

6 Financially Constrained Plan Development

Updating the CHCNGA LRTP provides the TPO with the opportunity to periodically reconsider the current programs direction and determine if transportation investments continue to align with community needs. Previous sections have outlined the process, analytical evaluations, and funding available for transportation investments. The identified multimodal transportation needs reflect demands given current regional growth patterns and local expectations for transportation services. Based upon these needs, the 2030 LRTP was developed. Solutions and recommendations to transportation needs were carefully balanced to reflect LRTP goals, community input, and the most cost-effective options for public investment.

Project Development

One goal of the CHCNGA 2030 LRTP is *to provide a balanced multimodal transportation system that provides for the efficient movement of people and goods*. In developing projects, various resources were utilized to identify multimodal transportation projects, as summarized below:

- The foundation of potential roadway improvements was *TransPlan 2025*. Based on the 2025 projects, roadway improvements for the 2030 LRTP were identified and tested using the results of the travel demand model, planning study recommendations, safety data, discussion with TDOT, GDOT, stakeholders and the general public.
- Public transportation improvements were developed by CARTA, Care-A-Van, HCRT, SETHRA, and STS staff in Tennessee and DT, WCT and Catoosa Trans-Aid staff in Georgia. Additionally, future population densities were analyzed to indicate where future transit services may be needed. Stakeholder and public comments were reviewed during the development of transit projects.
- Pedestrian and bicycle improvements were developed by reviewing recommendations set forth in local pedestrian and bicycle plans, reviewing safety data and discussing projects and priorities with the Bicycle Task Force, stakeholders and other local citizens.
- Rail improvements were developed by reviewing recommendations outlined in the *Tennessee Statewide Rail Plan*, as well as comments from CSX, Norfolk Southern, stakeholders, and the public.
- Airport improvements were developed by reviewing the *Chattanooga Airport Master Plan* and *Georgia Statewide Aviation Plan*, as well as through discussions with airport staff, stakeholders, and the general public.
- Waterway improvements were developed by reviewing the recommendations set forth in *TVA's River System Performance Report* as well as the *Chattanooga Downtown Plan*.
- ITS improvements were developed in coordination with TDOT, GDOT and the *Chattanooga ITS Architecture Plan*.

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All multimodal transportation improvements identified during development of the 2030 LRTP were evaluated against the seven CHCNGA LRTP goals as well as the federal planning factors outlined in TEA-21. Each identified project was also evaluated against the performance measures outlined early in the LRTP process. The project review screening process included evaluating each project based on delay reduction, safety, constructability, environmental justice (benefits and burdens on low-income and minority communities), cultural/natural resources, and connectivity to all modes. The evaluation results were shared with the TSC, the Advisory Group, and the TPO Executive Board and Staff. The screening documentation is provided in Appendix D.

The project selection process, which resulted in the CHCNGA 2030 LRTP, provided a continuous, cooperative and collaborative course of action. While some project priorities have changed since *TransPlan 2025*, most *TransPlan 2025* projects yet to be implemented are still valid and were included in the 2030 LRTP. The Advisory Group, TPO Executive Staff and Executive Board, and public were provided an opportunity to comment on any unimplemented *TransPlan 2025* project not included in the 2030 LRTP. Based upon this review, several *TransPlan 2025* projects were added to the 2030 LRTP.

Potential Roadway Alternative Scenarios

The travel demand model assisted in identifying and screening possible future roadway solutions. The model's value was that it could test a number of different transportation alternative scenarios based on different assumptions and projects to determine the resulting benefits or impacts to the transportation system. The results of each alternative scenario could then be compared against other alternatives as well as the base assumptions to determine which would have the greatest benefit for the CHCNGA region. Roadway improvement projects were then selected from the alternative scenario that appeared to have the greatest overall benefit for the region.

Three future alternative scenarios were developed based on different land use and transportation assumptions. The first scenario focused on improvements to the region's arterial system; the second scenario focused on Interstate improvements; and the third scenario focused on redistributing land use (population, households and employment) to activity centers throughout the CHCNGA region. Each scenario included two possible alternatives as shown in Table 6-1. Each scenario was comprised of a package of various capacity improvement projects, which were developed from projects recommended in *TransPlan 2025* and through the technical and qualitative needs assessment. Input from local stakeholders, the general public, the TSC, and TPO, TDOT and GDOT staff was critical for selecting which projects would be tested in each alternatives package.

Each alternative scenario was compared against the three benchmarks: the base year 2000 model, the 2030 E+C model, and the 2025 LRTP model. Table 6-1 lists the array of model alternatives evaluated. Appendix C provides maps, statistics, and a summary of each alternative.

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**Table 6-1
2030 LRTP Alternative Scenarios**

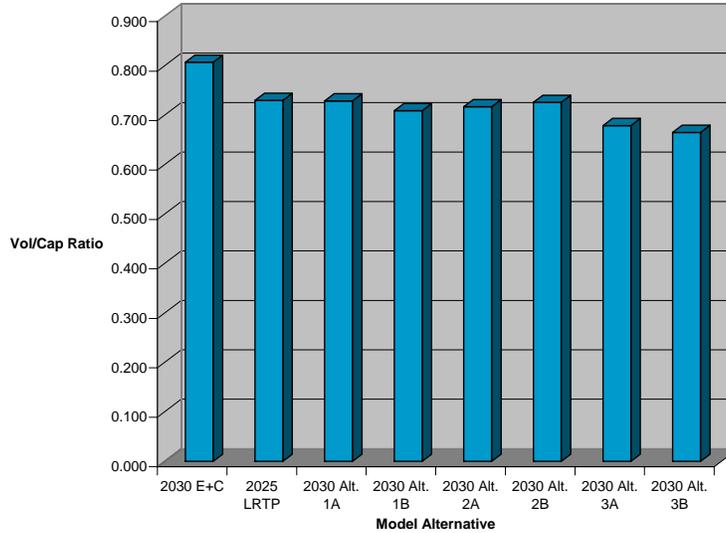
Scenario	Alternative	Improvement Project Assumptions	
		Roadway Improvements	Land Use Changes
Base Models	2000	Existing conditions model network	n/a
	2030 E+C	Existing conditions network with short-range projects added	n/a
	2025 LRTP	2025 future model based on program of projects included in <i>TransPlan 25</i>	n/a
Scenario 1: Improve cross radial connectors	2030 – 1A	Add capacity on existing arterial roadways	2030 E+C TAZ allocations
	2030 – 1B	Add capacity by development of new arterial roadways	
Scenario 2: Improve Interstate System	2030 – 2A	Add general purpose lane capacity to the Interstate highways	2030 E+C TAZ allocations
	2030 – 2B	Add special purpose (HOV) lane capacity to the Interstate highways	
Scenario 3: Redistribute Land Use	2030 – 3A	Add capacity on existing arterial roadways	Reallocate 50% of 2000 to 2030 growth into activity centers
	2030 – 3B	Add capacity by development of new arterial roadways	

