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Economic Impacts of West Central Florida's 2025 Regional Transit Needs Assessment

final

report

prepared for

West Central Florida Chairs Coordinating Committee

prepared by

Cambridge Systematics, Inc.

July 2005

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Executive Summary

This study identifies potential benefits to the economy of expanding public transit in the West Central Florida region. The West Central Florida MPO Chairs Coordinating Committee (CCC) includes a range of bus, bus rapid transit (BRT), and light rail services and facilities in its 2025 Regional Long-Range Transportation Plan (LRTP) Needs Assessment. This analysis estimates the economic benefits that would accrue to the region if the 2025 Needs Assessment transit projects were fully implemented, as compared to implementing only the transit services for which funding has been committed through 2009. Key findings include:

- **Ridership –** The 2025 Regional Transit Needs Assessment projects are expected to have a significant impact on transit ridership, with an estimated increase of 12 million annual transit trips in 2025.

- **Construction Activity –** The economic impacts associated with the construction of the expanded transit network would be an additional 6,485 jobs, a $486 million increase in gross regional product, and a $400 million rise in personal income in 2025. These benefits would cease once the transit projects are completed.

- **Travel Time Savings –** Direct user benefits on the transit and highway system related to increases in ridership, improved transit service and connectivity, and reduced highway congestion are projected to reach $104 million in 2025.

- **Increased Business Productivity –** Regional economic impacts include a $42 million annual increase in gross regional product and a $32 million annual increase in personal income. Cumulatively for the 2010-2025 period, gross regional product increases by $343 million, a figure that more than doubles in the following 10 years ($761 million during 2010-2035) as the transit projects are fully implemented and operational by that time. Similarly, cumulative personal income increases by $238 million during 2010-2025, and by $556 million during 2010-2035.

- **Air Quality –** Reduced vehicle emissions include: carbon monoxide, 2,300,000 less kilograms per year; hydrocarbons (contributing to global warming), 129,000 less kilograms per year; nitrous oxide (contributing to smog), 83,000 less kilograms per year. While this represents only about a 0.4 percent reduction, transit does play a role in stemming the continued growth in airborne pollutants.

This report also looks at a range of economic benefits that have been experienced by other regions as they expand public transit. Similar benefits may be expected in West Central Florida and include the following:

- **Real Estate Development –** Other metropolitan areas have reported new development around rail and busway projects valued at $160 million to $2.4 billion. In Tampa, private sector investment in the corridor around the TECO Line Streetcar, since the streetcar project was announced, is estimated at over $600 million.

- **Property Values –** The market value of properties nearby transit stations has been estimated to be ten percent to 38 percent higher than similar properties located farther away from stations, in areas such as Washington, D.C., Dallas, Atlanta, St. Louis, and suburban New Jersey.

- **Travel Time Savings Due to Travel Demand Management –** The 2025 Regional Transit Needs Assessment includes an expanded commuter assistance program to facilitate carpooling, flex-time, telework, and other alternatives to driving alone. A similar commuter assistance program in Washington State estimates that if the 13,480 vehicles removed from the Puget Sound region's highways by participating employees each morning were added back, overall morning delay per vehicle would be increased by 6.3 percent, or a total of 719,000 hours. This translates into an economic benefit to the Puget Sound region of $24 million in reduced travel delay.

Public transit system expansion also has the potential to generate significant benefits in these areas:

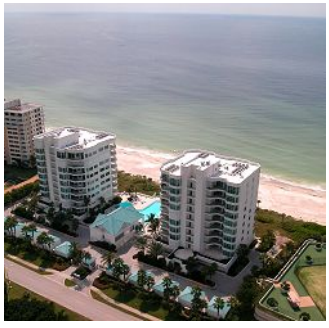
- **Business Access to Labor and Resources –** The region's attractiveness to businesses is enhanced by good access to workers, suppliers and vendors, and academic institutions. The proposed transit expansion would bring at least 100,000 additional people and almost 27,000 additional jobs within one-half mile of a transit line.

- **Creative Workers –** An enhanced transit system is an important (though not the only) component of vibrant urban environments that are attractive to educated young people. Attracting and retaining highly skilled and innovative members of the workforce puts West Central Florida in a better position to spawn new companies and attract high-paying industries to the region.

- **Self-Sufficiency for the Disadvantaged –** Over nine percent of West Central Florida's populace does not drive because of age, disability, or poverty. Expanding transit improves access to jobs and services. In Orlando, where Lynx carries about half the trips of the West Central Florida Needs Assessment network, the value of lost wages if the transit system were to stop abruptly was estimated at $16 to $122 million in only a few months.

- **Disadvantaged Trip Cost-Effectiveness –** An expanded transit system would reduce reliance on the expensive door-to-door paratransit services provided in each county to seniors and the disabled who cannot access local bus service. The cost saving potential is significant. Today, a paratransit trip in Hillsborough County costs $28.47 versus $3.71 for a bus trip.

- **Tourism –** Transit facilitates the mobility of tourists, who support a $9.2 billion industry today in West Central Florida.



- **Parking –** Improved transit can reduce the demand for parking in downtown areas, freeing land for more valuable uses. Salt Lake City estimated its most aggressive transit improvement scenario would eliminate the need for 13,500 parking spaces.

- **Urban Growth and Infrastructure Costs –** Transit has an effect on urban development patterns, facilitating smart growth and limiting the public infrastructure costs associated with sprawl. Nationally, the savings on roadways, water/sewer lines, housing costs, and public services from more compact development patterns is estimated at $22 to $24 billion per year.

In summary, transit investments in the West Central Florida region are expected to yield significant benefits to both business and personal travel. As the region continues to grow quickly, public transportation improvements will play a role in reducing congestion, serving the mobility needs of the local population and visitors, and enhancing West Central Florida's economic vitality.

1.0 Introduction

Every day, the public transportation systems in West Central Florida move thousands of people to jobs, health care services, shopping, educational institutions, recreational, entertainment, and other activities. In fact, by 2025, public transportation in the eight county area of Citrus, Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk, and Sarasota counties, is projected to serve 82,000 daily riders and about 24 million annual riders, even without the addition of transit investments beyond what is currently planned. However, with significant additional improvements, West Central Florida's transit system may serve as many as 124,000 daily riders, totaling about 36 million on an annual basis.[1] This increase in ridership would potentially translate into significant economic benefits for the region, such as increased business productivity, higher income levels, and improved competitiveness.

The objective of this study is to evaluate the economic impacts of the Chairs Coordinating Committee's 2025 Regional Transit Needs Assessment, focusing on the incremental increase in benefits between the "Existing plus Committed" (funded) transit network and the "needs" (additional transit needs that have not been funded) transit network. Several benefits resulting from the increase in transit investments, including travel time and cost savings (user benefits) are converted to economic terms (higher productivity due to a reduction in business costs) and run through an economic simulation model to estimate regional benefits (referred to as "estimated benefits" throughout the report), while other impacts of transit such as urban redevelopment, reductions in emissions, the rise in property values, real estate development, access to labor, and improved mobility for elderly, disabled, and lower-income populations are described in more qualitative terms (referred to as "other benefits" in the report). The positive effects of transit on these latter factors are further supported by drawing on the experiences of other urban areas in the United States with completed or planned light rail and bus rapid transit (BRT) investments.

Following the Introduction (Section 1.0), the report is divided into six additional sections and an appendix:

[1] The modeling used to estimate future ridership does not incorporate gas prices as a factor. As gas prices increase, as they have in the first half of 2005, drivers may substitute car trips with transit trips when possible. For example, Hillsborough Area Rapid Transit (HART) experienced a 16 percent increase in ridership in May 2005 compared to the same month in 2004, a fast rate of growth likely influenced by higher driving costs. If gas prices continue to rise and further induce people to switch to transit as a means for reducing fuel expenses, the future ridership estimates presented (and corresponding benefits) in this analysis may be underestimated.

Section 2.0, Background – This section presents a brief review of the trends affecting transportation and transit demand in West Central Florida.

Section 3.0, Comparison of Two Transit Improvement Scenarios – The basis of this analysis is the comparison of two transit investment alternatives. This section describes the differences between the two.

Section 4.0, Construction Benefits, Quantified – The investments necessary for building the transit needs as specified in the Long-Range Transportation Plan are substantial, an estimated $5.4 billion. Due to the level of this investment, the construction that will be required to meet West Central Florida's transit needs will have significant economic effects that will reverberate throughout the region. These benefits are quantified and described in this section.

Section 5.0, Long-Term Estimated Benefits – An improved transit network in West Central Florida will create quantifiable user benefits (e.g., travel time and cost savings) that will improve overall business productivity in the region. This section describes the extent of the user benefits resulting from the transit improvements and how these translate to business cost savings, increasing the economic competitiveness of the area. Economic benefits are estimated in terms of effects on gross regional product, income, and employment.

Section 6.0, Other Long-Term Benefits – Beyond the quantified economic benefits estimated in Section 5.0, transit improvements may lead to numerous other benefits, including urban redevelopment, more efficient services for the transportation disadvantaged population, improved access to employment, and reductions in air emissions. These "other benefits" could be even larger than the estimated benefits presented in Section 5.0. Drawing on a review of recent literature and the experiences of other metropolitan areas, the economic implications of these improvements for West Central Florida are discussed in this section.

Section 7.0, Conclusion – This section emphasizes the main points learned from the analysis concerning how West Central Florida would benefit from an improved transit network.

Appendix A – Appendix A describes the technical approach used to quantify the economic impacts based on the user benefits resulting from the implementation of the transit needs identified in the Chairs Coordinating Committee's Long-Range Transportation Plan. It also briefly describes the approach for estimating construction impacts and the other benefits that may result from improving transit service in West Central Florida.

2.0 Background

Several economic and demographic trends, including fast increases in population and employment (two key drivers of transportation demand), are adding to the complexities faced by West Central Florida as it strives to expand transportation infrastructure and services to accommodate the strong growth that is expected to continue through 2025.

Following World War II, Florida emerged as a leading center of growth in the nation, and West Central Florida played and is expected to continue to play a prominent role in this growth. The region's population increased by 52 percent between 1980 and 2000, more than twice as fast as the national rate of increase. In the past 50 years the West Central Florida region has risen quickly up the rankings of the largest United States metropolitan areas, underscoring its attractiveness as a center of business, transportation, and tourism. In 1950, West Central Florida was smaller in size than metropolitan Providence (625,000). By 2000, it had roughly the same population as Greater Seattle-Tacoma (3.6 million). By 2015, it will have the same number of people as metropolitan Atlanta has today (4.2 million). To put this into another perspective, between 1980 and 2000, West Central Florida added the equivalent of a metropolitan Jacksonville to its population (a net gain of nearly 1.2 million people) and is forecast to increase by the same amount again between 2000 and 2015.[1] Strong growth is anticipated to continue through 2025 as the region's population rises toward the 5.0 million mark.

West Central Florida is also a national leader in employment growth. Between 1990 and 2004, the area added 550,000 jobs, accounting for more than one-quarter of all job growth in Florida. The rate of increase during the period, 45.5 percent, was more than twice as fast as the nation's (20.1 percent). The West Central Florida region has maintained strong job growth recently, adding 61,000 jobs in 2004, the fifth highest net job gain in the country, only surpassed by New York City, Washington, D.C., Phoenix, and Miami-Fort Lauderdale.[2] Current forecasts project that the region will add more than 850,000 jobs through 2025.[3]

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[1] U.S. Census Bureau and Florida Office of Economic and Demographic Research (forecast data).

[2] U.S. Department of Labor, Bureau of Labor Statistics, "Current Employment Series" data are only released at the state and metropolitan levels. The figures for the "West Central Florida region" presented in this instance are comprised of three separate metropolitan areas, Tampa-St. Petersburg-Clearwater (Hernando, Hillsborough, Pasco, and Pinellas counties), Lakeland-Winter Haven (Polk County), and Sarasota-Bradenton (Manatee and Sarasota counties).

