



## **REMI TranSight in the Tampa Bay Area: Project Analysis and Planning for Resiliency**

Randy Deshazo, Director of Research; Tampa Bay Regional Planning Council  
**2019 Annual Emerald Coast Transportation Symposium**  
**Feb. 25-26, 2019 Navarre, FL**

# Tampa Bay Regional Planning Council (TBRPC)

- **Established in 1962**

Economic Development, Emergency Preparedness, Risk  
Management, Environmental Planning, GIS, and Decision Support

## **Economic Analysis Program**

- +400 economic impact studies since 1999

## **We do not take a position on projects.**

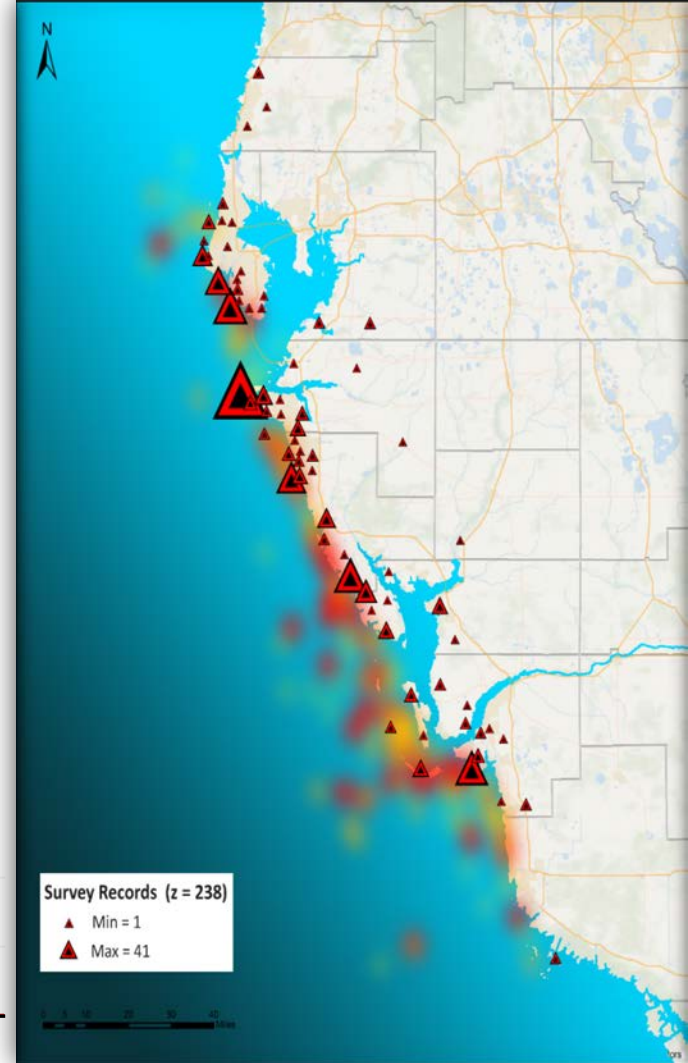
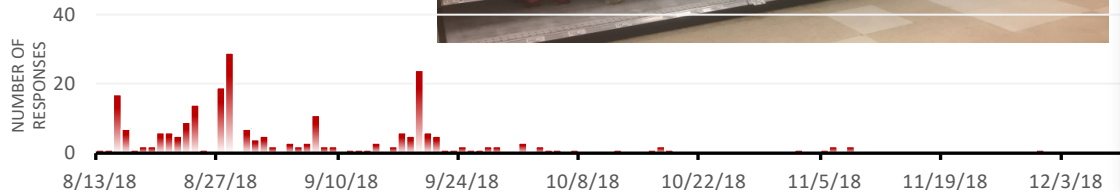
Instead, we are focused on a “just-the-facts” approach

- Six Counties
- 21 Municipalities
- 13 Gubernatorial Appointees
- 3 Ex-Officios
- 5,000 Square Miles
- 3.5 Million People



# Economic impact studies

- Environmental impacts
- Sea Level Rise, Florida Red Tide, and Valuation of Estuarine Services
- Business Development Support
- Firm relocations, Exports, Base studies, Industry studies, Supply Chains
- Transportation Investment
- Coast to Coast Trail, Tampa Bay Next, Resilient Transportation
- Special Event impacts
- Festivals and hurricanes

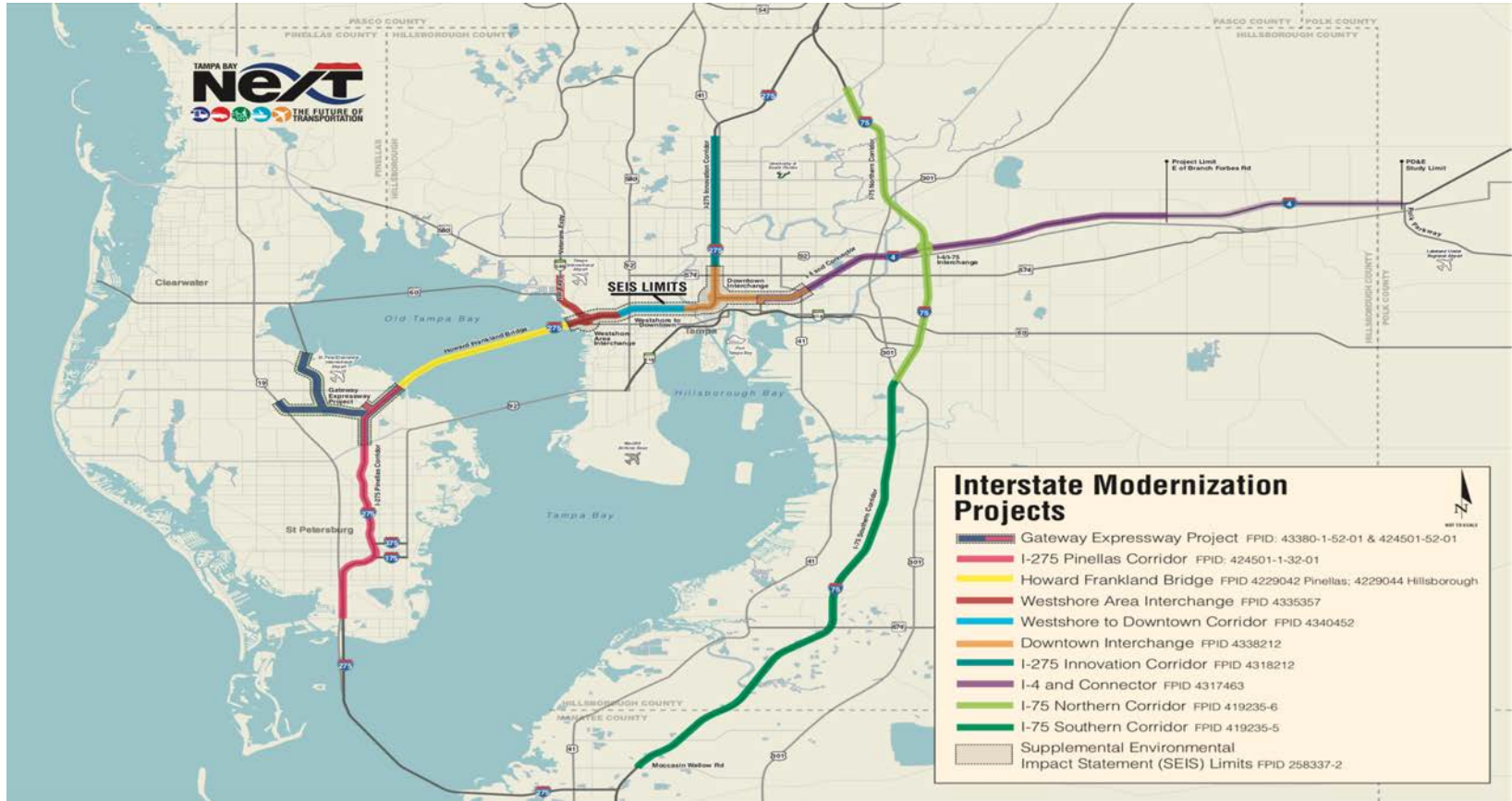


# Case Study 1:

- Tampa Bay Next and Impacts of Downtown Interchange Reconstruction
- FDOT contracted with TBRPC to address both community concerns and SEIR questions



