SPM Active Transportation Enhancement

September 23, 2015
Presentation Outline

• Background information
• Project goals
• Key findings
• Integration with SPM/2016 RTP
• Next steps
Project Background
Project Overview

• Regional agencies have typically relied on their regional models to provide key performance metrics – VMT, Delay, Congestion

• This approach worked well when SCAG focused on roadway and transit improvements

• But may not fully address new challenges – New types of strategies (active transportation & public health)
  – New metrics
  – New technologies and behaviors

• Need for a new approach
2016 RTP

- SCAG is looking into a broad range of strategies to support the RTP/SCS
  - Some similar (active transportation)
  - Some new (ridesourcing)
- SCAG is being asked to new metrics
  - Public health, fiscal impacts
- SCAG has some new tools (SPM)
- Need for some supplemental analysis
Scenario Planning Model & ABM or Bike Model

- Scenario Planning Model is fast and easy to setup scenarios.
- Provides key statistics on travel metrics and other planning questions.
- ABM and Bike Model take longer but offer a richer set of transportation metrics.
- Scenario Planning model could be used to quickly analyze geographically large scenarios or many different scenarios.
- ABM and Bike Model could be used to look analyze final scenarios or to add detail to outputs.
Urban Footprint Scenario Planning Model

Data Development and Organization

Scenario Development

Analysis

Base Data

Existing Plan Translation

Scenario Painting / Editing

Public Health

Local Fiscal Impacts

Land Consumption

Household Costs

Greenhouse Gas Emissions

Transportation

Building Energy Use

Building Water Use

Future Plan / Scenario Data
Place Types

Density

Mix of Uses

Street Connectivity

Location/Accessibility

Urban Compact

Standard
Land Development Category (LDC)

Urban
Land Development Category (LDC)

Compact Walkable
Land Development Category (LDC)

Standard Suburban
Existing SPM Process Uses MXD

- MXD trip generation was developed through collaboration between Fehr & Peers, the U.S. EPA, and an academic research team
- 230 mixed-use developments across the US were used to develop model
- Model was validated against 30 sites within California.
- SCAG uses SPZ data instead of 150 meter grid
• VMT is calculated using SCAG’s existing and future transportation networks, regional accessibility, and travel distance/times.

• Final Urban Footprint results provide vehicle trips and VMT at the individual SPZ and region.
Project Goals
Project Goals

• Develop methodology to augment existing SPM by:
  – Enhance sensitivity to active transportation investment
  – Provide means to forecast benefit without precision of detailed network (since many communities do not have plans)

• Ensure applicability across SCAG region

• Limited to available data on hand
  – SPM, Travel Model, SCAG GIS

• Develop quantitative relationships wherever possible for local conditions
Integration with SPM

• SCAG requested we work with SPM by integrating with the existing land use and demographic data

• Key variables in the SPM include:
  – Population
  – Employment
  – Placetypes
  – Intersection density
  – Transit stops
Household Travel Survey

- California Household Travel Survey (CHTS) was selected to develop a mode share model
- About 100K trip records (individual trips) for the SCAG region
- 80% are auto trips, 20% are other modes
- Trip Length by mode is also reported
- Includes trips of all types (work, non-work, social, etc)
Key Findings
Key Observations

• Walking makes up roughly 90% of active transportation trips.

• Significant variation in walking and biking by land use
  – Active transportation ranged from less than 10% to more than 40% of mode share

• Key transportation factors
  – Bike lanes
  – Sidewalks
  – Roadway speed
  – Transit stops
  – Intersection density (crosswalk frequency)
<table>
<thead>
<tr>
<th>Grouping</th>
<th>Place Types</th>
<th>Observed AT Mode Share</th>
<th>Range</th>
<th>Average</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>City Mixed Use, City Residential, Town Mixed Use, Urban Commercial,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Urban Mixed Use, High Intensity Activity Center</td>
<td></td>
<td>25-44%</td>
<td>30%</td>
<td>27%</td>
</tr>
<tr>
<td>2</td>
<td>Village Commercial, Town Residential, Village Mixed Use, City Commercial,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Town Commercial, Urban Residential, Industrial/Office/Residential Mixed High</td>
<td></td>
<td>18-27%</td>
<td>23%</td>
<td>24%</td>
</tr>
<tr>
<td>3</td>
<td>Neighborhood Residential, Village Residential, Campus Residential,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Institutional, Suburban Multi-Family</td>
<td></td>
<td>14-23%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>4</td>
<td>Neighborhood Low, Suburban Mixed Residential, Middle Intensity Activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Center, Industrial/Office/Residential Mixed Low, Office Focus</td>
<td></td>
<td>13-18%</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>5</td>
<td>Residential Subdivision, Low Intensity Retail Centered Neighborhood, Parks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open Space, Mixed Office and R&amp;D, Low Density Employment Park</td>
<td></td>
<td>8-12%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>6</td>
<td>Retail Strip Mall/Big Box, Office/Industrial, Industrial Focus, Large Lot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Residential, Rural Residential, Rural Employment, Rural Ranchettes, Military</td>
<td></td>
<td>7-10%</td>
<td>8%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Western LA Place Type Distribution
Long Beach Place Type Distribution
Irvine Place Type Distribution
## Trip Lengths