[3] West Central Florida MPO Chairs Coordinating Committee, *West Central Florida 2025 Long-Range Transportation Plan*, November 2004.

Beyond population and employment, increases in tourism also affect West Central Florida's transportation system. West Central Florida attracts millions of visitors and seasonal residents on an annual basis and has seen tourism-related sales rise from about $5 billion in 1990 to over $9 billion in 2004, underlining long-term growth in the industry.[4] Tourism is an important contributor to the West Central Florida economy and the region's continued popularity as a destination for domestic and international visitors will be affected, in part, by their experiences using the transportation system.

West Central Florida's combination of strong population, jobs, and tourism growth translates into increasing transportation demand. The area will confront significant transportation challenges in coming years to meet the mobility needs of a growing population, expanding businesses, an influx of retirees, and more visitors. The development of a more functional transportation network for the region will involve the further development and coordination of all modes serving the region – roadways, airports, seaports, rail, and transit.

[4] Florida Office of Economic and Demographic Research.

3.0 Comparison of Two Transit Improvement Scenarios

This report focuses on the economic benefits of transit improvements in the West Central Florida region, specifically analyzing the extent of the economic impacts that would be expected if the transit needs identified by the Chairs Coordinating Committee in its 2025 Long-Range Transportation Plan were implemented. The present transit plan for West Central Florida is represented by the "Existing plus Committed" network (see Figure 3.1, Map of Transit Facilities and Services – 2025 Existing plus Committed Network). The implementation of the projects included in the 2025 Regional Transit Needs Assessment (see Figure 3.2, Map of Transit Facilities and Services – 2025 Needs Network) would represent a $5.4 billion investment[1] above and beyond what is currently included in the Existing plus Committed plan. The increase in investment would bring stronger economic benefits for the region, improve access to a larger share of the region's population and jobs, reduce air pollution, lower fuel consumption, and likely encourage higher density development. People without cars in West Central Florida, by necessity or by choice, such as the elderly, lower-income families, and visitors would have expanded transportation options following the development of a more extensive, higher service transit network. This would better serve the transportation disadvantaged, reduce costs, and enhance the experience of tourists, from the other parts of the United States and abroad, visiting the region's beaches and attractions.

The next sections describe the range of benefits that may be expected if the transit needs identified in the 2025 Regional Transit Needs Assessment are implemented. The methodologies used to estimate these benefits are detailed in the Appendix at the end of the report.

[1] Includes transit capital costs including right-of-way acquisitions, but does not include costs related to high-speed rail over the Howard Frankland Bridge.

Figure 3.1 Map of Transit Facilities and Services
2025 Existing Plus Committed

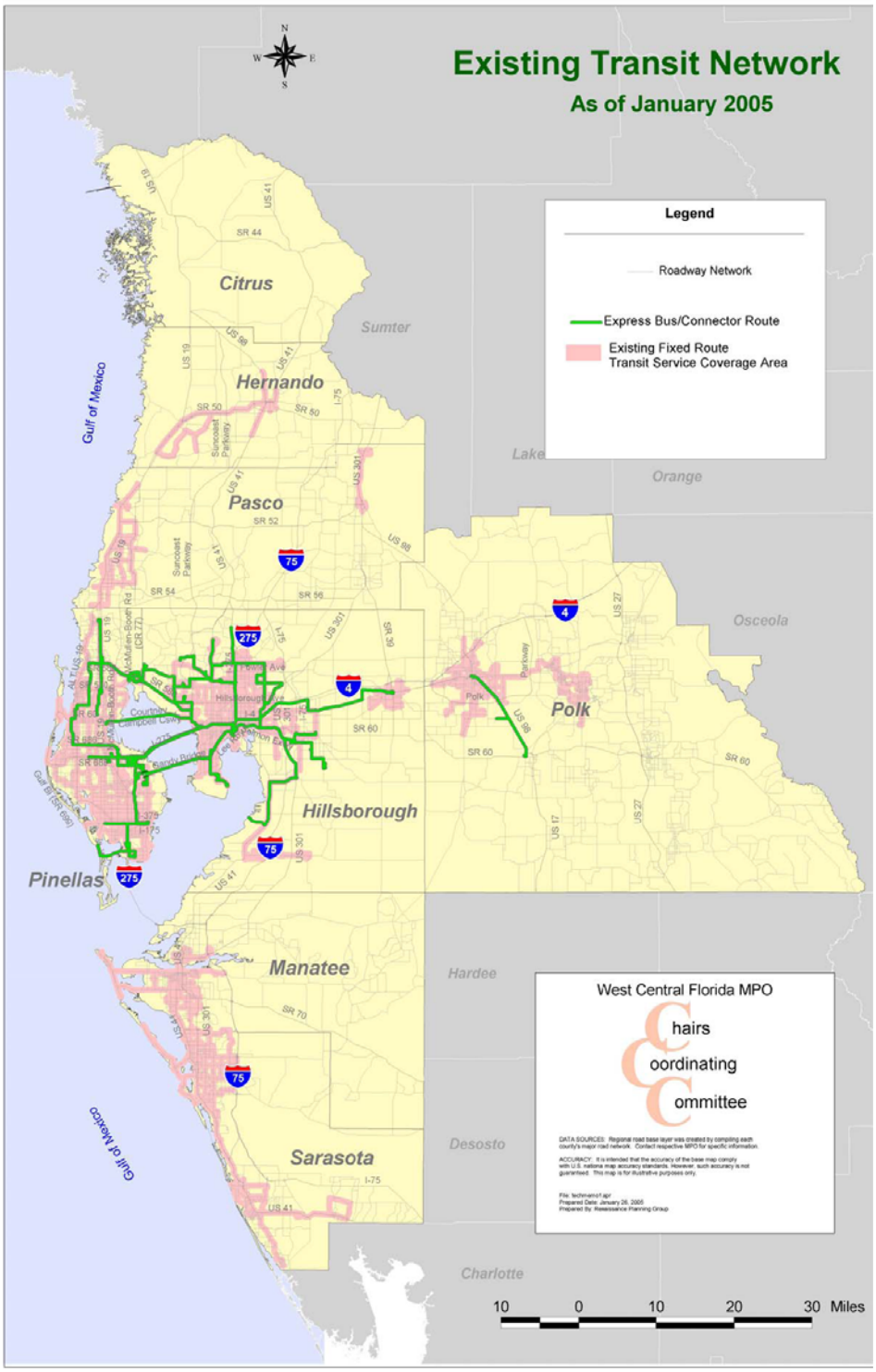
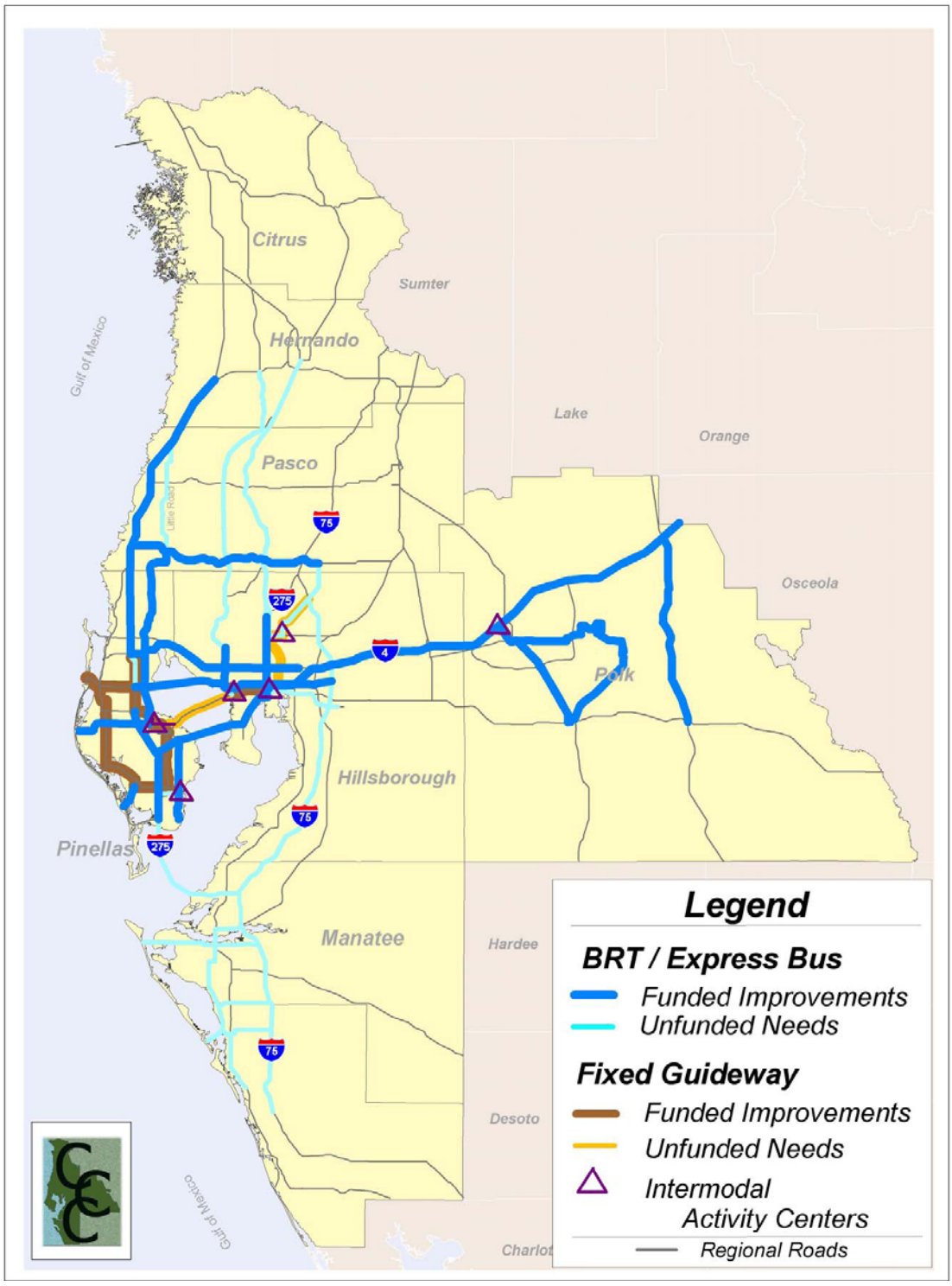


Figure 3.2 Map of Transit Facilities and Services
2025 Needs Network



4.0 Construction Benefits – Quantified

4.1 Construction Impacts

Table 4.1 Impacts of Transit Needs Construction on the West Central Florida Economy

