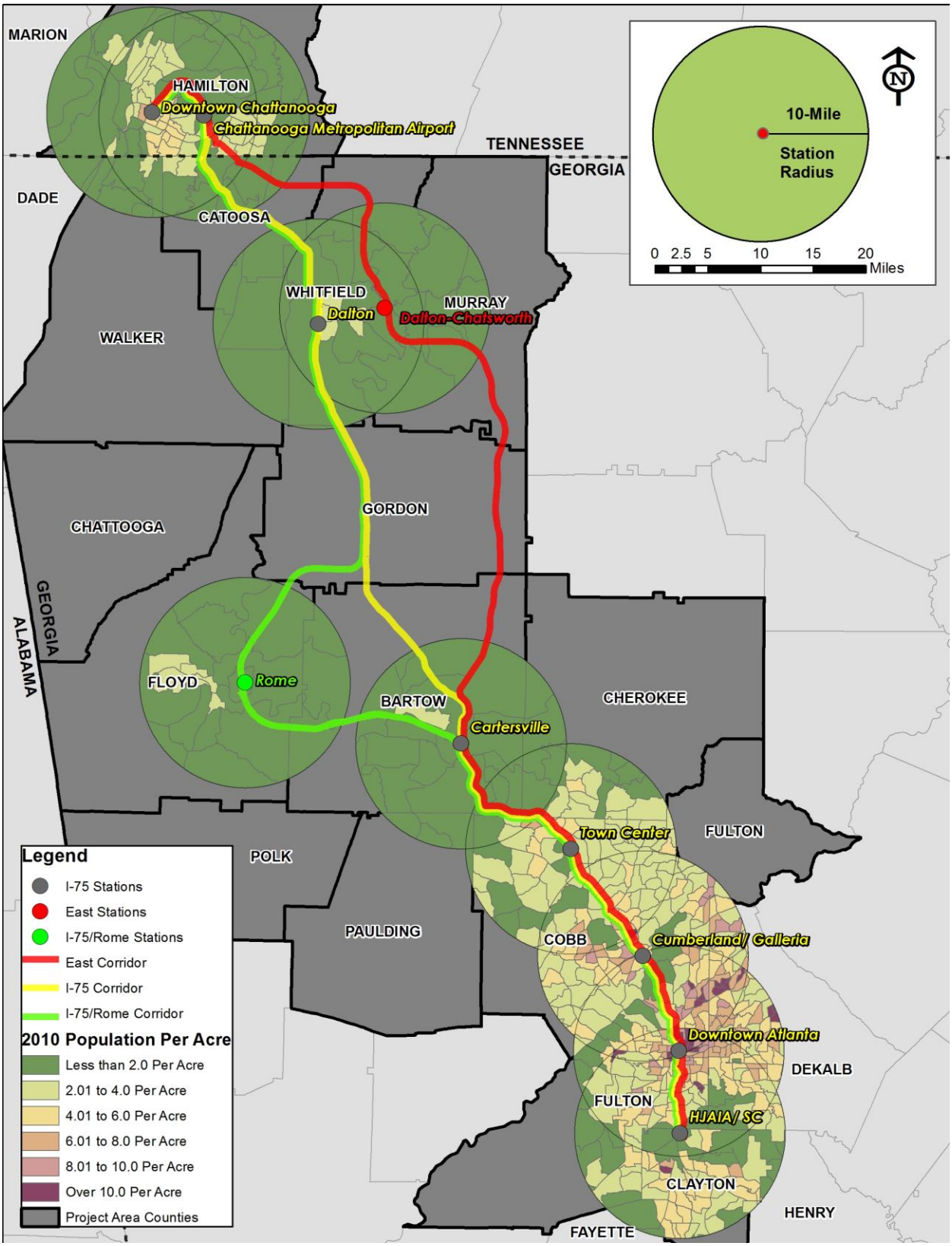
Source: US Census Bureau, Census 1990, Census 2000, and American Community Survey 5-Year Estimates (2008-2012).

Table 3-13: Project Area Employment Growth 1990 to 2012

County	1990	2000	2012	% Change 1990-2000	% Change 2000-2012	% Change 1990-2012
Bartow, GA	13,875	22,874	42,991	64.9	87.9	209.8
Catoosa, GA	20,146	27,154	29,467	34.8	8.5	46.3
Chattooga, GA	9,868	10,722	9,487	8.7	-11.5	-3.9
Cherokee, GA	48,237	75,316	105,797	56.1	40.5	119.3
Clayton, GA	96,580	114,468	114,093	18.5	-0.3	18.1
Cobb, GA	253,096	329,136	353,496	30.0	7.4	39.7
Douglas, GA	37,431	46,944	59,497	25.4	26.7	59.0
Floyd, GA	38,308	40,403	39,587	5.5	-2.0	3.3
Fulton, GA	320,149	392,627	447,421	22.6	14.0	39.8
Gordon, GA	17,439	22,451	23,399	28.7	4.2	34.2
Murray, GA	13,247	17,802	15,499	34.4	-12.9	17.0
Paulding, GA	20,732	41,472	66,571	100.0	60.5	221.1
Polk, GA	14,385	15,904	16,213	10.6	1.9	12.7
Walker, GA	26,571	27,753	27,652	4.4	-0.4	4.1
Whitfield, GA	37,932	39,593	44,421	4.4	12.2	17.1
Hamilton. TN	134,440	149,166	158,569	11.0	6.3	17.9
Total Project Area	**1,104,426**	**1,375,785**	**1,556,172**	**24.6**	**13.1**	**40.9**
Georgia Total	**3,090,276**	**3,839,756**	**4,277,991**	**24.3**	**11.4**	**38.4**
Tennessee Total	**2,250,842**	**2,651,638**	**2,815,491**	**17.8**	**6.2**	**25.1**

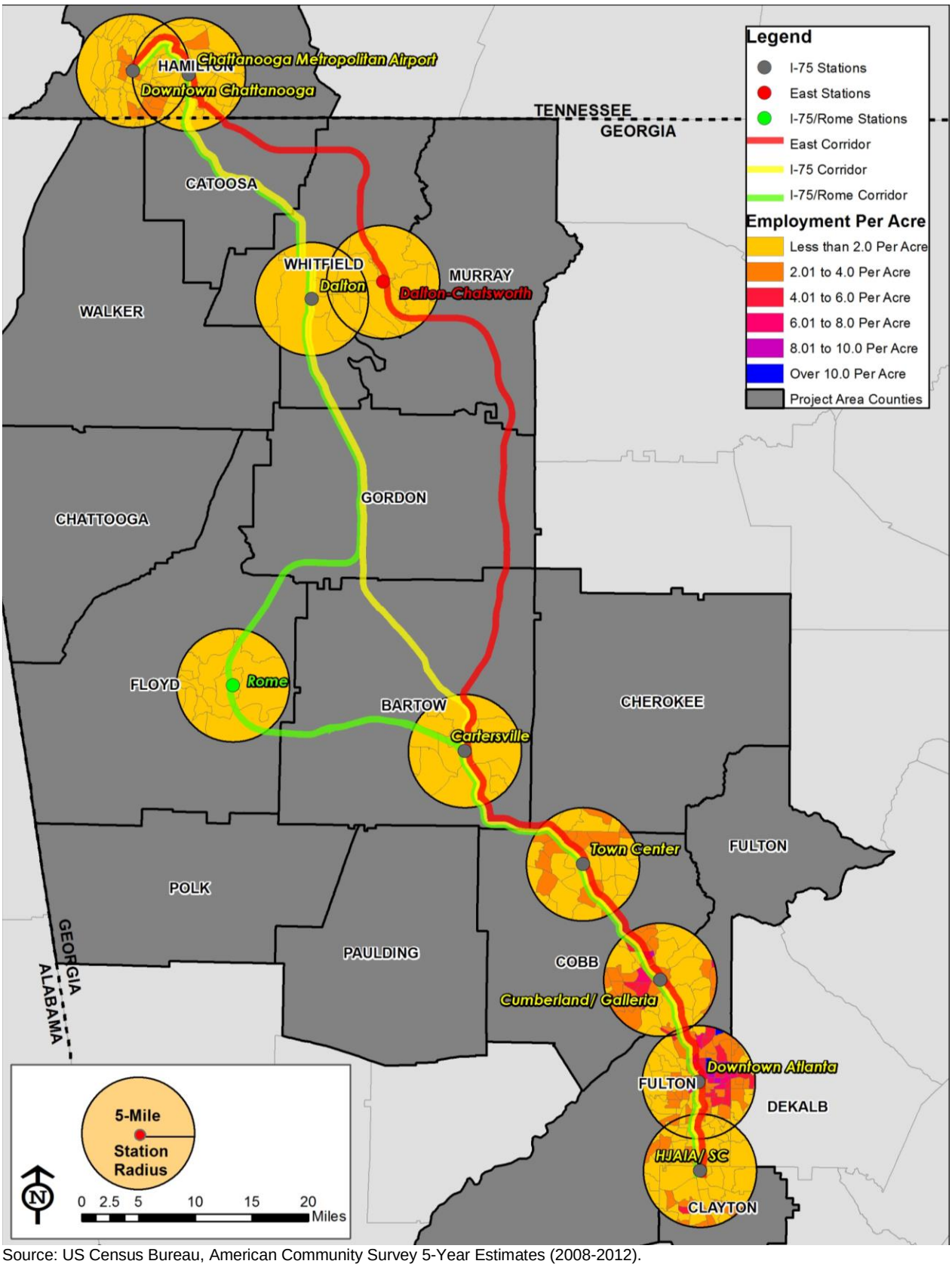
Source: US Census Bureau, Census 1990, Census 2000, and American Community Survey 5-Year Estimates (2008-2012).

Figure 3-5: Population Density in the Project Area



Source: US Census Bureau, American Community Survey 5-Year Estimates (2008-2012).

Figure 3-6: Employment Density in the Project Area



Source: US Census Bureau, American Community Survey 5-Year Estimates (2008-2012).

3.6.3.2 Environmental Justice

Table 3-14 shows the income, poverty, and minority statistics based on the 2010 U.S. Census for all counties in the Project Area. **Table 3-15** shows the number of census tracts within 500 feet of the centerline of each corridor with high concentrations of low income and minority populations. As this table is intended to present the effects of the corridors, it does not include Project Area counties that the corridors do not traverse. **Figure 3-7** shows that more urbanized areas have higher densities of minority and low-income populations compared with rural areas. The ratio of EJ areas to non-EJ areas within each corridor alternative when measured by linear mile along each corridor is 1:0.6 for the I-75 Corridor Alternative (i.e. one EJ area per 0.6 linear miles) and 1:1.1 (i.e. on EJ area per 1.1 linear miles) for the East and I-75/Rome Corridor Alternatives.

Table 3-14: Project Area Income and Poverty Status by County

County	2010 Population	2012 Median Household Income	% Below Poverty	% Minority
Bartow, GA	100,157	$46,014	16.0%	20.3%
Catoosa, GA	63,942	$47,676	12.2%	7.5%
Chattooga, GA	26,015	$32,825	20.7%	17.1%
Cherokee, GA	214,346	$66,065	8.4%	18.7%
Clayton, GA	259,424	$37,767	21.5%	85.9%
Cobb, GA	688,078	$61,791	11.9%	43.7%
Douglas, GA	132,403	$54,526	13.4%	50.8%
Floyd, GA	96,317	$39,933	20.9%	26.3%
Fulton, GA	920,581	$55,491	16.7%	59.2%
Gordon, GA	55,186	$40,562	19.9%	20.1%
Murray, GA	39,628	$32,618	19.8%	15.0%
Paulding, GA	142,324	$60,282	10.3%	25.0%
Polk, GA	41,475	$50,202	21.7%	26.7%
Walker, GA	68,756	$52,328	16.5%	8.0%
Whitfield, GA	102,599	$39,575	19.4%	37.8%
Hamilton. TN	336,463	$59,426	16.2%	28.0%
Total	**3,287,694**	**$48,568**	**15.9%**	**50.6%**

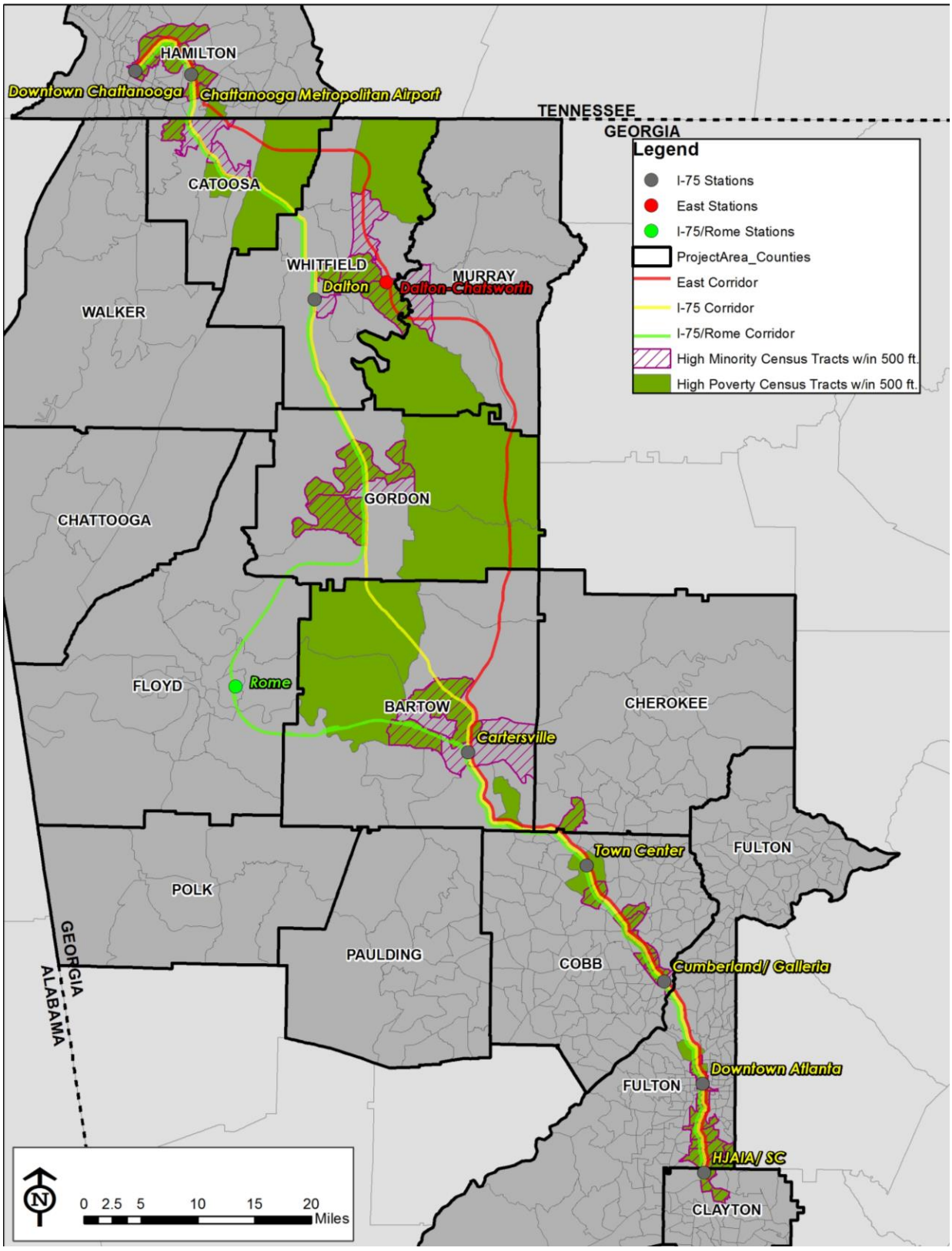
Sources: U.S. Census Bureau 2010 population, Minority population - 2010 Census; Median Household Income, Pct. Below Poverty - American Community Survey, 5-Year Summary (2008-12)

Table 3-15: Number by Corridor of Census Tracts with High Concentrations of Environmental Justice Populations in the 1,000-foot Study Area (2010)

County	I-75 Corridor Alternative			East Corridor Alternative			I-75/Rome Corridor Alternative		
	Low Income	Minority	Both	Low Income	Minority	Both	Low Income	Minority	Both
Bartow, GA	3	2	1	2	2	1	4	4	2
Catoosa, GA	3	3	1	1	1	0	3	3	1
Clayton, GA	1	1	1	1	1	1	1	1	1
Cherokee, GA	1	1	1	1	1	1	1	1	1
Cobb, GA	11	10	8	11	10	8	11	10	8
Paulding, GA	0	0	0	0	0	0	0	0	0
Floyd, GA	0	0	0	0	0	0	0	0	0
Fulton, GA	19	18	17	19	18	17	19	18	17
Gordon, GA	3	4	3	2	0	0	3	4	3
Murray, GA	0	0	0	1	1	0	0	0	0
Whitfield, GA	1	2	1	3	3	2	1	2	1
Hamilton. TN	8	8	8	9	8	8	8	8	8
Total Study Area	**50**	**49**	**41**	**50**	**45**	**38**	**51**	**51**	**42**

Sources: U.S. Census Bureau 2010 population, Minority population - 2010 Census; Median Household Income, Pct. Below Poverty - American Community Survey, 5-Year Summary (2008-12)

Figure 3-7: Environmental Justice Populations in the Project Area



Sources: U.S. Census Bureau (2010 population, Minority population - 2010 Census; Median Household Income, Pct. Below Poverty - American Community Survey, 5-Year Summary (2008-12))

3.6.3.3 Public Involvement

FRA, GDOT, and TDOT have striven for fair and meaningful involvement of all populations within the Project Area in undertaking the public involvement program for the Project. The following public involvement activities were conducted for all populations, including EJ populations, in the Project Area. See also **Chapter 7** for more information on the public outreach effort.

- Three public scoping meetings were held in September 2007 in Powder Springs and Rome, Georgia; and Chattanooga, Tennessee. Meetings were advertised in local newspapers, on GDOT's website, and the Project website.
- Four public information open houses were held in November 2010 in Dalton, Atlanta, and Cartersville, Georgia; and Chattanooga, Tennessee. Spanish and Portuguese interpreters were available at each meeting. The following methods were used to announce these meetings:
  - Local newspaper advertisements;
  - Project and GDOT website announcements;
  - Flyer distributed to the contact database that was prepared as part of the public involvement effort, chambers of commerce, and other agencies in the Project Area (see **Section 7.7.1** for more information about the stakeholder contact database);
  - Public service announcements sent to local radio stations;
  - Online calendar announcements (WABE radio station and Access Atlanta website);
  - Press releases distributed to GDOT's media contact list;
  - Flyers distributed by Chambers of Commerce by email blast and posting on their websites; and
  - Two newsletters were distributed in spring 2008 and in fall 2010 that summarized the progress of the Tier 1 DEIS as well as upcoming events.

3.6.4 Environmental Consequences

3.6.4.1 No-Build Alternative

The No-Build Alternative assumes an HSGT system would not be built between Atlanta and Chattanooga. Passenger service between the two cities would consist of existing bus services, air travel, and continued automobile use along I-75, US 411, and US 41. As the geographic scope and nature of the No-Build Alternative projects is limited, the potential effects of the projects are likely to be limited to the area in which the project is located.

Population and Employment: In the No-Build Alternative, the mobility and accessibility in the region would be limited to the existing transportation network and transit services, and identified highway projects. The limited scope of highway and transit improvements may not adequately address the projected population and employment growth, or transportation needs of the Project Area. Traffic congestion and associated delays could continue to grow. The No-Build Alternative would have no additional direct effects beyond those included in planned transportation improvements for the Project Area.

Economic: The roadway and transit improvements in the No-Build Alternative would likely benefit economic development within portions of the Project Area where the improvements occur. Given the limited scope of these transportation improvements, the potential change in market access is unlikely to change how local or regional employers plan and implement their competitive reach into supplier, customer, and labor markets. The limited scope of No-Build Alternative projects is not anticipated to affect the public sector substantially in terms of tax revenues, services, and land use.

Environmental Justice: All populations, including EJ populations, may experience changes in mobility in the existing transportation network and transit services in the No-Build Alternative because of increased demand arising from population and employment growth over time. The limited scope of highway and transit service improvements may not adequately address the transportation needs of projected population and employment in the Project Area. This condition would be borne by all populations. The assessment of whether the projects in the No-Build Alternative would be disproportionately high and adverse would be the responsibility of the sponsors of those projects. In the No-Build Alternative, the mobility benefits that would be provided by the Corridor Alternatives would not occur.

3.6.4.2 Corridor Alternatives

Population and Employment: The Corridor Alternatives would improve mobility in the region by adding a new mode of transportation. The Corridor Alternatives also would increase the accessibility of the populations within the proposed station areas to employment, air transportation, and opportunities for education, recreation, and commercial facilities. Not all Corridor Alternatives serve the same proposed station locations. For example, only the I-75/Rome Corridor Alternative serves the proposed Rome station location, and only the East Corridor Alternative serves the proposed Dalton-Chatsworth station location. Therefore, depending on the Corridor Alternative, increased accessibility would be provided differently among the Corridor Alternatives.

Similar to the No-Build Alternative, population and employment levels within the Project Area are expected to increase by 2030. In particular, the largest population and employment increases are expected to occur within the Atlanta and Chattanooga metropolitan regions. The population and employment levels would be expected to further increase due to land development expected to occur at proposed station locations as an indirect effect of the Project. The mobility benefit of the new HSGT service may increase the rate of population and growth of the towns and communities in the proposed station locations. **Table 3-16**: shows the population within a 10-mile radius of the proposed station locations and employment within a 5-mile radius of the proposed station locations. The I-75/Rome Corridor Alternative would serve the largest population and employment.

Table 3-16: Population and Employment near the Proposed Stations

Corridor Alternative	Population within 10-miles of Proposed Stations (millions)	Employment within 5-miles of Proposed Stations (thousands)
I-75	2.85	867
East	2.86	870
I-75/Rome	2.95	894

Sources: US Census Bureau, American Community Survey 5-Year Estimates (2008-2012).

Populations along the Corridor Alternatives could experience either potential direct effects such as property acquisition or physical alterations to property, or proximity effects, such as noise, access, or visual effects. Visual and noise effects could be more noticeable along sections of elevated rail or guideway and in areas adjacent to storage yards.

Economic: The potential for any Corridor Alternative to affect economic development, compared to the No-Build Alternative, was assessed in two ways: first by considering the potential for contingent development that could occur surrounding proposed station locations, and, second and more broadly, by considering development triggered by improved market access conditions across the entire transportation network within the Project Area. The potential market access improvement that would be offered by the Corridor Alternatives matters to existing and prospective employers as they gauge their competitive reach into supplier, customer, and labor markets. Wider market reach results in productivity and cost benefits, which ultimately support job growth greater than the No-Build Alternative.

The potential growth in population resulting from the potential increase in economic activity also would affect the public sector by increasing tax revenues while also increasing the need for educational, health care, and recreational facilities. Potential economic impacts would tend to be localized and stem from indirect effects such as changes in land use that in turn cause economic activity shifts, or land takings in settings with a lack of available parcels to accommodate business relocations or future intended development. Potential direct localized economic effects could result if motor vehicle traffic must be re-routed such that access to businesses and general mobility is affected.

Environmental Justice: As described for population and employment in general, not all Corridor Alternatives would serve the same proposed station locations or the same EJ populations. Depending on the Corridor Alternative, some EJ populations in the Project Area would be served and some would not. In addition, the ratio of EJ areas to non-EJ areas within each Corridor Alternative when measured by linear mile along each corridor (1:0.6 for the I-75 Corridor Alternative and 1:1.1 for the East and I-75-Rome Corridor Alternatives). However, most EJ census tracts are located in Cobb, Fulton, and Hamilton counties, all of which would be served by each of the Corridor Alternatives.

The use of existing ROW would minimize impacts to all communities; therefore, the Project Team anticipates the potential for disproportionately high and adverse effects to minority or low-income communities would be minimal due to the use of exclusive, grade-separated rail or guideway within existing right-of-way. The Project Team does not anticipate disproportionately high and adverse noise and vibration effects because the proposed service would be grade separated; however, the Project Team recognizes that the rail or Maglev equipment would also generate noise and that additional analysis during the Tier 2 NEPA phase will be required for a final determination. Potential benefits of the Corridor Alternatives could include, but are not limited to, improved mobility and access to regional destinations, reduced travel times, lower commuting costs, and greater employment opportunities. These benefits would be experienced by all populations within the Project Area.

Acquisition and Relocation: The Project could have negative effects on populations and businesses within the Project Area due to the potential need to acquire property for ROW. However, since the Project would be constructed within existing ROW wherever reasonably feasible, the number of acquisitions and relocations is expected to be minimized. The I-75 Corridor Alternative would potentially have the least negative effects regarding acquisitions and relocations because it follows the existing I-75 ROW. The potential for property acquisition and the relocation of residents and businesses will be studied in the Tier 2 NEPA process.

Community Cohesion: The Project could result in a disruption to community cohesion. If a proposed station or HSGT guideway is built within an existing neighborhood or community, it could act as a divide that physically separates a population from the surrounding community. The potential for this to occur will be evaluated further during the Tier 2 NEPA process.

In addition to permanent effects, all populations may experience temporary effects during construction, including effects to access and construction traffic, noise, and visual effects. The determination of whether construction activities would result in disproportionately high and adverse effects to EJ populations in identified communities will be evaluated during the Tier 2 NEPA process when a construction plan has been developed and specifics on the construction phase, such as staging areas and timing, are determined.

3.6.5 Potential Mitigation

At this corridor level of analysis, site-specific locations of proposed HSGT guideway, stations and facilities, as well as their potential effects, have not been identified. As a result, it is premature to evaluate potential mitigation. If a Corridor Alternative is selected and design of the Project is further

defined and delineated in the Tier 2 NEPA process, potential impacts on socioeconomic conditions and EJ communities will be identified in detail. At that time, GDOT and TDOT will refine the selected alternative to avoid or minimize Project effects and identify mitigation commitments to address remaining impacts.

The types of mitigation GDOT and TDOT could implement will depend on the nature and extent of impacts (e.g., displacements, noise and vibration impacts, access, visual, and safety). Public and agency input would help identify appropriate mitigation. Potential site-specific mitigation strategies might include accommodation of pedestrian access at proposed station sites, measures to reduce the impacts of noise and vibration, coordination with localities to determine primary emergency routes, and construction Best Management Practices to lessen the temporary effects on area residents. Mitigation would be implemented to Georgia and Tennessee state guidelines and policies. If it is not possible to avoid property impacts, mitigation measures will include providing relocation assistance and compensation, as appropriate, to affected property owners, in conformance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601 et seq.). This law requires that fair and equitable assistance be provided to those persons displaced by federal or federally funded actions. GDOT and TDOT are committed to avoiding or minimizing Project effects and implementing mitigation where warranted, effective and reasonably feasible.

3.6.6 Subsequent Analysis

In the Tier 2 NEPA process, the proposed station locations, storage and maintenance facility location, and exact alignment configuration will be determined, at which time a more in-depth analysis will be conducted. The analysis will include, but will not be limited to, the following:

- Effects of property displacements and business impacts of these displacements and relocation studies;
- Effects on community cohesion within residential neighborhoods;
- Effect of population and employment changes and growth, and corresponding demands for housing (and potentially TOD);
- Effects on the visual and aesthetics of the surrounding communities;
- Effects on station and pedestrian access and vehicular traffic circulation on roadway networks around HSGT stations; and
- Effects of the proposed project on community facilities.

For EJ, a more detailed and refined study will be completed to specifically document the presence of low-income and minority communities, and then to evaluate whether and where disproportionately high and adverse effects on those communities could occur. Within the Tier 2 process, the most recent U.S. Census block group data will be used to map the low-income and minority populations within the Project Area. This level of data may identify additional EJ communities not identified in the Tier 1 analysis, which uses Census tract data. In addition, information on potential minority and low-income communities will be gathered through public outreach activities such as listening sessions, community meetings, and one-on-one conversations with public officials. These activities will provide GDOT and TDOT with a better understanding of the demographics of the communities and the issues and concerns EJ communities may have. Using this information, the Tier 2 process will document the locations and characteristics of these communities and document issues of concern.

The effects analysis will consider the benefits of the Project as well as the potential for disproportionately high and adverse effects to EJ populations. In addition to issues and concerns raised by the identified populations, the assessment will consider the following:

- Number of acquisitions in EJ communities versus in the general reference population;

- Number of noise and vibration impacts in EJ communities versus in the general reference population;
- Number of impacts to park and recreation facilities in EJ communities versus in the general reference population;
- Effects on community cohesion within residential neighborhoods; and
- Transportation and access effects in EJ communities versus in the general reference population

The socioeconomic and EJ analyses also will consider the potential construction impacts of the Project and will identify warranted and reasonably feasible mitigation measures for potential effects.

3.7 Parklands, Wildlife Refuges, and Recreation Areas

This section identifies parklands, wildlife refuges, and recreation areas within the Project Area as well as a qualitative assessment of the potential effects of the Corridor Alternatives on those resources. A description of potential mitigation strategies is also provided.

3.7.1 Legal and Regulatory Context

Public parklands, recreation areas, wildlife and waterfowl refuges as well as historic properties listed on the National Register for Historic Places (NRHP) are protected under Section 4(f) of the U.S. Department of Transportation Act of 1966. Section 4(f) states that the Secretary of the USDOT shall not approve any program or project that requires the "use" of any land from a public park, recreation area, wildlife and waterfowl refuge, or historic site, unless there is no feasible and prudent alternative, and such project or program includes all possible planning to minimize harm.[13] For further discussion regarding this issue, refer to **Chapter 4** of this Tier 1 DEIS.

Parklands that have received funding from the Land and Water Conservation Fund Act (LWCF) are afforded additional protection under Section 6(f) of the LWCF. Under Section 6(f), the United States Department of the Interior (USDOI) provides funding for state, county, and local efforts to advance public recreation. Once LWCF funds are utilized for a particular recreation project, conversion of that park facility for any non-recreational purpose is prohibited unless alternatives are assessed and steps are taken to identify, evaluate, and supply replacement parkland. In addition, the Secretary of Interior must grant prior approval for the conversion and replacement parkland.

3.7.2 Methodology

The study area for the parklands, wildlife refuges, and recreational areas analysis is defined as a 1,000-foot wide corridor consisting of 500 feet on each side of the centerlines of the proposed Corridor Alternatives. This area is sufficiently wide to:

- Encompass and account for potential effects from the improvements associated with each Corridor Alternative including infrastructure improvements (such as embankments, aerial structures, track improvements), ancillary facilities (such as stations, yards and parking structures), or service changes.
- Account for contiguous parklands and wild and scenic rivers that may extend beyond the Corridor Alternative.
- Consider areas outside of the Corridor Alternative for proximity effects related to noise and vibration and visual and aesthetic changes. While noise and vibration, and visual and aesthetic changes could extend beyond the 1,000 feet, this methodology assumes that the more prominent effects would occur close to the proposed HSGT improvement.

[13] Historic and cultural resources are discussed in Section 3.8.

Sources of information include city and county websites, the GDNR EPD, National Park Service, and the U.S. Forest Service.

At this corridor level of analysis, potential effects to parklands, wildlife refuges and recreation areas are broadly described qualitatively. Since site-specific locations of the proposed HSGT guideway, stations and facilities, as well as their potential effects, have not been identified, it is premature to determine precise Project effects on parks, wildlife refuges, and recreation areas. If a Corridor Alternative is selected and design is further defined and delineated in the Tier 2 NEPA process, potential impacts on these resources will be identified in detail.

3.7.3 Affected Environment

In the 1-75 Corridor Alternative, there are 443 acres of parklands, wildlife refuges, and recreation areas; in the East Corridor Alternative, there are 447 acres; and in the I-75/Rome Corridor Alternative, there are 442 acres. **Table 3-17** lists the parklands, wildlife refuges, and recreation areas within each Corridor Alternative and identifies the owner or location for those resources for which the owner is not known. Currently, no Section 6(f) resources are known to occur in the Project Area. **Figures 3-9** and **3-10** show the locations of identified resources.

3.7.4 Environmental Consequences

3.7.4.1 No-Build Alternative

The No-Build Alternative assumes an HSGT system would not be built between Atlanta and Chattanooga. Passenger service between the two cities would consist of existing bus services, air travel, and continued automobile use along I-75, US 411, and US 41. In the No-Build Alternative, the impacts to parklands, wildlife refuges, and recreation areas could potentially occur if additional ROW is needed or if substantial changes to traffic and transit volumes or operations lead to proximity effects such as changes in noise levels and visual effects. As the geographic scope and nature of the No-Build Alternative projects is limited, the potential effects of the projects are likely to be contained to the areas in which the projects are constructed. The potential for impacts to parklands, wildlife refuges, and recreation areas would be determined through the environmental processes for the already planned transportation improvements.

3.7.4.2 Corridor Alternatives

In this assessment and notwithstanding future design efforts to avoid or minimize potential impacts, the number of parklands, wildlife refuges and recreational facilities was used to suggest the relative potential for impact on or adverse effect to cultural resources. As shown in **Table 3-17**, the I-75 Corridor Alternative potentially would affect 25 parks, wildlife refuges, and recreation areas; the East Corridor Alternative, 19; and the I-75/Rome Corridor Alternative, 30. The I-75/Rome Corridor Alternative has the highest number of parks, refuges or recreational areas in its study area and the highest potential for impacts on parkland resources. All three proposed corridors encompass the Chattahoochee River National Recreation Area, Lake Allatoona/Old 41 Recreation Area, Camp Jordan Park, and Brown Acres Golf Course. A small portion of Carters Lake is in the 1,000-foot buffer of the East Corridor Alternative. The East Corridor Alternative also encompasses a portion of Sand Mountain. The I-75 and I-75/Rome Corridor Alternatives are at the edge of the Resaca Battlefield.

Potential Project effects on parklands, wildlife refuges, and recreational resources include property acquisition, physical alterations to property, or proximity effects, such as noise, access, or visual effects. Visual and noise effects could be more noticeable along sections where the Project guideway is elevated. Beneficial effects to park, wildlife refuges, and recreational resources in close proximity to proposed station locations could occur as a result of improved access.

Each Corridor Alternative has the potential to temporarily affect these resources during construction. Potential effects of construction could include access, traffic, noise, and visual impacts. As

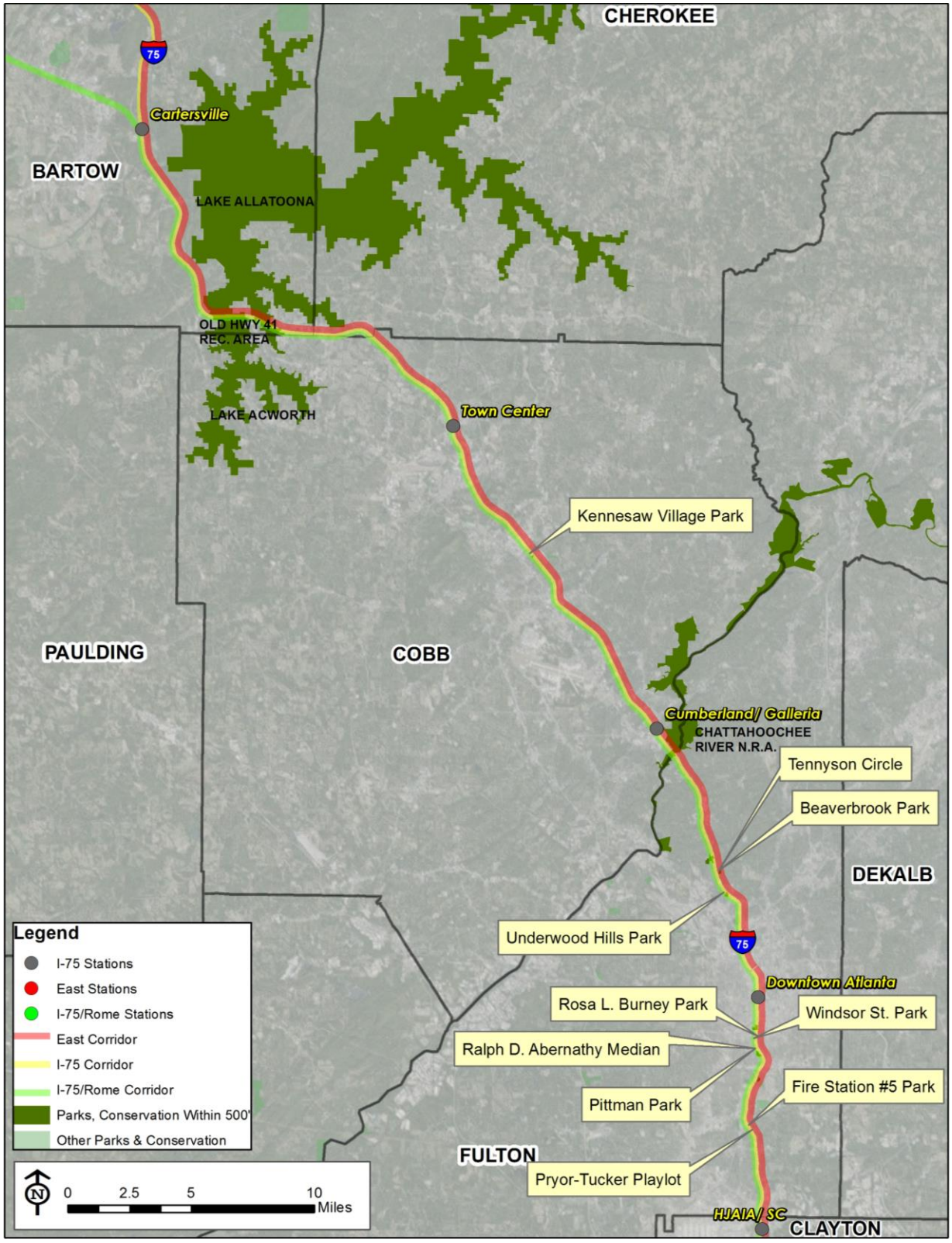
discussed in **Chapter 4** of this Tier 1 DEIS, determinations of Section 4(f) use, such as temporary occupancy as defined in 23 CFR 774.13, will be made during the Tier 2 NEPA process.

