INTRODUCTION & OBJECTIVE

The Hillsborough TPO is developing a Needs Analysis for proposed transportation infrastructure improvements out to the year 2050. This Long Range Transportation Plan (LRTP) identifies transportation projects that are being considered for future construction and operation to improve traffic operations, improve transportation safety, enhance premium transit usage, and support local government growth plans.

As a component of the 2050 LRTP, this assessment of major transportation infrastructure projects provides an analysis of the effectiveness of these projects to improve transportation operations and support improved access to commercial areas and activity centers. The projects analyzed within this technical memorandum were identified by the TPO and their supporting transportation agencies.

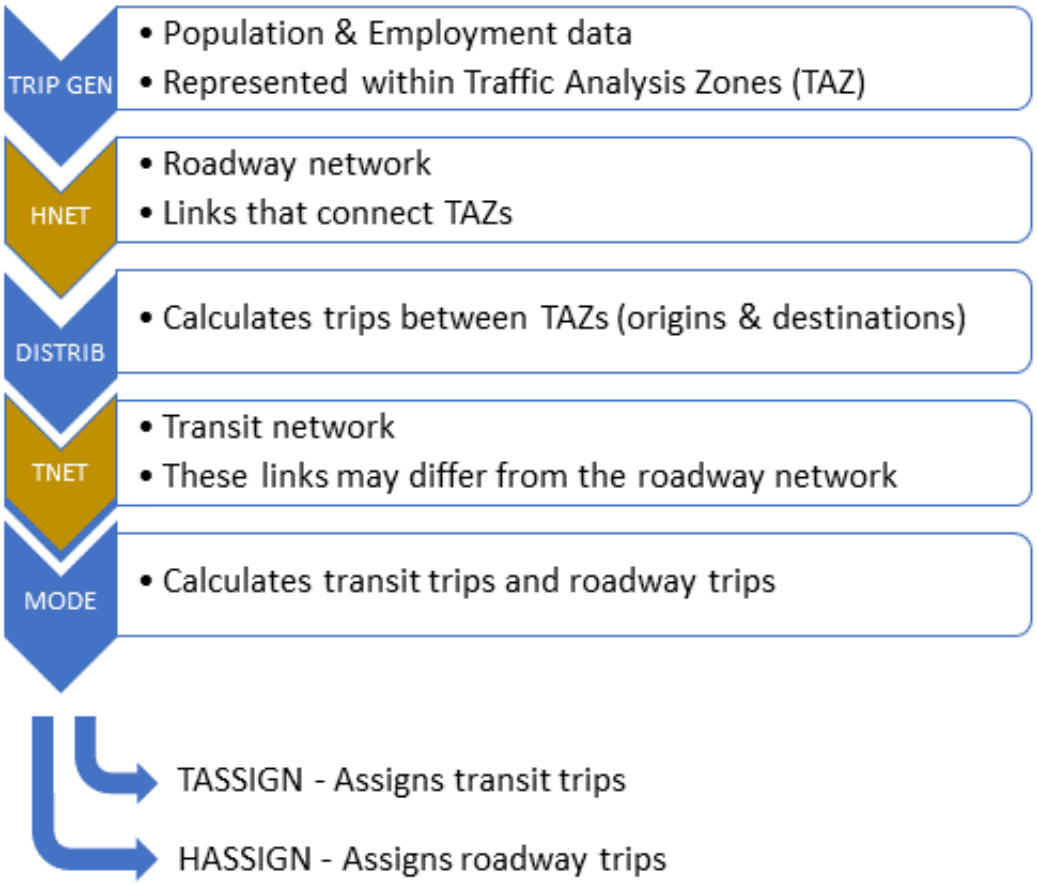
OVERVIEW OF HOW SCENARIO TESTING IMPACTS ROADWAY VOLUMES & TRANSIT RIDERSIP

Scenario testing evaluates changes (projects) in the TBRPM model network for roadways and for transit. These network changes result in changes to traffic volumes on the roadways and transit passengers. The interaction of roadway and transit projects impacts the performance metrics of the major projects.

At a generalized level, the testing of the 10 scenarios (and the 25 projects that are contained within the 10 scenarios) affects the roadway and transit networks that accommodate person trips from an origin to a destination. The testing changes specific roadway segments to reflect a capacity improvement (additional lanes), an extension, or a new or modified interstate interchange.

For major transit projects, the testing of the scenarios may include a new or expanded premium transit service (bus rapid transit, streetcar, light rail).

The following simplified graphic illustrates how the scenario testing methodology impacts the TBRPM model outputs for person and vehicle trips. Specifically, the scenario testing of 25 projects is accomplished through changes in the roadway network (HNET) and in the transit network (TNET). These steps in the simplified modeling process shown in the following figure are **gold** colored.



DISCUSSION OF METRICS

The primary metrics that can be derived from the TBRPM output consist of improvements in travel time, transit ridership, and improvements in accessibility to trip destinations (for both autos and transit). The following provides an overview of the various metrics developed for this evaluation.

Transit Share

- Based on origin to destination trip pair analysis.
- Transportation mode split between autos and transit along a corridor.
- Analysis shows the change in travel mode from auto to transit.

Person Hours of Delay

- A function of the congested speed compared to the free flow speed.
    - Free-Flow speeds (mph) are assigned by facility type:
        - 60 – Freeway
        - 45 – Divided Arterial

    - 40 – Undivided Arterial
    - 35 – Collector
    - 30 - Other
- The congested speed is calculated for each roadway segment defined in the TBRPM roadway network. It is based on the traffic volume and roadway capacity – with traffic congestion increasing as the operating level of service diminishes.

Access to Jobs

- Auto accessibility – The increase in the median number of jobs accessible by auto within 30 minutes along the corridor.
- Transit accessibility – The increase in the median number of jobs accessible by transit within 30 minutes along the transit route.

Planning Time Index

- This travel time index represents the 95th percentile of the congested travel time compared to the free-flow speed.
- Reflects delays due to congestion and incidents (crashes). FDOT Safety Performance Function equations are incorporated to assess safety/crashes, and are calculated based on roadway volume, facility type, and number of lanes.
- Historically, the 95th percentile represents the measure savvy commuters would use to plan for their trip. This is the total time a road user allocates to arrive on time 95% their trips.
- FDOT views this measure as a user's perspective on the reliability of travel time. (source: Margiotta, McLeod, Scorsone, Dowling (August 27, 2013.); Travel Time Reliability as a Service Measure for Urban Freeways in Florida.)

Reliability Index

- Represents the 80th percentile of the congested travel time compared to the free-flow speed.
- Reflects delays due to congestion and incidents (crashes). FDOT Safety Performance Function equations are incorporated to assess safety/crashes, and are calculated based on roadway volume, facility type, and number of lanes.
- Further analysis of travel time indices has shown that the 80th percentile is more sensitive to typical transportation improvements. Beyond this 80th percentile, research indicates that roadway improvements do not significantly improve travel times.
- FDOT views this measure as the roadway maintaining agency's perspective on the reliability of travel time.

Auto Travel Time

- Based on roadway volumes, segment distance and congested speed.

Transit Travel Time

- Based on the time to access the transit service (walk, park & ride), wait times, transfer times, and trip distance.

MAJOR PROJECT RANKINGS AND PERFORMANCE METRICS

Table 1 provides a ranking of the individual projects based on their cumulative performance metrics. Please note that the transit projects are highlighted in blue on the table.

For the roadway projects, Table 2 provides separate rankings for freeways and interchanges vs. arterial or collector road projects. Green highlighted cells indicate positive (favorable) results for the noted performance metrics and yellow highlights indicate the project did not score favorably.

For the transit projects, Table 3 provides the performance metrics, where again green highlighted cells indicate favorable results and yellow highlights indicate minimal/negligible positive results. The red highlighted cells indicate transit performance metric results that are contrary to our expectations. As an example, per the TBRPM model output, the MetroRapid Brandon project in Scenario 7 showed an increase in system-wide transit travel time. These types of results may require further review of the TBRPM model runs and output results.