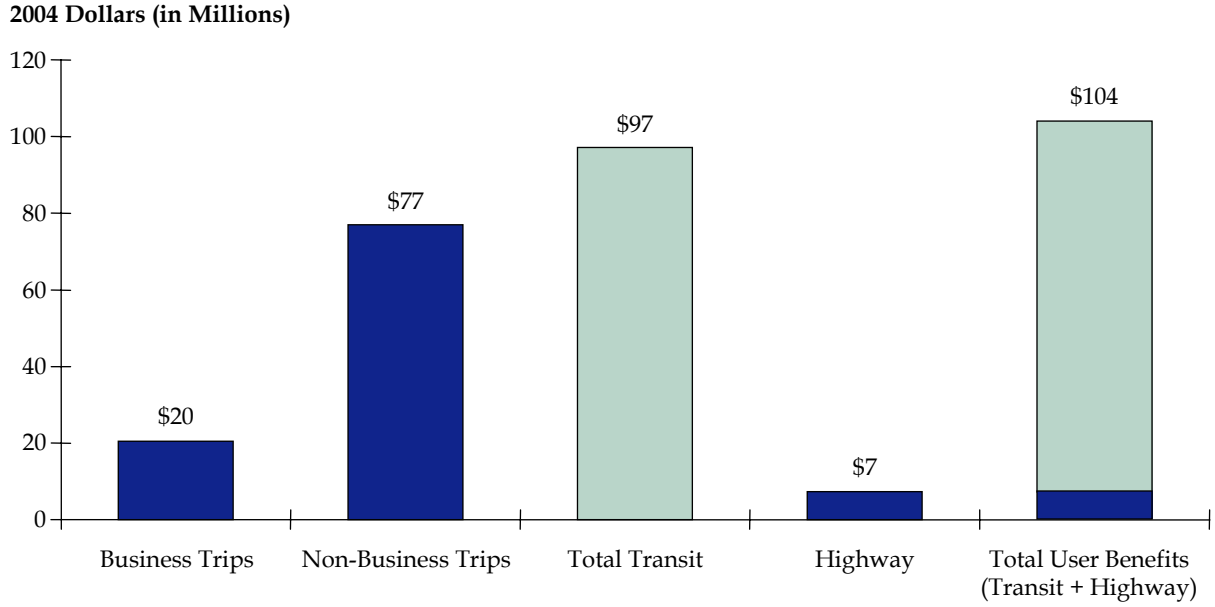
	2025
Employment	6,485
Gross Regional Product	$486 million
Personal Income	$400 million

The value of construction for West Central Florida's transit improvements will have a temporal, but significant, impact on the area's economy. Due to the construction of the transit improvements, such as bypasses to allow the operation of bus rapid transit along major corridors and fixed-guideway transit (Pinellas County's monorail system), West Central Florida can expect to have 6,485 more jobs in 2025 than it would have had without the construction component of the transit improvements. West Central Florida's gross regional product (GRP), a measure of the region's economic size, would increase by $486 million while personal income would rise by $400 million (2004 dollars). Unlike the longer-term benefits described in Sections 5.0 and 6.0, the economic impacts of construction are short-term and will largely end once the transit projects have been completed.

5.0 Long-Term Estimated Benefits

The economic impacts presented in this section are based on estimates of the user benefits for transit and highway travelers that would result from improved transit services in West Central Florida (please see the Appendix for a detailed discussion of the technical approach used to estimate economic benefits). The business component of these user benefits, in turn, represents a reduction in the costs for all industries to produce in the region. These productivity gains increase regional competitiveness, leading to improvements in employment, income, and gross regional product (GRP). Total user benefits are shown in Figure 5.1 and are estimated to be $104 million annually in 2025. As described in the Appendix, only a portion of the user benefits are business-related, and it is that component that is used as an input into a regional economic model (the Tampa Bay Regional Planning Council's model by Regional Economic Models, Inc., or "REMI" model, calibrated for the West Central Florida region) to estimate the economic benefits (employment, income, and GRP) resulting from the long-term improvements to West Central Florida's transit system.

Figure 5.1 Annual Increase in Direct User Benefits in 2025
Transit Needs versus Existing Plus Committed



5.1 REMI Economic Impact Analysis – Results

The results from the TBRPC "REMI" economic analysis are presented in the figures that follow. In all figures, the results represent the difference in benefits between the Existing plus Committed (E+C) transit plan and the Chairs Coordinating Committee's 2025 Regional Transit Needs Assessment. The benefits are presented at five-year intervals between 2015 and 2025.

The following example, using the gross regional product benefits, demonstrates how these data need to be interpreted: In the year 2025, the West Central Florida region is expected to have an additional $42 million in gross regional product due to transportation improvements based on the 2025 Regional Transit Needs Assessment compared to what would have happened with the Existing plus Committed plan. These figures represent the change for a specific year in time (they are not cumulative unless indicated). The estimates reflect the difference in travel performance between the two transit investment scenarios and are independent from the impacts due to constructing the transit improvements (shown in Section 4.0). The benefits represent the additional business growth that would occur in West Central Florida due to reduced travel costs and improved transportation connectivity following the implementation of the transit projects specified in the 2025 Regional Transit Needs Assessment. These are not the only benefits that would occur due to the transit improvements and should be considered as part of a broader range of benefits that would include those described in Section 6.0.

The gross regional product (GRP) of West Central Florida, an indicator of the region's production, is projected to increase by as much as $42 million while personal income could rise by $32 million by 2025 (see Figures 5.2 and 5.3).

Due to a reduction in business travel costs and an increase in travel efficiency due to the transit improvements included in the 2025 Regional Transit Needs Assessment, West Central Florida can expect to add as many as 414 more jobs by 2025 than would have occurred with the E+C plan (see Figure 5.4). As mentioned earlier, these are not short-term jobs associated with the construction or operation of transit facilities, but represent economic effects from business cost savings due to improved travel performance.

Figure 5.2 Change in Gross Regional Product

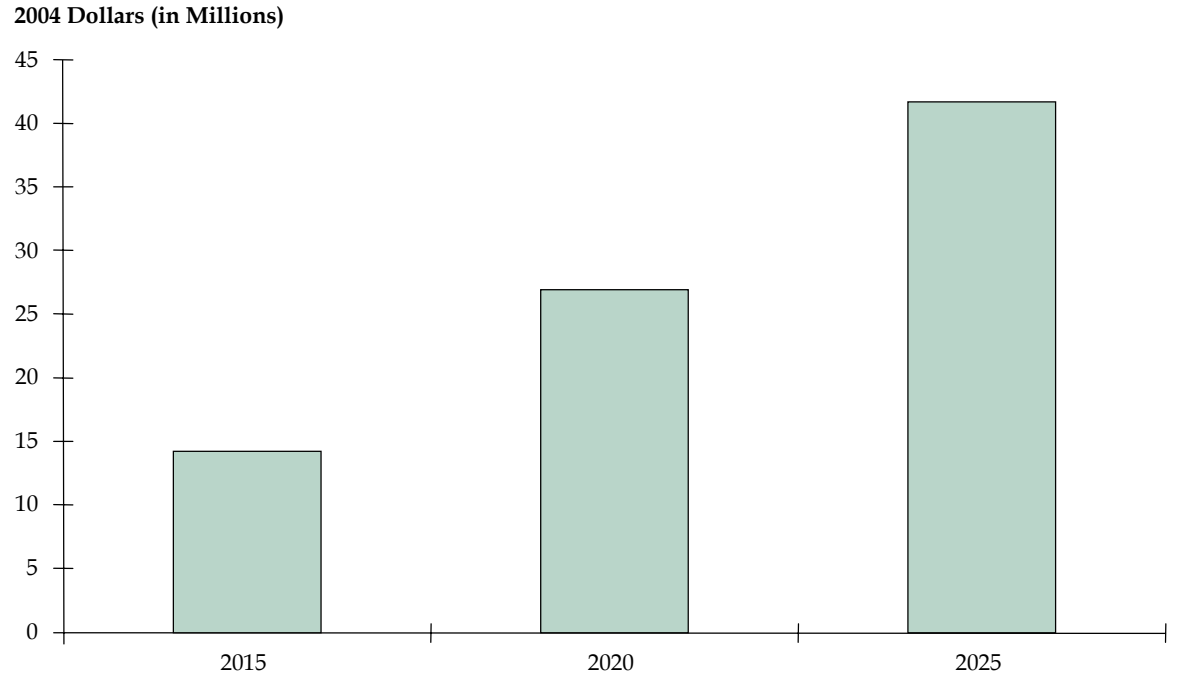


Figure 5.3 Change in Personal Income

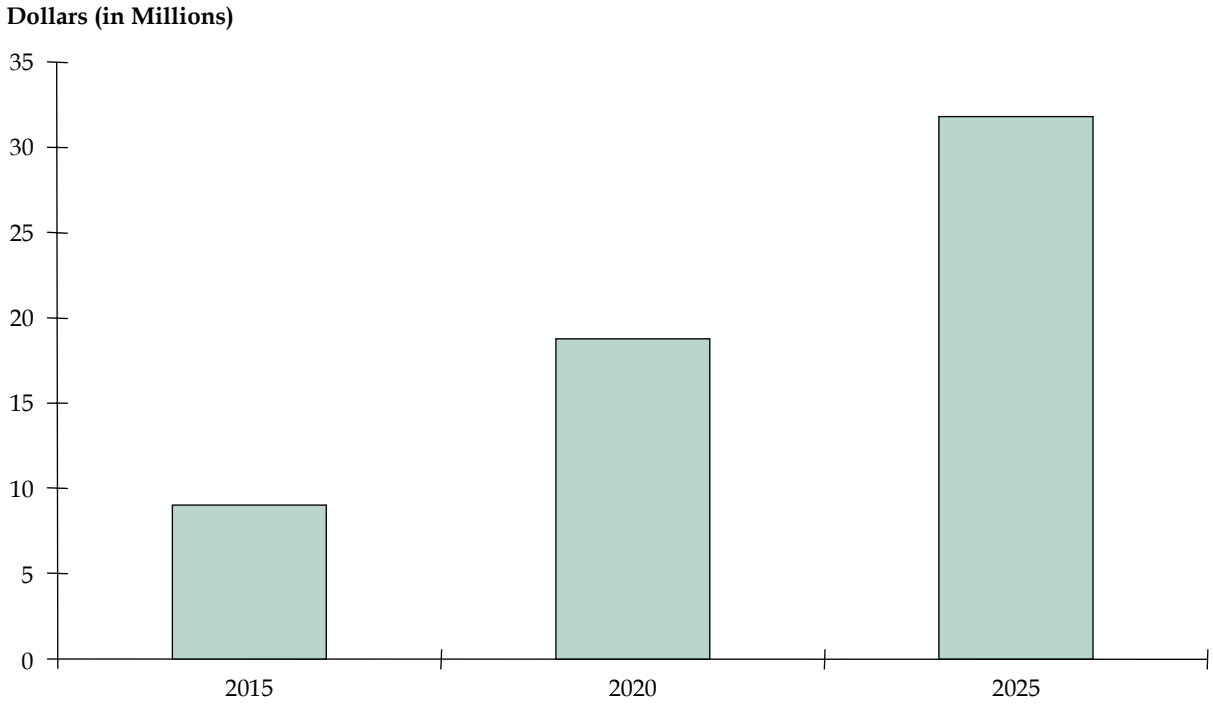
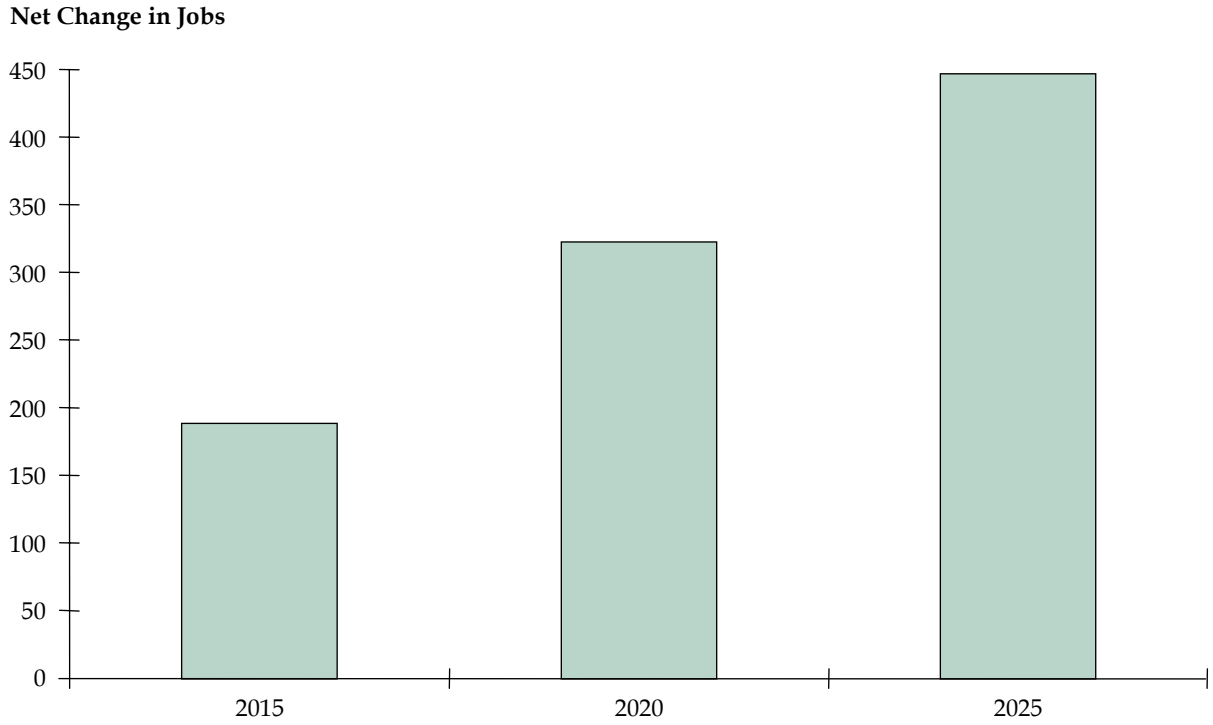