Table 3-17: Parklands, Wildlife Refuges, and Recreation Areas within the Project Area

Resource	Type	Owner/Location	Corridor		
			I-75	East	I-75/ Rome
Pryor-Tucker Playlot	Park	City of Atlanta, GA	X	X	X
Fire Station #5 Park	Park	City of Atlanta, GA	X	X	X
Pittman Park	Recreational Facilities	City of Atlanta, GA	X	X	X
Ralph David Abernathy Median	Park	City of Atlanta, GA	X	X	X
Windsor Street Park	Park	City of Atlanta, GA	X	X	X
Rosa L. Burney Park	Recreational Facilities	City of Atlanta, GA	X	X	X
Underwood Hills Park	Recreational Facilities	City of Atlanta, GA	X	X	X
Beaverbrook Park	Park	City of Atlanta, GA	X	X	X
Tennyson Circle	Park	City of Atlanta, GA	X	X	X
Chattahoochee River National Recreation Area	Conservation/ Wildlife Refuge	National Park Service	X	X	X
Kennesaw Village Park	Park	Cobb County, GA	X	X	X
Lake Acworth Recreation Area	Conservation/ Wildlife Refuge	US Army Corps of Engineers	X	X	X
Old 41 Recreation Area	Conservation/ Wildlife Refuge	US Army Corps of Engineers	X	X	X
Lake Allatoona	Conservation/Wildlife Refuge/Park	US Army Corps of Engineers	X	X	X
James A White Memorial Park/Pine Log Wildlife Management Area	Conservation/ Wildlife Refuge	State of Georgia	-	X	-
Shannon Park	Recreational Facilities	Rome-Floyd Parks and Recreation Authority, GA	-	-	X
Plainville Recreation Center	Park	City of Plainville, GA	-	-	X
Gordon County Greenspace	Conservation/ Wildlife Refuge	Gordon County, GA	X	-	X
Carter's Lake	U.S. Army Corps of Engineers	US Army Corps of Engineers	-	-	X
Resaca Battlefield	Battlefield	State of Georgia	X	-	X
Chattahoochee National Forest	Conservation/ Wildlife Refuge	USDA Forest Service	X	-	X
Dug Gap Elementary School	Recreational Facilities	Whitfield County, GA	X	-	X
Whitfield County Greenspace	Conservation/ Wildlife Refuge	Whitfield County, GA	X	-	X
Edwards Park	Park	Whitfield County, GA	-	X	-
Hackett Field	Recreational Facilities	City of Ringgold, GA	X	-	X
Sand Mountain	Conservation/ Wildlife Refuge	U.S. Army Corps of Engineers	**-**	**-**	**X**
Jack Mattox Park Complex	Recreational Facilities	Catoosa County, GA	X	-	X
Catoosa County Greenspace	Conservation/ Wildlife Refuge	Catoosa County, GA	**-**	**-**	**X**
Camp Jordan Park	Recreational Facilities	City of East Ridge, TN	X	-	X
Brown Acres Golf Course	Recreational Facilities	City of Chattanooga, TN	X	X	X
Warner Park and Zoo	Park	City of Chattanooga, TN	X	X	X
Lincoln Park	Recreational Facilities	City of Chattanooga, TN	X	X	X
Total Number of Resources			**25**	**19**	**30**

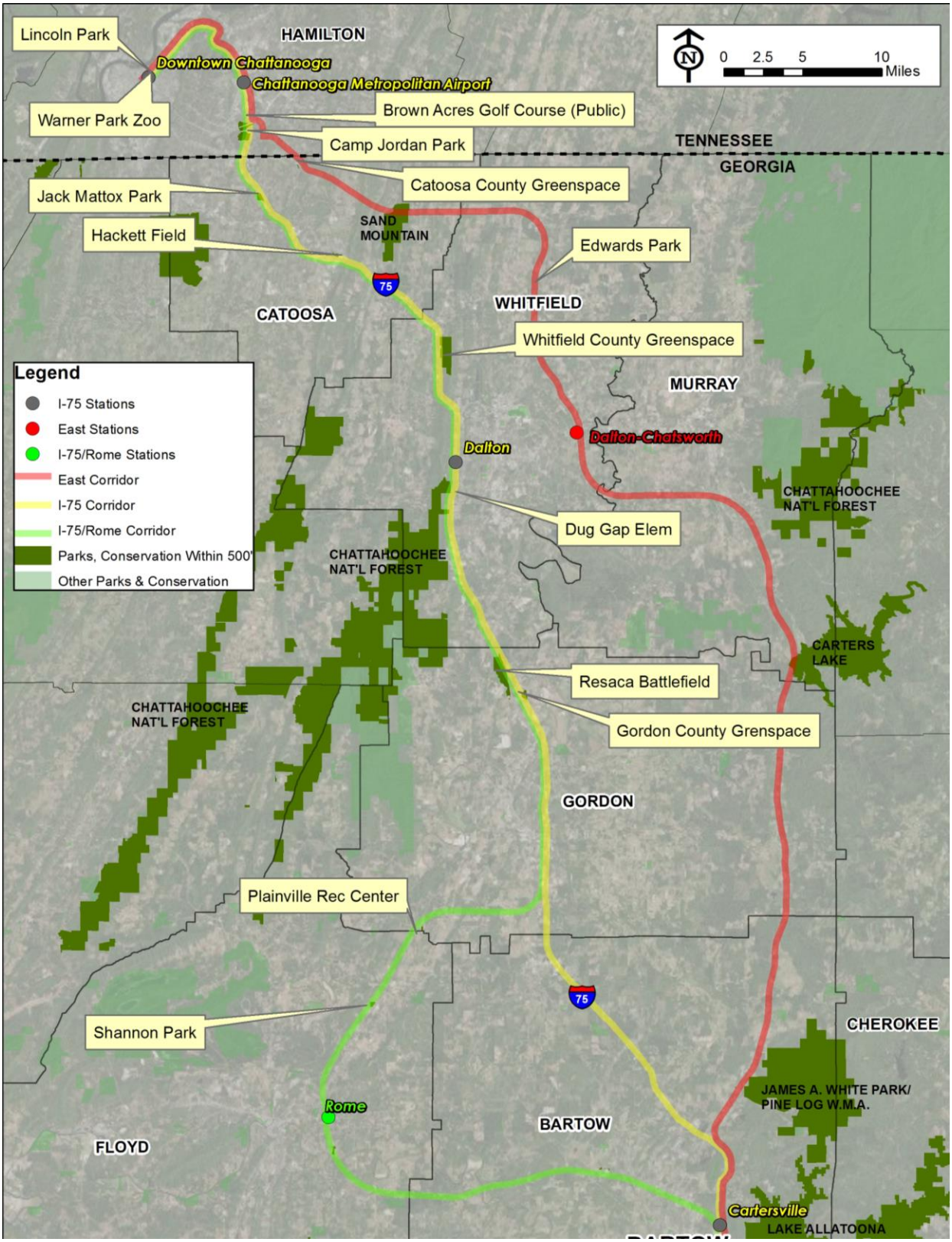
Sources: See list in Section 3.6.2

Figure 3-8: Parklands, Wildlife Refuges, and Recreation Resources – Project Area South



Sources: See list in Section 3.6.2

Figure 3-9: Parklands, Wildlife Refuges, and Recreation Resources – Project Area North



Sources: See list in Section 3.6.2

3.7.5 Potential Mitigation

At this corridor level of analysis, site-specific locations of the proposed HSGT guideway, stations and facilities, as well as their potential effects, have not been identified. As a result, it is premature to evaluate potential mitigation. If a Corridor Alternative is selected and design is further defined and delineated in the Tier 2 NEPA process, potential impacts on parks, wildlife refuges, and recreation areas will be identified in detail. At that time, GDOT and TDOT will refine the selected alternative to avoid or minimize Project effects and identify mitigation commitments to address remaining impacts.

The types of mitigation GDOT and TDOT will identify depends on the nature and extent of impacts (e.g., displacements, noise and vibration impacts, access, and safety). Public and agency input may help identify appropriate mitigation. Potential site-specific mitigation strategies might include replacement or enhancement of functions of parks, wildlife refuges, and recreational areas; and ongoing consideration during design of ways to minimize Project effects. GDOT and TDOT are committed to avoiding or minimizing Project effects and implementing mitigation where warranted, effective and reasonably feasible.

3.7.6 Subsequent Analysis

In the Tier 2 NEPA process, and if a Corridor Alternative is selected, GDOT and TDOT will inventory publicly owned parklands, wildlife refuges, and recreation areas within the selected Corridor Alternative. Detailed property mapping and information on the extent of public access, use and ownership for parklands, wildlife refuges, and recreation areas will be determined through consultation with public officials and property owners/officials with jurisdiction. Consultation will also be undertaken to determine the use of/impacts to resources, assess avoidance, work to minimize effects, and develop appropriate and reasonably feasible mitigation commitments where warranted and reasonably feasible.

If required, GDOT and TDOT will complete a Section 4(f) evaluation that documents use of Section 4(f) properties, including the extent to which a “permanent use”, “constructive use,” “temporary occupancy” of a property, or *de minimis* impact may occur (see **Chapter 4** addressing potential Section 4(f) resources). In the case of a use, the evaluation will address Section 4(f) requirements as applicable involving feasible and prudent avoidance alternatives analysis, least harm alternative analysis, all possible measures to minimize harm documentation, and coordination with officials having jurisdiction, including ultimately, if necessary, the U.S. Department of the Interior. The Section 4(f) Evaluation will be circulated as part of Tier 2 NEPA document. If, during the Tier 2 NEPA process, a Section 6(f) property is identified, a Section 6(f) Evaluation will be prepared and circulated.

3.8 Cultural Resources

This section provides a general overview of the cultural resources within the Project Area as well as a qualitative assessment of the potential effects of the Corridor Alternatives on these resources. The term “cultural resources” refers to a variety of built and natural places related to the “traditions, beliefs, practices, lifeways, arts, crafts, and social institutions of any community…” (U.S. Department of Interior, NPS 1998). The number of known historic resources within the Corridor Alternatives is a distinguishing factor that suggests varying potential for impacts among the Corridor Alternatives.

3.8.1 Legal and Regulatory Context

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and associated implementing regulations in 36 CFR Part 800 require federal agencies to take into account the

effects of their undertakings[14] on historic properties (any prehistoric or historic district, site, building, structure, or object listed on or eligible for listing on the National Register of Historic Places [NRHP]). 36 CFR 800.16 defines historic properties to include archaeological sites, prehistoric and historic districts, sites, buildings, structures or any object that may be eligible for inclusion in the NRHP as maintained by the Secretary of the Interior. In order to qualify for inclusion, properties must meet certain criteria and possess integrity as defined by the Secretary. These criteria are set forth in 36 CFR 60.4, and are defined below:

> *"The quality of significance in American history, architecture, archaeology, engineering and culture that is present in districts, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and that are associated with events that have made a significant contribution to the broad patterns of our history; that are associated with the lives of persons significant in our past; that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and that have yielded, or may be likely to yield, information important in prehistory or history."*

Historic properties also are protected by Section 4(f), which prohibits actions by the Secretary of Transportation that require "use" of a historic property that is listed or eligible for inclusion in the National Register, unless a determination is made that there is no feasible and prudent alternative to the use of such land, and all possible planning has been undertaken to minimize harm to the Section 4(f) property. This condition is discussed further in the **Chapter 4** Preliminary Section 4(f) Evaluation.

While there are a number of cemeteries within the study area that have cultural significance, it should be remembered that the following applies under the NHPA:

> *"…cemeteries and graves are among those properties that ordinarily are not considered eligible for inclusion in the National Register of Historic Places unless they meet special requirements. The National Register Criteria for Evaluation include considerations by which burial places may be eligible for inclusion in the National Register. To qualify for listing under Criteria A (association with events (association with people), or C (design), a cemetery or grave must meet not only the basic criteria, but also the special requirements of Criteria Considerations C or D, relating to graves and cemeteries."*

There are, however, federal and state laws and regulations that must be considered regarding cemeteries. The federal statute that regulates cemeteries, in addition to the provisions of the NHPA, is the *Native American Graves Protection and Repatriation Act* of November 16, 1990, which protects Native American burial sites and Native American human remains, funerary objects, sacred objects, and items of cultural patrimony on Federal and tribal lands (NAGPRA 1990). In Georgia, the Abandoned Cemeteries and Burial Grounds (1991); 36-72-1 et seq., which strengthens cemetery protection laws by authorizing local governments to preserve and protect abandoned cemeteries, and to issue permits prior to any disturbance of burials. Additional information can be found at http://georgiashpo.org/laws

In Tennessee, the most relevant laws and regulations are found in Tennessee Code Annotated (T.C.A.) 11-6-107d, which regulates the discovery of a human skeleton including notification of the

[14] The Advisory Council on Historic Preservation defines a Federal undertaking in 36 CFR 800.16(y) as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency.

Division of Archaeology; T.C.A. 46-4-101-104, which regulates the relocation of a cemetery; and T.C.A. 39-17-311 (Desecration of a venerated object) and T.C.A. 39-17-312, which regulate desecration. Additional information can be found at http://www.tn.gov/environment/docs/arch_historic-cemeteries.pdf

A traditional cultural property (TCP) is a place associated with the cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. Examples include a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world; or a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents (*National Register Bulletin 38, Guidelines for Evaluating and Documenting TCPs*).

Each federal agency is required under Section 106 to identify all federally recognized Native American Tribes and Native American groups (32 CFR §229.7(b)(2)) having aboriginal or historic ties to its jurisdictional land and seek to determine through the relevant Tribal official(s) the location and nature of TCPs (32 CFR §229.7(b)(1).

A “sacred site” is a specific, discrete, narrowly delineated location identified by a Native American Tribe or authorized Tribal representative to a federal agency as sacred by virtue of its religious significance to, or ceremonial use by, a Native American religion (Presidential E.O. 13007, *Indian Sacred Sites*, issued May 24, 1996). This order mandates that federal agencies accommodate Tribal access and use of Native American sacred sites to the extent practicable and avoid adverse impacts to such sites. TCPs and Native American Sacred Sites are not necessarily NRHP eligible, but are evaluated under NEPA (see 40 CFR §§1508.8, 1508.14).

3.8.2 Methodology

For purposes of this Tier 1 DEIS, the study area for cultural resources is defined as a 1,000-foot wide corridor consisting of 500 feet on each side of the centerlines of proposed Corridor Alternatives. The identification of resources within the study area of each Corridor Alternative was completed through the review of the literature available from the following sources:

- National Register of Historic Places (NRHP) documentation on file with the Tennessee Historical Commission - Tennessee State Historic Preservation Office (SHPO);
- NRHP documentation on file with the Georgia SHPO;
- Georgia Department of Natural Resources (GDNR) survey;
- Coosa Valley Regional Development Center;
- Northwest Georgia Regional Commission;
- Atlanta Regional Commission;
- Natural Archaeological Historical Resources Geographical Information System (NAHRGIS) database;
- Georgia Historic Bridge Survey (GHBS); and
- Regional and local historical societies and county planning and zoning departments in Bartow, Catoosa, Cherokee, Clayton, Cobb, Douglas, Floyd, Fulton, Gordon, Hamilton, Murray, Paulding, Polk, and Whitfield counties.

To comply with Section 106 of the NHPA, based on this literature review, all properties in the study area were identified that are listed, or potentially eligible for listing, in the NRHP. Historic properties are above-ground and/or subsurface properties or sites, at least 50 years of age, that are either listed on, or eligible for listing on, the NRHP because they meet the criteria, described in Section

3.8.2, established by the U.S. Department of Interior (USDOI), National Park Service (NPS) in 36 CFR Part 60.

In this Tier 1 assessment and notwithstanding future design efforts to avoid or minimize potential impacts, the number of NRHP listed, eligible and potentially eligible cultural resources in a corridor was used to suggest the relative potential for direct or indirect impact on or adverse effect to cultural resources. After selection of a preferred corridor alternative, the Tier 2 NEPA process will include a detailed assessment of effects in compliance with Section 106.

3.8.3 Affected Environment

3.8.3.1 Listed and Potentially Eligible Standing Structures

Table 3-18 presents resources listed on the NRHP and **Table 3-19** presents those that are potentially eligible for listing that are known to exist in the Project Area. Two of the listed resources are historic districts within the City of Atlanta. The potential exists for the Castleberry Hill District to be within an EJ census tract as it contains residential properties. The Means Street District, however, has no residents. In addition, four routes of the Trail of Tears and five Civil War battlefields identified by the National Park Service are found within the study areas of all three Corridor Alternatives while a sixth battlefield is within the Project Area of I-75 and I-75/Rome. **Figures 3-10** to **3-16** list the cultural resources located in the Project Area.

Table 3-18: Historic Resources Listed on the NRHP

Resource	Corridor Alternative		
	I-75	East	I-75/Rome
Southern Belting Company Building		X	
Selig Company Building	X	X	X
Westinghouse Electric Company Building	X	X	X
Cooledge, F. J., and Sons, Company--Hastings' Seed Company	X	X	X
Atlanta Spring and Bed Company--Block Candy Company	X	X	X
Atlanta Buggy Company and Warehouse--Hatcher Bros. Furniture Company	X	X	X
Southern Railway North Avenue Yards Historic District	X	X	X
King Plow Company	X	X	X
Ashby Street Car Barn	X	X	X
Means Street Historic District	X	X	X
Van Winkle, E., Gin and Machine Works	X	X	X
Benham Place			X
Carter's Quarters		X	
Castleberry Hill Historic District	X	X	X
Freeman-Hurt House		X	
Chattanooga National Cemetery	X	X	X
Total Number	**12**	**15**	**13**

Sources: Sources are listed in Section 3.8.2 Methodology

Table 3-19: Historic Resources Potentially Eligible for Listing on the NRHP

Resource	Corridor Alternative		
	I-75	East	I-75/Rome
1546 Bells Ferry Road	X	X	X
1647 Bells Ferry Road	X	X	X
Pickin' Barn House		X	
243 Broadacre Road		X	
26 Harris Lane		X	
2629 Mine Rd	X		X
Dillard house	X		X
Mt Zion AME Church	X	X	X
Bradford Home		X	
4600 Hwy 411, 1 m N of Pine Log		X	
611 Dawnville Road		X	
707 Dawnville Road		X	
798 Dawnville Road		X	
800 Dug Gap Road(at Harris)	X		X
Keith house; Callahan house		X	
Cohulla Creek Bridge		X	
Box 187, Ramhurst		X	
Boyton United Methodist Cemetery	X		X
Coosawattee River metal truss railroad bridge		X	
Brooker Farm Road		X	
Burnt Hickory Road			X
Swamp Creek Church	X		X
Coahulla Creek highway bridge		X	
E side North Avenue, just N of Lacey St.		X	
E side of Pinhook Road (CR 227), 0.2 m N of US 411		X	
Strickland house; Strickland-Champion house		X	
Oakman store		X	
E side US 411, 1 m S of GA 156, 1 m N of Ranger		X	
Front Street & Grove in Graysville		X	
Graysville, Blackford & Front Sts		X	
Chickamauga Creek Bridge		X	
Maddox Hill Road		X	
Pitner Branch Little Creek highway bridge		X	
McGaughey Chapel Road, N side, 1 m W of McGaughey Chapel		X	
(CR 106), 1.8 m W of US 41			X
Horton house		X	
H. F. Hamrick house		X	
N side of Calhoun Street (CO236), 0.15 m W of US 411		X	
John Gray Trimble house	X		
N side Plainville Rd (CR 479), at junction with CR 116; 733 P. Rd.			X
Barnett House; Barnett Hotel	X		X
Hammond Grocery			X
NW corner US 41 and Walker Street	X		X
H. F. Hamrick & Company; post office		X	
Old 411 Bridge		X	
Old Tennessee Hwy.		X	
Old US 411 at Seaboard RR		X	
S corner of CR 479 and Park Street			X
S side Calhoun Street (CR 236), just W of railroad		X	
Lewis Ramseur house; Ramseur-Tate house		X	
SE side North Avenue, S of GA 53		X	
SE side of CR 479, at junction with Scott Avenue			X
Bill Wilbanks house		X	
Southeast corner of Bee Parson Road and Bagley Road		X	
SW corner Park Street & US 411		X	
SW side CR 306/CS 600, S of CR 420		X	
SW side of Miller Ferry Rd (CR 106), 1.8 m W of US 41			X

Resource	Corridor Alternative		
	I-75	East	I-75/Rome
Bill Taylor house	X		X
Dalton Carpet Jobbers	X		X
Tom Barks house		X	
W of US 411 near center of Ranger		X	
W side Dug Gap Road	X		X
Joseph Daniel Johnson house	X		X
W side US 411		X	
J. W. Willis Store		X	
W side US 411 at Carters		X	
W side US 411 between Lacey St. and Part St.		X	
William Hopper house		X	
W side US 411, 0.5 m S of GA 156		X	
W side US 411, just N of Calhoun Street (CR 236)		X	
Carter's Store		X	
Total Number	**15**	**52**	**21**

Sources: Sources are listed in Section 3.8.2 Methodology
CR: County Road

3.8.3.2 Listed and Potentially Eligible Archaeological Resources

Table 3-20 presents the number of archaeological resources known to exist within the Project Area and indicates the corridor alternatives that potentially would affect each resource. The East Corridor Alternative has the most archaeological sites while the I-75 Corridor Alternative has the least.

Table 3-20: Identified Archaeological Sites by NRHP Status

NRHP Status	Corridor Alternative		
	I-75	East	I-75/Rome
Recommended Eligible	5	3	4
Recommended Ineligible	10	22	8
To be determined	17	21	26
All Sites in Corridor Alternative	**32**	**46**	**38**

Sources: Sources are listed in Section 3.8.2 Methodology

3.8.3.3 Cemeteries

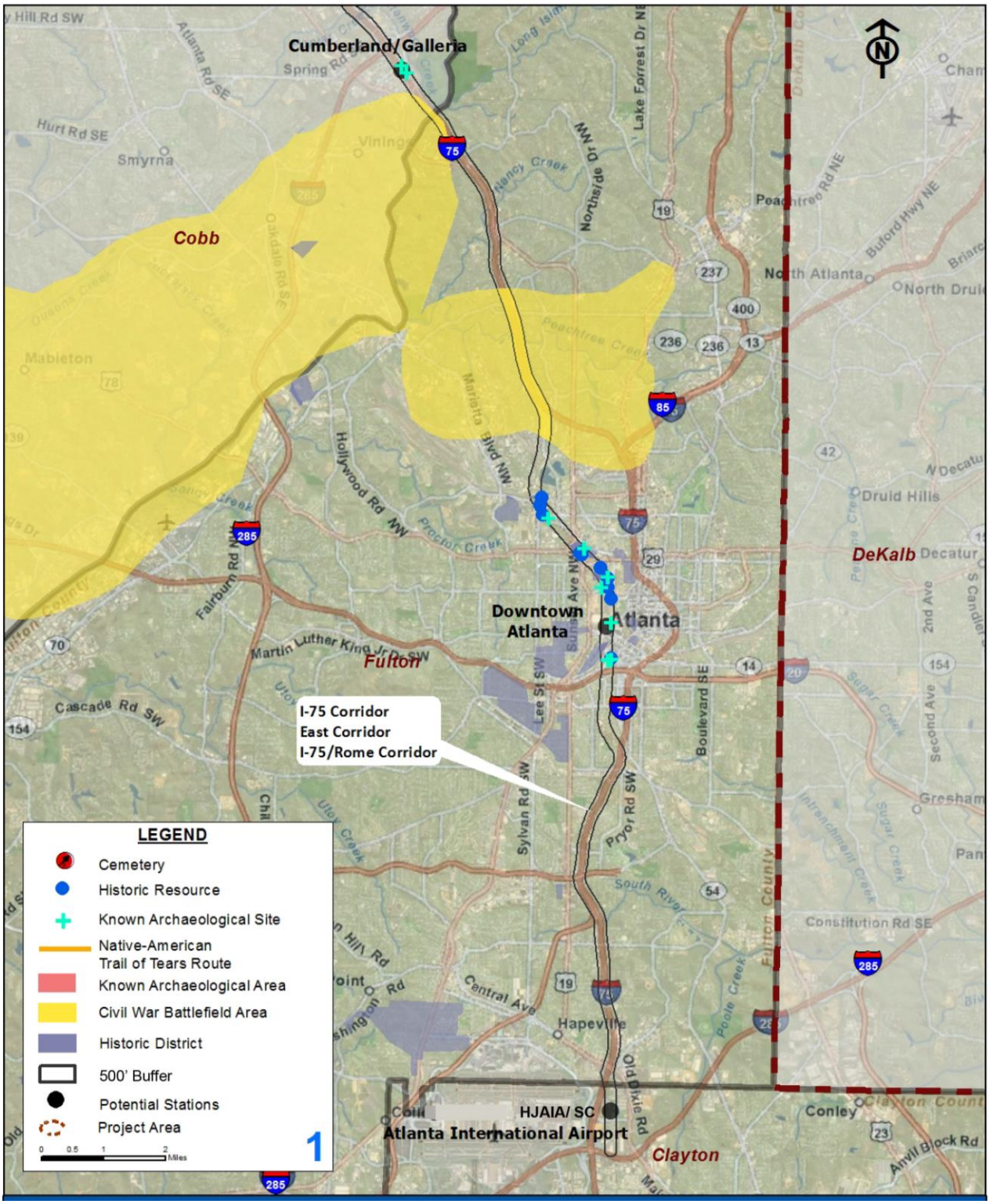
Table 3-21 identifies the cemeteries in the study area for each Corridor Alternative and indicates their NRHP eligibility status. In addition, the Chattanooga National Cemetery, included in **Table 3-19**, is a resource listed on the NRHP. It potentially could be affected by each of the three Corridor Alternatives.

Table 3-21: Identified Cemeteries Potentially Eligible for Listing on the NRHP

Resource	NRHP Status	Corridor Alternative		
		I-75	East	I-75/Rome
Dixon Cemetery	To be determined	X		X
Hale Cemetery	To be determined	X		X
Old Graysville Cemetery	To be determined		X	
Gresham Cemetery	To be determined	X	X	X
Berwin Cemetery	To be determined			X

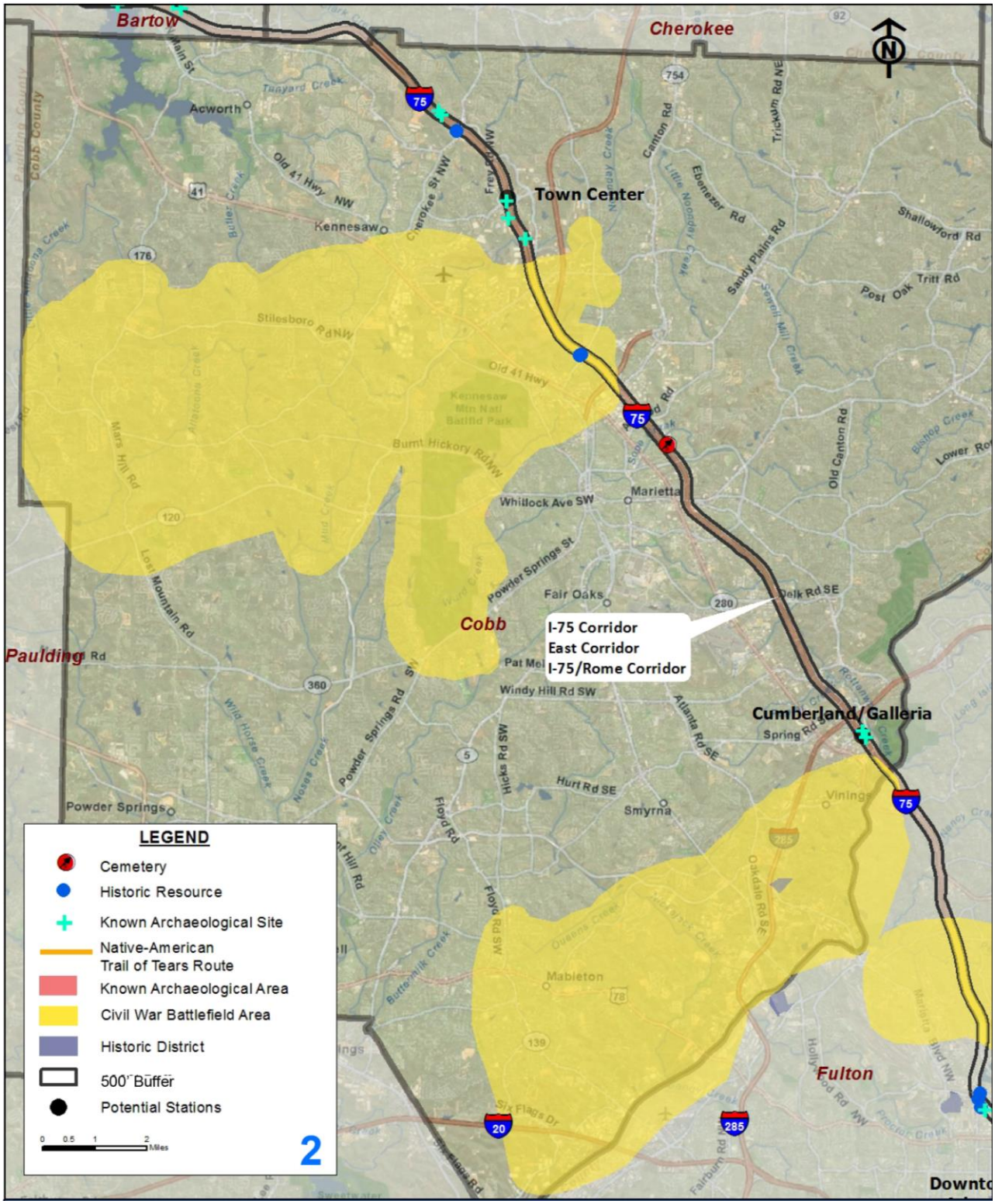
Sources: Sources are listed in Section 3.8.2 Methodology

Figure 3-10: Cultural Resources – Clayton and Fulton Counties, Georgia



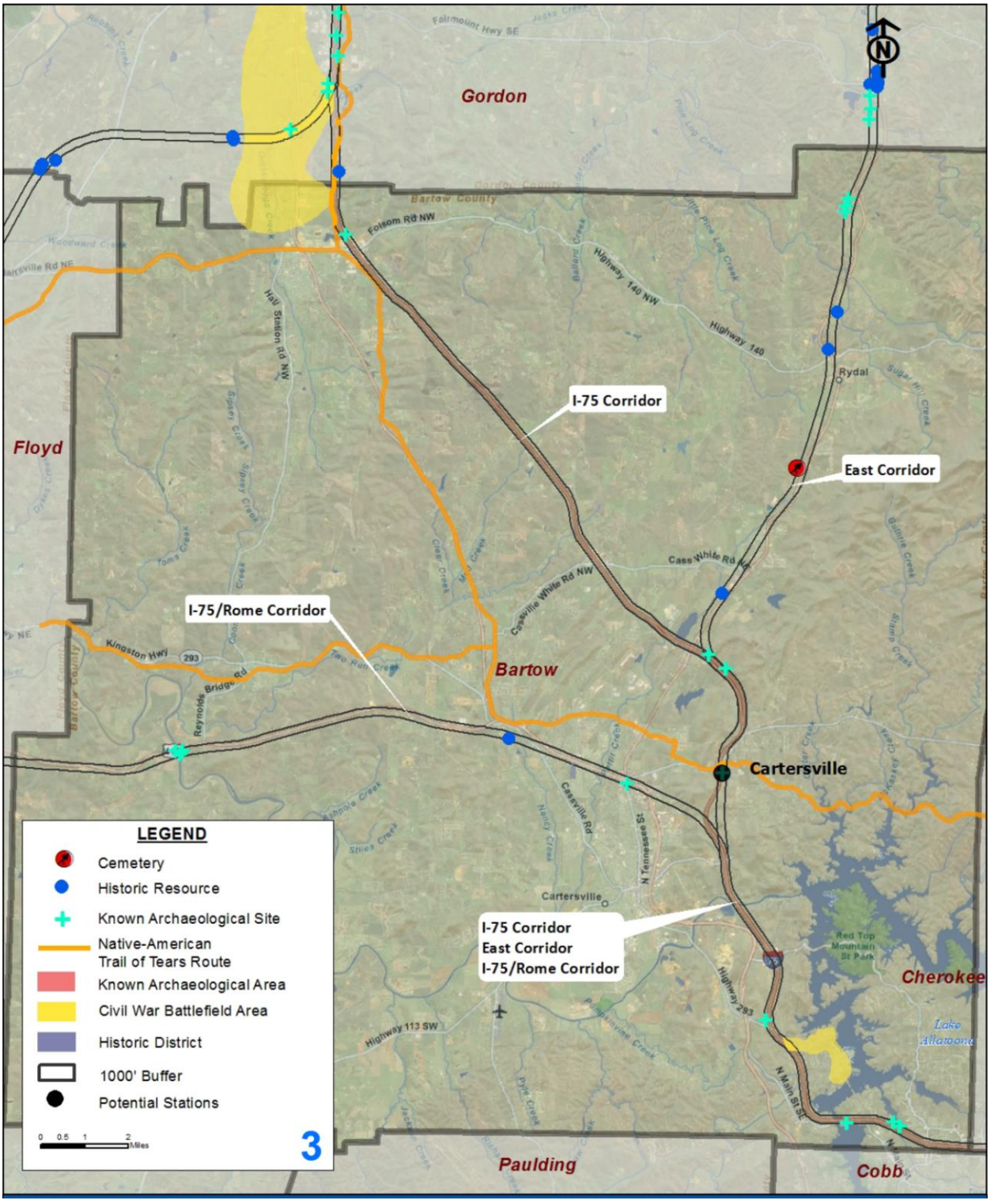
Sources: Sources are listed in **Section 3.8.2** Methodology

Figure 3-11: Cultural Resources – Cobb County, Georgia



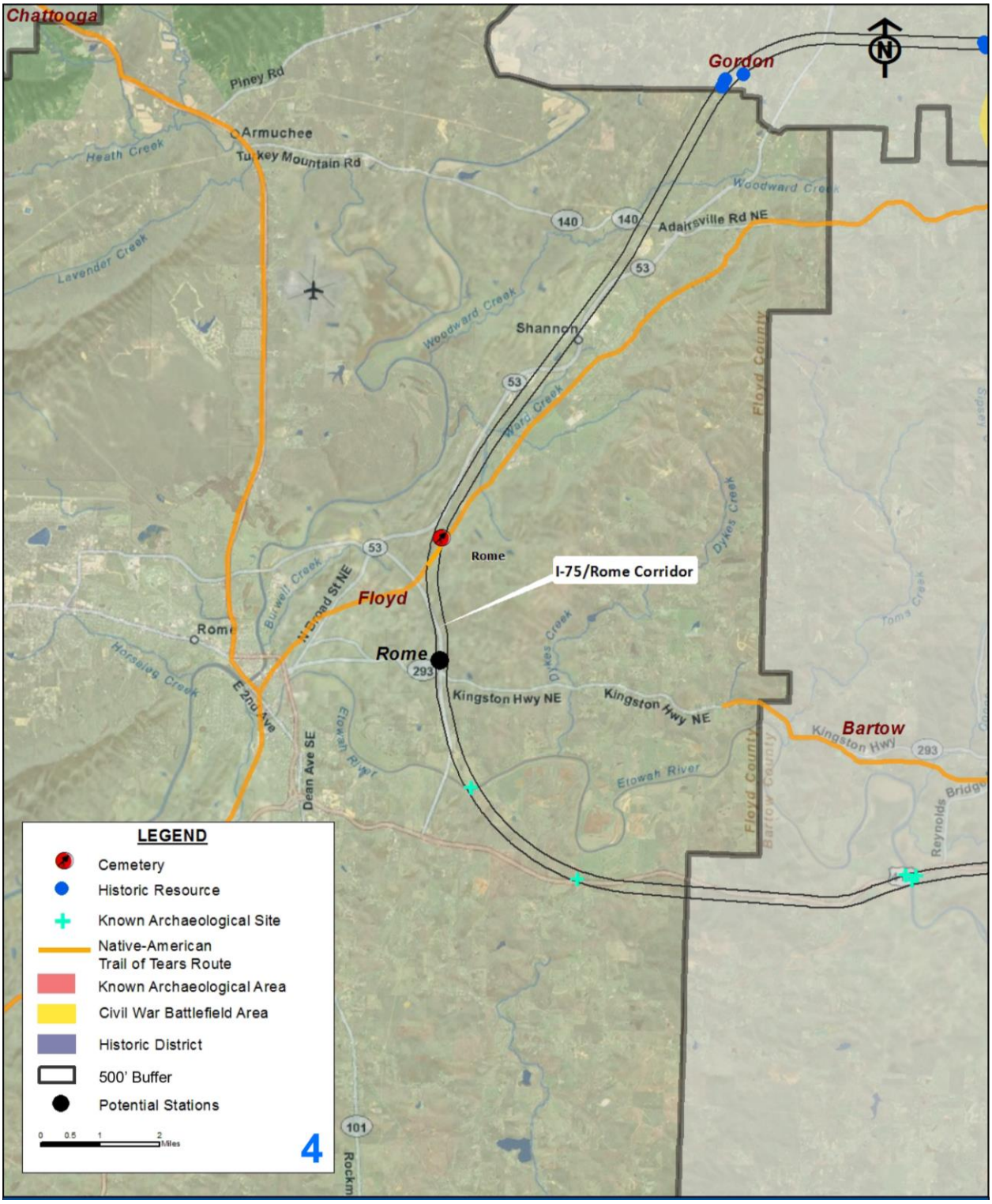
Sources: Sources are listed in Section 3.8.2 Methodology

Figure 3-12: Cultural Resources – Bartow County, Georgia



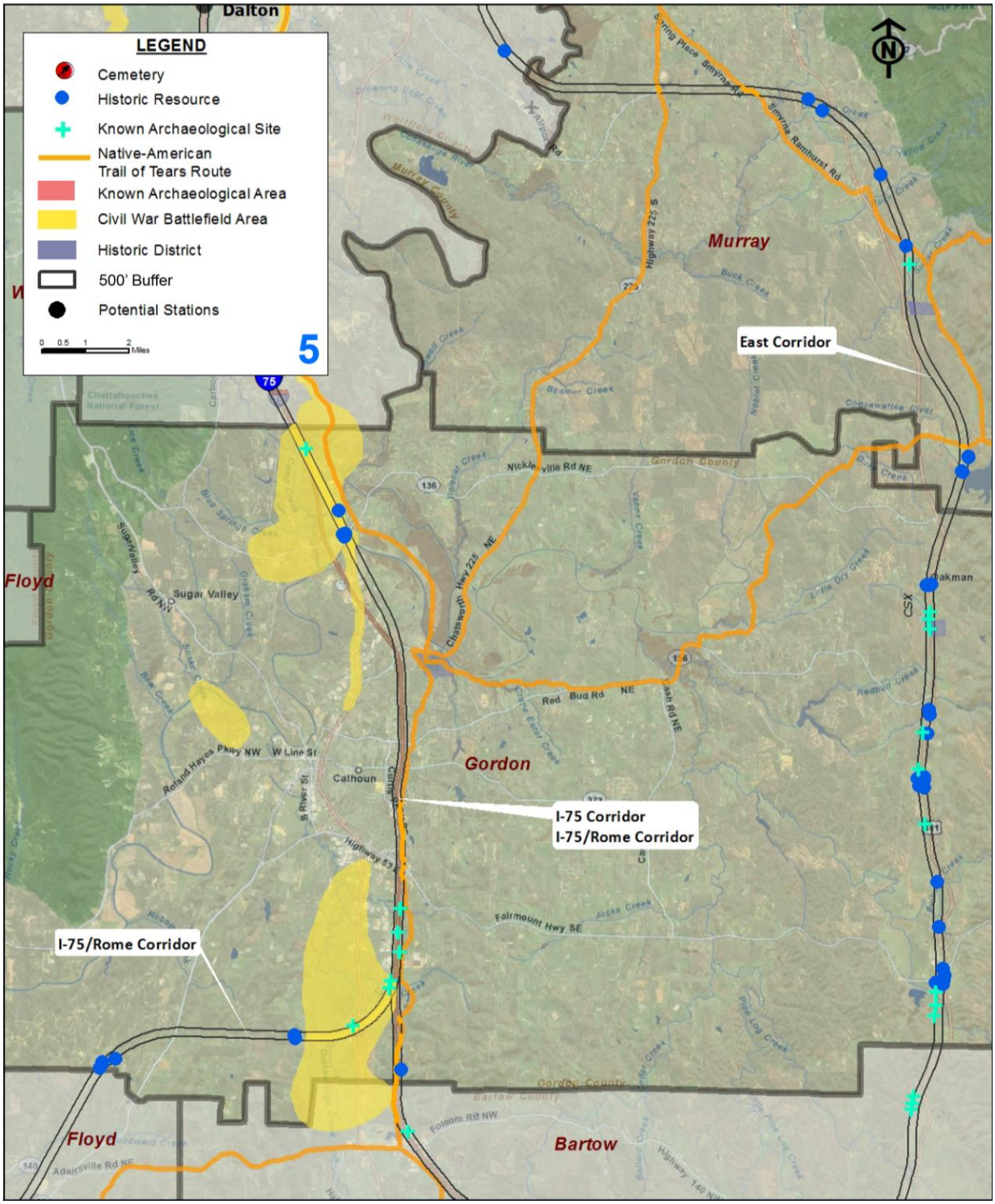
Sources: Sources are listed in Section 3.8.2 Methodology

