2050 LRTP Needs Assessment for Congestion Management & Crash Mitigation

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Introduction

2050 Plan Ingredients

Revenue Forecast – Estimated value, thru 2050, of existing funding streams & potential local-option revenue sources

Needs Assessments – *including cost estimates, performance forecasts, and performance-based prioritization*

➢ Congestion Management & Crash Mitigation – safety treatments and traffic flow treatments

➢ Good Repair and Resilience – Pavement, bridge, & transit vehicle maintenance, stormwater systems expansion and vulnerable road hardening
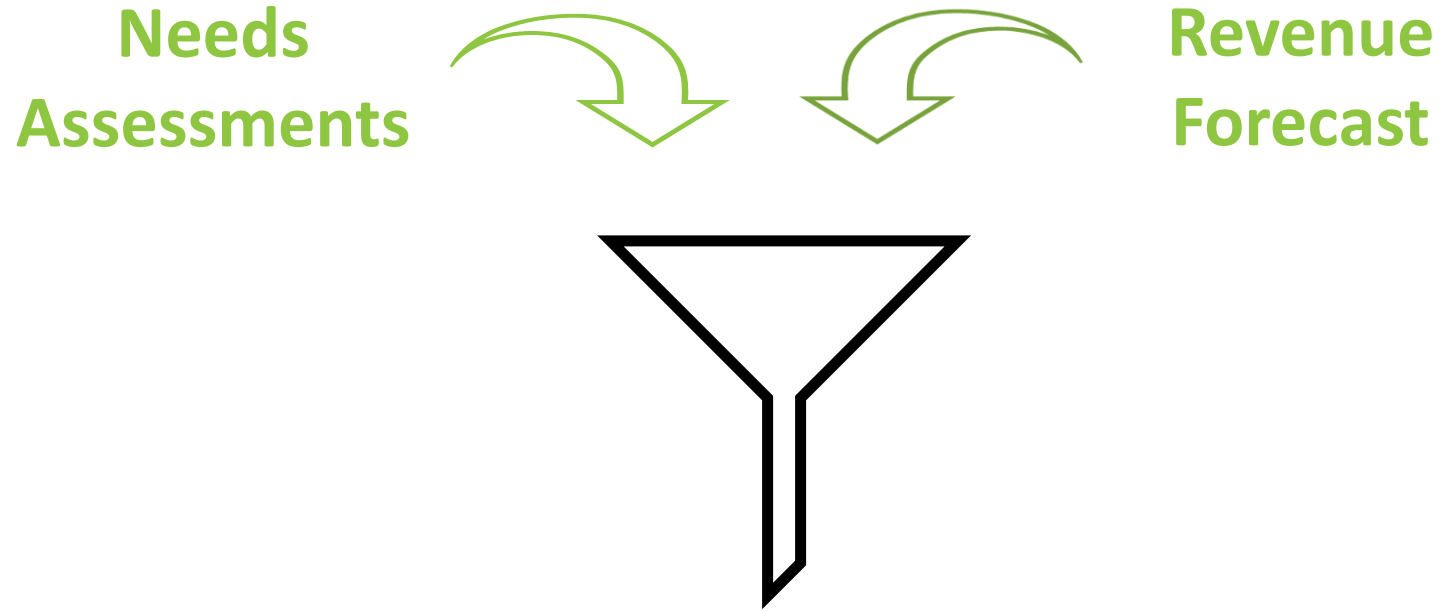
Needs Assessments (cont'd)

➤ Real Choices When Not Driving – Bus and circulator services, paratransit/TD services, trails and side paths separated from motor vehicle lanes

➤ Major Investments for Economic Growth – New or wider highways/ major roads, separated grade interchanges, fixed-guideway transit including BRT, rail, ferry

➤ Goods Movement & Truck Routes – Major projects as well as lower-cost traffic flow treatments focusing on freight flows

➤ Equity – Safety treatments, Good Repair & Real Choices projects to address sub-par infrastructure and public health in underperforming areas
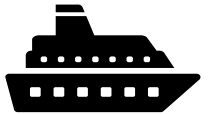
The 2050 Plan: Putting the pieces together

