Chapter 3: Building the Plan

Building something always starts from the ground up. In the case of building a long range transportation plan like Imagine 2040, the ground is made up of previous plans and existing conditions data.

In addition, the plan must take into consideration new federal regulations which require the use of performance measures. The performance measures will be used to evaluate transportation networks and systems in Hillsborough County to determine what improvements are needed and which can be achieved in the Imagine 2040 Plan.

Performance Measures

Performance Measures are a key component of the Moving Ahead for Progress in the 21st Century Act (MAP-21). Congress established seven national goal areas in MAP-21:

- **Safety –** to achieve a reduction in traffic fatalities and injuries on all public roads.
- **Infrastructure Condition –** to maintain the public highway infrastructure in a state of good repair.
- **Congestion Reduction –** to reduce congestion on the National Highway System.
- **System Reliability –** reduce travel time unpredictability on the public highway system.
- **Freight Movement and Economic Vitality –** to improve the national freight network, provide rural communities better access to national and international trade markets, and to encourage regional economic development.
- **Environmental Sustainability –**to enhance the transportation system while at the same time protecting the natural environment.
- **Reduced Project Delivery Delays –**to reduce project costs and accelerate the completion of projects by eliminating delays in the project development and delivery process.

Performance measures to achieve these goals are being established by US DOT, and each state will set its own targets against these measures. MPOs in Florida may adopt the statewide targets, and may create supplemental measures and targets appropriate for the metropolitan area.

For *Imagine 2040*, the Hillsborough MPO expanded on the MAP-21 performance measures and applied them to some of the thorniest challenges facing the community. Successive years of recessionary budget cutbacks have affected this community's ability to achieve targets in the following performance areas:

Preserve the System

- ❑ Road resurfacing schedule
- ❑ Bridge repair schedule
- ❑ Transit vehicle replacement schedule

Reduce Crashes & Vulnerability

- ❑ Total crashes, fatal crashes, and pedestrian/bike crashes
- ❑ Recovery time and economic impact of a major storm

Minimize Traffic for Drivers & Shippers

- ❑ Peak-hour travel time reliability
- ❑ Affected truck trips

Real Choices When Not Driving

- ❑ People & jobs served by the bus system
- ❑ People & jobs served by the trail/sidepath network

Major Investments for Economic Growth

- ❑ Key Economic Spaces
  - Jobs served
  - Delay reduced
- ❑ Strategic Intermodal System
- ❑ Development Based Needs
- ❑ Longer Range Vision

Each of these needs categories will be discussed in detail in this chapter.

Preserve the System

System preservation is a vital component to a long range transportation plan because investment for pavement preservation and new structural standards will be critical to ensuring the viability of roads and bridges. Additionally, transit system performance will not be jeopardized by fleet age and will be able to sustain for longer periods of time with enhanced maintenance measures. Deferring preventative maintenance to fleet vehicles can lead to failure of the road base and lead to more costly roadway rehabilitation efforts. Measuring system preservation can be accomplished by the maintenance schedule of roads and bridges, and transit fleet replacement schedule. Detailed information about system preservation can be found in the *System Preservation – Pavement, Bridges, and Transit Costs and Benefits* technical memorandum.

i. Pavement and Bridges

Well maintained roadways and bridges are not only critical to Hillsborough County, but to the entire nation since economic growth, national defense, and the movement of goods and people rely upon a well-maintained infrastructure system.

From the 1960s through the 1980s, most Federal and State funding went to building new highways and bridges. Now, roadways and bridges constructed during this time period are in jeopardy due to age, increased traffic volumes, and smaller budgets to maintain them. Pavement preservation extends the pavement's serviceable condition over a period of time, improves safety, and meets motorists driving expectations. Preventive maintenance, minor rehabilitation, and routine maintenance are examples of common pavement preservation methods.

Hillsborough County has 12,025 lane miles and they are maintained by the following agencies or jurisdictions:

- FDOT – 1,896 miles
- Hillsborough County – 6,920 miles
- City of Tampa – 2,800 miles
- Temple Terrace – 165 miles
- Plant City – 150 miles
- Tampa-Hillsborough Expressway Authority – 94 miles

Bridges are essential to the transportation network and have an average life expectancy of 50 years. Current spending on bridge maintenance in the county, as shown in the five-year work programs and capital improvement programs of Hillsborough County, the three cities, and FDOT District 7, comes to an average of $31 million annually, or $620 million over 20 years. However, current funding does not adequately address all of the needs for

major bridge repairs and/or replacements on some bridges for which Tampa and Hillsborough County are responsible.

Figure 3-1 is a list of bridges in Hillsborough County and Tampa that need to be replaced within the next 15 years, with cost estimates. The total cost to replace all thirty bridges on the list is just under $100 million in 2014 dollars.

Pavement begins aging and deteriorating the day it is applied. Most asphalt pavements have an optimal lifespan of 15 years, some less and some more depending on design structure, traffic volumes, traffic weights, and climate. For its high volume, high truck usage arterials, FDOT's standard are to resurface at least every 17 years. On lower volume collector and local streets, the pavement may last longer.

Pavement conditions are measured by three performance measures:

- **Safety** – wheelpath rutting, friction
- **Preservation** – cracking, potholes, raveling, patching, depressions
- **Ride** – rippling, faulting, public complaints

Figure 3-2 shows the estimated annual cost to achieve FDOT's maintenance standard on all roads countywide, which requires that six percent of roads are resurfaced annually. Under the low investment level, which matches current spending, only two percent of roads are resurfaced every year, while in the medium investment scenario four percent of roads are resurfaced annually.

Bridge Name	Total
Caruthers Road over Turkey Creek	$976,000
E. Keysville Road over Alafia River West Branch	$1,450,313
CR 672 over Hurrah Creek	$2,910,325
Grange Hall Loop over Little Manatee River	$5,231,250
CR 579 over Little Manatee River	$3,275,938
CR 579 over Little Manatee River South Fork	$3,339,036
CR 587 (West Shore Boulevard)	$1,386,189
Old Mulberry Road	$2,955,423
70th Street S	$1,709,736
Balm Riverview Road	$1,832,685
Old Big Bend Road	$5,066,102
CR 39 (230' North of CR 672)	$4,616,090
W. Waters Avenue	$2,077,620
Sligh Avenue	$8,581,706
CR 582 (Tarpon Springs Road)	$1,633,830
N. Pebble Beach Boulevard	$1,661,270
Fletcher Avenue	$14,406,596
Morris Bridge Road	$1,528,145
Morris Bridge Road	$2,440,457
Columbus Drive	$3,344,625
CR 39 (1.4 mi S of CR 640)	$2,357,228
CR 39 (2.2 mi S of CR 640)	$2,485,479
78th Street	$2,380,325
Morris Bridge Road	$6,615,000
4th Street SW	$5,433,026
Brorein Street Bridge	$2,000,000
Columbus Drive over Hillsborough River	$2,000,000
Cass Street Bridge	$2,000,000
Laurel Street	$2,000,000
Platt Street	$2,000,000
	Total $99,694,389

Figure 3-1 *Bridges in Hillsborough County and City of Tampa Identified for Replacement*

Figure 3-2: Summary of Pavement Preservation Investment Levels

Investment Level	Annual Cost for Resurfacing ($2014)	Total Cost for Resurfacing (20 years)	Lane Miles Resurfaced	Percentage of Roads Resurfaced Annually	Resurfacing cycle
Low 	$25,600,000 Based on current annual funding; currently there is a funding shortfall to maintain roads.	$512,000,000	146 - 197	2%	Every 50 years
Medium 	$53,700,000 Annual funding required to improve the pavement condition.	$1,074,000,000	350 - 458	4%	Every 25 years
High 	$83,833,035 Annual funding required to meet FDOT standard of resurfacing all roads every 17 years.	$1,676,660,700	715	6%	Every 17 years

ii. Transit Fleet

The latest data about transit fleet replacement was found in HART's fleet plan. The Federal Transit Agency's (FTA's) minimum vehicle life requirement is 12 years. Currently, HART's fleet replacement plan indicates a funding shortfall to achieve the prescribed 12 year replacement schedule. The current funding level is illustrated in Investment Level 1, with an average vehicle fleet age of 13 years in 2040, and an average of eight road-calls (vehicle breakdowns) each weekday. The high investment level describes an optimum fleet maintenance scenario with an average of five road-calls per weekday. The medium investment level, between these two, was based on having an average fleet age of eight years in 2040 with an average of six road-calls per weekday.

Figure 3-3 describes the high, medium, and low investment levels respectively for each transit vehicle fleet replacement.

With the High Investment Scenario, the average vehicle age in HART's fleet will be 5 years in 2040.

Investment Level	Statistics	Total
High	Total capital required for fleet plan	$168,086,862
LEVEL 3	Average fleet age (2040)	5 years
	Number of new vehicles	272
	Road calls per year	1,316
	Road calls each weekday	5
Medium	Total capital required for fleet plan	$128,628,520
LEVEL 2	Average fleet age (2040)	8 years
	Number of new vehicles	246
	Road calls per year	1,579
	Road calls each weekday	6
Low	Total capital required for fleet plan	$100,843,178
LEVEL 1	Average fleet age (2040)	13 years
	Number of new vehicles	187
	Road calls per year	2,193
	Road calls each weekday	8

Figure 3-3 *Investment Levels and Statistics for Transit Vehicle Fleet Replacement*

Minimize Traffic for Drivers & Shippers

As discussed in Chapter 2, the *Regional Congestion Management – State of the System 2012* report notes that the Tampa Bay Region is the 12th most congested metropolitan area in the nation and second most in Florida after Miami. The region ranked 28th in the nation with $670 million wasted each year as a result of congestion and had the 19th longest delay in the nation with over 53,000 hours spent each year stuck in traffic.

The congestion statistics for freight traffic are not much better. The Tampa Bay region ranks 21st in the nation in freight congestion with $210 million wasted each year due to congestions while the national average is $53 million per year[1].

Figure 3-4 depicts the most congested corridors in the Tampa Bay Area and **Figure 3-5** identifies the most congested intersections in unincorporated Hillsborough County.

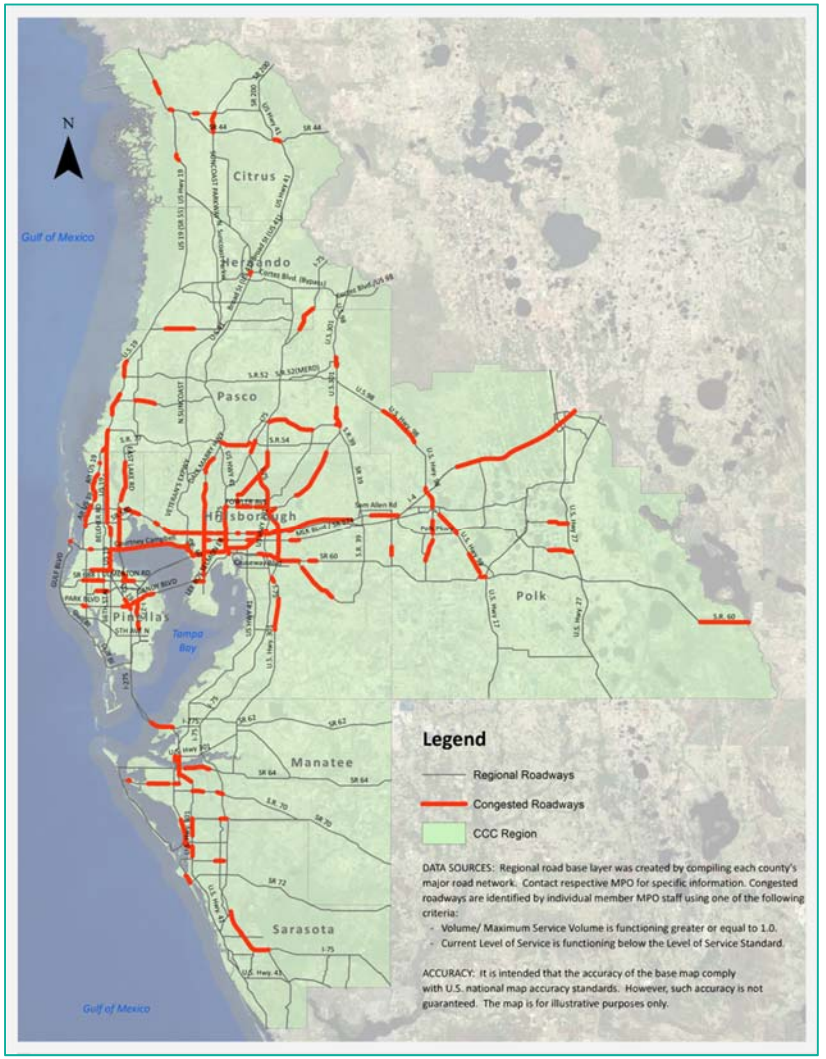


Figure 3-4 *Existing Tampa Bay Congested Corridors Map*

[1] Source: West Florida Metropolitan Planning Organizations Chairs Coordinating Committee *Regional Congestion Management Process: State of the System 2012,* 2012

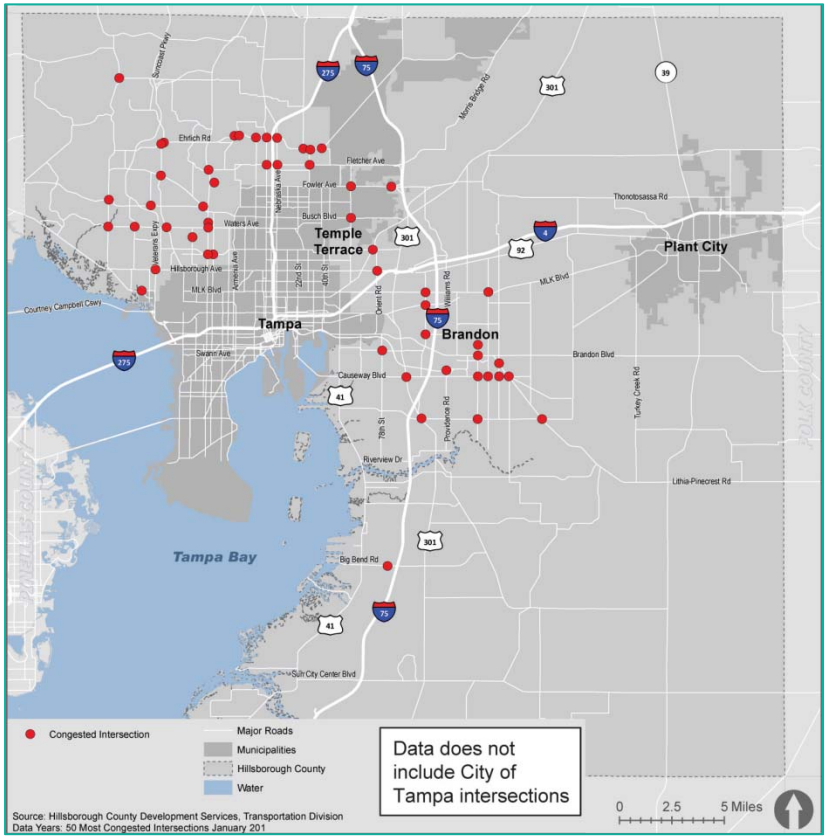


Figure 3-5 *Existing Hillsborough County Congested Intersections Map*

i. Congestion Management for Drivers

The *Congestion Management Costs and Benefits* technical memorandum goes into detail about performance measures used to evaluate congested roadway segments and the methodology behind the evaluation. The performance measures used were:

- Reliability –the consistency or dependency in commute times measured through a Travel Time Index
- Travel Time Index (mean travel time/free flow travel time)

All major roadway segments that were 80% congested (a volume to capacity ratio of greater than 0.8), based on existing traffic, where identified as needing improvement. The types of improvements that were considered in the analysis were:

- Geometric improvements at intersections, such as adding or extending turn lanes
- Advanced coordinated signal control, management at Traffic Management Centers (TMCs).
- Advanced Traffic Management Systems (ATMS)
- Expanding Road Ranger patrols/improving incident management.
- Freeway operational movements, such as variable speed limits, lane control, and ramp metering.