Table 1 – Major Project Rankings

Scenario	Project	Description	Project Limits	Rank
Scenario_1	I-4 Managed Lanes (Scenario 1)	Managed Lanes (4 new)	Downtown (I-275) to Polk County	1
Scenario_3	Lithia Pinecrest (Scenario 3)	Widen 2 to 4 lanes	Fishhawk Blvd to Lumsden Rd	2
Scenario_4	Suncoast Parkway (Scenario 4)	Widening to 8 lanes	Van Dyke Rd to County line	3
Scenario_10	Crosstown US 301 (Scenario 10)	Add upper deck lanes; 2 each direction	US 301 to Big Bend Road	4
Scenario_7	I-75 Managed Lanes South (Scenario 7)	Managed Lanes (4 new)	Downtown {I-4??} to Manatee County	5
Scenario_2	I-275 Managed Lanes (Scenario 2)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	6
Scenario_4	SR 60 (Scenario 4)	Widen 4 to 6 lanes	Valrico Rd to Polk County	7
Scenario_3	South Tampa Rail (CSX Multimodal Corridor) (Sc	Transit (rail)	Downtown to SW Tampa peninsula	8
Scenario_6	CR 39 (Scenario 6)	Widen 2 to 4 lanes	SR 60 to SR 674	9
Scenario_3	I-275 Managed Lanes (Scenario 3)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	10
Scenario_7	Metrorapid Brandon (Scenario 7)	BRT on 50th / 56th Street	USF to Brandon	11
Scenario_8	I-75 Managed Lanes North (Scenario 8)	Managed Lanes (4 new)	Pasco County to Downtown (I-4??}	12
Scenario_2	US 92 (Scenario 2)	Widen 2 to 4 lanes	Park Rd to Polk County	13
Scenario_2	Airport to Downtown Transit (Scenario 2)	Rail or streetcar	Airport to Downtown	14
Scenario_5	I-275 (Scenario 5)	Widen 6 to 8 lanes	Hillsborough Ave to Bearss Ave	15
Scenario_7	I-275/US-41 Interchange (Scenario 7)	New interchange	At US 41	16
Scenario_9	I-275 Managed Lanes (Scenario 9)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	17
Scenario_8	CR 672 / Balm Rd (Scenario 8)	Widen 2 to 4 lanes	Clement Pride to Balm Riverview Rd	18
Scenario_4	I-75 Interchange (Scenario 4)	New interchange	North of Manatee County line (Ft. Hamer Rd)	19
Scenario_5	CR 672 / Balm Road (Scenario 5)	Widen 2 to 4 lanes	Clement Pride to Balm Riverview Rd	20
Scenario_8	Metrorapid Brandon (East West BRT) (Scenario 8	Transit (BRT)	Airport/Westshore to Temple Terrace	21
Scenario_6	USF Brandon Rail (50th 56th BRT) (Scenario 6)	Downtown, USF, Brandon Transit	USF to Brandon	22
Scenario_6	I-75 Interchange (Scenario 6)	New interchange	US 301 to Harney Rd	23
Scenario_9	I-75/US 301 Interchange (Scenario 9)	Interchange Reconstruction	US 301	24
Scenario_1	US 41 Rail (Scenario 1)	Regional passenger rail	Bradenton to Brooksville	25
Scenario_10	Gandy Bridge (Scenario 10)	New bridge	Pinellas County to Selmon Gandy extension	26
Scenario_10	US 301 BRT (Scenario 10)	BRT on new road	End of Selmon Xway to US 301 (Big Bend Rd)	27
Scenario_9	TECO Streetcar Extension (Scenario 9)	Along Tampa Ave/FL Ave one-way pairs	Ft. Brooke Garage to Palm Ave	28

Table 2 – Roadway Performance Metrics

ROADWAY PROJECTS

Scenario	Project	Description	Project Limits	Rank	Person Hours Delay Change (Daily)	Auto Accessibility Change (Peak % / Off-Peak %)	Planning Time Index Change (Daily)	Reliability Time Index Change (Daily)	Daily Auto Travel Time Change (Minutes)
Freeways & Interchanges									
Scenario_1	I-4 Managed Lanes (Scenario 1)	Managed Lanes (4 new)	Downtown to Polk County	1	(55,847)	15% / (4)%	(1.4)	(0.8)	(20.8)
Scenario_4	Suncoast Parkway (Scenario 4)	Widening to 8 lanes	Van Dyke Rd to County line	3	(1,057)	33% / (12)%	(2.8)	(1.1)	(2.4)
Scenario_10	Crosstown US 301 (Scenario 10)	Add upper deck lanes; 2 each direction	US 301 to Big Bend Road	4	(8,475)	19% / 8%	(1.5)	(0.8)	(8.5)
Scenario_7	I-75 Managed Lanes South (Scenario 7)	Managed Lanes (4 new)	Downtown to Manatee County	5	(20,284)	18% / (3)%	(1.8)	(0.9)	(4.6)
Scenario_2	I-275 Managed Lanes (Scenario 2)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown	6	(3,616)	-	(0.6)	(0.3)	(1.2)
Scenario_3	I-275 Managed Lanes (Scenario 3)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown	10	(5,885)	1% / 0%	(0.6)	(0.3)	(3.5)
Scenario_8	I-75 Managed Lanes North (Scenario 8)	Managed Lanes (4 new)	Pasco County to Downtown	12	(5,458)	-	(0.3)	(0.2)	(1.8)
Scenario_5	I-275 (Scenario 5)	Widen 6 to 8 lanes	Hillsborough Ave to Bearss Ave	15	(1,998)	3% / 0%	(1.1)	(0.5)	(1.1)
Scenario_7	I-275/US-41 Interchange (Scenario 7)	New interchange	At US 41	16	-	11% / 0%	(0.5)	(0.2)	-
Scenario_9	I-275 Managed Lanes (Scenario 9)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown	17	(4,406)	2% / 0%	(0.7)	(0.3)	(1.6)
Scenario_4	I-75 Interchange (Scenario 4)	New interchange	North of Manatee County line	19	(220)	15% / (24)%	(0.1)	(0.1)	(5.4)
Scenario_6	I-75 Interchange (Scenario 6)	New interchange	US 301 to Harney Rd	23	-	21% / 4%	-	-	-
Scenario_9	I-75/US 301 Interchange (Scenario 9)	Interchange Reconstruction	US 301	24	-	-	-	-	-
Scenario_10	Gandy Bridge (Scenario 10)	New bridge	Pinellas County to Selmon Gandy extension	26	(55)	-	(0.1)	-	-
Non-Freeway Capacity Improvements									
Scenario_3	Lithia Pinecrest (Scenario 3)	Widen 2 to 4 lanes	Fishhawk Blvd to Lumsden Rd	2	(2,643)	11% / 4%	(2.8)	(1.5)	(12.7)
Scenario_4	SR60 (Scenario 4)	Widen 4 to 6 lanes	Valrico Rd to Polk County	7	(2,550)	41% / 1%	(0.6)	(0.3)	(2.8)
Scenario_6	CR39 (Scenario 6)	Widen 2 to 4 lanes	SR 60 to SR674	9	(1,200)	-	(1.3)	(0.6)	(12.3)
Scenario_2	US 92 (Scenario 2)	Widen 2 to 4 lanes	Park Rd to Polk County	13	(599)	1% / 1%	(1.3)	(0.5)	(2.7)
Scenario_8	CR672 / Balm Rd (Scenario 8)	Widen 2 to 4 lanes	Clement Pride to Balm Riverview Rd	18	(72)	2% / 0%	(0.9)	(0.3)	(0.7)
Scenario_5	CR672 / Balm Road (Scenario 5)	Widen 2 to 4 lanes	Clement Pride to Balm Riverview Rd	20	(72)	0% / 4%	(0.9)	(0.3)	-

Table 3 – Transit Performance Metrics

TRANSIT PROJECTS **PERFORMANCE METRICS**

Scenario	Project	Description	Project Limits	Rank	Mode Share Change (Peak % / Off-Peak %)	Transit Accessibility Change (Peak % / Off-Peak %)	Transit Travel Time Change (Minutes)
Scenario_3	South Tampa Rail (Scenario 3)	Transit (rail)	Downtown to SW Tampa peninsula	8	0.3% / 0.1%	5% / 2%	1.1 / (0.4)
Scenario_7	Metrorapid Brandon (Scenario 7)	BRT on 50th / 56th Street	USF to Brandon	11	0.3% / 0.0%	-	13.3 / 1.6
Scenario_2	Airport to Downtown Transit (Scenario 2)	Rail or streetcar	Airport to Downtown	14	0.0% / 0.1%	11% / 31%	(1.5) / (3.7)
Scenario_8	Metrorapid Brandon (Scenario 8)	Transit (mode TBD)	Brandon to Westshore	21	0.1% / 0.1%	-	1.2 / -1.1
Scenario_6	USF Brandon Rail (Scenario 6)	Downtown, USF, Brandon Transit	USF to Brandon	22	-	4% / 5%	(0.5) / (0.3)
Scenario_1	US 41 Rail (Scenario 1)	Regional passenger rail	Bradenton to Brooksville	25	-	-	0.8 / 0.2
Scenario_10	US 301 BRT (Scenario 10)	BRT on new road	End of Selmon Xway to US 301	27	-	-	1.5 / 0.2
Scenario_9	TECO Streetcar Extension (Scenario 9)	Along Tampa Ave/FL Ave one-way pairs	Ft. Brooke Garage to Palm Ave	28	0.0% / 0.3%	0% / 37%	0.1 / (3.3)

COST ESTIMATES:

Total cost estimates for the major projects have been compiled from several sources to provide the most current opinion of probable costs for the purpose of future programming. We recognize that construction costs and overall contractor bid costs have increased significantly over the past several years. A report published report by The Balmoral Group in December 2023 notes that bids received by FDOT in November 2023 averaged a 40% increase from all bids received in November 2020. Recognizing the variability of forecasted construction costs, the estimates in this technical memorandum may be subject to change as the sponsoring agencies update their project cost projections.

