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

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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
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

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

REMI Model Structure
Integration with TranSight

- VMT
- VHT
- Trips

TranSight

- Commuting Costs
- Accessibility Costs
- Transportation Costs
TBRPC analyzed 3 scenarios and analyzed the economic and community impacts of each.
Project schedule

- Economic Impacts measured by

- Total Employment
  - Direct & Indirect

- Employment by Industry
  - Construction & Manufacturing

- Employment by Occupation

- Personal Income

- Gross County Product

YEAR 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
CONSTRUCTION SYSTEM PERFORMANCE BENEFITS
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 $2.65B > 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

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

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

<table>
<thead>
<tr>
<th>Scenario</th>
<th>2006 AADTs</th>
<th>2035 AADTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Un-Tolled</td>
<td>283,800</td>
<td>187,500</td>
</tr>
<tr>
<td>Tolled</td>
<td>283,800</td>
<td>191,400</td>
</tr>
<tr>
<td>No Further Action</td>
<td>283,800</td>
<td>224,700</td>
</tr>
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</table>

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 Financed
Answering Questions about Property Values

- Additional bathroom: 7.5%
- Each acre of land: 3.1%
- 1/4 Mile Highway Proximity: -4.5%
- Every 1/4 Mi from Highway Access: -1.2%
- 10% inc in workers: -1.0%
- 10% inc in jobs: 2.3%

Percent change in home sale price
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)

- $250,000
- $200,000
- $150,000
- $100,000
- $50,000
- $0

FY2018 FY2020 FY2022 FY2024 FY2026

- $1,600,000
- $1,400,000
- $1,200,000
- $1,000,000
- $800,000
- $600,000
- $400,000
- $200,000
- $0

FY 2018 FY 2020 FY 2022 FY 2024 FY 2026

- ROW Acquisition

- Construction nuisance
Project impacts on baseline property values (II)
Net construction TIF revenue impacts over trend revenue

![Bar chart showing TIF Revenue Differences between Trend and Build Scenario (Thousands Nominal $)]
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
  - 2nd 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
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 150th Avenue/Tom Stuart Causeway to the Pinellas Bayway

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