To assist in determining each scenario's impact on congestion, V/C ratios, VMT, and VHT for each alternative in the model were evaluated. As the figures contained in Section D of the 2030 LRTP Technical Supplement (separate document) illustrate, Alternative 1A resulted in the highest overall V/C ratio, indicating the most amount of congestion. Alternative 3B (modified land use) results in the lowest overall V/C ratio, indicating the least amount of congestion. Alternatives 3A and 3B were tested to evaluate how land use controls could impact the roadway network.

In Tennessee and Georgia, most major decisions concerning land use are made at the local level. In the CHCNGA region, this means land use and development decisions are determined in each of the four counties. On the other hand, most major transportation decisions are made by TDOT and GDOT in coordination with regional TPOs such as the CHCNGA TPO. Coordination between local governments and their respective DOT are extremely important to realizing the positive impacts shown in Alternatives 3A and 3B. Figure 6-1 shows a comparison of each scenario's overall V/C ratio and Table 6-2 shows the VMT and VHT for each scenario.

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**Figure 6-1
Overall V/C Ratio by Alternative**



**Table 6-2
VMT and VHT Summary by Alternative**

CHCNGA 2030 Alternative Performance Summary		VMT	VHT
Alternatives			
2000	Base Year	10,725,660	326,717
2015 E+C	2015 Existing plus Committed	13,104,218	408,903
2030 E+C	Existing plus Committed	16,882,478	775,589
2025 LRTP	TransPlan 2025	16,957,482	601,905
2030 Alt. 1A	Cross Radial Connectors - Emphasis on Upgrades	16,938,704	697,267
2030 Alt. 1B	Cross Radial Connectors - Emphasis on New Locations	17,118,058	675,321
2030 Alt. 2A	Expansion of Interstates - Emphasis on Widening	16,956,836	679,813
2030 Alt. 2B	Expansion of Interstates - Emphasis on HOV/Truck Lanes	17,064,636	689,446
2030 Alt. 3A	Land Use Adjustment - Upgrades	16,266,991	636,962
2030 Alt. 3B	Land Use Adjustment - New Location	16,457,217	590,248

Of all 2030 alternative scenarios, Alternative 3B is most effective at reducing VHT and overall V/C, while 3A results in the lowest VMT. However, if 2030 land use assumptions are not met, Alternative 1B is the most effective at reducing VHT, while Alternative 1A results in the lowest VMT.

Project Selection

The CHCNGA 2030 LRTP includes 383 roadway, pedestrian, and bicycle projects which, based on the planning level cost estimates, total \$1.327 billion. Additionally, safety, bridge, ITS, and transit projects and programs, as well as planning studies, identified in the 2030 LRTP have a

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total estimated cost of \$543 million. Improvements include expansion to the existing roadway, new location roadways, pedestrian and bicycle system, ITS projects, and a Traffic Management Center (TMC). While not individually listed, maintenance projects such as resurfacing and reconstruction and operation projects are categorically included for a total \$207 million. The 2030 LRTP projects and programs total \$2.279 billion. TDOT, GDOT and the TPO, through their on-going process, will continue to identify maintenance and operation projects and program those into the TIP to ensure the transportation system is maintained and operates efficiently.

Projects and programs contained in the 2030 LRTP reflect input received throughout the 18-month public involvement process. Based on the available funding provided by TDOT and GDOT, adequate funding is available to implement the selected projects over the 25-year planning horizon. However, each funding source identified in Section 5 has specific limitations on the kind of project can be constructed.

Federal STP funds are made up of Surface Transportation Program-Other Area (STP-OA), Surface Transportation Program-Any Area (STP-AA), and Surface Transportation Program-Transportation Enhancement (STP-TE) funds. STP-AA funds are programmed by TDOT and GDOT and are used to fund major construction or reconstruction projects of state system roads. STP-OA funds are programmed by the TPO. Historically 75 percent has been used to fund roadway projects, 10 percent to fund intersection improvements, 5 percent to fund alternative transportation projects, 5 percent to fund enhancement projects and 5 percent to fund resurfacing projects. At the discretion of TDOT and GDOT, STP-AA funds can be used to fund local roadway projects. STP-AA funds may be used if the roadway functional classification is at least a "collector" facility and the roadway is temporarily put on the State Route system.

Projects included in the financially feasible 2030 LRTP were assigned to either Tier 1 or Tier 2. The TIP, which is updated biennially by the TPO, identifies short-term funding commitments for a three-year time period. The LRTP's Tier 1 reflects needed projects for which a phase (PE, ROW, or CST) will be funded over the next three years (FY 2006-2008). The prioritization of TIP projects and programs will be based on the TPO application process for local projects and coordination with TDOT and GDOT to ensure state projects are appropriately prioritized. Both time periods (Tier 1 and Tier 2) contain projects and programs from *TransPlan 2025*, along with any newly identified projects and programs.