Needs Assessments

Revenue Forecast

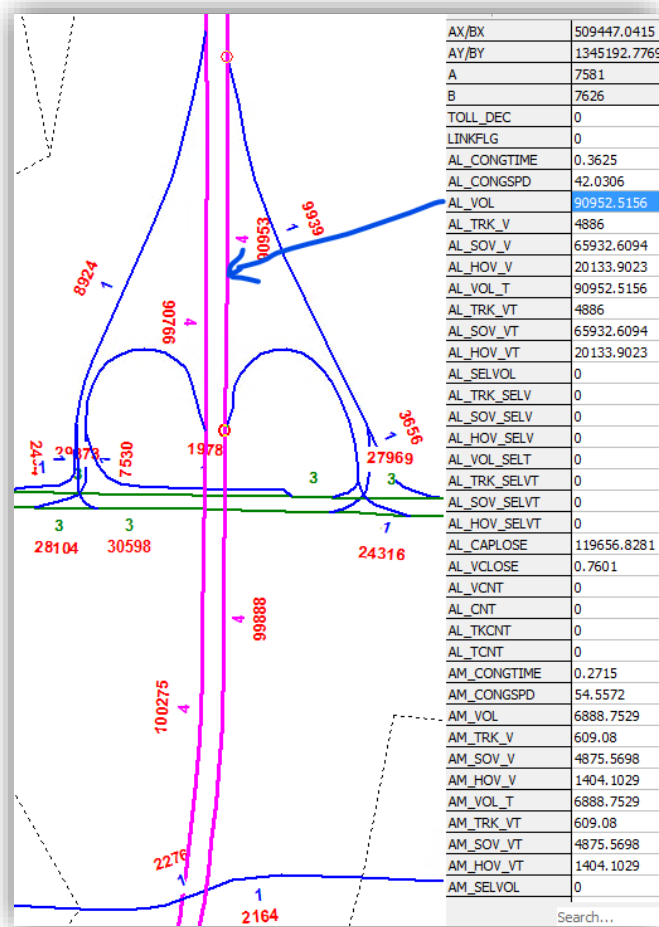Various scenarios using revenue sources ("cost feasible scenarios")

Public input

Board consideration of preferred scenario

Methodology

Needs Assessment Development

Tampa Bay Regional Planning Model (TBRPM)

Flowchart:
- How many trips?
- Where are they going?
- How are they going?
- Traffic on the network

- Results from TBRPM include future traffic volumes
- Sketch tool uses traffic volumes to forecast travel reliability, minutes of delay and crashes on major roads
- Treatments were applied to roads based on their congestion and crash performance
- Treatments were selected by the local governments based on recently completed projects

Reliable travel means that unpredictable circumstances do not cause lengthy, unpredictable, and frustrating delays.

Unpredictable Circumstances...

| Inclement Weather	Fluctuations in Demand	Crashes	Work Zones	Poorly Timed Traffic Signals

...Cause Unpredictable Delays.

Reliable travel: Most trips take about the same length of time. Under these conditions, users can expect to arrive on-time without worry and without unexpected delay.

Unreliable travel: Trips lengths are highly variable. It is difficult to judge how long a trip will take before making a trip and users often will build in extra time to ensure that they will arrive on-time. These users *expect* there to be unpredictable delay.

Travel Time
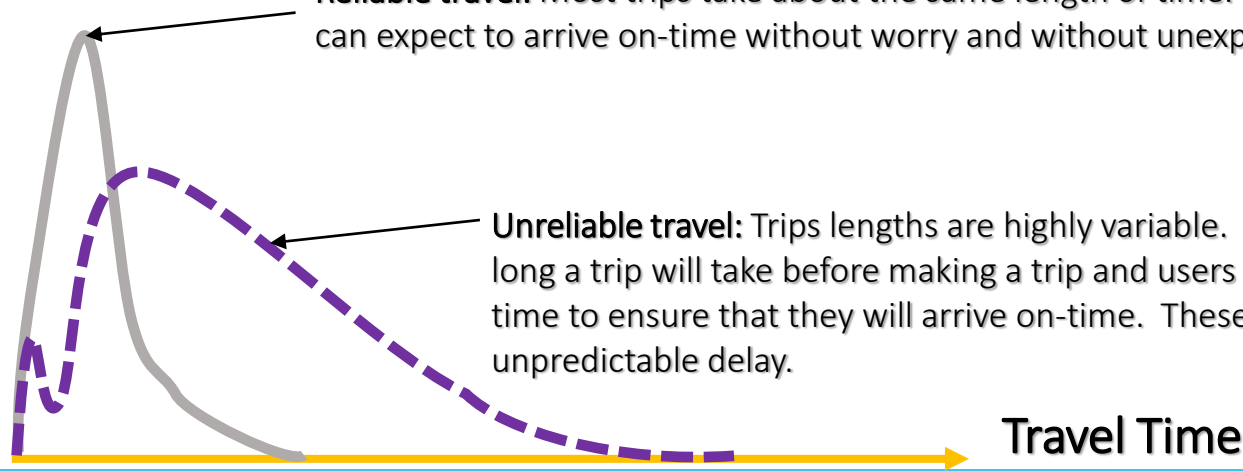
Congestion Management Scenarios