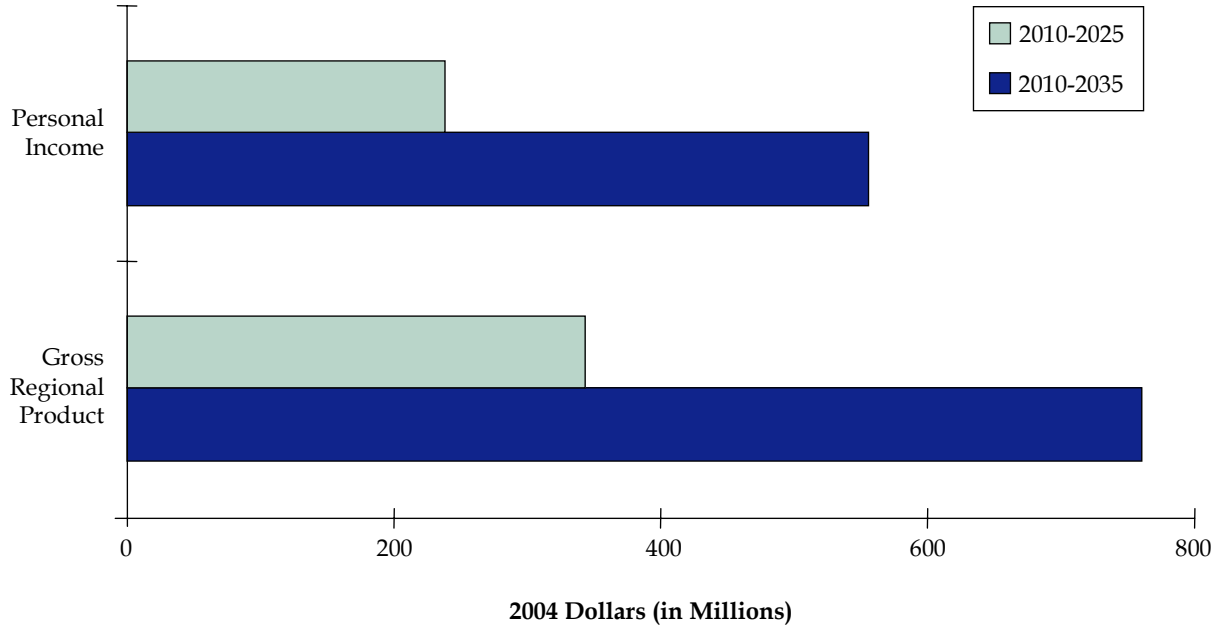
Figure 5.4 Net Change in Jobs Due to Business Portion of User Benefits



Cumulative Economic Impacts. The gross regional product and personal income benefits presented in Figures 5.2 and 5.3 represent single year increases. Both, however, will have a cumulative effect, benefiting the West Central Florida region year after year. For this reason the total stream of benefits for both gross regional product and personal income were estimated for the 2010 to 2025 period. The lifespan of the transit improvements, however, likely would be much longer, so future year (e.g., for 2035) estimates of cumulative economic benefits would be significantly larger (see Figure 5.5).[1] The cumulative gross regional product impacts were estimated to be $343 million for 2010-2025 and $761 million for 2010-2035. The results were similar for the cumulative increase in personal income.

[1] Assumes maximum annual benefits are reached in 2025 and remain constant in subsequent years. Benefits would be even larger after 2025 if user benefits continue increasing (e.g., as may result if diversion from autos to transit gains further momentum) following the completion of the transit improvements. The data used to estimate the cumulative totals has not been converted to net present values.

Figure 5.5 Cumulative Economic Benefits of Transit Needs Improvements



Time Savings, Congestion, and Regional Competitiveness. The economic impacts illustrated in this section were based on increases in business productivity resulting from time savings, among other user benefits, following the completion of an expanded transit network. A portion of the time savings was from trucks spending less time in traffic than would have been required without the transit improvements (transit decreases auto trips, providing trucks with less congested roadways). Congestion-related truck delays are real-world concerns among businesses. Today, the lower relative levels of congestion in the West Central Florida region compared to other large southeastern cities is a competitive, but fleeting advantage.[2] Businesses are attracted to the region, in part, because of the relative ease of moving people and goods within the region and to other parts of Florida. For example, the distribution of consumer goods is a major industry in the region, particularly in Polk County, and rising congestion levels significantly affects the productivity of this industry. A West Central Florida business official comments, "The traffic on the Gold Coast (Miami-Fort Lauderdale-West Palm Beach) is a nightmare and we're on the way to

[2] Although West Central Florida has serious traffic problems, the average annual hours of delay per traveler in the area is lower than Atlanta, Miami, Dallas, Washington, D.C., Houston, Orlando, Phoenix, and Austin according to the Texas Transportation Institute's 2005 Urban Mobility Study. A big jump in the Tampa area's congestion levels (from 42 to 46 hours of annual delay per traveler) between 2002 and 2003, however, further confirms that any competitiveness advantage Tampa may have had in terms of relative congestion levels may now be fading.

duplicating it here."[3] Maintaining West Central Florida's competitive advantage in the distribution industry (i.e., by improving mobility and thus lowering congestion levels) is very important, and public transportation can mitigate growth in congestion. As congestion grows, the importance of transit as a factor influencing business location decisions will increase.

Other Studies Showing Link between Transit and Business Productivity. Beyond the estimated benefits presented in this section demonstrating the positive association between transit investments and economic growth and productivity, other studies also have shown a similar link. For example, a positive correspondence between the number of transit vehicles per capita and productivity (value added per worker) was identified using a regression model based on data for the 100 densest United States metropolitan areas.[4] The results generated by the model were translated to show the aggregate economic effects of transit for all of the country's metropolitan areas. The study demonstrated that a one percent increase in transit presence (transit vehicles per capita) created $3 billion in annual economic benefits, with most of this increase due to productivity gains.

An analysis by Cambridge Systematics and the Economic Development Research Group further affirmed the significant positive impact of transit investment on jobs and business revenues. The findings include:[5]

- Business output and personal income are positively impacted by transit investment. Efficiencies gained from transit investments create savings to business operations, and increase the overall efficiency of the economy, positively affecting business sales and household incomes.

Air Quality and Fuel Consumption Benefits. Improving public transportation can reduce the emission of pollutants through a decrease in the amount of driving on roadways. The reduction in the emissions for three pollutants were calculated for this study: carbon monoxide (CO), hydrocarbons, and nitrous oxides (NOX). Table 5.1 shows the difference in emissions between the Existing plus Committed and the 2025 Regional Transit Needs Assessment. The expanded transit network in West Central Florida would result in a lowering of pollution levels.

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[3] Cambridge Systematics, Inc., *Tampa Bay Regional Transportation Blueprint*, prepared for the Tampa Bay Partnership, 2002.

[4] Federal Transit Administration, *Transit Benefits 2000 Working Papers: A Public Policy Analysis*, page 59.

[5] Cambridge Systematics, Inc. and Economic Development Research Group, *Public Transportation and the Nation's Economy*, for the American Public Transit Association, October 1999, page E1.

Table 5.1 Reductions in Air Pollution and Fuel Consumption

Type of Air Pollutant	Annual Reduction
Carbon Monoxide	-2.3 million kilograms
Hydrocarbons	-129,000 kilograms
Nitrous Oxide	-83,000 kilograms
Fuel Consumption	-3.3 million gallons

The Transportation Research Board documents an estimated dollar value of carbon monoxide and nitrous oxide based on costs of pollution impacts to health, visibility, and crops.[6] In 2005 dollars, the estimated value of the above pollutant reductions is $31,970 to $310,700 per year in carbon monoxide reductions and $173,055 to $2,192,030 per year in nitrous oxide reductions.

5.2 The Benefits of West Central Florida Transit Improvements Compared to Other Analyses

Quantifying the benefits of transit investments is a complicated task as many of the benefits are not readily quantifiable. In fact, the Federal Transit Administration (FTA) does not require a benefit/cost analysis as part of its New Starts program in selecting major new transit investments. For these reasons, there is not an abundance of published analyses concerning the benefits of transit investments.

Despite a relative lack of directly comparable reports, it is possible to place this analysis into context. Economic studies of Philadelphia and Chicago transit systems showed greater relative benefits than this analysis, but those studies were different in two key ways. First, both of these northern metropolitan areas are much larger, older, and more densely populated. Second, both studies focused on the ramifications of reducing or eliminating existing transit service (addressing a theoretical "what if" question – *what* would be the economic consequences *if* these cities' transit systems were greatly reduced in size) rather than providing a new service (by comparison, the benefits presented in this study are based on an expansion of transit services). Transit and transit stations can strongly influence economic development and residential patterns (e.g., Metro in Washington, D.C.), and the sudden removal of existing transit service (the approach used to analyze the economic impacts of transit in Philadelphia and Chicago) that has become

[6] Transit Cooperative Research Program, Report 78, *Estimating the Benefits and Costs of Public Transit Projects: A Guidebook for Practitioners*, 2002.

engrained in the regional economy is likely to show a greater impact than what may result from an expanded transit network combined with new services.[7]

Consistent in theme with the approach used for the Philadelphia and Chicago studies, the Texas Transportation Institute (TTI) estimated the direct impact of discontinuing all public transportation service in 85 metropolitan areas in the United States and replacing it with travel in private vehicles. In total, this would result in 1.1 billion hours of additional roadway delay corresponding with an $18.4 billion rise in congestion costs. With its limited transit services, however, the effects of shutting down the West Central Florida region's transit system would not have nearly as large an impact as would be experienced in similar-sized metropolitan areas with more extensive transit networks. According to the TTI, the elimination of transit services in West Central Florida would result in a $29.4 million rise in annual congestion costs. By comparison, a similar shutdown in the Seattle area (an area about 10 percent larger in population than the West Central Florida region as defined by the TTI) would increase annual congestion costs in that metropolitan area by $566.4 million.[8] The small impacts in West Central Florida reflect the area's relative dependence on private vehicles for travel and point to the potential for transit to have a greater role in serving the area's transportation needs.