With Investment Level 3, arterial roadway capacity could increase by 17% and freeway capacity by 10% by 2040.

The lowest funding level, Level 1, extends today's congestion management funding into the future, spending $310 million by 2040, and results in arterial capacity increasing by 7%. The Level 2 investment level spends over $871 million on improvements by 2040 and increases arterial capacity by 17%, reduces incident frequency by 5% and incident duration is reduced by 25%. The final investment level, Level 3, allocates over $1 billion to congestion improvements by 2040 and yields a 17% increase in arterial capacity by 17%, a 10% increase in freeway capacity, and incident frequency and duration are reduced by 7% and 25% respectively.

Figure 3-6 describes the type of projects, costs, and benefits under each investment scenario. For a list of specific congested roadways please see the *Congestion Management Costs and Benefits* technical memorandum.

Figure 3-6: Congestion Management Costs and Benefits

LEVEL 1

Investment Level 1 CURRENT SPENDING TREND

Responsible Agency	Description	FY13-17 CIP	FY14-18 CIP
FDOT	Road Ranger Patrol: I-275, 1-4/Selmon	$9,125,004	$9,125,004
Hillsborough	Intersection Program, ATMS, TMC	$50,792,000	$67,900,000
City of Tampa	Intersection Program, ATMS, signals	$10,440,000	
City of Temple Terrace	ATMS	$270,000	
Total 5-year spending		$70,627,004	$77,025,004
Average of 5-year spending		$73,826,004	
Current Spending Trend – Extended over 20 years			**Level 1 Total $295,304,016**

Benefits

- Arterial capacity is increased by 7%.

LEVEL 2

Benefits Investment Level 2

Description	Number	Unit Cost	Additional Cost	Total Cost
Level 1 Congestion Projects				$295,304,016
Intersections: geometric improvements, ATMS, TMC	640 intersections	$770,000		$492,800,000
TMC and ATMS Infrastructure and labor	One time cost		$9,400,000	$9,400,000
Freeway operations: Incident Management	120 miles	$260,000		$31,200,000
Freeway operations: Incident Management Infrastructure	One time cost		$3,000,000	$3,000,000
				Level 2 Total $831,704,016

Figure 3-6: Congestion Management Costs and Benefits

Benefits Investment Level 2

- Arterial capacity is increased by 17%

- Incident frequency is reduced by 5%

- Incident duration is reduced by 25%

Investment Level 3

Description	Number	Unit Cost	Additional Cost	20-Year Cost
Level 1 Congestion Projects				$295,304,016
Intersections: geometric improvements, ATMS	640 intersections	$770,000		$492,800,000
TMC and ATMS Infrastructure and labor	one time cost		$9,400,000	$9,400,000
Freeway operations: Incident Management, ramp metering, variable speed limits, lane control	120 miles	$1,500,000		$4,600,000
Freeway operations: Infrastructure & Labor	one time cost		$4,600,000	$180,000,000
				Level 3 Total $982,374,016

Benefits

- Arterial capacity is increased by 17%

- Incident frequency is reduced by 7%

- Incident duration is reduced by 25%

- Freeway capacity is increased by 10%

Figure 3-6 *Congestion Management Costs and Benefits*

ii. Freight Congestion

Freight and goods movement in Tampa Bay is already congested, and by 2040 the Federal Highway Administration (FHWA) forecasts that 496 million tons of freight will move through Tampa Bay in 2040 compared to 295 million tons in 2011[2]. Most of that freight will be moved by truck on the region's roadways.

To determine the 2040 needs to move freight efficiently through the region, various plans were reviewed, including the Port Tampa Bay Strategic Plan, the Tampa Bay Regional Goods Movement Study (TBRGMS), the Strategic Regional Freight Plan (SFRP), the Florida Statewide SIS Needs Plan, and the Statewide Ports Plan. Recommended projects from these studies were evaluated using performance measured designated to specifically address freight congestion. The performance measures used were:

- Percent miles of congested freight routes – this is used to track reductions in congestion on the regional freight system
- Percent of freight hotspots (high density areas where freight and goods movement take place) mitigated – based on the list of identified freight hot spots, this performance measure can track the number of hot spots eliminated or mitigated over time
- Planning Time Index – measures travel time reliability
- Buffer Index – measures how much time must be added for freight traffic to travel through a corridor
- Cost of Freight Delay – Calculating the cost of truck delay provides a monetized value of delay that can be used system-wide, or corridor-wide, to determine the benefit of a completed project

The *2040 Freight Needs Assessment Technical Memorandum* documents three levels for freight investment. The baseline comprises the FDOT District 7 Freight Quick Fix projects for Hillsborough County, as funded in the 5-year FDOT Work Program. This level of funding was extrapolated over 20 years, resulting in an investment of $18,632,000 for Level 1. This investment level provides funding for all

[2] Source: Hillsborough MPO *Freight Investment Program for the 2040 Long Range Transportation Plan Technical Memorandum,* 2014.

73 low-cost freight projects identified in the FDOT District 7 consolidated freight improvement database and FDOT Regional Strategic Freight Plan (excluding capacity projects and major maintenance/resurfacing projects, which are accounted for in other spending programs). The total investment for these projects is $17,020,523.

Low-cost, Level 1 projects include:

- Any project identified on the FDOT Freight Quick Fix list regardless of cost;
- Restriping to reconfigure an intersection or make lane width adjustments on existing surfaces to 12 feet, where possible, on heavily used truck corridors;
- Pulling back concrete median noses and replacing with pavement markings to enhance truck turning and reduce infrastructure damage;
- Adjusting the location of stop bars to allow for unimpeded wide truck turns, where generally only a single receiving lane exists;
- Adding truck-related signage;
- Minor corner radius changes/shoulder repair within the existing right-of-way (ROW);
- Corner radius modifications on rural facilities;
- Adding or modifying raised concrete channelization islands; and
- Adjusting signal timing.

Level 1 also includes moderate cost investments that range between $100,000 and $1 million although some projects and combinations of projects to improve a corridor or a corridor segment that may cost more. These projects include:

- Minor reconstruction within the existing ROW;
- Corner radius modifications on urban facilities;
- Milling and resurfacing intersections and approaches;
- Adding left-/right-turn lanes within the existing ROW;
- Adjusting turn lane lengths to accommodate more vehicles at intersections with a large amount of truck turning movements;
- Converting median openings to directional median openings throughout a corridor segment; and
- Railroad crossing upgrades/repairs/resurfacing, and
- Adding new traffic signals.

The next level of investment adds one major capacity improvement, a more costly project than many Level 1 investments combined. The recommended capacity project is a railroad grade separation on US 41 at Rockport. This high priority grade separation is identified in the Regional Strategic Freight Plan and has also been identified by the SIS Systems Needs Plan, the Regional Rail Plan, and the Port Tampa Bay Strategic Plan. It will relieve congestion resulting from 28[3] or more train crossings per day entering and exiting the CSX

[3] Source: Hillsborough MPO *Freight Investment Program for the 2040 Long Range Transportation Plan Technical Memorandum,* 2014

Rockport Phosphate Terminal, especially during peak commuting hours when traffic queues often reach over a mile length.

Level 3 investments recommend a second railroad grade separation (Causeway Boulevard, east of US 41), in addition to the grade separation listed under Level 2 or, as an alternative, construction of the SR 60 to I-4 Connector east of Brandon that is recommended in the Regional Strategic Freight Plan. Similar to the US 41 grade separation, the Causeway Boulevard grade separation will relieve congestion caused by trains entering the Rockport Terminal, as well as trains heading south to the Eastport Terminal, Port Manatee, and Bradenton. Causeway Boulevard is a key connector route between the US 301/I-75 corridor and Port Tampa Bay. The SR 60 to I-4 Connector is proposed to relieve a portion of the heavy through traffic on SR 60/Brandon Boulevard by providing an alternate route around Brandon via I-4. It is also expected to relieve additional traffic between I-75 to the north of I-4 and SR 60 east of Brandon. Other high cost projects that would further facilitate freight movement remain as unfunded needs.

Figure 3-7 below shows the baseline plus the additional recommended spending at each tier, as well as the total combined spending if the additional Level 2 or 3 funding is available. For specific projects and freight hot spots please see the *Freight Investment Program for the 2040 Long Range Transportation Plan* technical memorandum.

The typical costs presented in the tables include a percentage of the construction costs to cover engineering design, mobilization/CEI, ROW, and contingencies.

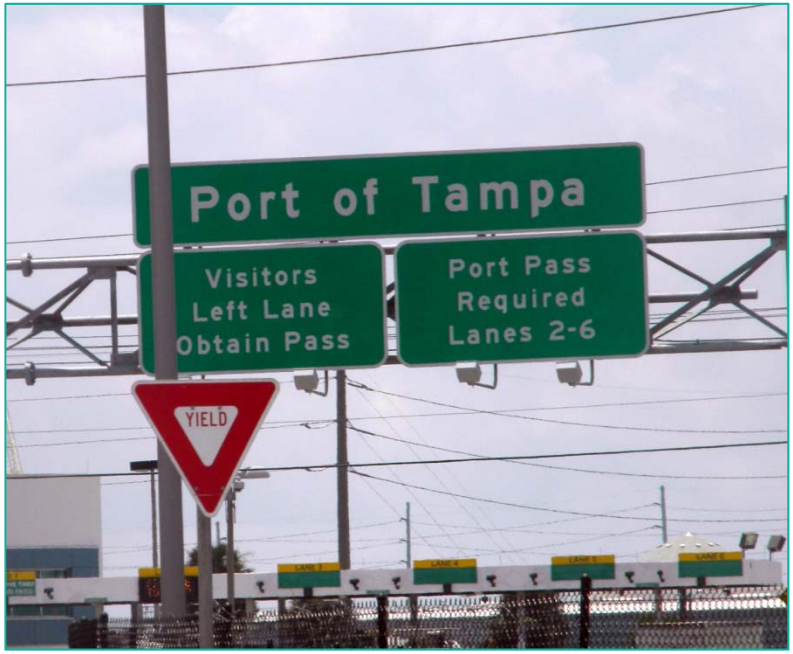


Figure 3-7: Freight Program Funding Tier Spending

		Project Costs	Investment Level Costs	Investment Level Benefits
	Baseline (Total value of FDOT Freight Quick Fix projects in Hillsborough County funded in the current adopted five-year FDOT Work Program)	$3,105,333		
	**72 operational and minor infrastructure projects** (continuation of FDOT Freight Quick Fix program)	$17,020,523	$17,020,523	117 thousand daily truck trips flow better through intersections
	**Add one railroad grade separation**	$50,652,000	$67,672,523	Above, plus: removes traffic stoppage of about 5 hours per day
	**Add second railroad grade separation**	$37,520,000	$105,192,523	Above, plus: removes another traffic stoppage of about 5 hours/ day
	Total Freight Needs (Includes additional grade separations) **Unfunded Freight Needs** (Beyond Level 3 Investment)			$956,773,568 $851,601,045

Reduce Crashes & Vulnerability

Another key component of the *Imagine 2040 Plan* is safety and security. The safety segment of the plan focuses on crash reduction while the security segment deals with transportation infrastructure vulnerability to flooding.

i. Safety: Crash Reduction

Hillsborough County has some of the most dangerous roadways in the nation. With the highest traffic fatality rate per capita of all large U.S. counties, Hillsborough has a traffic fatality rate of 12.4 fatalities per 100,000 residents based on 2010 data. Further, Hillsborough ranks 12th in the nation (based on counties with populations exceeding 1 million) for having the most traffic fatalities.[4] Safety Emphases Area crashes are those that are caused by aggressive driving, at-intersection, or lane departures, all of which Hillsborough County ranks in the top five Florida counties for these type of crashes. **Figure 3-8** identifies high crash areas in Hillsborough County. Very busy roadways such as Dale Mabry Highway, Hillsborough Avenue, Fletcher Avenue, and SR 60 in Brandon are identified on the map as high crash roadways with high crash intersections.

In addition, the Tampa Bay region has the highest pedestrian fatality rate in the nation with 3.5 pedestrian fatalities per 100,000 residents. In May 2014, Smart Growth America, a national organization that is dedicated to the research of and advocating for better community development and safer streets released a report, *Dangerous by Design 2014*, that chronicles the most dangerous roadways and the most threatened populations in the United States. Utilizing a methodology of determining the rate of pedestrian deaths relative to the number of people who drive to work in a given region, a Pedestrian Death Index (PDI) was calculated for all metropolitan areas in the country. According to the report, Tampa-St. Petersburg-Clearwater, FL was identified as the

second most dangerous metropolitan area for pedestrians

[4] Source: Hillsborough MPO, *Congestion Management/Crash Mitigation Process: Crash Severity Reduction Report,* 2012

with a pedestrian danger index of 190.13, coming in behind the Orlando - Kissimmee, Florida metropolitan area. **Figure 3-9** is a map showing the most dangerous locations for pedestrians. Areas along Florida Avenue, Nebraska Avenue, SR 60 in Brandon, and downtown Tampa have high pedestrian crashes.

The Hillsborough MPO produced the *Congestion Management/Crash Mitigation Process: Crash Severity Reduction Report* in 2012 that included the most common type of severe and fatal crashes. **Figure 3-10** is a pie chart that describes the type of severe crashes with angle/left turn accidents being the most common severe crashes. **Figure 3-11** shows the most common type of fatal crashes which bicycle and pedestrian crashes.