Figure 3-13: Cultural Resources – Floyd County, Georgia



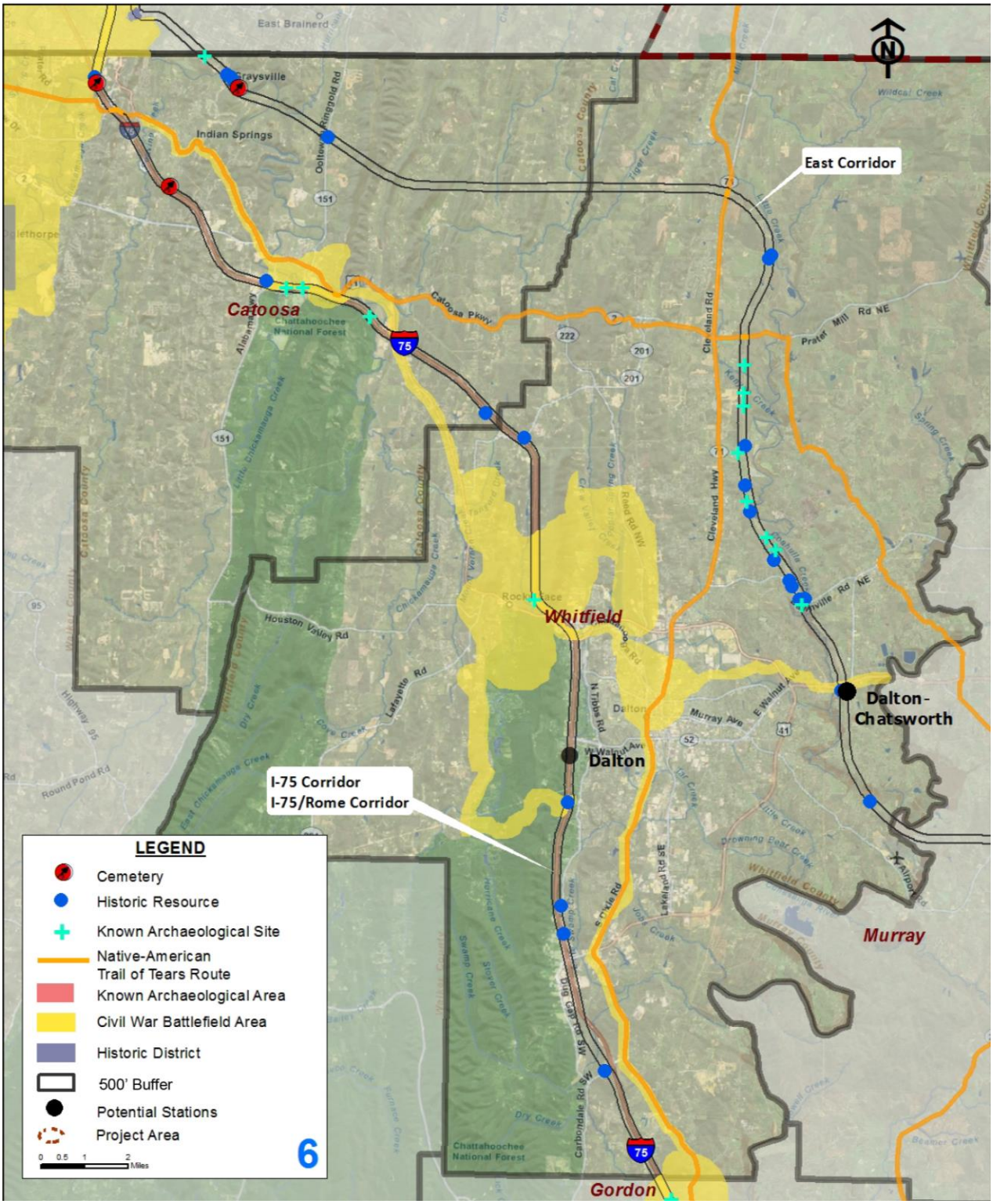
Sources: Sources are listed in Section 3.8.2 Methodology

Figure 3-14: Cultural Resources – Gordon and Murray Counties, Georgia



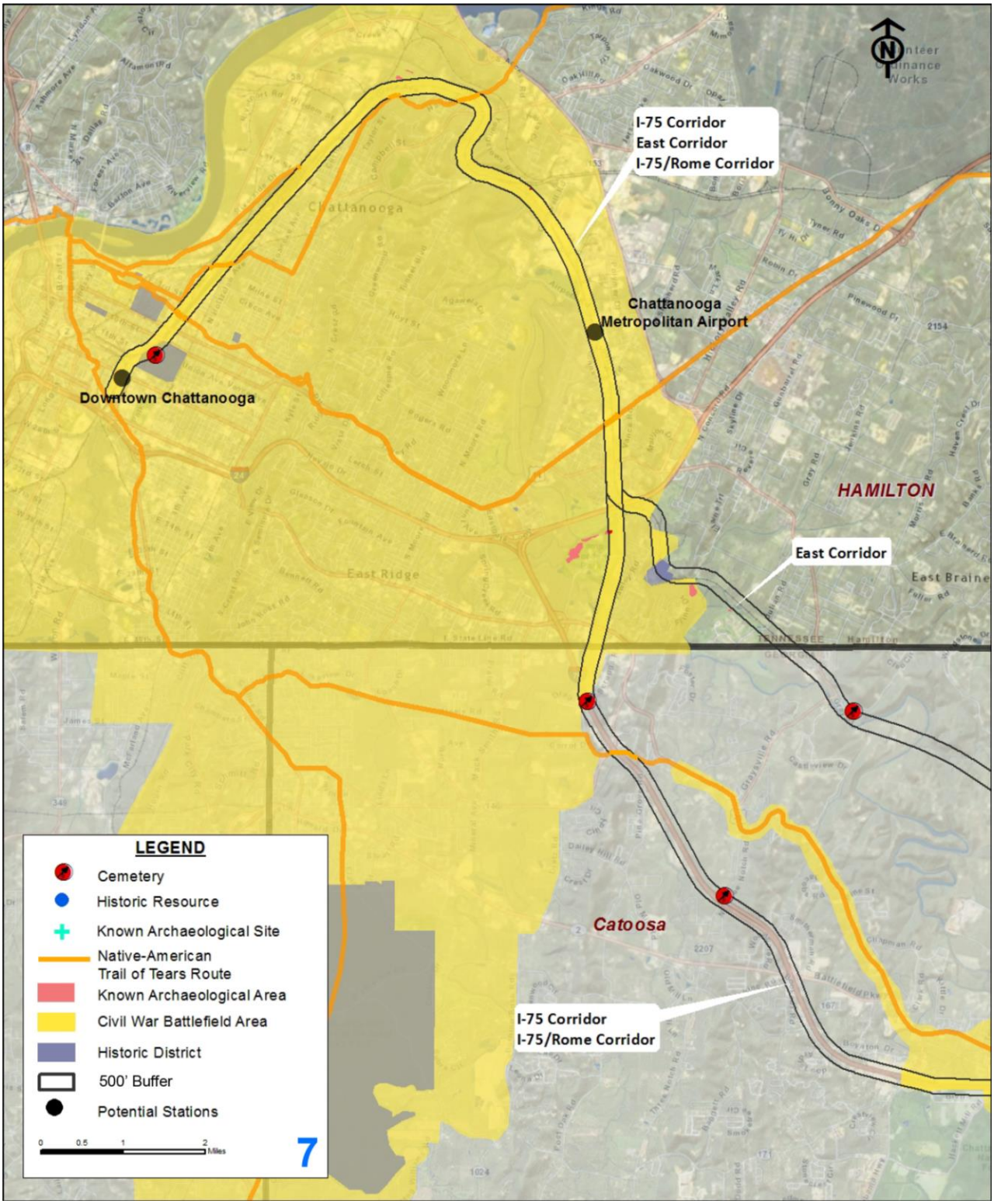
Sources: Sources are listed in **Section 3.8.2** Methodology

Figure 3-15: Cultural Resources – Whitfield and Catoosa Counties, Georgia



Sources: Sources are listed in Section 3.8.2 Methodology

Figure 3-16: Cultural Resources – Hamilton County, Tennessee



Sources: Sources are listed in Section 3.8.2 Methodology

3.8.3.4 Traditional Cultural Properties and Native American Sites

The Native American Tribes listed below and the GA Natural Heritage Program were notified during the scoping process.

- Alabama-Quassarte Tribal Town Creek Nation
- Alabama-Coushatta Tribe of Texas
- Cherokee Nation Chickasaw Nation
- Coushatta Tribe of Louisiana
- Eastern Band of Cherokee Indians
- Eastern Shawnee Tribe of Oklahoma
- Kialegee Tribal Town of the Creek Nation
- Muscogee (Creek) Nation
- Muscogee (Creek) National Council
- Poarch Band of Creek Indians
- Seminole Nation of Oklahoma
- Seminole Tribe of Florida
- Shawnee Tribe
- Thlopthlocco Tribal Town
- United Keetoowah Band of Cherokee

The SHPOs of Georgia and Tennessee, the United Keetoowah Band of Cherokee Indians, and the Tribal Historic Preservation Officer of the Seminole Tribe are confirmed Consulting Parties in the Section 106 process. Should GDOT or TDOT receive funding to complete Tier II NEPA documentation, FRA and the Project Team will undertake full consultation in accordance with Section 106 and 36 CFR Part 800, including identifying and reaching out to additional potential consulting parties.

The locations of traditional cultural properties and Native American sites, as well as archaeological sites, are maintained in confidence under various state and federal laws to protect them from intentional damage or destruction. To date, consultation with federally recognized Native American tribes, and both GA and TN SHPOs has not identified any Native American TCPs or Sacred Sites in the Corridor Alternatives' study areas. All correspondence is available for review in **Appendix E** – *Public Involvement & Agency Coordination.*

3.8.4 Environmental Consequences

3.8.4.1 No-Build Alternative

The No-Build Alternative assumes an HSGT system would not be built between Atlanta and Chattanooga. Passenger service between the two cities would consist of existing bus services, air travel, and continued automobile use along I-75, US 411, and US 41. In the No-Build Alternative, the impacts to cultural resources could potentially occur if additional ROW is needed or if substantial changes to traffic and transit volumes or operations lead to proximity effects such as changes in noise levels and visual effects. As the geographic scope and nature of the No-Build Alternative projects are limited, the potential effects of the projects are likely to be contained to the area in which the projects will be constructed. The potential for impacts to cultural resources would be determined through the environmental processes for the already planned transportation improvements.

3.8.4.2 Corridor Alternatives

As discussed in **Section 3.8.2** of this Tier 1 DEIS, GDOT and TDOT identified all properties in the study area that are listed, or potentially eligible for listing, in the NRHP. After selection of a Tier 1 Preferred Alternative, at which time the design of this Project will have progressed to a point sufficient to enable site-specific analyses of potential effects on protected cultural resources, the Tier 2 NEPA process will include a detailed assessment of effects in compliance with Section 106. In this Tier 1 assessment, the number of NRHP listed, eligible and potentially eligible cultural resources in a corridor was used to suggest the relative potential for direct or indirect impact on or adverse effect to cultural resources. As described in the Section 106 regulations, potential adverse effects on architectural resources include direct physical effects that alter the characteristics of the historic property in a manner that diminishes the integrity of the property's significant historic features. For

example, adverse effects occur due to the demolition of a standing structure resource either listed or determined to be eligible for listing on the NRHP or the alteration of the resource in a manner that removes the character-defining features that qualify it for listing. Similarly, adverse effects on archaeological resources result from construction activity that disturbs the site. Potential indirect effects on architectural resources include installation of new signal systems or overheard bridges, which constitute a visual intrusion that diminishes the property's integrity, thereby adversely affecting its historic significance and hence its eligibility for listing on the NRHP.

In comparing the potential impacts of the Corridor Alternatives on cultural resources, it should be noted that, as indicated by **Tables 3-19** and **3-20**, the NRHP status of many of the identified resources has not been yet determined. Further, if a Tier 1 Preferred Corridor Alternative is selected, additional resources may be identified during any subsequent Tier 2 analysis. Each Corridor Alternative potentially affects the same resources where the routes are identical, for example between the proposed locations of the HJAIA and Cartersville Stations and between I-75 in Tennessee and downtown Chattanooga. Where the corridors differ, the specific resources potential affected and the overall numbers of potentially affected resources differ. Given currently available information, **Table 3-22** summarizes the relative quantities of cultural resources in each study area that have been identified to date.

Table 3-22: Summary of Identified Cultural Resources

Corridor Alternative	Historic Resources (NRHP Status)		Archaeological Resources (Recommended NRHP Status)			NRHP Sites (acres)	Civil War Battlefields (acres)	Cemeteries (number)
	Listed	Potentially Eligible	Eligible	Ineligible	TBD*			
I-75	12	15	5	10	17	87	3,564	4
East	15	52	3	22	21	151	2,360	3
I-75/Rome	13	21	4	21	26	89	3,834	5

Sources: Tennessee Historical Commission - Tennessee SHPO 2010; Georgia SHPO 2010; Georgia DNR survey 2010; Coosa Valley Regional Development Center 2010; Northwest Georgia Regional Commission 2010; ARC 2010; GNAHRGIS database 2010; GHBS 2010; and Regional and local historical societies and county planning and zoning departments in Bartow, Catoosa, Cherokee, Clayton, Cobb, Douglas, Floyd, Fulton, Gordon, Hamilton, Murray, Paulding, Polk, and Whitfield counties.

Note: The Historic Resources column includes all historic resources provided by the sources listed above. The NRHP column lists the acres for only those properties listed in the NRHP. Further research on the cultural resources located in the study area will be conducted in the Tier 2 NEPA process.

*To be determined.

Of the NRHP-listed historic resources, 12 occur in the common corridor sections. Outside this common area, the I-75 Corridor Alternative has no other resources within its study area, the East Corridor Alternative has three additional resources, and the I-75/Rome Corridor Alternative has one additional resource. Of the potentially eligible historic resources, three occur in the common corridor sections. Outside this common area, the I-75 and I-75/Rome Corridor Alternative study areas have 11 resources, one additional resource is in the I-75 Corridor Alternative study area only, 49 are in the East Corridor Alternative study area, and 7 are in I-75/Rome Corridor Alternative study area.

In this assessment and notwithstanding future design efforts to avoid or minimize potential impacts, the number of NRHP listed, eligible and potentially eligible cultural resources in a corridor was used to suggest the relative potential for impact on or adverse effect to cultural resources. The I-75 Corridor Alternative has a total of 32 potential impacts; the East Corridor Alternative has a total of 70 potential impacts; and the I-75/Rome Corridor Alternative has a total of 38 potential impacts. Overall, the East Corridor Alternative has the highest number of cultural resources in its study area and the highest number of potential impacts on cultural resources in this assessment.

3.8.5 Potential Mitigation

Potential mitigation measures are presented here in a general manner. If potential adverse impacts are determined through subsequent analysis, specific mitigation measures will be developed as warranted by GDOT and TDOT through consultation with the FRA, the SHPOs of Georgia and Tennessee, and other consulting parties in accord with NHPA Section 106 (ACHP 2004) and applicable state regulations. If NRHP-eligible archaeological sites cannot be avoided or protected, data recovery excavations could be conducted to mitigate the adverse impacts. Cemeteries and burials will be avoided to the extent feasible. Any effects to cemeteries that cannot be avoided will be treated in accordance with the federal and state requirements identified in **Section 3.8.1** of this Tier 1 DEIS. For any use of properties that are listed, or eligible to be listed, on the NRHP, in addition to Section 106 consultation, Section 4(f) of the USDOT Act requires a detailed evaluation as discussed in **Chapter 4**.

3.8.6 Subsequent Analysis

It should be noted that there are likely, as yet unidentified, resources to be identified, analyzed, assessed and avoided through an intensive cultural resources inventory to be conducted during the Tier 2 NEPA process. The Tier 1 DEIS does not define specific alignments. The Tier 1 DEIS is evaluating Corridor Alternatives. Alignments will be defined in the Tier 2 NEPA phase. At that time, all cultural resources 50 years old or older (or a time period determined in consultation with the SHPOs), will be identified through field work to complete the desktop identifications in **Section 3.8.3**. All resources will be evaluated for whether or not they meet the NRHP criteria. FRA, GDOT, and TDOT will consider NRHP eligible or listed resources as Section 106 resources, which will also be subject to Section 4(f). Officials with jurisdiction will be identified and consulted for potential Section 106 resources. Consultation will be performed with public officials, property owners/officials with jurisdiction, SHPOs, tribal representatives, and other consulting parties regarding the effects of the Project on Section 106 resources and measures to minimize harm.

As explained in a fact sheet by the Advisory Council on Historic Preservation (ACHP 2011), the federal agency implementing a project or providing assistance, licenses, permits, or approvals for a proposed project is responsible for consulting with stakeholders and completing Section 106 prior to making a final decision. Agencies initiate Section 106 reviews in consultation with State and Tribal officials. Appointed by each state governor, the SHPO coordinates the state's historic preservation program and consults with agencies during Section 106 review. Agencies also consult with federally recognized Native American tribes and Native Hawaiian organizations when historic properties of religious and cultural significance to them are involved. Other consulting parties, such as individuals or groups interested in historic preservation, should be invited to consult, too. In order for FRA, GDOT and TDOT to complete a Section 106 review for the Project, the following four steps will be undertaken:

1. Initiate Section 106 and determine if it applies to a given project;
2. Identify historic properties in the Project Area;
3. Assess the effect of the Project on identified historic properties; and
4. Resolve adverse effects by exploring alternatives to avoid, minimize, or mitigate the effects.

If it is found during Tier 2 that historic properties would be adversely affected by the Project, the Section 106 consultation process will conclude with the negotiation and execution of a legally binding agreement that outlines how the FRA, GDOT, and TDOT will resolve those effects. Potential mitigation strategies could include data recovery excavations and design/engineering improvements to avoid possible negative effects.

3.9 Water Resources

This section addresses the related water resource subjects of wetlands, streams and lakes, and floodplains that potentially would be affected by the Corridor Alternatives. It also briefly describes the potential impacts that the Project could have on water quality. A soils analysis and concerns relative to groundwater including the locations of aquifers and recharge areas will be investigated in the Tier 2 NEPA analysis. The acreage of wetlands and streams potentially affected by the Corridor Alternatives is a distinguishing factor among the Corridor Alternatives.

3.9.1 Legal and Regulatory Context

Several federal regulations have been developed to provide protections for wetlands and waters and are applicable to the proposed project, including Executive Order 11990, DOT Order 5660.1A, the Rivers and Harbors Act of 1899, and the Clean Water Act (CWA).

Georgia State Waters are defined by the Official Code of Georgia 12-7-1 and are protected by the Georgia Erosion and Sedimentation Control Act of 1975, in compliance with the National Pollutant Discharge Elimination System (NPDES) permit as required under Section 402 of the Clean Water Act (CWA). Tennessee's water quality is regulated through the Water Quality Control Act, T.C.A. Section 69-3-101, and Rules of Tennessee Department of Environment and Conservation Division of Water Pollution Control, Chapter 1200-4-3. For stormwater discharges from transportation projects, a NPDES permit must be obtained and a stormwater management program in both Georgia and Tennessee must be developed.

Local communities that participate in the National Flood Insurance Program (NFIP) are responsible for administering Federal Emergency Management Agency (FEMA) policy, including regulating development in FEMA-designated floodplains. The list of participating local communities within the Project Area, all of which are in Georgia, from the Community Rating System Eligible Communities, May 1, 2014, is provided below. Coordination between the FRA, GDOT, TDOT, local communities, and FEMA will be necessary during the Tier 2 NEPA process.

Counties	Cities	
Catoosa	Austell	Lake City
Cherokee	Cartersville	Marietta
Cobb	College Park	Morrow
Douglas	East Point	Roswell
Fulton	Forest Park	
Paulding		

3.9.1.1 Wetlands and Streams

Section 404 of the Clean Water Act (33 U.S.C. 1344) regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Fundamental is the precept that dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.

From a national perspective, the degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts because the degradation or destruction of special sites may represent an irreversible loss of valuable aquatic resources. Guidelines, regulations, and a permitting program have been developed by the Environmental Protection Agency in conjunction with the Secretary of the Army acting through the Chief of Engineers under Section 404(b)(1) of the Clean Water Act (33 U.S.C. 1344) (1972).

Jurisdictional waters of the U.S., to which these guidelines and regulations apply, are defined by 33 CFR Part 328.3(b) and are protected by Section 404 of the CWA, which is administered and enforced by the U.S. Army Corps of Engineers (USACE). The Project Area falls within the jurisdiction of three USACE districts: Savannah, GA, Nashville, TN, and Mobile, AL.

Section 401 of the Clean Water Act also requires that any applicant for a Section 404 permit also obtain a Water Quality Certification from the state or states in which the project is located.

The legal authority to obtain federal program delegation to administer the CWA has been established in Georgia by the Georgia Water Quality Control (GWQC) Act, administered by the GDNR, and in Tennessee by the Tennessee Water Quality Control Act of 1977, administered by the Tennessee Department of Environment and Conservation.

Additionally, Executive Order 11990 – *Protection of Wetlands*, (as implemented by the Department of Transportation by USDOT Order 5660.1A) directs federal agencies to avoid to the extent possible, the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. It is DOT policy that new construction located in wetlands shall be avoided unless there is no practicable alternative to the construction and the proposed action includes all practicable measures to minimize harm to wetlands which may result from the construction.

3.9.1.2 Floodplains

Executive Order 11988 – *Floodplain Management and Protection*, (as implemented by the Department of Transportation by USDOT Order 5650.2) directs federal agencies to avoid to the extent possible, the long and short term effects associated with the occupancy and modification of floodplains. It requires efforts to avoid direct or indirect support of development within 100-year floodplains wherever there is a reasonable alternative, and prohibits floodplain encroachments which are hazardous, not economically viable, result in incomplete uses of the floodplain, or would cause a critical interruption of an emergency transportation facility, a substantial flood risk, or an effect on the floodplain's natural resource values.

Projects that encroach upon 100-year floodplains must be supported with additional specific information. The USDOT Order 5650.2, *Floodplain Management and Protection*, prescribes "policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of floodplain effects in agency actions, planning programs and budget requests." Environmental review documents should indicate potential risks and effects from proposed transportation facilities.

Many, but not all, local governments within the Project Area, as listed above in **Section 3.9.1**, participate in the NFIP, which limits the information available from some areas. In these NFIP communities, FEMA, in cooperation with other federal agencies and state and local governments, conducts detailed flood studies to determine designated floodways to safely convey floodwater during flood events. These studies result in floodway boundaries, which are illustrated on Flood Insurance Rate Maps (FIRMs). The information obtained through these studies is utilized by local jurisdictions in their land use and development ordinances and regulations to discourage development in flood prone areas.

The Flood Disaster Protection Act (42 U.S.C. §§ 4001-4128 [FDPA]), requires the identification of all flood-prone areas, the provision of flood insurance where applicable, and the purchase of insurance for structures in special flood-hazard areas. The FDPA applies to any federally assisted project in an area identified as having special flood hazards. Projects should avoid construction in, or develop a design to be consistent with, FEMA-identified flood hazard areas.

3.9.2 Methodology

3.9.2.1 Wetlands

Wetlands are defined under the CWA as, "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

The Project Team defined a defined as a 1,000-foot wide area surrounding each Corridor Alternative for the wetlands analysis. Data from the US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) was accessed to identify and determine the total acreages of wetlands falling within the Project Area.

3.9.2.2 Streams and Lakes

The potential effects to perennial streams and lakes were measured by the number and area of crossings by each Corridor Alternative. Perennial streams, rivers, lakes, and other Jurisdictional Waters of the U.S., excluding the intermittent and ephemeral and the wetlands identified above, were determined by desktop survey.

The study area for the assessment of wetlands is defined as a 1,000-foot wide area surrounding each Corridor Alternative. Data from the USFWS NWI was accessed to identify and determine the total acreages of wetlands falling within the each study area.

3.9.2.3 Floodplains

A floodplain is defined by FEMA as the area adjoining a river or stream that has been or may be covered by floodwaters during storm events. A floodplain consists of two components: the floodway and the flood fringe:

- The floodway is the mainstream or river channel and is the area regulated by federal, state, or local requirements to safely provide for the discharge of the base flood so the cumulative increase in water surface elevation does not rise to a point that it can cause damage to adjacent developed lands. FEMA establishes the amount of increase at one-foot, but state and local requirements can be more stringent.
- The flood fringe is the land area between the floodway and the 100-year floodplain boundary and is usually associated with standing water, rather than flowing water.

Hundred-year floodplains were identified in the corridor study areas using data captured from either the Digital Flood Insurance Rate Map (DFIRM) or FEMA Quadrangle 3 (Q3) data, depending on the county. These areas were then measured and the measurements were summed to reflect the total acreage of floodplains within each study area.

Beyond this desktop analysis, a detailed investigation of the water resources and the effects of the Project on water resources will be undertaken in the Tier 2 analysis.

3.9.3 Affected Environment

3.9.3.1 Wetlands

The approximate acreages and number of water resources found within each corridor study area are shown in **Table 3-23**. **Figures 3-17** through **3-23** illustrate the extent of wetlands in each corridor.

Table 3-23: Water Resources in the Project Area

Corridor Alternative	Wetlands (acres)	Stream Crossings (number)	Lakes (acres)	Floodplains (acres)
I-75	205	21	104	1,563
East	205	18	92	2,576
I-75/Rome	251	35	98	1,689

Sources: USFWS National Wetlands Inventory 2010; U.S. Census TIGER line files 2010; DFIRM and FEMA Q3 data

These data show the following regarding each Corridor Alternative study area:

- The I-75 Corridor Alternative has fewer acres of wetlands than the I-75/Rome Corridor Alternative and the same number of acres as the East Corridor Alternative. It has fewer stream crossings than I-75/Rome Corridor Alternative, but more than East Corridor Alternative. It also has the most acres of lakes and the least acres of floodplains.
- The East Corridor Alternative has fewer acres of wetlands than the I-75/Rome Corridor Alternative and the same number as the I-75 Corridor Alternative. It has the smallest number of stream crossings and acres of lakes. It also has the most acres of floodplains.
- The I-75/Rome Corridor Alternative has the most acres of wetlands and stream crossings. It has more acres of lakes than the East, but fewer than I-75, and more acres of floodplains than I-75, but fewer than the East.

3.9.3.2 Streams, Lakes, and Watersheds

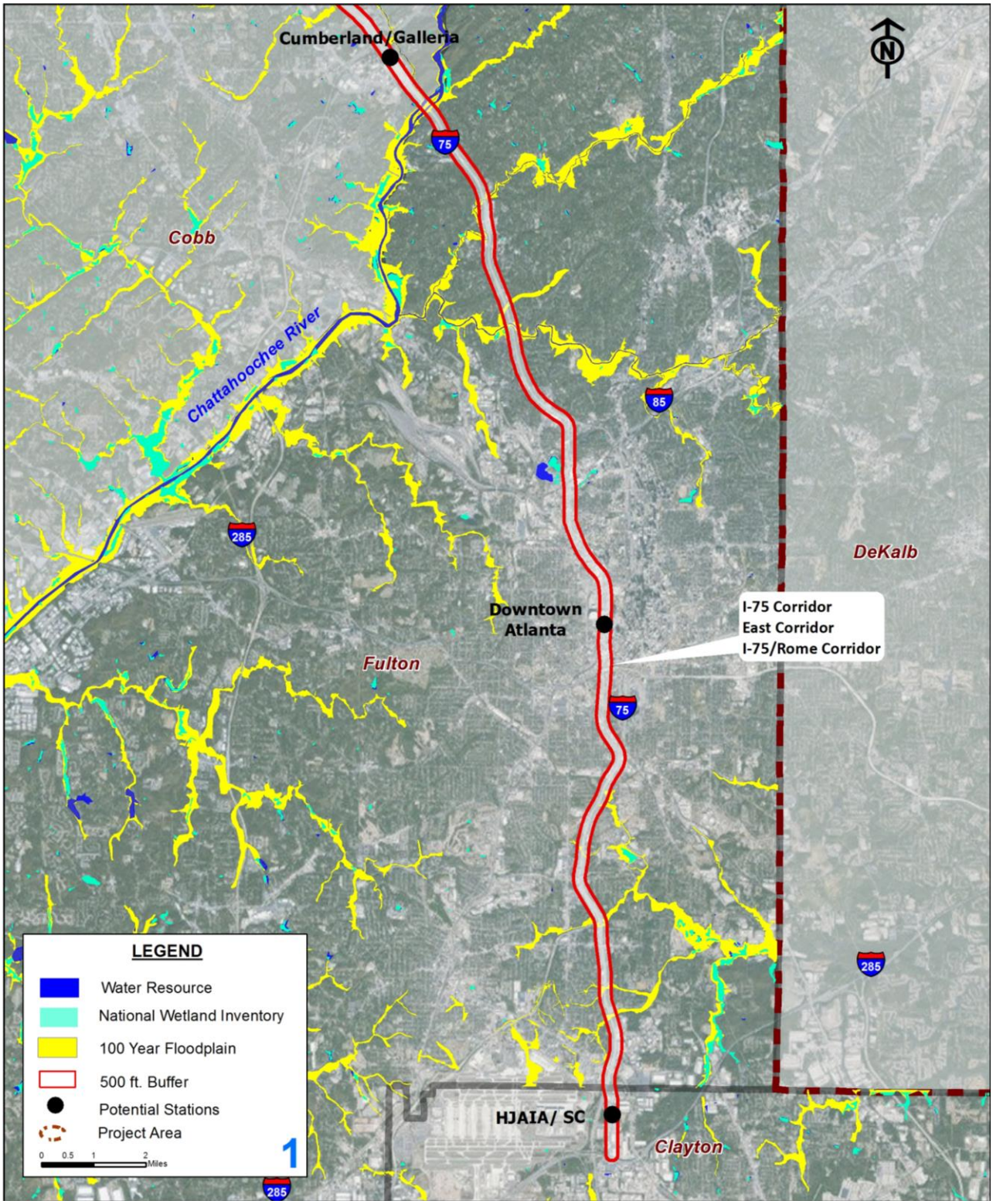
The streams and lakes crossed by each alternative can best be described in the context of the watersheds formed by each hydrologic unit or watershed. The watersheds in the Project Area are shown on **Figure 3-24** and described below. **Table 3-24** presents the Hydrologic Unit Codes (HUC), the respective water bodies (streams and lakes) and segment descriptions, and use classifications for each watershed. With the exception of the Upper Chattahoochee Watershed for which no assessment is available, all watersheds are shown in the 303(d) list as having impaired waterbodies.

Upper Flint - The Upper Flint River basin is located in north central Georgia and is approximately 2,993 square miles. The Flint River begins at the southern edge of the Atlanta region in Clayton County, which includes the southern terminus of each Corridor Alternative. The basin drains to the south where it flows into Lake Seminole at the Florida state line, and eventually discharges to the Gulf of Mexico through the Apalachicola River. Major tributaries include Whitewater, Muckalee, Kinchafoonee, and Ichawaynochaway Creeks.

Upper Ocmulgee - The Upper Ocmulgee watershed is located in north central Georgia and contains approximately 2,625 square miles. Between the proposed HJAIA station and the proposed Downtown Atlanta station, each Corridor Alternative is within the Upper Ocmulgee watershed. The Ocmulgee River is formed from the headwaters of the Yellow, Alcovy, and South Rivers, which begin along the southeastern edge of the Atlanta region in Fulton, DeKalb, and Gwinnett Counties. Major tributaries include the Little Ocmulgee and Towaliga Rivers and Tobesofkee, Echeconnee and Big Indian Creeks.

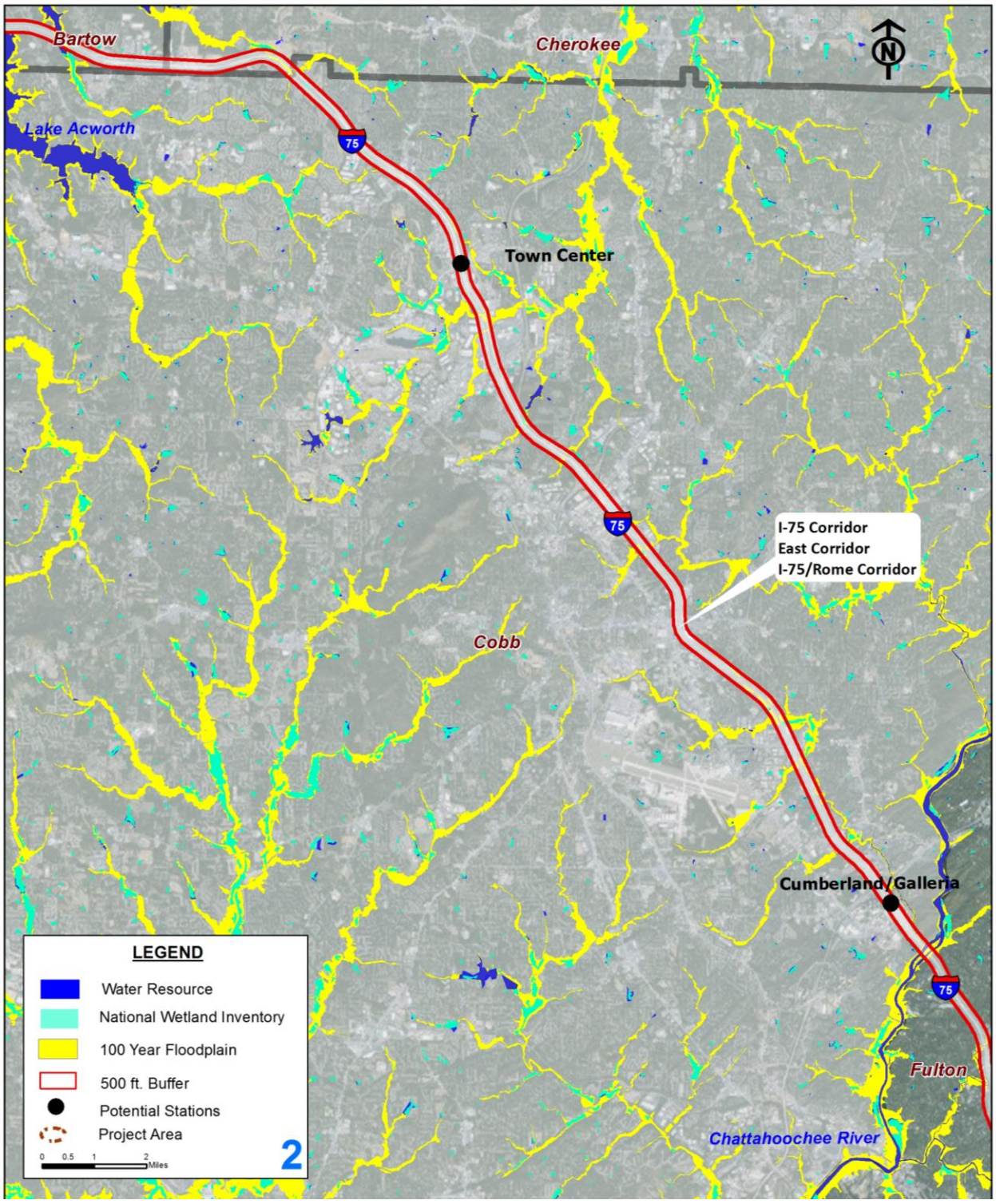
Upper Chattahoochee - The Upper Chattahoochee watershed is located in northeast central Georgia and contains approximately 1,580 square miles. Between the proposed Downtown Atlanta station and the proposed Cumberland/Galleria station and part of the way to the proposed Town Center station, each Corridor Alternative is within the Upper Chattahoochee watershed. The Chattahoochee River begins in northeast Georgia near the Tennessee border, drains to the southwest, and flows through the Atlanta region. Major tributaries include Johns, Nancy, and Sope Creeks.