# Study Background II: Tampa area interstate modernization

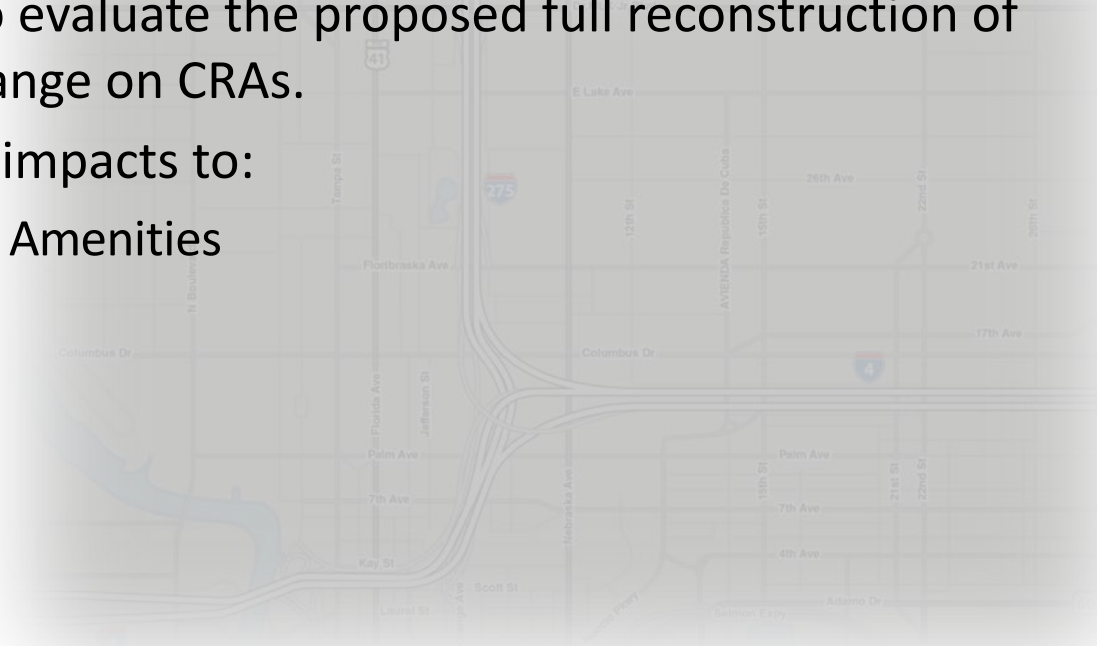


## Study Background I: Most Tampa Bay highway facilities already exceed design capacity

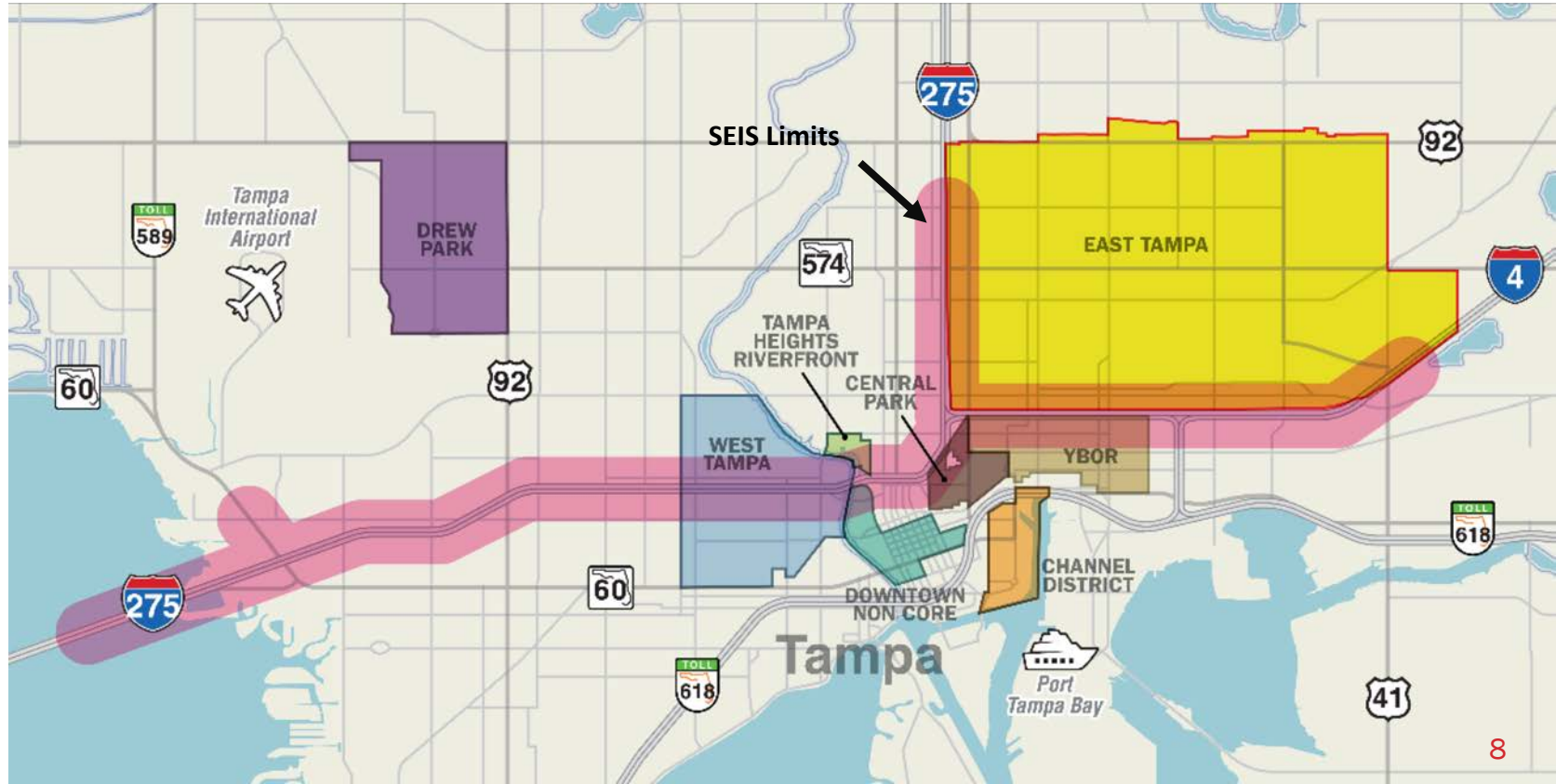
Regional Network Trips	Trips	Vehicle Miles Traveled (VMT)	Vehicle Hours Traveled (VHT)	Average Speed (MPH)
Year 2006	4,324,962	43,695,389	1,424,927	30.67
Year 2035 No Further Action	7,057,463	74,716,754	2,885,654	25.89
Year 2035 Non-Tolled Express Lanes	7,057,463	74,996,105	2,788,831	26.89
Year 2035 Tolled Express Lanes	7,057,463	75,393,835	2,768,213	27.24

# Downtown interchange reconstruction concerns

- City of Tampa Community Redevelopment Agency Board requested impact study in 2016 to evaluate the proposed full reconstruction of the Downtown Interchange on CRAs.
- CRA concerns included impacts to:
  - Access to Community Amenities
    - Water Works Park
  - Parking
  - Vacancy Rates
  - Property Values
  - CRA TIF Revenue



# Socio-cultural effects and economic Analysis of CRAs study boundaries





## TBRPC Used Remi Transight:

### **1. With Regional Travel Demand Model output**

Forecast countywide impacts of construction and system performance

### **2. Combining balance of arterial/highway traffic routing and land use**

Develop a 'narrative' of likely sub-area economic impacts

### **3. Modeling property value impacts from construction with statistical techniques**

Create project alternative fiscal impact forecast for CRAs

# **1. With Regional Travel Demand Model output**

Forecast countywide impacts of construction  
and system performance

# Impacts of congestion on commuters and goods movement



## **Commuters Pay More**

Results in loss of time at work and with family.



## **Increased Travel Time**

Longer travel time for transit riders  
Increase in delivery costs.



## **More Delivery Vehicles**

Needed to maintain and grow distribution markets. Higher vehicle costs, more drivers, new routes.



## **Changes in Work Shifts**

Cause additional shifts or cutbacks in production schedules.



## **Increased Inventory Costs**

Increases in inventory safety stocks.