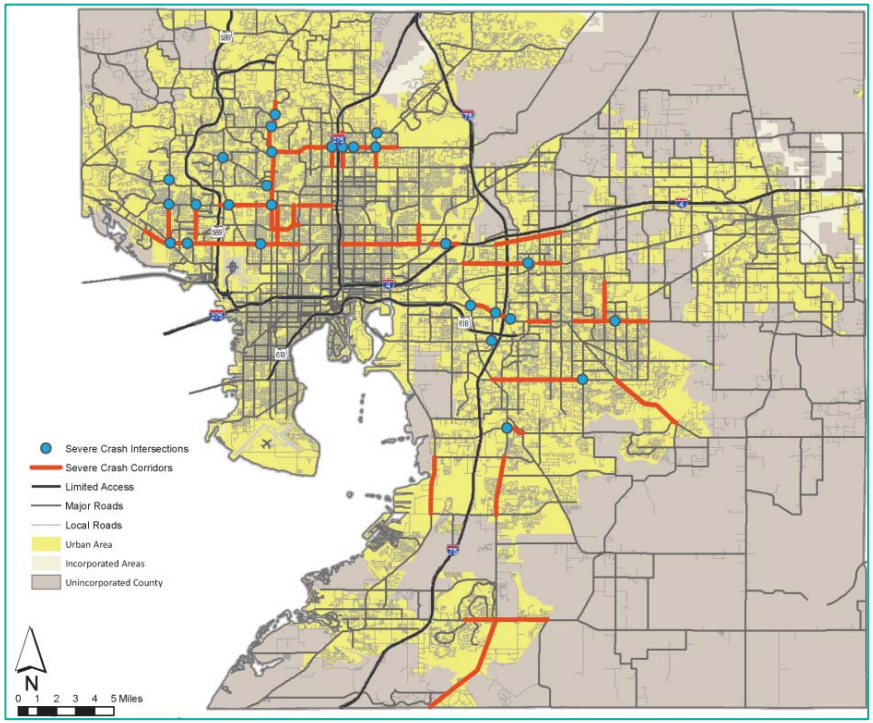


Figure 3-8 *Severe Crash Hot Spots in Hillsborough County*

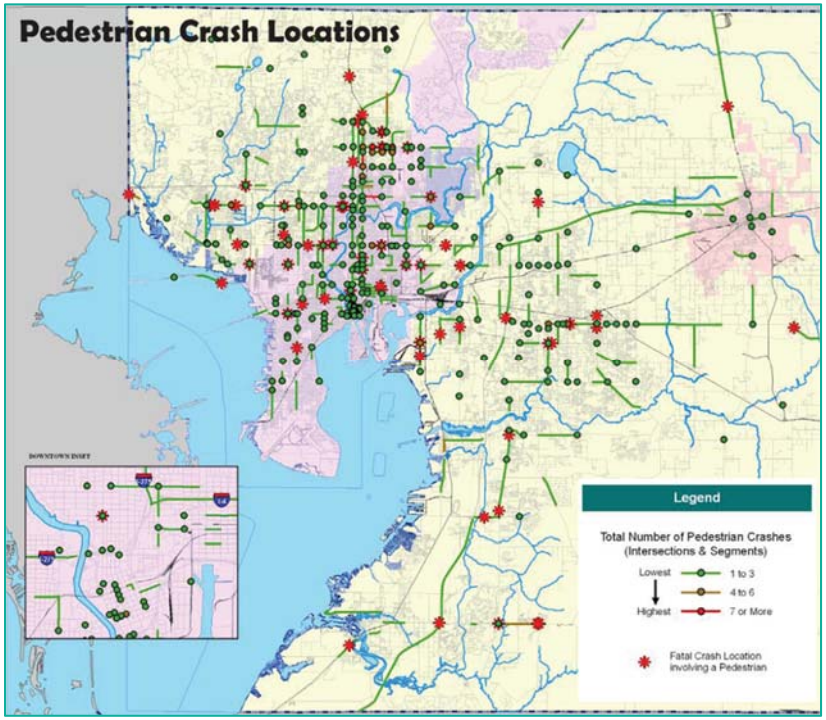


Figure 3-9 *Pedestrian Crash Areas*

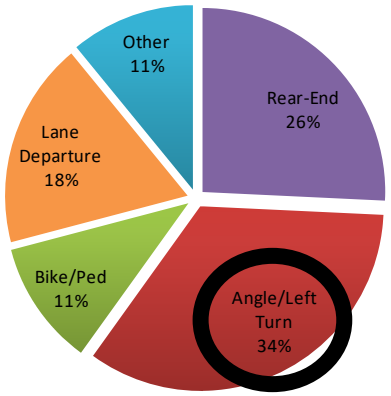


Figure 3-10 *Severe Crashes by Category*

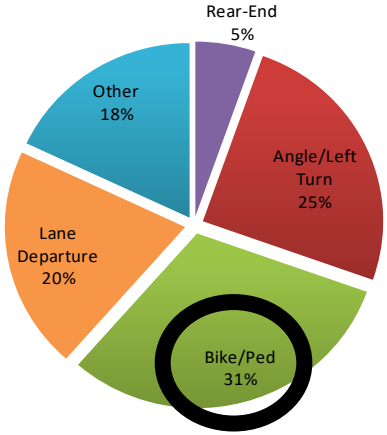


Figure 3-11 *Fatal Crashes by Category*

From 2006 to 2010 Hillsborough County experienced a reduction in injury and fatality crashes per 100 million vehicle miles travelled (VMT). In 2006 Hillsborough County had the highest injury and fatality crashes among other peer counties (Broward, Duval, Miami-Dade, Orange, Palm Beach, and Pinellas) in Florida and higher than the statewide average. By 2010 Hillsborough had the 3rd highest in the state, with a 17% decrease in injury and fatality crashes since 2006[5]. **Figure 3-12** is a line graph comparing injury and fatality crashes per 100 million VMT for the most populous counties in Florida.

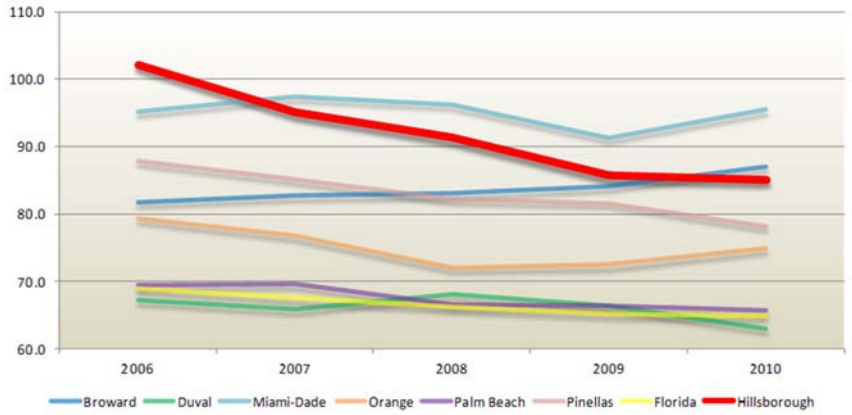


Figure 3-12 *Injury and Fatality Crashes per 100 Million VMT*

The *Imagine 2040 Plan* intends to continue this trend for Hillsborough County. The *Congestion Management/Crash Mitigation Process: Crash Severity Reduction Report* identifies roadway infrastructure strategies that have the potential to address those crash issues which are not easily mitigated through current safety retrofit programs and typical design approaches. Safety enhancement projects include:

- Roundabouts instead of traditional signalized intersections;
- Continuous flow intersections;
- Construct medians;
- Construct Diverging Diamond Interchanges;
- Construct turn lanes/bays;
- Complete streets design that includes the addition of bicycle lanes, and sidewalks;
- Construct pedestrian islands/refuges;
- Increase better signage;
- Road diets; and
- Street lights

For more details and examples of the safety enhancement treatments listed above and specific safety improvement projects please see the *Congestion Management and Crash Mitigation Technical Memorandum* and the *Congestion Management/Crash Mitigation Process: Crash Severity Reduction Report*.

[5] Source: Hillsborough MPO, *Congestion Management/Crash Mitigation Process: Crash Severity Reduction Report,* 2012

As with the previous programs discussed, there are three funding levels to improve safety in the *Imagine 2040 Plan.* The Level 1 investment level represents the current trend and proposes to spend over $498 million by 2040 and anticipates reducing crashes by 9%, fatal crashes by 9.7%, and bicycle/pedestrian crashes by 136 crashes per year.

The Level 2 investment level intends to spend over $919 million by 2040 and reduce total crashes by 20%, fatal crashes by 20%, and reduces bicycle and pedestrian crashes by 294 crashes per year.

The Level 3 investment level proposes to spend over $2.2 billion by 2040 and is anticipated to reduce total crashes by 50.8%, fatal crashes by 50.7%, and reduce bicycle and pedestrian crashes by 704 crashes per year.

Another investment level, Level 2 ½, is projected to lower the total number of crashes and fatal crashes by over 20% by investing approximately $1.3 billion by 2040. Projects in Level 2 ½ include over 450 miles of "complete streets" treatment that will cover all priority corridors and 300 miles of new sidewalks.

Figure 3-13 details the benefits and costs of each investment level. **Figure 3-14** is a list of complete streets projects (complete streets are those that have pedestrian and bicycle facilities, along with other features for the safety and comfort of all users) to be implemented in Level 2 ½ or Level 3 that would improve safety along Hillsborough County roadways.

Figure 3-13: Crash Reduction Costs and Benefits

Investment Level	Benefits	Responsible Agency	Description	Annual Cost (in thousands)	20 Year Cost (in thousands)
Level 1 Current Spending Trend LEVEL 1	• Total crashes are reduced by 4,390 (9%) • Total fatal crashes reduced by 13 (10%) • Bike/pedestrian crashes reduced by 136	Hillsborough County	Intersections, medians, sidewalks, school safety	$11,315	$226,300
		City of Tampa	Sidewalks, bikeways, crosswalks	$5,769	$115,373
		Temple Terrace	Sidewalks, bike lanes, ADA curbs	$133	$2,655
		Plant City	Intersections, sidewalks	$112	$2,240
		FDOT	Education, enforcement, grants to local agencies	$7,587	$151,732
			Total	$24,915.	$498,300
Level 2 LEVEL 2	• Total crashes are reduced by 9,017 (20%) • Total fatal crashes reduced by 28 (20%) • Bike/pedestrian crashes reduced by 294	All	900 intersection treatments: signal adjustments, pedestrian signals & refuge areas, turn lanes/bays, crosswalks	$22,575	$451,500
		Hillsborough County	600 miles of new standard street lights, including operational cost for 20 years	$21,000	$420,000
		All	300 miles of new sidewalks for continuous sidewalk on at least one side of all major roads	$2,400	$48,000
			Total	$45,975	$919,500
Level 2 ½ LEVEL 2	• Total crashes are reduced between 20%-51% • Total fatal crashes reduced between 20&-51%	All	450 miles of "Complete Streets" treatments, covering all Priority Corridors plus some other major roads with above-average crashes	$44,787	$895,735
		Hillsborough County	600 miles of new standard street lights, including operational cost for 20 years	$21,000	$420,000
		All	300 sidewalk miles, for continuous sidewalk on at least one side of all major roads	$2,400	$48,000
			Total	$68,188	$1,363,735
Level 3 LEVEL 3	• Total crashes are reduced by 22,722 (51%) • Total fatal crashes reduced by 68 (51%) • Bike/pedestrian crashes reduced by 704	All	900 miles of "Complete Streets" treatments, covering all major roads with above-average crash rate	$87,918	$1,758,367
		Hillsborough County	600 miles of new standard street lights, including operational cost for 20 years	$21,000	$420,000
		All	300 sidewalk miles, for continuous sidewalk on at least one side of all major roads	$2,400	$48,000
			Total	$111,318	$2,226,367

Figure 3-14: Complete Streets Potential Projects *Illustrative Projects for Consideration in Crash Mitigation Program*			
Source or Responsible Party	**Project Location**	**Further Description**	**Transportation for Economic Development Project?**
City of Tampa	22nd St (21st Ave to 23rd Ave) Phase 3	Roundabout at 21st/22nd, on-street bike lanes, bus shelters, sidewalks	
City of Tampa	22nd St (Hillsborough Ave to MLK Blvd)	Complete Street	
City of Tampa	40th St (SR 60 to Hillsborough Ave)	Road diet	YES
City of Tampa	7th Ave (22 St to 50 St)	Road diet	YES
City of Tampa	Cass/Tyler/Nuccio "The Green Spine"	2-way, roundabout, protected bikeway	YES
City of Tampa	Columbus Dr./17th, 18th, and 19th (from 14th Street to 43rd Street)	2-way conversion, on-street parking, protected bikeway	YES
City of Tampa	County Line Rd (I-75 overpass to Bruce B. Downs)	Complete Street	
City of Tampa	Floribraska Ave (Nebraska to Florida)	road diet, bicycle and pedestrian enhancements	YES
City of Tampa	Tampa/Florida (I-275 to Violet St.)	one-way conversion to two-way	YES
City of Tampa	Westshore Blvd (Kennedy Blvd to Spruce St)	Bicycle and pedestrian enhancements	YES
City of Tampa	Whiting St (Ashley Dr. to Brush St)	Complete Street	
City of Tampa	Zack St. Promenade of the Arts	ped friendly, public art, gateway to Curtis Hixon, shade, crosswalks, medians, on-street parking	
Hillsborough County	131st Ave (Nebraska Ave to 30th St)	bicycle and pedestrian enhancements	YES
Hillsborough County	Ambassador Rd. (Powhattan Ave. to Hillsborough Ave.) T & C Community Plan	Add curb, sidewalks, bike lanes, landscaping, streetscaping	YES
Hillsborough County	Paula Dr. (Town N Country Blvd to Hanley Rd) T & C Community Plan	Add curb, sidewalks, bike lanes, landscaping, streetscaping	YES
Hillsborough County	Pauls Dr. - Brandon Main Street (SR 60 to Feeder Rd.)	Sidewalks, on-street parking, streetscaping, landscaping, gateways	
Plant City	SR39/Collins from Park Rd. to Alabama St.	Complete Street	
Temple Terrace	Fowler Ave. (Riverhills Blvd to I75)	bicycle and pedestrian enhancements	YES
MPO Crash Severity Reduction Study	Fowler Ave. (Nebraska to30th St)	bicycle boulevard on frontage roads, widen medians, landscaping	
MPO SR60 Compatibility Study	Brandon Blvd.	Consistent with SR60 Overlay District	
MPO SR60 Compatibility Study	Lithia Pinecrest and Bryan Road reconfigure	Roundabout, one-way pairs for circulation	

ii. Security: Vulnerability Reduction

Due to Hillsborough County's location along the coast of the Gulf of Mexico and Tampa Bay reaching into the heart of the county, the area is vulnerable to storm surges and flooding from hurricanes as well as sea-level rise. Much of the transportation infrastructure in Hillsborough County is located within zones that are susceptible to storm surges and sea level rise. Vital connections between Hillsborough and Pinellas Counties such as the Gandy Bridge (US 92), Howard Frankland Bridge (I-275), and Courtney Campbell Causeway (SR 60) must cross over Tampa Bay thus almost cutting Pinellas County off from Hillsborough County in the event of a hurricane. The bay bridges, coastal roadways within storm surge areas, and even roads subject to inland flooding may suffer from structural failure, washouts, and debris on the roadway. **Figure 3-15** is map identifying the anticipated storm surge and disrupted links in Hillsborough and Pinellas Counties after a Category 3 hurricane.

In the event of a major hurricane, the three bay crossings connecting Hillsborough with Pinellas may be unusable.