A study comparing transit improvements included in Salt Lake City's long-range plan with a "no-build" scenario for the 2005-2030 period showed increases in gross regional product of $140 million in 2030.[9] By comparison, the benefits analysis quantified in this study showed an increase of $42 million in West Central Florida's GRP in 2025 due to the increase in transit investments. Several factors contributed to the higher benefits in the Salt Lake City study, including: 1) the benefits accrued for five additional years (2030 versus 2025); 2) a higher increase in transit ridership (a gain of 31 million annual riders in Salt Lake City compared to a 12 million increase in West Central Florida) largely due to the addition of commuter rail lines and expanding an existing light rail system; 3) the Salt Lake City study's baseline comparison included relatively fewer transit investments than the baseline used for this analysis (i.e., the baseline used in this study had a "higher starting point" than the one used for Salt Lake City, thus netting a lower increase in ridership); and 4) a "network effect" – meaning that the Salt Lake City area, already served today by light rail, will have a transit network significantly more enhanced than West Central Florida's, enabling people to reach more destinations using transit and thus

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[7] Urban Institute and Cambridge Systematics, Inc., *The Economic Impact of SEPTA on the Regional and State Economy: Public Transportation Renewal as an Investment*, for the Delaware Valley Region Planning Commission, 1991; and Cambridge Systematics, Inc., *The Economic Impacts of the RTA on the Regional and State Economy*, 1995.

[8] Texas Transportation Institute, *2005 Urban Mobility Study*, Texas A&M University, 2005. The TTI study quantifies data for the Tampa-St. Petersburg and Sarasota-Bradenton areas but does not include measures for Polk County in its tabulations. The findings represent the effects of a theoretical elimination of transit services in 2003.

[9] Cambridge Systematics, Inc., *Economic Impacts of Expanding Public Transportation in the Wasatch Front Range*, 2005.

encouraging greater ridership. Overall, the benefits for the West Central Florida improvements are proportional, based on the increase in ridership, to those estimated in Salt Lake City.

This section reviewed the results of a complex economic impact analysis based on user benefits. When considering the full range of economic impacts that may result from transit improvements, however, it is also important to include many other key benefits that are not captured from the approach used in Section 5.0. These other potential benefits are described in Section 6.0 of this report.

6.0 Other Long-Term Benefits of Transit

Section 4.0 quantified the construction impacts and Section 5.0 quantified the economic benefits, based on improvements in business productivity and air quality that may result from fully implementing the needs identified in the 2025 Regional Transit Needs Assessment. In this section, the range of other benefits not previously quantified will be described in detail, spelling out how they are likely to make tangible impacts on the West Central Florida economy in the future. The benefits of transit improvements discussed in this section include station area real estate development, increased property values, urban environments that attract talented, young people, improved mobility for tourists and for the transportation disadvantaged, decreased demand for parking, and business attraction. Whenever possible, evidence from other studies is cited and explained to demonstrate how the transit investments may reverberate through the economy.

Station Area Real Estate Development. In anticipation of new transit lines or soon following their completion, a number of cities around the country are experiencing significant increases in development in proximity to proposed or new transit stations. Recently constructed transit systems located throughout the United States demonstrate the station area development resulting from public transportation investment. Specifically, researchers have revealed the following findings:

- The St. Louis Metrolink light rail system opened in 1993. Since then, the system has helped attract the development of a $266 million convention center hotel, a $60 million performing arts center, the $5.8 million Jackie Joyner Kersee Sports Complex, and the $160 million renovation of Cupples Stadium (a 10-building, 12-acre, mixed-use development).[1]

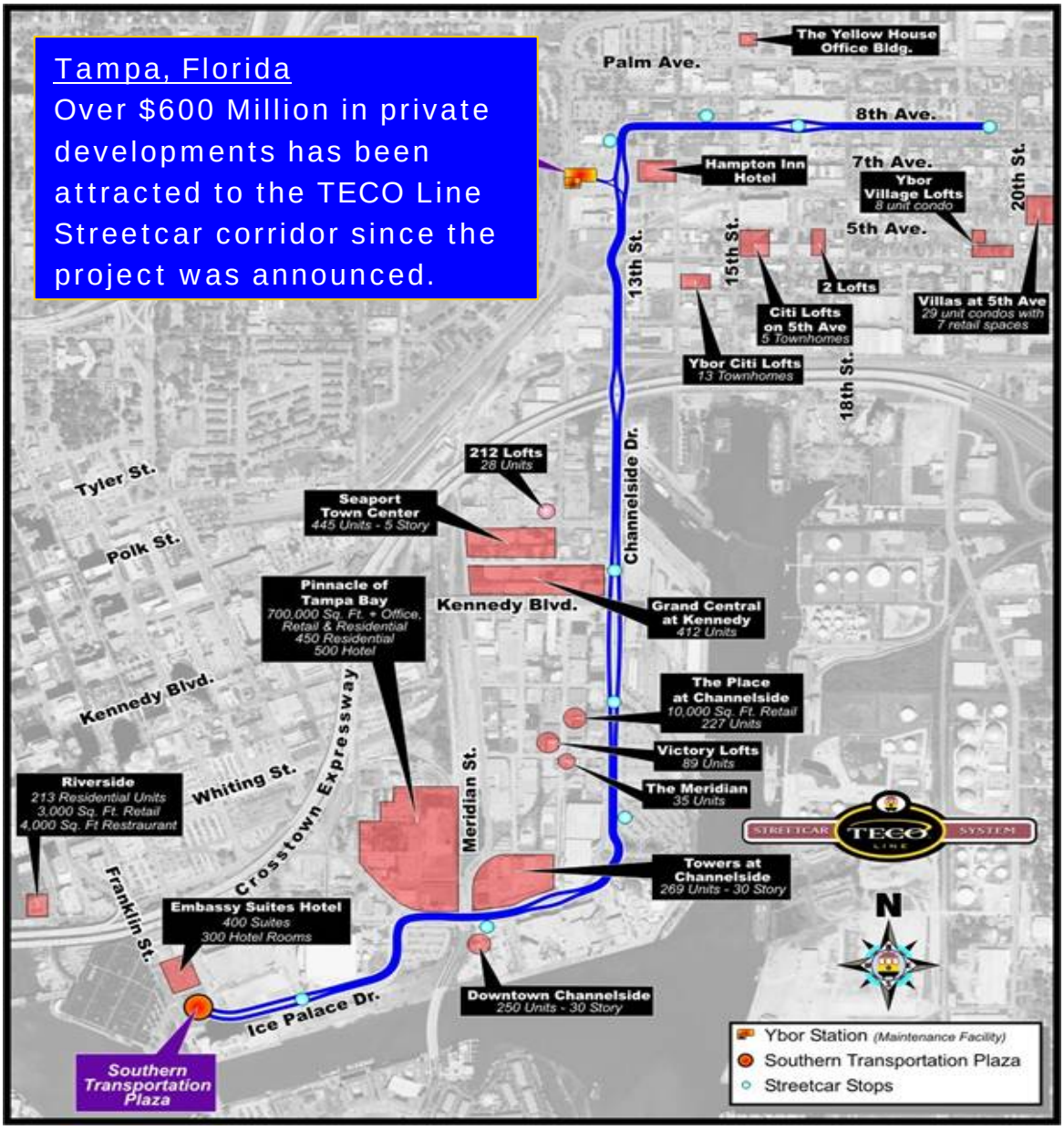
- In North Central Texas, the Dallas Area Rapid Transit System (DART) has helped attract $1.3 billion in private investment to the area since beginning operations in 1996. Downtown Dallas experienced a 33 percent increase in retail sales in the years following the system opening, compared with an increase of three percent citywide.[2] The establishment of the light rail system was a factor leading to the conversion of an

[1] American Public Transportation Association, *The Benefits of Transportation: Essential Support for a Strong Economy.*

[2] American Public Transportation Association, *The Benefits of Transportation: Essential Support for a Strong Economy.*

abandoned office building into a new hotel and also spurred the construction of the Galatyn Park Urban Center, a mixed-use development.[3]

Figure 6.1 Development in Proximity to Tampa's TECO Line Streetcar Corridor



[3] Cambridge Systematics, Inc., *Demonstrating the Positive Impacts of Transportation Investment on Economic, Social, Environmental, Community and Quality of Life Issues,* NCHRP Project 8-36, Task 22 (2001).

- Opening in 1986, Portland, Oregon's MAX light rail has been cited as an example of the high levels of new development that may occur following the construction of a new transit line. Since the decision to build the line was announced, $2.4 billion in development activity has taken place around the system's stations, much of it started before the system was complete. In downtown Portland, every vacant parcel of land around the MAX line has changed hands, been developed or is planned for development in the near future.[4]

- The real estate market in Denver is already responding to early plans for a major transit expansion that would add 119 miles of new track to the current system by 2015. In April 2005, a developer announced plans for a 68-acre project near a planned suburban station that will include 300,000 square feet of commercial space and up to 700 housing units. Another example is the $160 million CityCenter Englewood project which will convert an old shopping mall into a mixed-use development. Real estate developers have realized that there is a demand for residential and commercial space in proximity to the proposed transit lines, and are focusing investments there – "everyone is looking at the stops to see what opportunities exist," one national developer commented.[5]

Often more affordable and less complicated to implement, many local governments and transit agencies are selecting bus rapid transit (BRT) as an alternative (or complement) to the development of light rail systems. Within the West Central Florida region, there are plans for new or enhanced bus routes that will include BRT technologies (e.g., limited stops, expanded amenities at stations, dedicated running ways, electronic signage, etc.). Although not as thoroughly researched as new or expanded light rail projects, greater documentation is emerging showing that BRT projects also result in significant station area investments, often similar in magnitude to those resulting from fixed-guideway light rail lines:

- Pittsburgh's MLK, Jr. East Busway provides an example of the more focused type of development that can result from BRT. Since it was opened in 1983 there have been 54 developments along the East Busway with a total value of $302 million. Of these, 42 developments (representing 58 percent of the value, or $176 million) are clustered within a six-minute walk (1,500-foot radius) of a busway station. These projects include housing, restaurants, retail space, offices, medical buildings, and a theater.[6]

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[4] Center for Transportation Excellence, *Transit Profile: The Portland Area MAX Light Rail System.* http://www.cfte.org/success/success_portland.pdf.

[5] Wall Street Journal, *Sluggish Market Bets on the Rails*, April 6, 2005, page B4.

[6] David E. Wohlwill, *Development Along A Busway: A Case Study of Development Along the Martin Luther King, Jr. East Busway in Pittsburgh, Pennsylvania* (1996), reported by the Transportation and Land Use Coalition.

- Ottawa, Canada's Transitway BRT system began operating in 1983. Since that time, $675 million (U.S. dollars) has been invested around bus stations along the corridor.[7]

- Since the planning process began for Phase I of the Silver Line in Boston, $450 million has been invested in commercial and residential development along the corridor.[8]

- In Dayton, Ohio a bus transfer station has attracted new retail establishments and the area has become a popular gathering spot.[9]

- The Euclid Corridor Transportation Project is a proposed BRT system in Cleveland, Ohio. A study of the long-term impacts of the project estimated that over a 25-year period it could generate or attract:[10]

  – 8.9 million square feet of non-residential development; and

  – 6,938 residential dwelling units.

Relevance to West Central Florida. With its fast population and economic growth, transit investments in West Central Florida may also be expected to attract significant levels of station area development, especially around light rail and BRT stations. The City of Tampa is already experiencing significant real estate investment in proximity to its TECO Streetcar Line (see Figure 6.1). The propagation of this type of development throughout West Central Florida, however, will require targeted planning that supports higher densities, pedestrian amenities, mixed uses, etc.

Increased Property Values. Numerous studies have documented that proximity to transit facilities increases the value of nearby residential, commercial, and retail properties. The studies show that access to transit, as a positive amenity, will be reflected in higher commercial and residential property values.

- A study by the Federal Transit Administration showed that property values rise as distance to Washington Metro stations decreases.[11] The study found that a 1,000-foot reduction in the distance to a transit station corresponded to a $2.30 per square foot increase in commercial property value. Given an average floor space of 30,630 square

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[7] TCRP Report 90, *Bus Rapid Transit, Volume 1: Case Studies in Bus Rapid Transit* (2003).

[8] American Public Transportation Association, *The Benefits of Transportation: Essential Support for a Strong Economy.*

[9] American Public Transportation Association, *The Benefits of Transportation: Essential Support for a Strong Economy.*

[10] Cambridge Systematics, Inc., *Economic Development Assessment for the Cleveland Euclid Corridor Transportation Project,* for FTA (2003).