Environmental justice was a consideration throughout the study, especially during the selection of programs and projects. Special efforts were made to involve EJ communities in the planning process. Residential, employment, and transportation patterns of minority and low-income populations were identified to address their needs. In addition, an organized and targeted public involvement process was developed to facilitate participation and engage minority and low-income populations in the transportation decision making process. During the project development process, the 2030 LRTP considered potential impacts of recommended projects on EJ communities by evaluating each projects impacted on low-income or minority populations in the CHCNGA region. Figures 6-2 and 6-3 identify areas with EJ concentrations (low-income and minority) and the 2030 LRTP roadway projects. Areas with EJ concentrations were found to have transportation needs as part of the technical analysis. Technical evaluations were

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combined with public comments and input from the communities in identifying improvements to the roadway system in those areas. A total of 57 roadway projects are located in areas with EJ concentrations (62 percent of the total 2030 LRTP roadway projects). The project value for these projects is \$1.073 billion (85 percent of the 2030 LRTP total roadway transportation investments) and will improve 231.7 miles (79 percent of the 2030 LRTP total mileage expected to be improved by LRTP recommended projects). These projects will improve roadway transportation in EJ communities in the study area. Transit projects also serve EJ communities. The CARTA buses operate in an area serving 67 percent of the high concentrated low-income communities and 75 percent of the high concentrated minority communities in the CHCNGA region. In addition, the total amount of bicycle facilities investments is \$4.6 million in low-income communities and \$3.6 million in minority communities in the study area. Pedestrian improvements are also identified throughout the study area with distribution of improvements including neighborhoods with EJ concentrations. Appendix D provides the documentation that was developed and used in the project selection process.

2030 Cost Feasible Plan

Funding for the recommended program was reviewed with the planning partners. Federal law requires the LRTP to be fiscally constrained and include only those projects and programs for which revenues can be reasonably anticipated. The CHCNGA region is projected to have approximately \$2.383 billion available for multimodal transportation system investments (capital, operations and maintenance) over the next 25 years. To ensure the 2030 LRTP was financially constrained, estimated planning level project and program costs (PE, ROW and CST) were calculated and compared against the anticipated revenues. Based on this analysis, all projects and programs contained in both time periods fall within the anticipated 2030 revenues, as provided by TDOT and GDOT.

Other “non-project” recommendations that the TPO should consider in the future include:

- Establishing a Freight Task Force as a subcommittee of the TPO. This subcommittee should include freight stakeholders and will provide the planning process with a user’s perspective of transportation needs.
- Establishing a Ride Share/Alternative Work Strategy initiative that will investigate the potential for establishing carpooling, vanpooling and teleworking with local business participation.
- Continual coordination of the planning process with federal air quality developments must be continued. The transportation planning process and air quality planning were coordinated throughout the 2030 LRTP process.

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Figure 6-2
Roadway Projects Contained in Non-White Population Areas

Figure 6-3
Roadway Projects Contained in Low-Income Population Areas

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Multimodal Transportation System

The 2030 LRTP includes programs and projects identified from various sources, including comprehensive plans and other related local and state planning efforts, stakeholders, and the public. They were evaluated in the LRTP study process and determined to represent a transportation need that supports LRTP transportation goals. Figure 6-4 depicts the roadway projects contained in the 2030 LRTP. Appendix E includes a list of projects contained in the 2030 LRTP for each mode.

Roadway and Bridge Improvements

The improved roadway network contained in the 2030 LRTP includes projects identified in *TransPlan 2025* as well as new roadway projects to address the demands of new development and changes in trip patterns identified from the update of 2030 land use and socioeconomic data. A listing of the 93 roadway projects, which total \$1.265 billion, are provided in Appendix E and Figure 6-4 shows the project location by improvement type. A summary list of roadway improvements identified in the 2030 LRTP for improving regional mobility includes the following:

- North/south mobility projects:
 - I-75 northbound to I-24 westbound lane extension beyond the Belvoir Road overpass
 - I-24/Ringgold Road Interchange and Welcome Center Modifications
 - Widen US 27 from I-24 to SR 8/ Signal Mountain Boulevard
 - Widen SR 193 from Central Avenue Extension to SR 341
 - Widen Mission Ridge Road from McFarland Avenue to SR 341
 - Construct new roadway from US 27/Chickamauga Avenue from US 27 Relocation/Hogan Road to Rossville Bypass
 - Construct new bypass around Rossville - Reroute US 27 along General Thomas Avenue and 45th Street
 - Widen Graysville Road, from Ringgold Road to East Brainerd Road
 - Widen SR 321/Ooltewah-Ringgold Road from Lee Highway to US 41/US 76

- East/west mobility projects:
 - Widen I-24 from I-59 to US 27 in Tennessee and Georgia
 - Construct HOV lanes on I-75 and I-24 throughout the study area
 - Widen Shallowford Road from east of Moore Road to west of SR 153
 - Widen Brainerd Road from Dodds Avenue to Moore Road
 - Widen SR 317/Bonny Oaks Drive from SR 58 to I-75
 - Widen Old Lee Highway from SR 317 to Little Debbie Parkway
 - Widen SR 317/Apison Pike from Old Lee Highway from East College Drive
 - Widen Amnicola Highway from Riverport Road to SR 153
 - Widen Gadd Road from Norcross Road to SR 153
 - Construct Signal Mountain Bypass from US 127 to US 27
 - Widen SR 2/Battlefield Parkway from South Cedar Lane to I-75

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Figure 6-4
2030 LRTP Roadway Projects

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I-75 and I-24 directional interchange was identified as a “choke point” in a 2002 *Interchange Modification Report (IMR)* completed by TDOT. Based on the information, analysis and recommendations contained in the IMR, the 2030 LRTP identifies the following short-term solutions, which have been approved by FHWA:

- Construct an additional lane for the I-75 northbound to I-24 westbound movement to extend beyond the Belvoir Road overpass.

The IMR also analyzed traffic operations at the I-75/Ringgold Road interchange and Welcome Center and recommends the following improvements:

- Eliminate loop ramp in northeast quadrant
- Modify northbound off ramp to include a left turn lane movement at Ringgold Road
- Modify the northbound on ramp from Ringgold Road and add a northbound lane on I-75 to beyond the Welcome Center
- Construct a new access road from Ringgold Road to serve I-75 Welcome Center

These improvements will improve both the level of service and safety through this area of I-75.