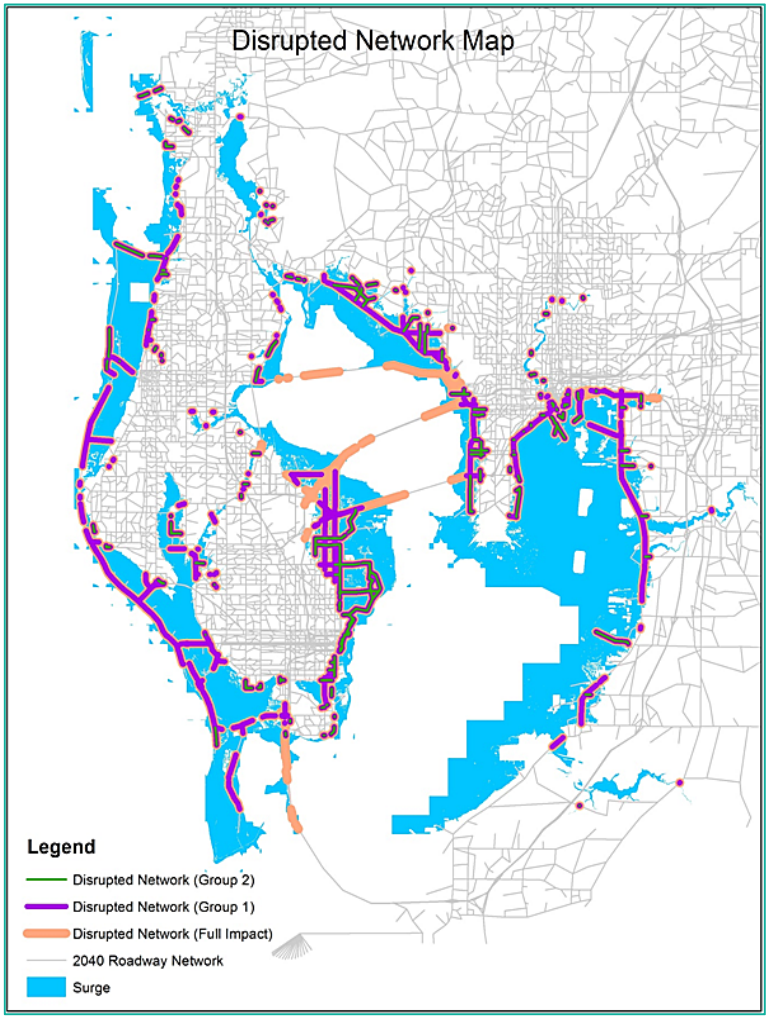


Figure 3-15 *Potentially Disrupted Links in Pinellas and Hillsborough Counties During and After a Category 3 Hurricane*

To measure the impacts to transportation infrastructure, from a representative Category 3 hurricane, three different investment levels were evaluated. The performance measures used to analyse the three investment scenarios are:

- Travel Time Delay due to transportation network disruption;
- Lost Trips due to transportation network disruption; and
- Economic Losses due to storm in 2014 dollars.

Below are the comparisons between the three investment scenarios:

Investment Level 1:

- Cost over 20 years: Approximately $629 million;
- Funds only routine stormwater drainage improvements, and is based on current spending trend;
- 8 weeks of road network disruption due to representative Category 3 storm; and
- Economic loss to Hillsborough County: $266 million.

Investment Level 2:

- Cost over 20 years: Approximately $660 million;
- Funds Interstates only with drainage improvements, shoreline armoring and wave attenuation;
- 6 weeks of road network disruption due to representative Category 3 storm;
- Economic loss to Hillsborough County: $153 million or 42% less than Investment level 1; and
- $31 million additional investment compared with Level 1 results in $113 million benefit in avoided losses.

Investment Level 3:

- Cost over 20 years: $772 million;
- Funds Interstates and arterials with drainage improvements, shoreline armoring and wave attenuation;
- 3 weeks of road network disruption due to representative Category 3 storm;
- Economic loss to Hillsborough County: $119 million or 55% less than level 1; and
- $112 million additional investment compared with Level 1 results in $147 million benefit in avoided losses.

Flooding vulnerability is a very real threat that the transportation network and infrastructure face in Hillsborough County. The amount that is invested in adaptation and mitigation measures to shore up the vulnerable infrastructure in the *Imagine 2040 Plan* determines how much disruption and economic loss the residents and businesses of Hillsborough County will endure when a storms and flooding impact the region.

For more detailed information about vulnerability please see the *Needs Assessment: Vulnerability Reduction Costs and Benefits Technical Memo.*

Real Choices When Not Driving

The Preferred Growth Scenario described in Chapter 2 requires that investments in transportation alternatives to driving alone be made. In order to achieve this goal, investment in transit, multi-use trails, and services for the transportation disadvantaged (TD) and the growing senior citizen population must be planned for.

i. Transit/Bus Service

Hillsborough Area Regional Transit (HART) is the transit provider for Hillsborough County. As of 2014, HART operates local, express, and flex bus service. Three potential levels of investment in HART bus services were developed for the Imagine 2040 Plan. A detailed list of the service improvements in each investment level, including capital and operating costs, is provided in the *Needs Assessment: Real Choices When Not Driving Technical Memo*. The three potential levels of investment were evaluated using Transit Level of Service (TLOS), a measure of the quality of service from the passenger's perspective, based on the frequency with which buses travel each road. The thresholds for the A (best) through F (worst) letter grade are consistent with FDOT's ARTPLAN methodology. For this analysis, the TLOS score for each road segment is based on the total number of buses of any route which travel that road each hour. Since HART typically is able to provide only a few trips per day on its express bus routes, the express routes were not included in the analysis. The TLOS score is as follows:

Level of Service	*Wait Time*
LOS A: >6 buses/hour	*< 10 min. – Passengers don't need schedules*
LOS B: 4.01-6 buses/hour	*10-14 min. – Frequent service*
LOS C: 3-4 buses/ hour	*15-20 min. – Max desirable time to wait if missed bus*
LOS D: <3 buses/hour	*21-30 min. – Service unattractive to choice*
LOS E: <2 buses/hour	*31-60 min. – Service available during hour*
LOS F: <1 bus/hour	*>60 min. – Service unattractive to all rider*

Each of the three investment levels will serve the population at different levels of service. **Figure 3-16** summarizes how much of the population and jobs of Hillsborough County in 2040 will be served by transit with each investment level. **Figure 3-17** is a bar graph describing the number of people and jobs that will be served in 2040 with each investment level.

- **Low Investment Level (Level 1):** The low investment level is based on HART's "Status Quo" Plan as described in the *Transit Development Plan (TDP) for FY 2014 - FY 2023*. The "Status Quo" is a financially constrained plan extrapolating today's funding levels into the future. Service improvements are limited to those which can be implemented without increasing the number of buses needed at peak hour, since HART's existing vehicle maintenance facility is very close to capacity. Therefore, the proposed improvements primarily include adding evening or weekend hours to existing routes and some higher frequencies. A map of the TLOS that would be provided under the low investment level is shown in **Figure 3-18**. The bus service areas shown in the map are a ¼-mile radius (about a 10-minute walk) around each route.
- **Medium Investment Level (Level 2):** The medium investment level is a subset of HART's Vision Plan as described in the TDP. HART's Vision Plan identifies unfunded transit needs for Hillsborough County. For the LRTP, the medium investment level includes Vision Plan improvements that focus on the core urban area, where ridership potential is greatest. Specifically, the medium investment level consists of six new MetroRapid routes, plus 30 local routes that are new or improved in frequency and/or hours. A map of the TLOS that would be provided under the medium investment level is shown in **Figure 3-19**.
- **High Investment Level (Level 3):** Similar to the medium investment level, the high investment level is also based on HART's Vision Plan. It adds the remaining service improvements identified as needed by HART, including 20 new or improved express bus routes, and at least 18 flex and circulator route improvements. These express and flex/circulator routes expand the bus service area and provide cost-effective service to lower density communities. A map of the TLOS that would be provided under the high investment level is shown in **Figure 3-20**.

Figure 3-16: Transit Performance Measures for Each Investment Level

Investment Level[1]	Statistics				
Low	**Costs[1]**				
	**Total Cost (Capital and O&M over 20 years)**				$1,730,760,275
	Performance Measures				
		Frequent	**Somewhat Frequent**	**Basic**	**Minimal/None**
		(LOS A-B)	(LOS C-D)	(LOS E)	(LOS F)
	Countywide population & jobs within ¼-mile of transit	16%	29%	4%	51%
	Roadway Centerline Miles	84	305	70	-
Medium	**Costs[1]**				
	**Total Cost (Capital and O&M over 20 years)**				$2,638,324,568
	Performance Measures				
		Frequent	**Somewhat Frequent**	**Basic**	**Minimal/None**
		LOS A-B	LOS C-D	LOS E	LOS F
	Countywide population & jobs within ¼-mile of transit	44%	8%	0.5%	48%
	Roadway Centerline Miles	400	120	15	-
High	**Costs[1]**				
	**Total Cost (Capital and O&M over 20 years)**				$3,010,135,325
	Performance Measures				
		Frequent	**Somewhat Frequent**	**Basic**	**Minimal/None**
		(LOS A-B)	(LOS C-D)	(LOS E)	(LOS F)
	Countywide population & jobs within ¼-mile of transit	48%	16%	0.2%	36%
	Roadway Centerline Miles	503	140	7	-

[1] *Costs are presented in millions of 2014 dollars; total cost over 20 years*

Figure 3-16 *Transit Performance Measures for Each Investment Level*

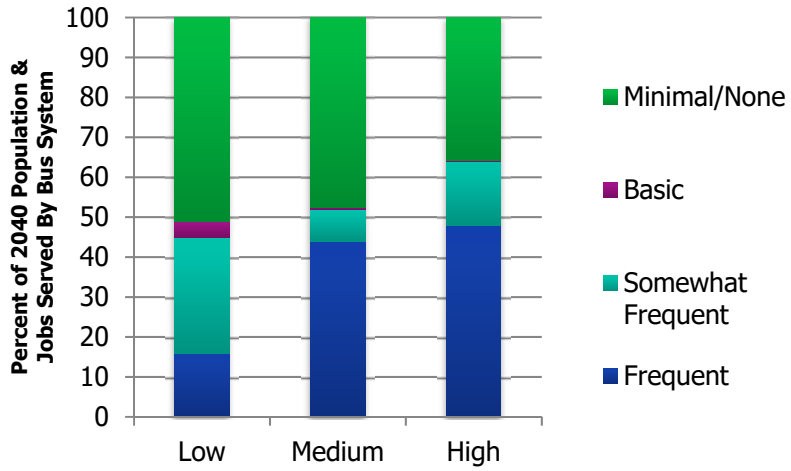


Figure 3-17 *Quality of Service with Each Level of Investment*

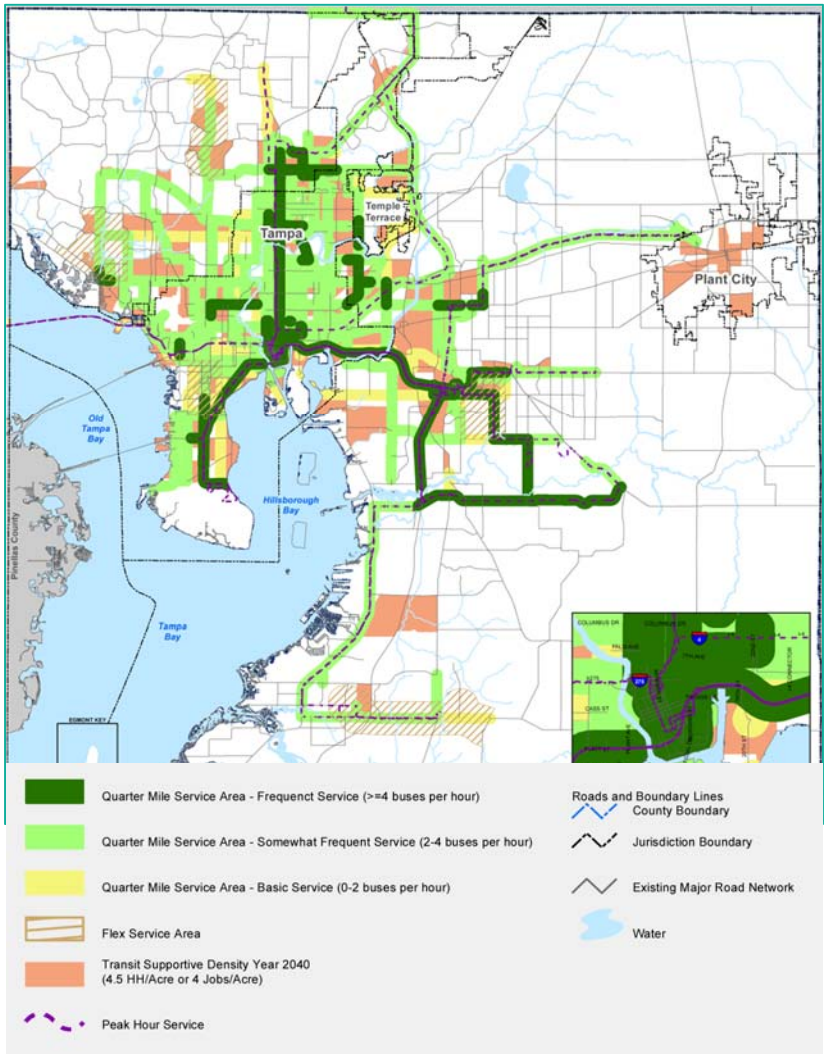


Figure 3-18 *Map of Transit Service in Hillsborough County with Low Investment Level*

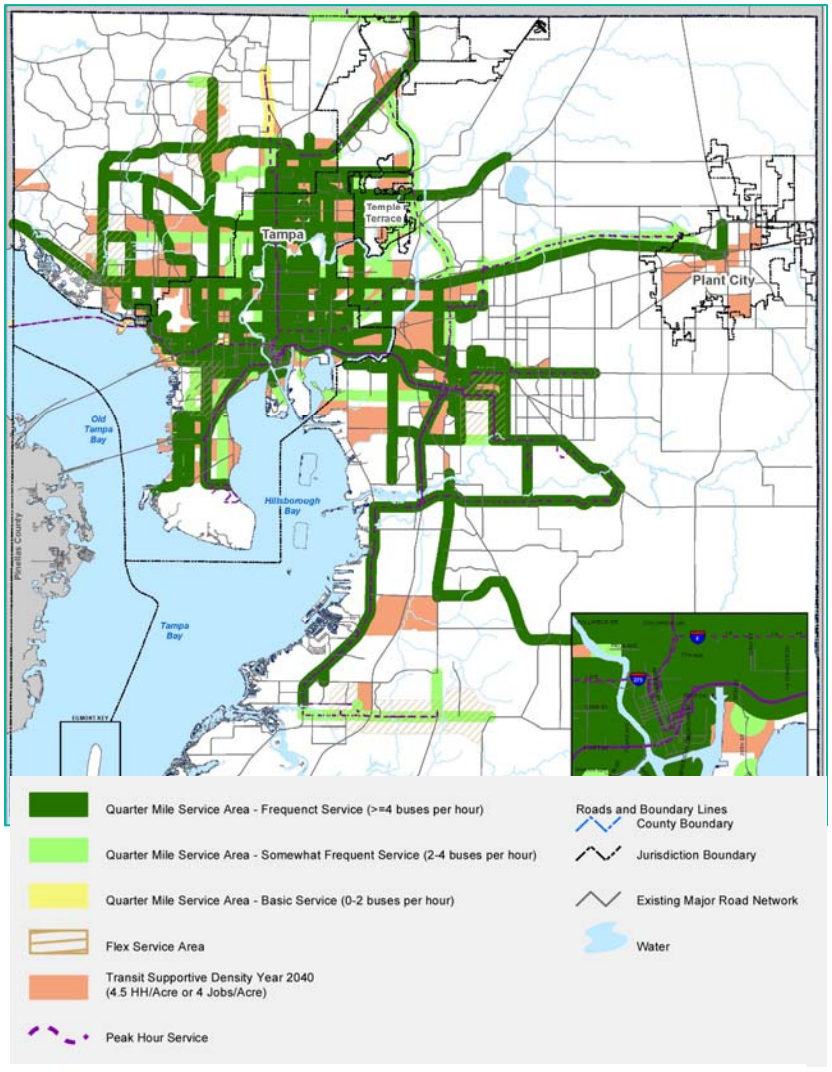


Figure 3-19 *Map of Transit Service in Hillsborough County with Medium Investment Level*