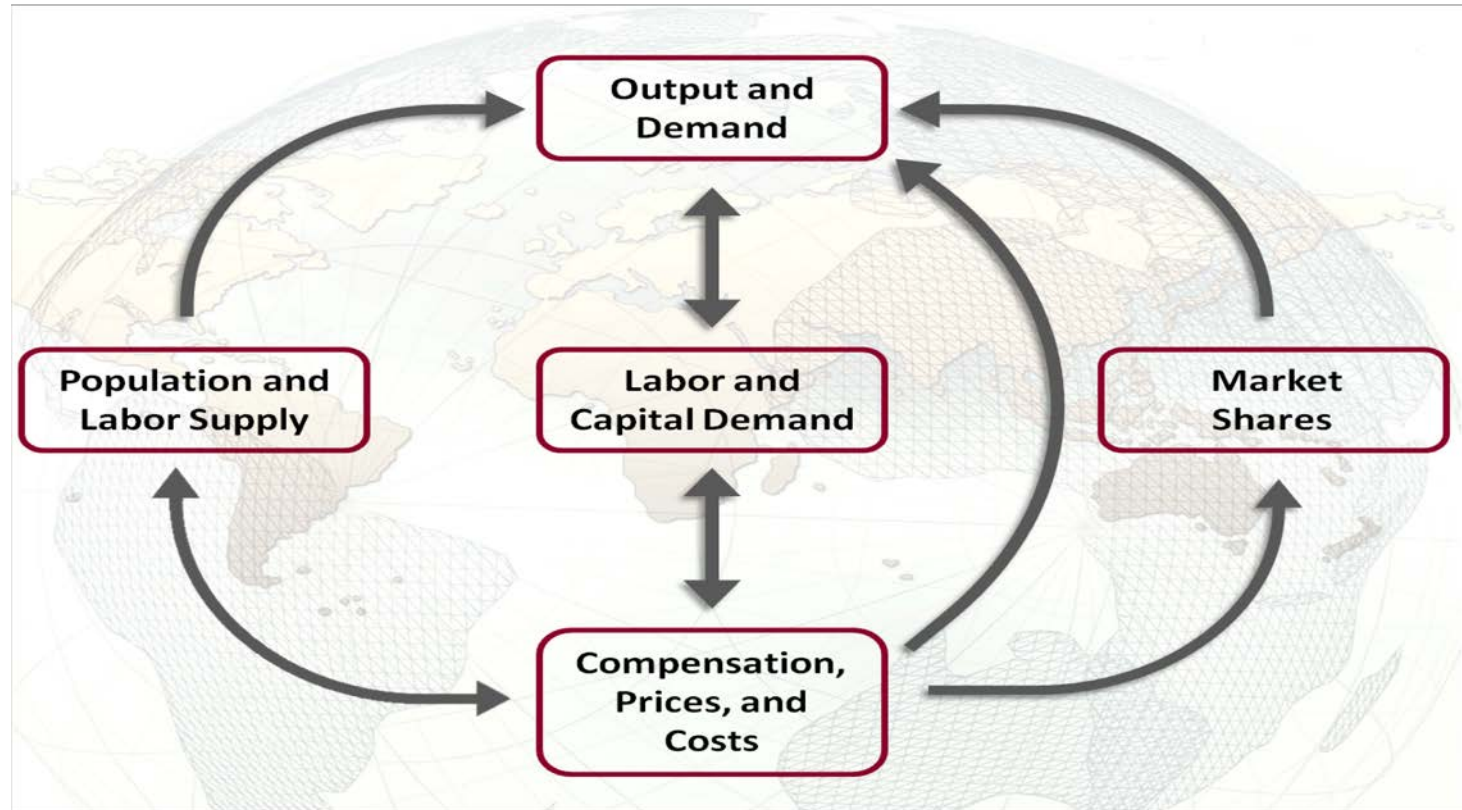


## **Fewer Afternoon Deliveries**

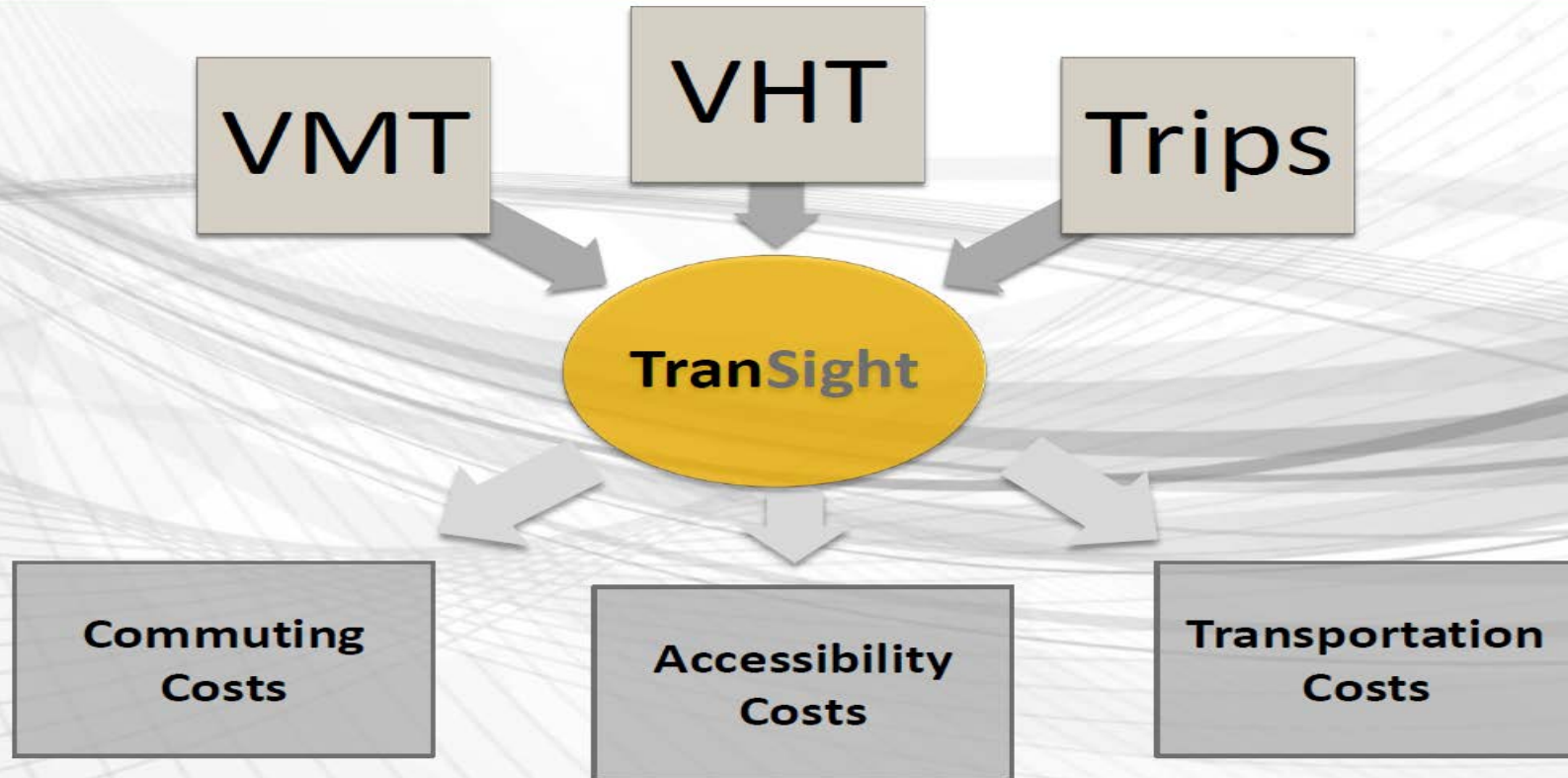
Forces restocking restrictions, forcing businesses to adjust operating hours.

Source: Weisbrod, Glen, Don Vary and George Treyz. 2003.  
“Measuring the Economic Costs of Urban Traffic Congestion to Business.” Transportation Research Record #1839.

# REMI Model Structure



# Integration with TranSight





# Countywide Impact Study scenarios

- TBRPC analyzed 3 scenarios and analyzed the economic and community impacts of each.