Scenario 1 – TREND (Funding reflecting current spending)

- Annual budget for treatments: $24 M

- Treatments focused on the most congested roads

- Freeways: Ramp Metering and Part-time Hard Shoulder Running

- Arterials & Collectors: Real-Time Traffic Adaptive Signal Control

Congestion Management Scenarios

Scenario 2 – PERFORMANCE (Funding increased to improve system performance

- Annual budget for treatments: $48 M

- Treatments focused on the most congested roads

- Freeways: Ramp Metering, Part-time Hard Shoulder Running, Traffic Incident Management

- Arterials & Collectors: Real-Time Traffic Adaptive Signal Control and Left-Turn Lanes at Intersections where applicable
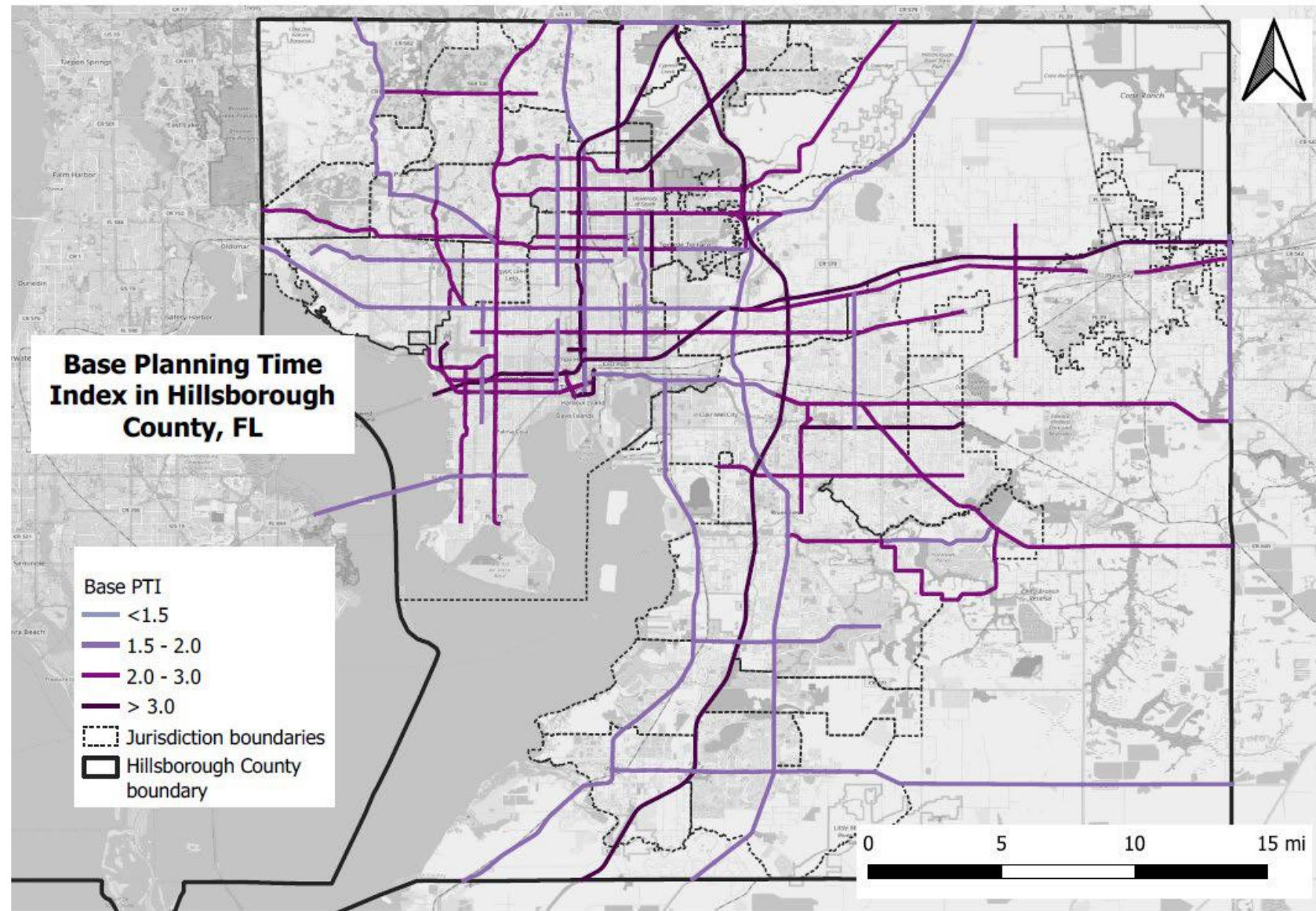
Impact of Congestion Management Treatments