Table 4 – Total Cost Estimates

Scenario	Project	Description	Project Limits	Rank	Length (mi)	Cost Estimate
Scenario_1	I-4 Managed Lanes (Scenario 1)	Managed Lanes (4 new)	Downtown (I-275) to Polk County	1	26.34	$ 355,413,614
Scenario_3	Lithia Pinecrest (Scenario 3)	Widen 2 to 4 lanes	Fishhawk Blvd to Lumsden Rd	2	6.00	$ 200,000,000
Scenario_4	Suncoast Parkway (Scenario 4)	Widening to 8 lanes	Van Dyke Rd to County line	3	3.73	$ 21,000,196
Scenario_10	Crosstown US 301 (Scenario 10)	Add upper deck lanes; 2 each direction	US 301 to Big Bend Road	4	10.07	N/A
Scenario_7	I-75 Managed Lanes South (Scenario 7)	Managed Lanes (4 new)	Downtown to Manatee County	5	20.02	$ 147,744,983
Scenario_2	I-275 Managed Lanes (Scenario 2)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	6	9.03	$ 1,247,213,301
Scenario_4	SR 60 (Scenario 4)	Widen 4 to 6 lanes	Valrico Rd to Polk County	7	12.31	$ 59,549,761
Scenario_3	South Tampa Rail (CSX Multimodal Corridor) (Sc	Transit (rail)	Downtown to SW Tampa peninsula	8	8.55	$ 175,000,000
Scenario_6	CR 39 (Scenario 6)	Widen 2 to 4 lanes	SR 60 to SR 674	9	16.54	$ 162,360,338
Scenario_3	I-275 Managed Lanes (Scenario 3)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	10	9.03	$ 1,247,213,301
Scenario_7	Metrorapid Brandon (Scenario 7)	BRT on 50th / 56th Street	USF to Brandon	11	18.48	$ 165,000,000
Scenario_8	I-75 Managed Lanes North (Scenario 8)	Managed Lanes (4 new)	Pasco County to Downtown (I-4)	12	19.81	$ 483,494,000
Scenario_2	US 92 (Scenario 2)	Widen 2 to 4 lanes	Park Rd to Polk County	13	3.05	$ 88,913,500
Scenario_2	Airport to Downtown Transit (Scenario 2)	Rail or streetcar	Airport to Downtown	14	12.93	$ 800,000,000
Scenario_5	I-275 (Scenario 5)	Widen 6 to 8 lanes	Hillsborough Ave to Bearss Ave	15	6.37	$ 94,842,704
Scenario_7	I-275/US-41 Interchange (Scenario 7)	New interchange	At US 41	16	0.50	$ 2,813,479
Scenario_9	I-275 Managed Lanes (Scenario 9)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	17	9.03	$ 1,247,213,301
Scenario_8	CR 672 / Balm Rd (Scenario 8)	Widen 2 to 4 lanes	Clement Pride to Balm Riverview Rd	18	2.46	$ 24,104,078
Scenario_4	I-75 Interchange (Scenario 4)	New interchange	North of Manatee County line (Ft. Hamer Rd)	19	0.5	$ 73,800,000
Scenario_5	CR 672 / Balm Road (Scenario 5)	Widen 2 to 4 lanes	Clement Pride to Balm Riverview Rd	20	2.46	$ 24,104,078
Scenario_8	Metrorapid Brandon (East West BRT) (Scenario 8	Transit (BRT)	Airport/Westshore to Temple Terrace	21	12.63	$ 115,500,000
Scenario_6	USF Brandon Rail (50th 56th BRT) (Scenario 6)	Downtown, USF, Brandon Transit	USF to Brandon	22	18.48	$ 165,000,000
Scenario_6	I-75 Interchange (Scenario 6)	New interchange	US 301 to Harney Rd	23	0.5	$ 73,800,000
Scenario_9	I-75/US 301 Interchange (Scenario 9)	Interchange Reconstruction	US 301	24	0.5	$ 7,051,657
Scenario_1	US 41 Rail (Scenario 1)	Regional passenger rail	Bradenton to Brooksville	25	55.07	N/A
Scenario_10	Gandy Bridge (Scenario 10)	New bridge	Pinellas County to Selmon Gandy extension	26	2.66	$ 472,147,934
Scenario_10	US 301 BRT (Scenario 10)	BRT on new road	End of Selmon Xway to US 301 (Big Bend Rd)	27	10.07	N/A
Scenario_9	TECO Streetcar Extension (Scenario 9)	Along Tampa Ave/FL Ave one-way pairs	Ft. Brooke Garage to Palm Ave	28	2.71	$ 250,000,000

ECONOMIC IMPACTS / COST-BENEFIT ASSESSMENT:

We note there are various transportation industry methodologies to develop some measure of the overall economic impact of major transportation investments. As the 2050 LRTP Needs Assessment is primarily associated with identifying the capital cost of infrastructure projects (versus ongoing operational costs), we turn to a basic economic question people face on a daily basis – the value of time over capital expenditures. A measure of this metric that can be modeled in the TBRPM network is the travel time savings associated with a specific project. Table 5 provides the forecasted reductions in person travel time throughout the network per $1 Million project cost.

Some projects like the I-4 and the I-75 Managed lanes project have a relatively high cost-benefit values. Conversely, several of the interchange modification projects do not have a favorable person hours saved per investment cost. While these types of projects significantly improve traffic operations and safety, their person hours saved as represented in the TBRPM model output is not reflected.

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Table 5 – Reductions in Person Hour Travel Time per $1 Million of Project Cost

Project	Description	Project Limits	Rank	Person Hour / Cost ($1M)
I-4 Managed Lanes (Scenario 1)	Managed Lanes (4 new)	Downtown (I-275) to Polk County	1	-157.1
Lithia Pinecrest (Scenario 3)	Widen 2 to 4 lanes	Fishhawk Blvd to Lumsden Rd	2	-13.2
Suncoast Parkway (Scenario 4)	Widening to 8 lanes	Van Dyke Rd to County line	3	-50.3
Crosstown US 301 (Scenario 10)	Add upper deck lanes; 2 each direction	US 301 to Big Bend Road	4	N/A
I-75 Managed Lanes South (Scenario 7)	Managed Lanes (4 new)	Downtown to Manatee County	5	-137.3
I-275 Managed Lanes (Scenario 2)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	6	-2.9
SR 60 (Scenario 4)	Widen 4 to 6 lanes	Valrico Rd to Polk County	7	-42.8
South Tampa Rail (CSX Multimodal Corridor) (Sc	Transit (rail)	Downtown to SW Tampa peninsula	8	N/A
CR 39 (Scenario 6)	Widen 2 to 4 lanes	SR 60 to SR 674	9	-33.6
I-275 Managed Lanes (Scenario 3)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	10	-4.7
Metrorapid Brandon (Scenario 7)	BRT on 50th / 56th Street	USF to Brandon	11	N/A
I-75 Managed Lanes North (Scenario 8)	Managed Lanes (4 new)	Pasco County to Downtown (I-4)	12	-11.3
US 92 (Scenario 2)	Widen 2 to 4 lanes	Park Rd to Polk County	13	-6.7
Airport to Downtown Transit (Scenario 2)	Rail or streetcar	Airport to Downtown	14	N/A
I-275 (Scenario 5)	Widen 6 to 8 lanes	Hillsborough Ave to Bearss Ave	15	-21
I-275/US-41 Interchange (Scenario 7)	New interchange	At US 41	16	None
I-275 Managed Lanes (Scenario 9)	Managed Lanes (4 new)	SR 60 Westshore Int. to Downtown (I-4)	17	-4
CR 672 / Balm Rd (Scenario 8)	Widen 2 to 4 lanes	Clement Pride to Balm Riverview Rd	18	-3
I-75 Interchange (Scenario 4)	New interchange	North of Manatee County line (Ft. Hamer Rd)	19	-3
CR 672 / Balm Road (Scenario 5)	Widen 2 to 4 lanes	Clement Pride to Balm Riverview Rd	20	-9
Metrorapid Brandon (East West BRT) (Scenario 8	Transit (BRT)	Airport/Westshore to Temple Terrace	21	N/A
USF Brandon Rail (50th 56th BRT) (Scenario 6)	Downtown, USF, Brandon Transit	USF to Brandon	22	N/A
I-75 Interchange (Scenario 6)	New interchange	US 301 to Harney Rd	23	None
I-75/US 301 Interchange (Scenario 9)	Interchange Reconstruction	US 301	24	None
US 41 Rail (Scenario 1)	Regional passenger rail	Bradenton to Brooksville	25	N/A
Gandy Bridge (Scenario 10)	New bridge	Pinellas County to Selmon Gandy extension	26	-0.1
US 301 BRT (Scenario 10)	BRT on new road	End of Selmon Xway to US 301 (Big Bend Rd)	27	N/A
TECO Streetcar Extension (Scenario 9)	Along Tampa Ave/FL Ave one-way pairs	Ft. Brooke Garage to Palm Ave	28	N/A