Figure 3-17: Water Resources – Clayton and Fulton Counties, Georgia



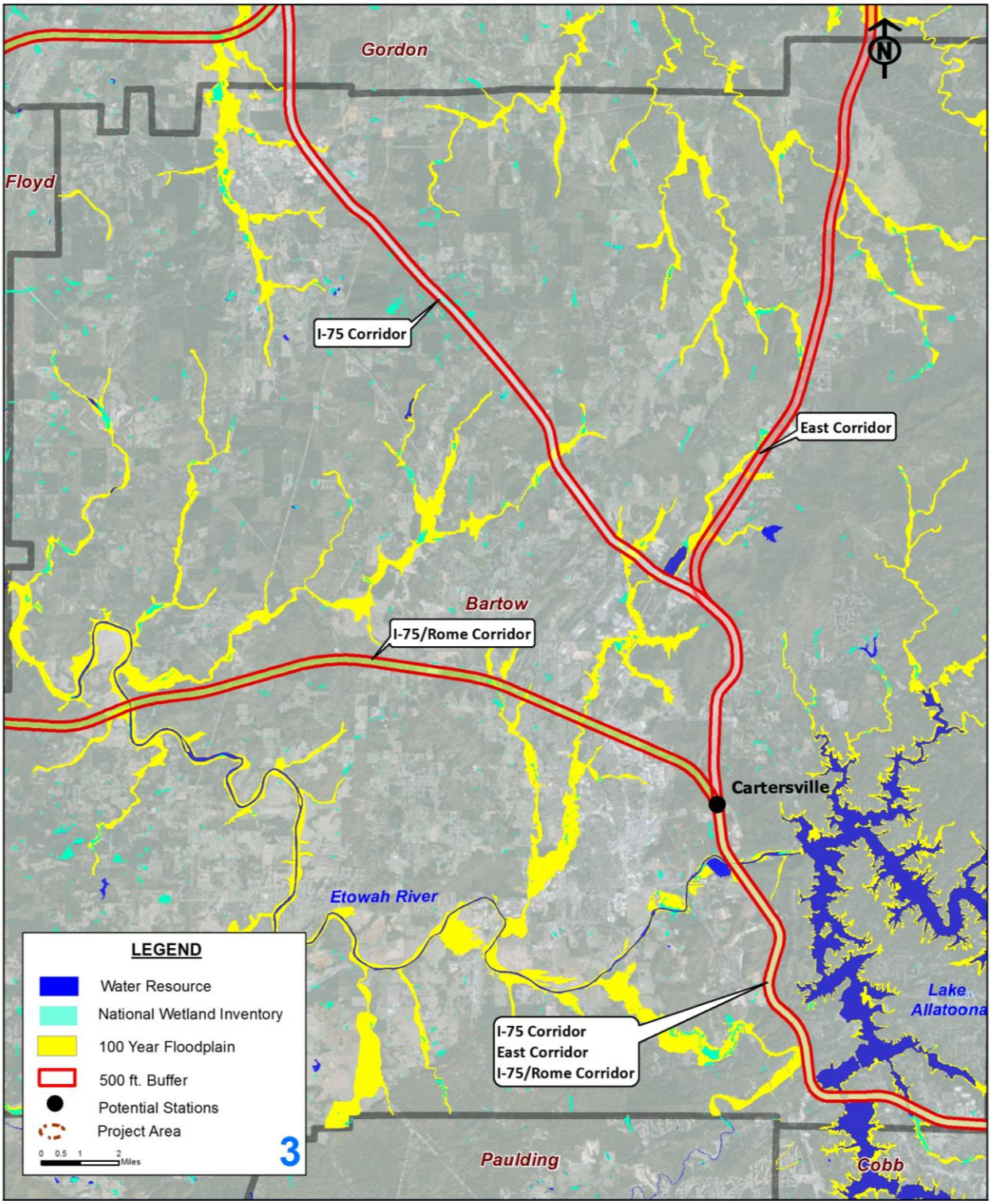
Source: USFWS National Wetlands Inventory 2010; U.S. Census TIGER line files 2010; DFIRM and FEMA Q3 data

Figure 3-18: Water Resources – Cobb County, Georgia



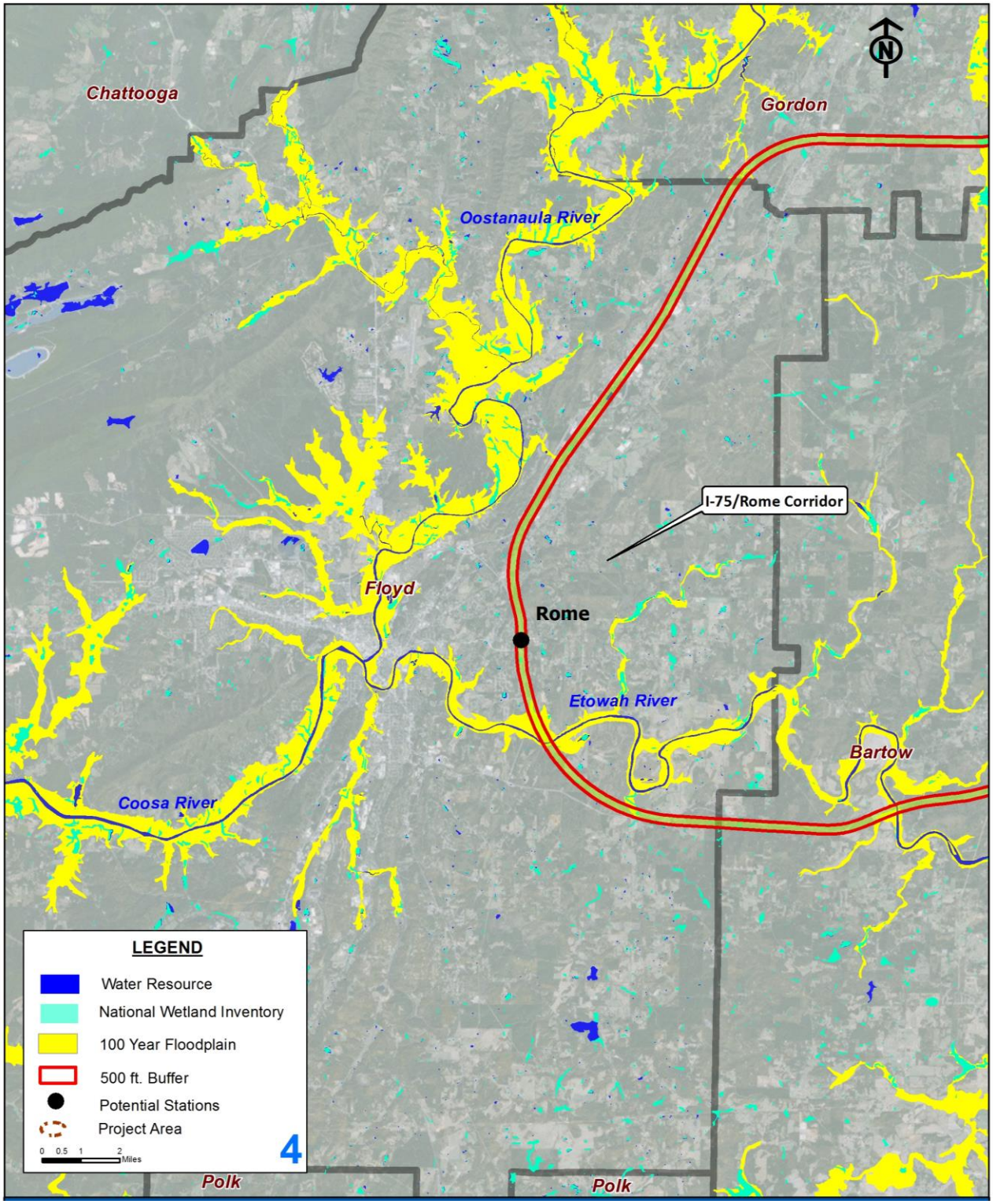
Source: USFWS National Wetlands Inventory 2010; U.S. Census TIGER line files 2010; DFIRM and FEMA Q3 data

Figure 3-19: Water Resources – Bartow County, Georgia



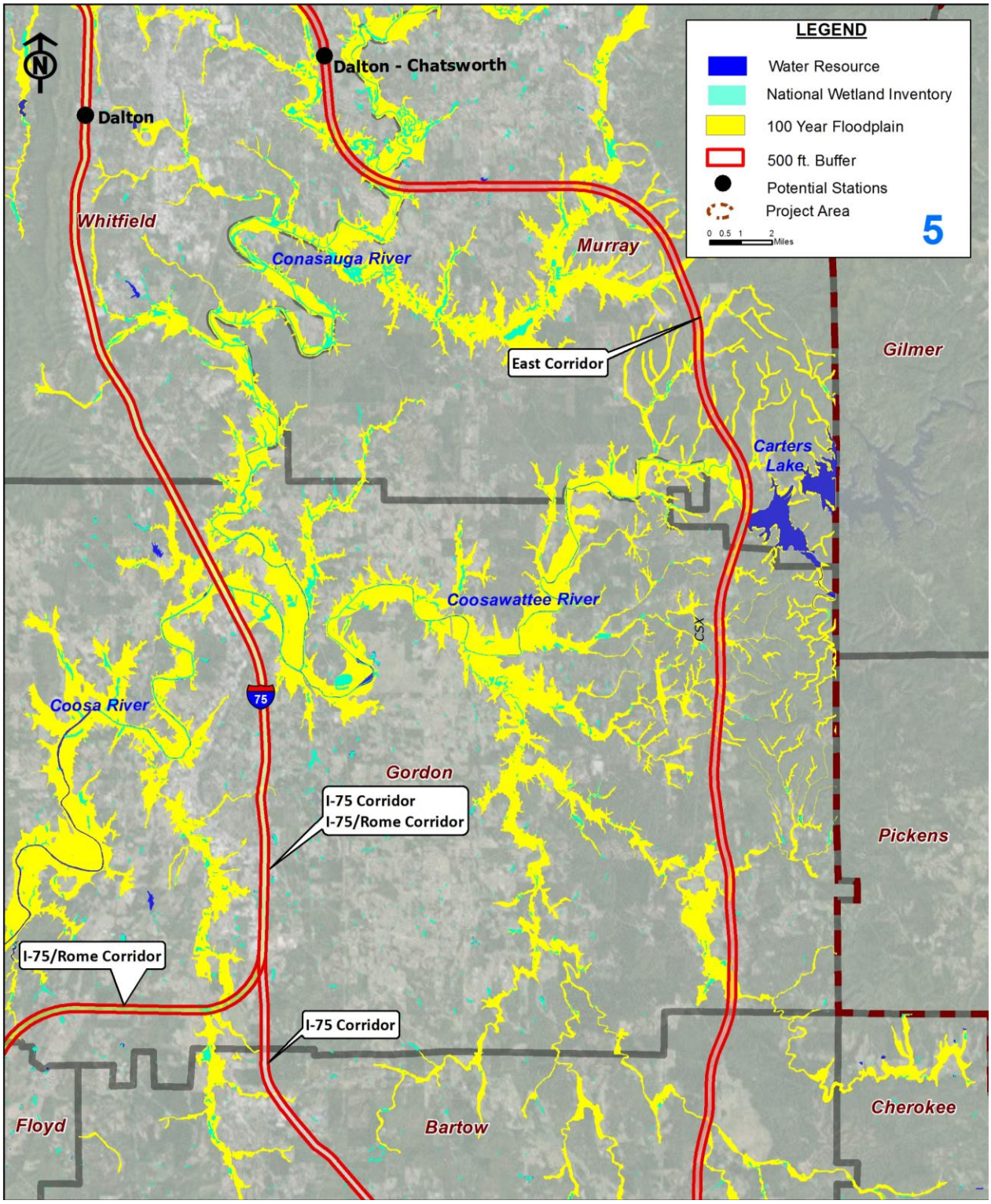
Source: USFWS National Wetlands Inventory 2010; U.S. Census TIGER line files 2010; DFIRM and FEMA Q3 data

Figure 3-20: Water Resources – Floyd County, Georgia



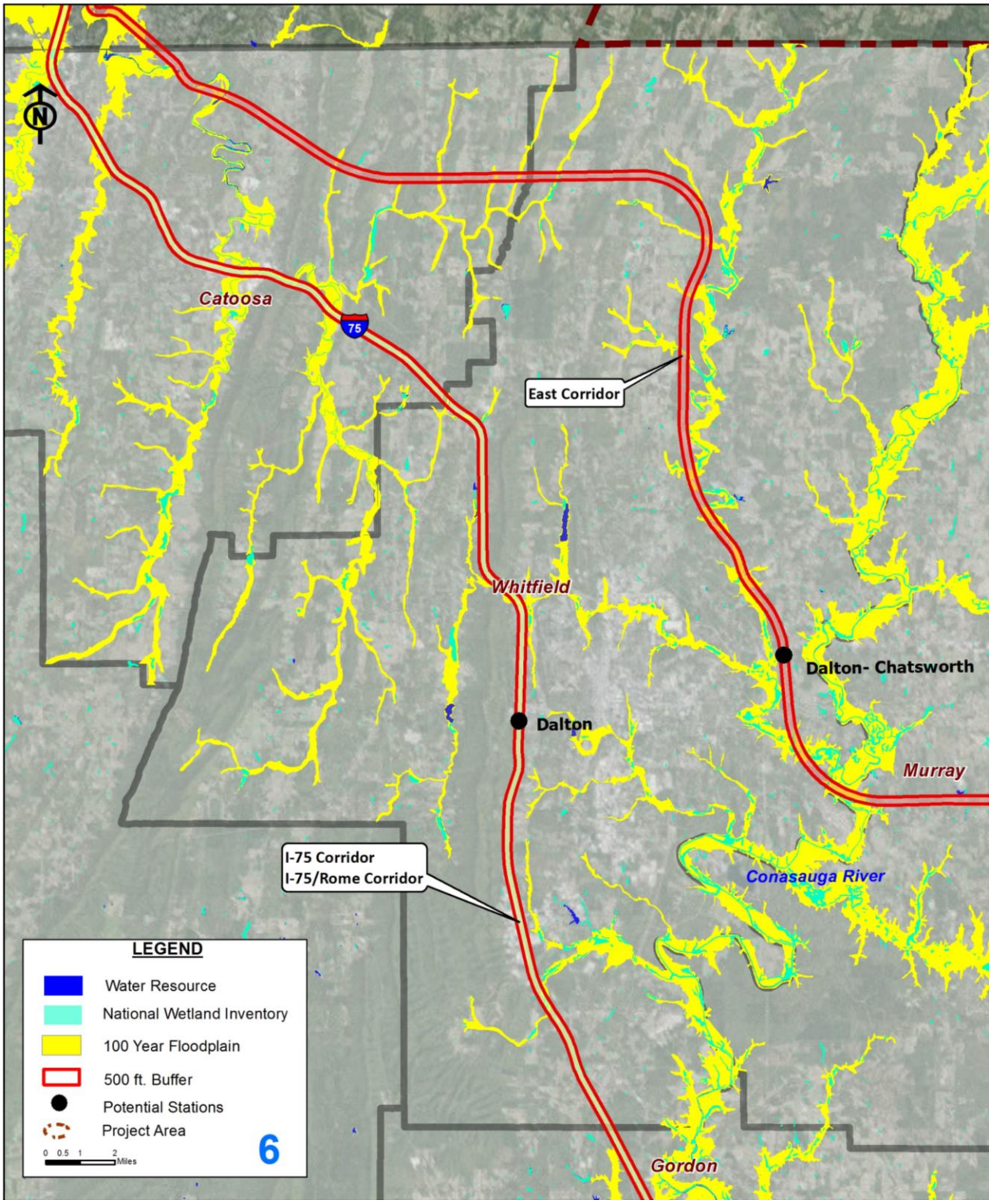
Source: USFWS National Wetlands Inventory 2010; U.S. Census TIGER line files 2010; DFIRM and FEMA Q3 data

Figure 3-21: Water Resources – Gordon and Murray Counties, Georgia



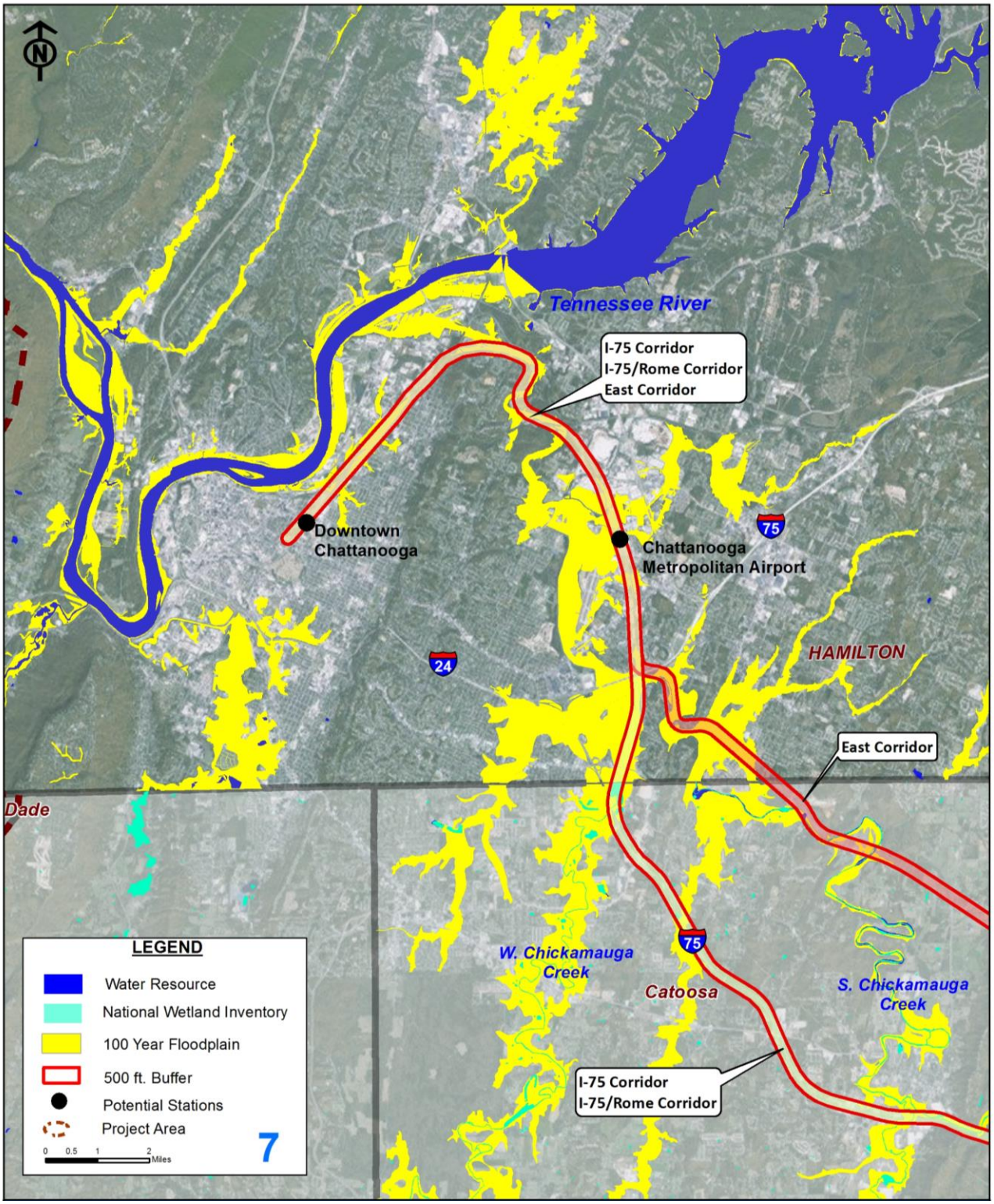
Source: USFWS National Wetlands Inventory 2010; U.S. Census TIGER line files 2010; DFIRM and FEMA Q3 data

Figure 3-22: Water Resources – Whitfield and Catoosa Counties, Georgia



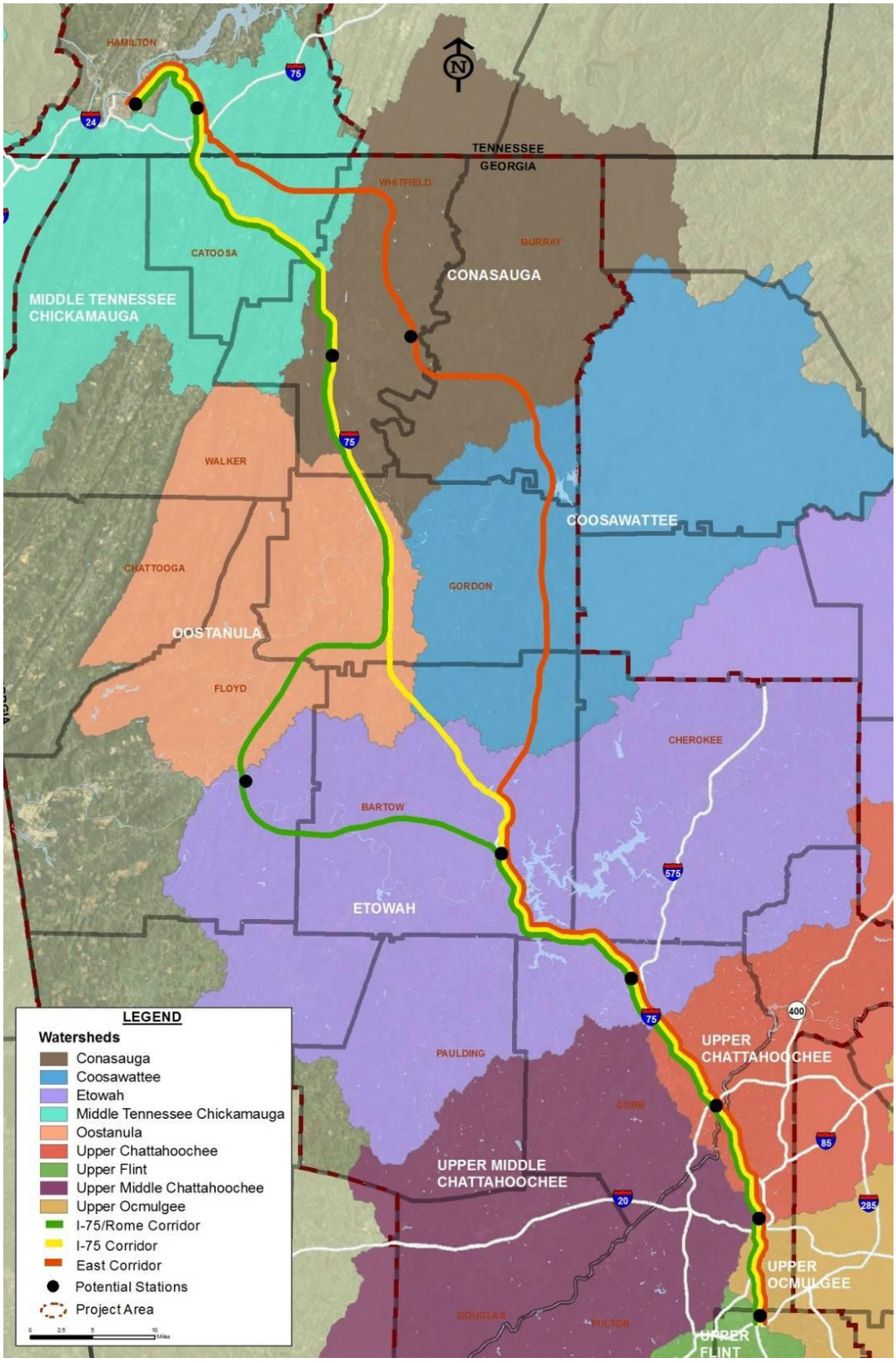
Source: USFWS National Wetlands Inventory 2010; U.S. Census TIGER line files 2010; DFIRM and FEMA Q3 data

Figure 3-23: Water Resources – Hamilton County, Tennessee



Source: USFWS National Wetlands Inventory 2010; U.S. Census TIGER line files 2010; DFIRM and FEMA Q3 data

Figure 3-24: Watersheds



Sources: DFIRM and FEMA Q3 data 2010

Table 3-24: Waters Classified in Regulations

Watersheds and United States Geological Survey (USGS) HUC	Water Body and Segment	Use Classification
Upper Flint (HUC 03130005)	Flint River, Woolsey Road to SR 16	Drinking Water
Upper Ocmulgee (HUC 03070103)	Alcovy River, SR 81 to City of Covington Water Intake	Drinking Water
	Big Haynes Creek, SR 20 to Bald Rock Road	Drinking Water
	Big Haynes Creek, SR 78 to confluence with Yellow River	
	Jackson Lake, South River at SR 36; Yellow River at SR 36; and Alcovy River at Newton New Factory Road Bridge to Lloyd Shoals Dam	Recreation
	Ocmulgee River, SR 18 to Macon Water Intake	Drinking Water
	Tobesofkee Creek, Lake Tobesofkee	Recreation
	Towaliga River, Headwaters to SR 36	Drinking Water
	Towaliga River, SR 36 to High Falls Dam	Recreation
	Yellow River, SR 24 to Porterdale Water Intake	Drinking Water
Upper Chattahoochee (HUC 03130001)	Chattahoochee River, Headwaters to Buford Dam	Recreation
	Chattahoochee River, Buford Dam to Atlanta (Peachtree Creek)	Recreation / Drinking Water
	Big Creek, SR 400 to City of Roswell Water Intake	Drinking Water
Etowah (HUC 03150104)	Etowah River, Cherokee Road 782 to Canton Water Intake	Drinking Water
	Etowah River, Cherokee Hwy 20 to Allatoona Dam	Recreation / Drinking Water
	Etowah River, Allatoona Dam to Cartersville Water Intake	Drinking Water
Oostanaula (HUC 03150103)	Oostanaula River, Confluence of Conasauga and Coosawattee Rivers to Calhoun Water Intake	Drinking Water
	Oostanaula River, Confluence with Armuchee Creek to Rome Water Intake	Drinking Water
Coosawattee (HUC 03150102)	Ellijay River, Headwaters to Ellijay Water Intake	Drinking Water
	Cartecay River, Headwaters to Ellijay Water Intake	Drinking Water
	Coosawattee River, Confluence of Mountaintown Creek to Carters Dam	Recreation
	Coosawattee River, US 411 to confluence of Conasauga River	Drinking Water
Conasauga (HUC 03150101)	Conasauga River, SR 2 to Dalton Water Intake	Drinking Water
	Mill Creek, Headwaters to Dalton Water Supply	Drinking Water
	Conasauga River, Waters within Cohutta Wilderness Area	Wild and Scenic
	Jacks Creek, Waters within Cohutta Wilderness Area	
Middle Tennessee Chickamauga (HUC 06020001)	Tennessee River, Waters within Tennessee River Basin	Recreation

[1] Specific criteria apply at all times when the river flow measured at a point immediately upstream from Peachtree Creek equals or exceed 750 cubic feet per second (cfs) (Atlanta gage flow minus Atlanta water supply withdrawals).

Etowah - The Etowah River watershed is located in central north Georgia and contains approximately 1,865 square miles. Portions of each Corridor Alternative are within this watershed. The Etowah River originates in Murray County and joins the Oostanaula River in Rome, GA., to form the Coosa River that then flows into Alabama. Major tributaries include Little River and the Euharlee, Pumpkinvine, and Allatoona Creeks.

Oostanaula - The Oostanaula watershed, Hydrologic Units of the Coosa River Basin, is located in northwest Georgia and contains approximately 562 square miles. Portions of the I-75 and the I-75/Rome Corridor Alternatives are within this watershed. The Oostanaula River is formed by the confluence of the Conasauga and Coosawattee Rivers. The basin drains to the south through Gordon and Floyd Counties.

Coosawattee - The Coosawattee watershed, a Hydrologic Unit of the Coosa River Basin, is located in northwest Georgia and southeast Tennessee and contains approximately 862 square miles. The

East Corridor Alternative and a small portion of the I-75 Corridor Alternative are within this watershed. It originates in Murray County and flows westward into Gordon County where the Coosawattee meets the Conasauga River to form the Oostanaula River. Major tributaries include the Ellijay and Cartecay Rivers.

Conasauga - The Conasauga basin, a Hydrologic Unit of the Coosa River Basin, is located in northwest Georgia and southeast Tennessee and contains 604 square miles. Portions of each Corridor Alternative are within this watershed. It originates in Murray County, flows northward into Tennessee, where it flows briefly westward before turning back south and flowing into Murray County, Georgia. From there the Conasauga flows southwest into Gordon County, where it converges with the Coosawattee River.

Middle Tennessee Chickamauga - The Middle Tennessee Chickamauga watershed, referred to by the State of Tennessee as the Lower Tennessee Watershed is a sub-basin of the Tennessee River Basin. It is located in northwest Georgia, southeast Tennessee, and northwest Alabama. It contains approximately 604 square miles. Portions of each Corridor Alternative are within this watershed. The Tennessee River begins east of Knoxville, Tennessee. From there, it flows southwest through toward Chattanooga before entering Alabama. Major tributaries include Town Creek and the Elk and Flint Rivers.

3.9.3.3 Floodplains

In general, each Corridor Alternative is primarily within developed and urbanized areas and areas of existing transportation ROW. **Figures 3-19** through **3-24** show the 100-year floodplains identified through review of the Digital Flood Insurance Rate Map (DFIRM) and FEMA Quadrangle 3 (Q3) data.

3.9.3.4 High Priority Waters

The GDNR has designated a statewide list of 212 high priority waters. This list was created to protect important populations of high priority species and to protect or restore aquatic systems, which was part of a larger effort to develop a comprehensive wildlife conservation strategy for Georgia. A map of all high priority waters in the State of Georgia is shown in **Figure 3-25**.

3.9.4 Environmental Consequences

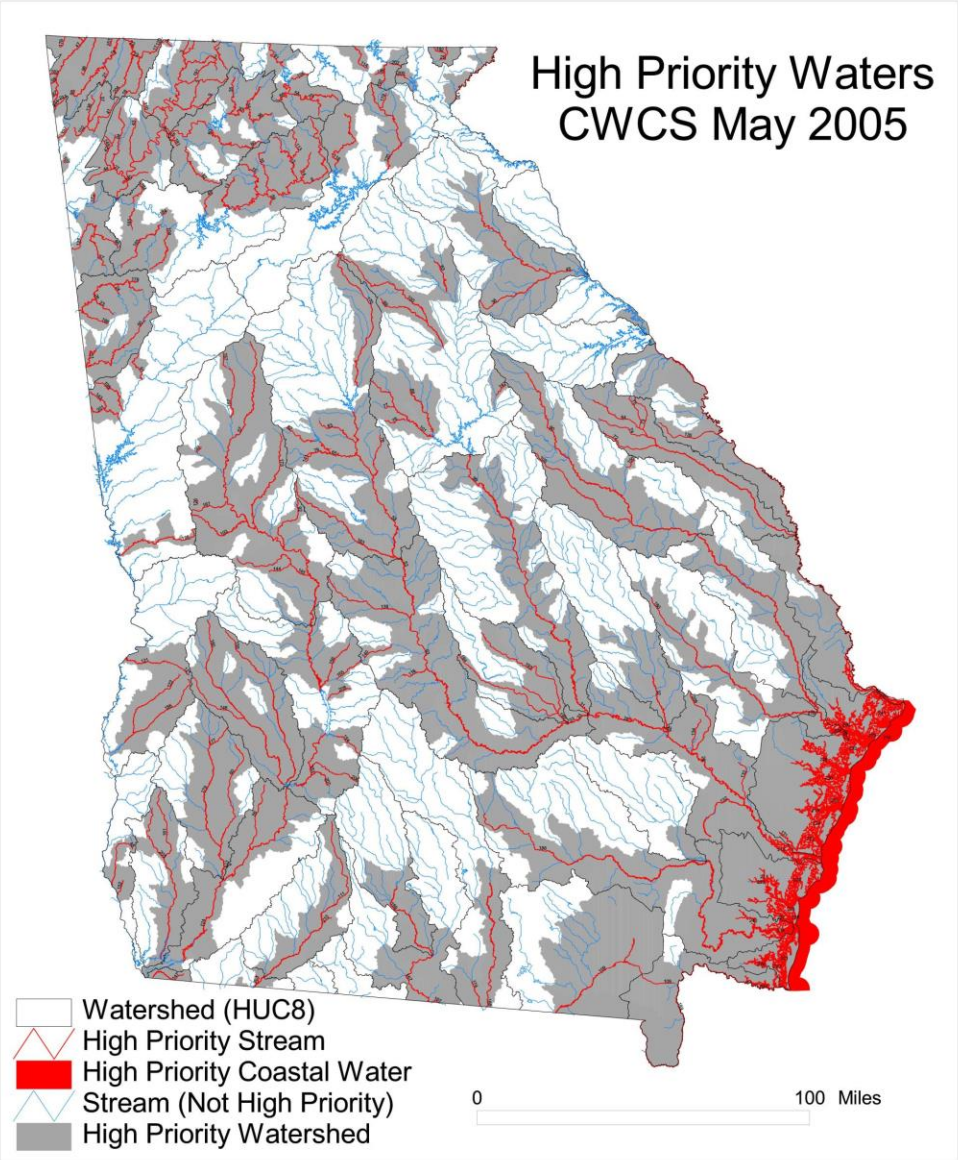
3.9.4.1 No-Build Alternative

The No-Build Alternative assumes an HSGT system would not be built between Atlanta and Chattanooga. Passenger service between the two cities would consist of existing bus services, air travel, and continued automobile use along I-75, US 411, and US 41. In the No-Build Alternative, the impacts to wetlands, streams, lakes, and other water resources could potentially occur if additional ROW is needed or if substantial changes to traffic and transit volumes or operations lead to proximity effects such as increased impervious surfaces and associated runoff. As the geographic scope and nature of the No-Build Alternative projects is limited, the potential effects of the projects are likely to be confined to the area in which construction will occur. The potential for impacts to wetlands, streams, lakes, and other water resources would be determined through the environmental processes for the already planned transportation improvements.

3.9.4.2 Corridor Alternatives

Wetland Impacts: Permanent wetland impacts may occur in specific locations of each Corridor Alternative where new rail/guideway, HSGT stations, and parking areas are proposed in or adjacent to wetlands. Temporary, construction-related impacts could occur, such as at corridor crossings of waterways. The I-75/Rome Corridor Alternative potentially has the most acres of wetlands and, as a result, the greatest potential to impact wetlands. The I-75 and East Corridor Alternatives have fewer acres of wetlands, and potentially less impact on wetlands.

Figure 3-25: High Priority Waters in Georgia



Source: GDNR Wildlife Resources Division 2005

Streams and Lakes: Potential direct impacts of the Project on streams and lakes include, but may not be limited to, permanent clearing of riparian vegetation, fill placement in waters, and stormwater runoff from impervious surfaces. These actions may potentially alter the natural characteristics of water resources, resulting in changes in water temperature, increased nutrients and sedimentation, and alterations in stream channel circulation. The I-75/Rome Corridor Alternative has the highest number of stream crossings and a high number of lakes; for this reason, it has the Corridor Alternative with the greatest potential to affect streams and lakes. The I-75 and East Corridor Alternatives have somewhat fewer numbers of stream crossing and lakes, and relatively less potential to affect these resources.

Floodplains: Permanent floodplain impacts may occur in specific locations where HSGT stations, parking areas, maintenance and storage facilities, and the guideway are introduced in or adjacent to these areas. The East Corridor Alternative has the most acres of floodplains and, therefore, the

highest potential for floodplain impacts. The I-75 and I-75/Rome Corridor Alternatives have relatively fewer acres of floodplains, and therefore, relatively less potential for floodplain impacts.

Water Quality Impacts: Impacts to water quality may occur due to the addition of impervious areas at HSGT stations, parking areas, maintenance and storage facilities, and, to an extent to be determined, by the guideway, depending on the technology selected and the design of the guideway. In addition to the increased runoff rates and volume from these impervious areas, changes in drainage patterns would occur due to the piping of stormwater runoff into closed drainage systems that would have direct outfalls to receiving waters. If a Corridor Alternative is selected, detailed analysis in Tier 2 will determine the specific increase of impervious area that would result from the development of the selected Corridor Alternative.

Each Corridor Alternative potentially could have temporary construction effects on water resources and water quality. Such effects can result from clearing of vegetation, exposure of soil exposed due to grubbing, earth moving and grading, and other construction-related activities. These activities may cause soil erosion and sedimentation in downstream waters. Temporary access for construction activities and equipment also may affect water resources. The presence of heavy equipment and construction-related chemicals during construction potentially would affect water resources by increasing the risk of contamination.

3.9.5 Potential Mitigation

Wetlands, Streams, and Lakes

FRA, GDOT, and TDOT embrace the USACE's wetland mitigation policy of "no net loss of wetlands." Avoidance, minimization, and compensatory mitigation will be applied in sequential order as the design of the Project advances. GDOT and TDOT will examine reasonably feasible ways to avoid affecting wetlands, streams and lakes that are appropriate to the scope and degree of the potential Project effects and practicable in terms of cost, existing technology, and logistics in light of the Project's purpose.

GDOT and TDOT will then examine appropriate and practicable steps to reduce the potential Project effects on wetlands, streams and lakes. These steps will be implemented through design refinements. Minimization will typically focus on decreasing the footprint of the Project in and near these resources. Other examples of minimization that will be considered include:

- Minimizing clearing and grubbing activity;
- Decreasing or eliminating discharges into streams;
- Minimization of activities within stream channels; and
- Use of spanning structures and bottomless culverts over streams.

Compensatory mitigation will be developed by GDOT and TDOT during the Tier 2 NEPA phase after potential effects have been avoided and minimized to the extent reasonably feasible. In anticipation of the possibility of incurring unavoidable wetlands impacts, GDOT and TDOT have preliminarily evaluated existing and proposed compensatory mitigation sites during preparation of the Tier 1 DEIS to better understand the general availability and costs of mitigation credits. The Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS), accessed in November 2014, indicates that mitigation banks having credits that would serve the Project Area are potentially available. During the Tier 2 NEPA process, the Project Team will again consult RIBITS to ensure that the necessary mitigation banks are still potentially available.

The cost of mitigation credits is a function of supply and demand. According to Mitigation Management, the exclusive sales agent for commercial mitigation banks wetland credits range from $7,500 to $20,000 per credit, while stream credits range from $25 to $30 per credit in Gordon and

southern Whitfield Counties, to $45 in Bartow and Floyd Counties, to as high as $85 in Catoosa and northern Whitfield Counties in 2015. As the number of credits needed per Hydrologic Unit Code (HUC is defined in subsequent analysis), it will be easier to estimate the probable cost. There also is the potential opportunity for onsite mitigation for some wetlands, which will be examined in more detail during Tier 2 analysis.

Floodplains

As with wetlands, streams and lakes, GDOT, and TDOT will examine reasonably feasible ways to avoid affecting floodplains that are appropriate to the scope and degree of the potential Project effects and practicable in terms of cost, existing technology, and logistics in light of the Project's purpose. Minimization strategies could include design aspects such as right angle crossings, typical section reductions, and increased numbers of bridge spans or span length. Mitigation will be developed by GDOT and TDOT after potential effects have been avoided and minimized to the extent reasonably feasible. Restoration of floodplains to be equivalent to the prior functions is a typical strategy that would be examined if warranted in the Tier 2 NEPA process.