[11] Federal Transit Administration, *Transit Benefits 2000 Working Papers: A Public Policy Analysis*, page 106.

feet, a 1,000-foot reduction in the distance to transit increased the average value of a commercial property by $70,139 (assuming late 1990s property values).[12]

- A study found that St. Louis homes located within 1,460 feet (slightly more than one-quarter mile) of a light rail station commanded prices 32 percent higher than those located more than 1,460 feet from the stations.[13]

- Between 1996 and 2000, property values around Dallas Area Rapid Transit (DART) stations increased by 25 percent.[14]

- Researchers at Portland University (Oregon) documented that homes in proximity to a transit station are 10 percent more valuable than similar homes located more than 1,000 feet from the station.[15]

- Statistical models developed to analyze the impact of transit on property values showed that a home's value (based on 1990 sales figures) in Alameda County, California increased by $2.29 for each meter it was closer to a Bay Area Rapid Transit (BART) station. According to the models, a house nearby a BART station would sell for close to 38 percent more than an identical home not near any BART service (35 km away).[16]

- In suburban New Jersey, the median price for homes in Census tracts immediately served by rail lines operated by the Delaware River Port Authority Transit Corporation (PATCO) was 10 percent higher than the price for homes located away from the rail line. Similarly, in Philadelphia, the median home price for Census tracts served by the Southeastern Pennsylvania Transit Authority (SEPTA) commuter service enjoyed a 3.8 percent premium over the median home price for Census tracts not directly served by commuter rail.[17]

- More intensively used transit systems have a greater impact on property values, as demonstrated by a study of five rail systems in California.[18] The study showed that the transit systems exhibiting the strongest correlations between property values and

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[12]Federal Transit Administration, *Transit Benefits 2000 Working Papers: A Public Policy Analysis*, page 112.

[13]Thomas A. Garrett, *Light Rail in America: Policy Issues and Prospects for Economic Development,* Federal Reserve Bank of St. Louis (www.stlouisfed.org), 2004.

[14]Kay, J.H., and G. Haikalis, *All Aboard*, Planning, Volume 66, No. 10, (October 2000): 14-19.

[15]Center for Transportation Excellence, *Transit Profile: The Portland Area MAX Light Rail System.* http://www.cfte.org/success/success_portland.pdf.

[16]*Impacts of Rail Transit on Property Values*, Booz Allen & Hamilton, 1999, page 2.

[17]*Impacts of Rail Transit on Property Values*, Booz Allen & Hamilton, 1999, page 2.

[18]*Impacts of Rail Transit on Property Values*, Booz Allen & Hamilton, 1999, page 4.

proximity to transit stations were the systems (BART, San Diego Trolley) with the highest rates of ridership and with the most service to locations within their respective regions.

- Investment in transit and rail-transit joint development had positive impacts on property values based on observations for five rail stations in the Washington, D.C. and Atlanta areas over the 1978 to 1989 period. Higher systemwide ridership increases average office rents near stations, and joint development projects (i.e., development projects that intermingle commercial space with transit stops) commanded at least three dollars per square foot more in annual office rents than comparable properties not adjacent to transit stations. In station areas with joint development projects, office vacancy rates were lower, average building densities higher, and share of regional growth larger.[19]

Relevance to West Central Florida. Higher property values in areas with access to transit may also generate higher levels of revenue for municipalities in West Central Florida.

Urban Environment and the Attraction of the Creative Class. The type of development and urban densities that would occur around the transit stations in West Central Florida may attract higher numbers of highly educated people who otherwise would not be as attracted to the region, and further stimulate growth in the region's downtown districts. Ambitious, young, and creative people are often seeking urban environments (i.e., an urban fabric that encourages interaction) that transit helps stimulate. Tampa already has a high-growth economy. Transit investments may help the region attract the type of higher wage jobs associated with the types of industries that require access to highly trained, skilled, and innovative people. For example, Google, Inc., a recognized leader in web search engines, is looking to expand outside of its Silicon Valley, California base. The key factors being evaluated by Google as it appraises sites for expansion include: 1) an ample supply of 22- to 30-year-olds; 2) a vibrant urban environment; and 3) proximity to public transportation.[20]

The areas around transit stations have the potential to become centers of revitalized neighborhoods. The diversity of development types in the vicinity of a single transit station, and among stations along a transit line, can allow residents, workers, and visitors to walk and use transit to get from their origins to their destinations. Lively streets in turn create a sense of safety and community that attracts young professionals and helps promote the sharing of ideas and knowledge that leads to innovation. Transit-oriented development also is attractive to a diverse population, including people of all ages and incomes. A diverse population allows a diversity of ideas to spread through a community.

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[19] Robert Cervero, *Rail Transit and Joint Development*, Journal of the American Planning Association, Winter 1994.

[20] Boston Business Journal, *Google Goggles Hub for Major Expansion*, May 27, 2005.

Vibrant, transit-oriented, urban environments are strong pulls for artists, designers, scientists, engineers, and other young professionals in the 25 to 34 age group. By expanding the segment of West Central Florida's population that is a member of this so-called "Creative Class," the region will be in a better position to produce innovations that spawn new companies. The region also will have an advantage in attracting higher-paying jobs in industries that require a skilled workforce.

West Central Florida's local governments and regional partnerships already have established the infrastructure necessary to support the creative class and encourage its growth in the region. For example, a group of Tampa Bay entrepreneurs formed Creative Tampa Bay in 2003 to help the region more effectively use its assets to attract and nurture the Creative Class. Other initiatives launched by cities, counties, universities, and other business groups throughout the region have formed the initial framework for fostering the growth and attraction of the Creative Class.[21] The availability of mass transit emerges as an issue in the Tampa Bay region's efforts to create an environment that nourishes young people.[22]

Transit improvements in the region could help refocus a larger share of the region's development around proposed stations in the urban core. West Central Florida's various municipalities, transportation and development agencies, universities, and private-sector entities must work together to develop and renew areas around transit stations, helping to make West Central Florida more attractive to the Creative Class.

Reduced Sprawl Resulting in More Compact Development and Cost Savings. Transit has an effect on urban development patterns, fostering the support and implementation of smart growth initiatives and limiting the costs associated with sprawl. Studies of growth and development patterns have found significant savings from denser land use patterns. For example, in a recent speech, "The Costs of Sprawl Revisited," Anthony Downs characterized the alternative to sprawl as "a more compact form of growth with higher densities, limited outward extension, more in-fill development, and more emphasis on transit." The savings on roadways, water/sewer lines, housing costs, and public services from more compact development nationally would be $22 to $24 billion per year.[23]

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[21] The mayors of Tampa and St. Petersburg have strongly supported the concept of the creative economy. The mayor of Tampa has formed a Creative Industries Council to encourage area businesses to support the arts and the mayor of St. Petersburg also has spoken on the topic. The Florida High-Tech Corridor Council (a joint effort of the University of South Florida and the University of Central Florida) has sponsored studies ("The Young and the Restless: How Tampa Bay Competes for Talent," 2004) and has hosted several forums with regional partners regarding the creative class.

[22] Creative Tampa Bay, *The Young and the Restless: How Tampa Bay Competes for Talent*, 2004.

[23] *The Costs of Sprawl Revisited*, Anthony Downs, presented at the ULI District Council Meeting, April 2004 (www.anthonydowns.com/sprawlrevisited.htm).

Complementing these findings, a recent report by the Brookings Institution identified three main benefits from transit-supported smart growth development patterns:[24]

- The cost of providing public infrastructure and services can be reduced with proper design and planning – government savings for roads, water/sewer, and operations and service delivery;

- Regional economic performance is enhanced when areas are developed with vital urban centers – including the finding that productivity increases with county employment density; and

- Suburbs also benefit from investment in healthy urban core areas – reduced city poverty rates and increased city income are associated with higher suburban income levels and property values.

Enhanced Mobility for Visitors to the Region. Tourism is a leading industry in West Central Florida, with annual spending of about $9.2 billion. In 2004, West Central Florida accounted for 16 percent of tourism-related spending in Florida.[25] Improvements in the area's transit system is likely to yield numerous benefits for the industry by increasing the appeal of the area to visitors and improving labor access.

- Transit creates a more attractive environment for tourism by allowing visitors to navigate the region without a car, easing access to attractions, improving safety, and reducing congestion. West Central Florida is a magnet for Europeans who are generally familiar with how to use transit and often prefer it over cars. However, in West Central Florida, transit does not provide a viable alternative for visitors. Once tourists land in Tampa, Sarasota, or St. Petersburg, they need a car to conveniently reach the area's attractions.

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[24] *Investing in a Better Future: A Review of the Fiscal and Competitive Advantages of Smarter Growth Development Patterns*, Mark Muro and Robert Puentes, The Brookings Institution, 2004.

[25] Florida Office of Economic and Demographic Research, *Taxable Tourism and Recreation Sales*, 2004.

- West Central Florida's attempt to attract the 2012 Olympics was stymied, at least in part by the relative lack of transit service in the area. The quadrennial Olympics attracts thousands of athletes, media representatives, and visitors, making it one of the most logistically complicated spectator events in the world. Gridlock is a major concern that can delay events and tarnish the image and experience of attending the games. For these reasons, the availability of transit is a criteria used by the Olympics Committee to evaluate prospective sites. West Central Florida's transit services were viewed as inadequate to support the Olympics' needs. This shortcoming was later described by a leader in the regional effort to attract the games – "the Tampa Bay region's ability to move people between multiple sites was a major shortcoming in the region's bid to host the 2012 Olympics. The Olympics Committee saw the region's transportation offerings as woefully short of the mark."[26]

- Although the lack of transit was not cited explicitly, traffic congestion (and memories of gridlock the last time Tampa hosted the Super Bowl in 2001) did emerge as a concern in Tampa's successful bid to attract the 2009 Super Bowl. A stronger transit network (including associated improvements in transit services, land use, and pedestrian amenities) in West Central Florida would help mitigate the congestion concerns and would further strengthen the region's future efforts to attract national and international caliber events.

- Transit enhances access to jobs for hospitality industry workers, frequently an issue in tourist destinations, including the beach areas of Pinellas and Sarasota counties, that have a limited stock of affordable housing. The lack of transit options can impede the hospitality industry's efforts to attract labor, especially those paying lower wages. Hotels in the region not adjacent to bus routes often confront significant challenges to retain adequate staffing to maintain operations and expected service levels.[27]

[26] Cambridge Systematics, Inc., *Tampa Bay Regional Transportation Blueprint*, prepared for the Tampa Bay Partnership, 2002.

Increased Mobility for Elderly, Disabled, and Lower-Income Populations. Transportation represents a large expense and transit helps people who cannot afford an automobile to access jobs. Improved transit benefits employers as well as jobholders. In Orlando, the value of lost wages if the transit system were to stop service, and transit-dependent riders were forced to find other jobs, was estimated at $16 to $122 million in 2002. The West Central Florida Needs Assessment transit network is projected to carry twice the number of passenger trips as the Orlando system did at that time.

Transit also provides the elderly with an increased ability to live independently and to access social services, fostering a greater sense of belonging within the community. In 2000, 21.1 percent of West Central Florida's population was over 65 in age, compared to less than 18 percent for Florida, overall. With the aging of the population in West Central Florida and the region's continued attractiveness to retirees, the demand for transit by older people will increase markedly in coming years.

The use of transit allows "transportation-disadvantaged" people (persons unable to drive because of disabilities or poverty, a group representing over nine percent of West Central Florida's total population) to increase their incomes and reduce their dependency on welfare, which benefits the society as a whole.[28] In West Central Florida, trips provided by most counties' paratransit services are largely limited to medical and other life-sustaining purposes (e.g., food shopping); the supply of trips is generally not adequate to provide daily service to education and jobs. The expansion of the fixed-route bus system as specified in the 2025 Regional Transit Needs Assessment would provide greater opportunities for the transportation disadvantaged to access employment and training. It would also help shift this population from expensive paratransit services (for example, there is a $28.47 per trip cost on Hillsborough County's *Sunshine Line* today) to more cost-efficient fixed-route transit ($3.71 per trip, on average, for HART local and express routes today).