Highway Type	Miles Improved				Peak Delay Reduction		Annual Investment Cost in M	
	Trend	Percentage	Performance	Percentage	Trend	Performance	Trend	Performance
Collector	48	3%	238	12%	17%	59%	$1.50	$12.00
Divided Arterial	147	13%	147	13%	49%	49%	$9.00	$9.50
Undivided Arterial	56	13%	56	13%	48%	53%	$3.50	$5.00
Interstate/ Freeway	49	15%	108	33%	64%	87%	$9.00	$21.00
Total	300	8%	548	14%	48%	70%	$24.00	$47.00

Planning Time Index (Reliability) for Selected Arterial Roadways Prior to TSMO Investments

Base Planning Time Index in Hillsborough County, FL

Base PTI
- <1.5
- 1.5 - 2.0
- 2.0 - 3.0
- > 3.0
- Jurisdiction boundaries
- Hillsborough County boundary

0   5   10   15 mi

Planning Time Index (Reliability) for Selected Arterial Roadways After TSMO Investments

Improved Planning Time Index in Hillsborough County, FL

Improved PTI
— < 1.5
— 1.5 - 2.0
— 2.0 - 3.0
— > 3.0
⋯ Jurisdiction boundaries
▢ Hillsborough County boundary

0   5   10   15 mi
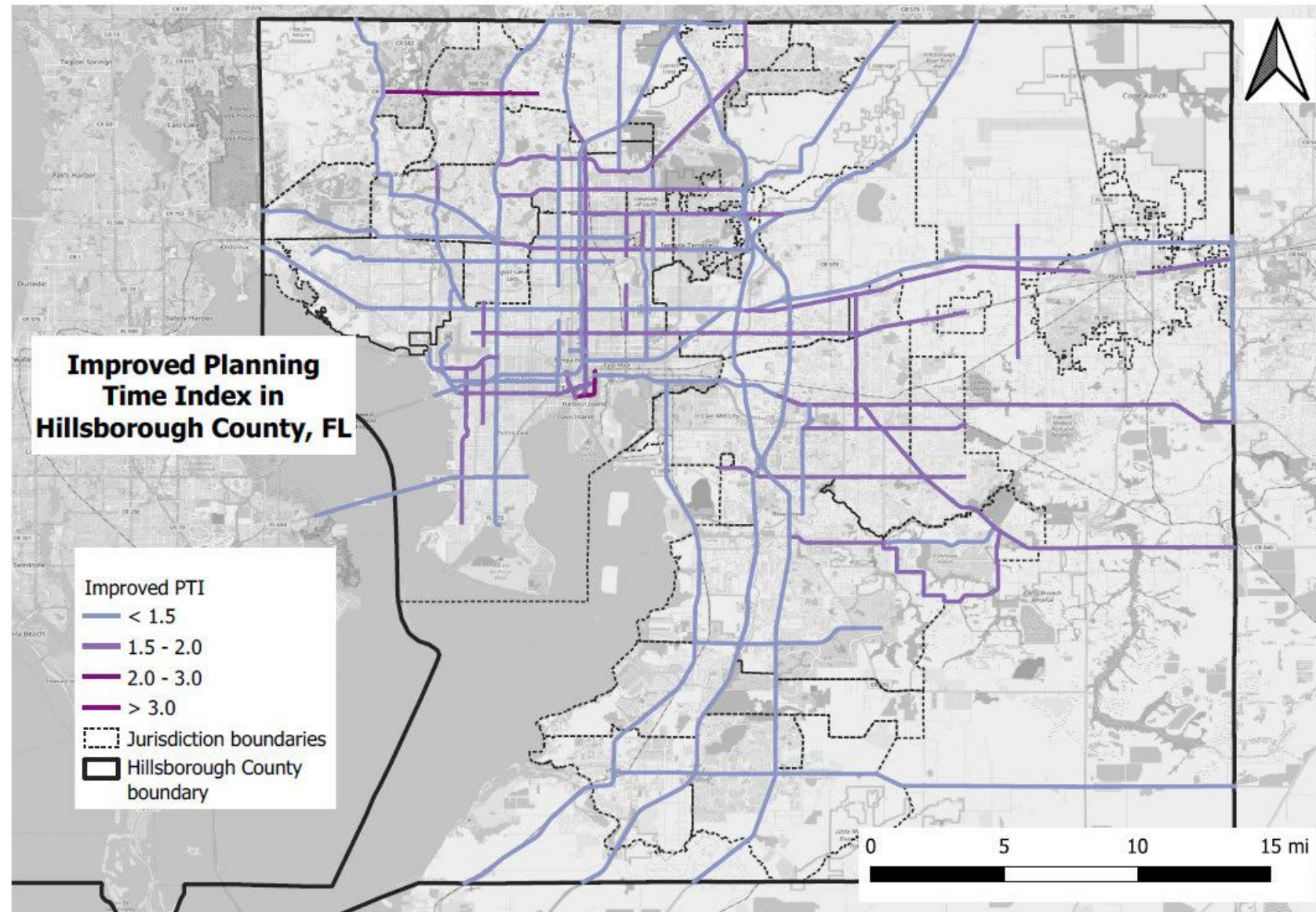
Crash Mitigation Scenarios