As bridges age, they not only deteriorate physically but also become functionally obsolete due to evolving design standards. Maintaining the bridge network is important because of the delay caused by travel detours when bridges are posted or closed. Both TDOT and GDOT promote preventive maintenance activities on bridges to extend their useful life. These activities include scour protection, minor bridge deck rehabilitation, and spot painting. Federal bridge funds (BRBH funds) cannot be used to fund these activities because they do not bring bridges up to current standards. Federal bridge funds are intended to extend the life of the bridge.

Both TDOT and GDOT undertake biennial bridge evaluations, during which time the bridge’s sufficiency rating is calculated. The CHCNGA TPO relies on TDOT and GDOT bridge priorities and sufficiency ratings in making programming decisions for the TIP and LRTP. Any bridges on the NHS that are in poor repair and in danger of being closed or posted receive a high priority in the bridge program. A list of each bridge project contained in the 2030 LRTP, which total \$64.389 million, is provided in Appendix E. The bridge replacement projects were coordinated with on-going TDOT and GDOT bridge projects to ensure these projects are identified in the 2030 LRTP. New bridges over railroad crossings were identified through discussions with local officials. These improvements are along high traffic corridors in the region and constructing grade separations will improve traffic operations and safety by removing the conflict between autos and trains.

Transit Improvements

Demand for transit services has grown in the urban core over time, and currently demand for new or targeted service to accommodate needs fueled by the growing tourism and visitor market. Demand for evening and weekend transit service has developed as a result of the change in the region’s economic base from manufacturing to service industries. In addition,

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transit service demands from special market groups, such as the elderly and those with disabilities, have increased.

Development trends outside the region's urban core have not always supported transit. The vast majority of new residential, retail, office, and industrial development has occurred outside CARTA's traditional market and fixed route service areas, in low density suburban and rural locations. Low density development in the region over the past several decades has favored the single occupant vehicle.

Transit services hold the promise of more efficient utilization of the existing transportation network by supporting greater person throughput on a given roadway by encouraging local residents to use transit services instead of using their personal vehicle. Transit also provides residents with the choice of an alternative means of transportation. Transit riders may include choice riders or individuals who lack a vehicle or the ability to drive. Transit also reduces congestion and improves air quality by reducing single occupant vehicle (SOV) trips. In addition to the transit projects and programs contained in the 2030 LRTP, the CARTA Board and staff are currently developing a long range vision that will identify increased service frequency and, if funding permits, route expansions. The 2030 LRTP identified \$412,706 of 5311 funding for Hamilton County; \$338,500 for Catoosa County; \$67,500 for Dade County; \$542,000 for Walker County; and \$372.670 million of 5307 and 5309 funding for CARTA. A complete list of public transportation projects and programs are listed in Appendix E.

The viability of the CHCNGA transit system relies on residents being able to easily reach transit stops and stations with or without a vehicle. Aside from expanding or further developing the transit system, enabling greater transit accessibility requires a comprehensive coordination strategy between CARTA and the four rural public transportation providers. Each transit service provider offers a valuable public transportation service. Coordinating routes and schedules will benefit local users and will make the entire CHCNGA transit system network more effective.

Rural transit services, funded with FTA 5311 funds, have been in place serving the Collegedale, Red Bank and other communities in Hamilton County. These funds are congressionally designated for rural areas which are defined by the Census using a population and density criteria. The 2000 Census recorded growth in the Chattanooga region that increased the population / density, which reduced the amount of "rural" area. Thus, areas that were traditionally served by rural providers must now be served by urban providers. Recognizing this change and its impact on the region, the TPO staff and Board recommended a transit study be conducted to determine how best to meet and finance the growing demand for transit in the new urbanized areas. The study will address coordination of rural and urban transit services, bi-state transit connectivity and funding responsibilities for transit services.

The 2030 LRTP recommends coordinating pedestrian and bicycle infrastructure improvements with CARTA routes and services to leverage maximum utility of both investments. All CARTA buses are now equipped with bicycle racks and this improvement along with coordinating bicycle route along CARTA routes will encourage simultaneous use of each mode purpose. Passenger access to transit routes using sidewalks and bicycle trails enhances intermodal connectivity and improves mobility.

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Pedestrian Improvements

Construction and maintenance of sidewalks has been and continues to be the predominant strategy for improving pedestrian movements in the CHCNGA region. The LRTP recommends:

- More signalized crosswalk locations. Funding for pedestrian and bicycle facilities should be a scope element included in highway and transit projects.
- Installation of countdown pedestrian signals and pedestrian scale lighting.
- Continued adherence to the ADA.
- More emphasis on pedestrian connections to CARTA stops.

As noted in Section 3, pedestrian facility needs were identified through plan review and stakeholder and public input. The CHCNGA TPO's *Chattanooga Urban Area Sidewalk-Streetscape Policy Guide* included a quantitative sidewalk evaluation matrix to assist jurisdictions in prioritizing sidewalk projects.

Approximately 363 miles of sidewalk needs were identified for the 2030 LRTP, and each municipality in the CHCNGA region has funding to construct additional sidewalks based on their local needs to improve connectivity and encourage pedestrian travel. As sidewalk priorities are identified by local officials using the sidewalk-streetscape policy guide, projects will be submitted to the TPO during the biennial TIP application process.

Greenways are another component of the region's pedestrian network. Chattanooga's greenway system includes locations within the City of Chattanooga and Hamilton County, as well as connections into north Georgia. The Trust for Public Lands has taken the lead for providing an interconnected greenway system linking vital recreational facilities with major activity centers in the CHCNGA region. The greenway program is an important component to encourage pedestrian travel and the majority of the planned greenway system is included in the 2030 LRTP.

The pedestrian projects identified in the 2030 LRTP represent a large investment (\$29.767 million) which will transform pedestrian mobility in the CHCNGA region, contributing to a balanced multimodal transportation system. A complete list of pedestrian projects, which includes sidewalks, streetscapes and greenways, is provided in Appendix E.