CASE STUDIES:

The case studies are provided on the following pages. They are to be provided as an Appendix to the tech memo and will illustrate the primary benefits of similar major projects from various locations throughout the country. The draft case studies include the following projects:

- BRT/Fixed Guideway – Pinellas SunCoast Transit
- BRT/Fixed Guideway – Denver, CO "A-Line" to Union Station
- BRT/Fixed Guideway – Charlotte, NC LYNX Blue Line Expansion
- Roadway Capacity – Orlando, FL I-4 Ultimate
- Interchange – Polk County I-4 & SR 557
- Interchange – Orlando, FL SR 528 & SR 436
- Roadway Extension – Port St. Lucie, FL Crosstown Parkway Extension.

Some key takeaways from these case studies that have relevance for Hillsborough County include the following:

- Premium transit projects spur private redevelopment investments in the vicinity of BRT and light rail or commuter rail stations.
    - This redevelopment includes the provision of affordable housing which supports local government policy objectives beyond transportation.
- Managed lane projects have resulted in reduced average peak period travel times which supports additional regional development/redevelopment as auto accessibility from residential areas to commercial centers improves.
- Modifications to existing interstate interchanges significantly improve auto and truck accessibility to commercial areas through improved operations and reduced crashes. This in turn supports redevelopment efforts in the vicinity of the improved interchanges.
- Roadway capacity projects improve access to commercial areas and address existing safety problems which has shown to improve local economic conditions related to improved business access, improved corridor aesthetics, and safer conditions for non-motorized corridor users.

BRT/Fixed Guideway

Gresham Smith

Pinellas Suncoast Transit
Authority: SunRunner BRT

The SunRunner, Tampa Bay's first BRT system, is designed to mimic the capacity and speed of a metro with the flexibility and lower cost of a bus system.

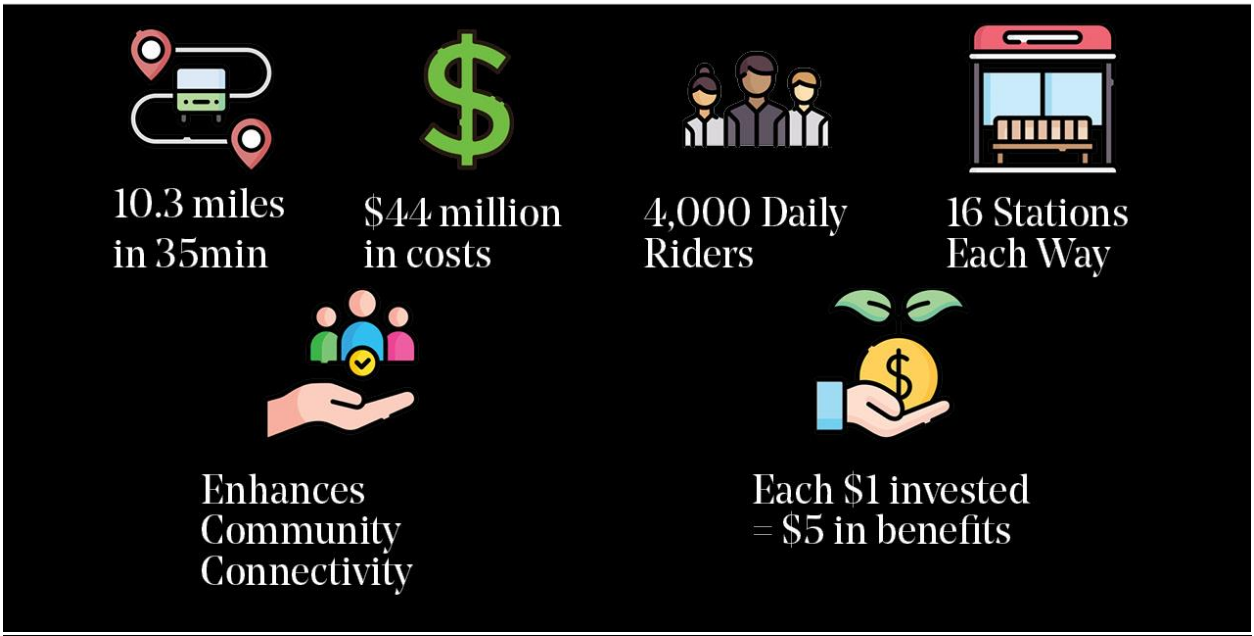
The project aims to enhance community connectivity, increase traffic to businesses near stations, provide potential savings from reduced car ownership, reduce traffic emissions and demand for parking, and increase visibility due to BAT lanes.

PSTA is considering partnerships with municipalities to increase affordable housing opportunities near the corridor.

An APTA study found that every $1 invested in public transit generates $5 in economic benefit. This, along with the increased property value near BRT stations and reduced annual transportation costs for households near public transit, reinforces the economic impact of such projects.

The SunRunner is expected to spur real estate development along the corridor, with mixed-use projects like Orange Station. This aligns with the StPete2050's mission of improving access to attainable housing options within all neighborhoods.

Project Impact



BRT/Fixed Guideway

Gresham Smith

Denver Transit Oriented Development and the A-Line to Union Station

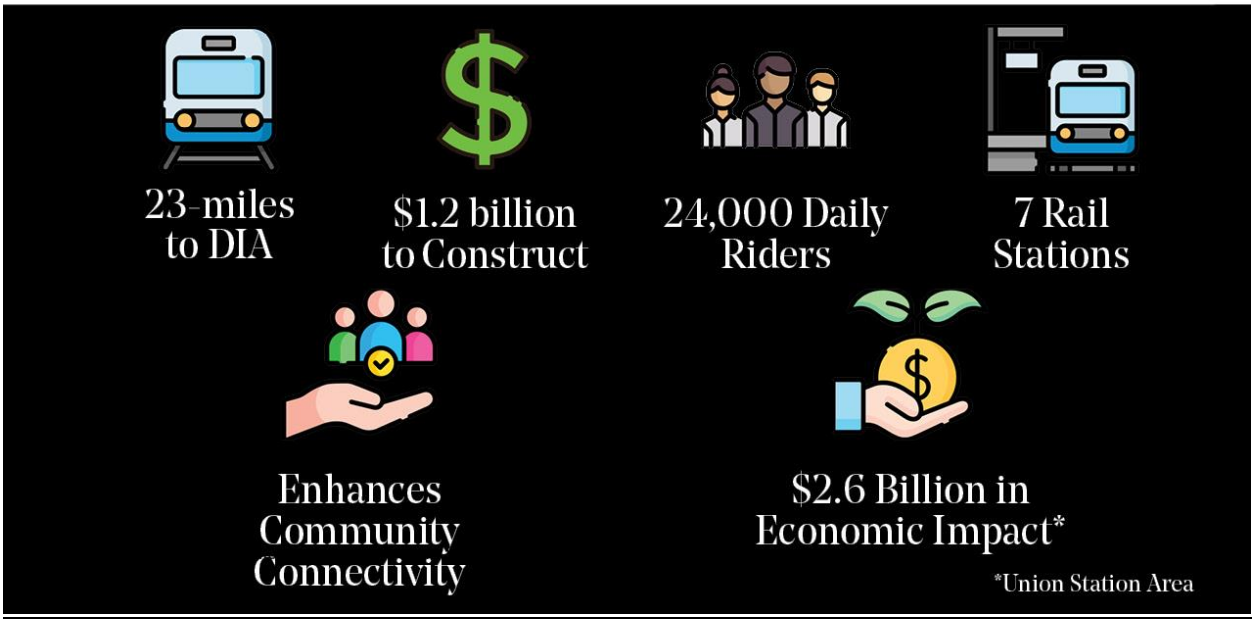
The heavy rail transit system in Denver provides a crucial link between the airport and downtown. This transit infrastructure has significantly influenced the development of the region.