<table>
<thead>
<tr>
<th>Place Type Grouping</th>
<th>Place Types</th>
<th>Walk Trip Length</th>
<th>Bike Trip Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>City Mixed Use, City Residential, Town Mixed Use, Urban Commercial, Urban Mixed Use, High Intensity Activity Center</td>
<td>0.5</td>
<td>2.5</td>
</tr>
<tr>
<td>2</td>
<td>Village Commercial, Town Residential, Village Mixed Use, City Commercial, Town Commercial, Urban Residential, Industrial/Office/Residential Mixed High</td>
<td>0.5</td>
<td>2.0</td>
</tr>
<tr>
<td>3</td>
<td>Neighborhood Residential, Village Residential, Campus Residential, Institutional, Suburban Multi-Family</td>
<td>0.5</td>
<td>2.0</td>
</tr>
<tr>
<td>4</td>
<td>Neighborhood Low, Suburban Mixed Residential, Middle Intensity Activity Center, Industrial/Office/Residential Mixed Low, Office Focus</td>
<td>0.5</td>
<td>3.0</td>
</tr>
<tr>
<td>5</td>
<td>Residential Subdivision, Low Intensity Retail Centered Neighborhood, Parks Open Space, Mixed Office and R&amp;D, Low Density Employment Park</td>
<td>0.7</td>
<td>2.5</td>
</tr>
<tr>
<td>6</td>
<td>Retail Strip Mall/Big Box, Office/Industrial, Industrial Focus, Large Lot Residential, Rural Residential, Rural Employment, Rural Ranchettes, Military</td>
<td>0.7</td>
<td>3.0</td>
</tr>
</tbody>
</table>
Integration with SPM/2016 RTP
Existing SPM Process
Transportation Only Improvements

- Transportation only factors include:
  - Bike lane density
  - Percent of roadways with sidewalks
  - Transit stops
  - Intersection density
  - Network density of lower speed roads (25 mph)
  - Network density of higher speed roads (35 mph)
  - Parking costs
<table>
<thead>
<tr>
<th>Grouping</th>
<th>Place Types</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>City Mixed Use, City Residential, Town Mixed Use, Urban Commercial, Urban Mixed Use, High Intensity Activity Center</td>
<td>50%</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>Village Commercial, Town Residential, Village Mixed Use, City Commercial, Town Commercial, Urban Residential, Industrial/Office/Residential Mixed High</td>
<td>50%</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>Neighborhood Residential, Village Residential, Campus Residential, Institutional, Suburban Multi-Family</td>
<td>35%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>4</td>
<td>Neighborhood Low, Suburban Mixed Residential, Middle Intensity Activity Center, Industrial/Office/Residential Mixed Low, Office Focus</td>
<td>35%</td>
<td>45%</td>
<td>100%</td>
</tr>
<tr>
<td>5</td>
<td>Residential Subdivision, Low Intensity Retail Centered Neighborhood, Parks Open Space, Mixed Office and R&amp;D, Low Density Employment Park</td>
<td>20%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>6</td>
<td>Retail Strip Mall/Big Box, Office/Industrial, Industrial Focus, Large Lot Residential, Rural Residential, Rural Employment, Rural Ranchettes, Military</td>
<td>10%</td>
<td>25%</td>
<td>35%</td>
</tr>
</tbody>
</table>
# Bike Lane Density
*(Weighted Average of Facilities by Square Mile)*

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Place Types</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>City Mixed Use, City Residential, Town Mixed Use, Urban Commercial, Urban Mixed Use, High Intensity Activity Center</td>
<td>0</td>
<td>0.1</td>
<td>0.25</td>
</tr>
<tr>
<td>2</td>
<td>Village Commercial, Town Residential, Village Mixed Use, City Commercial, Town Commercial, Urban Residential, Industrial/Office/Residential Mixed High</td>
<td>0</td>
<td>0.1</td>
<td>0.25</td>
</tr>
<tr>
<td>3</td>
<td>Neighborhood Residential, Village Residential, Campus Residential, Institutional, Suburban Multi-Family</td>
<td>0</td>
<td>0.1</td>
<td>0.75</td>
</tr>
<tr>
<td>4</td>
<td>Neighborhood Low, Suburban Mixed Residential, Middle Intensity Activity Center, Industrial/Office/Residential Mixed Low, Office Focus</td>
<td>0</td>
<td>0.1</td>
<td>0.75</td>
</tr>
<tr>
<td>5</td>
<td>Residential Subdivision, Low Intensity Retail Centered Neighborhood, Parks Open Space, Mixed Office and R&amp;D, Low Density Employment Park</td>
<td>0</td>
<td>0.1</td>
<td>0.75</td>
</tr>
<tr>
<td>6</td>
<td>Retail Strip Mall/Big Box, Office/Industrial, Industrial Focus, Large Lot Residential, Rural Residential, Rural Employment, Rural Ranchettes, Military</td>
<td>0</td>
<td>0.1</td>
<td>0.25</td>
</tr>
</tbody>
</table>
Implementing Transportation Only Improvements

• Change in either bike lane density or percent of roads with sidewalks or both

• First Mile/Last Mile
  – Likely both but perhaps mostly sidewalks
  – Could also be modeled through changes in transit stops or land uses

• Additional bike infrastructure
  – Will increase bike lane density directly, which will lead to increased biking trips
Next Steps
What Happens Next?

• We prepared a spreadsheet version to analyze strategies for the RTP and SCAG is currently running the model.

• SCAG will be engaging Calthorpe to code these variables and equations into the SPM
Future Work

• SCAG has an extensive database of land use, demographic, transportation, and travel behavior information

• Locally collected data

• Records on 20,000 households and 100,000 trips
  – Statistically valid survey
  – Includes data on trip type, trip location, and information on traveler

• SCAG could assist CTC’s, COG’s, Counties, and Cities in doing a similar or related analysis
Questions