3.9.6 Permits

Permits may be required for the Project prior to construction. GDOT and TDOT would obtain these permits after the conclusion of the Tier 2 NEPA process:

- **Section 404 and 401 Permits:** The placement of fill materials in wetlands/Waters of the U.S. requires a permit from the USACE under Section 404 of the CWA of 1977. The appropriate level of this permit is determined based on the type of fill activity and the amount and location of fill involved. Section 404 permit requirements will be determined through coordination with the USACE during the Tier 2 NEPA process. In addition, a Section 401 General Water Quality Certification will be required if any portion of the Project may result in a discharge into "Waters of the United States" or for which an issuance of a federal permit or license is required. The USACE cannot issue a Section 404 permit until a Section 401 certification is issued. Final determination of permit applicability lies with the USACE.
- **U.S. Army Corps of Engineers:** The Project may require approval by the USACE to cross Lake Allatoona.
- **U.S. Forest Service:** The Project may require approval by the US Forestry Service (USFS) to traverse the Chattahoochee National Forest.
- **National Pollutant Discharge Elimination System (NPDES) Permit:** This Project would require a NPDES permit, which requires preparation and implementation of an Erosion, Sedimentation, and Pollution Control Plan and a Comprehensive Monitoring Program. In Georgia and Tennessee, NPDES permits are obtained through the Georgia Soil and Water Conservation Commission and the Tennessee Department of Environment and Conservation.
- **Tennessee Valley Authority (TVA):** The Project would require a TVA Section 26a permit because it would cross the South Chickamauga Creek, a tributary of the Tennessee River. The Section 26a permit applies to projects built across, along, or in the Tennessee River or any of its tributaries. They are issued by the TVA.
- **Georgia Erosion and Sedimentation Act of 1975:** The Georgia Erosion and Sediment Act of 1975, as amended, prohibits land disturbing activities within 25 feet (horizontally measured) of warm water streams and state waters and within 50 feet of cold water streams without approval from the Director of the GDNR EPD. It is anticipated that vegetative buffer variances would be required for this Project.
- **National Park Service:** The Project may require a permit from the National Park Service to use property within the Chattahoochee River National Recreation Area pursuant to Section 1.6 (a) of 48 FR 30275, June 30, 1983, as amended, which states that the activity authorized by a

permit shall be consistent with applicable legislation, federal regulations and administrative policies, and based upon a determination that public health and safety, environmental or scenic values, natural or cultural resources, scientific research, implementation of management responsibilities, proper allocation and use of facilities, or the avoidance of conflict among visitor use activities will not be adversely impacted.

GDOT and TDOT would obtain all necessary permits.

3.9.7 Subsequent Analysis

If a Corridor Alternative is selected, subsequent analysis to further identify potential impacts on water resources would be undertaken for that alternative in Tier 2. The subsequent analysis would include the following.

- Field surveys of potential surface water impacts to further analyze potential impacts on water quality and to seek required permits from the appropriate agencies.
- Analysis of how the Project would contribute to total additional impervious ground surfaces and the subsequent potential additional impacts on surface run-off. This analysis would also identify potential mitigation measures.
- Obtaining all necessary permits.
- The usage type of each stream in the project area will also be documented, as well as each stream's status on the EPA 303(d) list of impaired waters.
- Field investigations and jurisdictional wetland delineations, which would include the quantification of wetland impacts.
- Determination of potential mitigation strategies to minimize potential effects.

3.10 Biological Resources

This chapter describes the existing wildlife/aquatic species and their habitats within the 1,000-foot study area of the proposed Corridor Alternatives, reports the potential effects of the Project on these resources, and identifies potential mitigation that could be implemented to address potential effects. The number of known threatened and endangered species habitats potentially affected by the Corridor Alternatives is a distinguishing factor among the Corridor Alternatives.

3.10.1 Legal and Regulatory Context

The following federal and state regulations provide the regulatory context for biological resources:

- **Endangered Species Act:** Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. §1536), requires that any action likely to affect a species classified as federally-protected be subject to review by the USFWS. Critical habitat is a term defined and used in the Act. It is a specific geographic area(s) that is essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery.
- **Migratory Bird Treaty Act:** The Migratory Bird Treaty Act (16 U.S.C. §§ 703–712) protects all native migratory game and non-game birds with exceptions for the control of species that cause damage to agricultural or other interests in the U.S. and its territories. (50 CFR 10.13, List of Migratory Birds)
- **Bald and Golden Eagle Protection Act:** The bald eagle is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. § 668) (BGEPA). The BGEPA prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The bald eagle is listed as threatened by the State of Georgia and is state listed as "Deemed in Need of Management" in Tennessee.

- **Georgia Environmental Policy Act (GEPA) of 1991:** GEPA (O.C.G.A. § 12-16-1) protects the cultural and natural resources of Georgia that may be impacted by a state government agency's actions.
- **Georgia Wildflower Preservation Act of 1973:** The Georgia Wildflower Preservation Act (O.C.G.A. §§ 12-6-170) Provides for the designation of officially protected plants and authorizes rules for the collection, transport, sale and listing of these plants.
- **Georgia Endangered Wildlife Act of 1973:** The Georgia Endangered Wildlife Act (O.C.G.A. §§ 27-3-130) provides for the designation and protection of rare, threatened and endangered species within the State of Georgia.
- **Tennessee Scenic Rivers Act of 1968:** This Act (Acts 1968, ch. 540, §§ 1, 2; T.C.A., § 11-1401) establishes the policy to preserve the scenic river system for aesthetic, ecological, and other scientific reasons. Priority is given to the preservation of natural, unspoiled, undeveloped river areas to assure preservation and to provide proper management of the recreational, wildlife and other land and water resources.
- **Tennessee Natural Areas Preservation Act of 1971:** The Tennessee Natural Areas Preservation Act (Acts 1971, ch. 116, § 1; T.C.A., § 11-1701) authorizes the Department of Environment and Conservation, Bureau of Parks and Conservation, Division of Natural Areas to manage the Natural Areas Program through which State Natural Areas have been designated and their use is governed; and the Natural Areas Registry that develops non-binding voluntary agreements with private and public landowners to protect sites of ecological importance.
- **Tennessee Non-game and Endangered or Threatened Wildlife Species Conservation Act of 1974:** The Tennessee Non-game and Endangered or Threatened Wildlife Species Conservation Act (Acts 1974, ch. 769, § 1; T.C.A., § 51-901) provides protection for nongame wildlife and provides protection and management of endangered and threatened species within the state.
- **Tennessee Rare Plant Protection and Conservation Act of 1985:** The Tennessee Rare Plant Protection and Conservation Act (Acts 1985, ch. 242, § 1; T.C.A., § 11-26-201) requires written permission from a landowner or manager before removing or destroying state-listed endangered plant species, and requires nurseries to be licensed to sell state listed endangered plant species.
- **Tennessee Water Control Act of 1977:** The Tennessee Water Control Act (Acts 1971, ch. 164, § 1; 1977, ch. 366, § 1; T.C.A., § 70-324) requires permitting for discharges of wastewater and monitors contamination to aquatic species habitats**.**

3.10.2 Methodology

A Geographic Information Systems (GIS) map of recorded, limited site-specific accounts of terrestrial protected species, and more broadly based species locations for aquatic species, as well as areas designated as critical habitat was overlaid onto Project Area mapping utilizing a GIS database maintained by the USFWS (*http://www.fws.gov/athens/endangered.html*). The number of instances where a Corridor Alternative potentially crosses an area designated as critical habitat was quantified. In addition, the area within each Corridor Alternative's study area (500 feet to each side of the corridor centerline) and within the *Etowah Aquatic Habitat Conservation Plan* (Priority 1 and 2 areas only) was quantified (USFWS 2007).

Agency Coordination

In August 2007 and September 2010, the following organizations were notified about the Project and the Corridor Alternatives:

- USFWS in Athens, Georgia and Cookeville, Tennessee;
- Tennessee Department of Environment & Conservation (TDEC);

- GDNR Natural Heritage Program; and
- US Department of Agricultural Natural Resources Conservation Service (USDA NRCS) in Tennessee and Georgia.

3.10.3 Affected Environment

The Project Area spans three major (Level III) ecoregions - the Piedmont, Blue Ridge, and Ridge and Valley regions. USEPA defines an ecoregion as an area of similarity regarding patterns in the mosaic of abiotic and biotic, aquatic and terrestrial ecosystem components, including geology, physiography, vegetation, climate, soils, hydrology, land use, and wildlife, with human beings considered as part of the biota. They are shown in **Figure 3-26**.

The Piedmont includes Clayton, Fulton and Cobb Counties, southern Cherokee County, and a small area of southeast Bartow County. The Piedmont is the non-mountainous area of the Appalachian Highlands, consisting of plains and hills that are a transition between the coastal plain and Appalachians.

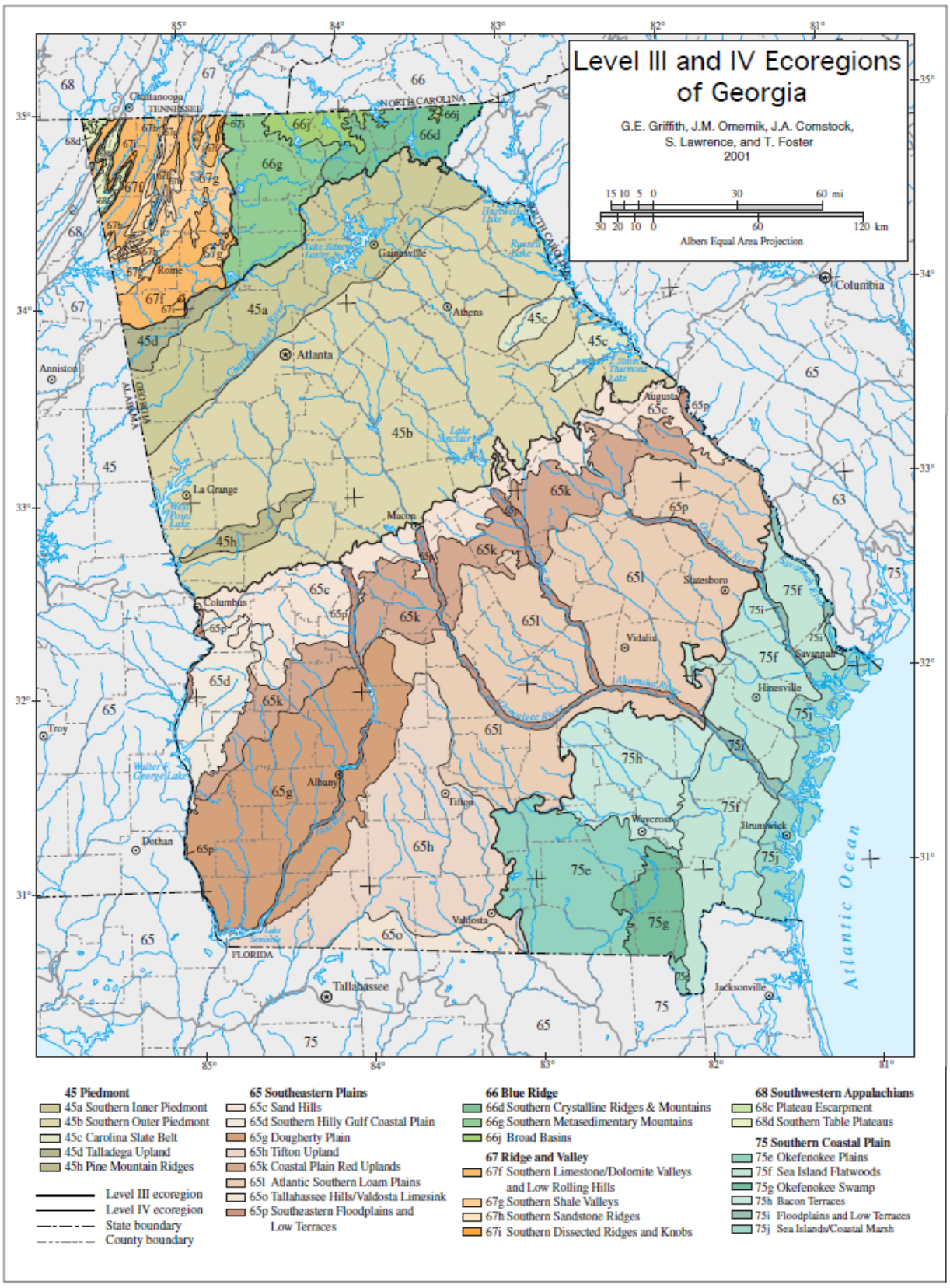
The Blue Ridge extends from Georgia northeast to Pennsylvania and consists of ridges, plateaus, and mountain peaks that are primarily forested slopes. It is one of the richest areas of biodiversity in the eastern United States. Northern Cherokee County and the eastern portions of Bartow, Gordon, and Murray Counties are located within this ecoregion.

The Ridge and Valley region is relatively low-lying but consists of roughly parallel ridges and valleys, and is approximately 50 percent forested. It is a transition area between the Blue Ridge and Southwestern Appalachians. All of Hamilton, Tennessee, and Catoosa, Whitfield, and Floyd Counties, as well as the majority of Bartow, Murray, and Gordon, in Georgia are in the Ridge and Valley ecoregion.

Preliminary data indicates that suitable habitat potentially occurs within the Project Area counties for 177 protected species that are federally listed and/or listed by the states of Georgia or Tennessee. The protected species are listed by county in **Table 3-25**. Inclusion in the list does not necessarily mean that the threatened or endangered species is found within the Project Area or within a Corridor Alternative. Rather, the list identifies the presence of suitable habitat for a given threatened or endangered species within a county as compiled in April 2014 from reports by the USFWS, iPaC (Information, Planning and Conservation System); Tennessee Department of Environment and Conservation (TDEC); Interactive Rare Species Database for Environmental Review; and GDNR, Rare Species and Natural Communities Data.

Critical habitat is the specific area occupied by a protected species at the time it is listed as a protected species on which are found the physical or biological features that are essential to the conservation of the species. Critical habitat in the Project Area is shown in **Figure 3-27**.

Figure 3-26: Ecoregions in Georgia



Source: GDNR website: http://www1.gadnr.org/cwcs/PDF/ga_eco_l3_pg.pdf. 2001

Table 3-25: Threatened and Endangered Species Habitat by County

County/ Counties	Common Name (*Genus species*)	Federal Status	State Status	I-75 Corridor	East Corridor	I-75/ Rome Corridor
Mammal						
Bartow, Catoosa, Cherokee, Floyd, Murray, Whitfield	Gray bat (*Myotis grisescens*)	Endangered	Endangered	✓	✓	✓
Bartow, Catoosa, Cherokee, Cobb, Floyd, Fulton, Gordon, Murray, Whitfield	Northern Long-Eared Bat (*Myotis septentrionalis*)	Proposed Endangered	N/A	✓	✓	✓
Bartow, Catoosa, Cherokee, Floyd, Hamilton, Murray, Whitfield	Indiana bat *(Myotis sodalis)*	Endangered		✓	✓	✓
Murray	Rafineque's big-eared bat (*Corynorhinus rafinesquii*)		Rare		✓	
Birds						
Catoosa	Red-cockaded woodpecker (*Picoides borealis*)	Endangered	Endangered	✓	✓	✓
Cherokee, Murray	Bald eagle (*Haliaeetus leucocephalus*)		Threatened	✓	✓	✓
Cobb, Fulton	Henslow's sparrow (*Ammodramus henslowii*)		Rare	✓	✓	✓
Fulton, Floyd, Hamilton	Bachman's sparrow (*Aimophila aestivalis*)		Rare (GA); Endangered (TN)	✓	✓	✓
Fulton, Hamilton	Peregrine falcon (*Falco peregrinus*)		Rare (GA); Endangered (TN)	✓	✓	✓
Hamilton	Bewick's wren (*Thryomanes bewicki*)		Endangered	✓	✓	✓
Invertebrates, Clams						
Bartow, Cherokee, Floyd, Gordon, Murray, Whitfield	Finelined pocketbook *(Lampsilis altilis)*	Threatened		✓	✓	✓
Bartow, Cherokee, Floyd, Gordon, Murray, Whitfield	Southern clubshell *(Pleurobema decisum)*	Endangered	Endangered	✓	✓	✓
Bartow, Cherokee, Floyd, Gordon, Murray, Whitfield	Triangular Kidneyshell *(Ptychobranchus greenii)*	Endangered		✓	✓	✓
Bartow, Floyd, Gordon, Whitfield	Interrupted Rocksnail *(Leptoxis foreman)*	Endangered	Endangered	✓	✓	✓
Clayton, Fulton	Purple bankclimber *(Eliptoideus sloatianus)*	Threatened		✓	✓	✓
Clayton, Fulton	Oval pigtoe *(Pleurobema pyriforme)*	Endangered		✓	✓	✓
Clayton, Fulton	Shinyrayed pocketbook *(Lampsilis subangulata)*	Endangered	Endangered	✓	✓	✓
Clayton, Fulton	Gulf moccasinshell *(Medionidus penicillatus)*	Endangered	Endangered	✓	✓	✓
Bartow, Cherokee, Floyd, Gordon, Murray, Whitfield	Alabama moccasinshell *(Medionidus acutissimus)*	Threatened	Threatened	✓	✓	✓
Bartow, Floyd, Gordon, Murray, Whitfield	Coosa moccasinshell (*Medionidus parvulus*)	Endangered	Endangered	✓	✓	✓

County/ Counties	Common Name (*Genus species*)	Federal Status	State Status	I-75 Corridor	East Corridor	I-75/ Rome Corridor
Bartow, Cherokee, Floyd, Gordon, Murray, Whitfield	Southern pigtoe (*Pleurobema georgianum*)	Endangered	Endangered	✓	✓	✓
Gordon, Murray, Whitfield	Georgia pigtoe *(Peurobema hanleyianum)*	Endangered	Endangered	✓	✓	✓
Hamilton	Pink mucket (*Lampsilis abrupta*)	Endangered	Endangered	✓	✓	✓
Hamilton	Dromedary pearlymussel *(Dromus dromas)*	Endangered	Endangered	✓	✓	✓
Hamilton	Orangefoot pimpleback *(Plethobasus cooperianus)*	Endangered	Endangered	✓	✓	✓
Hamilton	Cumberland bean *(Villosa trabalis)*	Endangered		✓	✓	✓
Hamilton	Fanshell *(Cyprogenia stegaria)*	Endangered		✓	✓	✓
Hamilton	Tan riffleshell *(Epioblasma florentina walkeri)*	Endangered		✓	✓	✓
Hamilton	Slabside pearly mussel (*Pleuronaia dolabelloides*)	Endangered		✓	✓	✓
Hamilton	Rough pigtoe (*Pleurobema plenum*)	Endangered	Endangered	✓	✓	✓
Cobb, Fulton	Delicate spike (*Elliptio arctata*)		Endangered	✓	✓	✓
Gordon, Floyd, Murray, Whitfield	Alabama spike (*Elliptio arca*)		Endangered	✓	✓	✓
Gordon, Murray, Whitfield	Upland combshell (*Epioblasma metastriata*)	Endangered	Endangered	✓	✓	✓
Gordon, Murray, Whitfield	Southern acornshell (*Epioblasma othcaloogensis*)	Endangered	Endangered	✓	✓	✓
Floyd, Gordon, Murray, Whitfield	Rayed kidneyshell (*Ptychobranchus foremaniaus*)	Endangered	Endangered	✓	✓	✓
Murray, Whitfield	Alabama creekmussel (*Strophitus connasaugaensis*)		Endangered	✓	✓	✓
Hamilton	Cumberland monkeyface (*Quadrula intermedia*)	Endangered	Endangered	✓	✓	✓
Fish						
Bartow, Cherokee, Cobb, Floyd, Fulton	Cherokee darter *(Etheostoma scotti)*	Threatened	Threatened	✓	✓	✓
Bartow, Cherokee, Floyd, Gordon, Murray, Whitfield	Amber darter *(Percina antesella)*	Endangered	Endangered	✓	✓	✓
Gordon, Murray	Goldline darter *(Percina aurolineata)*	Threatened	Threatened	✓	✓	✓
Bartow, Cherokee, Floyd, Fulton	Etowah darter *(Etheostoma etowhae)*	Endangered	Threatened	✓	✓	✓
Catoosa, Hamilton	Snail darter *(Percina tanasi)*	Threatened	Threatened	✓	✓	✓
Murray, Whitfield	Conasauga logperch *(Percina jenkinsi)*	Endangered	Endangered	✓	✓	✓
Murray, Whitfield	Blue shiner (*Cyprinella caerulea*)	Threatened	Endangered	✓	✓	✓
Hamilton	Laurel dace *(Chrosomus saylori)*	Endangered		✓	✓	✓

County/ Counties	Common Name (*Genus species*)	Federal Status	State Status	I-75 Corridor	East Corridor	I-75/ Rome Corridor
Bartow, Floyd, Gordon, Murray, Whitfield	Coldwater darter (*Etheostoma ditrema*)		Endangered	✓	✓	✓
Bartow, Cherokee, Gordon, Murray, Whitfield	Rock darter (*Etheostoma rupestre*)		Endangered	✓	✓	✓
Bartow, Cherokee, Floyd, Gordon, Murray, Whitfield	Lined chub (*Hybopsis lineapunctata*)		Rare	✓	✓	✓
Bartow, Cherokee, Gordon, Murray, Whitfield	Coosa chub (*Macrhybopsis sp.1*)		Endangered	✓	✓	✓
Catoosa	Blackside snubnose darter (*Etheostoma duryi*)		Rare	✓	✓	✓
Catoosa, Whitfield	Flame chub (*Hemitremia flammea*)		Endangered	✓	✓	✓
Catoosa	Ohio lamprey (*Ichtyomyzon bdellium*)		Rare	✓	✓	✓
Catoosa	Popeye shiner (*Notropis ariommus*)		Endangered	✓	✓	✓
Catoosa	Mountain madtom (*Noturus eleutherus*)		Endangered	✓	✓	✓
Catoosa	Stargazing minnow (*Phenacobius uranops*)		Threatened	✓	✓	✓
Catoosa, Whitfield	Dusky darter (*Percina sciera*)		Rare	✓	✓	✓
Cherokee, Murray, Whitfield	Freckleberry madtom *(Noturus* undescribed*)*		Endangered	✓	✓	✓
Cherokee, Gordon, Murray, Whitfield	Freckled darter (*Percina lenticular*)		Endangered	✓	✓	✓
Clayton, Cobb, Fulton	Highscale shiner (*Notropis hypsilepis*)		Rare	✓	✓	✓
Clayton	Halloween darter (*Percina crypta*)		Threatened	✓	✓	✓
Fulton	Bluestripe shiner (*Cyprinella callitaenia*)		Rare	✓	✓	✓
Floyd, Gordon, Murray, Whitfield	Trispot darter (*Etheostoma trisella*)		Endangered	✓	✓	✓
Floyd, Gordon, Murray, Whitfield	River redhorse (*Moxostoma carinatum*)		Rare	✓	✓	✓
Murray, Whitfield	Holiday darter (*Etheostoma brevirostrum*)		Endangered	✓	✓	✓
Murray, Whitfield	Burrhead shiner (*Notropis asperifrons*)		Threatened	✓	✓	✓
Murray, Whitfield	Bridled darter (*Percina kusha*)		Endangered	✓	✓	✓
Murray	River darter (*Percina shumardi*)		Endangered		✓	
Reptiles, Amphibians						
Catoosa	Eastern hellbender (*Crytobranchus alleganiensis*)		Threatened	✓	✓	✓
Floyd, Gordon, Murray, Whitfield	Alabama map turtle (*Graptemys pulchra*)		Rare	✓	✓	✓
Murray, Whitfield	Map turtle (*Graptemys geographica*)		Rare	✓	✓	✓
Hamilton	Tennessee cave salamander (*Gyrinophilus palleucus*)		Threatened	✓	✓	✓

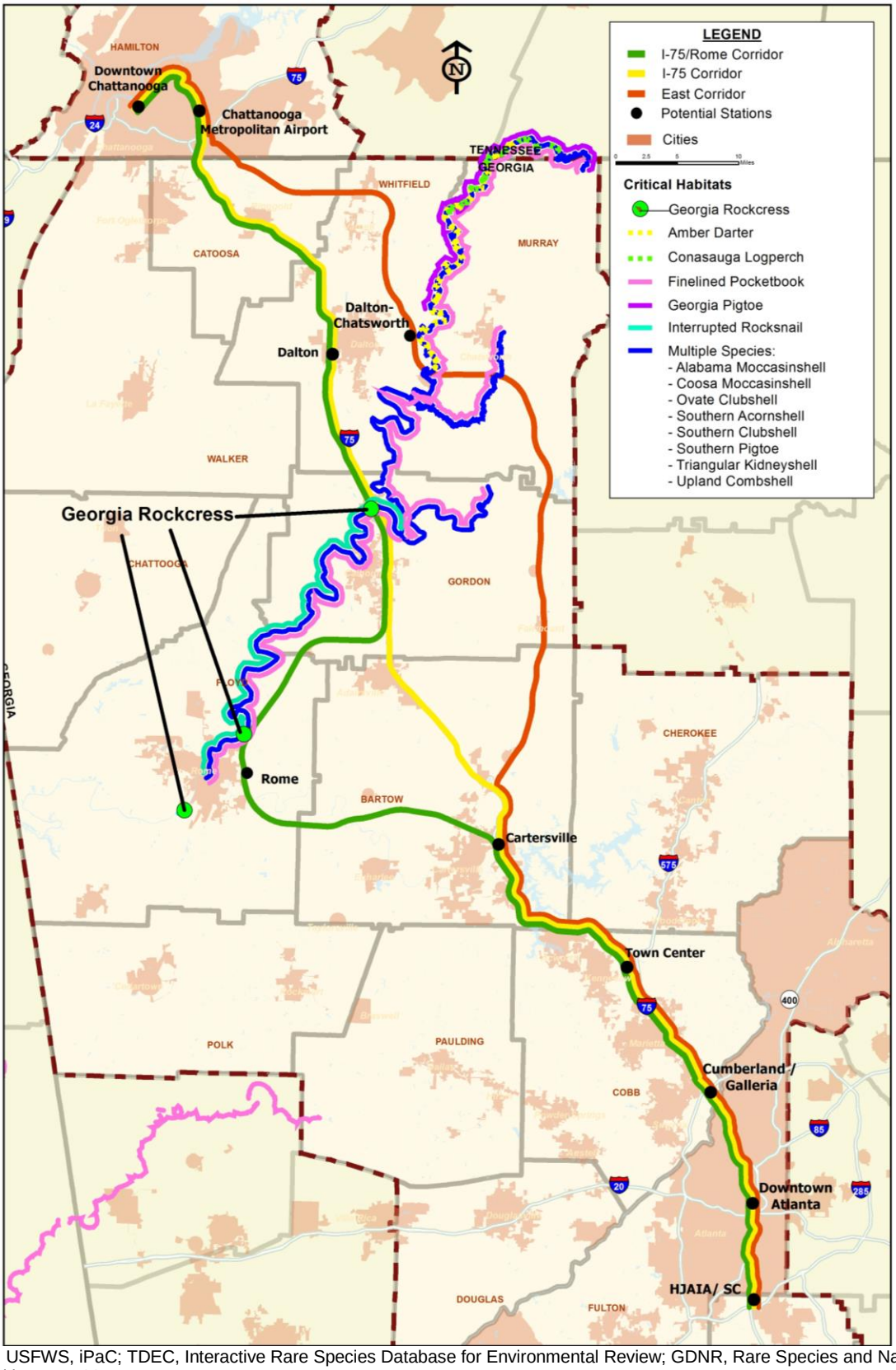
County/ Counties	Common Name (*Genus species*)	Federal Status	State Status	I-75 Corridor	East Corridor	I-75/ Rome Corridor
Other Animal						
Bartow, Cherokee	Etowah Crayfish (*Cambarus fasciatus*)		Threatened	✓	✓	✓
Catoosa, Hamilton	Chickamauga crayfish (*Cambarus extraneus*)		Threatened	✓	✓	✓
Catoosa, Floyd, Gordon, Whitfield	Cherokee clubtail (*Gomphus consanguis*)		Threatened	✓	✓	✓
Murray	Conasauga blue burrower (*Cambarus cymatilis*)		Endangered		✓	
Murray	Beautiful crayfish (*Cambarus speciousus*)		Endangered		✓	
Cobb, Fulton	Chatahoochee crayfish (*Cambarus howardi*)		Threatened	✓	✓	✓
Murray	Edmund's snaketail (*Ophiogomphus edmundo*)		Endangered		✓	
Plants						
Cherokee, Clayton, Cobb	Michaux's sumac *(Rhus michauxii)*	Endangered		✓	✓	✓
Bartow, Catoosa, Floyd, Gordon, Hamilton, Murray, Whitfield	Large-flowered skullcap *(Scuellaria montana)*	Threatened	Threatened	✓	✓	✓
Bartow, Cherokee, Floyd, Gordon, Murray, Whitfield	Tennessee yellow-eyed grass (*Xyris tennesseensis*)	Endangered	Endangered	✓	✓	✓
Cobb	Little ampianthus (*Amphianthus pusillus*)	Threatened		✓	✓	✓
Floyd	Mohr's Barbara button (*Marshallia mohrii*)	Threatened	Threatened			✓
Floyd	Alabama leather flower (*Clematis socialis*)	Endangered	Endangered			✓
Hamilton	Small whorled pogonia (*Isotria medeoloides*)	Threatened	Endangered	✓	✓	✓
Hamilton	Virginia spiraea (*Spiraea virginiana*)	Threatened	Endangered	✓	✓	✓
Clayton	Black-Spored quillwort (*Isoetes melanospora*)	Endangered		✓	✓	✓
Bartow	Seaside alder (*Alnus maritime*)		Threatened	✓	✓	✓
Bartow	American barberry (*Berberis Canadensis*)		Endangered	✓	✓	✓
Bartow, Floyd	Three-flowered Hawthorn (*Crataegus triflora*)		Threatened	✓	✓	✓
Bartow, Cherokee, Floyd, Hamilton	Fraser's loosestrife (*Lysimachia fraseri*)		Rare (GA); Endangered (TN)	✓	✓	✓
Bartow, Cobb	Monkeyface orchid (*Platanthera intergrilabia*)		Threatened	✓	✓	✓
Bartow, Floyd	Little river black-eyed Susan (*Rudbeckia heliopsidis*)		Threatened	✓	✓	✓
Bartow, Cherokee, Cobb, Fulton	Bay star-vine (*Schisandra glabra*)		Threatened	✓	✓	✓
Bartow, Cobb, Fulton, Murray	Georgia aster (*Symphyotrichum georgianum*)		Threatened	✓	✓	✓
Catoosa, Murray	Goldenseal (*Hydrastis canadensis*)		Endangered	✓	✓	✓

County/ Counties	Common Name (*Genus species*)	Federal Status	State Status	I-75 Corridor	East Corridor	I-75/ Rome Corridor
Catoosa, Floyd	Great Plains ladies-tresses (*Spiranthes magnicamporum*)		Endangered	✓	✓	✓
Catoosa	Glade meadow-parsnip (*Thaspium pinnatifidum*)		Endangered	✓	✓	✓
Cherokee	Golden slipper (*Cypripedium parviflorum*)		Rare	✓	✓	✓
Cherokee, Cobb, Fulton, Hamilton	Indian olive (*Nestronia umbellule*)		Rare (GA); Endangered (TN)	✓	✓	✓
Cherokee, Cobb, Fulton	Dwarf sumac (*Rhus michauxii*)	Endangered	Endangered	✓	✓	✓
Cherokee, Murray	Eastern turkeybeard (*Xerophyllum asphodeloides*)		Rare	✓	✓	✓
Clayton, Cobb, Fulton, Murray	Pink lady's-slipper (*Cyrpipedium acaule*)		Unusual	✓	✓	✓
Cobb	Sun-loving draba (*Draba aprica*)		Endangered	✓	✓	✓
Fulton, Murray	Yellow ladyslipper (*Cypripedium parviflorum*)		Rare	✓	✓	✓
Fulton	Sweet pinesnap (*Monotropsis odorata*)		Threatened	✓	✓	✓
Fulton	Barren strawberry (*Waldsteinia lobata*)		Rare	✓	✓	✓
Floyd, Gordon	Georgia rockcress (*Arabis georgiana*)	Candidate	Threatened	✓	✓	✓
Floyd	Purple milkweed (*Asclepias purpurascens*)		Rare			✓
Floyd	Yellow foxglove (*Aureolaria patula*)		Threatened			✓
Floyd	Nutmeg hickory (*Carya myristiciformus*)		Rare			✓
Floyd, Hamilton	Fremont's leather flower (*Clematis fremonti*)		Endangered	✓	✓	✓
Floyd	Whorled sunflower (*Helianthus verticillatus*)	Endangered	Candidate			✓
Floyd	Alabama warbonnet (*Jamesianthus alabamensis*)		Endangered			✓
Floyd	Michigan lily (*Lilium michiganense*)		Rare			✓
Floyd	Alabama snow wreath (*Neviusia alabamansis*)		Threatened			✓
Floyd	Allegheny spurge (*Pachsyandra procumbens*)		Rare			✓
Floyd	Barbed rattlesnake root (*Prenanthes barbata*)		Threatened			✓
Floyd	Royal catchfly (*Silene regia*)		Endangered			✓
Floyd	Dwarf trillium (*Trillium pusillum*)		Endangered			✓
Floyd	Limerock arrow-wood (*Viburnum bracteatum*)		Endangered			✓
Floyd, Gordon, Murray, Hamilton	Cumberland rose gentian (*Sabatia capitata*)		Rare (GA); Endangered (TN)	✓	✓	✓

County/ Counties	Common Name (*Genus species*)	Federal Status	State Status	I-75 Corridor	East Corridor	I-75/ Rome Corridor
Floyd, Gordon	Trailing meadowrue (*Thalictrum debile*)			✓	✓	✓
Murray	Broadleaf tickseed (*Coreopsis latifolia*)		Rare		✓	
Murray	Starflower (*Trientalis borealis*)		Endangered		✓	
Hamilton	Granite gooseberry (*Ribes curvatum*)		Threatened	✓	✓	✓
Hamilton	Menge's fame-flower (*Phemeranthus mengesii*)		Threatened	✓	✓	✓
Hamilton	Roundleaf's fame-flower (*Phemeranthus tertifolius*)		Threatened	✓	✓	✓
Hamilton	White-leaved leatherflower (*Clematis glaucophyllia*)		Endangered	✓	✓	✓
Hamilton	Tall larkspur (*Delphinium exaltatum*)		Endangered	✓	✓	✓
Hamilton	Florida hedge-hyssop (*Gratiola floridana*)		Endangered	✓	✓	✓
Hamilton	Canada Lily (*Lilium canadense*)		Threatened	✓	✓	✓
Hamilton	Wood lily (*Lilium philadelphicum*)		Endangered	✓	✓	✓
Hamilton	Narrow-leaved trillium (*Trillium lancifolium*)		Endangered	✓	✓	✓
Hamilton	Southern nodding trillium (*Trillium rugelii*)		Endangered	✓	✓	✓
Hamilton	Sharp's lejeunea (*Lejeunea sharpie*)		Endangered	✓	✓	✓
Hamilton	Compass plant (*Silphium laciniatum*)		Threatened	✓	✓	✓
Hamilton	Southern prarie-dock (*Siliphium pinnatifidum*)		Threatened	✓	✓	✓
Hamilton	Prarie goldenrod (*Solidago ptarmicoides*)		Endangered	✓	✓	✓
Hamilton	Southern morningglory (*Sylisma humistrata*)		Threatened	✓	✓	✓
Hamilton	Northern bush-honeysuckle (*Diervilla lonicera*)		Threatened	✓	✓	✓
Hamilton	Mountain bush-honeysuckle (*Diervilla sessilifolia*)		Threatened	✓	✓	✓
Hamilton	Yellow honeysuckle (*Lonicera flava*)		Threatened	✓	✓	✓
Hamilton	Small's stonecrop (*Diamopha smallii*)		Endangered	✓	✓	✓
Hamilton	White fringeless orchid (*Platantherea intergrilabia*)	Candidate	Endangered	✓	✓	✓

Sources: USFWS, iPaC; TDEC, Interactive Rare Species Database for Environmental Review; GDNR, Rare Species and Natural Communities Data 2014

Figure 3-27: Critical Habitats



Sources: USFWS, iPaC; TDEC, Interactive Rare Species Database for Environmental Review; GDNR, Rare Species and Natural Communities Data 2014

The Corridor Alternatives pass through nine general habitat types. Each is described below. Of particular sensitivity is the land protected by the *Etowah Aquatic Habitat Conservation Plan (Etowah* HCP*)*, which protects 10 imperiled aquatic species that live in the Etowah Watershed. The watershed is traversed by each Corridor Alternative in Bartow, Cherokee, and Cobb Counties and is traversed by I-75/Rome Corridor Alternative in Floyd County. The species include three federally listed fish species: Etowah darter (endangered), amber darter (endangered), and Cherokee darter (threatened). Under the Etowah HCP, local governments can pass ordinances and policies to ensure that development activities do not cause harm to these fish species. In return, developers enjoy reduced consultation times with USFWS, saving them money. Also, the local governments receive an Incidental Take Statement, which gives them, and the developers who adhere to the regulations, protection from prosecution if fish are accidentally killed. This ability streamlines and limits the coordination required of the developers with the USFWS, and limits prosecution for incidental impacts. The nine general habitat types are:

- High intensity urban - multi-family dwellings, commercial/industrial, prisons, speedways, junkyards, confined animal operations, roads, railroads, airports, runways, and utility swaths.
- Low intensity urban - Single-family dwellings, recreation, cemeteries, playing fields, campus-like institutions, parks, and schools.
- Deciduous forest - Forest composed of at least 75 percent deciduous trees in the canopy, and deciduous woodland. Twelve such areas, characterized by large contiguous tracts of forest land at least 100 acres in size, were identified as potential migratory bird habitats along the proposed alternatives.
- Evergreen forest - Evergreen forest, at least 75 percent evergreen trees, managed pine plantations, and evergreen woodland.
- Clearcut and sparse - recent clearcuts, sparse vegetation, and other early successional areas.
- Open water - Lakes, rivers, ponds, ocean, industrial water, aquaculture that contained water at the time of image acquisition.
- Row crop/pasture - Row crops, orchards, vineyards, groves, horticultural businesses, pasture, and non-tilled grasses.
- Forested wetland - Cypress gum, evergreen wetland, deciduous wetland, depressional wetlands, and shrub wetlands.
- Quarries/strip mines and rock outcrops - exposed rock and soil from industrial uses, gravel pits, landfills, rock outcrops, mountaintops, and barren land.

The vast majority of the Project Area falls into the high intensity urban and low intensity urban habitat type, while deciduous and evergreen forest are the next most common types. Other habitats mentioned above are encountered sporadically within each Corridor Alternative.

3.10.4 Environmental Consequences

3.10.4.1 No-Build Alternative

The No-Build Alternative assumes an HSGT system would not be built between Atlanta and Chattanooga. Passenger service between the two cities would consist of existing bus services, air travel, and continued automobile use along I-75, US 411, and US 41. In the No-Build Alternative, the impacts to biological resources could potentially occur if additional ROW is needed. As the geographic scope and nature of the No-Build Alternative projects is limited, the potential effects of the projects are likely to be limited to the area in which the projects are constructed. The potential for impacts to biological resources would be determined through the environmental processes for the already planned transportation improvements.

3.10.4.2 Corridor Alternatives

Within each of the Corridor Alternatives, the potential for direct impacts to protected species and their habitat will depend on the location of those species and habitat and the ability of GDOT and TDOT to refine the selected alternative to avoid or minimize impacts. Species and habitat in the vicinity of proposed station locations may be vulnerable to impacts resulting from land use changes that could be induced by the Project indirectly.