## 3 Scenarios



No Further Action



Construction & Non-Tolled Express Lanes



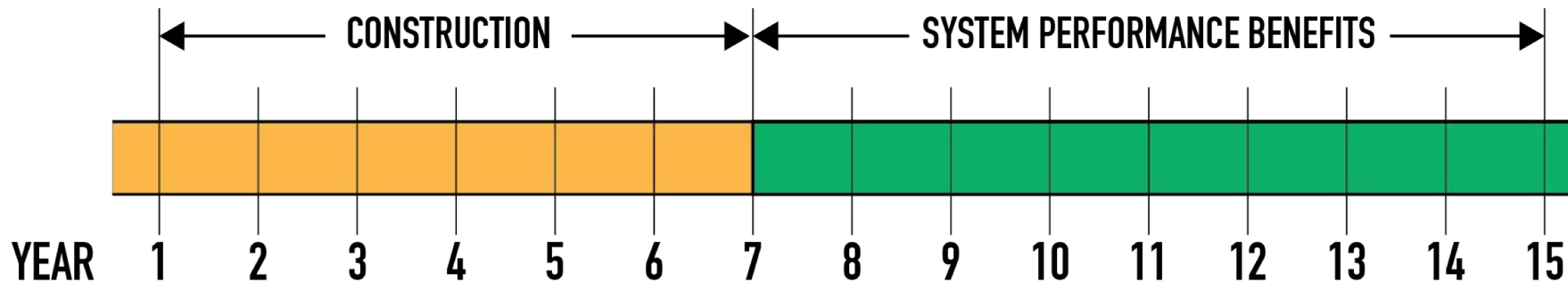
Construction & Tolled Express Lanes

## Community Impacts



## Economic Impacts

# Project schedule



- Economic Impacts measured by

**Total  
Employment**  
Direct & Indirect

**Employment  
by Industry**  
Construction &  
Manufacturing

**Employment  
by Occupation**

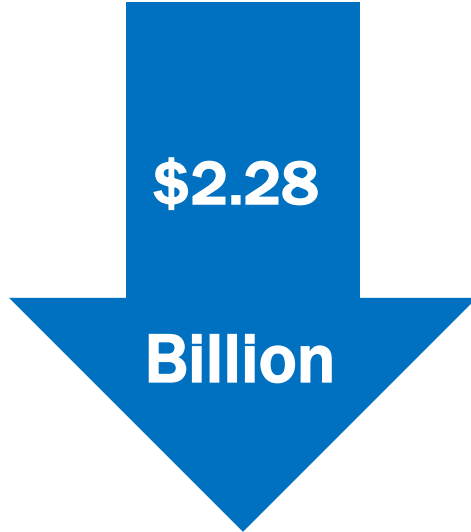
**Personal  
Income**

**Gross  
County  
Product**

# The cost of no further action: Annual Averages

Annual average impact of no further action over 20 years

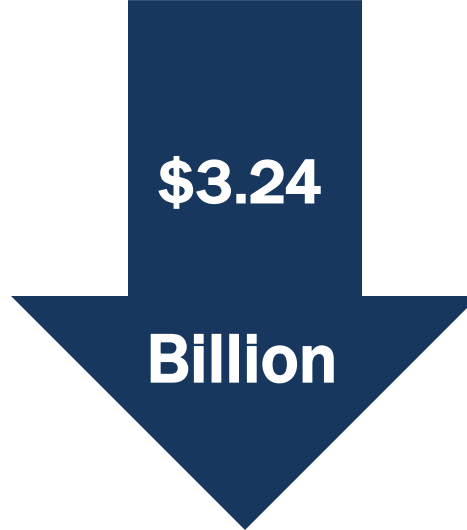
**Lost  
Personal Income**



**\$2.28**

**Billion**


**Lost Gross  
County Product**



**\$3.24**

**Billion**

**Lost Jobs  
(FTE Equivalent)**



**25,652**

Source: TBRPC 2018

# AVERAGE ANNUAL CONSTRUCTION IMPACTS

**\$2.65B** Construction Project  **4,110** Jobs



**2,595**

**Construction**



**109**

**Administrative  
Support Services**



**37**

**Truck  
Transportation**



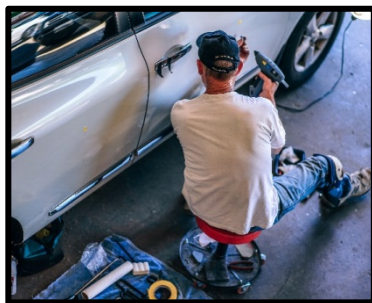
**97**

**Wholesale**

Source: TBRPC 2018,  
TranSight 2.0

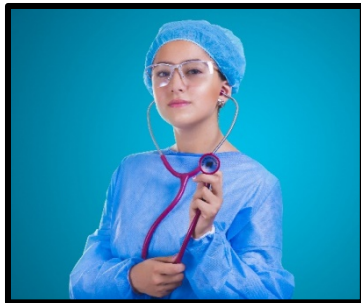
# AVERAGE ANNUAL INDIRECT CONSTRUCTION IMPACTS

## 1,515 Indirect Jobs



**11**

**Fabricated Metal  
Manufacturing**



**47**

**Health Care**



**127**

**Food Service/  
Accommodations**



**260**

**Retail Trade**

Source: TBRPC 2018, TranSight 2.0



# Countywide Summary Economic Impacts

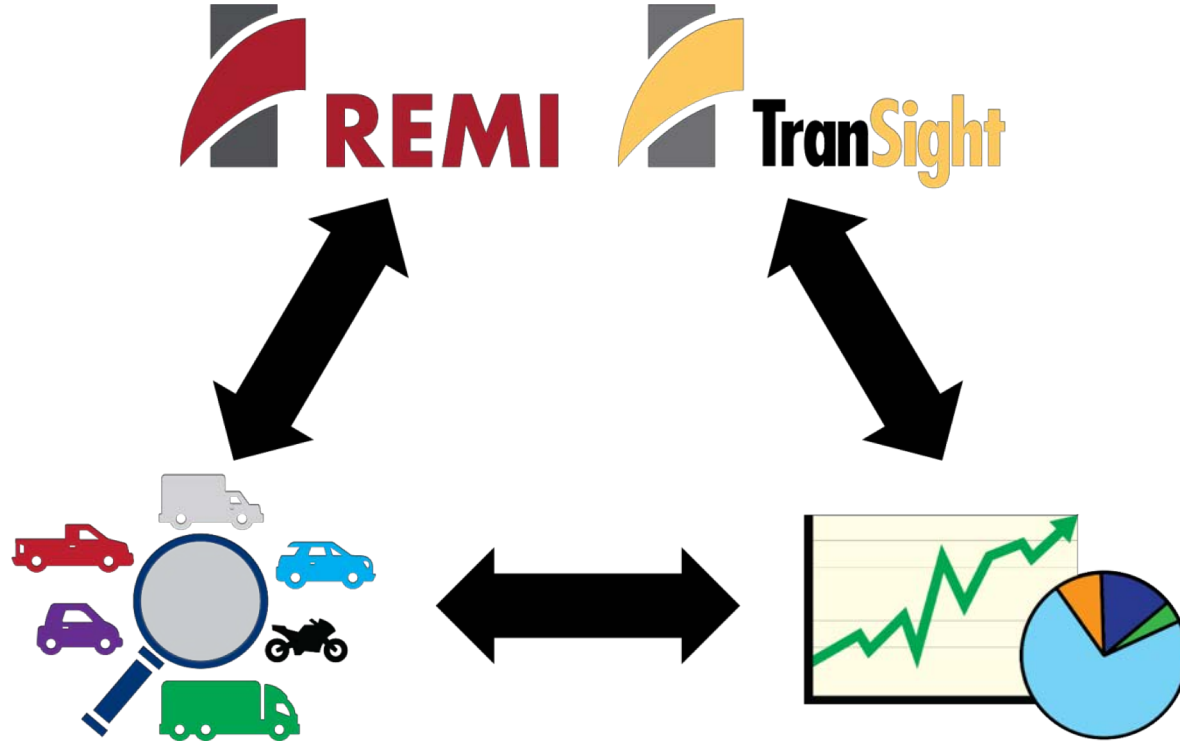
Hillsborough County	Yearly Average		
	No Further Action (-15.6%)	Non Tolled Express Lanes	Tolled Express Lanes
Population	-28,763	10,897	11,724
Labor Force	-17,846	6,795	11,117
Total Employment	-25,652	9,757	12,413
Gross County Product (\$Mil)	- \$3,243	\$1,283	\$1,634
Personal Income (\$Mil)	- \$2,280	\$638	\$803

Source: TBRPC Transight Model  
TBRPC, 2017

## 2. Combining balance of arterial/highway traffic routing and land use

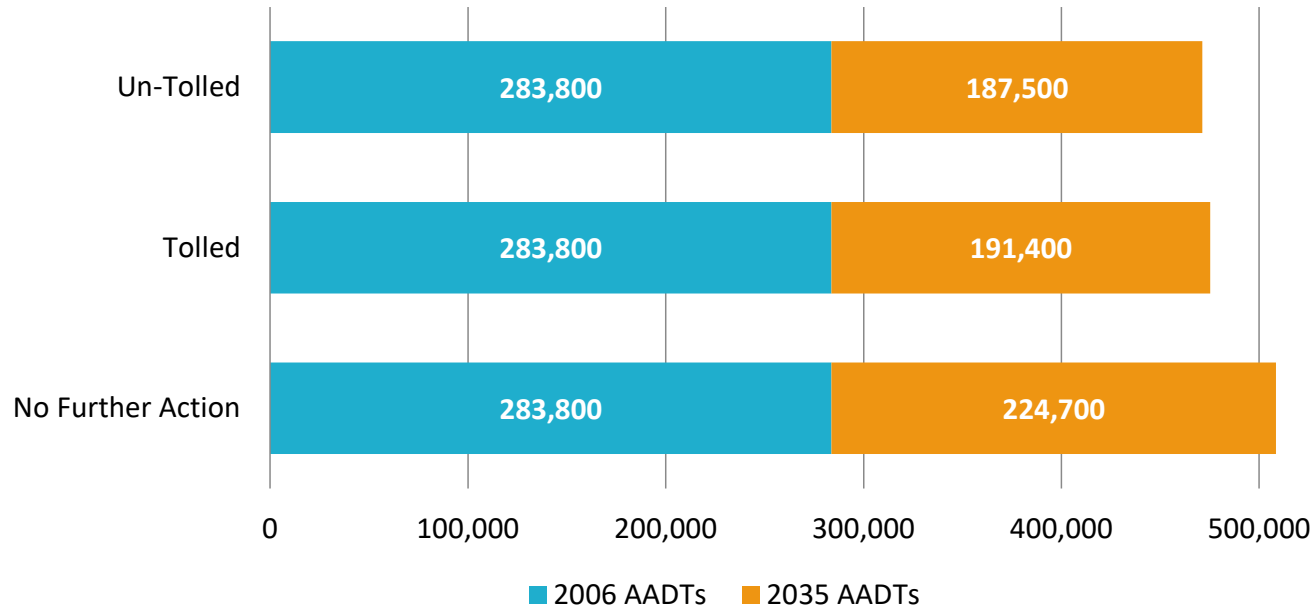
Develop a 'narrative' of likely sub-area economic impacts