Annual Budget : $25 M for TREND and $50 M for PERFORMANCE

- Improvements considered on Arterials and Collectors

  - Bike Lanes

  - Intersection Lighting

  - Pedestrian Crosswalks and Signals

  - Convert TWLTL to raised median

  - Reduce Driveway Density

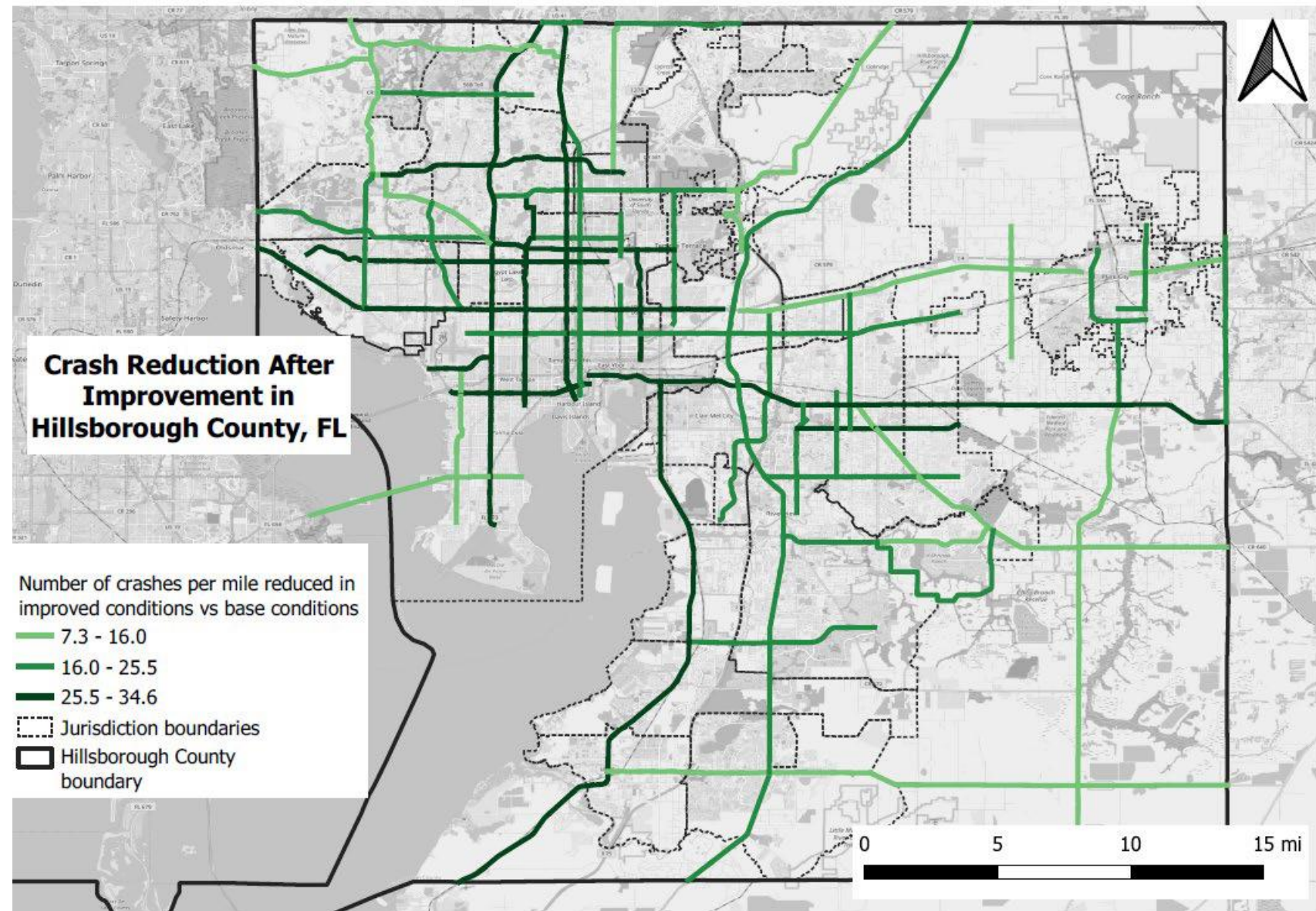 - Speed Control/Enforcement

  - Traffic Calming
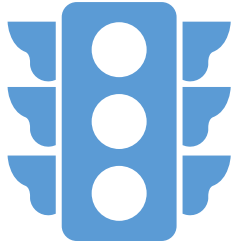
Impact of Crash Mitigation Treatments

Highway Type	Miles Improved		Total Crashes		Fatal Crashes		Ped + Bike		Annual Investment Cost in M	
	Trend	Performance	Trend	Performance	Trend	Performance	Trend	Performance	Trend	Performance
Divided Arterial	565	565 (51%)	59%	59%	59%	59%	82%	82%	$21	$24
Collector	0	277 (14%)	0%	39%	0%	40%	0%	43%	$0*	$11
Undivided Arterial	77	220 (50%)	40%	64%	42%	63%	43%	80%	$4	$15
Total	642	1062 (28%)	33%	43%	44%	54%	55%	71%	$25	$50

* In Trend Scenario money is expended before adding treatments on all corridors

Crash Reductions on Selected Arterial Roadways Due to Safety Improvements

Crash Reduction After Improvement in Hillsborough County, FL

Number of crashes per mile reduced in improved conditions vs base conditions
- 7.3 - 16.0
- 16.0 - 25.5
- 25.5 - 34.6
- Jurisdiction boundaries
- Hillsborough County boundary

0   5   10   15 mi

Congestion

$24 M per year could reduce future peak delay by almost 50% on 300 miles of roadway. Doubling the investment could result in 70% delay reduction on 550 miles of roadway.

Safety

$25 M per year could reduce fatal crashes by 35% and bike ped crashes by 55% on 640 miles of roadway. For $50 M per year, fatal crashes could be reduced by 46% and bike ped crashes could be reduced by 71% on over 1060 miles of roadway by 2050.

Recommended Action:

Approve the Draft 2050 Plan Needs Assessment for Congestion Management and Crash Mitigation

Questions/Comments

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