Table 3-26 shows the number and total acreage of threatened and endangered species habitats within the Corridor Alternatives. The I-75 and I-75/Rome Corridor Alternatives have the least potential to impact threatened and endangered species habitat; the East Corridor Alternative has the highest potential.

Table 3-26: Threatened and Endangered Species Habitats

Corridor Alternative	Number of Threatened and Endangered Species Habitats	Acres of Threatened and Endangered Species Habitat
I-75	21	1,907
East	38	2,158
I-75/Rome	21	1,817

Sources: USFWS in Athens, Georgia and Cookeville, Tennessee 2010; TDEC 2010; GDNR Natural Heritage Program 2010; and USDA Natural Resources Conservation Service in Tennessee and Georgia 2010

3.10.5 Potential Mitigation

GDOT and TDOT will examine appropriate and practicable steps to reduce the potential effects of the Project on threatened and critical habitats. These steps will be implemented through design refinements in consultation with state and federal agencies as appropriate. Minimization will typically focus on decreasing the footprint of the Project in and near these critical habitats and alignment shifts to avoid populations and/or habitat areas.

Potential mitigation strategies could include but not be limited to restricting construction activities during time of year that is sensitive to species (i.e., breeding, nesting, migration). Although the location of the proposed alignment along existing transportation corridors would minimize the additional impact to natural/undeveloped areas, there would still be potential for cumulative impacts. Additionally, some bird and bat species roost in transportation infrastructure (such as under bridges); therefore, mitigation strategies such as relocation or installation of new habitats of roosting areas within the existing transportation corridors would also be considered. Affected plants and trees could also be relocated.

3.10.6 Subsequent Analysis

If a Corridor Alternative is selected, the Tier 2 NEPA process will further evaluate the potential effects of the selected alternative on biological resources. The analysis will include a detailed field survey to determine the presence of federally and state-protected species in the selected alternative corridor, a spatial evaluation of both plant and animal species within the selected alternative corridor, as well as the identification of potential conflict areas. Additional detailed field survey will be undertaken by GDOT and TDOT to determine the presence of populations and/or habitat for federally protected and state-listed species. Habitat quality will also be considered. Activities within the Etowah Aquatic Habitat Conservation area will require review and approval by the local authorities implementing the Etowah HCP as well as coordination with USFWS. The Tier 2 NEPA process will also identify specific mitigation strategies to address remaining impacts on biological resources.

3.11 Secondary and Cumulative Effects

This chapter presents a preliminary evaluation of the potential secondary (or indirect) effects and cumulative (incremental) effects of the Project. This Tier 1 evaluation presents a generalized assessment of the potential secondary and cumulative effects based on Tier 1 concepts that would be further refined in the Tier 2 NEPA phase, once the scope and timing of improvement projects are better defined.

3.11.1 Legal and Regulatory Context

Secondary Effects

The CEQ NEPA regulations and FRA's Procedures require that there be an analysis of potential secondary effects for federally funded projects.[15] The CEQ implementing regulations require that an EIS include a discussion of preliminary environmental consequences, including "indirect effects and their significance" (40 CFR 1502.16). In addressing potential uncertainties in this type of analysis, the CEQ regulations require the EIS to make a "good faith effort" to identify and disclose indirect or secondary effects (CEQ 1981).

Cumulative Effects

The CEQ/NEPA regulations and FRA Procedures also require that an analysis of potential cumulative effects take place for federally funded projects. The CEQ/NEPA implementing regulations require that an EIS include a discussion of preliminary environmental consequences. According to 40 CFR 1508.7, this includes "the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions". In addressing potential uncertainties in this type of analysis, CEQ requires the EIS to make a "good faith effort" to identify and disclose cumulative effects (CEQ 1981).

3.11.2 Methodology

Secondary Effects

CEQ defines secondary effects as "impacts which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." Secondary effects could include growth-inducing impacts and other impacts related to changes in the pattern of land use, population density or growth rate, and related impacts on air and water and on other natural systems, including ecosystems" (40 CFR 1508.8(b)). An example of a secondary effect is a new HSGT station built in an undeveloped area and commercial and residential uses, which otherwise would not have been built, develop in the station area. However, the provision of HSGT does not in and of itself cause secondary development to occur.

Secondary effects typically include impacts to human and natural systems from changes in land use patterns and growth induced by proposed public and private development plans. Assessing the potential secondary effects involves defining the scope and geographical boundaries for the analysis. The Project Team analyzed the potential secondary effects on a broad scale due to the general nature of the Project description. Consideration of local area secondary effects takes place as part of subsequent analysis following greater definition of the alignment and station areas, construction footprints, and the amount of right-of-way needed.

[15] FRA's Procedures note these as "indirect" impacts (64 FR 28554).

Cumulative Effects

Cumulative effects are changes to the environment brought about by an action in combination with other past, present and future human actions. In simplest terms, analyzing cumulative effects means considering and accounting for the impacts of a proposed action in the context of the existing transportation system and improvements to it that are reasonably foreseeable in the vicinity. FRA defines "reasonably foreseeable" as projects that are both planned and funded.

This Tier 1 DEIS analyzes the potential cumulative effects of the proposed Project on a broad scale and at a conceptual level. The purpose of this analysis is to identify the potential cumulative effects of the Corridor Alternatives in combination with other major improvements in the Project Area. The results presented here are qualitative. The Project Sponsor will consider the site-specific cumulative effects of the Preferred Corridor Alternative at a more detailed level, including development effects, as part of the subsequent Tier 2 analysis.

Improvement projects included in the cumulative effects analysis are transportation projects in or near the Project Area approved for implementation under the No-Build Alternative. The project list focuses on those that, when combined with the Atlanta to Chattanooga HSGT Project, could contribute to cumulative effects. **Section 2.3.1** lists the projects. This analysis only considered transportation improvement projects. Land developments of regional impact would be included during subsequent Tier 2 analysis of secondary and cumulative effects.

3.11.3 Potential for Secondary and Cumulative Effects

The potential for secondary and cumulative effects exists for all Corridor Alternatives under consideration. The effects associated with the Corridor Alternatives would primarily be attributable to transportation and development projects and secondary development that may occur at station areas. At this level of analysis, the results for secondary and cumulative effects would essentially be the same for all Corridor Alternatives considered. More in-depth evaluations of these topic areas will take place during subsequent analysis in the Tier 2 NEPA phase, following the selection of a Build Alternative and determination of locations for proposed facilities.

3.11.3.1 No-Build Alternative

Under the No-Build Alternative, implementation of the proposed HSGT Project would not happen, therefore, no new secondary or cumulative effects would occur beyond those attributed to other projects. The No-Build Alternative would not provide the improved level and quality of HSGT service between Atlanta and Chattanooga. The primary transportation mode between these cities would continue to be automobile travel. The anticipated result would be increased traffic congestion, additional automobile crashes, and increases in vehicular pollutant emissions, and the associated degradation of air quality associated with congested roadways.

3.11.3.2 Corridor Alternatives

Secondary Effects

A Corridor Alternative would result in secondary effects some time *after* the Project is built, or some distance from the location of the Project. Secondary effects attributable to the Atlanta to Chattanooga HSGT Project would result mainly due to the new HSGT transportation system accessibility provided at the proposed station areas. This would be due to residential and commercial development potentially induced by the Project that could occur on undeveloped land within a three-to-five-mile radius of access points to the proposed service. The proposed stations would serve as those access points. Implementing HSGT within a corridor does not, in and of itself, cause secondary development to occur. Typically, local jurisdictions via their land use plans may allow more intense land development to occur around such transportation improvements, however development may occur regardless of new HSGT station construction. More precise station location decisions would result via coordinated efforts with local city and county elected officials and planners

to help ensure that the sites and opportunities presented for growth development are suitable to handle increased traffic and other demands.

Table 3-27 presents the potential positive and negative secondary effects of the Corridor Alternatives. The table includes those resource areas where impacts are most likely to occur. It is important to note that the corridor alternatives presented in this Tier 1 DEIS are not precisely defined alignments, and that the route for the selected alternative would be further refined during subsequent analysis. Thus, potential secondary effects presented here are overviews of likely impacts expected along the three Corridor Alternatives. Actual secondary effects may be greater or lesser, which will be determined following the selection of a corridor alternative and precise alignment definition.

Table 3-27: Potential Secondary Effects of the Corridor Alternatives

Resource	Potential Secondary Effect
Transportation	• Increased traffic from potential induced development around station locations • Bus routes modifications to accommodate changes in traffic patterns resulting from the locations of stations
Air Quality	• Localized air quality impacts from increased traffic due to potential induced development
Noise	• Noise impacts from increased traffic due to potential induced land development
Socioeconomics and Economic Development	• Population and employment increases due to potential induced development • Potential positive effect on business sales and revenues • Economic development around HSGT stations, with increased employment opportunities and increased tax revenues
Communities and Environmental Justice	• Effects on communities due to change in development and property values, and associated traffic impacts due to induced development • Increased need for educational, health care, and recreational facilities due to potential induced development
Parklands, Wildlife Refuges, Recreation Areas	• Potential wildlife habitat impacts from induced development • Potential noise and visual effects
Cultural Resources	• Induced development may have the potential to affect cultural resources although any impacts would likely be required to be mitigated, including potential provision of historic mitigation • Potential noise and visual effects
Water Resources	• Indirect effects on surface waters, aquifers, wetlands, and floodplains due to induced development, although the extent of the conversion would depend on the siting and location of development and regulatory mechanism to minimize/mitigate any fills
Biological Resources	• Potential wildlife habitat effects from induced development. The extent of this effect is dependent on the siting, location, and nature of the development and measures to minimize/mitigation any effects

Cumulative Effects

A general description of the potential types of cumulative effects on resources is in **Table 3-28**. The effects summarized in **Table 3-28** would apply to all Corridor Alternatives.

3.11.3.3 Potential Mitigation Measures

As described above, implementation of any of the Corridor Alternatives, when considered in the context of implementation of other transportation projects, may have effects on air quality, cultural resources, land cover, water and biological resources, and transportation. For many of the negative effects identified, mitigation measures could minimize the overall indirect and cumulative effects. Mitigation strategies will be considered in the Tier 2 NEPA phase.

Table 3-28: Potential Cumulative Effects of the Corridor Alternatives

Resource	Potential Cumulative Effect
Transportation	• Potential cumulative traffic impacts that could create congestion on surface streets leading to and from proposed stations, which would be more pronounced at proposed station locations in downtown Atlanta and Chattanooga • Project would contribute to a better overall transportation network that would function to more effectively and efficiently meet the needs of commuters, travelers, residents, and businesses within the Project Area • Potential to change how people travel across the Project Area, reducing the share of trips by automobile, air, and intercity bus modes as travelers switch to HSGT service
Air Quality	• Potential positive impacts on regional air quality by contributing to the development of a more complete multi-modal transportation system within the Project Area and encouraging changes in long-term travel behavior by attracting riders away from long-distance auto and short-term air travel, as well as through the advocacy for more energy efficient modes of transport that improve air quality
Noise	• Localized cumulative noise impacts could occur at station locations primarily in urban areas with higher densities of sensitive receptors
Socioeconomics and Economic Development	• Population and employment around the proposed station locations may increase above the current projections. This would influence the density, employment mix, design and timing of commercial development • Potential also exists for housing needs to increase to accommodate the likely increases in population and employment
Communities and Environmental Justice	• Potential cumulative effects related to quality of life, which could include noise and vibration impacts, barrier effects, aesthetics, and safety • Benefit from improved mobility options provided by all transportation projects under construction or planned within the Project Area
Parklands, Wildlife Refuges, and Recreation Areas	• Potential cumulative impacts could include proximity effects, such as noise impacts, on the resource
Cultural Resources	• Potential cumulative effects would be primarily due to increased noise and vibration as a result of new HSGT service
Water Resources	• Possible cumulative effects due to increased impervious ground surfaces, stormwater run-off and water quality
Biological Resources	• Possible cumulative effects due to land use conversion resulting in habitat loss

3.11.3.4 Subsequent Analysis

Subsequent Tier 2 analysis will further evaluate the potential for secondary land development and cumulative effects. The Project Sponsor will reevaluate the potential secondary effects of the Project in the context of current market forces, and existing and proposed developments near the stations. The analysis would also define the specific cumulative effects the Project may have on key resources when considered with other past, present, and future actions. Coordination with state and federal resource agencies and metropolitan planning organizations would provide more specific information about local projects for consideration.

4.0 PRELIMINARY SECTION 4(F) EVALUATION

This preliminary Section 4(f) Evaluation has been prepared to comply with the US Department of Transportation (USDOT) Act of 1966 (49 USC § 303), hereinafter referred to as "Section 4(f)," and FRA's Procedures. Additional guidance was taken from the Federal Highway Administration's (FHWA) implementing regulations (23 CFR Part 774).

4.1 Summary Statement

The preliminary Section 4(f) Evaluation describes the potentially affected properties identified in **Sections 3.7** and **3.8** of the Tier 1 DEIS that are protected under Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended, and documents whether those potential impacts have a bearing on the decision to be made in the Tier 1 FEIS/ROD. Specifically, the Project could result in a Section 4(f) use of one or more properties. FRA will make determinations of use during Tier 2 analysis if a specific alignment(s) is identified and refined within the wide, selected Tier 1 buffer area. The identified potential uses do not have a bearing on the decision to be made in the Tier 1 FEIS/ROD because they are not definitive in this preliminary evaluation. Each corridor provides the opportunity during Tier 2 for FRA, GDOT, and TDOT to examine a full range of specific, project level alignment alternatives within the selected corridor, including avoidance alternatives as required to satisfy Section 4(f). The tiered approach allows FRA not to preclude the ability to identify, evaluate and ultimately select a specific alignment for the HSGT project that satisfies Section 4(f) in addition to NEPA. The wide buffer areas used in Tier 1 give FRA, GDOT, and TDOT the flexibility to determine and refine one or more alignments within the selected buffer area, and to avoid or minimize impacts and uses of resources including Section 4(f) properties during Tier 2. Opportunities to minimize harm to Section 4(f) properties in Tier 2 are not precluded by Tier 1 decision-making.

4.2 Methodology

For purposes of this preliminary evaluation, the properties identified in this chapter are within a 1,000-foot wide buffer along each Corridor Alternative. For this Tier 1 DEIS, the Corridor Alternatives are examined within corridors 1,000 feet in width, which allows for variation in the horizontal alignments to be determined during the Tier 2 NEPA phase and is sufficiently wide to evaluate the potential environmental issues associated with the alternatives. No alignments have been defined in this Tier 1 DEIS. If a Corridor Alternative is selected, the wide buffer areas used in this Tier 1 DEIS analysis give FRA, GDOT, and TDOT the flexibility to determine and refine one or more alignments within the selected Corridor Alternative, and to avoid or minimize impacts and uses of resources including Section 4(f) properties during the Tier 2 phase of the project. For more detail on the methodology used to identify these properties, refer to **Sections 3.7** and **3.8**.

4.3 Legal and Regulatory Context

Section 4(f), as amended, protects public parks and recreational lands, wildlife and waterfowl refuges, and properties of national, state, or local significance that have been determined eligible or listed in the National Register of Historic Places (NRHP) from use by transportation projects, unless there are no prudent and feasible alternatives to their use. The use of such resources can be approved by FRA only if there is no feasible and prudent avoidance alternative and only after the proposed project is determined to have included all possible planning to minimize harm. Section 4(f) requires the U.S. DOT to seek concurrence from the U.S. Department of the Interior before making these findings.

This preliminary evaluation is consistent with the FHWA implementing regulation (23 CFR 774.7(e)) regarding tiered EIS documents. In a tiered EIS, the detailed information necessary to complete a Section 4(f) approval may not be available. In such cases, the potential impacts that a proposed

project could have on Section 4(f) properties are identified along with a determination as to whether those potential impacts have a bearing on the Tier 1 decision.

4.4 Affected Environment

4.4.1 Section 4(f) Properties

Table 4-1 presents the number of historic properties, archaeological sites, cemeteries, and public parks that may be protected under Section 4(f) within the 1,000-foot buffer of each Corridor Alternative. They are described further in the following sections and in **Sections 3.7 and 3.8** of this Tier 1 DEIS.

Table 4-1: Numbers of Section 4(f) Properties with 1,000-foot Buffer of Corridor Alternatives

Corridor Alternative	Historic Properties	Archaeological Sites	Cemeteries	Public Parks
I-75	26	32	4	21
East	66	46	3	19
I-75/Rome	33	38	5	25

Sources: NRHP documentation on file with the Tennessee Historical Commission - Tennessee SHPO 2010; Georgia SHPO 2010; Georgia DNR survey 2010; Coosa Valley Regional Development Center 2010; Northwest Georgia Regional Commission 2010; ARC 2010; NAHRGIS database 2010; GHBS 2010; and Regional and local historical societies and county planning and zoning departments in Bartow, Catoosa, Cherokee, Clayton, Cobb, Douglas, Floyd, Fulton, Gordon, Hamilton, Murray, Paulding, Polk, and Whitfield counties; U.S. Home Town Locator 2010; Google Earth 2010; Georgia DNR 2010

Note: The Historic Properties column includes all historic properties provided by the sources listed above. Further research on the cultural resources located in the study area will be conducted in the Tier 2 NEPA process.

4.4.1.1 Historic Sites

The eligibility of potential historic sites and properties for the NRHP has not been determined in the Tier 1 DEIS. Sites listed in the NRHP, sites determined eligible for listing in the NRHP, sites potentially eligible, and unevaluated sites that have been identified through a literature review are listed in **Tables 3-18 and 3-19 in Chapter 3**. Note that in some cases, a cemetery, after evaluation, may be listed on the NRHP as a historic site or as an archaeological site. Cemeteries are listed in **Table 3-21 of Chapter 3**. These tables present all properties identified within a 1,000-foot buffer area of the Corridor Alternatives. During the Tier 2 NEPA process, an Intensive Cultural Resources Survey will be conducted and the findings will be reviewed through consultation with the SHPO of each state, in accordance with Section 106 of the NHPA, to determine the eligibility of all sites that have not been previously listed.

4.4.1.2 Archaeological Sites

Section 4(f) also applies to archaeological sites that are listed or eligible for listing in the NRHP. Section 4(f) does not apply to archaeological sites where the value relates to information that can be gathered through data recovery or the value is minimal for preservation in place. Additional archaeological studies will be conducted in Tier 2 NEPA analysis, including an Intensive Cultural Resources Survey and consultation with the SHPO of each state, to fully determine eligibility and determine whether sites worthy of preservation need to be preserved in place. **Table 3-20 in Chapter 3** lists the number of potential archaeological sites and their respective NRHP status in the buffer of each Corridor Alternative.

4.4.1.3 Public Parks

Section 3.7 of the Tier 1 DEIS discusses the parks, wildlife refuges, and recreation properties within the 1,000-foot buffer areas of the Corridor Alternatives. **Table 3-17 in Chapter 3** presents the public

parks, recreational facilities, and conservation/wildlife refuges within the 1,000-foot buffer of each Corridor Alternative.

4.5 Potential Uses of Section 4(f) Properties

Potential "uses" of Section 4(f) properties are defined as follows:

- A permanent use occurs when a transportation project incorporates the resource into the facility and includes both fee simple acquisition and permanent easements.
- A temporary adverse use occurs when a transportation project temporarily occupies a portion of the resource, which results in an adverse condition.
- A constructive use or proximity effect occurs when the resource is not taken by right-of-way (ROW). Proximity effects would compromise the activities or features that qualify the property as a Section 4(f) resource.

FRA, GDOT, and TDOT can determine that certain uses have a *de minimis* impact on covered properties, provided the official with jurisdiction over the property agrees in writing that the impact is minor and will not affect the activities, features, or attributes of the property.

If a Corridor Alternative is selected, a Section 4(f) use of one or more properties listed above could occur because of the Project. FRA, GDOT, and TDOT will make determinations of use during Tier 2 analysis when a specific alignment(s) is identified and refined within the wide, selected Tier 1 buffer area. The identified potential uses do not have a bearing on the decision to be made in the Tier 1 FEIS/ROD because the key factors identified in the EIS relate to other issues - ridership, cost, and natural resources effects- that would not affect Section 4(f) resources. The wide buffer areas used in Tier 1 give FRA, GDOT, and TDOT the flexibility to determine and refine one or more alignments within the selected buffer area, and to avoid or minimize impacts and uses of resources including Section 4(f) properties during Tier 2.

4.6 Avoidance Analysis, Least Overall Harm Analysis, and All Possible Planning to Minimize Harm

The information presented in **Table 4-1** shows that the East Corridor Alternative has the highest number of cultural resources, while having the fewest number of parks. The I-75 and I-75/Rome Corridor Alternatives are generally equivalent with fewer cultural resources in number and a larger numbers of parks compared with the East Corridor Alternative.

Because the configuration of an alignment has not been determined at this stage in the development of the proposed project, it would be premature to identify specific alternatives to avoid Section 4(f) properties because additional data are needed on the Section 4(f) properties and additional design detail is needed for the Preferred Corridor Alternative. During the Tier 2 NEPA phase, avoidance of uses of these resources would be made possible in many cases through minor redesign or narrowing of the disturbance limits. Additional studies and coordination with the SHPOs of Georgia and Tennessee, appropriate tribes and other Section 106 consulting parties are needed to determine what historic and archaeological resources are eligible for listing in the NRHP and which archaeological sites are worthy of preservation in place. Additional research also will be needed to confirm the Section 4(f) status of parks, particularly for multiple use lands, or where the ownership status is unclear.

More detailed design is needed to further define both the ROW requirements and the land that would be required during project construction. As design is advanced and its effects are studied in a Tier 2 NEPA document, FRA, GDOT, and TDOT will complete the Section 4(f) evaluation by determining

use(s) and applying the following evaluations as appropriate: *de minimis* impact, prudent and feasible avoidance alternative analysis, least overall harm analysis, and all possible planning to minimize harm.

4.7 Preliminary Coordination

Early coordination letters were sent to the SHPOs of Georgia and Tennessee to collect information on existing cultural resources in the Project Area (see **Appendix E**). However, coordination as required by Section 106 to determine the eligibility of cultural resources and effects of the proposed project on those resources has not been undertaken. If a Corridor Alternative is selected, coordination with the SHPOs and other officials with jurisdiction will occur during Tier 2 analysis when FRA, GDOT, and TDOT will determine and refine one or more alignments within the selected Tier 1 Corridor Alternative buffer area, and determine project-related uses of protected properties.

4.8 Preliminary Section 4(f) Approvals and Subsequent Analysis

The following activities will be conducted during Tier 2 NEPA analysis to enable a Section 4(f) evaluation to be completed:

- Prepare detailed plans and profiles of the Preferred Corridor Alternative.
- Prepare Phase I Intensive Cultural Resource Surveys and coordinate with Georgia and Tennessee SHPOs and other consulting parties to determine resource eligibility for listing in the NRHP. These efforts, in accordance with Section 106 of the NHPA, will be used to determine whether and where a use of protected Section 4(f) property(s) would occur.
- Coordinate with officials with jurisdiction over other potentially affected 4(f) properties to confirm property boundaries and to identify planned facilities.
- Determine, through more detailed design and coordination with officials with jurisdiction, if a 4(f) property can be avoided or use minimized, including analysis of alignment refinements, retaining walls, steeper slopes or other design techniques. This activity also includes an analysis to identify the type of use of each protected property (temporary, permanent, constructive), if any, that would occur, as well as determine whether a permanent use can meet the criteria for a *de minimis* impact.
- Coordinate with the public to obtain their input on the potential uses.
- Conduct a least overall harm analysis if more than one alternative is developed as part of the Tier 2 NEPA document and no reasonable and prudent alternative to using a Section 4(f) property exists. The least harm analysis will determine which alternative would cause the least overall harm in light of the Section 4(f) statute's preservation purposes.
- Develop appropriate mitigation measures for any unavoidable uses of Section 4(f) properties. Undertake and document all possible planning to minimize harm to each property where a 4(f) property cannot be avoided.

The Project Team does not anticipate that this Section 4(f) determination in Tier 2 will have an effect on decisions made during Tier 1. The Tier 1 corridor level analysis is specifically designed to focus decision-making on selecting the best corridor for the Project based on the key factors at the Tier 1 stage: ridership, cost, and parklands and cultural resource effects, and other areas where readily available data are available for the broad level analysis that was conducted in this Tier 1 DEIS. If a Corridor Alternative is selected, the wide buffer areas used in Tier 1 give FRA, GDOT, and TDOT the flexibility to determine and refine one or more alignments within the selected buffer area, and to avoid or minimize impacts and uses of resources including Section 4(f) properties during Tier 2.

5.0 COSTS AND FUNDING

5.1 Introduction

This chapter provides preliminary, order of magnitude capital cost estimates to build the Corridor Alternatives. It also provides initial estimates of projected operating revenue and discusses the funding sources by which the project sponsor may construct and operate the potential Corridor Alternative ultimately selected, if one is selected. Detailed capital, operating and maintenance cost development, operating surpluses and deficits, and financial capacity analysis are deferred to future analysis.

5.2 Estimated Capital Costs

The following describes the estimated cost to design and construct each of the three Corridor Alternatives proposed for the Atlanta-Chattanooga HSGT system. The preliminary capital cost estimates were categorized into the Federal Railroad Administrations (FRA's) Standard Cost Categories (SCCs) for Capital Projects/Programs, described below, and estimated by determining the appropriate unit costs and the cost element quantities from conceptual alignment and station option plans prepared for each proposed Corridor Alternative.

- SCC 10 – Track Structures and Track. This category consists of:
  - Track items such as double/single track on at-grade, structure, tunnels, and retained section.
  - Earthwork – site preparation, cut, fill, erosion control, fencing and special drainage.
  - Structures, tunnels, walls – viaducts and bridges (standard, high, and long span), water crossings, tunnels (tunnel boring machine, mined, soft ground, cut and cover), crossovers, trench, retaining walls, containment walls, mechanical and electrical for tunnels.
  - Grade separations – over and under crossings in urban and minor street closures.
- SCC 20 – Stations, Terminals, Intermodal. This category consists of terminal stations, line stations (two/four track), fare collection, vertical circulation, site development, parking, etc.
- SCC 30 – Support Facilities: Yards, Shops, Administrative Buildings. This category consists of vehicle storage and maintenance facilities and associated tracks, maintenance and operations buildings, site development, and parking.
- SCC 40 – Sitework, Right-of-Way, Land, Existing Improvements. This category consists of rail and utility relocation/removal, real property acquisition and owner/business relocation, etc. Environmental mitigation – mitigation of environmental impacts such as impacts to wetlands, parkland, biological resources, wildlife habitat, communities, and hazardous material cleanup. Environmental mitigation is estimated as three percent of construction costs and based on the average total cost of mitigation.
- SCC 50 – Communications and Signaling. This category consists of system elements including signals, communication, wayside protection, traction power, and distribution.
- SCC 60 – Electric Traction. Included within SCC 50 for this Tier 1 DEIS.
- SCC 70 – Vehicles. Costs associated with the vehicles and equipment needed to operate the service are not included in this Tier 1 DEIS. They will be addressed in future NEPA document(s).
- SCC 80 – Professional Services. This category consists of program implementation costs added as a percentage (25.5 percent) of construction and procurement costs. It includes preliminary engineering, environmental review, design management, final design, procurement, construction management, agency costs, risk management and testing, and pre-revenue operations.

- SCC 90 – Unallocated Contingency. This category consists of a cost added as a percentage (25 percent) of overall costs to account for uncertainties at the program level of analysis. It is based on past experience for projects at an early stage of definition.
- SCC 100 – Financial Charges**.** Included within SCC 80 for this Tier 1 DEIS.

More detailed cost estimates will be developed during subsequent Tier 2 analysis.

The preliminary capital cost estimates for the Corridor Alternatives are presented in **Table 5-1**. Costs were estimated for year 2014 dollars and are in constant dollars. These costs reflect those elements associated with planning, design, and construction of the alternatives and reflect the physical features associated with potential alignments including stations, track and bridge improvements, and other infrastructure. The level of engineering is of a conceptual nature at this stage of project development and uses steel-wheeled track and system elements costs. Future analysis will differentiate between steel-wheeled and Maglev train technologies, which typically carry higher capital costs than steel-wheel. Maglev systems require tighter construction tolerance allowance, larger radius curves, and longer point of vertical curves versus steel wheel locomotives. Each of these brings a higher cost in materials, field labor, and design time. Maglev also requires electrification costs that are above those of steel wheel locomotives. Maintenance facility costs for diesel exhaust must be accounted for in the design and construction of the facility since it must either be captured and released outside of the building for interior air quality purposes or diluted by high volume exhausting. Likewise, Maglev requires a shop and yard electrification system.

Table 5-1: Estimated Capital Costs

Cost Elements	Corridor Alternatives (Millions in 2014$)		
	I-75	East	I-75/ Rome
SCC 10 - Track Structures and Track			
Track	378	370	396
Earthwork	241	1,978	911
Structures, Tunnels, Walls	3,059	2,574	2,843
Grade Separations	341	124	333
SCC 20 - Stations, Terminals, Intermodal	607	586	627
SCC 30 – Support Facilities: Yards, Shops, Administrative Buildings	154	154	154
SCC 40 – Sitework, Right-of-Way, Land, Existing Improvements			
Rail and Utility Relocation	53	32	48
Right-of-Way	282	306	394
Right-of-Way for Stations and Site Development	25	30	30
SCC 50 – Communications and Signaling and SCC 60 – Electric Traction	339	366	403
Subtotal of Construction Cost	**5,480**	**6,518**	**6,137**
SCC 90 – Unallocated Contingency (25% of Construction)	1,370	1,629	1,534
Subtotal of Construction Cost w/Contingencies	**6,849**	**8,147**	**7,671**
SCC 80 – Professional Services and **SCC 100 – Financial Charges** (25.5% of construction and procurement)	1,747	2,078	1,956
Total Construction Cost, Contingencies, Vehicles and Program Implementation	**8,596**	**10,225**	**9,627**
Environmental Mitigation - 3% of construction cost (SCC 40)	164	196	184
Total Project Cost	**$8,760**	**$10,420**	**$9,811**

Source: Atlanta to Chattanooga HSGT Project Team 2014

Note: Figures may be subject to rounding discrepancies.

5.3 Operating and Maintenance Costs

GDOT and TDOT have deferred the development of detailed operating and maintenance (O&M) cost estimates to future Tier 2 NEPA analysis when the preferred mode will be selected. The O&M cost estimates of the Preferred Alternative will be based on daily train miles, operating speed, travel time, energy consumption, station configuration, maintenance and storage facilities, assumed operating frequencies, labor time requirements and staff salaries, and routine maintenance schedules.

5.4 Estimated Operating Revenues

Table 5-2 presents the estimated daily and annual operating revenues for each of the Corridor Alternatives. The basis for operating revenues is ridership forecasts, which are generated from the ridership forecasting model. Ridership forecasts are based upon proposed routes and proposed station stop locations, operating speeds and travel times, service frequencies, and fares. Ridership forecasts were not sensitive to a specific type of train technology or associated passenger capacity limitations; therefore, ridership and revenues are equivalent between Maglev and steel-wheeled technology options.

Table 5-2: Estimated Annual Operating Revenue for the Year 2040

Year 2040 Revenues	Corridor Alternative		
	I-75	East	I-75/Rome
Daily	$420,300	$260,300	$519,300
Annual*	$136,597,500	$84,597,500	$168,772,500

Source: Atlanta to Chattanooga HSGT Project Team 2014

*Assumed 325 revenue days per year to account for lower ridership during weekends and holidays.

For the purposes of estimating operating revenues for this Tier 1 DEIS, an assumed fare structure was used that allows for consistent comparison across alternatives. A distance-based fare of $0.75 per mile (2014$) and a $14.00 (2014$) boarding fee were assumed for inter-city service. For intra-Atlanta trips, a flat $14.00 fare was assumed, with an additional $7.00 for trips to/from HJAIA airport (all monetary values in 2014$). These fares were developed for testing purposes and not intended to be either revenue-maximizing or ridership-maximizing. They were calculated using similar values to other high-speed intercity rail projects around the country. Further refinement of fare structures will occur during subsequent study and policymaking processes.

5.5 Potential Funding Sources

The implementation of a state supported project to provide the proposed HSGT service will require a well thought out funding strategy. This section describes federal, state, local, and other funding options that could help fund the selected alternative (see **Table 5-3**). The funding strategy will need to address two key areas: 1) capital funding for infrastructure and train equipment and 2) operating support if required, to supplement ticket revenues.

The basic funding model for the proposed HSGT service in the U.S. is to use public sector grant funds to capitalize the proposed project's infrastructure needs to implement a new service or achieve a desired level of service. Public sector capital funding is generally required for the following:

- Project development activities including: planning, environmental compliance (NEPA), preliminary engineering (PE), and final design (FD);
- Infrastructure construction: track, signals, and stations; and
- Acquisition of operating equipment and construction of maintenance facilities.

Table 5-3: Federal, State, and Local Funding and Financing Sources

Federal Capital Grant Programs
FRA High Speed and Intercity Passenger Rail Program (Sections 301, 302, 501 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA))
Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program
Federal Financing and Loan Programs
USDOT Transportation Infrastructure Finance and Innovation Act (TIFIA)
Railroad Rehabilitation and Improvement Financing (RRIF)
FHWA Section 130 Highway Railroad Grade Crossing Safety Program
FRA High Speed Rail Crossing Improvement Program
FHWA Surface Transportation Program
FHWA CMAQ Funds
FHWA Grant Anticipation Revenue Vehicle Bonds
IRS Tax Exempt Private Activity Bonds
State and Local Capital Match Funding
State General Fund Appropriations
State General Obligation and Revenue Bonds
Freight Railroad Contributions
Local General Fund Appropriations
Local Bonding
Joint Development
Public Private Partnerships
Specialized State Grant Programs
Value Capture Taxes - Land Value Taxes, Local Tax Incremental Financing and Tax Allocation Districts Community Improvement Districts, Developer Impact Fees, Air Rights
Specialized Local Funding Programs - Georgia Special Purpose Local Option Sales Tax, Georgia House Bill 277, Tennessee Gasoline Tax for Local Transportation Funding
Operating Support Funding
State Appropriations
FHWA CMAQ Funds
Revenue Maximization Strategies
Operating Cost Control Strategies

Federal Capital Funding

Capital funding will typically come from federal grant sources, shown in **Table 5-3**, and will be matched with state funds. Local participation is usually limited to such things as station development and corridor acquisition in urban areas for joint transit use. Where infrastructure improvements benefit freight operations, private railroads may also be a source of matching funds.

The goal of the capital investment program is to provide an enhanced level of service with the potential to increase revenues and to reduce and/or eliminate operating subsidies. Where on-going operating support is required, funding will have to be provided by state sources, generally through annual appropriations, although there may be opportunities for limited federal funding sources such as the Congestion Mitigation and Air Quality (CMAQ) Improvement Program or Traffic Mitigation Programs.

State and Local Funding

The majority of existing state-funded corridor services require some kind of on-going state operating support. Given the limited federal funding available to states, an important strategy for reducing operating support requirements is to create a service development plan that maximizes ridership and revenues through competitive travel times, accessible stations, aggressive pricing, targeted advertising, traveler amenities, and low-cost feeder bus operations. State and local agencies would need to identify sources of funding to support any operating subsidies.

Operating Funding

The service development planning process should also seek to minimize operating costs through negotiations with Amtrak or other passenger service operators, and vendor maintenance of equipment.

Other Considerations

The experience in Europe, Asia, and in Amtrak's Northeast Corridor (Acela Express) between Washington D.C., New York, and Boston is that passenger high-speed ground transportation service between major population centers can generate an operating profit. This profit can be used to retire a portion of the capital cost for equipment and infrastructure or provide funds for future capital maintenance activities.

Various governmental and private financing tools can be used as a secondary source of capital to maximize the leverage offered by a funding stream derived from net operating revenues. Federal financing tools include low interest direct loans, loan guarantees, and federal interest tax exemptions.

Loans supported by governmental financing tools and strategies can be useful for capital investments where HSGT passenger service is being provided by a special purpose governmental authority with taxing powers or access to dedicated tax revenues such as a local sales tax.

Specialized financing tools such as tax incremental financing are also useful for public private partnerships at the local level to develop joint use passenger stations with various retail, food service, car rental, hotel, and housing opportunities.

Potential federal, state, and local funding and financing sources are listed in **Table 5-3** in terms of their application as: 1) sources of federal capital funding and financing, 2) state and local sources of capital match funding, and 3) sources of operating funding.

5.5.1 Funding Sources and Strategies for Operating Support

State Appropriations

Nationally, the predominant source of public sector operating support in cases where revenues do not cover operating costs is the use of annual state appropriations. Most states currently contract with Amtrak to provide service given that Amtrak has a federal right of access to provide passenger rail service on existing freight lines at an incremental cost. Amtrak then charges each state for any

operating costs not covered by operating revenues. Other entities seeking to operate on freight rail would have to negotiate access under a separate agreement, which may not carry the same cost benefits.

The challenge in using the annual state appropriations process to fund HSGT passenger service is that estimates must be made each year in advance of actual expenditure. If there is an unforeseen increase in factor costs such as fuel or labor, it may be difficult to adjust the appropriations level because of the long lead-time required by the state budget and appropriations process. The use of multi-year operating contracts is one mechanism to manage the uncertainty associated with the state budgetary process and potential changes in factor costs.

FHWA Congestion Mitigation and Air Quality Funds

Start-up operating expenses for intercity passenger HSGT service are eligible for FHWA CMAQ funding for the first five years of operation. These provisions are clarified in the July 2014 *Revised Interim Guidance on CMAQ Operating Assistance under MAP-21.* The proposed project must be in a federally designated non-attainment area and demonstrated to contribute to the attainment or maintenance of the air quality standard through reduction in vehicle miles traveled, fuel consumption or through other factors. The regulations include eligibility for corridors where a portion of the corridor is in a nonattainment area. The federal cost share is typically 80 percent.

Revenue Maximization Strategies

While not a direct funding source, a revenue maximization strategy should be a key part of any state approach to minimizing state operating subsidies for intercity passenger HSGT service. This strategy begins in the service development planning process and continues through start-up and on-going operation. Elements for consideration in a revenue maximization strategy include service levels, intermodal connectivity, feeder bus networks, aggressive ticket pricing, traveler amenities, and advertising and marketing campaigns.

Setting an appropriate level of service to maximize revenues involves increasing frequencies, speeds, and other service features to the point that marginal ridership and resulting revenues equal marginal operating costs. Generally, this means adding infrastructure and equipment improvements to increase frequencies and decrease travel times until they are substantially less than auto travel times in the same corridor. An integrated feeder bus network scheduled to meet arriving and departing trains is another low cost, low risk method to increase ridership. Other approaches to encourage intermodal connectivity for local transit, bike/pedestrian, intercity bus, and air are also important.

