Freeway Performance Initiative

Maximize System Performance Through Technology

Goals
- Deploy current technology to better manage the congestion on our freeway system, including parallel arterial and transit systems
- Address recurrent congestion (bottlenecks) and non-recurrent congestion (incidents)

Key FPI Elements
- Incident Management
- Traveler Information
- Arterial Management
- Ramp Metering
Service coverage peaked in 2012 while number of assists declined.

Current and future focus:
Make adjustments to service that accurately reflect regional congestion and incident patterns.

<table>
<thead>
<tr>
<th>Year</th>
<th>Trucks</th>
<th>Miles</th>
<th>Assists</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>41</td>
<td>135</td>
<td>87,000</td>
</tr>
<tr>
<td>2000</td>
<td>58</td>
<td></td>
<td>330</td>
</tr>
<tr>
<td>2006</td>
<td>77</td>
<td></td>
<td>450</td>
</tr>
<tr>
<td>2012</td>
<td>79</td>
<td></td>
<td>140,000</td>
</tr>
<tr>
<td>2014</td>
<td>82</td>
<td></td>
<td>575</td>
</tr>
<tr>
<td>2016</td>
<td>~77</td>
<td></td>
<td>~500</td>
</tr>
</tbody>
</table>

**Freeway Service Patrol**

**Call Boxes**

- **2004**: Removed 900 call boxes in response to declining call volumes.
- **2006**: Continued to downsize program due to prevalence of cell phones.
- **2008**: Introduced 511 Freeway Assist and complete bridge call box installation.
- **2014**: Install 511 Freeway Assist signs at removed sites. Spacing increases to 2 mi.
- **Future**: Complete removal from urban corridors.
What 511 Delivers
- Real-time & historical traffic
- Real-time & static transit
- Ridesharing & bicycling
- Real-time & static parking
- Breaking news & emergency info

How It’s Delivered
- Phone – call 511
- Web – visit 511.org
- Mobile – visit m.511.org
- App – 511 SF Bay Transit
- Texting/SMS
- Transit Hub and Highway CMSs

Program for Arterial System Synchronization (PASS)
- Coordinates signals during peak periods (commute, school, etc.)
- Improves bike, ped and transit mobility on major arterials
- Develops incident management flush plans, traffic responsive plans, and event coordination plans ($2M in FY2015)
Ramp Metering

- Control the rate at which vehicles enter a freeway facility through the use of traffic signals (i.e., breaking up vehicle platoon)

- Help ensure that the freeway is able to carry all the traffic it should be able to carry

FPI Ramp Metering Plans
Operating Principles

1. Coordinate freeway and arterial operations to ensure efficient operation of both facilities.

2. Promote high occupancy vehicles (HOV) preferential lanes at on-ramps where needed and if feasible.

3. Ensure that queues from metered ramps do not impede operation of local streets and intersections or block access to private property.

4. Ensure that if queues at metered ramps cannot be accommodated, metering will be set at a faster rate to eliminate the negative impact (queue override).
More Local Support for Ramp Metering Today

- **Freeway Management Focus**
  - Shift away from additional capacity to efficient operations of existing system

- **Partnerships & Leadership**
  - MTC, Caltrans & Congestion Management Agencies working together to deliver metering

- **Responding to Local Concerns**
  - Locals are concerned about spillback onto local streets and diversion
  - Metering rates developed within the Ramp Metering Implementation Plan are set to minimize spillback and diversion
  - Local jurisdictions are part of the technical committee providing direct input into the Ramp Metering Implementation Plan

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Corridors with Activated Ramp Meters

- FPI has activated metering in following corridors to date:
  - Solano I-80
  - Contra Costa CC-4
  - Alameda I-580, I-680
  - San Mateo US-101, I-280
## Mobility Benefits of Ramp Metering

*Increased freeway throughput of 2-5% results in measurable mobility benefits*

<table>
<thead>
<tr>
<th>County/Route</th>
<th>Corridor</th>
<th>Reduction In Travel Time</th>
<th>Reduction In Duration of Peak Period, hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM 101</td>
<td>SB Hillsdale to University</td>
<td>19</td>
<td>57</td>
</tr>
<tr>
<td>ALA 580</td>
<td>EB Foothill to Greenville</td>
<td>11</td>
<td>33</td>
</tr>
<tr>
<td>SM 280</td>
<td>NB Sneath to Serramonte</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>SCL 85</td>
<td>SB Almaden to Cottle</td>
<td>4</td>
<td>52</td>
</tr>
<tr>
<td>SCL 87</td>
<td>NB Route 85 to Skyport</td>
<td>4</td>
<td>30</td>
</tr>
<tr>
<td>SCL 87</td>
<td>SB Charcot to Santa Teresa</td>
<td>9</td>
<td>41</td>
</tr>
<tr>
<td>ALA 580</td>
<td>WB Interstate 205 to Foothill</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td>SCL 101</td>
<td>SB Embarcadero to De La Cruz</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>SCL 880</td>
<td>SB Route 237 to Stevens Creek</td>
<td>11</td>
<td>38</td>
</tr>
</tbody>
</table>

- **Travel Time:** Reduced 1 to 19 minutes (or 5 to 57%)
- **Duration of Peak Period:** Reduced 1 to 2 hours

### MTC Freeway Performance Initiative

**Upcoming Metering Activation by Year**

- Activated **2014**
MTC Freeway Performance Initiative
Upcoming Metering Activation by Year

Activated
2014
2015

Activated
2014
2015
2016
MTC Freeway Performance Initiative
Upcoming Metering Activation by Year

Activated
2014
2015
2016
≥2017

What’s Next:
Close “Gaps” in Metering Other High-Priority Corridors

- Close “gaps” in metering on other high-priority corridors (to be funded with federal funds from upcoming Cycle 3)
- Identify priority corridors using performance-based approach in consultation with Caltrans and partner agencies
What’s Next: Active Management Strategies

- Adaptive Ramp Metering
  - Adaptive to system-wide traffic on a freeway corridor (not just at specific ramp location)
  - Reduces freeway travel time by 3 to 10% (vs. conventional ramp metering)
  - Examples:
    - Orange, Ventura, and Los Angeles Counties’ Adaptive Ramp Metering (1990s)
    - Alameda CTC’s I-80 Adaptive Ramp Metering (2015)

- Other Active Traffic Management Strategies
  - Hard shoulder running, park-ride management, dynamic pricing, variable speeds, contraflow lane, etc.
  - P&R Management (LA Metro)