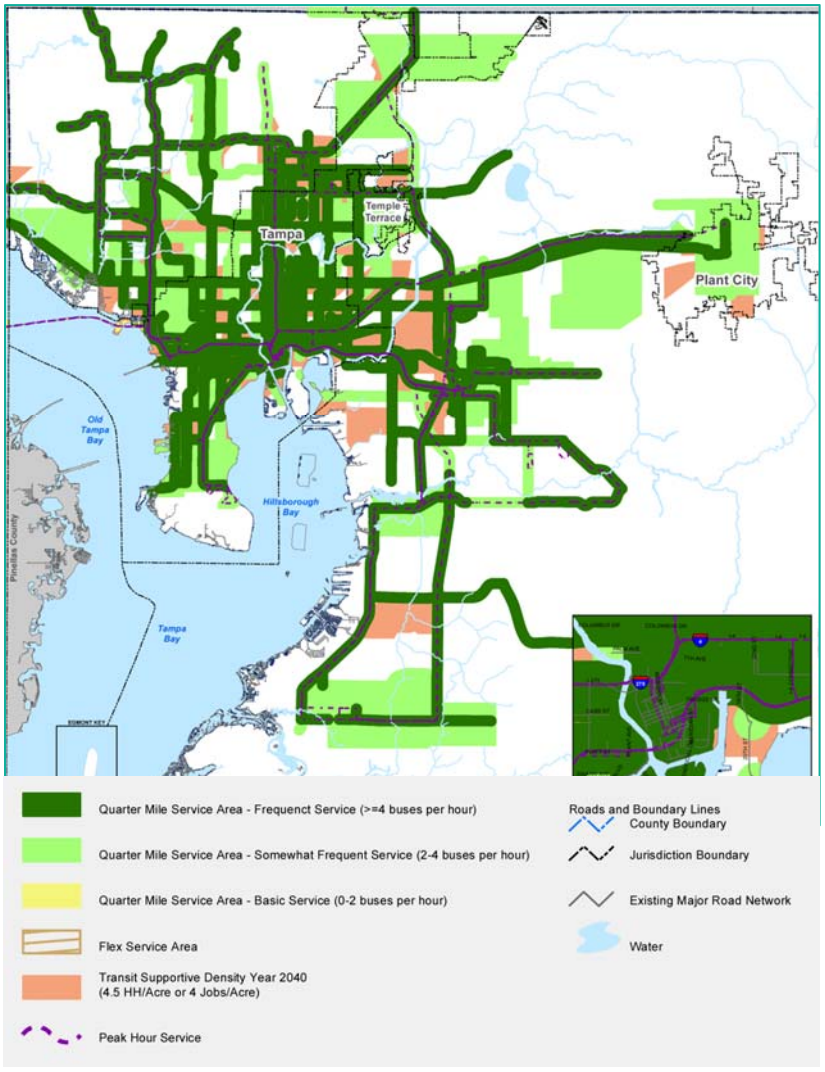


Figure 3-20 *Map of Transit Service in Hillsborough County with High Investment Level*

ii. Transportation Disadvantaged Services

One important aspect of this Plan is the allocation of funds for accommodating the increasing population of the transportation disadvantaged (TD). These services provide equal access for those who are unable to transport themselves or to purchase transportation, and are therefore dependent upon others to obtain access to health care, employment, education, shopping, social activities, and/or other life-sustaining activities (per Florida Statutes, Chapter 427).

Fixed route transit serves 52% of the population within the County, leaving 48% of the County without access to the fixed route bus system. Paratransit services in the County, such as the Hillsborough County Sunshine Line and HARTplus, provide TD residents in Hillsborough County with needs-based transit for eligible persons who have physical, cognitive, emotional, visual, or other disabilities which prevent them from using the HART fixed route system. Depending on the needs of the passenger, the service either picks them up and drops them at their destination, or takes them to an accessible fixed route bus stop.

According to the 2010 Census, 12% of the population is age 65 and older. Including seniors, persons with disabilities and/or low income, the potential TD population in 2013 (407,727) is an estimated 34% of the total population of Hillsborough County. **Figure 3-21** estimates the forecasted TD population living outside of the bus service area in 2040 respective to the three levels of bus service investment described previously. A cost estimate for providing Sunshine Line services to this population, at similar levels of service as today, is also summarized here. Detailed cost estimates are available in the *2040 Needs Assessment: Real Choices When Not Driving Technical Memorandum.* It is important to note that more investment in fixed route transit service decreases the need for TD services because more people that qualify as TD will have access to fixed route transit service.

Investment Level	TD Population Unserved By Transit in 2040	Annual ParaTransit Trips Needed in 2040	Annual Operating Cost in 2040 (2014$)	Fleet Needed in 2040	Total Capital + Operating Cost, 2019-2040
Low Bus Invest-ment	282,000	2.26 M	$31.8 M	547	$579.43 M
Medium Bus Invest-ment	187,000	1.5 M	$21.1 M	363	$436.60 M
High Bus Invest-ment	182,000	1.4 M	$20.0 M	352	$428.52 M

Figure 3-21 *Transportation Disadvantaged Living Outside of Bus Service Area*

34% of the population of Hillsborough County has the potential to be Transportation Disadvantaged.

Trails and Sidepaths

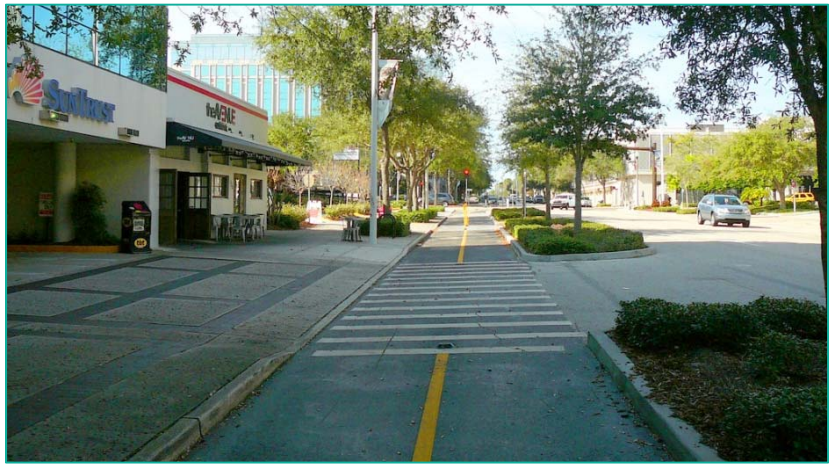
Considerable progress has been made in expanding the availability of sidewalks and on-road bicycling facilities, such as striped lanes and shared-lane arrows, in Hillsborough County. In the last few years, demand has grown for "protected" bike lanes, which are physically separated from traffic. The separation could be a curb, flexible posts, planters, green boulevard area or some other means. National surveys point to 10% or less of the population feeling safe and comfortable bicycling on the paved shoulders of roads. Expanding the availability of "protected" walk/bike facilities could attract a much wider audience.

Hillsborough County at present has approximately 80 miles of paved trails and sidepaths, which are mostly in parks. The potential new trails and sidepaths considered in this analysis come from multiple sources, including the Hillsborough County and Tampa Greenways Plans, Tampa Walk-Bike Plans, Temple Terrace multi-modal plans, and community plans prepared by the Planning Commission.

The performance measures used in this analysis were the number of residents and workers with access to excellent or good Pedestrian Level of Service (PLOS) and Bicycle Level of Service (BLOS) facilities (i.e., living or working within ¼ mile). PLOS and BLOS are defined as "A" (best) through "F" (worst) based on quantitative measures that represent the pedestrian's or bicyclist's point of view. Trails and sidepaths are both typically considered high PLOS/BLOS facilities.

The investment levels are as follows:

- **The "Status Quo," low investment level** maintains the current level of spending, which when extrapolated into the future provides approximately $40 million over the next 20 years. Under this level of investment, 40 miles of paved trails and sidepaths will be added. Even if high-density areas are prioritized, only 16-17% percent of the population (about 1/6) will live near a good or excellent walk/bike facility (PLOS/BLOS "A" or "B") in 2040.



Example of a barrier-separated bicycle facility ("sidepath") in St. Petersburg, Florida

Because jobs tend to be more centrally located, 28-29% of future employees will be near a good or excellent walk/bike facility.

- **The medium investment level** invests $140 million over the next 20 years and results in the construction of 140 miles of paved trails and sidepaths. Based on this level of investment, 22-23% percent of the population (at least 1/5) will live near a good or excellent walk/bike facility and 34-35% percent of jobs will be located near a good or excellent walk/bike facility.

- **The high investment level** invests $240 million over the next 20 years and results in the construction of 240 miles of paved trails and sidepaths. This level of investment expands the trail/sidepath network out into the rural and lower-density suburban areas. Based on this level of investment, 24-25% percent of the population (about ¼) will live near a good or excellent walk/bike facility. In addition, 36-37% percent of jobs will be located near a good or excellent walk/bike facility.

Figure 3-22 details the benefits and costs of trails and sidepaths in each investment level scenario. **Figure 3-23** is a map showing the trails that could be built with each funding investment level. The trails in yellow are those that would be funded in low investment scenario. Those trails in green plus the yellow trails from the low investment scenario would be funded in the medium investment level scenario. The high investment level scenario will fund all trails in the low and medium investment scenarios plus the trails in red.

Figure 3-22: Benefits and Costs of Trail/Sidepath Investment Levels

	Trail/Sidepath Investment Level Statistics				
Low	**Capital Cost**	$39,902,854			
LEVEL 1	**Performance Measures**				
	Level of Service	**A-B**	**A-B**	**C-D**	**E-F**
	Facility	Ped LOS	Bike LOS	Both	Both
	Countywide population near trails*	17%	16%	3%	81%
	Countywide jobs near trails	29%	27%	5%	69%
Medium	**Capital Cost**	$140,406,778			
LEVEL 2	**Performance Measures**				
	Level of Service	**A-B**	**A-B**	**C-D**	**E-F**
	Facility	Ped LOS	Bike LOS	Both	Both
	Countywide population near trails	23%	22%	3%	75%
	Countywide jobs near trails	35%	34%	2%	62%
High	**Capital Cost**	$241,737,567			
LEVEL 3	**Performance Measures**				
	Level of Service	**A-B**	**A-B**	**C-D**	**E-F**
	Facility	Ped LOS	Bike LOS	Both	Both
	Countywide population near trails	25%	24%	2%	73%
	Countywide jobs near trails	37%	37%	2%	61%

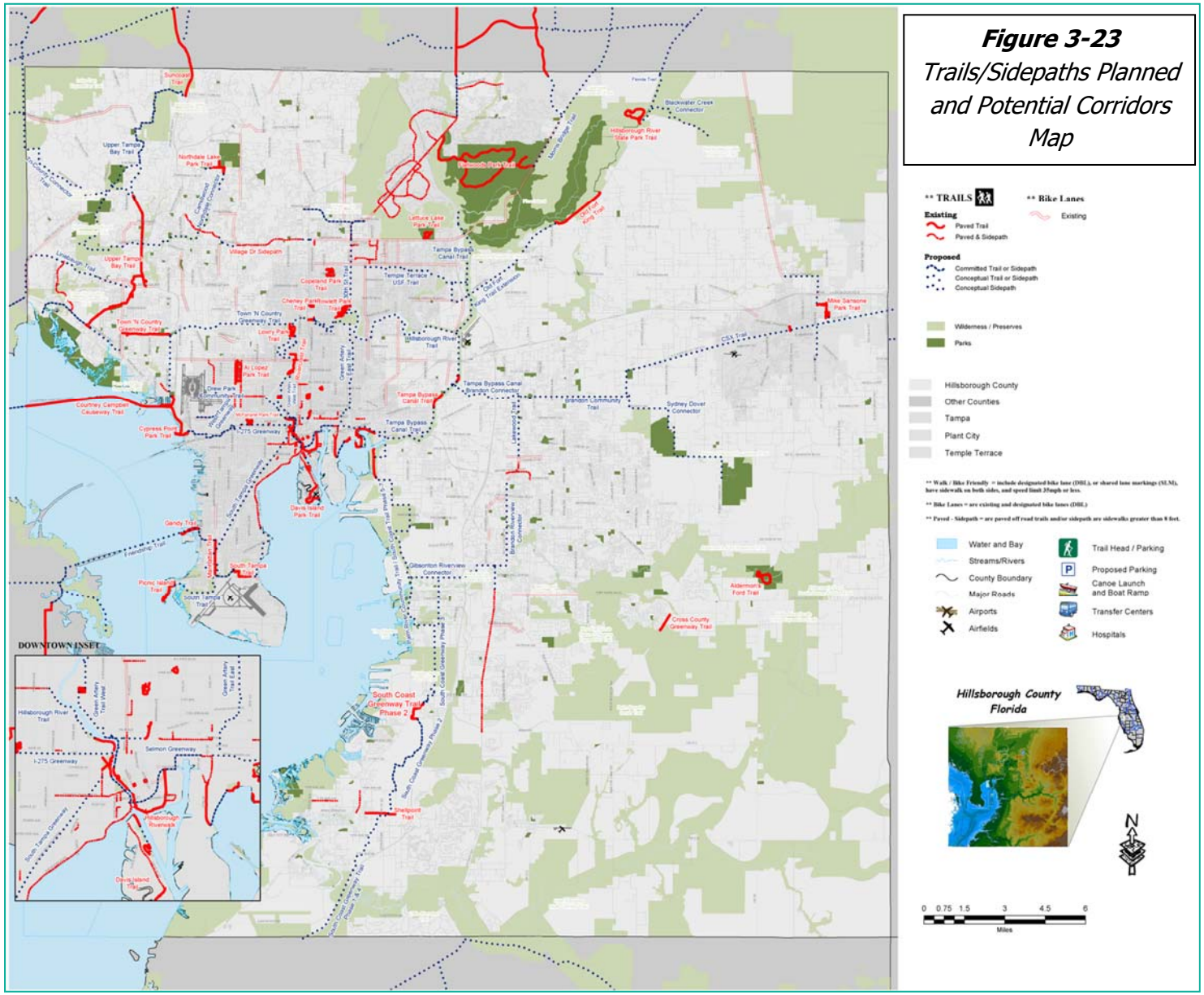


Figure 3-23
Trails/Sidepaths Planned and Potential Corridors Map

Major Investments for Economic Growth

Investing in transportation infrastructure is a key component of growing an area's economy. A safe, reliable, and efficient transportation infrastructure must be in place in order for people and goods to move from one place to another. Good transportation infrastructure can promote economic growth.

i. Key Economic Spaces (KES)

In collaboration with other agencies participating in Hillsborough County's Transportation for Economic Development (TED) effort, the Hillsborough MPO analyzed existing employment patterns and future growth potential, identifying a number of clusters of "key economic spaces" comprising at least five thousand jobs today. As shown in **Figure 3-24**, many of these have great potential. **Figure 3-25** is a clustered dot density map that displays jobs in Hillsborough County.