States generally have flexibility in their ticket pricing strategy and often under-price state-supported passenger rail services. Airline-type “revenue yield maximization” strategies including time-of-day, day-of-week, and seasonal pricing can also be considered. State sponsored passenger HSGT service is ultimately a business, and revenue maximization pricing is preferred over ridership maximization to insure its long-term financial viability.

Provision of on-board amenities, such as wide seats and ample leg room, food service, and on-board video and audio programming also attracts travelers. Wi-Fi access and 110-volt plug-in access for laptops, cell phones, and other productivity enhancement devices used by travelers are other potential amenities. HSGT travel is a new experience for many and an aggressive advertising and on-going marketing program is an important and cost-effective means to maximize ridership.

Operating Cost Control Strategies

An operating cost control strategy, while not a funding source, should be a key part of a state’s approach to minimizing state operating subsidies. An operating cost control strategy should begin in

the service development planning process and continue through start-up and on-going operation. Elements for consideration in an operating cost control strategy include competitive bidding for the state operating franchise, careful negotiations with Amtrak or other operators, maintenance of operating equipment by the manufacturer or other outside vendor, outsourcing of food service, cleaning services, station operations, and other activities.

The use of competitive bidding offers an opportunity to reduce or possibly eliminate the need for state operating support funding. Under this approach, the state award of a passenger HSGT service franchise would go to the proposal that has the greatest operating surplus or least public operating subsidy requirement. For projects with the potential to generate an operating surplus, bidders could also be asked to quantify the proportion of the required capital investment they would be willing to finance. This approach may work best for new HSGT services operating in dedicated "greenfield" corridors between major population centers.

Negotiations with Amtrak or other operators in developing an operating contract can also be used to control specific cost items. For example, some states have taken on the responsibility for reservations and information call centers to reduce contract costs. Other states have eliminated reserved service to eliminate it as a cost item.

Limited food service can be offered by vending machines, and the use of carts for point of sale food service can be cheaper than operating a dining or bistro car. During periods of upward (or downward) uncertainty in fuel costs, Amtrak or other providers may agree to put these costs outside of an operating agreement. States may find this advantageous to accepting a high-end contract cost if they have the flexibility to budget for a range of fuel costs outside of a fixed cost contract.

Finally, states can consider contracting out a variety of services, which might be provided by the state more cheaply than through the operator including delivery of operating equipment maintenance services by the equipment manufacturer, as well as contracting out food service, cleaning services, and other activities.

5.5.2 Federal and State Capital Funding Assumptions and Requirements

As discussed in **Section 5.2**, the preliminary capital cost estimates for the proposed project range from $8.7 to $10.4 billion depending on the alternative selected. Similar to the development of the interstate highway system, this level of capital investment would require a significant federal funding component. The FRA's High Speed and Intercity Passenger Rail (HSIPR) Program, as authorized under the 2008 Passenger Rail Investment and Improvement Act (PRIIA), could offer the best model for current and expected future federal funding for intercity passenger HSGT development. The basic feature of this program is the provision of 80 percent federal grants to states for intercity passenger HSGT planning, design, and construction. However, due to the uncertainties with federal funding sources, other financing sources will need to be further investigated during future studies.

Given the magnitude of the federal grant match requirement, state bond funds are the most likely source of funding for this kind of state capital investment, subject to state statutory and constitutional limitations. Assuming state bond funds will be used to fund the required state match, the annual cost to Georgia and Tennessee would need to be determined during future study.

Given this, potential public private partnerships (P3s) could be investigated whereby the state would put the operating franchise out for bid as a design-build-operate-maintain project and then select the operator willing to finance the greatest portion of the proposed project from the operating surplus. The state would have to maintain ownership to finance any portion of the proposed project with General Obligation (GO) bonds.

5.6 Risk and Uncertainty

A large-scale project such as the Atlanta – Chattanooga HSGT Project faces many risks due to multiple participants and unknowns such as funding sources, and actual revenue and ridership numbers. Assessing potential risks and investigating mitigating factors before the start of project construction will be necessary. As with any transportation project, there are general risks such as capital funding, revenue, operating cost, environmental, institutional, and schedule risks. However, in the case of the Project, there are also unique risks such as intergovernmental risks associated with the need for two independent state governments to agree on the many aspects of the service and its costs. This section outlines these general and unique risks, and suggests possible mitigation measures. **Table 5-4: Potential HSGT Project Challenges** summarizes an initial discussion of project risks.

5.6.1 Risk Assessment

The highest risks identified in **Table 5-4** are federal capital funding risks, intergovernmental risks, and operating cost and financial feasibility estimation risks. Of these, the greatest risk is the federal funding risk, given the magnitude of the capital funding needs associated with the Project. The future federal funding Congress authorized as part of Fixing America's Surface Transportation Act (FAST Act), passed on December 4, 2015, provides funding for the following three new competitive rail development grant programs:

1. **Consolidated Rail Infrastructure & Safety Improvements Program** - To improve the safety, efficiency, and reliability of passenger and freight rail systems
2. **Federal-State Partnership for State of Good Repair Program** - To reduce the state of good repair backlog on publically-owned or Amtrak-owned infrastructure, equipment, and facilities
3. **Restoration & Enhancements Program** - For operating assistance to initiate, restore, or enhance intercity passenger rail transportation

However, these programs are competitive. Without a guaranteed, multi-year source of federal funding for intercity passenger service, large-scale transportation projects such as the proposed HSGT service in the Project Area could be difficult to implement.

Intergovernmental risk is the next highest risk. Intergovernmental cooperation and coordination between Georgia and Tennessee will be critical for this proposed project to move forward. If federal funding is available on an 80 percent basis, as in the current HSIPR and federal highway programs, a 20 percent state share requirement has the potential to be seen by state elected officials as an opportunity to leverage a significant amount of federal funding to benefit the citizens of their state. However, the match requirement is significant because there are many competing priorities for state dollars, which will likely vary in each state.

Coordination has to been seen in the context of the federal system under the U.S. Constitution where states are legally described as "sovereigns" - able to set their own independent political courses, subject to only specific powers delegated to the federal government. Only goodwill and well-defined mutual self-interest will bring about a coordinated and agreed upon service plan, funding plan, and a schedule for a project of this magnitude.

Further, operating cost and financial feasibility estimation risks are related to intergovernmental coordination. Unlike capital cost estimation risks, which can be controlled through the preliminary engineering and the final design cost estimation and bidding process; operating costs and the absolute financial feasibility of the proposed project will only be known once the service is initiated. The P3 process, where the project franchise is competitively bid and awarded to a private sector operator, is a strategy for minimizing this risk to the public sector.

Table 5-4: Potential HSGT Project Challenges

Challenge Type	Description	Potential Solution
Funding Challenges		
Federal Capital	• New Surface Transportation Program: FAST Act • No aannual appropriations under PRIIA	• Utilize surface transportation block grant program to leverage potential for public-private partnerships
State Capital	• State bonding capacity • Impact on credit rating	• Investigate federal TIFIA or Railroad Rehabilitation & Improvement Financing (RRIF) loans or loan guarantees to minimize impact on state credit ratings.
State Operating Support Funding	• The need for annual general fund appropriations	• Prepare service development plan focusing on maximizing revenues and minimizing operating costs.
Environmental Challenges		
NEPA	• Potential cost impacts of environmental resources yet to be identified	• Conduct NEPA studies early in the design process. • Start mitigation efforts early for any environmentally sensitive areas.
Estimations/Forecast Challenges		
Capital Cost	• Additional costs identified after detailed preliminary engineering and design	• Move promptly to 30 percent PE and project NEPA stage to refine costs.
Financial Feasibility	• “Planning level” financial analysis nor “investment grade” at this stage	• Prepare financial analysis based on refined cost estimates and a detailed operating plan.
Operating Cost	• Variations in operating costs after execution of contract with operator	• Conduct an in-depth cost analysis to more accurately estimate operating costs. • Develop long term operating cost forecasts that address cost changes associated with increases in ridership and/or service levels over time.
Ridership and Revenue	• Market conditions impact on actual ridership and revenue	• Promote ridership via strategic station location. • Conduct marketing activities – incentives program
Schedule Risk	• Additional costs due to governmental decision-making and funding delays as it relates to authorization of a new “Surface Transportation Program” • Changes in Project Scope • Changes in Design or Operating Standards • Unforeseen Issues in Implementation	• Develop proactive relationships with federal agency staff at all levels to insure project receives proper priority for agency action.
Technology	• Limited information available for HSGT train technologies • Other train technologies may be available when construction begins	• Continue to monitor technology throughout PE and design. • To the extent possible, ensure flexibility in system design.
Institutional Challenges		
Intergovernmental	• Legislative and executive action needed concurrently by two “sovereign” states • States may not have similar priorities in capital contributions, timing, etc.	• Develop multi-state compacts – with agreement upon schedule and cost sharing. • Develop memorandum of agreement with local municipalities.

5.7 Summary of Funding Analysis

Chapter 5 summarizes the capital costs and revenues for the three Corridor Alternatives considered. In addition, an analysis of funding and financing options available to the states of Georgia and Tennessee as they consider the implementation of the proposed HSGT service in the Project Area were considered. Based on this, several conclusions can be reached:

- Significant federal funding will be required to implement the proposed HSGT service in the Atlanta – Chattanooga Project Area. At least a 20 percent state match share will likely be required.
- The most likely source of funding for the state match share will be state GO bonds. Supplementary federal financing may be required using federal loans or loan guarantees offered by federal programs like the Transportation Infrastructure Finance and Innovation Act (TIFIA) or Railroad Rehabilitation and Improvement Financing (RRIF).
- A competitively bid design-build-operate-maintain franchise structure has the potential to offer the least cost and lowest risk to the states. This could potentially develop into a P3.

These conclusions should be analyzed, refined and confirmed in a more detailed “investment grade” financial analysis if a Preferred Alternative is selected.

5.8 Subsequent Analysis

Following the selection of a Preferred Alternative, a financial capacity analysis will be necessary. This will rely upon capital costs developed for a more precisely engineered alignment, and refined operating plans and fare structures. These will allow for development of operating and maintenance costs estimates, calculation of operating surpluses and deficits, and formulation of state bonding assumptions and requirements.

The goal of financial planning will be to develop an understanding of the financial aspects of the proposed action through an examination of funding sources and the allocation of those funds. Preparing a cash flow projection of the proposed action clarifies this understanding. The cash flow projection compares the income and expense potential of the following elements:

- Capital cost estimates;
- O&M cost estimates;
- Fare revenue estimates; and
- Other sources of funds.

The financial analysis will discuss and explore funding options that address capital and operating fund shortfalls discovered during an evaluation of the cash flow projections. Again, more detailed financial analysis and cash flow projections will be required in subsequent stages of project development.

6.0 EVALUATION OF ALTERNATIVES

6.1 Introduction

Chapter 6 provides a summary evaluation of the No-Build and Corridor Alternatives. The evaluation contained in this chapter is an assessment of the findings presented in preceding chapters of this Tier 1 DEIS, along with a comparative discussion of the benefits and effects of the alternatives considered. The evaluation provides the basis for decision-makers and the public to consider the trade-offs in selecting an alternative corridor to advance to further study.

In this chapter, the No-Build and Corridor Alternatives were evaluated based on their ability to meet the Project purpose and need, and on consideration of their relative benefits and consequences. **Table 6-1** summarizes the data findings for the Corridor Alternatives; these data are discussed in the subsections below.

Table 6-1: Comparative Summary of the Corridor Alternatives

Needs	Measures	Corridor Alternative		
		I-75	East	I-75/Rome
Enhance regional transportation mobility and accessibility	Time to Travel Alternative End to End (minutes)	88	95	102
	Population within 10 miles of Proposed Station Locations (millions)	2.85	2.86	2.95
	Employment within 5 Miles of Proposed Station Locations (thousands)	869	870	894
	Daily Ridership (number of boardings)	11,725	8,556	13,204
Spur economic growth and regional vitality	Capital Cost (steel wheel only; 2014$ millions)	$8,760	$10,420	$9,811
Provide safe, efficient, reliable transportation	Provide passenger HSGT service on exclusive guideway	Yes	Yes	Yes
Enhance airport access and intermodal connections	Provide access to HJAIA and CMA; connect to MARTA, GRTA and CCT service areas	Yes	Yes	Yes
Improve air quality nonattainment areas and minimize environmental impacts	Proportion of Corridor Alternative within an Existing Transportation Corridor (percent)	76	31	53
	Ratio of EJ areas to overall corridor (based on linear miles)	0.6:1	0.5:1	0.5:1
	Ratio of Station Areas with and without EJ populations	6:2	6:2	6:2
	Noise-sensitive Land Uses (acres)	5,914	7,519	8,425
	Vibration-sensitive Land Uses (acres)	891	1,695	1,372
	Parklands and Wildlife Refuges (acres)	443	447	442
	Parklands and Wildlife Refuges (number)	25	19	30
	Known Archaeological Resources (number)	32	46	38
	Known Historic Resources (number)	26	66	33
	Cemeteries (number)	4	3	5
	Wetlands (acres)	205	205	251
	Stream Crossings (number)	21	18	35
	Floodplains (acres)	1,563	2,576	1,689
	Known Threatened and Endangered Species Habitats (number)	21	38	21
	Known Threatened and Endangered Species Habitats (acres)	1,907	2,158	1,817

6.2 Effectiveness in Meeting the Purpose and Need

As presented in **Chapter 1**, the Project is intended to enhance intercity mobility and economic growth throughout the Project Area between the metropolitan areas and the airports of Atlanta, Georgia, and Chattanooga, Tennessee, by providing faster and more reliable ground transportation service to the traveling public as an alternative to highway, intercity bus, and air travel in a manner that is safe and cost-effective, while avoiding, minimizing, and mitigating impacts on the human and natural environment.

6.2.1 Enhance Intercity Mobility

The first purpose of the Project is to enhance intercity mobility throughout the Project Area between the metropolitan areas and the airports of Atlanta, Georgia and Chattanooga, Tennessee.

No-Build Alternative

The No-Build Alternative projects would address congestion, access and safety issues in selected portions of the Project Area transportation network, but would not enhance intercity mobility throughout the Project Area between the metropolitan areas and the airports of Atlanta, Georgia and Chattanooga, Tennessee. The No-Build Alternative will not achieve this Project purpose.

Corridor Alternatives

Each Corridor Alternative would achieve this purpose by providing new HSGT in the Project Area that:

- Provides intercity travel capacity to supplement over-used interstate highways;
- Meets future intercity travel demand that cannot be accommodated by existing and No-Build Alternative transportation systems;
- Provides intermodal connections with local transit, major airports and highways;
- Increases transportation access in terms of population and employment; and
- Supports population and employment growth through improved access.

However, the Corridor Alternatives differ in ridership performance, as noted in **Table 6-1**:

- The I-75/Rome Corridor Alternative would have the highest ridership, followed by the I-75 Corridor Alternative; the East Corridor Alternative would have the lowest ridership.

6.2.2 Enhance Economic Growth

The second purpose of the Project is to enhance economic growth throughout the Project Area between the metropolitan areas and the airports of Atlanta, Georgia and Chattanooga, Tennessee.

No-Build Alternative

The capital cost of the No-Build Alternative would include the costs to construct the No-Build Alternative projects described in **Chapter 2**. The No-Build Alternative would be implemented whether a Corridor Alternative is constructed or not, but the No-Build Alternative would produce less growth in the tax base and employment compared to a Corridor Alternative. The No-Build Alternative has potential to increase accessibility to employment opportunities in some parts of the corridor, and may support some development of urban densities and associated economic activity in some parts of the corridor. However, the No-Build Alternative would achieve these benefits to a lesser degree than the Project; these benefits would be localized compared with the corridor-wide benefits of the Project. Thus, the No-Build Alternative would not achieve this Project purpose.

Corridor Alternatives

Each Corridor Alternative would achieve this purpose by generating capital expenditures during construction and by providing an opportunity for growth in the tax base and employment at potential station locations during operation. Capital cost is the one measure for this purpose that differs among the Corridor Alternatives, as shown in **Table 6-1**. Specifically, the I-75 Corridor Alternative would have the lowest capital cost among the Corridor Alternatives, while the East Corridor Alternative would have the highest capital cost.[16]

6.2.3 Faster and More Reliable Ground Transportation Service

The third purpose of the Project is to provide faster and more reliable ground transportation service to the traveling public as an alternative to highway, intercity bus and air travel.

No-Build Alternative

The No-Build Alternative projects would address localized congestion, access and safety issues to some degree, but would not individually or collectively provide corridor-wide benefits in terms of faster and more reliable ground transportation service to the traveling public as an alternative to highway, intercity bus, and air travel. The No-Build Alternative will not achieve this Project purpose.

Build Alternatives

Each Corridor Alternative would achieve this purpose by providing a new HSGT service. The service would operate on dedicated rail or guideway unlike existing transportation services. For this reason, service reliability would be inherent under typical operating conditions.

End to end travel times vary among the Corridor Alternatives as indicated in **Table 6-1** with the I-75 Corridor Alternative being the shortest at 88 minutes, the East Corridor Alternative at 95 minutes, and the I-75/Rome Corridor Alternative at 102 minutes. To put these durations into context, approximate existing transportation travel times from end to end are:

- Air – 120 minutes (includes 60 minutes arrival prior to departure and airport gate to gate)
- Intercity bus – 125 to 185 minutes
- Automobile (on I-75) – 110 minutes (non-peak)

All Corridor Alternatives would provide faster end to end service compared to intercity bus service or driving on existing roadways. The I-75 Corridor Alternative is closest in travel time to air if only flight time is considered and not time spent at the airports checking in, clearing security, and claiming baggage. End to end travel times with the I-75 Alternative are the shortest at 88 minutes, the East Corridor Alternative at 95 minutes, and the I-75/Rome Corridor Alternative at 102 minutes.

6.2.4 Safe and Cost-Effective Transportation Service

The fourth Project purpose contains two components: provide safe and cost-effective transportation service. FRA, GDOT, and TDOT place the safety of transportation users and the community at the forefront of this study as it considers the relative benefits and effects of each Corridor Alternative.

[16] The unit of measurement for capital costs is order-of-magnitude dollars and reflects the investment necessary to construct an HSGT system. Differentiation between the capital costs of Steel-Wheeled and Maglev technologies is not made since technology selection is not made within this Tier 1 DEIS. Steel-Wheeled technology capital costs were used in this case to ensure an equitable comparison of alternatives. The capital costs included in this estimate include track, structures, stations, utilities, ROW, design, and contingencies, as described in Chapter 5.

No-Build Alternative

Safety is a key goal of any transportation project. For this reason, the sponsors of each No-Build Alternative project would consider safety as a priority in the design, construction and operation of their projects. However, because most projects in the No-Build Alternative are roadway projects, and because travel on roadways is relatively less safe than passenger rail/guideway travel according to FRA statistics, the No-Build Alternative is likely to perform less well compared to the Corridor Alternatives in achieving the safety component of the Project purpose and need.

Corridor Alternatives

As the Tier 1 analysis focuses on corridor evaluations, and specific alignments will not be identified in this Tier 1 DEIS, specific safety elements of design and practice have not yet been developed. However, the conservative buffer areas of each Corridor Alternative provide opportunities to optimize safety in the future design of alignments. At this level of study, there are no distinguishing differences between the Corridor Alternatives in this regard. As FRA statistics indicate that rail/guideway travel is safer[17] than automobile travel, and inasmuch as most of the No-Build Alternative projects are roadway improvements, the Corridor Alternatives would be more responsive to the Project purpose and need regarding safe travel than the No-Build Alternative.

Cost-effectiveness is a decision-making tool that compares the relative cost of a project with its performance to determine the relative economic benefit of an action. In this Tier 1 cost-effectiveness assessment, the capital cost of each Corridor Alternative is considered in light of the forecast ridership and travel time. **Table 6-1** summarizes the data findings for each Corridor Alternative. **Table 6-2** shows the trade-offs among the Corridor Alternatives, considering these cost-effective factors.

Table 6-2: Cost-effectiveness Comparison

Corridor Alternative	Travel Time	Ridership	Capital Cost
I-75	Shortest	Higher	Least
East	Longer	Lowest	Highest
I-75/Rome	Longest	Highest	Higher

Table 6-2 indicates the following regarding the Corridor Alternatives:

- **I-75 Corridor Alternative:** The I-75 Corridor Alternative would have the shortest travel time, the second highest ridership, and the least cost.
- **East Corridor Alternative:** The East Corridor Alternative would have a longer travel time than the I-75 Corridor Alternative, but shorter than the I-75/Rome Corridor Alternative; it would have the lowest ridership and the highest cost.
- **I-75/Rome Corridor Alternative:** The I-75/Rome Corridor Alternative would have the longest travel time, but it would have the highest ridership; it would cost more than the I-75 Corridor Alternative but less than the East Corridor Alternative.

[17] In 2011, the number of U.S. fatalities on passenger trains was six passengers or under 1 percent of all transportation fatalities in comparison to autos, which were 32,367, or approximately 94 percent (FRA 2011).

6.2.5 Avoid or Minimize and Mitigate Impacts on the Human and Natural Environment

The fifth purpose of the Project is to avoid or minimize and mitigate impacts on the human and natural environment.

No-Build Alternative

The projects in the No-Build Alternative would incur costs and potential effects on the human and natural environment that would be determined by the sponsors of those projects. As the geographic scope and nature of the No-Build Alternative projects is limited, the potential effects of the projects are likely to be limited. However, the No-Build Alternative would not improve air quality because it would not reduce the quantity or the growth rate of mobile source emissions resulting from vehicle miles traveled on the highway network in the Project Area. Thus, the No-Build Alternative would not achieve this Project purpose.

Corridor Alternatives

As the Tier 1 analysis focuses on corridor evaluations and specific alignments will not be identified in this Tier 1 DEIS, specific elements of design are not yet developed. However, the conservative buffer areas of each Corridor Alternative provide opportunities to avoid or minimize impacts on the human and natural environments in the future design of alignments. Nevertheless, at this level of study, several differences among the Corridor Alternatives were identified:

Use of Existing Transportation Corridors. To avoid or minimize impacts on the human and natural environments, GDOT and TDOT determined that the Corridor Alternatives should use existing transportation corridors wherever reasonably feasible. By using existing corridors, such as existing highway rights-of-way, there is a reduced likelihood of effects that result of property acquisition and disturbance of previously undisturbed areas. **Table 6-1** indicates the percent of each Corridor Alternative within an existing transportation corridor. The I-75 Corridor Alternative would use the most existing right-of-way, followed by the I-75/Rome Corridor Alternative. The East Corridor Alternative would use the least percentage of existing transportation corridors, thereby having the highest potential for effects according to this measure.

Population and Employment Access: With the exception of ridership and as shown in **Table 6-1**, the mobility analysis findings in this Tier 1 DEIS indicate that the Corridor Alternatives perform similarly in terms of absolute numbers as measured by population access and employment access. Beyond the absolute numbers, however, these factors provide some clarity as to who specifically is counted in those numbers. County-based 2010 U.S. Census data demonstrate that the Corridor Alternatives have varying characteristics regarding race and income. As shown in **Figure 3-7** in Chapter 3, more urbanized areas typically have higher densities of minority and low-income populations compared with rural areas.

The ratio of environmental justice (EJ)[18] areas to non-EJ areas within each Corridor Alternative corridor when measured by linear mile along each corridor is 0.6:1 for the I-75 Corridor Alternative and 0.5:1 for the East and I-75/Rome Corridor Alternatives. **Table 6-3** lists the proposed station areas served by each alternative and then summarizes:

- County-based demographics in terms of minority populations; and
- Station areas that are in high density areas of population and employment as indicated in **Figures 3-5** and **3-6** in **Chapter 3**.

[18] Environmental justice (Executive Order No. 12898) is concerned with minority and low-income populations as defined in Chapter 3 of this EIS.

Table 6-3: Race, Population and Employment in Proposed Station Areas

Proposed Station Area	Race		Density Area?		Corridor Alternative		
	Minority %	Primary Race Categories	Pop	Emp	I-75	East	I-75/ Rome
HJAIA/ SC (not EJ)	59	Black, White		●	●	●	●
Downtown Atlanta (EJ)	59	Black, White	●	●	●	●	●
Cumberland/Galleria (EJ)	44	White, Black, Hispanic	●	●	●	●	●
Town Center (not EJ)	44	White, Black, Hispanic			●	●	●
Cartersville (EJ)	20	White, Black, Hispanic			●	●	
Rome (EJ)	26	White, Black, Hispanic					●
Dalton (EJ)	38	White, Hispanic			●		●
Dalton-Chatsworth (EJ)	38	White, Hispanic	●			●	
CMA (EJ)	28	White, Black			●	●	●
Downtown Chattanooga (EJ)	28	White, Black	●	●	●	●	●

Notes: Pop: Population; Emp: Employment; Density Area: using Figures 3-7 and 3-8, a presence score was determined by the occurrence of densities greater than 2.01 per acre.

Based on the Tier 1 level of analysis and subject to further analysis in Tier 2, each Corridor Alternative has two potential station areas with no EJ populations: HJAIA and Town Center. The U.S. Census data for all other proposed station areas identifies EJ populations. Thus, in general, each Corridor Alternative's potential station areas are primarily in locations also occupied by EJ populations.

However, not all Corridor Alternatives serve the same potential station areas or the same EJ populations. For example, only the I-75.Rome Corridor Alternative would serve the proposed Rome station area. Similarly, only the East Corridor Alternative would serve the proposed Dalton-Chatsworth station area. The proposed Dalton-Chatsworth station area is a substantially higher population density area compared to Rome, but neither proposed station area is a high-density employment area. By contrast, the I-75 and I-75/Rome Corridor Alternatives would serve Dalton, while the I-75 and East Corridor Alternatives would serve Cartersville. Thus, depending on the Corridor Alternative considered, Dalton, Dalton-Chatsworth, Cartersville, and/or Rome may or may not be served. Therefore, depending on the Corridor Alternative, some EJ populations in the study area would be served and some would not.

Parklands: The difference between the Corridor Alternatives in terms of acreage of potentially affected parkland and wildlife refuges is insignificant; however, there is distinguishable difference in the number of parks or refuges that could be affected. The I-75/Rome Corridor has the highest number of potential parklands and the East Corridor has the least.

Known Historic Resources: The East Corridor Alternative has twice the number of known historic resources as the I-75 or I-75/Rome Corridor Alternatives. The higher number is due to the East Corridor Alternative using a lower percentage of existing transportation rights-of-way. This differentiating factor suggests the potential for a higher number of Project impacts on known historic resources if the East Corridor Alternative is advanced.

Wetlands, Streams, and Floodplains: For the same reason, the I-75/Rome Corridor Alternative has more acres of wetlands and stream crossings than the other Corridor Alternatives. This difference suggests the potential for a higher number of Project impacts on wetlands, and streams if the I-75/Rome Corridor Alternative is advanced. The East Corridor Alternative has a considerably higher acreage of floodplains compared with the other corridors.

Known Threatened and Endangered Species Habitats: The East Corridor Alternative has a larger number of known threatened and endangered species habitats within the buffer area than the I-75 and I-75/Rome Corridor Alternatives. This differentiating factor suggests the potential for a higher number of Project impacts on known threatened and endangered species habitats if the East Corridor Alternative is advanced.

Noise and Vibration: All Corridor Alternatives would have potential noise and vibration impact. The I-75 Corridor Alternative is the best performing for both noise and vibration sensitive land uses within their respective screening distances. This may be attributed to the fact that a longer length of the I-75 Corridor Alternative is adjacent to the interstate highway system, whereas the other two alternatives deviate from the interstate and travel along U.S. highways (which tend to have more development located closer to the roadway than interstate highways).

Air Quality: The I-75/Rome Corridor Alternative has the highest potential to transfer trips from the highway system to the HSGT and, thereby, reduce vehicular emissions. This finding is based solely on ridership. The I-75 Corridor Alternative would perform slightly less well followed by the East Corridor Alternative having the lowest potential.

In summary, despite the differences among the Corridor Alternatives, each Corridor Alternative demonstrates some level of achievement of this Project purpose of avoiding or minimizing and mitigating impacts on the human and natural environment based on the data available at this Tier 1 level of study and shown in **Table 6-1**. The East Corridor Alternative has the highest potential for impacts on known historic resources and floodplains and has the most vibration-sensitive land uses, while the I-75/Rome Corridor Alternative has the highest potential to impact wetlands and stream crossings and the most noise-sensitive land uses. Compared to the other Corridor Alternatives, the I-75 Corridor Alternative has the lowest potential for noise and vibration impacts and impacts on known historic resources, streams, and floodplains; impacts on wetlands are similar to the East Corridor Alternative.

6.3 Balancing Benefits and Effects

The transportation, economic, and air quality benefits of the Atlanta – Chattanooga HSGT Project come with some potential negative effects. GDOT and TDOT have strived to avoid or minimize effects during Tier 1 analysis by aligning the Corridor Alternatives primarily along existing transportation corridors. The buffer areas provide opportunities to avoid or minimize impacts in future design. Yet some potential effects may not be avoidable given the developed character of some communities the Project is intended to serve, the design requirements of the Project, and the need to avoid affecting future operations of the existing transportation facilities in the corridors. Consequently, the decision to advance one alternative to the next phase of study involves recognizing and understanding that GDOT and TDOT are working to balance the trade-offs between the benefits and effects of the alternatives.

Each Corridor Alternative would enhance intercity mobility and economic growth throughout the Project Area by providing faster and more reliable ground transportation service between Atlanta, Georgia and Chattanooga, Tennessee. Each Corridor Alternative would provide a highway, intercity bus, or air travel option that would be safe and cost-effective, while avoiding, minimizing, and mitigating impacts on the human and natural environment. Whereas the Corridor Alternatives perform similarly among many of the measures assessed, a number of measures reveal differences that distinguish the Corridor Alternatives: travel time, ridership, capital cost, amount of transportation corridor used, and potential impacts to known historic resources, wetlands, stream crossings, floodplains, known threatened and endangered species habitats, and parks and wildlife refuges. **Table 6-4** focuses on these distinguishing measures.

Table 6-4: Summary of Distinguishing Performance Measures

Needs	Measures	Corridor Alternative		
		I-75	East	I-75/Rome
Enhance regional transportation mobility and accessibility	Time to Travel Corridor Alternative End to End (minutes)	88	95	102
	Daily Ridership (number of boardings)	11,725	8,556	13,204
Spur economic growth and regional vitality	Capital Cost (2014$ millions)	$8,760	$10,420	$9,811
Minimize environmental impacts	Proportion of Corridor Alternative within Existing Transportation Corridor	76%	31%	53%
	Noise-sensitive Land Uses (acres)	5,914	7,519	8,425
	Vibration-sensitive Land Uses (acres)	891	1,695	1,372
	Known Historic Resources (number)	26	66	33
	Wetlands (acres)	205	205	251
	Stream Crossings (number)	21	18	35
	Floodplains (acres)	1,563	2,576	1,689
	Parks & Wildlife Refuges (number)	25	19	30
	Known Threatened and Endangered Species Habitats (number)	21	38	21

Notes:
High
Medium
Low

The I-75 Corridor Alternative is the best performing Corridor Alternative. It rates High for the most performance measures, including travel time, capital cost, use of existing transportation corridors, potential noise and vibration impacts, and potential impacts to known historic resources, wetlands, floodplains, and known threatened and endangered species habitats. It rates Medium for ridership and stream crossings. The I-75 Corridor Alternative does not rate Low for any of the distinguishing measures.

The East Corridor Alternative rates High in terms of potential impacts on wetlands and stream crossings, and rates Medium with regard to travel time and potential impacts to known threatened and endangered species habitats. The East Corridor Alternative has greater noise-sensitive land uses than the I-75 Corridor Alternative, but of the three Corridor Alternatives, it has the most vibration-sensitive land uses. The East Corridor Alternative performs least well among the Corridor Alternatives in the areas of ridership, capital cost, and potential impacts to known historic resources and floodplains.

The I-75/Rome Corridor Alternative rates High for ridership and potential impacts to known threatened and endangered species habitats. It rates Medium with regard to use of existing transportation corridors and potential impacts to known historic resources and it rates Low for travel time, potential noise impacts, and potential impacts to wetlands and stream crossings.

The No-Build Alternative would not achieve the Project purpose as it would not reduce travel time or enhance passenger mobility throughout the Project Area between the metropolitan areas and airports of Atlanta and Chattanooga. The projects in the No-Build Alternative would incur costs and potential effects on the human and natural environment that would be determined by the sponsors of those projects. As the geographic scope and nature of the No-Build Alternative projects is limited, the potential effects of the projects are likely to be limited. While the No-Build Alternative has the potential to cause fewer effects on the human and natural environment than the Corridor Alternatives, it would not improve air quality because it would not reduce the quantity or the growth rate of mobile source emissions resulting from vehicle miles traveled on the highway network in the Project Area.

The findings of this analysis indicate that the decision to be made by the Tier 1 EIS process involves examining the trade-offs between the benefits and effects of the Corridor Alternatives. Given GDOT and TDOT's use of conservative buffer areas in this study, opportunity exists to avoid or minimize effects on the human and natural environment as the Project advances to Tier 2 study. For this reason, it may be more relevant to weight the cost-effectiveness criteria. In doing so, trade-offs remain.

If a Corridor Alternative is selected by this Tier 1 FEIS/ROD , FRA, GDOT, and TDOT would work to preserve existing and planned transportation operations in the existing corridors they affect as well as avoid or minimize impacts on the human and natural environments. In Tier 2, GDOT and TDOT will coordinate with regulatory agencies to identify and refine alignments that avoid or minimize effects. Likewise, in the Tier 2 phase of the project, GDOT and TDOT will work with affected stakeholders and the communities to avoid or minimize effects of alignments it develops during Tier 2 study.

6.4 Next Steps

After FRA publishes the Tier 1 DEIS and the public comment period for the Tier 1 DEIS is completed, GDOT and TDOT will prepare a combined Tier 1 FEIS/Record of Decision (ROD), which will identify the Preferred Corridor Alternative. FRA, GDOT, and TDOT will evaluate potential alignments within the selected Preferred Corridor Alternative in the Tier 2 NEPA process.

Since there will be no selection of a preferred technology as part of this Tier 1 DEIS, both Maglev and steel-wheel train technologies advance for consideration with the Preferred Alternative and No-Build Alternative. When a technology is selected, the selected alignment will be refined to optimize the operation of the selected technology.

7.0 COORDINATION WITH AGENCIES, STAKEHOLDERS, AND THE PUBLIC

In compliance with the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Moving Ahead for Progress in the 21st Century Act (MAP-21), and the National Environmental Policy Act (NEPA), FRA, GDOT, and TDOT implemented a comprehensive program to coordinate with federal, state, and local agencies, and maximize participation of the many stakeholders and the public in the Project Area at key points in the environmental review process. The program allowed for dialogue on issues and alternatives and assisted in the development of solutions. This chapter describes coordination and the public involvement activities that were conducted as part of the Tier 1 DEIS for the Project.

7.1 Coordination Plan

Consistent with SAFETEA-LU, which calls for the development of a coordination plan for all projects for which an EIS is prepared under NEPA, GDOT, in coordination with TDOT and the FRA drafted a *Coordination Plan* (GDOT 2010) and a *Public Involvement Plan (PIP)* (GDOT 2007). The *Coordination Plan* provided structure for coordination and communication between lead federal and state, cooperating, and participating agencies, including tribal governments, and was intended to guide the agency coordination process, make reviews more efficient, and streamline the project decision-making process. More specifically, the *Coordination Plan* outlined the activities that occurred during the NEPA process to coordinate agency participation and comment. It was designed to provide flexibility to address changes to the Project. GDOT submitted the plan to potentially interested agencies for review and comment.

The *PIP* was developed to guide the public involvement process for Project. It is based on GDOT's Public Involvement Guidelines (GDOT 2012) and is intended to ensure ongoing public involvement using a variety of tools and techniques to invite and encourage the public to learn about and become involved in the Project.

In 2014, GDOT merged the *Coordination Plan* and *PIP* into one document, covering both public, agency, and stakeholder involvement. The *Agency and Stakeholder Involvement Plan (ASIP)* carries forward the two previous documents through completion of the Tier 1 EIS, and includes revisions and updates in accordance with Section 6002 of Public Law 104-59 SAFETEA-LU and amended by Section 1305 MAP-21. The *ASIP* outlines activities, tools, and techniques used to maximize participation in the Project. See Appendix E for a copy of the ASIP.

7.2 Agency Coordination and Consultation

Section 6002 of SAFETEA-LU promotes efficient project management by lead agencies and enhanced opportunities for coordination with the public and other federal, state, local, and tribal government agencies during project development. When the Tier 1 DEIS was initiated, the FHWA and FRA served as co-Lead agencies for the Project. As such, the agency coordination and consultation was conducted in accordance with these requirements. GDOT, in coordination with FRA, FHWA, and the TDOT, prepared and mailed participating agency[19] invitation letters to federal, state, and local government agency representatives. Note that in 2014, FHWA's role changed from a Lead Agency to a participating agency. A full listing of these agencies is included in **Appendix E**, Agency Coordination & Public Outreach, of this Tier 1 DEIS. No agencies were invited to serve as a

[19] Participating agencies, as defined by SAFETEA-LU, are those with an interest in the project. FHWA was originally a Lead agency in co-operation with FRA for the project, but has since changed status to a Participating agency.

cooperating agency[20]. Outreach efforts to agencies affiliated with the project included agency scoping meetings, interagency coordination meetings, and participation in the Steering Committee, described in **Section 7.2.3**.

7.2.1 Agency Scoping

The environmental planning and review process for the Project began with early coordination and an agency scoping process. Federal, state, and local agencies received invitations to participate and provide comments regarding possible concerns or considerations for the resource areas under their authority. A copy of the invitation letter and mailing list are included in the *Scoping Summary Report* (GDOT 2008) contained in **Appendix E**.

The scoping process began on August 22, 2007 and ended on October 4, 2007 during which two agency scoping meetings were held. The scoping process for the Project was conducted in accordance with 40 CFR 1501.7 to solicit participation from agencies, counties, municipalities, and the public as part of the NEPA process. The scoping process was used to identify the range of mode technologies and corridors to be studied, the potential impacts to the human and natural environments, and the key issues and concerns to be addressed in the Tier 1 EIS.

The Agency Scoping Meetings were announced in a Notice of Intent (NOI) that appeared in the Federal Register on August 22, 2007 (see **Appendix A**). State and federal environmental regulatory and review agencies, Native American tribal councils, municipalities, counties, and other government organizations and officials were notified of the Agency Scoping Meetings and scoping process through direct mailings, which also initiated the early coordination process. The locations, dates, and number of attendees at the Agency Scoping Meetings are outlined in **Table 7-1**.