# 'narrative' of likely sub-area economic impacts



# Growth in Arterial Volumes to 2035

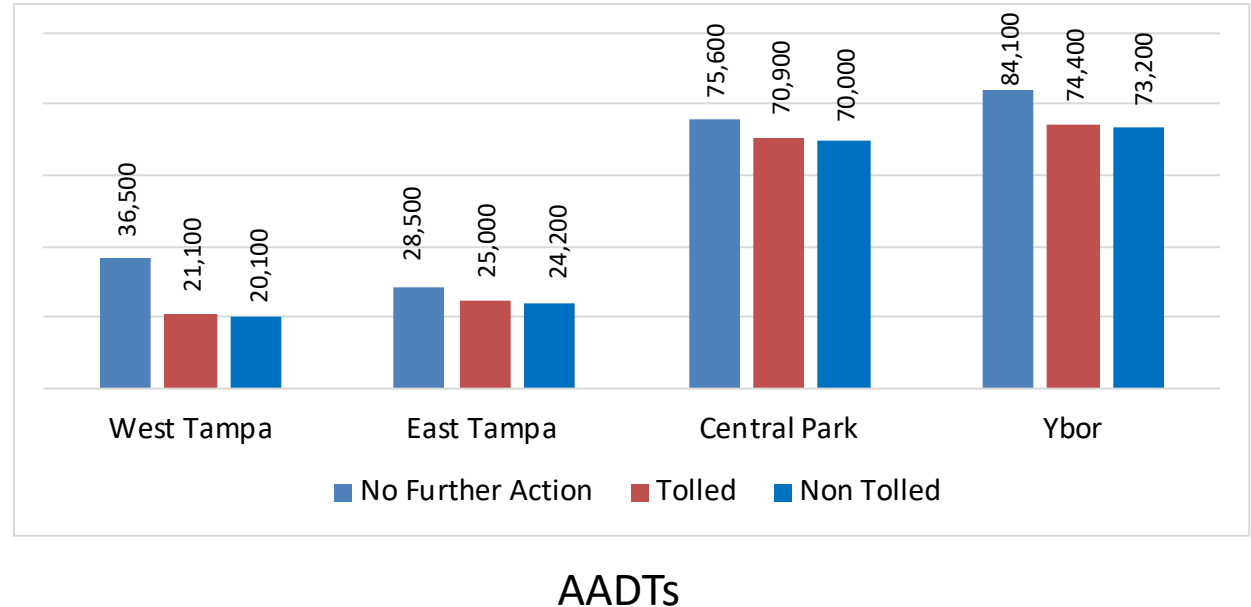
Figure 6.2: CRA Arterial Traffic Volumes 2006-2035 by Transportation Scenario



Source: Tampa Bay Regional Planning Model, 2018

## Combining travel model with literature findings

- Some industries are sensitive to traffic volume changes, others are not.
- Manufacturing industries likely to face pressure to move from downtown, finance less so.
- Commercial and MF values increase with volume but SF declines.



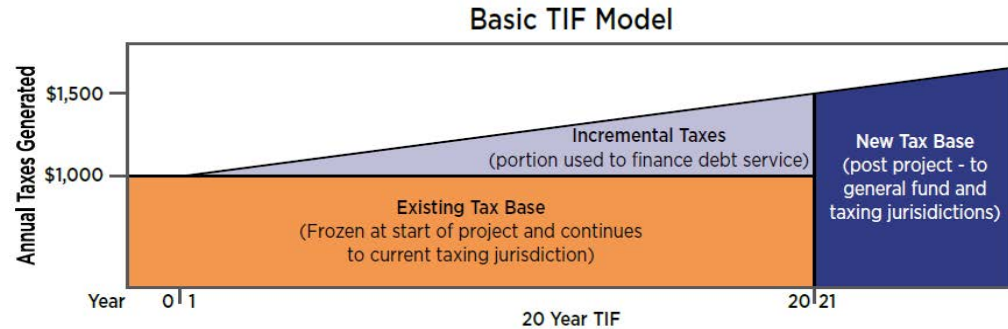


### **3. Modeling property value impacts from construction with statistical techniques**

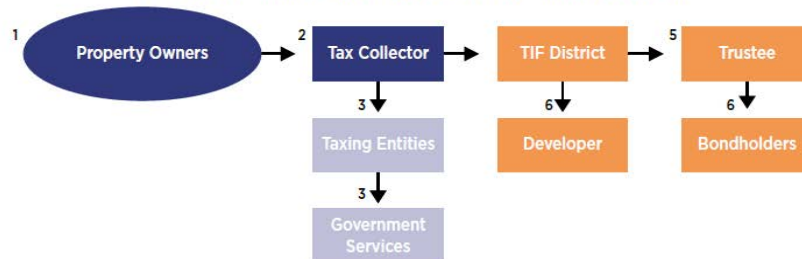
Create project alternative fiscal impact forecast for CRAs

