Toolboxes, Languages, and Co-benefits: Considerations for Policy Issues

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Sacramento Area Council of Governments
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The context of my remarks

• A performance-based integrated scenario planning process
• Regional land use & transportation plan (the Blueprint Vision)
• The Plan is moving to implementation by our cities and counties
• SB 375
  – California legislation to integrate land use, transportation, and climate change
Why Improve SACOG Models?

• Models are tools to apply research in the most effective and comprehensive manner to address policy issues
• Research points to interrelated causes and consequences
• Policy issues are often, and more frequently, interrelated
Develop Better Information and Tools for Decision Making

I-PLACE³S - Land Use Planning Model

SACSIM Tour-based travel model
Regional projections from PLACE3S, PECAS, other
--residential
--employment
--school enrollment

Population Synthesizer ($PopSyn$)

Long Term Choice Simulator

Person Day Activity and Travel Simulator ($DaySim$)

Person trip list

Special Generators (eg, airport)

External trips

Commercial movements

Trip aggregator

OD Matrices

Network traffic assignment

Network performance (skims)
I-PLACE^3S Planning Model

- **PLA**nning for **C**ommunity **E**nergy, **E**conomic and **E**nvironmental **S**ustainability
  - Land Use and Growth “Visioning” Tool
  - Parcel based to meet planning and public outreach needs
  - Modular framework to enhance current functions and add new functions
I-PLACE³S Modules

- Land use development
- Return on investment
- Transportation
- Energy demand - buildings
- Public health/physical activity
- Agriculture/open space
- Future modules (Infrastructure cost, Fiscal analysis, Water demand)
Placer Vineyards, a Sub-regional Analysis

- 5,200 acre site at the edge of the current urban area
- "Blueprint" alternative 21,000 households
- Lower development alternative 14,000 households
  - Add the “surplus” 7,000 households to next-most-likely locations in the sub-region
<table>
<thead>
<tr>
<th>Blueprint Alternative</th>
<th>Placer Co. Unincorp. Alternative</th>
<th>Sub-Regional Market Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HH's Remaining in PV Area</td>
<td>HH's Allocated to Other Areas</td>
</tr>
<tr>
<td>Households</td>
<td>21,367</td>
<td>13,162</td>
</tr>
<tr>
<td></td>
<td>Percent of Daily Person Trips</td>
<td></td>
</tr>
<tr>
<td>Transit</td>
<td>1.4%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Bike+Walk</td>
<td>6.5%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Private Auto</td>
<td>91.0%</td>
<td>93.1%</td>
</tr>
<tr>
<td></td>
<td>Daily Person Trips per Household</td>
<td></td>
</tr>
<tr>
<td>Transit+Bike+Walk Trips /HH</td>
<td>0.78</td>
<td>0.57</td>
</tr>
<tr>
<td>Vehicle Miles Traveled / HH</td>
<td>43.1</td>
<td>49.8</td>
</tr>
<tr>
<td>Daily Vehicle Miles Traveled</td>
<td>921,021</td>
<td>656,117</td>
</tr>
</tbody>
</table>

Curtis Park Village: A Neighborhood analysis
## Project Area Travel Metrics

### Year 2035 Weekday Travel Indicators for Curtis Park Village

<table>
<thead>
<tr>
<th></th>
<th>Developer Option B</th>
<th>Developer Aug2009 Plan</th>
<th>SCNA Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Area Only</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle Miles Traveled</td>
<td>12,830</td>
<td>17,198</td>
<td>15,343</td>
</tr>
<tr>
<td>VMT Per Person+Job</td>
<td>6.7</td>
<td>7.3</td>
<td>7.4</td>
</tr>
<tr>
<td>Transit Trips</td>
<td>156</td>
<td>177</td>
<td>202</td>
</tr>
<tr>
<td>Transit Mode Share</td>
<td>3.8%</td>
<td>3.5%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Bike+Walk Trips</td>
<td>474</td>
<td>591</td>
<td>560</td>
</tr>
<tr>
<td>Bike+Walk Mode Share</td>
<td>11.7%</td>
<td>11.7%</td>
<td>11.9%</td>
</tr>
</tbody>
</table>