Investment in transit has spurred substantial development within a half-mile walk of high-frequency stations. This includes 39,500 residential units, 10,400,000 square feet of office space, 1,500,000 square feet of retail, and 2,800 hotel rooms.

Denver Union Station has had a significant annual economic impact of 2.6 billion dollars and a 1.85-billion-dollar employment impact. The station has become a hub for transit and commercial activity, contributing to the economic vitality of the city.

The A-Line illustrates the potential economic and societal benefits of a robust heavy rail transit system. The significant TOD around high-frequency stations and the economic impact of Denver Union Station offer valuable insights for fixed guideway transit.

Project Impact



BRT/Fixed Guideway

Gresham Smith

Charlotte Area Transit System:

LYNX Blue Line Expansion

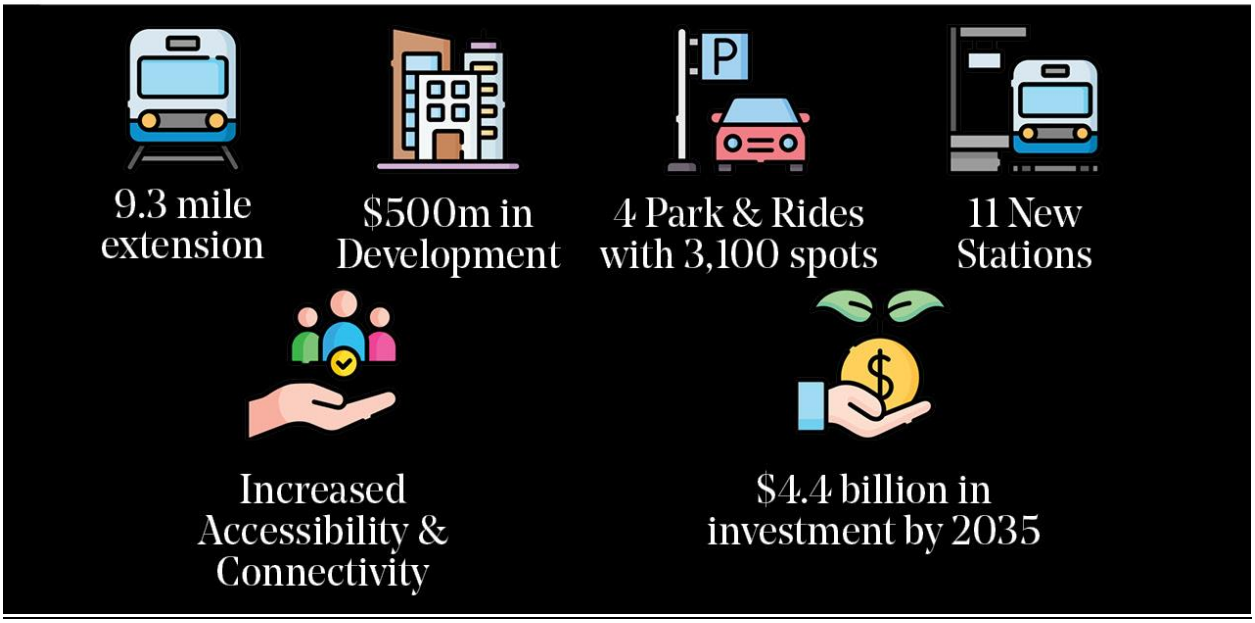
The LYNX Blue Line is a significant component of the Charlotte Area Transit System (CATS). CATS expanded this line with from the previous terminus stop at 7th Street Station to UNC Charlotte's main campus.

The Blue Line extension (BLE) has attracted nearly $500 million in new private development along the line. These projects are either completed, planned, or currently under construction.

Since its initial opening in November 2007, the LYNX Blue Line has spurred over $1.5 billion in transit-oriented development in the south corridor. The BLE is expected to stimulate similar economic growth in the Northeast corridor.

The LYNX Blue Line in Charlotte serves as an excellent example of how strategic transit developments can spur substantial economic growth and urban development. The projected economic development and the actual private investments triggered by the Blue Line extension offer valuable insights. The success of this light rail project also underscores the transformative power of transit-oriented development.

Project Impact



Roadway Capacity

Gresham Smith

I4 Ultimate

The I-4 Ultimate project involves the reconstruction and widening of 21 miles of Interstate 4 (I-4) from west of Kirkman Road in Orange County, Florida, through downtown Orlando to east of State Road 434 in Seminole County. Project objectives included:

- Fully reconstruct existing general-purpose lanes.
- Add four express toll lanes in the median.
- Reconstruct 15 major interchanges.
- Reconstruct, construct, or widen 140 bridges.

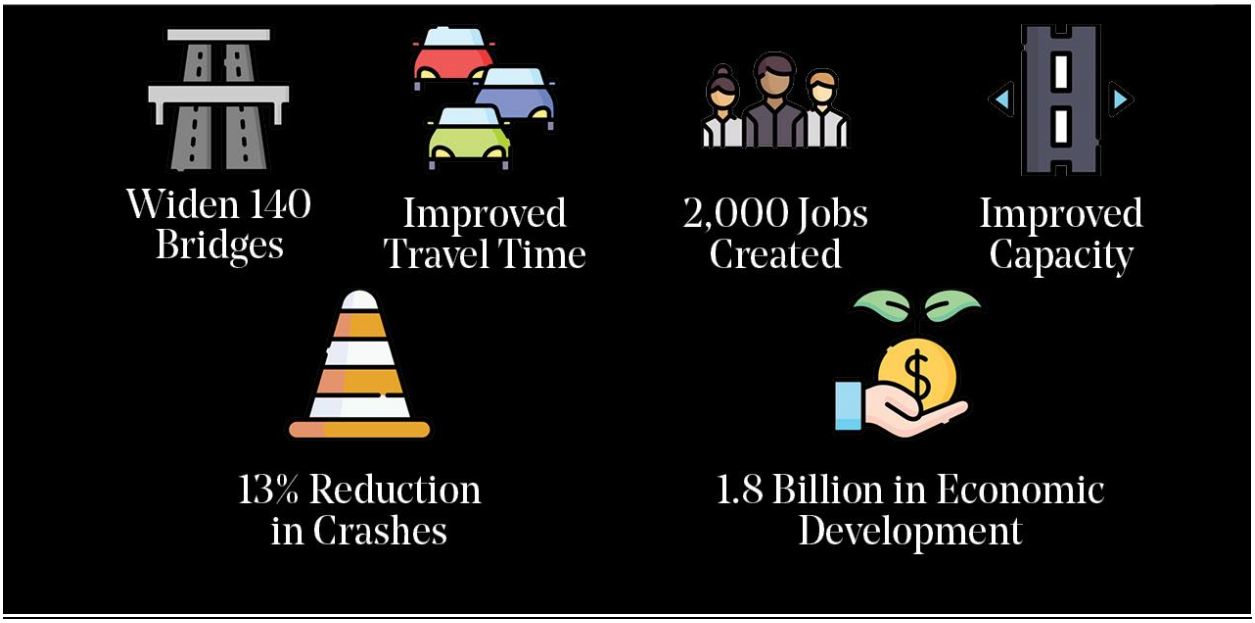
The addition of express lanes and improved interchange capacity is expected to increase average travel speeds by approximately 15 miles per hour during peak hours.

In addition to improved travel times, widened shoulders, removal of weaving sections, and enhanced interchange signaling are expected to contribute a projected 13% reduction in crashes.