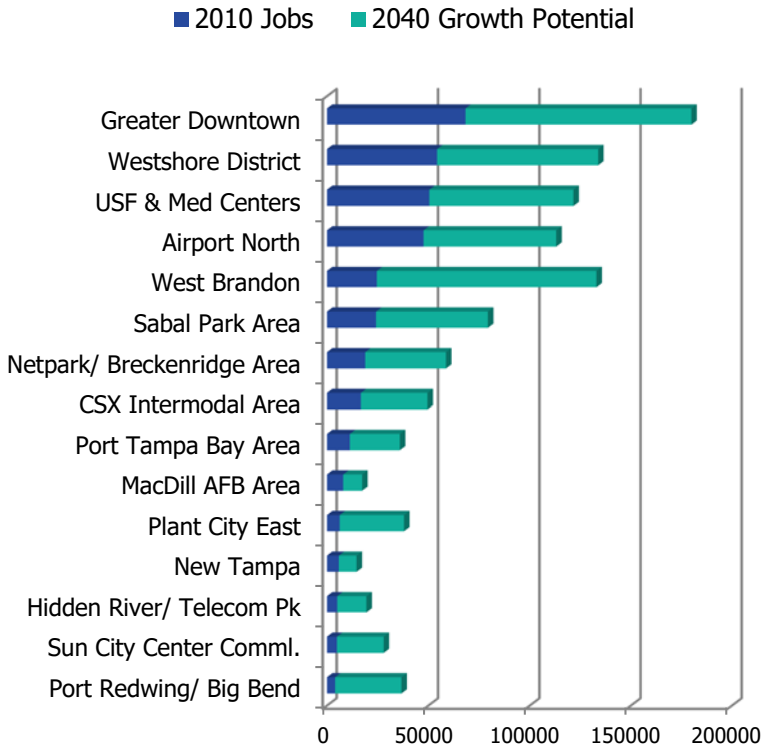


Figure 3-24
Key Economic Spaces & Potential Growth 2010 and 2040 Job Estimates

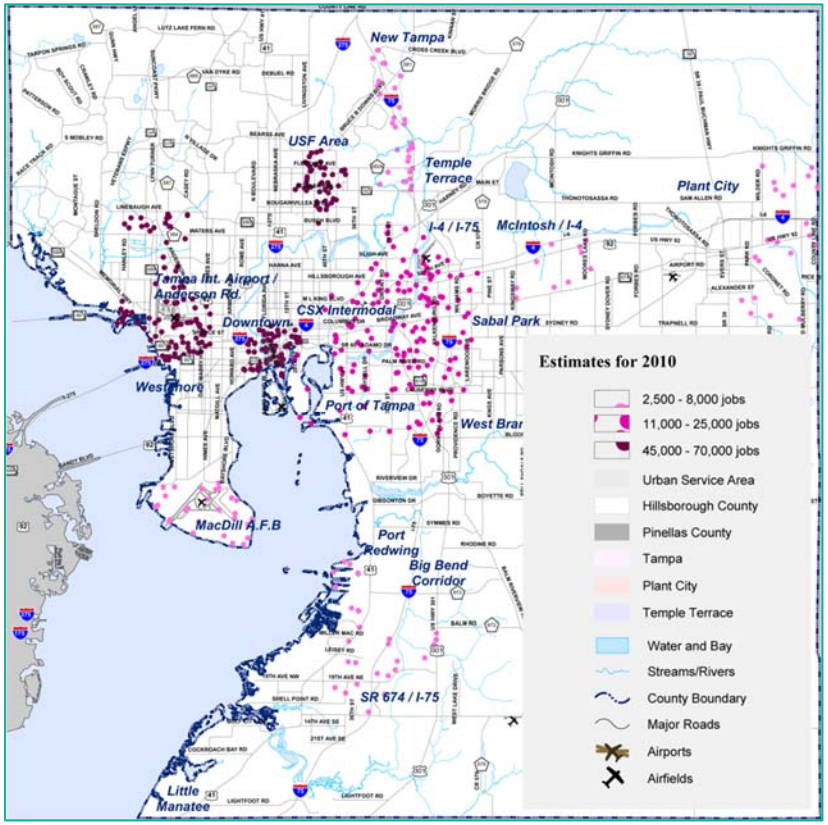
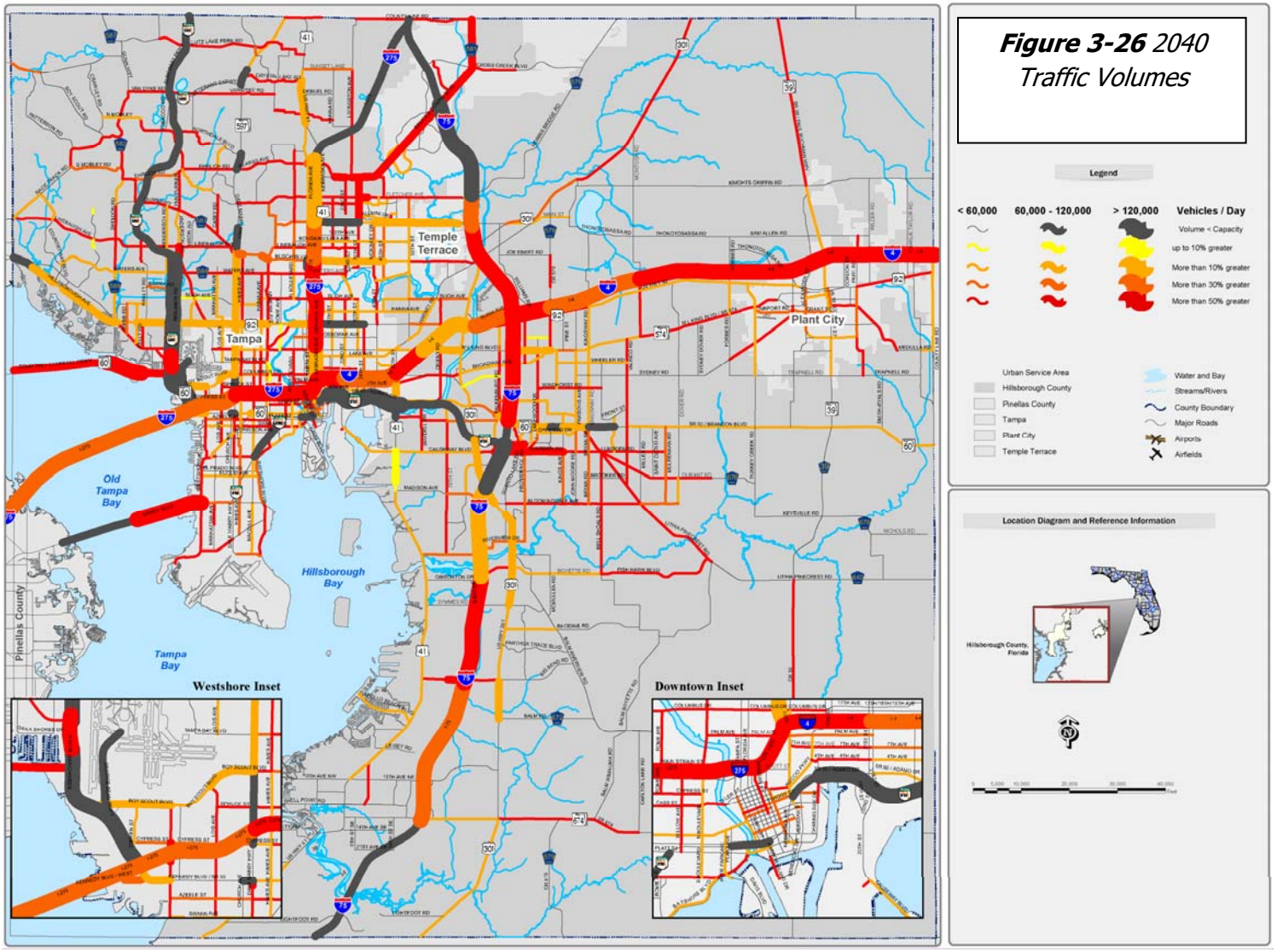


Figure 3-25 *Job Clusters in Hillsborough County*

While growth is desirable, it also presents challenges, as shown in **Figure 3-26**. The most heavily congested corridors in 2040 are forecast to be greater than 50% over their capacity.

To maintain good connectivity within and between Hillsborough's key economic spaces, and to other major activity centers in the region and state, strategic capacity improvements have been identified. Roadway widening and extension projects that serve key economic spaces *and* are forecast to be at least 30% over capacity in 2040 have been identified as 2040 Needs.

This evaluation was used to focus limited resources on projects that provide the greatest benefit. Other road capacity projects remain in the Longer Range Vision. Such congested corridors which are less than 30% over capacity by 2040 can potentially be addressed with a combination of less costly strategies such as advanced traffic management systems, intersection geometry, travel demand management, mixed-use development, and cultivating walk, bike and transit usage.



Traffic Volumes Higher Than Roadway Capacity In 2040 If No Improvements Are Made Beyond Those In The Currently Funded Five-Year Improvement Programs

By taking this two-tiered approach, 41 distinct projects were identified that met the Key Economic Space and 30% Over Capacity criteria.

An upgraded transit system can also facilitate connections between economic centers. **Figure 3-27** is a map displaying the potential transit connections between major KES areas such as downtown Tampa, Westshore, and USF. In addition possible regional connections to Pinellas County, Pasco County, and Orlando are shown.

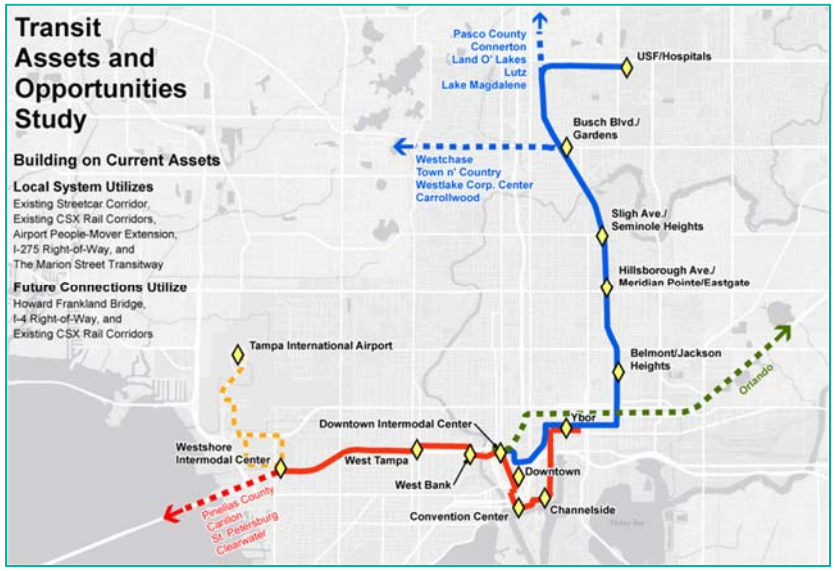


Figure 3-27
Map of Potential Transit KES and Regional Connections

Another proposed project to connect KES areas, the Westshore Multimodal Center, is a FDOT project coordinated with the Hillsborough MPO and HART, to construct a multimodal center on the north side of I-275 between Trask Street and Manhattan Avenue. The multimodal center will serve multiple modes of transit and provided a location to connect from one mode of transit to another. The Westshore Multimodal Center also has the potential to connect to the proposed people mover at Tampa International Airport. **Figure 3-28** is a rendering of the proposed Westshore Multimodal Center.

Figure 3-29 is the *Imagine 2040 Plan* 2040 needs project list. The project list includes a mixture of roadway widening and extensions, interchange modifications, and fixed-guideway transit projects. The list gives an estimate of the total project cost in 2014 dollars; the two main performance measures, delay reduction and the number of jobs in the vicinity of the project; and the key economic space that the project serves.

This project list is financially unconstrained, meaning if money were not an issue, these are the projects that should be built by 2040 to accommodate the projected growth that Hillsborough County is anticipating. The list *is* constrained by the comprehensive plans of the local governments, which identify some roadways which will not be widened regardless of congestion due to severe impacts on neighborhoods, environmental or cultural resources.

Some projects in the list have been studied before, while others are new concepts which require further evaluation. The fixed guideway transit projects listed arise from the recent MPO's *Transit Assets & Opportunities Study,* which builds on several previous studies of rail and bus rapid transit, including the HART Alternatives Analysis of 2010 and the MPO's Post-Referendum Analysis of 2011-2012. The *Transit Assets & Opportunities Study* focused on key central corridors where there is high congestion, high demand, and little available right-of-way, as the right place to start investing in transit. It pointed towards least-cost technologies, such as adding passenger vehicles on existing underutilized freight rail track, and modernizing and extending TECO Streetcar to serve major destinations such as the downtown office core and Westshore business district. Both of these potential investments provide an opportunity for future extensions to serve other major regional destinations.