# Community Redevelopment Areas

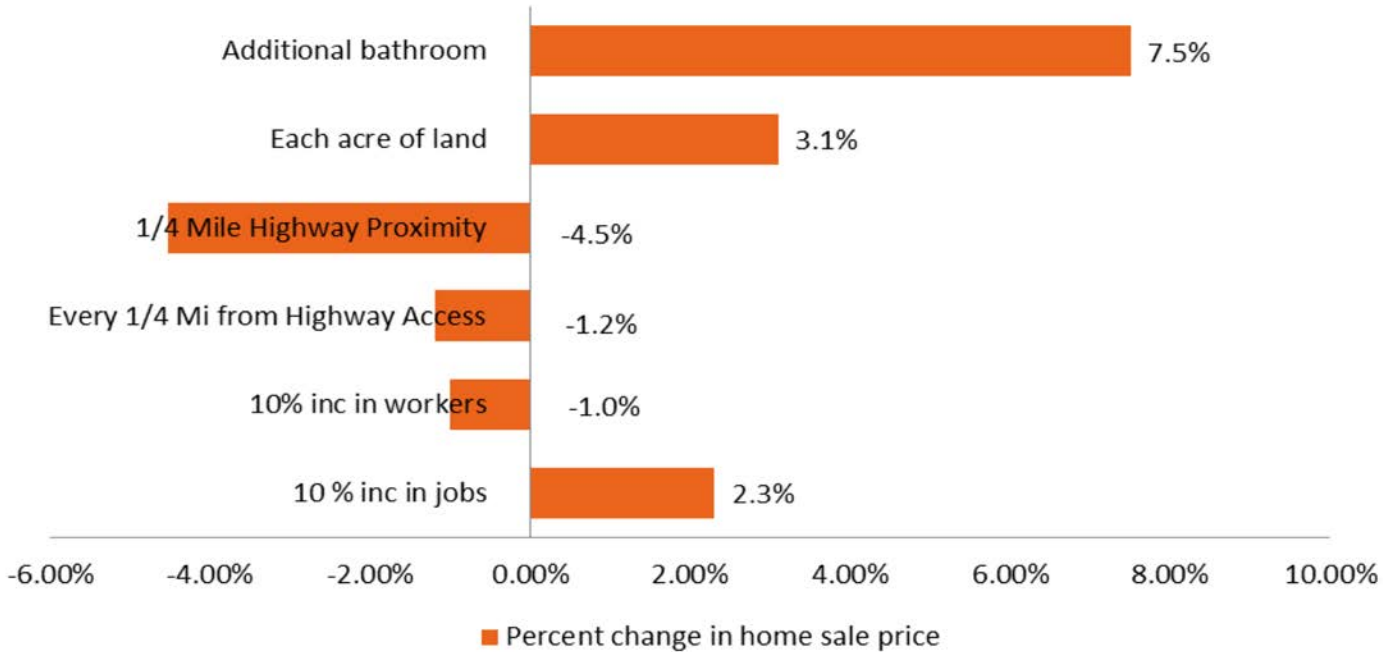
- Tax Increment Financing



## Flow of Funds in a Typical TIF Transaction



# Answering Questions about Property Values



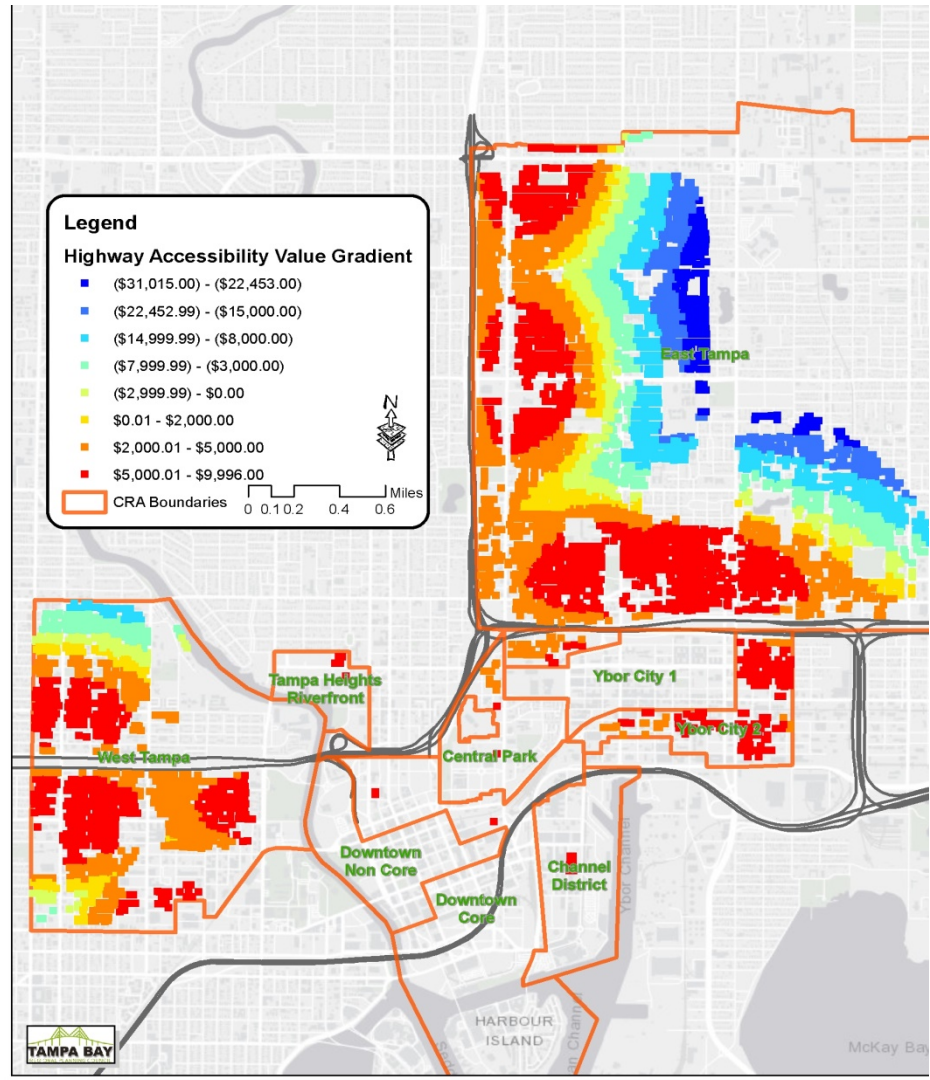
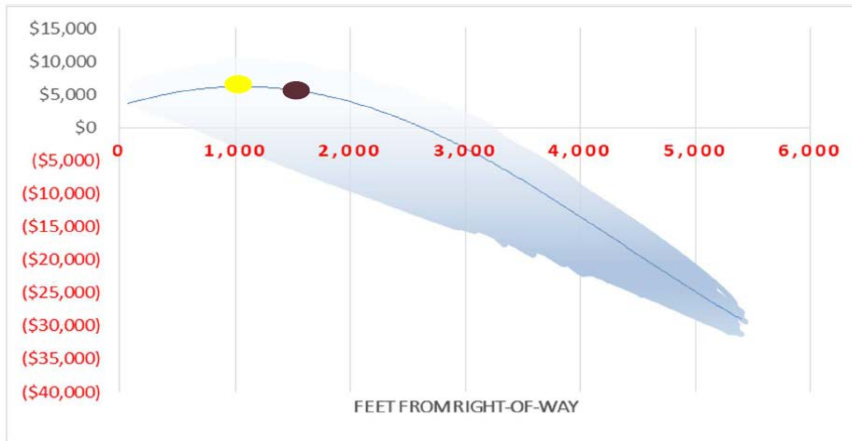
# Create alternative CRA fiscal impact forecast

- Construction impacts property values:
- Before and During ROW acquisition (cash value removed from tax rolls)
- During construction (nuisance impacts depress property values by 2.64% per year of construction)
- Economic stimulus impacts on property values (Elasticity estimates: historical TranSight control GCP regressed onto CRA property value trends)
- Impacts of highway realignment on property values (hedonic price model)

# highway realignment impacts on property values

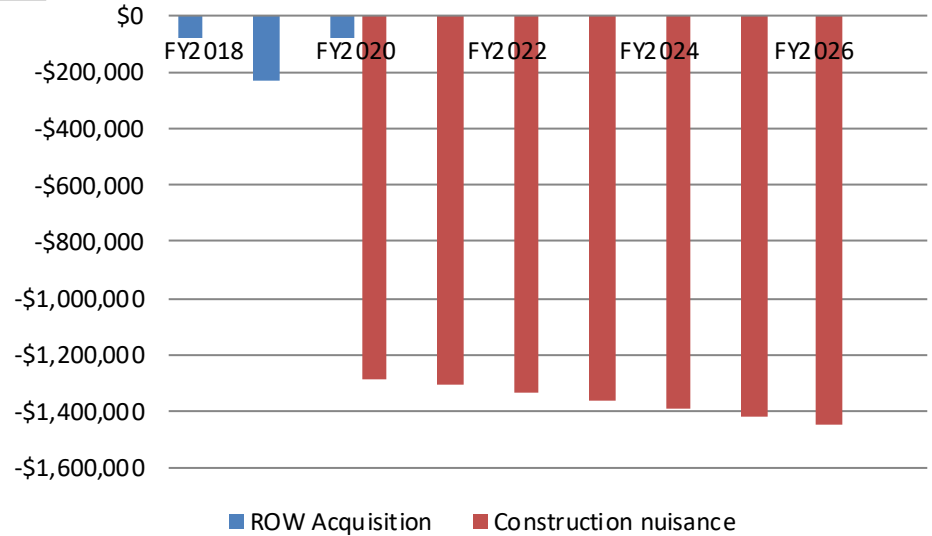
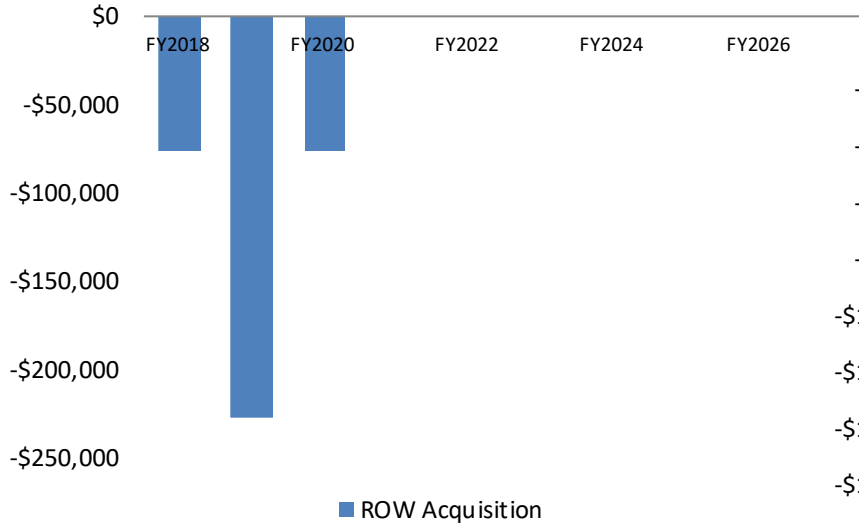
Heat map depicts how highway access amenity value varies by distance to ROW and Access points.

Predicted amenity value scatterplot shows change in value by distance to ROW

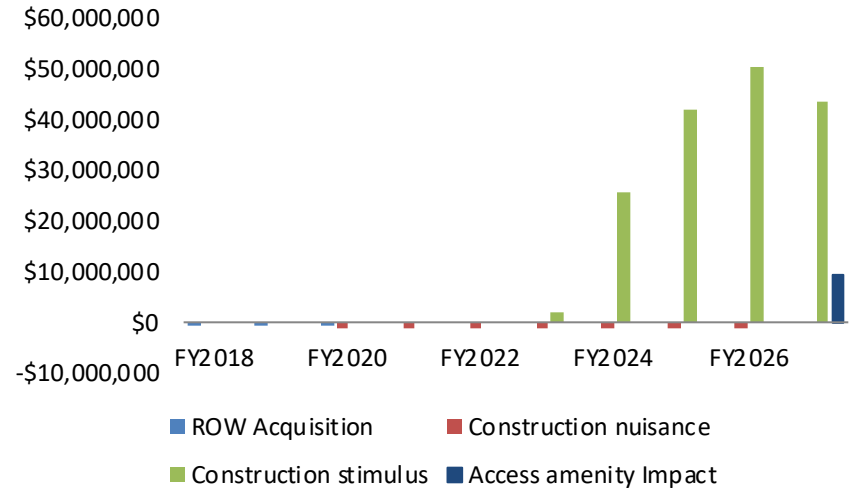
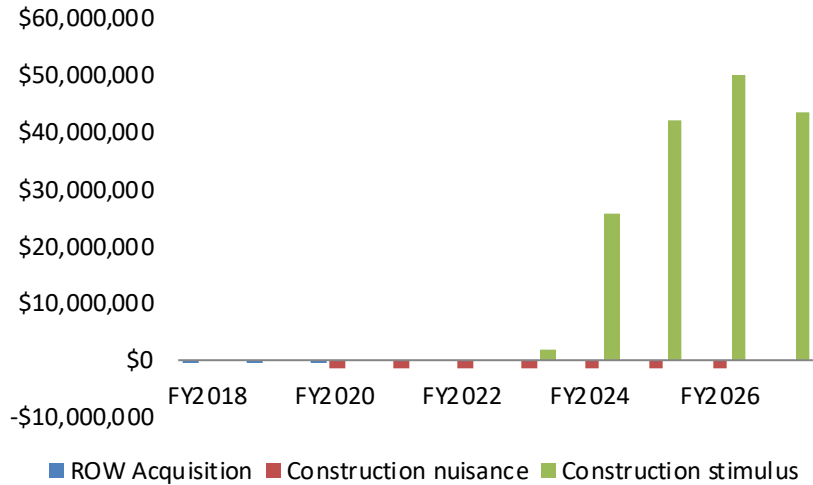