Source: Sacramento Area Council of Governments, October 2009.
## Project + Neighborhood Travel Metrics

<table>
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</thead>
<tbody>
<tr>
<td><strong>Expanded Project Area</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Vehicle Miles Traveled</td>
<td>571,499</td>
<td>575,327</td>
<td>571,534</td>
</tr>
<tr>
<td>VMT Per Person+Job</td>
<td>16.3</td>
<td>16.2</td>
<td>16.2</td>
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<tr>
<td>Transit Trips</td>
<td>9,909</td>
<td>10,441</td>
<td>9,998</td>
</tr>
<tr>
<td>Transit Mode Share</td>
<td>6.3%</td>
<td>6.6%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Bike+Walk Trips</td>
<td>13,930</td>
<td>14,135</td>
<td>14,110</td>
</tr>
<tr>
<td>Bike+Walk Mode Share</td>
<td>8.9%</td>
<td>9.0%</td>
<td>9.0%</td>
</tr>
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Source: Sacramento Area Council of Governments, October 2009.
Greenhouse Gas Analysis, A RTP Analysis

• SB 375 requires RTP meet greenhouse gas targets, either in the adopted or alternative plan
• If targets are met, residential projects can receive environmental streamlining
• Apply the travel model + emissions models for total and per capita GHG
2035 GHG per Capita
Current Development Projects

- Travel pricing improvements to SACSIM
- Integrate SACSIM with DynusT and MOVES
- Public health and urban form
- PECAS calibration
Lessons from Integrated Analysis of Policy Issues

• Complex policies require clear descriptions to a variety of audiences
• Recognize that models can be policy instruments
  – Models need to remain objective tools so the analysis is credible
  – Models need to be understood
• The analysis (and the analyst) has the responsibility to communicate effectively in the “language” of the audience
Lessons (continued)

• Travel models need to, and finally are getting close to, acknowledge that there are many impacts that are important to a wide range of interests
  – Travel is derived demand
  – Travel impacts and connections are pervasive

• Impacts are seen as primary and secondary, depending on the audience
  – Co-benefits
A Travel Model Toolbox

Researchers

Model Developers

Practitioners
A Travel Model Toolbox

Network Systems (Supply)

Researchers

Model Developers

Practitioners
A Travel Model Toolbox

Network Systems (Supply)

Travel Behavior (Demand)

Researchers

Model Developers

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A Travel Model Toolbox

Network Systems (Supply)

Travel Behavior (Demand)

Personal Commercial

Researchers

Model Developers

Practitioners
# A Travel Model Toolbox

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<thead>
<tr>
<th></th>
<th>Network Systems (Supply)</th>
<th>Travel Behavior (Demand)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Personal</td>
</tr>
<tr>
<td>Researchers</td>
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<td>Model Developers</td>
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<td></td>
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<td>Practitioners</td>
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Complex Policies Mean Moving to a Bigger Box

• Transportation planners
  – Management
  – Finance
• Traffic engineers
• Elected officials
• News media
• Land use
More Parts of the Bigger Box

- Demographics & economics
- Public health
  - Safety
  - Physical activity
  - Pollution exposure
- Air pollution
- Climate change
A Short List of Modeling Issues

- Activity patterns
  - time use, multi-day patterns, telecommuting and other tele-activities
- Network fidelity
  - Network dynamics and management interaction with travel demand in short run and long run
- Emissions models
  - MOVES modal complexity, vehicle fleet changes due to travel demand, land use, and economics, non-trip emissions
OK, So the List is a Little Longer

• How do these systems interact through time? Can path dependent model systems reasonably represent this level of dynamics?
  – How do we model learning curves, rates of change from economic and policy changes
• How do the analytical and communication priorities get balanced within time and budget constraints?
• Finally remember we should have as simple a model as possible to address the problem
Questions ?