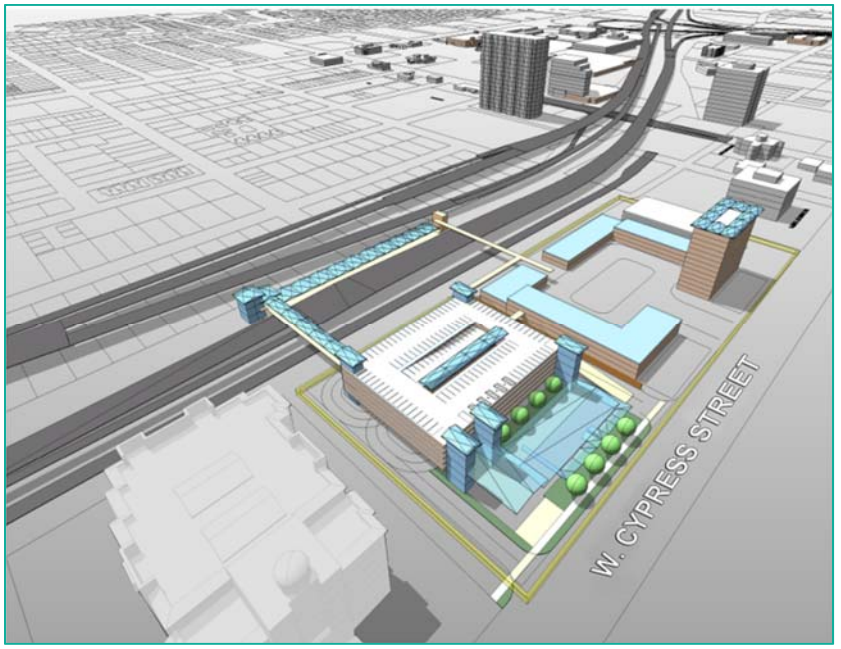


Figure 3-28 *Rendering of Proposed Westshore Multimodal Center*

Figure 3-29: 2040 Needs Assessment for Capacity Projects

Project No.	Facility	From	To	Existing or Committed Lanes	MPO 2040 Needed Lanes	TOTAL PROJECT	Local Govt. Cost Share	Delay Reduction / Centerline Mile	2040 Jobs / Centerline Mile	Imagine 2040 Business District
1023	131ST AVE	NEBRASKA AVE	30TH ST	2U	4D	$31,940,903		22	3779	USF Area
1024	46TH ST	FLETCHER AVE	SKIPPER RD	2U	4D	$21,249,674		17	1017	USF Area
1025	78TH ST	MADISON AVE	CAUSEWAY BLVD	2U	4D	$33,402,905		-14	620	Pt Tampa Bay
1026	ANDERSON RD	HILLSBOROUGH AVE	HOOVER	2U	4D	$20,493,667		290	2573	Airport North
1051	ANDERSON RD	SLIGH AVE	LINEBAUGH AVE	4D	6D	$61,306,780		374	1879	Airport North
1027	ARMENIA AVE	SLIGH AVE	BUSCH BLVD	2U	3D	$13,744,404		120	910	
1052	BEARSS AVE	I-275	BRUCE B DOWNS BLVD	4D	6D	$60,007,232		380	942	USF Area
1079	BIG BEND RD	US HWY 41	COVINGTON GARDEN DRIVE	4D	6D	$55,968,000		235	713	Pt Redwing/ Big Bend
1049	BLOOMINGDALE AVE	US 301	BELL SHOALS RD	4D	4D + 1 SUL	$3,401,694		382	283	Brandon West
1029	BROADWAY AVE (CR 574)	62ND ST	US 301	2U	3D	$21,059,794		116	938	CSX Area
1055	CR 579	US 92	I-4	4D	6D	$17,469,138		124	799	Sabal Park Area
1056	CR 579	I-4	SLIGH AVE	2U	6D	$5,322,851		26	623	Sabal Park Area
9996	DAVIS RD	HARNEY RD	MAISLIN DR	0	2U	$3,000,000				NetPark Area
Rail1	FIXED GUIDEWAY TRANSIT	USF-DTN TRANSIT CORR.	PINELLAS COUNTY LINE	0	DMU on existing track	$341,492,500	>25%			Airport North
Rail1.1	FIXED GUIDEWAY TRANSIT - OPERATIONS FOR 10 YEARS	USF-DTN TRANSIT CORR.	PINELLAS COUNTY LINE	0	DMU on existing track	$68,925,650	>75%			Airport North
Rail2	FIXED GUIDEWAY TRANSIT	USF-DTN TRANSIT CORR.	PASCO COUNTY	0	DMU on existing track	$175,087,500	>25%			USF Area
Rail2.1	FIXED GUIDEWAY TRANSIT - OPERATIONS FOR 10 YEARS	USF-DTN TRANSIT CORR.	PASCO COUNTY	0	DMU on existing track	$31,288,620	>75%			USF Area
95	FIXED GUIDEWAY TRANSIT	YBOR CITY	DOWNTOWN	Streetcar	Capital Maint. / Modernization	$39,013,278				Greater Downtown
1030	FALKENBURG RD	BRYAN RD	HILLSBOROUGH AVE	2U	4D	$19,362,598		-4	2394	Sabal Park Area
1057	FLETCHER AVE	30TH ST	MORRIS BRIDGE RD	4D	6D	$133,177,618		1169	2131	New Tampa & Hidden River
1058	HILLSBOROUGH AVE	50TH ST	ORIENT RD	4D	6D	$57,179,338		736	1802	NetPark Area

Figure 3-29: 2040 Needs Assessment for Capacity Projects

Project No.	Facility	From	To	Existing or Committed Lanes	MPO 2040 Needed Lanes	TOTAL PROJECT	Local Govt. Cost Share	Delay Reduction / Centerline Mile	2040 Jobs / Centerline Mile	Imagine 2040 Business District
INT4	I-75	at BIG BEND ROAD		0	Interchange	$41,500,000				Interstate Improvements
1019	INTERBAY	DALE MABRY HWY	MANHATTAN	2U	3D	$8,546,945		39	586	MacDill AFB Area
1013	LAKEWOOD	SR 60	SR 574	2U	3D	$23,793,607		58	289	Sabal Park Area
1059	LINEBAUGH AVE	SHELDON RD	VETERANS EXWY	4D	6D	$49,841,161		222	377	Airport North
1031	LIVINGSTON AVE	BEARSS RD	VANDERVORT RD	2U	4D	$41,089,091		243	303	New Tampa & Hidden River
1034	NEW E/W ROAD (NEW TAMPA)	I-275	COMMERCE PARK BLVD	0	4D	$103,138,992		569	55	New Tampa & Hidden River
1035	NEW TAMP BLVD	COMMERCE PARK BLVD	BRUCE B DOWNS BLVD	2U	4D	$ 23,915,301		12	166	New Tampa & Hidden River
1014	OCCIDENT ST EXTENSION	CYPRESS ST.	WESTSHORE PLAZA	0	2U	$4,846,783		261	18647	Westshore
1036	PARSONS AVE/ JOHN MOORE RD	BLOOMINGDALE AVE	SR60/BRANDON BLVD	2U	4D	$63,250,919		16	723	Brandon West
1037	PROGRESS BLVD	FALKENBURG RD	US HWY 301	2U	4D	$24,259,271		-51	169	Brandon West
Rail3	FIXED GUIDEWAY TRANSIT	DOWNTOWN	USF	0	DMU on existing track	$296,700,000	>25%			Greater Downtown
Rail3.1	FIXED GUIDEWAY TRANSIT OPERATIONS FOR 10 YEARS	DOWNTOWN	USF	0	DMU on existing track	$54,000,000	>75%			Greater Downtown
Rail4	FIXED GUIDEWAY TRANSIT	DOWNTOWN	WESTSHORE	0	Modern Tram	$455,975,000	>25%			Greater Downtown
Rail4.1	FIXED GUIDEWAY TRANSIT - OPERATIONS FOR 10 YEARS	DOWNTOWN	WESTSHORE	0	Modern Tram	$57,000,000	>75%			Greater Downtown
Rail5	FIXED GUIDEWAY TRANSIT	WESTSHORE	TAMPA INTERNATIONAL AIRPORT	0	Automated People Mover	$206,508,862	>25%			Greater Downtown
Rail5.1	FIXED GUIDEWAY TRANSIT OPERATIONS FOR 10 YEARS	WESTSHORE	TAMPA INTERNATIONAL AIRPORT	0	Automated People Mover	$38,000,000	>75%			Greater Downtown
124A	SAM ALLEN RD W	ALEXANDER ST EXT	W OF PAUL BUCHMAN HWY	2U	4D	$7,120,000				Plant City East
1038	SAM ALLEN RD EXTENSION	E OF PARK RD	WILDER RD	2U	4D	$9,239,668		189	240	Plant City East

Figure 3-29: 2040 Needs Assessment for Capacity Projects

Project No.	Facility	From	To	Existing or Committed Lanes	MPO 2040 Needed Lanes	TOTAL PROJECT	Local Govt. Cost Share	Delay Reduction / Centerline Mile	2040 Jobs / Centerline Mile	Imagine 2040 Business District
1040	SAM ALLEN RD EXTENSION	WILDER RD	COUNTY LINE RD	0	4D	$55,543,005		20	101	Plant City East
1041	SKIPPER RD	BRUCE B DOWNS BLVD	46TH ST	2U	4D	$11,384,888		47	1476	New Tampa & Hidden River
1042	SR 674	US 301	CR 579/SAFFOLD RD	2U	4D	$49,192,157		115	57	Sun City Center
1015	TRAPNELL RD EXTENSION	NESMITH RD	COUNTY LINE RD	0	2U	$4,741,351		94	101	Plant City East
1022	TRASK ST	CYPRESS ST.	BOY SCOUT BLVD	2U	3D	$4,774,371		341	14059	Westshore
1016	TRASK ST EXTENSION	CYPRESS ST.	GRAY ST	0	2U	$2,723,967		192	16368	Westshore
1043	US HWY 92	US HWY 301	CR 579	2U	4D	$51,213,498		57	1760	Sabal Park Area
1044	US HWY 92	CR 579	THONOTOSASSA RD	2U	4D	$203,419,551		150	290	Sabal Park Area
1045	US HWY 92	REYNOLDS ST	COUNTY LINE RD	2U	4D	$61,918,234		119	568	Plant City East
MMC1	FIXED GUIDEWAY CENTER WESTSHORE	CYPRESS ST.	TRASK ST	0	Transit Center	$35,040,500				Westshore
1046	WILLIAMS RD	BROADWAY AVE	SLIGH AVE	2U	4D	$48,673,711		28	1322	Sabal Park Area
1047	WOODBERRY RD	FALKENBURG RD	GRAND REGENCY BLVD	2U	4D	$12,339,404		156	1751	Brandon West
1048	WOODBERRY RD	GRAND REGENCY BLVD	LAKEWOOD DR	2D	4D	$24,851,874		58	511	Brandon West
1091	EVERHART RD EXTENSION	FALKENBURG RD	US301	0	3D	$3,436,524		10	396	Brandon West
1100	US HWY 41	CAUSEWAY BLVD	CSX INTL YARD		New Interchange	$96,750,000		3336	Interchange N/A	Brandon West
1099	MEMORIAL HWY	INDEPENDENCE PKWY	HILLSBOROUGH AVE		6D	$65,241,955		1470	60	Airport North
Water	WATER TRANSIT	PORT REDWING	MACDILL AFB		Commuter Ferry	$16,934,000				MacDill AFB Area
9999	62ND STREET	COLUMBUS DR	CSX INTL YARD	2U	3D	$4,889,776				CSX Area

Strategic Intermodal System

FDOT District 7 has a long range planning list of projects that have a horizon year for the Strategic Intermodal System (SIS). FDOT classifies SIS facilities as those that have statewide and interregional significance. SIS facilities contain all modes of transportation for moving people and goods including linking transfers between modes and facilities. **Figure 3-30** shows the future express lanes and intermodal system planned for Hillsborough and Pinellas counties. SIS projects include replacement of the northbound span of the Howard Frankland Bridge, modification of the I-275 & SR 60 interchange near Tampa International Airport, and express lanes on Tampa Bay area interstates. **Figure 3-31** is a table detailing all SIS projects projected to be needed through 2040.

FDOT conducted an express lanes study on interstates in the three core Tampa Bay counties (Hillsborough, Pasco, and Pinellas). Express lanes are proposed to be constructed along I-275 from the Gateway Area in Pinellas County across the Howard Frankland Bridge and onto Wesley Chapel in Pasco County. In the long term, express lanes are proposed to be constructed along I-4 from I-275 to the Polk County line and along I-75 from Wesley Chapel in Pasco County to SR 674 in southern Hillsborough County.

The express lanes are anticipated to be constructed separate from the general purpose lanes and accommodate longer distance trips and express bus service. Express bus routes are proposed to connect Pinellas County, Westshore/Tampa International Airport, Downtown Tampa, and the USF Area. These express lanes will be tolled with variable pricing dependent on how congested the corridor's general purpose lanes are.

Figure 3-30 *Tampa Bay Express Lanes and Intermodal System*

Figure 3-31: Financially Unconstrained SIS 2040 Needs Project List (Amended June 11, 2019)						
Project No.	**Facility**	**From**	**To**	**Existing or Committed Lanes**	**TOTAL PROJECT* ($ millions)**	**MPO 2040 Needed Lanes**
1002	I-275	N OF HOWARD FRANKLAND	S OF SR 60	6F	$65.00	8 + 4 Express Toll Lanes
1003	I-275	S OF LOIS AVE	HILLSBOROUGH RIVER BRIDGE	6F	$140.90	2 Express Toll Lanes
1005	I-275 @ I-4	ROME AVE / I-275	MLK / SELMON CONNECTOR	8F	$2,182.12	DOWNTONW INTERCHANGE
1008	I-4	E OF 50TH STREET	POLK PARKWAY	6F	$2.709.87	4 Express Toll Lanes
1008	I-4	I-4 / SELMON CONNECTOR	E OF MANGO RD	6F	$111.31	2 Express Toll Lanes
	I-4	W OF ORIENT RD	WEST OF I-75	6F	$95.49	Operational Improvements
1009	I-75	SR 674	S OF US 301	6F	$438.94	4 Express Toll Lanes
1010	I-75	S OF US 301	N OF FLECTHER AVE	6F/8F	$1,934.16	4 Express Toll Lanes
1011	I-75	N OF FLETCHER AVE	N OF I-75/I-275 APEX	6F	$309.39	4 Express Toll Lanes
1093	I-275	SR 60 INTERCHANGE			$35.67	SR 60 INTERCHANGE
1093	I-275 NB EXPRESS	N OF HOWARD FRANKLAND	S OF TRASK ST		$113.88	SR 60 INTERCHANGE
1093	I-275 NB FLYOVER	SR 60 EB	I-275 NB		$53.25	SR 60 INTERCHANGE
1093	I-275 SB	N OF REO ST	S OF LOIS AVE		$140.75	SR 60 INTERCHANGE
1093	SR 60	N OF INDEPENDENCE	I-275 AT WESTSHORE		$193.29	SR 60 INTERCHANGE
1006	I-275	N of MLK BLVD	N OF BEARSS AVE	4F/6F	$317.4	8F
Interchange	I-75	S OF CSX/BROADWAY	EB/WB I-4		$61.05	INTERCHANGE
Interchange	I-75	US 301	I-4		$93.46	INTERCHANGE
Interchange	I-75 & SR 60	SR60 @ SLIP RAMP	TO N OF SR 60 AT CSX		$21.47	INTERCHANGE
Interchange	I-75 SB OFF RAMP	S OF BYPASS CANAL	EB/WB I-4	6F	$16.33	INTERCHANGE
Interchange	I-4	TAMPA BYPASS CANAL	EAST OF I-75		$16.66	INTERCHANGE
	I-75	SR 60	BRUCE B DOWNS BLVD	6F	$179.27	2 Express Toll Lanes
	I-75	S OF SELMON EXPRESSWAY	N OF SR 60	6F	$12.78	Operational Improvements
Interchange	I-75	WB SR 60 ENTRANCE RAMP	S OFCSX RR		$23.51	INTERCHANGE
Interchange	I-75	I-75	EAST OF WILLIAMS RD		$3.21	INTERCHANGE
1089	SUNCOAST PARKWAY	VETERANS EXPWY	PASCO COUNTY	4F	$36.,73	6F
	SR 60	VALRICO RD	SR 39	4D	$219.05	6D
1001	US 92	GANDY BRIDGE	DALE MABRY HWY	4D	$125.30	4D + 2F
*Costs for SIS projects are provided by FDOT in future year of expenditure dollars						

Development Based Needs

Traffic congestion is not limited to Hillsborough County's key economic spaces. Recent and upcoming suburban expansion places new burdens on roadways. Development-based needs are road capacity projects that will be constructed to mitigate the traffic impacts of those new and/or expanded developments.

