SR-91 CORRIDOR OPERATIONS
PROJECT UPDATE

Western Riverside County
Programs and Projects Committee Meeting
November 26, 2018

David Thomas, Toll Project Manager
Today’s Presentation

• Background
• Work since the May Commission meeting
• Staff Recommendations
  – Construction of General Purpose Lane 91 Westbound near the County Line
  – Agency-to-agency agreements
Background

• Opening of the 91 Express Lanes March 20, 2017
• Key congestion areas
• Operational improvements evaluated
• May 9, 2018 Commission meeting
Work Performed Since May

• 91 Express Lanes entrance at I-15 Northbound
• Restriping 91 Westbound Express Lanes entrance/exit near the County Line
• Green River Road Ramp Meter Study
• Environmental and Design of General Purpose Lane 91 Westbound near the County Line
91 Express Lanes entrance at I-15 Northbound

- Extend express lane entrance south
- Implemented on September 16, 2018
- Reduces impact to General Purpose lanes from queuing in the 91 Express Lanes

I-15 NB EL Option 1
Restriping 91 Westbound Express Lanes Entrance/Exit near the County Line

- Restripe the separated entrance and exit to a continuous access lane
- Implemented November 16-19, 2018
- Expected to reduce congestion periods and improve travel times in the westbound 91 General Purpose lanes

SR-91 WB GP Option 3
RCTC
SR 91 COP
Green River Road Ramp Meter - Off vs. On
Fall 2018 Trial
Agenda

1. Background of Green River Road Ramp meter trial
2. Data Collection Program
3. Results – Queue Observations, Travel Time runs and Traffic Counts
Background of the Green River Road Meter

- 3-lane ramp meter at Green River
- Cycle Length - 7.5 seconds
- Heavy delays on Green River Road
- Trial program schedule
  - Sep 10 Week: Meter On
  - Sep 17 Week: Meter Off
  - Sep 24 Week: Meter Off
  - Oct 1 Week: 2 cars / Green
Monitor Traffic Conditions before and after

**Travel Time Runs**

- Travel time runs on Green River Road and SR 91 (3 days/week)
- Traffic counts on SR 91 and Green River Road
Monitor Traffic Conditions before and after Video Camera Observations

- Drone observation every Tuesday
- Fixed position cameras:
  - Green River Road at Fresno Road and Dominguez Ranch Rd
  - SR 91 at Main Street
  - Green River Road on Ramp
Drone Observation: Points of Reference
Drone Observation at On-Ramp: 6:45 AM

6:45:09

METER ON: Sep 11

6:45:09

METER OFF: Sep 25

6:45:06

METER OFF: Sep 18

6:45:05

2 cars / green: Oct 2
Drone Observation Upstream: 6:45 AM

**Meter On: Sep 11**

- Nicholas Place: 4300 ft queue

**Meter Off: Sep 25**

- Palisades Dr: 5100 ft queue

**Meter Off: Sep 18**

- Nicholas Pl: 3900 ft queue

**6:53:16**

- Ridgeline Dr: 6600 ft queue
- 2 cars / green: Oct 2
Drone Observation at On-Ramp: 7:30 AM

7:30:08

METER ON: Sep 11

7:30:03

METER OFF: Sep 18

7:30:13

METER OFF: Sep 25

7:30:04

2 cars / green: Oct 2
Drone Observation Upstream: 7:30 AM

Drone Observation Upstream: 7:30 AM

Drone Observation Upstream: 7:30 AM

Drone Observation Upstream: 7:30 AM
Week 4: 2 cars per green

• Portable message signs were placed at two locations, before and after meter
# 2 cars per green: Compliance Statistics