Decreased Parking Demand. Parking needs in areas well-served by transit, such as downtowns and popular attractions, decrease as fewer people drive to their destinations. Improved transit service would free up parking lots in West Central Florida's downtown areas that could be used for higher density development that enhances the urban fabric (residential, commercial, retail, and entertainment uses rather than parking lots or garages). The lower costs of transit may also entice more people to travel to downtown areas if bus and light-rail tickets are lower than parking fees. By easing access to downtown areas and reducing parking cost burdens, downtown businesses can benefit from increased commercial activity. A study conducted on transit investment alternatives for the Salt Lake City area, found that the most aggressive transit improvement scenario would eliminate the need for an estimated 13,500 parking spaces.[29]

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[27] Cambridge Systematics, Inc., *Tampa Bay Regional Transportation Blueprint*, prepared for the Tampa Bay Partnership, 2002.

[28] TCRP Report 34, *Assessment of the Economic Impacts of Rural Public Transportation*, 1998, page 140.

[29] Cambridge Systematics, Inc., *Economic Impacts of Expanding Public Transit in the Wasatch Front Region*, November 2004.

Access to Labor Markets and Resources. Several factors that influence the attractiveness of an area to prospective companies interested in expansion or relocation are affected by the availability and quality of transit service. These factors include: access to labor; access to universities and other academic institutions; and access to suppliers and vendors.

A key expansion and location decision criterion for businesses is the regional labor pool from which employees can be drawn. Public transportation affects business expansion decisions by increasing the population reachable within a 20- to 30-minute commute. This is especially true for communities with parking and congestion challenges. For example, the convergence of Washington, D.C.'s Metro lines on its downtown has resulted in a better labor market for employers than what would have otherwise occurred.[30]

The 2025 Regional Transit Needs Assessment for West Central Florida would improve access to labor and jobs in the region. Compared to the Existing plus Committed (E+C) transit network, the expanded transit network included in the needs assessment would bring over 100,000 additional people and almost 27,000 additional jobs, respectively, within one-half mile of a transit line.[31]

The Value of Travel Demand Management. The 2025 Regional Transit Needs Assessment also includes an expanded commuter assistance program to encourage and facilitate the use of transportation alternatives to driving alone. Existing commuter assistance programs in West Central Florida operate carpool matching, vanpool vehicle rental, emergency ride

[30] Federal Transit Administration, *Transit Benefits 2000 Working Papers: A Public Policy Analysis*, page 88.

[31] Estimates are based on applying geographic information systems (GIS) software to the E+C and Transit Needs Assessment alternatives, comparing the difference in population and employment captured by drawing a one-half mile buffer around proposed transit lines. The data are for 2000 (employment) and 2005 (population). The results would likely increase significantly by 2025 due to anticipated population and economic growth.

home and telework programs, and work with employers to encourage employees to commute without driving alone every day. Today, the programs are somewhat limited in scope and geographic area. Benefits of expanded commuter assistance that could accrue to the region include reductions in traffic delay, reduced air pollutants, and reduced fuel consumption.

As an example, a commuter assistance program operating in the Puget Sound region of Washington State estimates that if the 13,480 vehicles removed from the region's highways by participating employees each morning were added back, overall morning delay per vehicle would be increased by 6.3 percent, or a total of 719,000 hours. This translates into an economic benefit to the Puget Sound region of $24 million in reduced travel delay.

7.0 Conclusion

This study finds significant benefits related to the extensive public transportation investment included within the Chairs Coordinating Committee's 2025 Regional Transit Needs Assessment for West Central Florida. Much of the benefit is derived from expected increases in transit ridership due to the expanded network and enhanced transit services. The estimated benefits of implementing the Regional Transit Needs Assessment would be an additional 12 million annual transit riders by 2025, approximately $100 million in annual user benefits, and a $42 million annual increase in gross regional product (GRP).

Other benefits include a net reduction in auto emissions of 2.3 million kilograms of carbon monoxide annually, as well as 3.3 million fewer gallons of fuel consumed. Beyond the estimated benefits of the 2025 Regional Transit Needs Assessment, extensive additional impacts may be expected due to the expansion of transit service in West Central Florida. This includes improved labor force accessibility (benefiting both employers and individuals seeking jobs), improved efficiency and coverage in the provision of transit services for the transportation disadvantaged, and significant transit-oriented development opportunities that may lead to denser urban neighborhoods and commercial districts. These findings are further affirmed by a number of studies that have documented and quantified the linkages between transit investments and property values, productivity, and real estate development. As West Central Florida continues to gain jobs and add population with corresponding rises in traffic congestion, transit presents a means for shaping the region's growth, enhancing its economy, and increasing its competitiveness as a business center and tourist destination.

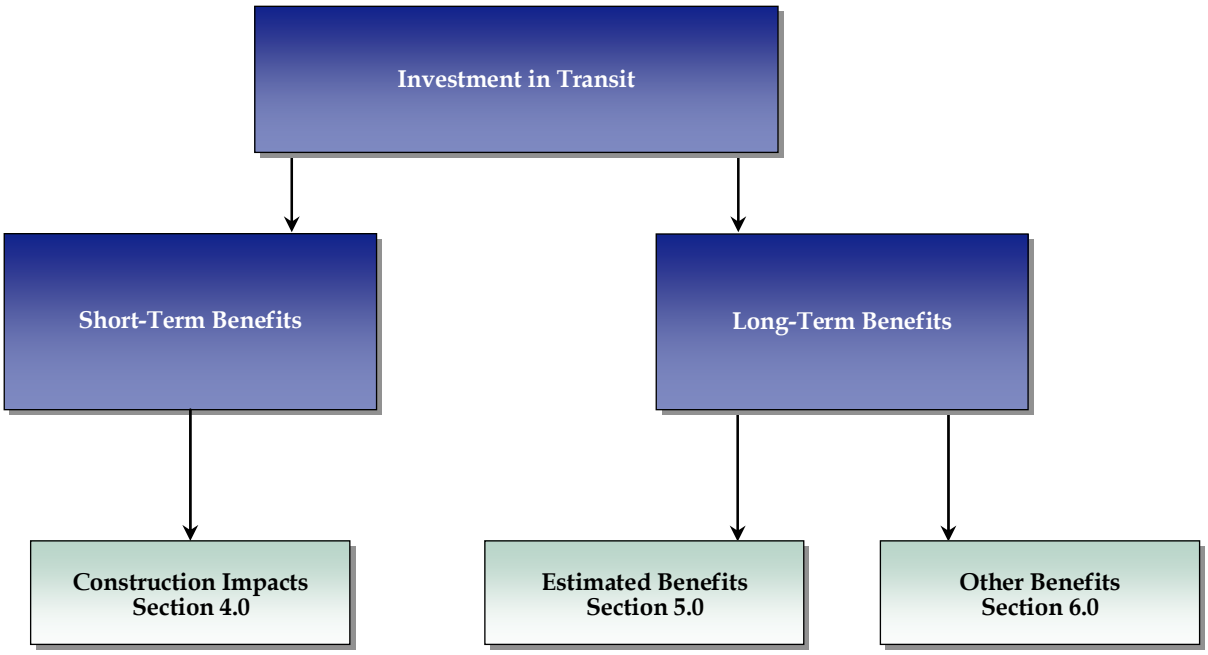
Appendix A

Technical Approach

Technical Approach

This appendix briefly describes how the study was conducted. Figure A.1 demonstrates schematically how the discussion of the economic impacts of transit investments are handled in the main body of the report. Section 4.0 quantifies the short-term, temporal impacts resulting from the construction of the expanded transit network; Section 5.0 estimates the economic effects of improved business productivity resulting from the use of transit services; and Section 6.0 reviews other benefits that may be expected in West Central Florida due to improved transit.

Figure A.1 Short- and Long-Term Benefits of Transit Investments by Report Section



Transit investments produce a number of different impacts on regional economies and the quality of life. The analysis distinguishes these impacts based on the extent to which they affect the regional economy, emphasizing those impacts that would make the West Central Florida economy more productive and competitive. Considerations concerning the economic impacts described in the analysis include the following:

- **Impacts Can Be Generative, Redistributive, or a Financial Transfer –** *Generative* impacts represent an increase in economic growth or efficiency for the regional economy, and are the only impacts that result in net economic gains to society at large.[1] Generative impacts include user benefits (time savings, reduced fuel consumption, lower wear and tear on vehicles, and improved safety) that result in economic growth (regional employment, income growth, job accessibility, agglomeration and urbanization benefits, and external benefits). External benefits include environmental (improved air and water quality) and social benefits (better access to education and healthcare). The effects of the user benefits on the regional economy is the focus of the quantitative analysis of this report (Section 5.0). *Redistributive* impacts account for locational shifts of economic activity and benefits within a region, while *financial transfer* effects involve the transmittance of monies from one entity to another. Unlike the generative impacts, redistributive and financial transfer impacts, do not contribute significantly to the aggregate economic welfare of the region.

- **Short-Term and Long-Term Economic Impacts –** The long-term, generative effects of transit improvements and how they reverberate through the West Central Florida economy is a primary focus of the report. Other effects, such as those resulting from construction, are more temporal in nature, providing the local economy with a significant, but temporary, short-term stimulus.

- **Estimated and Other Benefits –** Some of the impacts examined in this report are quantified (estimated benefits), while others are described qualitatively (other benefits). While Section 5.0 covers the estimated benefits resulting from a quantitative analysis, including direct travel benefits, regional economic impacts, and reductions in emissions and fuel consumption resulting from the transit improvements, the relevance and magnitude of other benefits is primarily covered in a qualitative fashion in Section 6.0. This includes a discussion of development and redevelopment opportunities, labor market accessibility, and improved access for the transportation disadvantaged population. The analysis presented in Section 6.0 generally draws on the findings of other studies regarding the varied benefits that may result from transit improvements. It is important to note that the benefits of transit investments discussed in Section 6.0 may be just as important (or more so) to the West Central Florida economy than those that are estimated (quantified) in Section 5.0. The analysis of estimated benefits in Section 5.0, stressing the business productivity impacts of the user benefits resulting from the expansion of the transit network and services, represents one component of the economic benefits that would be expected in West Central Florida and should be weighed with the other benefits detailed in Section 6.0.

[1] *Economic Impact Analysis of Transit Investments: Guidebook for Practitioners*, TCRP Report 35, Transportation Research Board; Cambridge Systematics, Inc., Robert Cervero, and David Aschauer, 1998.

Quantitative Analysis Approach – Construction and Estimated Benefits

The approaches used to quantify the economic impacts of the construction spending (a shorter-term, temporal benefit) and the improvements in business productivity (a longer-term benefit enhancing regional competitiveness) associated with the expanded transit network are described below.