Bicycle Improvements

As the CHCNGA region continues to grow and prosper over the next 25 years, improving the bicycle network will be a major transportation strategy. The bicycle network provides a comprehensive network of facilities that connects the local population to desired destinations. The *Chattanooga Urban Area Bicycle Facilities Master Plan* completed in 2002 by the TPO inventoried generators and attractors, including schools, parks, libraries, employment centers, shopping areas and the like. Following extensive public involvement and the TPO Executive Board's approval, the project recommendations set forth in that plan were included in the 2030 LRTP. The 2030 LRTP identifies 377 miles of bicycle facilities, which total \$21.454 million, and

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includes a combination of bicycle lanes (dedicated 4-foot lanes) and bicycle routes. The recommended bicycle projects will provide not only a comprehensive multi-jurisdictional network of facilities to accommodate cyclists of various skill levels, but also a clear course of action to make a more bicycle-friendly community. A list of each bicycle project and map showing project locations are provided in Appendix E.

Rail Improvements

The City of Chattanooga Debutts rail yard, located at Amnicola Road and Wilcox Boulevard, continues to serve as the major hub for rail activity. As industrial development occurs, a need to consider feeder roads to industrial sites with rail spurs and especially dual spurs (such as Enterprise South that will be served by both CSX and Norfolk Southern) is essential. Railroads require investment of dollars in order to maintain quality rail activity. Potential funding sources include HR 879 which is a tax credit program for short line rail roads. There is also a trend or movement toward strengthening intermodal activity. The Hamilton County Railroad Authority has regional and short term railroad goals. Primarily, this authority would like to use funding to improve the NS (main line) rail line in Chattanooga.

At-grade rail-highway crossings exist throughout the CHCNGA region. These represent potential safety problems. TDOT and GDOT select most needed railroad crossing safety projects based on their biennial evaluations. Any additional rail crossing safety improvements or changes to the project list of rail crossings are coordinated with the TPO. A list of the rail safety projects identified for improvement through stakeholder and public meetings to be completed over the next 25 years in the CHCNGA region, which total \$9.7 million, is provided in Appendix E.

Aviation Improvements

The *Chattanooga Metropolitan Airport Master Plan* includes recommendations for future improvements. The *Airport Master Plan* calls for better access between downtown and the airport, identifies the need for additional parking, runway expansion and improved internal roadway circulation. The 2030 LRTP provides additional and improved access to the Chattanooga Metropolitan Airport. For other identified airport improvements, TDOT and GDOT have Statewide Aviation Programs that are funded through federal (FAA) Block Grants. All aviation improvements must be included in the TDOT Capital Improvement Program to be eligible for federal funds.

The *Georgia Aviation System Plan* addresses improvement needs for north Georgia airports. The Barwick Lafayette Airport in Walker County, Georgia (location is outside CHCNGA study area boundary) is considered a Level II business airport of local impact. The Georgia Aviation System Plan identified minimum standards for Level II airports. As state and or federal aviation funding becomes available, deficient standards will be addressed by the GDOT Office of Intermodal Programs Aviation Division.

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Waterway Improvements

Waterways are included in the LRTP for reference only. The Army Corps of Engineers recommends replacing the existing lock at the Chickamauga Dam. Funding for a new Chickamauga lock is not part of the LRTP funding. The new lock which will cost approximately \$240 million will be 75 foot by 400 foot (39 percent bigger than existing lock). Replacing the lock will assure continuation of operation of the biggest operating lock in the nation. Improvements can keep goods traversing by river rather than via truck over that already congested roadway system. Constructing a new lock would improve goods movement efficiency due to the reduction in the amount of time it take a barge to pass through the new lock. Currently, only one standard size barge can pass through the Chickamauga lock at a time, and the average process time for each tow is approximately eight hours (the greatest duration of any lock in the region). The new lock is projected to cut the average tow time nearly in half and would encourage more river related industry to locate in the region. This increased efficiency may also encourage certain goods currently being moved across the roadways to switch to a barge. It is anticipated that it will take approximately six years to construct the new Chickamauga lock.

The City of Chattanooga Downtown Plan identified private water taxi service on the Tennessee River between North Shore and Ross's Landing and other key riverfront activity centers. Since this is a private taxi service, no TPO funding has been allocated to this program. The CHCNGA 2030 LRTP recommends that a waterways development plan be completed which will provide valuable information to the private sector on implementing water taxi service on the Tennessee River in Chattanooga.

Other Transportation Influences

Freight Movement

Since 1991, federal transportation legislation has emphasized improving the intermodal efficiency of the freight transportation system to provide better connections among the four major modes of freight transport (air, highways, railroads, and waterways). National estimates predict that traffic congestion will double within the next few years, requiring more attention to issues related to goods movement. Moving freight efficiently will help the CHCNGA region compete more efficiently for manufacturing and transportation jobs. In response, the 2030 LRTP has identified improvements, which are listed in Appendix E, to the National Highway System (NHS). The NHS is comprised of Interstate and arterial highways that are most important to moving goods from and to market. In addition, the 2030 LRTP identifies future studies, which are listed in Appendix E. The TPO will conduct a Freight Study which will assist in planning for the anticipated future growth in freight movement across the CHCNGA region. The Study will begin in October 2006 to ensure the recommendations are available for incorporation into the 2035 LRTP update.

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In response to the growing freight needs in the region, a Freight Task Force should be established as a subcommittee of the TPO. The Freight Task Force could ensure that the freight community's concerns and priorities are taken into account in regional transportation planning activities. Specifically, the task force should seek to:

- Provide the freight community with general and mode-specific information about the transportation program;
- Educate decision-makers about the freight community's concerns;
- Comment on transportation projects that address the freight community's needs;
- Participate in planning studies to address high-priority issues; and
- Provide information for transportation planning purposes.

Freight Task Force members will be the conduit for communications of the freight community's concerns with regional, state, and federal officials and planners. The Freight Task Force will be important to helping the transportation plans understand the demands of transportation operators. The information provided by this group will be valuable for future planning studies identified in the 2030 LRTP.

Safety Improvements

Safety improvements in the CHCNGA region were developed through reviewing crash data and through discussion with local officials and the general public. However, safety improvements in the CHCNGA region must address more than roadway improvements. Based on the review of crash data, most crashes in the region were the result of driver behavior or human factors. Speeding, red light running, following too closely, improper lane changes, weaving in and out of traffic, driving under the influence, not paying attention, and driving too fast for conditions are some of the most common behaviors that lead to crashes, injuries, and fatalities. Because of the behavioral causes of vehicle crashes, most crashes are preventable and not the result of roadway design or geometrics. Improving safety on regional roadways will require a broad approach that goes beyond typical engineering solutions, such as education and heightened enforcement.

