San Mateo
US 101 Express Lane Feasibility Study

Draft Report

Kittelson & Associates

C/CAG Presentations - February, 2015
Why Are We Here?

- US 101 in San Mateo is the longest and most congested stretch of freeway in Bay Area without an HOV lane

- C/CAG, MTC, Caltrans Studies
Study Limits

- HOV/HOT Lane Limits
- Study Limits
- Extension Beyond Study Limits to Capture Effects of Queues
Shoe-horning HOV on 101

- Figuring out how to fit HOV Lanes onto US 101

  - Add/Convert HOV Lane (March 2011)
    - All the way from Whipple to SF County Line
    - Add HOV lane: Cost Prohibitive
    - Convert regular lane to HOV: Creates unacceptable added delay

- Looked at various options to improve cost-effectiveness.

- Staged Innovative Add (Hybrid) HOV Lane (June 2012)
  - Only go from Whipple to I-380: $156 million
Latest Study – Go beyond HOV to HOT

- **Purpose of Latest Study**
  - Preliminary High Level Express Lane Feasibility Assessment

- **Two Concepts**
  - **Concept 1: HOV-to-HOT (Innovative Add HOT Lane)**
    - $259 million
      - $156 million to build HOV lanes
      - $103 million to convert to express lane operation
  - **Concept 2: GP-to-HOT (Convert HOT Lane)**
    - $108 million to convert to express lane operation
    - Traffic diversion or mode shift needed to mitigate travel delay impacts.
Existing Lanes

4 Through Lanes

Aux Lane
Concept 1 - Innovative

4 Through Lanes + HOT
Concept #2 - Convert

3 Through Lanes + HOT

Aux Lane
The Results

- Vehicle Capacity
- Freeway Congestion
- Freeway Performance
- Mixed Flow Lane travel times

Caveats:
- It's tough modeling how people react to extreme congestion.
- Numbers will change
Available Capacity for Tolled Vehicles

- Concept 1 and Concept 2 Similar

- Northbound
  - More Capacity Available in Shoulder Hours
    - 6:00-7:00 and 9:00-10:00 AM
    - 2:30-3:30 and 6:30-7:30 PM

- Southbound
  - No Capacity south of Holly
Freeway Congestion

- Concept 1: Congestion similar to Hybrid HOV
- Longer queues with Concept 2
## Freeway Performance Measures

<table>
<thead>
<tr>
<th>Performance Measures</th>
<th>Staged Hybrid HOV</th>
<th>Concept 1 - Hybrid HOT</th>
<th>Concept 2 - Convert HOT</th>
<th>Concept 1 vs Staged Hybrid HOV</th>
<th>Concept 2 vs Staged Hybrid HOV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Miles Travelled</td>
<td>5,145,600</td>
<td>5,166,500</td>
<td>4,836,400</td>
<td>0.4%</td>
<td>-6.0%</td>
</tr>
<tr>
<td>Vehicle Hours Travelled</td>
<td>187,000</td>
<td>184,000</td>
<td>187,400</td>
<td>-1.6%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Vehicle Hours of Delay</td>
<td>107,800</td>
<td>104,400</td>
<td>113,000</td>
<td>-3.2%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Person Miles Travelled</td>
<td>5,839,900</td>
<td>5,901,700</td>
<td>5,573,000</td>
<td>1.1%</td>
<td>-4.6%</td>
</tr>
<tr>
<td>Person Hours of Delay</td>
<td>109,200</td>
<td>105,800</td>
<td>113,400</td>
<td>-3.2%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Average Vehicle Speed</td>
<td>27.5</td>
<td>28.1</td>
<td>25.8</td>
<td>2.1%</td>
<td>-6.2%</td>
</tr>
<tr>
<td>Average Person Speed</td>
<td>29.3</td>
<td>30.0</td>
<td>28.0</td>
<td>2.3%</td>
<td>-4.6%</td>
</tr>
</tbody>
</table>
How do they compare to Now?

- **Do Nothing**
  - Increased congestion on US 101, I-280, streets
  - Increased crowding on SamTrans, Caltrain
  - Increased greenhouse gas emissions

- **Concept 1 – Add Express Lane**
  - Decreased congestion on US 101, I-280, streets
  - Minor new revenues to invest in mitigations
  - Lesser increase in transit crowding, increased HOVs
  - Lesser increase in GHG

- **Concept 2 – Convert Lane to Express Lane**
  - Increased congestion on US 101, I-280, streets
  - Minor new revenues to invest in mitigations
  - Greatly increased transit ridership/service, increased HOVs
  - Lesser increase in GHG
Find some way to do the Express Lane.
It is better than doing nothing.