Some projects on the list could be funded as part of development agreements, proportionate share mitigation, or using impact or mobility fees. Changes in Florida's growth management law have led to renegotiations of development agreements, making the long-term funding outlook less clear. There are 28 development based projects identified in the *Imagine 2040 Plan* as shown in **Figure 3-32.**

Figure 3-32: Development Based Needs Projects				
Project No.	Facility	From	To	Project Description
9995	19th Avenue NE	US 41	US 301	Widen to 4 Lanes Divided
1095	24th Street	SR 674	19th Avenue NE	Widen to 4 Lanes Divided
1096	24th Street	19th Avenue NE	Big Bend Road	Widen to 4 Lanes Divided
1097	30th Street	19th Avenue	Apollo Beach Boulevard	New 2 Lane Divided
1094	Apollo Beach Boulevard	US 41	US 301	New 4 Lane Divided
1097	Big Bend Road	US Hwy 41	US Hwy 301	Widen to 6 Lanes Divided
1077	Big Bend Road Ext.	Balm Riverview Road	Boyette Road	New 2 Lane
1090	Camden Field Parkway	US Hwy 41	Falkenburg Road	New 2 Lane
9997	Charlie Taylor Road	I-4	Knights Griffin Road	Add center turn lane
1068	Citrus Park Drive	Linebaugh Ave	Sheldon Rd	New 4 Lane Divided
1088	County Line Road	Swindell Road	Knights Griffin Road	Widen to 4 Lanes Divided
3010	County Line Road	Livingston Avenue	Bruce B. Downs Blvd	Widen to 4 lanes Divided (Pasco County)
1081	Cumberland Street	Ceaser Street	Meridian Street	New 2 Lane Divided
1101	Dale Mabry Hwy	Van Dyke Road	Cheval Boulevard	Widen to 6 Lanes Divided
1074	Falkenburg Road Ext.	78th Street	Dead End	New 2 Lane
1076	Fish Hawk Boulevard	Bell Shoals Road	Lithia Pinecrest Road	Widen to 4 Lanes Divided
1085	K-Bar Parkway	Kinnan Road	Morris Bridge Road	New 2 Lane
1086	Kinnan Street	Dead End	Pasco County*	New 2 Lane Divided
1075	Lithia Pinecrest Road	Bloomingdale Avenue	Adelaide Drive	Widen to 4 Lanes Divided
1066	Lutz Lake Fern Road	Suncoast Parkway	Dale Mabry Hwy	Widen to 4 Lanes Divided
1073	Madison Avenue	US 41	78th Street	Widen to 4 Lanes Divided
1087	Meadow Point Extension	K-Bar Parkway	Beardsley Drive	New 2 Lane
9998	Providence Lake Boulevard	English Bluff Court	S. of Summer Breeze Drive	New 2 Lane
1103	Rhodine Road	US 41	US 401	New 2 Lane
1078	Simmons Loop Road	US 301	Gibsonton Road	New 2 Lane
1080	Summerfield Boulevard/West Lake Drive	SR 674	Balm Road	New 2 Lane
9993	Tyson Street	Westshore Boulevard	Manhattan Boulevard	New 2 Lane
1067	Van Dyke Road	Suncoast N. Ramp	Dale Mabry Hwy	Widen to 4 Lanes Divided
8000	Wilsky Boulevard	Hanley Road	Linebaugh Avenue	Widen to 4 Lanes Divided

The map found in **Figure 3-33** identifies the location of all 2040 needs projects listed in the previous needs projects tables.

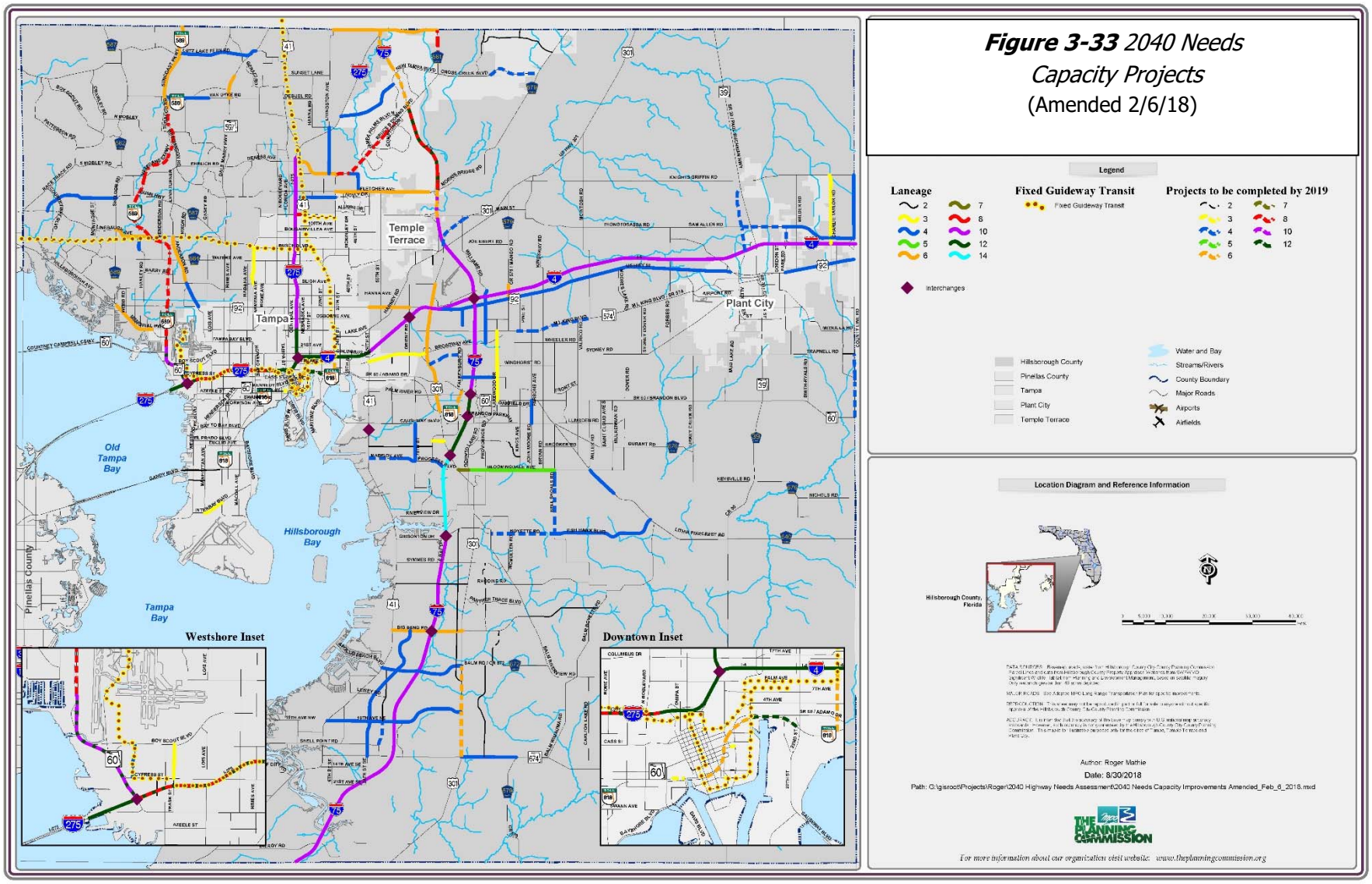


Figure 3-33 *2040 Needs Capacity Projects*
(Amended 2/6/18)

Longer Range Vision/Illustrative Projects

i. Highway Projects In Longer Range Vision

Longer range highway and roadway needs that are beyond 2040 have been identified in **Figure 3-34**. These improvement concepts have been identified in previous plans and studies, but did not meet the threshold for severe congestion by 2040. Examples include the widening of US 301 north of Fowler Avenue from two to four lanes, widening of SR 60 east of Valrico Road from four lanes to six lanes, and the widening of US 41 from Madison Avenue to Ruskin from four lanes to six lanes.

ii. Transit Projects in Longer Range Vision

Longer range transit needs that are in addition to the 2040 transit needs have also been identified in **Figure 3-35.** These improvement concepts have been identified in previous plans and studies, such as the 2035 Long Range Transportation Plan and the TBARTA Master Plan. They include a range of transit modes such as bus rapid transit, express bus routes, regional bus routes, rail, water transit, high speed rail, and streetcar system.

Conclusion

Chapter 2 has shown that Hillsborough County is projected to grow by nearly 600,000 people by 2040. In order accommodate this anticipated population growth, the Hillsborough MPO must identify the transportation needs for the horizon year of 2040. Chapter 3 of *Imagine 2040* identifies these transportation needs and what kind of projects can be funded depending on the investment level that the residents of Hillsborough County are willing to fund. The next step is to identify funding sources and estimate the revenues from these funding sources in order to pay for the projects and at which investment level.

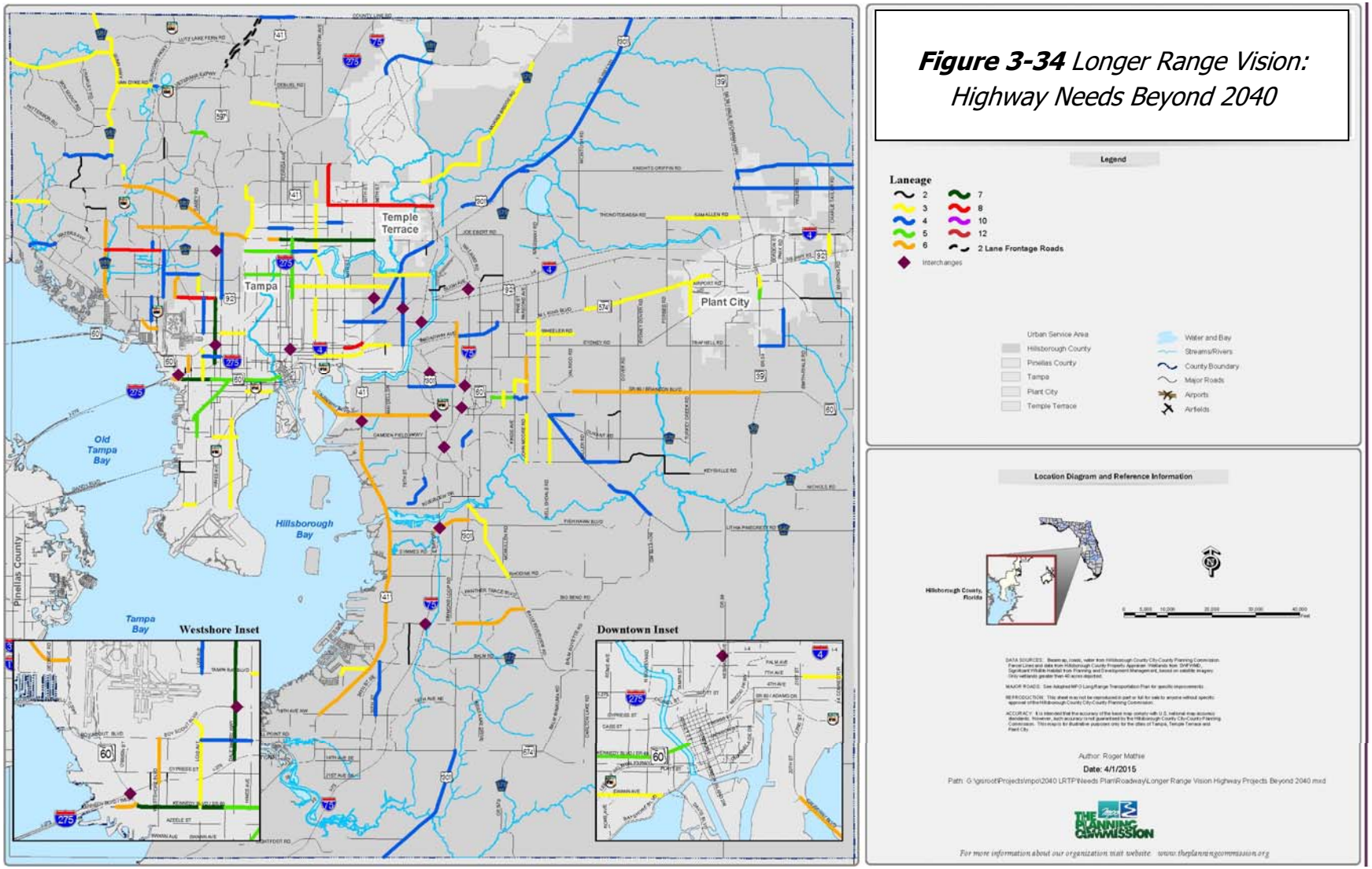


Figure 3-34 *Longer Range Vision: Highway Needs Beyond 2040*

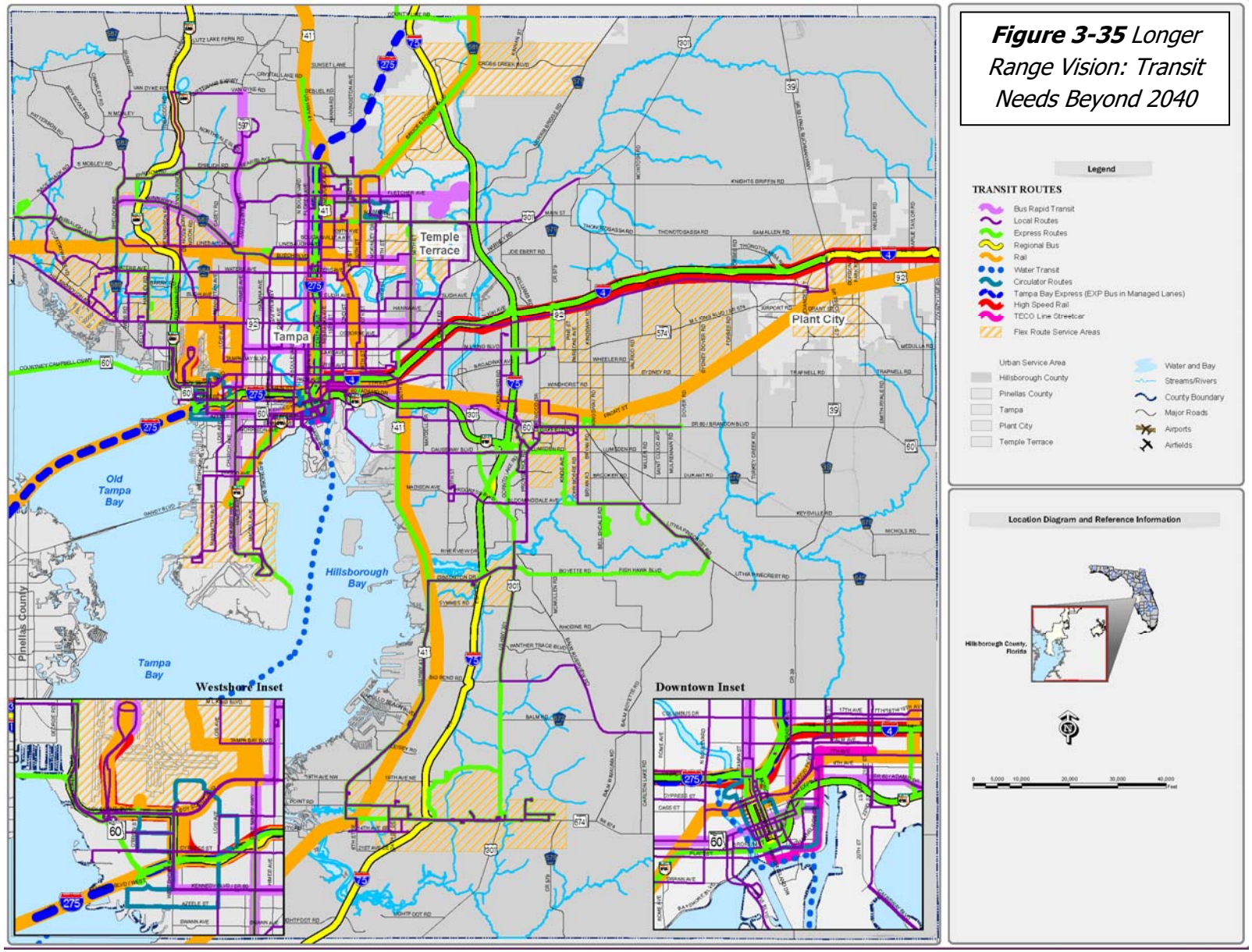


Figure 3-35 *Longer Range Vision: Transit Needs Beyond 2040*