During discussions with local officials and citizens and after reviewing crash data, locations were identified where intersection improvements, traffic signals and roadway realignments were needed. A list of roadway safety improvement projects, which include intersection improvements, traffic signals and roadway realignments and total \$28.585 million, are provided in Appendix E.

Operations and Maintenance

Operations and maintenance is an important component of the 2030 LRTP addressing preservation of the system. Operations and maintenance includes system operations (plowing, mowing, painting, traffic control, bike and pedestrian ways, etc.), bridge replacement and rehabilitation, resurfacing and reconstruction projects, bus replacements, and other related activities. While operations, maintenance and system preservation in aggregate are significant

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(\$207 million in the 2030 LRTP), individual operations and maintenance projects are considered small capital projects. Many of these projects are grouped into “lump sum” categories that encompass maintenance, lighting, signage, etc. Consequently, these types of projects are not specifically identified in the 2030 LRTP.

Both TDOT and GDOT contract with local municipalities for some maintenance projects. Each municipality in the CHCNGA region recognizes the necessity of operations and maintenance and funds local maintenance with local monies. Each county and municipality in the CHCNGA region has submitted a letter of commitment to operate and maintain their roadway infrastructure. These letters are on file at the office of the TPO.

Transit operations and maintenance is part of providing transit services. Transit operations and capitol projects are identified in the LRTP in Appendix E.

Intelligent Transportation System Improvements

Future ITS services in CHCNGA region were defined by local stakeholders as part of a TDOT Regional ITS Architecture initiative. Each ITS service requires coordination between multiple agencies, and ITS staff from TDOT and GDOT meet regularly. There are currently four ITS services planned in the CHCNGA region: regional traffic control, incident management, transit management, and signal system interconnection, which total \$26.732 million. The ITS projects are provided in Appendix E. GDOT has no current plans to install any ITS technologies in north Georgia at this time; however, integrating surveillance cameras in Georgia may be considered in the future.

Regional Traffic Signal Control

Traffic signals are an important component of traffic management as they allow for the safe movement of vehicles through intersections. Signal control systems may range from local single controllers to interconnected, coordinated signal systems. Advanced traffic signals can adapt to current traffic conditions. Traffic signals along arterial streets in the Chattanooga region are currently not coordinated across jurisdictional boundaries, but coordination will be required in the future to improve traffic operations.

Several of the municipalities in the CHCNGA region currently operate coordinated signal systems. The 2030 LRTP identifies corridors in the region where a coordinated traffic signal system operations will improve the operational efficiency of the roadway network instead of widening the roadway. A list of these improvements is provided in Appendix E.

TDOT plans to use dynamic message signs (DMS) and Highway Advisory Radio (HAR) along the freeways to provide drivers with real-time traffic and incident information. This system will enable the coordination of detours with other traffic agencies in the region, thereby facilitating implementation of signal timing plans to direct the detoured traffic. TDOT will also be developing a video surveillance system to operate traffic signals and coordinate with emergency response agencies. Once the system is operational, TDOT anticipates sharing the system with local agencies. The video images will be available to the public through the TDOT web site.

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Coordination of traffic control devices to improve operations along surface streets and on/off freeways in the Chattanooga region will benefit travelers by reducing their travel times and alleviating congestion. These benefits will be experienced incrementally as ITS is deployed and control systems are coordinated in the region.

Incident Management

Response to incidents must be coordinated in a bi-state region. Traffic and public safety agencies in the CHCNGA region coordinate their response to incidents. TDOT currently operates Freeway Service Patrols in the Chattanooga area, which respond to all types of incidents to clear the roadway as soon as possible and minimize the impact on traffic flow. The patrols use radios to communicate with the dispatch and other emergency agencies in the area.

In the future, the region's traffic and public safety agencies will collect information from roadway infrastructure, motorist reports, 911 and other emergency calls for coordinated incident response. The traffic systems will include TDOT's regional traffic management center (RTMC), the Freeway Service Patrols, Chattanooga traffic operations center (TOC) and various other traffic control centers in the region. As development of the traffic centers advances, signal timing plans and uniform DMS notices will be developed for on-duty personnel to respond to, and ultimately clear, various types of incident scenarios. Once the emergency and traffic systems are interconnected, each TOC will have access to the latest incident status. The emergency dispatchers will have capability to view and control the CCTV cameras operated by the RTMC and municipalities to verify incidents. The RTMC will control all of TDOT's surveillance cameras on the freeway. Public agencies involved in emergency response or traffic controls will be able view camera images once they have installed the appropriate communications equipment and establish the necessary interagency agreements.

Regional Transit Management

In the CHCNGA region, transit services are provided by several agencies. CARTA provides fixed-route services, Care-A-Van paratransit service, Dial-a-Ride service in neighborhoods and an electric shuttle in the downtown area. HCRT, SETHRA, Walker County Transit, Catoosa Trans-Aid and Dade Transit provide paratransit service for regional users.

Currently, CARTA buses have traffic signal priority for City of Chattanooga in the area around Hamilton Place Mall. In the future, CARTA may expand transit signal priority to additional areas. Other transit agencies would like to have traffic signal priority. CARTA is in the process of implementing ITS tracking for their vehicles and automatic counts to record the number of passengers as they enter and exit the vehicles. Eventually, CARTA will provide information on current transit service using a variety of means including a website, signs at stops and other means. CARTA will coordinate all activities with the other transit agencies in the region.

Transit agencies in the CHCNGA region intend to improve transit operations by limiting street traffic conflicts that can impact schedules and ultimately budgets. Interface with local public safety agencies must be coordinated so transit emergencies can be reported quickly.

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Signal System Coordination

Signal system coordination provides a means by which a sequence of green lights is established along a series of traffic signals to allow for the uninterrupted flow of traffic between these traffic signals. Signal coordination is most typically used along heavily traveled arterial streets with a frequent presence of traffic signals. To provide flexibility in traffic system control and to improve mobility on major corridors, the 2030 LRTP identifies upgrading existing traffic signal equipment along key corridors in the CHCNGA region.