Construction Impact Analysis

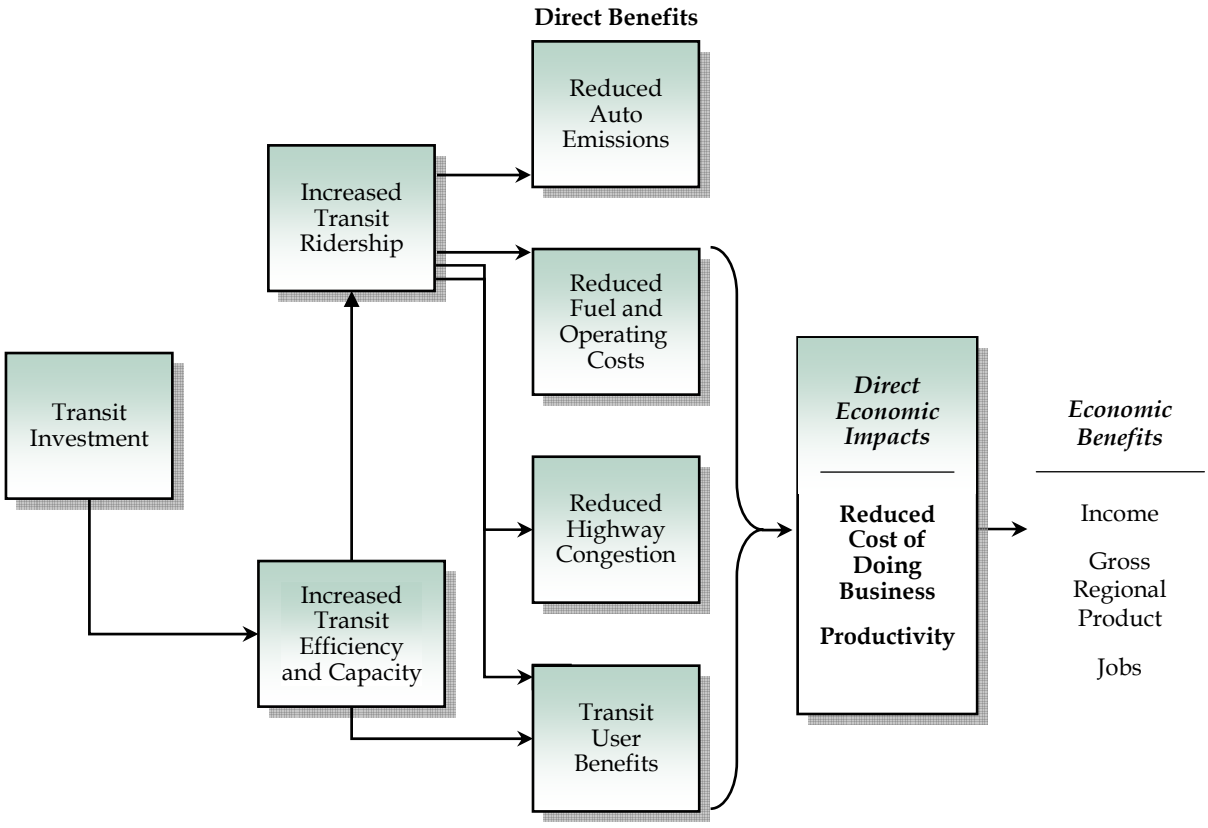
The stream of construction spending for the 2025 Regional Transit Needs Assessment was estimated to be $5.4 billion for the 2010-2025 period. This sum was annualized (so it could be used as an input to the Tampa Bay Regional Planning Council's Regional Economic Models, Inc. or "REMI" model) for each year during the 15-year period. The annualized construction expenditures were then used as an input into the REMI model to estimate the macroeconomic benefits that are expected to result from the building of an expanded transit network. The values were entered as a pure construction input, assuming that these figures do not include acquisition costs for right-of-way. Although they act as a temporary stimulus on the regional economy and create projects that can make a regional economy more competitive economically, construction impacts are not considered to be generative in nature, as they do not, in themselves, increase productivity. The economic benefits of the construction spending associated with the 2025 Regional Transit Needs Assessment, in terms of income, gross regional product, and jobs, are summarized in Section 4.0.

Economic Impact Analysis

The general analytical framework to estimate and quantify the economic benefits of transit investments in the West Central Florida region is depicted in Figure A.2. Investments in public transportation lead to increased transit efficiency and capacity, such that transit travelers have quicker connections between origins and destinations, more stops and stations near travel destinations, and more travel options (bus, bus rapid transit, and light rail). This increase in efficiency and capacity attracts new transit riders and improves travel conditions for riders already using the system. The overall effect of the improvements is an increase in ridership and a shift from auto trips to transit trips.

Increases in transit ridership have numerous effects on the local economy which derive from a combination of: 1) **transit user benefits** – better transit service improves travel time and connectivity for existing transit users and will persuade additional travelers to switch their mode of travel as it benefits them to do so; and 2) **reduced auto trips and vehicle miles traveled** (VMT) which, in turn, lowers auto emissions, highway congestion, and the demand for parking.

Figure A.2 Estimating Long-Term Benefits of Transit Investments



These user benefits, described above, reduce the costs of doing business and translate to an enhanced economy in terms of improved productivity, economic competitiveness, and greater growth potential. Long-term, the transit investments, and the productivity improvements they engender, result in appreciable increases in income, gross regional product, and jobs in the region.

Models and Data Applied to Estimate Benefits

The quantitative analysis used to estimate economic impacts, derived from calculations of user benefits, is made possible by the availability of data and transportation and economic models. The majority of the data generated to measure direct transportation effects in this study was produced by the Hillsborough County MPO on behalf of the Chairs Coordinating Committee. The Florida Department of Transportation's (FDOT) District 7 Office maintains a travel demand model which captures both transit and highway trips, and includes a mode choice model to estimate how transit improvements will affect transit ridership and travel costs. This study compares data from two future scenarios, both analyzed using the FDOT District 7 Regional Transportation Analysis (RTA) model:

- 2025 Existing plus Committed (E+C); and

- 2025 Regional Transit Needs Assessment (as identified by the Chairs Coordinating Committee in the 2025 Long-Range Transportation Plan).

By comparing the two scenarios, it is possible to discern the incremental improvement in benefits that would accrue if the transit needs identified by the CCC were implemented. The travel demand model produces results used in this study such as: transit ridership changes; vehicle miles traveled (VMT); and travel time by trip purpose. These benefits are first estimated for five travel zone districts, which fall within and correspond to the counties in District 7 (Citrus, Hernando, Hillsborough, Pasco, and Pinellas).[2]

User Benefits. Using the results generated by the Hillsborough County MPO, Cambridge Systematics ran the SUMMIT user benefits model. SUMMIT is specifically designed for the estimation of transit-related user benefits, and is the model required by the Federal Transit Administration (FTA) for New Starts applications for potential major transit construction projects.[3] For this analysis, SUMMIT was primarily used to produce estimates of user benefits for the two travel demand model runs ("E+C" and 2025 Regional Transit Needs Assessment scenarios) described above. User benefits were estimated in terms of traveler benefit, expressed as time. The benefits were estimated based on a tradeoff analysis of utility between different modes and travel performance. This estimation methodology is sanctioned by the FTA.

SUMMIT estimates user benefits in terms of hours, and these hours are then converted into monetary values to conduct the economic benefits analyses. Value of time estimates vary significantly depending on trip purpose, methodology, and model. Accordingly, Table A.1 shows the value of time estimates that are used in this study to monetize user benefits by trip type. The values are consistent with those used in other national studies, and are based on value of time estimates within the FHWA's Surface Transportation Efficiency Analysis Model (STEAM). The actual values used in this study have been adjusted from national values to be consistent with average wage rates (from the U.S. Department of Labor's Bureau of Labor Statistics) in the West Central Florida region (the estimate for the total value of transit-related user benefits using this process is included in Section 5.0).

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[2] District 1, including Manatee, Polk, and Sarasota counties are not included in the models used to estimate the transit impacts in this analysis. Combined, the District 1 counties account for 20.9 percent of the transit trips in West Central Florida. An assumption is made that these counties will receive a proportional share of the transit improvements specified in the 2025 Regional Transit Needs Assessment. Therefore, a factorial of 1.26 is used to increase the benefits accruing in the District 7 counties and more fully account for the total benefits that may result from the implementation of the projects included in the 2025 Regional Transit Needs Assessment.

[3] For more information on SUMMIT, visit www.fta.dot.gov, and for a site specific to FTA New Starts: http://www.fta.dot.gov/grant_programs/transportation_planning/major_investment/9924_ENG_HTML.htm.

Table A.1 Value of Time by Trip Purpose

Dollars per Hour, 2004

Trip Purpose	Value of Time
Home-Based Work (commuter trips)	$9.02
Home-Based School	$2.59
Home-Based Other (shopping, social, recreational trips)	$4.42
Non-Home-Based, Non-Business	$5.52
Non-Home-Based, Business (trips with an explicit business purpose)	$16.73

Finally, highway system user benefits are another component of user benefits estimated for this study. The highway benefits occur due to a reduction in VMT, relieving some highway congestion. In order to avoid the double-counting of benefits, only highway trips were included in this analysis because benefits for transit trips are already included in the SUMMIT results. The highway benefits are estimated based on changes in travel times (in hours) for non-transit trips (e.g., truck and auto). These figures were monetized ($30 per hour for trucks and $8 per hour for autos) based on value of time estimates from the FHWA's Highway Economic Requirements (HERS) model and STEAM. Trips include those that originate in West Central Florida with destinations outside the region, those that are destined for West Central Florida with origins outside the region, and trips that both originate and are destined for points within the region.

Regional Economic Impact Analysis. In addition to direct user benefits, the regional economic impacts of transit investments in terms of personal income, employment, and gross regional product (GRP) can also be estimated (these estimates are presented in Section 5.0). Investments in public transportation have direct effects on the transportation system in terms of travel time, travel cost, and other factors. A portion of these transportation efficiency gains are related to business travel. There are several categories of business travel that are incorporated into the estimate of direct economic impacts (the business cost savings that ultimately yield higher productivity and increases in regional competitiveness):

- **Business Component of Non-Home-Based Trips –** This includes "on-the-clock" travel for meetings and other business purposes, and is estimated to be 3.3 percent of all transit trips based on the most recent data (2001) from the National Household Travel Survey (NHTS). There is no local data available for this concept, but 3.3 percent is likely to be a conservative estimate.

- **Business Cost Component of Commuting Trips –** Past studies have shown that rising commute times can increase the labor costs to firms that must pay a premium to compensate for high travel costs.[4] Although studies for Los Angeles and elsewhere have assigned a 50 percent share of the cost of home-based work trips (i.e., commuter trips) to labor costs, this study conservatively uses a 25 percent assumption for West Central Florida (i.e., 25 percent of the user benefits resulting from commuting trips on transit are used as inputs to generate regional economic benefits using the REMI model). Research has shown that this effect (employers compensating their workers implicitly with higher wage rates for commuting costs) tends to increase with the size of the labor market. Since West Central Florida is a medium- to large-sized metropolitan area, it is appropriate to use a lower value than in Los Angeles, New York, and Chicago.

Business Component of Highway Travel. Increases in transit ridership with corresponding reductions in highway volumes can have a real impact on roadway congestion, and the business portion of highway travel time savings (trucks and business auto) lead to a direct business cost savings.[5] Reductions in business travel costs resulting from the 2025 Regional Transit Needs Assessment lead to direct economic impacts in terms of lower costs of doing business and increased productivity. These direct effects can then be applied as inputs into a regional economic simulation model (for this analysis, the Tampa Bay Regional Planning Council's Regional Economic Models Inc. or "REMI" model is applied) to estimate total regional economic impacts for concepts including income, employment, and gross regional product (GRP).

Other Long-Term Benefits of Transit

The approach for estimating benefits described above does not cover all of the economic benefits that may be expected in West Central Florida following the implementation of the transit improvements included in the 2025 Regional Transit Needs Assessment. Many analyses (including several large-scale studies), conducted over the past 10 to 15 years, demonstrate a wide range of economic benefits that may result due to transit improvements. Section 6.0 reviews these other benefits, most drawing on the experiences of other regions that have implemented significant transit improvements, and explains their potential relevance to West Central Florida.

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[4] J. Zax, *Compensation for Commutes in Labor and Housing Markets*, Journal of Urban Economics, No. 30, pp. 192-207, 1991.

[5] *Estimating the Benefits and Costs of Public Transit Projects: A Guidebook for Practitioners*, TCRP Report H-19, Transportation Research Board, ECONorthwest and PBQD, Inc., 2001.