The project includes aesthetic treatments such as pedestrian bridges, accent lighting, fountains, art sculptures, and architectural features.

The project is estimated to generate $1.8 billion in economic development and create approximately 2,000 jobs.

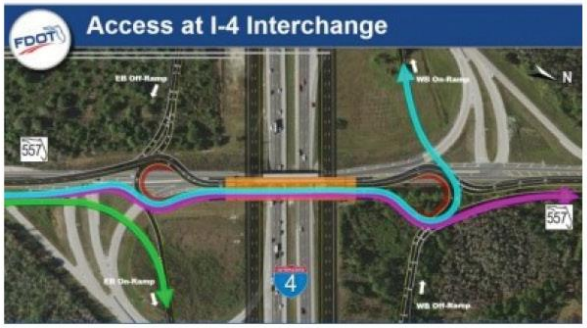
Project Impact



Roadway Interchange

Gresham Smith

State Road 557 (SR 557)
and I4 in Polk County



The intented goal of this project was to replace the existing partial cloverleaf interchange with a new diamond configuration and a wildlife corridor.

The new diamond configuration was designed to improve traffic circulation and safety, and also enhance emergency access and truck access in Polk County. The project also involved preparing the median along I-4 to accommodate future I-4 Master Plan improvements, including provisions for special purpose (express) lanes and a high-speed rail (HSR) corridor. The State Road 557 (SR 557) was widened to four travel lanes, transitioning to the existing two-lane County Road (CR 557) both north and south of the interchange. The wildlife crossing is expected to reduce roadway accidents involving wildlife and facilitate their safe passage.

Due to the reconfiguration of the intersection, sites near the project area are being promoted as sites for future development and industry. Colliers International has prepared an investment overview brochure to promote the site as a future home to a 112-acre logistics center.

The project provided several insights into managing traffic flow during construction. Challenges were faced, particularly with respect to lane closures, but were adeptly managed to minimize disruption.

Project Impact

Roadway Interchange

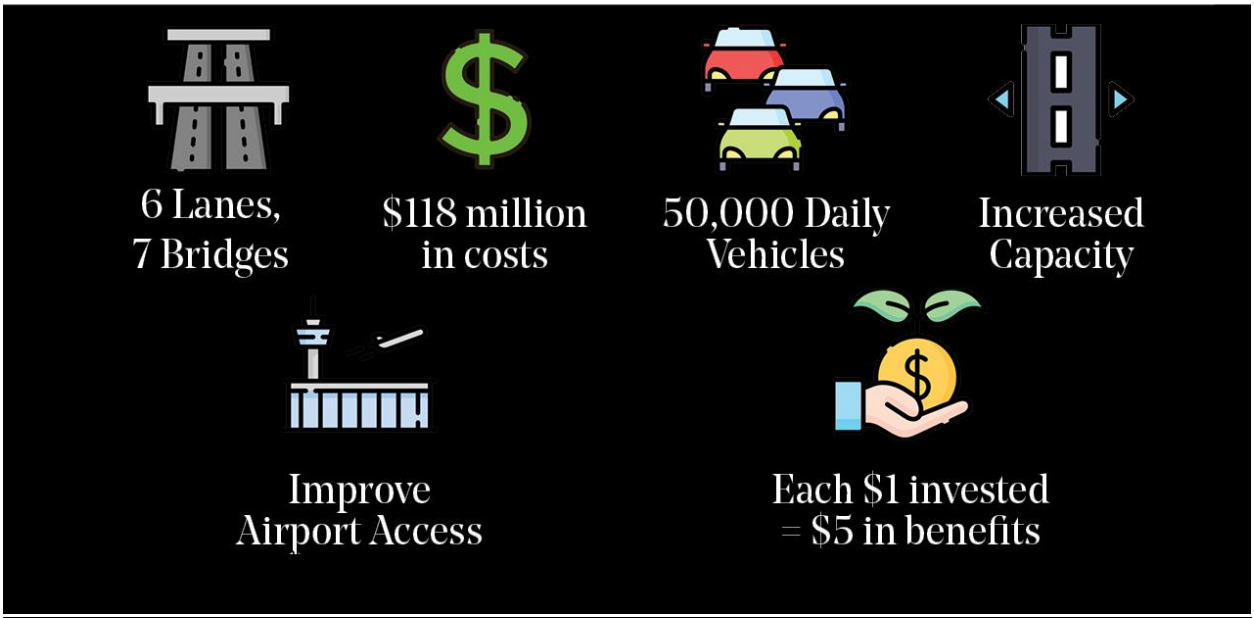
Gresham Smith

SR 528/SR 436 Interchange
Reconfiguration Project, Orlando, Florida

The SR 528/SR 436 Interchange Reconfiguration project design included the widening of SR 528 from four to six lanes, construction of seven new bridges, replacement of a box culvert, and several aesthetic enhancements to complement the CFX roadways. The project team coordinated with multiple stakeholders, including the Greater Orlando Aviation Authority (GOAA), Brightline, Florida Department of Transportation (FDOT) District Five, City of Orlando, Orange County, utility agency owners, Federal Aviation Administration (FAA), and the Water Management Districts.

The reconstructed interchange provides increased capacity with additional lanes at each critical movement within the interchange and along SR 528. The elimination of loop ramps and provision of semi-directional flyovers help guide tourists through this busy interchange. The new fully directional systems interchange alleviates a previous left merge that caused accidents. Aesthetics were updated throughout the interchange to create a cohesive look. The project is currently constructed and receiving aesthetically enhanced landscaping to match the rest of the airport.

Project Impact



Roadway Extension

Gresham Smith

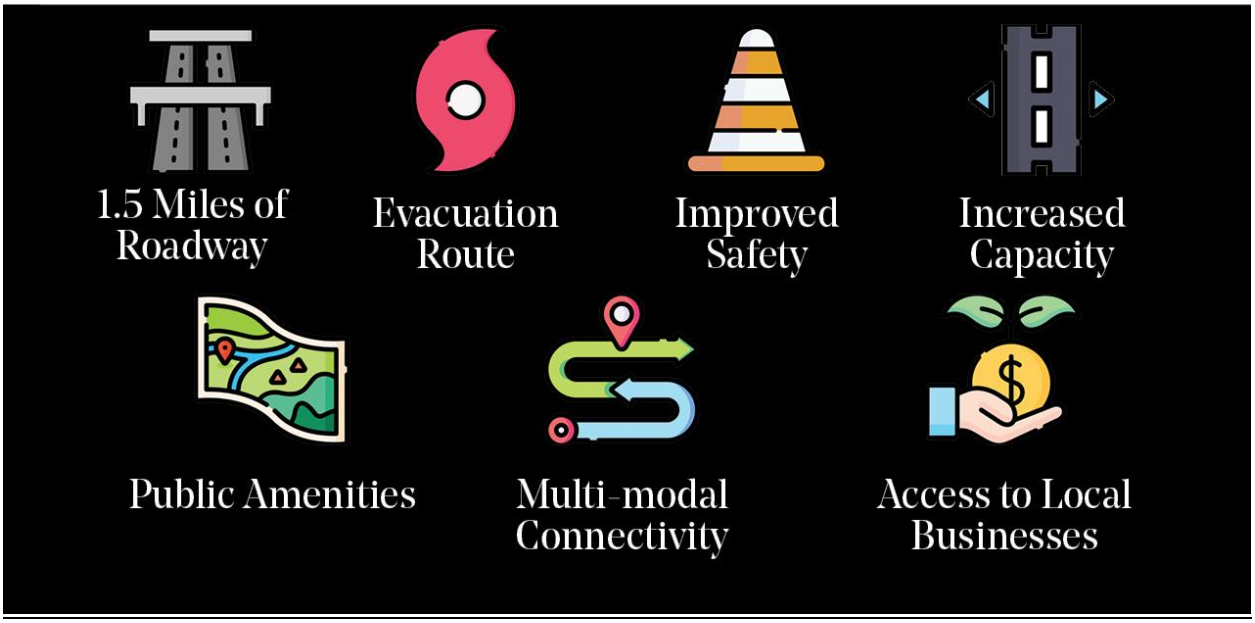
Crosstown Parkway Extension
Project, Port St. Lucie, Florida

The Crosstown Parkway Extension Project in the City of Port St. Lucie, Florida, provides a new bridge crossing over the North Fork of the St. Lucie River. This project connects the existing Crosstown Parkway from Manth Lane to U.S. 1, extending along the existing West Virginia Drive. This two-mile project includes a 4,000-foot bridge and a six-lane divided highway, serving as a multi-modal transportation alternative.