Congestion Management System

Federal regulations cite that “consideration needs to be given to strategies that reduce SOV (single-occupancy vehicle) travel and improve existing transportation system efficiency.” The intent is to identify strategies to reduce SOV demand as an alternative to road widening or new road construction. The same regulations detail five categories of traditional and nontraditional congestion management strategies that could be considered. The categories are Transportation Demand Management (TDM) measures, traffic operational improvements, public transportation improvements, Intelligent Transportation System (ITS) technologies and, where necessary, additional system capacity. Many of these options are identified in the 2030 LRTP that will mitigate traffic on the region’s roadway as well as along the CMS network. However, the TPO does not have control of some of these strategies and coordination with other agencies and or jurisdictions is required to implement the congestion management strategy. The TPO should continue to discuss and explore potential options for congestions management with member governments. The public’s strong support for transit aligns with other strategies to reduce SOV travel in the region.

Congested corridors and intersections listed in the 2004 CMS report are addressed through projects and programs identified in the 2030 LRTP. Some of the improvements entail adding system capacity to improve operations along the congested corridors while other strategies include TDM, operational, and ITS improvements to assist in mitigating traffic.

Transportation Demand Management

TDM is critical to addressing many of the growth and development issues in the CHCNGA region. TDM focuses on reducing trips on the transportation system, particularly during peak travel periods. This is accomplished through better management of travel demand by relieving some of the pressure on the transportation system and improving efficiency by shifting demand to times or modes that have excess capacity. TDM strategies also improve the quality of life by providing local citizens transportation choices for traveling to desired destinations. To help address the growing demands being placed on the CHCNGA transportation system, the 2030 LRTP supports three primary TDM strategies: ridesharing, cycling and walking support, and improving transit accessibility. The 2030 LRTP identifies extensive bicycle and pedestrian improvements which will expand the existing network to provide a system that will allow local residents to bike and walk in areas where the only current mode of transportation is by automobile. The 2030 LRTP also recommends a Ride Share/Alternative Work Strategy study which will establish a program to encourage carpooling, teleworking and local business

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participation as well as identify logical areas to construct park and ride lots to promote the program.

Planning Studies

Study of the region's transportation needs and consideration of potential solutions have led to recognition of the need for additional studies focused on specific aspects of the program. The recommended planning studies that should be completed in Tier 1 will provide the TPO, TDOT, GDOT and the regional transit agencies recommended projects and programs, implementation strategies on prioritizing future multimodal projects and programs. Appendix E provides a complete list of recommended studies, which total \$6.425 million, included in the 2030 LRTP.

Context Sensitive Design

There are numerous projects contained in the 2030 LRTP that will require sensitive design to protect and preserve the community characteristics as improvements are implemented. Context Sensitive Design (CSD) can offer solutions to transportation needs that preserve the unique landscapes, respect historic neighborhoods, and accommodate alternative modes, such as cyclists and walkers. Local CHCNGA citizens have become more concerned about the impact of transportation improvements on their community. The CHCNGA TPO understands that constructing roadway projects impacts local communities. To lessen these impacts, a design solution review was undertaken during the development of the 2030 LRTP to ensure roadway projects are responsive to various project settings. Typical sections based on the future functional classification of a roadway projects are provided in Appendix F. Each typical section sheet provides a design which seeks to respect unique project settings and accommodates anticipated multimodal users while improving the safety and mobility of travelers. In this way, CSD as shown in the typical section sheets, provides an approach to development of new and redesigned facilities that balance meeting transportation needs with the values of the communities served.

Project and Program Relationship to Goals

- **Goal 1** – Provide a balanced multimodal transportation system for the efficient movement of people and goods.
 - Projects and programs included in the 2030 LRTP cover all transportation modes. The Plan identifies an extensive bicycle and pedestrian network throughout the region. Each public transportation provider will continue to serve the region through fixed route and demand transit services. The combination of these projects along with the roadway and intersection projects provide a balanced an efficient transportation system that reduces VMT and VHT.
- **Goal 2** – Develop and maintain a multimodal system which provides for the safe, efficient and convenient movement of people and goods.
 - The 2030 LRTP identifies maintenance funding which will provide the region resources to adequately maintain the multimodal transportation system. The 2030 LRTP developed multimodal projects and programs which improves traffic operations

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- and safety throughout the region. Improvements include intersection improvements (new traffic signals, traffic signal coordination, turn lanes, etc.) roadway realignments, roadway widenings, railroad crossing enhancements and grade separations
- **Goal 3** – Coordinate the transportation system with existing development and planned growth in the study area consistent with specific land use plans.
 - During the development of the 2030 LRTP, land use plans from Hamilton County in Tennessee and Dade, Walker and Catoosa Counties in Georgia were examined to ensure the projects and programs identified in the Plan supported the surrounding land use. As projects move forward to implementation, the LRTP identifies context sensitive design criteria to ensure projects conform to the surrounding land use and community features.
 - **Goal 4** – Provide viable travel choices to ensure mobility and sustain the quality of the environment.
 - The 2030 LRTP identifies HOV lanes, bicycle, pedestrian, greenway, transit projects and programs that provide local citizens additional travel options. The Plan also recommends that a regional Park and Ride/ Commute Alternative study be completed. This study will examine areas in which to build Park and Ride lots to encourage carpooling/ridesharing and these lots will also be areas in which transit providers can offer service from outlying areas into Chattanooga.
 - **Goal 5** – Develop a financially feasible multimodal transportation system that supports the development of all sectors of the study area's economy.
 - Based upon the projected funding available to the region, all projects and programs identified in the 2030 LRTP can be implemented over the next 25 years. The multimodal improvements identified in the 2030 LRTP support existing and future regional plans. For example, projects contained in the 2030 LRTP will encourage economic growth at Enterprise South, the Chattanooga Regional Airport, downtown Chattanooga, Collegedale and throughout north Georgia. Other municipalities throughout the region will also benefit from the improved transportation network identified in the 2030 LRTP.
 - **Goal 6** – Increase cooperative intergovernmental programs that enhance the safety, convenience and efficiency of motorized and nonmotorized travel throughout the study area.
 - All local jurisdictions (State, County, City) were included in the process of developing the 2030 LRTP. The existing TPO structure includes representation from federal, state, county and city agencies and this group collaborated to ensure the multimodal transportation projects and programs enhanced mobility and safety throughout the entire region.
 - **Goal 7** – Develop operations and maintenance strategies that maximize the life of the transportation system.