Table 7-1: Agency Scoping Meetings

Location	Date/Time	Number of Attendees
GDOT Office of Environment/Location 3993 Aviation Circle, Atlanta, Georgia	September 18, 2007, 10:30 am - 12:00 pm	12
Chattanooga Hamilton County Bicentennial Library 1001 Broad Street, Chattanooga, Tennessee	September 20, 2007, 10:30 am - 12:00 pm	9

Each Agency Scoping Meeting opened with GDOT providing an overview of the Project, followed by a presentation outlining the scope of the Project. After the presentation, agency representatives could ask questions, provide input, or specify analysis for consideration in the EIS process. The Agency Scoping Meetings are summarized in the *Scoping Summary Report* in **Appendix E**. Highlights of the feedback from the two Agency Scoping Meetings included comments pertaining to:

- Available capacity and use of active CSX and Norfolk Southern (NS) freight corridors;
- Potential effects on water and biological resources;
- The number and locations of stations and their limitations on potential train speed;
- The availability of preliminary Project cost figures;
- Consideration of other mode technologies;

[20] A Cooperating Agency is any federal agency, other than a Lead Agency, that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative (40 CFR 1508.5).

- Integration of the Project with other transportation improvement projects already planned or underway; and
- The potential location of alignments and stations.

7.2.2 Interagency Coordination Meetings

Coordination meetings between federal and state lead agencies took place on a monthly basis throughout the development of the Tier 1 DEIS. These meetings provided opportunity for ongoing coordination and discussion of the Project process, products, and issues. Also, in accordance with the *ASIP*, Participating Agency meetings were held to review the key Tier 1 NEPA milestones. Participating agencies were involved in, and participated in the review of the following aspects of the Project:

- Purpose and need;
- Identification of the potential corridors and mode technologies;
- Corridor screening and alternative development; and
- Scope of the environmental impact assessment of the Tier 1 DEIS.

7.2.3 HSGT Intermodal Sub-Committee

Formation of the HSGT Intermodal Sub-Committee supported the development of the Tier 1 DEIS. The Sub-Committee includes members of the of the Georgia State Transportation Board and study area stakeholders, which generally include County Commissioners, City Council members, and planning managers/staff of jurisdictions within the Project Area. The Intermodal Sub-Committee received regular briefings throughout the development of this Tier 1 DEIS and provided input to GDOT project management staff at key points.

7.3 Tribal Coordination

Since Native American Tribes may have interests regarding natural and cultural resources that could be in the Project Area, and in accordance with federal requirements, the following tribes and the Georgia Natural Heritage Program were contacted via letter during the scoping process:

Alabama-Quassarte Tribal Town Creek Nation,
Alabama-Coushatta Tribe of Texas,
Cherokee Nation, Chickasaw Nation,
Coushatta Tribe of Louisiana,
Eastern Band of Cherokee Indians,
Eastern Shawnee Tribe of Oklahoma,
Kialegee Tribal Town of the Creek Nation,
Muscogee (Creek) Nation,
Muscogee (Creek) National Council,
Poarch Band of Creek Indians,
Seminole Nation of Oklahoma,
Seminole Tribe of Florida,
Shawnee Tribe,
Thlopthlocco Tribal Town,
United Keetoowah Band of Cherokee

FRA, GDOT, and TDOT will continue to consult with the tribes regarding potential natural and cultural resource impacts of concern to the tribes throughout Project development.

7.4 Stakeholder Involvement

Stakeholders were engaged on an ongoing basis to provide timely and ongoing feedback. Stakeholders were identified as any agency, organization, or group with an interest in the Project that was not designated as a participating agency. A full list of stakeholders for the Project is provided in the *ASIP* (see **Appendix E**).

7.4.1 Spring 2008 Stakeholder Meetings

In the early stages of the Tier 1 DEIS, stakeholders were involved in developing the Project purpose and need, and identifying the range of potential mode technologies and corridors. As shown in **Table 7-2** during the months of January to June 2008, 19 meetings were held with local planning and technical staff in the Project Area. Meeting participants were provided an overview of the Project, profile sheets and typical sections of corridors under consideration. Potential alignments and station locations were discussed. The details of these meetings are outlined in the *Final Technical Meeting Minutes* (GDOT 2008). More than 60 local government representatives participated in these meetings. Highlights of the feedback from these meetings included comments pertaining to:

- The need to include local knowledge and opinions regarding the placement of stations and alignments;
- Areas suitable for the proposed HSGT service are often the same areas as those proposed for industrial-related economic development;
- Current county zoning ordinances may not be able to accommodate TOD;
- Land development activities currently underway for areas proposed for HSGT alignments;
- The effect an HSGT system would have on the local tax base, and concern it would have a negative economic effect;
- Concerns for access to businesses and residences along the alignments, effects to Environmental Justice communities, visual resources, and historic and archaeological sites;
- Suggestion to tunnel sections of the HSGT alignment rather than have aerial sections, when necessary;
- Support of future connectivity to Nashville; and
- Potential for local matching funds for future phases of the Project.

In addition, from July to September 2008, over 20 supplemental stakeholder meetings were held with community, neighborhood, and business organizations. Information about the Tier 1 DEIS and the Project was available at each meeting.

Table 7-2: Spring 2008 Stakeholder Meetings

Stakeholder	Location	Date	Number of Attendees
Douglas County	Douglas County Courthouse 8700 Hospital Drive, Douglasville, GA	January 23, 2008	2
City of Cartersville	Planning & Development Department City Hall, 10 North Public Square, Cartersville, GA	January 23, 2008	7
Floyd County and City of Rome	Planning Department, City of Rome 601 Broad Street, Rome, GA	January 24, 2008	7
City of Marietta	Development Services Department 205 Lawrence Street, Marietta, GA	January 24, 2008	3
Murray County	Murray County Land Development Office 121 North 4th Avenue, Chatsworth, GA	January 25, 2008	3
City of Atlanta	Atlanta City Hall 55 Trinity Avenue, Suite 1450, Atlanta, GA	January 25, 2008	2
Polk County	Planning & Zoning Commissioner's Office 144 West Avenue, Cedartown, GA	January 28, 2008	3
Catoosa County and City of Ringgold	City of Ringgold Administrative Offices 150 Tennessee Street, Ringgold, GA	January 28, 2008	4
Gordon County	Gordon County Chamber of Commerce 300 South Wall Street, Calhoun, GA	January 29, 2008	4
Bartow County	Bartow County Commissioner's Office 135 West Cherokee Avenue, Suite 135 Cartersville, GA	January 29, 2008	2
Cumberland Community Improvement District	240 Interstate North Parkway Marietta, Georgia 30006	April 23, 2008	1
Town Center Community Improvement District	Town Park Commons, Bldg. 125, Town Park Drive Marietta, Georgia 30066	April 23, 2008	1
Hamilton County, City of Chattanooga, Chattanooga-Hamilton County Regional Planning & Chattanooga-Hamilton, County/North Georgia TPO	1250 Market Street, Chattanooga, TN	May 21, 2008	4
Chattanooga Metropolitan Airport Authority	101 Airport Road Chattanooga, TN	May 21, 2008	1
City of Rockmart	200 S Marble Street, Rockmart, GA	May 22, 2008	2
Whitfield Count, City of Dalton, North Georgia Regional Development Center (NGRDC)	Administrative Building #1 301 West Crawford Street, Dalton, GA	May 23, 2008	8
Clayton County	Clayton County DOT 7960 N. McDonough Street Jonesboro, GA	June 13, 2008	3
Cobb County	100 Cherokee Street, Marietta, GA	June 19, 2008	5
Paulding County	Henry Winn Building 120 East Memorial Drive, Dallas, GA	June 19, 2008	2

7.4.2 Fall 2010 Stakeholder Meetings

To support the corridor screening and alternative development process, in fall 2010 several stakeholder meetings were held. Stakeholders were notified of meetings by mail or email notices two weeks prior to the meetings. Two days prior to the meetings, email reminders encouraged stakeholder attendance. These meetings are outlined in **Table 7-3**.

Table 7-3: Fall 2010 Stakeholder Meetings

Location	Date/Time	Number of Attendees
Atlanta-Fulton County Library/Margaret Mitchell Branch 1 Margaret Mitchell Square Atlanta, GA 30303	October 26, 2010 10 AM – 12 Noon	4
Dalton City Hall 300 W. Waugh St. Dalton, GA 30720	October 27, 2010 10 AM – 12 Noon	17
Cumberland/Town Center CID 240 Interstate North Parkway Atlanta, GA 30339	October 28, 2010 1:30 PM – 3:30 PM	6
Cartersville Council Chambers 10 Public Square Cartersville, GA 30120	October 28, 2010 10:30 AM – 12 Noon	6
Chattanooga City Council 1000 Lindsay Street Chattanooga, TN 37402	October 29, 2010 10 AM – 12 Noon	19
Dalton Utilities Board Room 1200 VD Parrott Parkway Dalton, GA 30720	November 2, 2010 7:30 AM – 9:00 AM	9
City Hall Mayor's Conference Room City of Chattanooga	November 4, 2010 4:00 PM – 5:30 PM	27
Sam King Room-City Hall 601 Broad Street Rome, GA 30161	November 8, 2010 3:00 PM – 4:30 PM	13
Dalton- Whitfield Chamber of Commerce 890 College Drive Dalton, GA 30720	November 16, 2010 10 AM – 12 Noon	2

Highlights of the feedback from these stakeholder meetings included comments pertaining to:

- Right-of-way (ROW) requirements for an HSGT alignment, as well as the location of the potential alignments and stations, and the fare, frequency and schedule of train operations;
- Corridor alternatives removed from consideration;
- Implementation timeframe and funding mechanisms;
- Connectivity to other forms of transit;
- Historic resources and water resource impacts;
- Funding for HSGT projects nationwide and impacts on this Project;
- Emergency preparedness for a potential high-speed train crash; and
- Whether proposed HSGT service along the I-75 corridor would lessen the need for future additional roadway capacity.

7.5 Public Involvement

To date, there have been two major decision points where significant involvement from the public was solicited. The first was at the public scoping meetings held in 2007 to get input on the purpose and need, the range of potential corridors, and the mode technologies to be evaluated in the Tier 1 DEIS. The second was at a public information open house meeting held in 2010 to describe to the public the alternative development process and the results of the corridor screening.

7.5.1 Fall 2007 Public Scoping Meetings

The formal comment period for the scoping process began on August 22, 2007 and ended on October 4, 2007. Three Public Scoping Meetings were held for the Project during that time. Over 70 people attended the Public Scoping Meetings. The Public Scoping Meetings were advertised in local newspapers such as the *Atlanta Journal Constitution*, the *Rome-News Tribune, the Daily Tribune-News of Cartersville*, and the *Chattanooga Times-Free Press*. Meetings were also announced on the Project website (http://www.dot.ga.gov/travelingingeorgia/rail/Pages/Atl-Chatt.aspx). The meetings are outlined in **Table 7-4**.

Table 7-4: Fall 2007 Public Scoping Meetings

Location	Date/Time	Number of Attendees
McEachern High School 2400 New Macland Road Powder Springs, GA	September 18, 2007 5:00 – 7:30 pm	13
Rome Civic Center 400 Civic Center Drive Rome, GA	September 19, 2007 5:00 – 7:30 pm	14
Chattanooga Hamilton County Bicentennial Library 1001 Broad Street Chattanooga, TN	September 20, 2007 5:00 – 7:30 pm	49

Each of the Public Scoping Meetings followed the same format as the Agency Scoping Meetings in **Section 7.2.1**. At each meeting, attendees signed-in upon arrival and received a Scoping Information Package. Meetings included an “open house” area with a series of information boards displayed. The information boards illustrated the corridors under consideration and provided an overview of the EIS process.

Each meeting opened with GDOT staff providing an overview of the Project, followed by a presentation outlining the scope of the Project. After the presentation, members of the public could ask questions and provide input. Members of the GDOT Project team were available to answer questions. Attendees had the option of either completing the comment form contained in the Scoping Information Package at the meeting or mailing it in prior to the close of the comment period. A court reporter was also present to record public comments. A record of all attendees and participants was compiled; individuals were added to the overall Tier 1 DEIS mailing list and database.

All public meeting locations were compliant with the ADA. The *Scoping Summary Report* (GDOT 2008) details the comments and issues raised by the public during the Public Scoping Meetings. Highlights of the feedback from these meetings included comments pertaining to:

- Potential alignments and station locations;
- Connections with existing and planned transit systems;
- Potential costs of the Project and the amount the government may have to pay per rider;
- Air quality benefits and reduced fuel consumption resulting from auto trip being replaced by the Project;
- the Project’s effect of positively transforming communities / land uses or leading to additional urban sprawl;
- the Project‘s potential for attracting investment in infrastructure, economic development, and capital investments to poor regions;
- Capacity concerns for Chattanooga Metropolitan Airport; and
- Concern for the potential adverse effects to cultural resources.

The information gathered during the scoping process was used to assess which Project mode technologies and corridors met the purpose and need while minimizing impacts to the social, cultural, and natural environments. Input gathered also assisted in identification of specific environmental impacts to be assessed in the Tier 2 NEPA process.

7.5.2 Fall 2010 Public Information Open House Meetings

GDOT conducted four public information open house meetings in the Project Area to provide opportunities for public review and comment on the corridor screening and alternative process, and results. The meetings were held between November 4, 2010 and November 18, 2010 and were attended by over 200 individuals. A list of the public workshop meeting locations, dates, and number of attendees is provided in **Table 7-5**.

Table 7-5: Fall 2010 Public Information Open House Meetings

Location	Date/Time	Number of Attendees
CHCRPA Regional Planning Agency 1250 Market Street (Room 1A, First Floor), Chattanooga, TN	November 4, 2010 6:00 - 8:00 pm	66
Dalton State College 650 College Drive (James Brown Center, Room 105) Dalton, GA	November 8, 2010 6:00 - 8:00 pm	87
St. Mark United Methodist 781 Peachtree St. NE (Fellowship Hall), Atlanta, GA	November 9, 2010 6:00 - 8:00 pm	32
Cartersville Civic Center 435 W. Main Street Cartersville, GA	November 18, 2010 6:00 - 8:00 pm	28

At each meeting, attendees signed-in upon arrival and received an information package that included a Project newsletter with a Project description and maps, a comment card, and a copy of the presentation. Information was also provided in Spanish and Portuguese. The first portion of the meetings provided an opportunity for the attendees to view a series of display boards that provided an overview of the Tier 1 EIS process, as well as the corridor screening and alternative development processes.

Each meeting opened with GDOT staff welcoming attendees, followed by a presentation that provided an update on the Project and an overview of the corridor screening and alternative development process, and the preliminary results. After the presentation, members of the public could ask questions and provide input. Members of the Project team were available to answer questions. Attendees had the option of either completing the comment form contained in the information package at the meeting or mailing it in prior to the close of the comment period. A record of all attendees and participants was compiled; individuals were added to the overall Tier 1 DEIS mailing list and database.

A court reporter was present to record the public's comments. A summary of the comments received from the meetings is included in **Appendix E**. Highlights of the feedback from the meetings included comments pertaining to:

- A train technology preference;
- Support for the potential financial benefits and regional/national connectivity that could come from an HSGT system; and
- Concern for property acquisition and additional noise generated by HSGT.

7.5.2.1 Public Information Open House Advertisement

Advertisement for the public information open house meetings appeared on the Project website, a Project flyer was distributed to those listed in the contact database, and notices were sent to chambers of commerce and other agencies in the Project Area. **Table 7-6** gives the date and publication of the announcements for the open house meetings.

Table 7-6: Public Information Open House Advertisement

Meeting	Publication	Date (2010)
Chattanooga, TN	Chattanooga Times Free Press	October 24, 25, 26
Dalton, GA	The Daily Citizen	October 31
Atlanta, GA	Atlanta Journal Constitution	October 28 and 31, November 1
Cartersville, GA	Daily Tribune	November 11, 12 and14

Public service announcements were sent to local radio stations and meeting announcements were sent to online calendars (WABE, Access Atlanta, etc). Press releases were distributed to GDOT's media contact list. The chambers of commerce in each city assisted in promoting the meetings by distributing flyers by email and posting on their websites. Meeting details were also posted on the Project website and the GDOT website.

7.5.2.2 Ongoing Agency Coordination

Additional agency coordination has been ongoing since the project started to keep agencies informed on the Project's progress. The most recent coordination meeting was held in August 2013 between FRA, FHWA, TDOT, and GDOT.

7.6 Public Meetings

During the public comment period for this Tier 1 DEIS, FRA, GDOT, and TDOT will hold public meetings. The Project Team has not yet determined how many meetings will be held or the where they will be held. The meetings will be an opportunity for FRA, GDOT and TDOT to hear comments on the Tier 1 DEIS. After the close of the public comment period, FRA, GDOT and TDOT will consider the public and agency input it has heard as well as the findings of the Tier 1 DEIS. The agencies will then select a Preferred Corridor Alternative from among the alternatives considered in the Tier 1 DEIS.

In accordance with MAP-21, FRA may issue a combined Tier 1 FEIS/ROD. The Tier 1 FEIS/ROD will identify the Preferred Corridor Alternative, summarize the environmental impacts, respond to public and agency comments received on the Tier 1 DEIS, and discuss the reasons why it was selected. During the development of the Tier 1 FEIS/ROD, GDOT and TDOT will also undertake additional public and agency coordination. GDOT will post the Tier 1 FEIS/ROD on the Project website (http://www.dot.ga.gov/IS/Rail/AtlantatoChattanooga), and publish notices in primary Project Area newspapers.

7.7 Communication Tools

GDOT and TDOT use a variety of communication tools to inform and solicit input from the public and agencies. Communication tools complimented and supplemented the outreach effort. These tools included:

- Stakeholder contact database;
- Project website and email;
- Newsletters;

- Media relations; and
- Comment forms (available on the Project website and at all public meetings).

7.7.1 Stakeholder Contact Database

GDOT developed a stakeholder contact database, which expanded over the course of the Tier 1 NEPA process. The database listed interested individuals and groups who desired to be kept informed of the progress of the Project, and aided in promoting participation at public meetings and notifying the public of key updates to the Project website.

The database included over 400 individuals representing the public, property owners in the Project Area, agencies, elected and public officials, civic and community groups, public interest groups, faith-based organizations, and the business community. Updates to the stakeholder contact database were made throughout the development of the Tier 1 DEIS.

7.7.2 Project Website and Email

GDOT established a website for the Project at http://www.dot.ga.gov/IS/Rail/AtlantatoChattanooga to provide updated Project information during the Tier 1 NEPA process. The Project website includes a synopsis of the Project, frequently asked questions, Final Scoping Summary Report, and Existing Conditions Report.

7.7.3 Newsletters

GDOT and TDOT produced and distributed two newsletters at key milestones during development of the Tier 1 DEIS. A Project newsletter was produced in Spring 2008 and distributed to stakeholders and the public. Another newsletter coincided with the release of the results of the corridor screening and alternatives development process in Fall 2010. The newsletters shared information on these activities and findings, and encouraged public input. Distribution of newsletters electronically and in hard copy made the publications accessible to a large number of people. A copy of each newsletter is included in **Appendix E**.

7.7.4 Media Relations

Media coverage aided in advertising the Project and as a tool to encourage public participation in the development of the Tier 1 DEIS. The *ASIP* lists the media outlets used by GDOT during the process including printed media, radio, television, colleges and universities, and community outlets.

7.7.5 Comment Forms

Comment forms in English, Portuguese, and Spanish languages were used during public outreach for the Project to solicit input from the public. When the Tier 1 DEIS document is available for public review during the public comment period, GDOT and TDOT will make comment forms available at public meetings and on the GDOT Project website (http://www.dot.ga.gov/IS/Rail/AtlantatoChattanooga).

7.7.6 Accommodations for Minority, Low-income, and Persons with Disabilities

Special outreach efforts were made to reach minority, low-income, and limited English proficiency (LEP) populations and persons with disabilities. Strategies to reach minority, low-income, and disabled populations included holding meetings in transit-accessible locations and at a variety of meeting times, including nights and weekends, in order to encourage maximum participation. Spanish and Portuguese language interpreters were available at each meeting to assist LEP populations. All public meeting locations were compliant with the Americans with Disabilities Act (ADA).

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9.0 ACRONYMS

ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
APC	Air Pollution Control
APM	Automated People Mover
ARC	Atlanta Regional Commission
ASIP	Agency and Stakeholder Involvement Plan
BACT	Best Available Control Technologies
BGEPA	Bald and Golden Eagle Protection Act
CAA	Clean Air Act of 1970
CAAA	Clean Air Act Amendments of 1990
CARTA	Chattanooga Area Regional Transportation Authority
CCKY	Chattooga and Chickamauga Railway
CCT	Cobb Community Transit
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CHCRPA	Chattanooga-Hamilton County Regional Planning Agency
CMA	Chattanooga Metropolitan Airport
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CO	Carbon monoxide
CR	County Road
CSX	Chessie-Seaboard Express Railroad Transportation
CTP	Comprehensive Transportation Plan
CWA	Clean Water Act
dB	decibel
DEIS	Draft Environmental Impact Statement
DFIRM	Digital Flood Insurance Rate Map
DMU	Diesel Multiple Unit
DNR	Department of Natural Resources
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPD	Environmental Protection Division (of the Georgia Department of Natural Resources)
ESA	Endangered Species Act
FD	Final Design

FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FRUTS	Floyd-Rome Urban Transportation Study
FY	Fiscal Year
GDNR	Georgia Department of Natural Resources
GDOT	Georgia Department of Transportation
GCT	Gwinnett County Transit
GEPA	Georgia Environmental Policy Act
GHBS	Georgia Historic Bridge Survey
GIS	Geographic Information Systems
GNHP	Georgia Natural Heritage Program
GO	General Obligation
GRTA	Georgia Regional Transportation Authority
GWQC	Georgia Water Quality Control
HCP	Habitat Conservation Plan
HJAIA	Hartsfield-Jackson Atlanta International Airport
HSGT	High-Speed Ground Transportation
HSIPR	High Speed and Intercity Passenger Rail
HSR	High Speed Rail
HUC	Hydrologic Unit Codes
I-24	Interstate 24
I-75	Interstate 75
I-285	Interstate 285
I-85	Interstate 85
LEP	Limited English Proficient
LWCF	Land & Water Conservation Fund
LOS	Level of Service
LRTP	Long Range Transportation Plan
Maglev	Magnetic Levitation
MAP-21	Moving Ahead for Progress in the 21st Century Act
MARTA	Metropolitan Atlanta Rapid Transit Authority
MMPT	Multi-modal Passenger Terminal
MOE	Measure of effectiveness
mph	Miles per hour
MPO	Metropolitan Planning Organization
MS4s	Municipal Separate Storm Sewer Systems
MSAT	Mobile Source Air Toxics

NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHRGIS	Natural, Archaeological Historical Resources Geographic Information Systems
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGRDC	North Georgia Regional Development Center
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxides
NOx	Nitrogen Oxides
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory (of the United States Fish and Wildlife Service)
NS	Norfolk Southern
O^3	Ozone
O&M	Operating and Maintenance
P3s	Public Private Partnerships
Pb	Lead
PE	Preliminary Engineering
PIP	Public Involvement Plan
PM	Particulate Matter
PM2.5	Particulate matter with a diameter of 2.5 micrometers and smaller
PM10	Particulate matter with a diameter of 10 micrometers and smaller
ppm	parts per million
PRIIA	Passenger Rail Investment and Improvement Act
Q3	Quadrangle 3
RIBITS	Regulatory In-lieu Fee and Bank Information Tracking System
ROD	Record of Decision
ROW	Right-of-way
RRIF	Railroad Rehabilitation and Improvement Financing
RTD	Rome Transportation Department
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SC	Southern Crescent
SCC	Standard Cost Categories
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SOx	Sulfur Oxides

SR	State Route
STIP	State Transportation Improvement Program
STP	Surface Transportation Program
SWTP	Statewide Transportation Plan
TAG	Tennessee, Alabama and Georgia Railroad Line
T.C.A.	Tennessee Code Annotated
TCP	Traditional cultural property
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TEA-21	Transportation Equity Act for the 21st Century
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIGER	Topologically Integrated Geographic Encoding and Referencing
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Program
TOD	Transit-oriented development
TVA	Tennessee Valley Authority
US	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDOI	United States Department of the Interior
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFS	United States Forestry Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VHS	Very High Speed
W&A	Western and Atlantic Railroad

10.0 GLOSSARY OF TERMS

100-year floodplain – Areas along or adjacent to rivers, streams, or other bodies of water that convey floodwaters during a 100-year frequency storm event.

accessibility – A measure of how reachable locations or activities are from a given site; it is influenced by changes in travel time, safety, vehicle operating costs, and transportation choice.

adverse effect – Defined in Section 106 of the National Historic Preservation Act (NHPA) (36 CFR 800.5(a) (1)). An adverse effect to a historic property occurs when the project under consideration alters any characteristic that qualifies the property for inclusion in the National Register of Historic Places in a manner that would diminish the integrity of the property.

affected environment – Ambient conditions at the time an Environmental Impact Statement is prepared.

Agricultural and Forestal District (AFD) – Provides a means to conserve, protect, and encourage the development and improvement of agricultural and forestal lands for the production of food and other agricultural and forestal products, and conserve and protect agricultural and forestal lands as valued natural and ecological resources which provide essential open spaces for clean air sheds, as well as for aesthetic purposes.

alighting(s) – The act of a passenger disembarking from a transit vehicle; see boarding(s)

alignment – The ground plan of a roadway, railway or other fixed route.

ambient air – A physical and chemical measure of the existing concentration of various chemicals in the outside air, usually determined over a specific time period (e.g., one hour, eight hours).

ambient background noise – The existing cumulative noise that is characteristic of an area based on current activity levels.

Archaeological Resources Protection Act of 1979 (ARPA) – governs the excavation of archaeological sites on federal and Indian lands in the united states, and the removal and disposition of archaeological collections from those sites

Area of Potential Effect (APE) – For purposes of complying with Section 106 of the NHPA, a geographic area or areas where an undertaking (e.g., the Atlanta-Chattanooga HSGT project) may directly or indirectly cause alterations in the character or use of historic properties, if any such properties are located in the area of the project.

at-grade – level with the ground surface.

Atlanta Regional Commission (ARC) – The Atlanta Regional Commission (ARC) is the regional planning and intergovernmental coordination agency for the 10-county area including Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry and Rockdale counties, as well as the City of Atlanta.

Average Daily Traffic (ADT) - The total traffic volume during a given time period, ranging from 2 to 364 consecutive days, divided by the number of days in that time period, and expressed in vehicles per day.

Best Management Practices – Specific standards utilized during construction and design to minimize the impact on surrounding resources.

boarding(s), passenger – The count of passengers embarking onto a transit vehicle or route for the purposes of measuring ridership or fare revenue.

capital costs – The cost to construct a transportation system such as HSGT. Costs include design fees, vehicle procurement, environmental mitigation, property acquisition, construction materials, and labor for the construction of a project.

census tract – A small statistical subdivision of a county defined by a local committee of census data users for the purpose of presenting census information every ten years. The census tract boundaries, which are nested within counties, generally follow visible features and governmental unit boundaries.

centerline – The line corresponding to the central geometric axis of a railroad track, road, trail or other transportation corridor. It is typically used as the reference point for measurements of track dimensions and location.

Clean Air Act of 1970 (CAA) – Legislation mandating the U.S. Environmental Protection Agency (EPA) to set national air quality standards to protect the public against common pollutants. State governments are required to devise clean-up plans to meet these EPA standards.

Clean Air Act Amendment of 1990 (CAAA) – A strategy for the U.S. to address the problem of urban smog. It requires states and the federal government to reduce emissions from automobiles, trucks, buses, ships, barges, and consumer products, and to meet air quality standards. It particularly addresses the urban problem of ozone, carbon monoxide (CO), and particulate matter. It defines how areas are designated “attainment” and allows the EPA to classify “non-attainment” areas as those that do not meet the federal air quality standards.

Corridor Alternative – A corridor alternative being evaluated as the proposed action during the EIS process.

cross section – The cross-sectional configuration of a transportation corridor (railway, trail, roadway, etc.) that specifies typical widths for tracks/travel lanes, related facilities, buffer areas and total right-of-way.

Comprehensive Plan – A plan required by state law to be used by local municipalities as a guide to decision-making about the natural and built environment.

commuter rail – A mode of passenger transportation where either diesel or electric-powered locomotives and their associated rail cars use tracks that are part of a general rail network. Commuter rail is distinguished from intercity rail in the relatively smaller geographic scope of service area.

Conformity – A designation given to transportation plans, programs, and projects that conform to federally mandated state air-quality plans.

Congestion Mitigation and Air Quality (CMAQ) – Authorized under the Intermodal Surface Transportation Equity Act (ISTEA), this law provided $6 billion in funding for surface transportation and other related projects that contribute to improvements in air-quality and reduce congestion. Section 1101 of MAP-21 authorizes funds for the CMAQ program and Section 1105 amends 23 U.S.C. 104(b)(4) and provides for the apportionment of funds.

Council on Environmental Quality (CEQ) – Established in the Executive Office as part of the National Environmental Policy Act of 1969 (NEPA), the council coordinates federal environmental efforts, policies, and initiatives, and ensures that federal agencies meet NEPA requirements.

cumulative impact – The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

day-lighting – pedestrian safety measure achieved by removing parking spaces adjacent to curbs around an intersection, increasing visibility for pedestrians and drivers and minimizing conflicts

decibel – A unit of measure of sound pressure used to describe the loudness of sound on the A-weighted scale.

determination of eligibility – The decision made by the State Historic Preservation Office (SHPO) regarding whether historic buildings or districts are eligible for listing or listed in the National Register of Historic Places (NRHP).

direct effects – Effects that occur as a direct result of the project.

double-track – The construction of two (usually parallel) transit lines for the purpose of enhancing the efficiency of operations.

Draft Environmental Impact Statement (Draft EIS) – A comprehensive study of potential environmental impacts related to federally assisted projects. Projects for which a DEIS is required are defined in the National environmental Policy Act of 1969, as amended.

effects – Synonymous with impact, includes the result from actions that may have a beneficial or detrimental outcome.

endangered species – A species whose prospects for survival are in immediate danger based on a loss of habitat, over-exploitation, predation, competition, or disease. An endangered species requires immediate attention or extinction will likely follow.

Environmental Justice (EJ) – Provides for equal protection from environmental hazards and fair treatment for all people regardless of race, ethnicity, or economic status, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no population of people bear an unequal share of negative environmental impacts of pollution or environmental hazard resulting from industrial, municipal, and commercial operations or the execution of federal, state, or local policies.

Federal Highway Administration (FHWA) – As part of the United States Department of Transportation (USDOT), the FHWA is charged with the broad responsibility of ensuring that America's roads and highways continue to be safe and technologically up-to-date.

Federal Railroad Administration (FRA) – Created by the Department of Transportation Act of 1966 (49 U.S.C. 103, Section 3(e)(1)). Its purposes are to enforce regulations, administer railroad assistance programs, and conduct research and promote rail safety.

freight rail – A mode of freight transportation where either diesel or electric-powered locomotives and their associated rail cars use tracks that are part of a general rail network.

Final Environmental Impact Statement (FEIS) – The document is published following a Draft Environmental Impact Statement (DEIS). It addresses revisions in the design of the proposed

project, incorporates public and agency comments received during the public circulation period of the DEIS and during the DEIS public meeting, and identifies the Preferred Corridor Alternative.

Geographic Information Systems (GIS) – A system of computer software and hardware, data, and personnel to manipulate, analyze and present geographically referenced information or data that is identified according to their locations.

Georgia Department of Transportation (GDOT) – The Georgia Department of Transportation plans, constructs, maintains and improves Georgia's road and bridges. The Department also provides support for other modes of transportation such as freight and intercity passenger train service, mass transit and airports, and airport and air safety planning.

Georgia Natural Heritage Program (GNHP) - state-run program that inventories the occurrences and status of rare plant and animal species and native communities in the state.

grade crossing – An intersection where a roadway crosses a railway at the same elevation.

greenspace – general term describing an area of parkland, open space or other type of natural or vegetated land.

habitat – The area or environment where an organism or ecological community normally lives or occurs.

high-level platforms – Station platforms constructed at the same level as a typical train-floor, approximately four feet above ground. Done to increase passenger boarding and alighting speeds and to comply with the Americans with Disabilities Act.

High Speed Ground Transportation (HSGT) – High Speed Ground Transportation is a mode of transportation that travels at greater speeds than traditional rail technology. The 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, and is a self-guided intercity passenger transportation mode that is time-competitive with air and auto for trips of 100 to 500 miles in length.

hydric soils – A soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

hydrology indicators – The presence of water at or near the surface for a designated amount of time.

hydrophytic vegetation – Plant-life that thrives in wet conditions.

infill –The process of developing vacant or under-used parcels within existing urban areas that are already largely developed

intercity – traveling between two cities

Jurisdictional determination (JD) – Regulatory review of previously identified wetlands and waters of the United States Army Corp of Engineers (USACE) in compliance with Section 404 of the Clean Water Act.

land use – Classification providing information on land cover and the types of human activity occurring on a parcel of land, such as "commercial," "industrial," "residential," or "open space."

level of service (LOS) – A letter grade designation used to describe given roadway conditions with "A" being at or close to free-flow conditions and "F" being at or close to over-saturation of the roadway; usually based on the progression of vehicles through the green phase of a signal, driver discomfort/frustration, lost travel time, and fuel consumption.

low-income – Any household with income at or below the U.S. Bureau of the Census poverty thresholds.

Magnetic Levitation (Maglev) – a system of transportation that suspends, guides and propels vehicles, predominantly trains, using magnetic levitation from a very large number of magnets for lift and propulsion.

Moving Ahead for Progress in the 21st Century (MAP-21) - Signed into law Public Law 112-141, provides funds for surface transportation programs.

Metropolitan Atlanta Rapid Transit Authority (MARTA) – The principal rapid transit system in the metropolitan Atlanta region.

mass transit – Transportation that provides regular and continuing general or special transportation to the public; does not include school buses, charters, or sightseeing transportation.

master plan – An exhaustive plan that defines an airport's short- and long-term development needs.

Metropolitan Planning Organization (MPO) – The forum for cooperative transportation decision making for a metropolitan area. Title 23 U.S.C. §134 requires that (1) a MPO be designated for each Urbanized Area (UZA) containing 50,000 or more persons based on the latest US Census, and (2) the metropolitan area has a continuing, cooperative and comprehensive transportation planning process.

micron – A unit of length equal to one millionth (10^{-6}) of a meter.

minority – A member of the following races: (1) Black or African American, (2) American Indian or Alaska Native, (3) Asian, (4) Native Hawaiian or other Pacific Islander, (5) Hispanic or Latino Origin.

mitigation – The actions necessary to reduce or eliminate an impact and thereby restoring the affected environment and personnel to manipulate, analyze and present geographically referenced information or data that is identified according to their locations.

mitigation banking – The restoration, creation, enhancement, and preservation of wetlands and/or other aquatic resources, for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources.

multi-family – A classification of housing where multiple separate housing units for residential (i.e. non-commercial) inhabitants are contained within one building.

National Environmental Policy Act of 1969 (NEPA) – Requires federal agencies to consider the environmental impacts of major federal projects or decisions, to share information with the public; to identify and assess reasonable alternatives; and to coordinate efforts with other planning and environmental reviews taking place.

Native American Graves Protection and Repatriation Act (**NAGPRA**) - requires federal agencies and institutions that receive federal funding to return Native American" cultural items" to

lineal descendants and culturally affiliated Indian tribes and Native Hawaiian organizations. Cultural items include human remains, funerary objects, sacred objects, and objects of cultural patrimony.

National Historic Preservation Act (NHPA) - Legislation intended to preserve historical and archaeological sites in the United States of America. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices.

National Register of Historic Places (NRHP) – A federal list of buildings, sites, district or other properties that have a historic significance. The National Register of Historic Places is maintained by the Keeper of the National Register.

No-Build Alternative – The future condition of an area in the absence of a project; assumes that no improvements will be made with the exception of periodic maintenance and minor enhancements needed to maintain safe operation and those already designated in the approved plan.

Norfolk Southern Railway (NS) – A national freight rail company operating within the study corridor.

off-peak period – Used to describe times where travel is not at its peak, or highest level, during the day. Off-peak travel usually occurs in the midday and evenings in most cities.

operating costs – The periodic and usual expenses a company incurs to generate revenues.

park-and-ride facility – A parking facility that is part of a transportation facility; an access mode for patrons to drive private vehicles to a transportation facility.

Passenger Rail – A passenger railroad service that operates between cities on trackage that is usually part of the general railroad system.

Project Area – The special limits within which alternatives are considered.

Record of Decision (ROD) – A formal decision made by a lead federal agency based on its interpretation of a Final Environmental Impact Statement.

ridership – The number of people using a public transportation system during a given time period.

river basin – The entire geographical area drained by a river and its tributaries.

right-of-way (ROW) – Land available for operation of transportation facilities (roadways or rail lines). The land is typically government-owned (local, state, or federal). A transportation facility may occupy all or a portion of the right-of-way. ROWs can be grade-separated or at-grade.

scoping – The effort taken at the beginning of a study to consider all issues that should be addressed in the study. It is the first phase of activity to prepare an Environmental Impact Statement.

grade-separated – Used to describe an alignment that is elevated or below ground, or crossings that use an overpass or an underpass. Grade separation allows traffic or transit vehicles to pass stopping for opposing traffic on the crossed facilities.

ground-borne vibration and noise – The vibration-induced levels that propagate over ground between the source and a receptor such as a building; typically assessed indoors.

secondary impact – The effect of an action that takes place sometime after a primary event has occurred.

single-family – Land use characterized by lots containing individual residential homes surrounded by yards.

State Historic Preservation Office (SHPO) – A state administrative agency responsible for carrying out consultation in accordance with the National Historic Preservation Act of 1966, as amended and other state historic preservation regulations.

steel-wheeled – The most common type of transit, characterized by that form of wheel on locomotives running along steel rail.

stormwater – Runoff water that is generated by a rain event. Storm water discharges include runoff from land, pavements, building rooftops and other surfaces. Storm water runoff can accumulate a variety of pollutants such as oil and grease, chemicals, nutrients, metals, and bacteria as it travels across land before discharging into surface and other receiving waters. Heavy surges in storm water runoff can cause other negative effects, including flooding and erosion, to streams and adjacent low-lying areas, especially in urbanized watersheds.

Tier 1 Environmental Impact Statement (EIS) – A written statement, required by Section 102 (2) (C) of the NEPA for projects that involve a federal action such as funding. The Tier 1 EIS serves to provide information about significant environmental impacts and informs decision-makers and the public of practical alternatives that would prevent or minimize adverse impacts or improve the quality of the human environment.

threatened species – A species that may become endangered if surrounding conditions begin or continue to deteriorate.

topography – The surface features of a place or region.

Tennessee Department of Transportation (TDOT) – A multimodal agency with statewide responsibilities in aviation, public transit, waterways and railroads. The mission of TDOT is to plan, implement, maintain and manage an integrated transportation system for the movement of people and products, with emphasis on quality, safety, efficiency and the environment.

wetlands – Tidal areas or swamps with water saturated soil characteristics and associated vegetation that meet certain criteria on which filling and development are federally- and/or state - regulated.

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