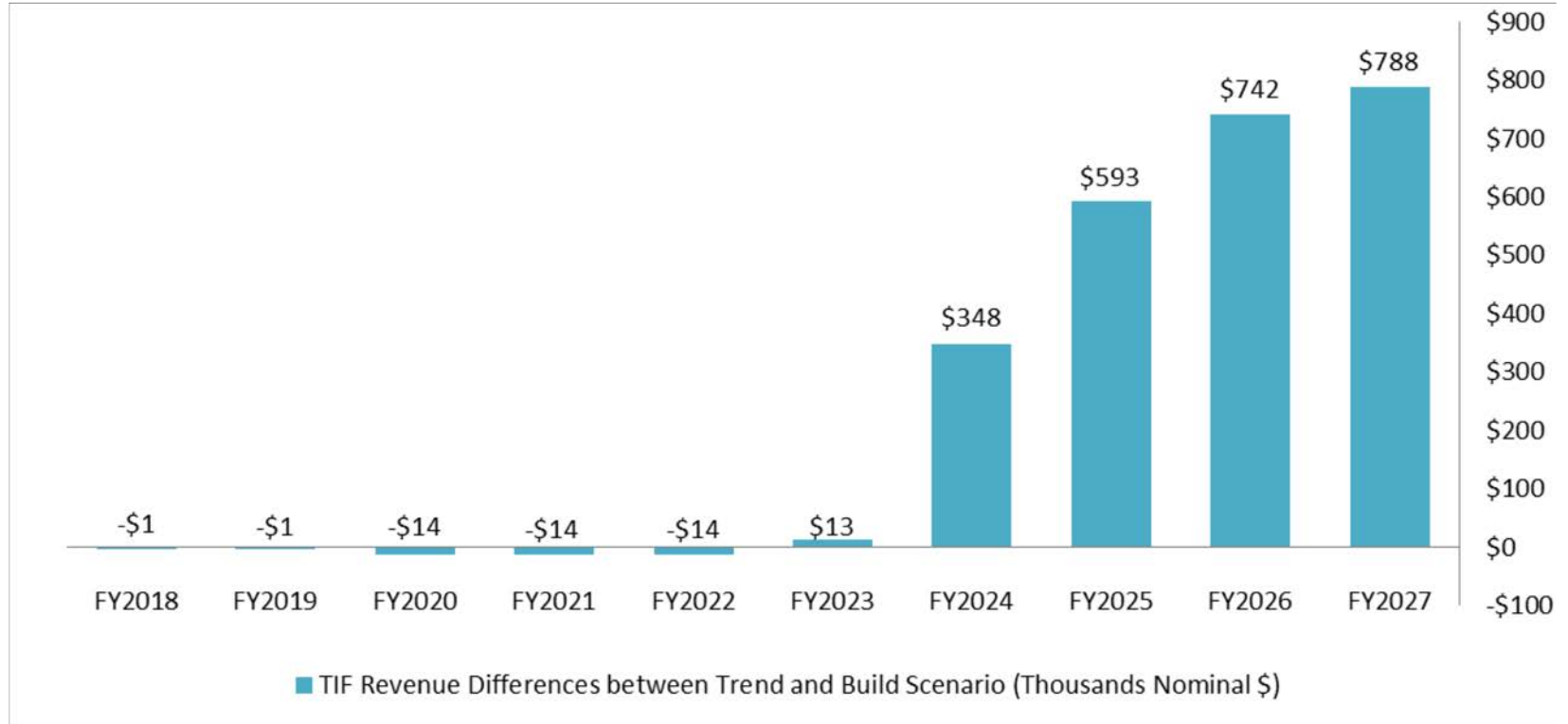
# Project impacts on baseline property values (I)



# Project impacts on baseline property values (II)



# Net construction TIF revenue impacts over trend revenue



# The Big Picture: Hillsborough county and CRAs

## Community & Countywide Impacts

- No Further Action



Doing nothing has a cost



Fewer jobs per year



Increased traffic on arterial roadways impacts adjacent single family properties



Potential increase in value to some commercial and multifamily properties

## Construction and System Performance



Modest net-positive property value growth in CRAs



Gains in TIF Revenue in a growing economy



Overall, positive impacts to jobs, economy, and property values



Some impacts to highway adjacent properties



## Case Study 2:

- Hillsborough-Pinellas-Pasco TMA engaged in a resiliency pilot study
- TBRPC using REMI TranSight to study impacts of inundation crippling critical transportation links



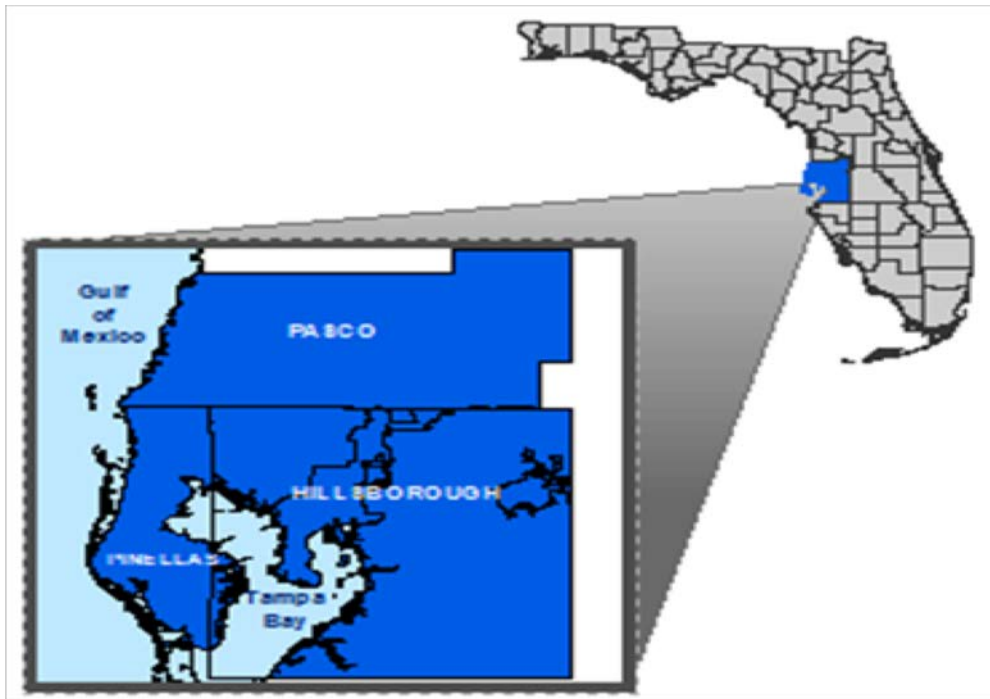
# FHWA Resilience & Durability to Extreme Weather Pilot Program