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- Both TDOT and GDOT have on-going maintenance and operations programs which systematically preserve the transportation infrastructure. This strategy will continue in the future and all projects and programs will be included in the TIP as identified by TDOT, GDOT and the TPO.

Plan Implementation

The implementation of the 2030 LRTP consists of priority phases identified as Tier 1 and Tier 2. Each project and program in the 2030 LRTP is listed in Appendix E and provides the planning level cost estimate as well as the implementation phase period. The Program of Projects contained in the 2030 LRTP establishes a framework for the future multimodal transportation system in the CHCNGA region. The development of the 2030 LRTP represents a continuation of the transportation programs current direction, emphasizing air quality sensitivity and multimodal transportation efficiency.

The TIP (2006 to 2008) will include multimodal projects and programs identified in the Tier 1 implementation period. The prioritization of these projects and programs will be based on the TPO TIP application process for local projects and coordination with TDOT and GDOT to ensure state projects are appropriately prioritized. The short range implementation plan sets the stage for longer range improvements that follow.

Section 5 outlined the process in which the total projected available funding of \$2.383 billion over the next 25-years was determined. The total cost estimates to implement all projects and programs contained in the 2030 LRTP totals \$2.279 billion. Based on the projected revenues provided by TDOT, GDOT and CARTA and the planning level cost estimates approved by the TSC, TPO staff and Board, the 2030 LRTP demonstrates financial feasibility.

As shown in Table 6-3, revenues and expenditures are balanced for the Plan (in keeping with federal requirements in 23 CFR 450.322(11)). The projects programmed in Tier 1 and Tier 2 reflects priorities of GDOT, TDOT and of local governments. Contingent on the availability of funding in the anticipated federal legislation and priorities established by Congress in the new federal bill, the projects contained in specific time periods may be shifted.

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Table 6-3

Revenue and Expenditure Comparison by Category (2006-2030)

	CHCNGA Tiers 1 and 2 Estimated Revenues and Expenditures					
	Total Revenues	Total Expenditures	TN Revenues	TN Expenditures	GA Revenues	GA Expenditures
New Construction and Reconstruction	\$1,347,046,057	\$1,279,386,437	\$969,336,172	\$903,559,497	\$377,709,885	\$375,826,941
Safety/Intersection	\$28,885,300	\$28,585,300	\$14,059,000	\$14,059,000	\$14,826,300	\$14,526,300
Bridge	\$64,389,718	\$64,389,718	\$43,933,333	\$43,933,333	\$20,456,385	\$20,456,385
Enhancements	\$92,653,567	\$56,434,528	\$75,000,000	\$38,780,962	\$17,653,567	\$17,653,567
ITS	\$26,732,000	\$26,732,000	\$26,732,000	\$26,732,000	\$0	\$0
Public Transportation 5307 and 5309	\$372,670,000	\$372,670,000	\$372,670,000	\$372,670,000	\$0	\$0
Public Transportation 5311	\$34,017,650	\$34,017,650	\$10,317,650	\$10,317,650	\$23,700,000	\$23,700,000
Waterway	\$0	\$0	\$0	\$0	\$0	\$0
Rail Safety	\$9,700,000	\$9,700,000	\$6,662,500	\$6,662,500	\$3,037,500	\$3,037,500
Airport	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance and Operations	\$207,457,151	\$207,457,151	\$148,831,878	\$148,831,878	\$58,625,273	\$58,625,273
Local STP OA	\$200,000,000	\$200,000,000	\$154,000,000	\$154,000,000	\$46,000,000	\$46,000,000
TOTAL REVENUES AND EXPENDITURES	\$2,383,551,443	\$2,279,372,784	\$1,821,542,533	\$1,719,546,820	\$562,008,909	\$559,825,965

Local Municipality Responsibility

TPO Committee members have participated in the entire LRTP update process. Their interest and commitment to improving transportation should continue to reflect a proactive approach to dealing with development and development-related traffic problems. Transportation and land use should be taken into consideration when developing local transportation plans, subdivision regulations, and access management plans. The LRTP spans a region with two states and four counties. TPO and local jurisdictions should work together with the transportation planning partners, including FHWA, FTA, TDOT and GDOT, to address the region's multimodal transportation concerns.

In order for the 2030 LRTP to be successful, local municipalities are more directly considering a proactive approach to dealing with development and development-related traffic problems. To address circulation issues, municipalities should develop and utilize sound circulation plans as part of their comprehensive plan. The plans should contain pertinent data on existing and future traffic conditions and should be analyzed to identify deficient intersections and segments to show where improvements are or might be needed. Proposed improvements to alleviate problems should be identified and provided the TPO for future considerations during the update to the LRTP.

Responsibility of local governments to maintain and operation local roads is important to local mobility. Financing the operations and maintenance of local roads has been a joint effort of State DOTs and local counties and cities. Tennessee DOT uses its State Street Aid to help local governments with operations and maintenance of local roads. The annual appropriation is distributed by formula to local governments and is used, along with local government tax digest funding, for roads and bridges. Georgia DOT uses a similar mechanism for local road projects in Walker, Dade and Catoosa Counties. GDOT Local Assistance Road Projects (LARP) funds City and County contracts for local road maintenance.

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Plan Approval

The 2030 LRTP was reviewed at the April and May TPO Executive Staff and Executive Board Committee meetings. The draft 2030 LRTP was also presented to the public at open house meetings in four locations in the CHCNGA region in April and the final 2030 LRTP was presented to the public in May. Comments from all meetings were reviewed and incorporated into the final 2030 LRTP. The 2030 LRTP was presented to the TPO Executive staff at which the staff approved sending the Plan to the TPO Executive Board for adoption. After presenting the 2030 LRTP, the TPO Executive Board adopted the 2030 LRTP on June 21st.