The project included 1.5 miles of roadway improvements and a 4,032-foot-long bridge, providing a vital third river crossing and an essential hurricane evacuation route. The project traverses a highly environmentally sensitive area, requiring the minimization of wetland impacts and the protection of the Savannas Preserve State Park. The project also includes a waterfront area featuring a trailhead to the Crosstown Parkway sidewalks and an ADA-accessible canoe launch.

The Crosstown Parkway Extension project offers benefits in terms of safety, aesthetics, and functionality. As a coastal community, Port St. Lucie had only two evacuation routes before this project. The new bridge provides a third east-west connection to US 1, enhancing public safety, mobility, and access to businesses.

Project Impact



APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES

Traffic volume time of day cohorts analyzed.

For auto travel analysis:

- AM Peak - 6:30AM to 9:00AM (2.5 hours)
- Midday (MD) Off-Peak - 9:00AM to 3:30PM (6.5 hours)
- PM Peak - 3:30PM to 6:30PM (3 hours)
- Evening (EV) and overnight Off-Peak - 6:30PM to 6:30 AM (12 hours)

For transit analysis:

- Peak – (AM only reported in TBRPM) 6:30AM to 9:00AM (2.5 hours)
- Off Peak – (Midday only report in TBRPM) 9:00AM to 3:30PM (6.5 hours)

{APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES}

TRANSIT SHARE

Project	Type	Score	Rank	Change in Mode Share (Positive is good) Peak Transit Share	Off-Peak Transit Share
South Tampa Rail (Scenario 3)	Transit	20.8	8.0	0.3%	0.1%
TECO Streetcar Extension (Scenario 9)	Transit	0.1	28.0	0.0%	0.3%
Airport to Downtown Transit (Scenario 2)	Transit	14.1	14.0	0.0%	0.1%
Metrorapid Brandon (Scenario 7)	Transit	18.4	11.0	0.3%	0.0%
Metrorapid Brandon (Scenario 8)	Transit	6.9	21.0	0.1%	0.1%
I4 Managed Lanes (Scenario 1)	Managed Lanes	51.0	1.0	0.1%	0.0%
I-275 Managed Lanes (Scenario 3)	Managed Lanes	18.4	10.0	0.1%	0.0%
Crosstown US 301 (Scenario 10)	Managed Lanes	37.5	4.0	0.1%	0.0%
US 301 BRT (Scenario 10)	Transit	1.3	27.0	0.0%	0.0%
US 41 Rail (Scenario 1)	Transit	2.1	25.0	0.0%	0.0%
USF Brandon Rail (Scenario 6)	Transit	5.8	22.0	0.0%	0.0%

{APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES}

PERSON HOURS DELAY

Project	Type	Score	Rank	Change in Person Hours of Delay (Negative is good) AM	MD	PM	EV	All
I4 Managed Lanes (Scenario 1)	Managed Lanes	51.0	1.0	-17,899	-15,489	-22,425	-35	-55,847
I-75 Managed Lanes (Scenario 7)	Managed Lanes	35.5	5.0	-4,670	-10,706	-4,891	-17	-20,284
Crosstown US 301 (Scenario 10)	Managed Lanes	37.5	4.0	-2,797	-2,840	-2,837	-1	-8,475
I-275 Managed Lanes (Scenario 3)	Managed Lanes	18.4	10.0	-1,963	-2,099	-1,823	-1	-5,885
I-75 Managed Lanes (Scenario 8)	Managed Lanes	15.1	12.0	-531	-4,219	-700	-8	-5,458
I-275 Managed Lanes (Scenario 9)	Managed Lanes	10.0	17.0	-1,514	-1,710	-1,182	-1	-4,406
I-275 Managed Lanes (Scenario 2)	Managed Lanes	24.0	6.0	-1,302	-1,448	-866	0	-3,616
Lithia Pinecrest (Scenario 3)	Capacity	41.8	2.0	-746	-610	-1,287	0	-2,643
SR 60 (Scenario 4)	Capacity	20.8	7.0	-714	-513	-1,323	0	-2,550
I-275 (Scenario 5)	Capacity	13.5	15.0	-440	-814	-742	-2	-1,998
CR 39 (Scenario 6)	Capacity	19.5	9.0	150	-900	-449	0	-1,200
Suncoast Parkway (Scenario 4)	Capacity	38.5	3.0	-404	-254	-399	0	-1,057
US 92 (Scenario 2)	Capacity	14.8	13.0	-193	-128	-278	0	-599
I-75 Interchange (Scenario 4)	Interchange	8.7	19.0	-60	-24	-137	0	-220
CR 672 (Scenario 8)	Capacity	9.1	18.0	-36	-10	-26	0	-72
Balm Road (Scenario 5)	Capacity	8.6	20.0	-36	-10	-26	0	-72
Gandy Bridge (Scenario 10)	Managed Lanes	1.4	26.0	-35	-13	-7	0	-55

{APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES}

AUTO ACCESSIBILITY

Project	Type	Score	Rank	Change in Accessibility (Positive is good) Peak Auto Access	Off-Peak Auto Access
Suncoast Parkway (Scenario 4)	Capacity	38.5	3.0	41%	1%
SR 60 (Scenario 4)	Capacity	20.8	7.0	33%	-12%
I-75 Interchange (Scenario 6)	Interchange	4.5	23.0	21%	4%
Crosstown US 301 (Scenario 10)	Managed Lanes	37.5	4.0	19%	8%
Metrorapid Brandon (Scenario 7)	Transit	18.4	11.0	18%	-1%
I-75 Managed Lanes (Scenario 7)	Managed Lanes	35.5	5.0	18%	-3%
I4 Managed Lanes (Scenario 1)	Managed Lanes	51.0	1.0	15%	-4%
I-75 Interchange (Scenario 4)	Interchange	8.7	19.0	15%	-24%
Lithia Pinecrest (Scenario 3)	Capacity	41.8	2.0	11%	4%
I-275/US-41 Interchange (Scenario 7)	Interchange	10.2	16.0	11%	0%
US 41 Rail (Scenario 1)	Transit	2.1	25.0	6%	0%
I-275 (Scenario 5)	Capacity	13.5	15.0	3%	0%
CR 672 (Scenario 8)	Capacity	9.1	18.0	2%	0%
I-275 Managed Lanes (Scenario 9)	Managed Lanes	10.0	17.0	2%	0%
I-275 Managed Lanes (Scenario 3)	Managed Lanes	18.4	10.0	1%	0%
USF Brandon Rail (Scenario 6)	Transit	5.8	22.0	1%	0%
US 92 (Scenario 2)	Capacity	14.8	13.0	1%	1%
South Tampa Rail (Scenario 3)	Transit	20.8	8.0	0%	0%
TECO Streetcar Extension (Scenario 9)	Transit	0.1	28.0	0%	0%
I-275 Managed Lanes (Scenario 2)	Managed Lanes	24.0	6.0	0%	0%
US 301 BRT (Scenario 10)	Transit	1.3	27.0	0%	2%
Balm Road (Scenario 5)	Capacity	8.6	20.0	0%	4%

{APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES}

TRANSIT ACCESSIBILITY

Project	Type	Score	Rank	Peak Transit Access	Off-Peak Transit Access
Airport to Downtown Transit (Scenario 2)	Transit	14.1	14.0	11%	31%
I-275 Managed Lanes (Scenario 2)	Managed Lanes	24.0	6.0	9%	-1%
South Tampa Rail (Scenario 3)	Transit	20.8	8.0	5%	2%
USF Brandon Rail (Scenario 6)	Transit	5.8	22.0	4%	5%
I-275 Managed Lanes (Scenario 3)	Managed Lanes	18.4	10.0	4%	1%
US 41 Rail (Scenario 1)	Transit	2.1	25.0	0%	0%
TECO Streetcar Extension (Scenario 9)	Transit	0.1	28.0	0%	37%
I-275 Managed Lanes (Scenario 9)	Managed Lanes	10.0	17.0	0%	8%

{APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES}

PLANNING TIME INDEX

Project	Type	Score	Rank	Change in Planning Time Index (Negative is good) AM	MD	PM	EV	All
Suncoast Parkway (Scenario 4)	Capacity	38.5	3.0	-5.9	-2.1	-5.6	0.0	-2.8
Lithia Pinecrest (Scenario 3)	Capacity	41.8	2.0	-4.8	-2.8	-4.0	0.0	-2.8
I-75 Managed Lanes (Scenario 7)	Managed Lanes	35.5	5.0	-2.8	-2.3	-2.7	0.0	-1.8
Crosstown US 301 (Scenario 10)	Managed Lanes	37.5	4.0	-1.8	-1.9	-2.2	0.0	-1.5
I4 Managed Lanes (Scenario 1)	Managed Lanes	51.0	1.0	-2.4	-1.6	-2.1	0.0	-1.4
CR 39 (Scenario 6)	Capacity	19.5	9.0	-1.1	-2.1	-1.3	0.0	-1.3
US 92 (Scenario 2)	Capacity	14.8	13.0	-1.7	-1.5	-2.2	0.0	-1.3
I-275 (Scenario 5)	Capacity	13.5	15.0	-1.3	-1.4	-1.6	0.0	-1.1
Balm Road (Scenario 5)	Capacity	8.6	20.0	-2.0	-0.2	-1.6	0.0	-0.9
CR 672 (Scenario 8)	Capacity	9.1	18.0	-2.0	-0.2	-1.6	0.0	-0.9
I-275 Managed Lanes (Scenario 9)	Managed Lanes	10.0	17.0	-1.1	-0.8	-0.9	0.0	-0.7
I-275 Managed Lanes (Scenario 2)	Managed Lanes	24.0	6.0	-1.0	-0.9	-0.6	0.0	-0.6
SR 60 (Scenario 4)	Capacity	20.8	7.0	-0.8	-0.5	-1.5	0.0	-0.6
I-275 Managed Lanes (Scenario 3)	Managed Lanes	18.4	10.0	-1.2	-0.6	-1.0	0.0	-0.6
I-275/US-41 Interchange (Scenario 7)	Interchange	10.2	16.0	-0.9	-0.5	-0.9	0.0	-0.5
I-75 Managed Lanes (Scenario 8)	Managed Lanes	15.1	12.0	-0.1	-0.7	-0.1	0.0	-0.3
Gandy Bridge (Scenario 10)	Managed Lanes	1.4	26.0	-0.5	0.0	-0.2	0.0	-0.1
I-75 Interchange (Scenario 4)	Interchange	8.7	19.0	-0.3	0.3	-1.2	0.0	-0.1

{APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES}

RELIABILITY INDEX

Project	Type	Score	Rank	Change in Reliability Index (Negative is good) AM	MD	PM	EV	All
Lithia Pinecrest (Scenario 3)	Capacity	41.8	2.0	-3.0	-1.2	-2.6	0.0	-1.5
Suncoast Parkway (Scenario 4)	Capacity	38.5	3.0	-2.7	-0.7	-2.5	0.0	-1.1
I-75 Managed Lanes (Scenario 7)	Managed Lanes	35.5	5.0	-1.4	-1.0	-1.4	0.0	-0.9
I4 Managed Lanes (Scenario 1)	Managed Lanes	51.0	1.0	-1.5	-0.8	-1.3	0.0	-0.8
Crosstown US 301 (Scenario 10)	Managed Lanes	37.5	4.0	-1.0	-0.9	-1.3	0.0	-0.8
CR 39 (Scenario 6)	Capacity	19.5	9.0	-0.5	-0.8	-0.7	0.0	-0.6
US 92 (Scenario 2)	Capacity	14.8	13.0	-0.9	-0.5	-1.1	0.0	-0.5
I-275 (Scenario 5)	Capacity	13.5	15.0	-0.8	-0.5	-0.9	0.0	-0.5
I-275 Managed Lanes (Scenario 9)	Managed Lanes	10.0	17.0	-0.6	-0.4	-0.5	0.0	-0.3
I-275 Managed Lanes (Scenario 2)	Managed Lanes	24.0	6.0	-0.5	-0.4	-0.4	0.0	-0.3
I-275 Managed Lanes (Scenario 3)	Managed Lanes	18.4	10.0	-0.6	-0.3	-0.5	0.0	-0.3
Balm Road (Scenario 5)	Capacity	8.6	20.0	-0.7	0.0	-0.5	0.0	-0.3
CR 672 (Scenario 8)	Capacity	9.1	18.0	-0.7	0.0	-0.5	0.0	-0.3
SR 60 (Scenario 4)	Capacity	20.8	7.0	-0.4	-0.2	-0.6	0.0	-0.3
I-75 Managed Lanes (Scenario 8)	Managed Lanes	15.1	12.0	-0.1	-0.3	-0.1	0.0	-0.2
I-275/US-41 Interchange (Scenario 7)	Interchange	10.2	16.0	-0.3	-0.1	-0.3	0.0	-0.2
I-75 Interchange (Scenario 4)	Interchange	8.7	19.0	0.0	0.1	-0.6	0.0	-0.1

{APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES}

AUTO TRAVEL TIME

Project	Type	Score	Rank	Change in Auto Travel Time Minutes (Negative is good) AM	MD	PM	EV	All
I4 Managed Lanes (Scenario 1)	Managed Lanes	51.0	1.0	-44.4	-11.8	-44.2	-2.0	-20.8
Lithia Pinecrest (Scenario 3)	Capacity	41.8	2.0	-23.8	-5.6	-28.6	-1.2	-12.7
CR 39 (Scenario 6)	Capacity	19.5	9.0	-18.7	-7.5	-20.8	-3.5	-12.3
Crosstown US 301 (Scenario 10)	Managed Lanes	37.5	4.0	-17.9	-5.4	-17.3	0.2	-8.5
I-75 Interchange (Scenario 4)	Interchange	8.7	19.0	-5.3	-5.4	-5.4	-5.4	-5.4
I-75 Managed Lanes (Scenario 7)	Managed Lanes	35.5	5.0	-9.7	-3.2	-15.0	3.1	-4.6
I-275 Managed Lanes (Scenario 3)	Managed Lanes	18.4	10.0	-6.1	-3.0	-4.5	-1.7	-3.5
SR 60 (Scenario 4)	Capacity	20.8	7.0	-3.6	-1.9	-6.6	-0.2	-2.8
US 92 (Scenario 2)	Capacity	14.8	13.0	-3.7	-2.3	-4.0	-1.6	-2.7
Suncoast Parkway (Scenario 4)	Capacity	38.5	3.0	-3.5	-1.9	-3.9	-1.6	-2.4
I-75 Managed Lanes (Scenario 8)	Managed Lanes	15.1	12.0	-1.4	-2.9	-2.1	0.0	-1.8
I-275 Managed Lanes (Scenario 9)	Managed Lanes	10.0	17.0	-3.1	-1.3	-2.6	-0.2	-1.6
I-275 Managed Lanes (Scenario 2)	Managed Lanes	24.0	6.0	-2.7	-0.9	-2.0	0.0	-1.2
I-275 (Scenario 5)	Capacity	13.5	15.0	-2.0	-0.9	-2.1	0.0	-1.1
CR 672 (Scenario 8)	Capacity	9.1	18.0	-1.4	-0.3	-1.0	-0.2	-0.7

{APPENDIX TO THE MEMO - PERFORMANCE METRICS ASSESSMENT TABLES}

TRANSIT TRAVEL TIME

Project	Type	Score	Rank	Change in Transit Travel Time Minutes (Negative is good) Peak Period	Off-Peak Period
I-75 Managed Lanes (Scenario 8)	Managed Lanes	15.1	12.0	-2.2	1.0
I-275 Managed Lanes (Scenario 2)	Managed Lanes	24.0	6.0	-2.1	-1.7
Crosstown US 301 (Scenario 10)	Managed Lanes	37.5	4.0	-1.8	1.7
Airport to Downtown Transit (Scenario 2)	Transit	14.1	14.0	-1.5	-3.7
SR 60 (Scenario 4)	Capacity	20.8	7.0	-1.5	0.0
USF Brandon Rail (Scenario 6)	Transit	5.8	22.0	-0.5	-0.3
TECO Streetcar Extension (Scenario 9)	Transit	0.1	28.0	0.1	-3.3
US 41 Rail (Scenario 1)	Transit	2.1	25.0	0.8	0.2
South Tampa Rail (Scenario 3)	Transit	20.8	8.0	1.1	0.4
Metrorapid Brandon (Scenario 8)	Transit	6.9	21.0	1.2	-1.1
US 301 BRT (Scenario 10)	Transit	1.3	27.0	1.5	0.2
Metrorapid Brandon (Scenario 7)	Transit	18.4	11.0	13.3	1.6