*presented to*  
*LMS Working Group*

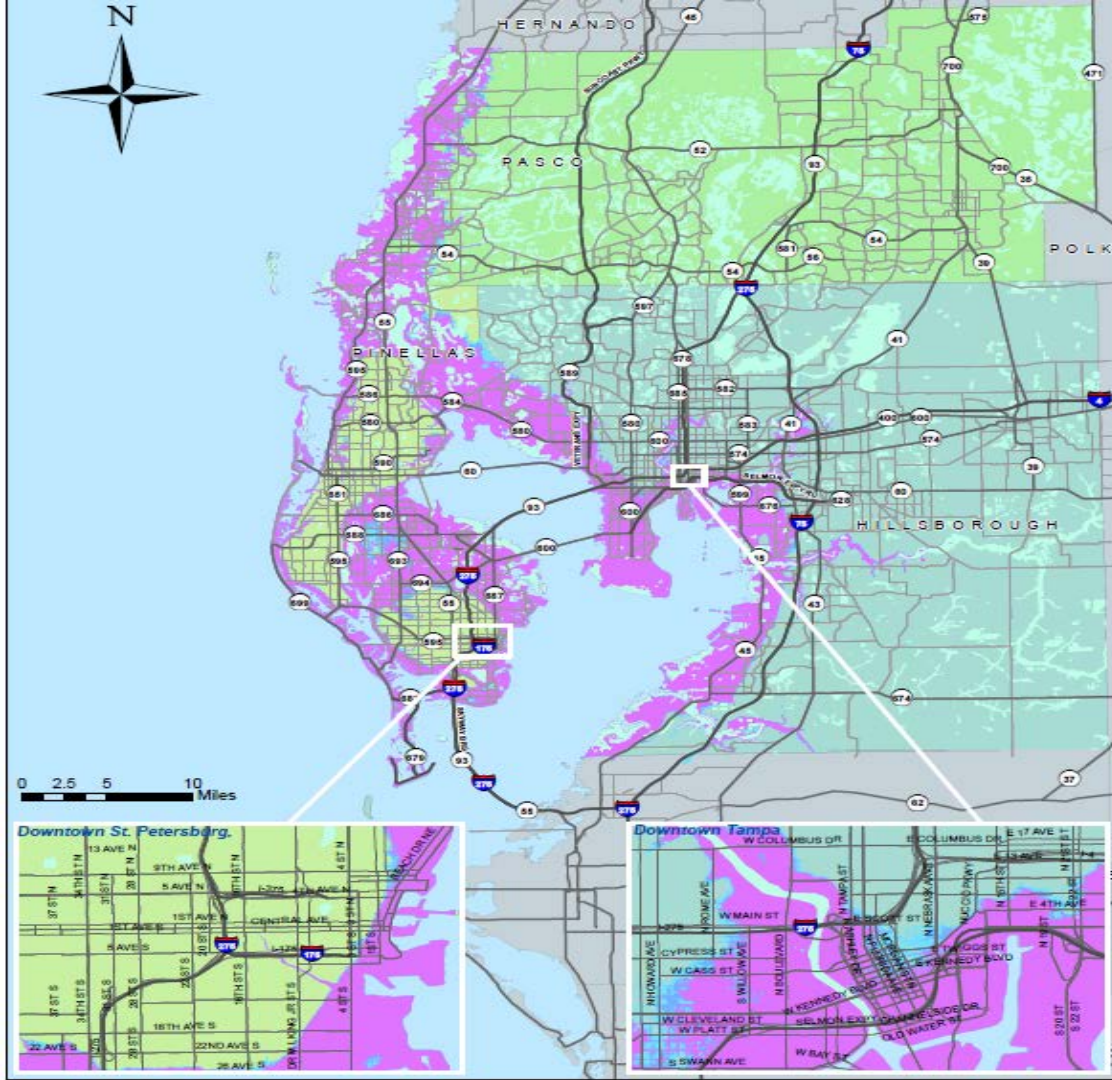
*presented by*

December 2018

# Resilient Tampa Bay – Transportation: Background



- Tampa Bay TMA
  - 2.8M Population
  - 2<sup>nd</sup> largest pop. In FL.
  - 1000+ miles of shoreline
  - 58% pop. in flood zones
- Regional vulnerability assessment of surface transportation assets
  - Incorporate into LRTPs, hazard mitigation, emergency mgt, and PDRP plans



# Storm Surge & SLR

**Category 3 Storm,  
Cat3 + Intermediate Low SLR,  
Cat3 + High SLR**

Counties

- Outside Study Area
- Hillsborough
- Pasco
- Pinellas

— Transportation Network

- Lakes, Rivers, Streams, Marshes
- Inundated Land - Category 3 Storm
- Inundated Land - Cat3 + Intermediate Low SLR
- Inundated Land - Cat3 + High SLR





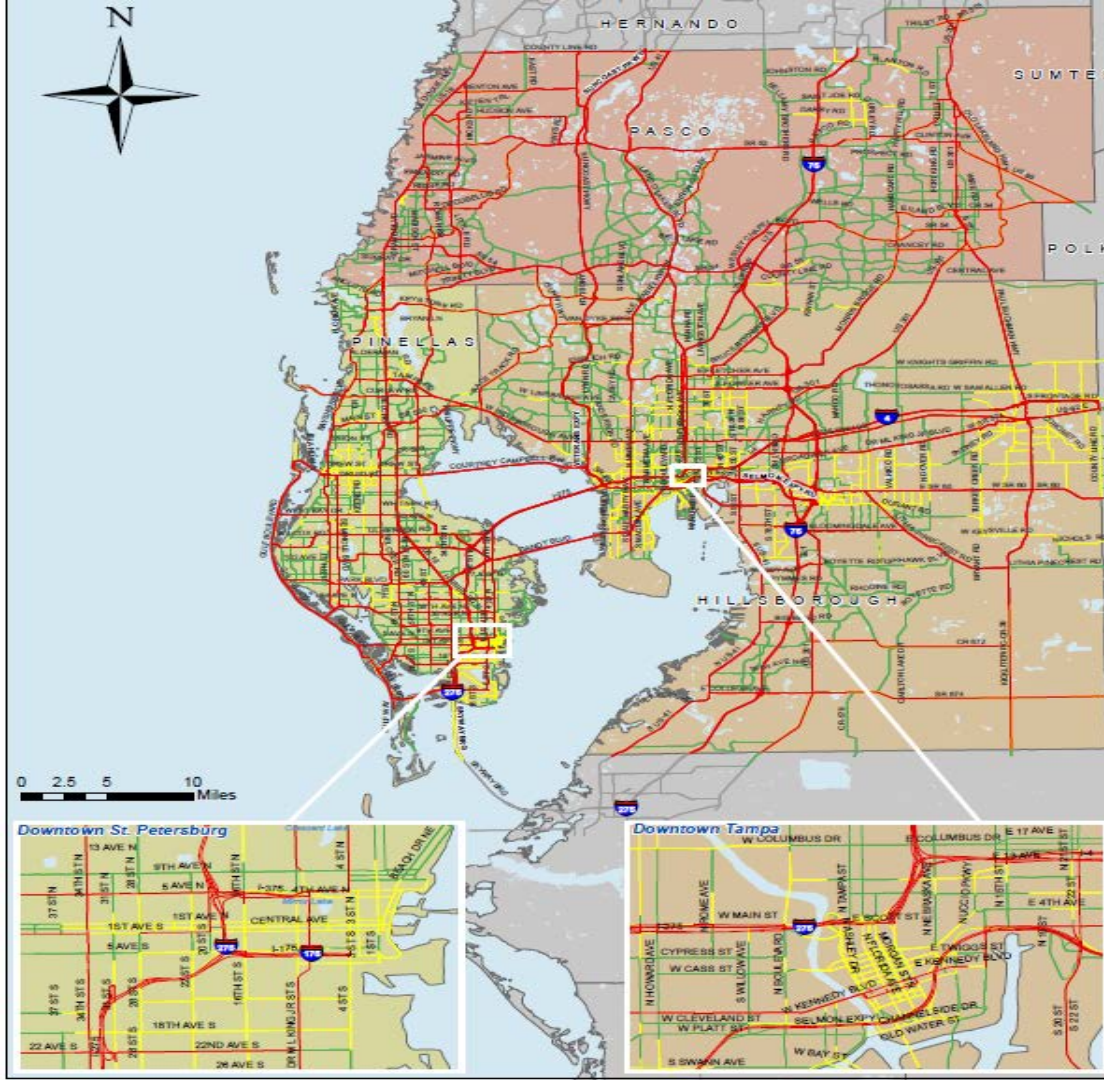
# Critical Transportation Facilities

## Transportation Facilities Counties

### Criticality

- High
- Moderate
- Low
- Water Bodies

- Outside Study Area
- Hillsborough
- Pasco
- Pinellas

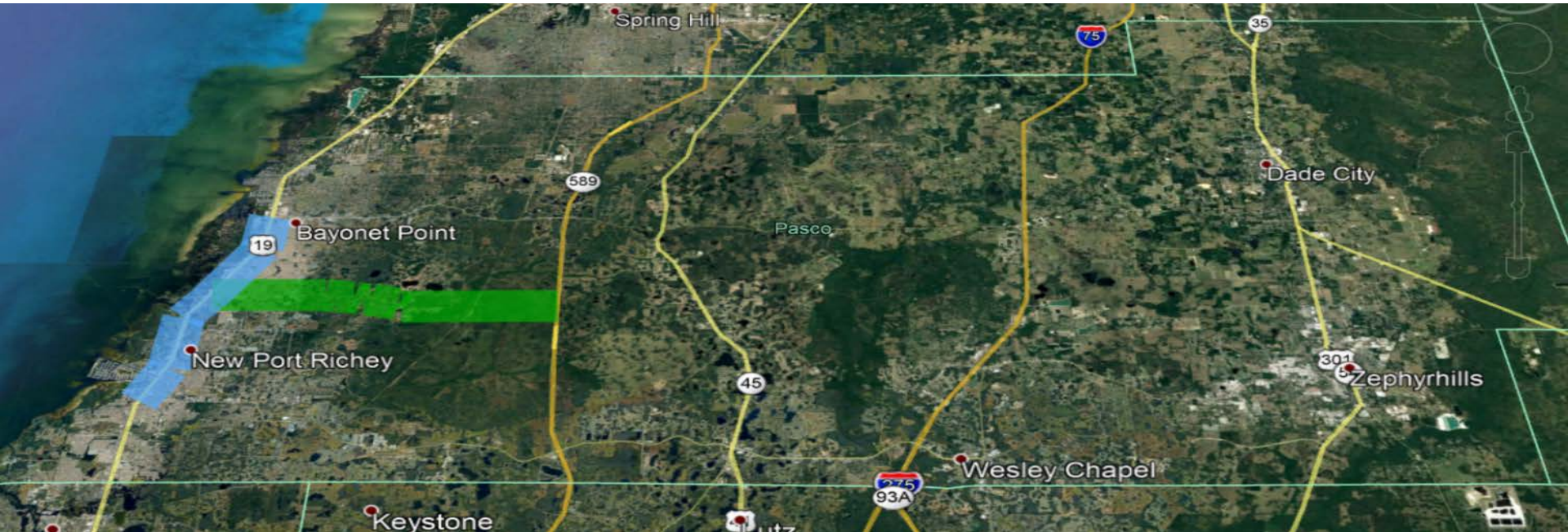


# Representative Projects

- Pasco County

US 19 from S.R.54 to S.R.52

Ridge Rd from US 19 to Suncoast Pky





# Representative Projects

- Pinellas County

Gulf Boulevard/SR 699 from  
150<sup>th</sup> Avenue/Tom Stuart  
Causeway to the Pinellas  
Bayway

Roosevelt Boulevard/SR 686  
from Ulmerton Road/SR 688 to  
Gandy Boulevard