<table>
<thead>
<tr>
<th>Date of Observation</th>
<th>Time Interval</th>
<th>No. of times 2 cars go on Green</th>
<th>No. of times 1 car go on green</th>
<th>% of Time 2 cars departed per green signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 1</td>
<td>15 minutes</td>
<td>53</td>
<td>112</td>
<td>32%</td>
</tr>
<tr>
<td>October 2</td>
<td>10 minutes</td>
<td>81</td>
<td>50</td>
<td>62%</td>
</tr>
<tr>
<td>October 3</td>
<td>10 minutes</td>
<td>82</td>
<td>39</td>
<td>67%</td>
</tr>
</tbody>
</table>

- One-third of the time only 1 car left the meter
- Ramp throughput and travel time on Green River Road degraded due to lack of compliance
Travel Time Results **6:00 AM**

**SR91 GP and Green River Road**

---

**Meter On**
- SR 91: 45 minutes
- Foothill Pkwy / Green River: 48 minutes

**Meter Off**
- SR 91: 48 minutes
- Foothill Pkwy / Green River: 36 minutes

- 48 minutes from I-15 to Gypsum Canyon (Green River Rd)
- 45 minutes on SR 91 from McKinley to Gypsum Canyon

- 36 mins. from I-15 to Gypsum **(-12 mins)**
- 48 minutes from McKinley to Gypsum Canyon **(+3 minutes)**
Travel Time Impact: Green River Road and SR 91

- 9 to 11 minute decrease in average Travel Time on Green River Road from 6-8 AM when meter is off
- 2 to 3 minute increase in travel time on SR 91 from 5-7 AM
- Factor in the amount of traffic - total increase of 270 vehicle-hours of delay
SR 91 Westbound (71 to 241) Avg. Travel Time - Meter ON vs. OFF

- 1 to 2 minute travel time increase on SR 91 westbound GP (SR 71 to 241)
- Source: Caltrans
Traffic Volume Results

Traffic Volume Counts – Green River Road on-ramp

- Throughput on Green River Road ramp increases during peak hours with meter turned off.

![Graph showing traffic volume counts over time with comparative data.](chart.png)
Traffic Volume Results

Traffic Volume Counts – Green River Road and Palisades intersection (1 mile upstream)

- Green River Road volume increases
- Reflects increased activity on Green River Road / Foothill Parkway
- More activity in Week 3

Green River Road at Palisades

<table>
<thead>
<tr>
<th>Time</th>
<th>Avg. Weekday- Week 1: Meter ON</th>
<th>Avg. Weekday- Week 2: Meter OFF</th>
<th>Avg. Weekday- Week 3: Meter OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 AM</td>
<td>605</td>
<td>667</td>
<td>751</td>
</tr>
<tr>
<td>5:00 AM</td>
<td>1,511</td>
<td>1,774</td>
<td>2,099</td>
</tr>
<tr>
<td>6:00 AM</td>
<td>1,662</td>
<td>1,673</td>
<td>1,774</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>1,621</td>
<td>1,645</td>
<td>1,673</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>1,539</td>
<td>1,539</td>
<td>1,539</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>1,367</td>
<td>1,367</td>
<td>1,367</td>
</tr>
</tbody>
</table>
Traffic Volume Results

Traffic Volume – Green River Rd west of Serfas Club Drive (2.5 miles upstream)

- Green River Road volume increases during peak hours
- Reflects increased activity on Green River Road / Foothill Parkway

Green River Road at Serfas Club Drive

<table>
<thead>
<tr>
<th>Time</th>
<th>Week 1 Meter ON</th>
<th>Week 2 Meter OFF</th>
<th>Week 3 Meter OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 AM</td>
<td>590</td>
<td>688</td>
<td>773</td>
</tr>
<tr>
<td>5:00 AM</td>
<td>1,208</td>
<td>1,205</td>
<td>1,437</td>
</tr>
<tr>
<td>6:00 AM</td>
<td>897</td>
<td>994</td>
<td>1,007</td>
</tr>
<tr>
<td>7:00 AM</td>
<td>833</td>
<td>996</td>
<td>1,007</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>808</td>
<td>984</td>
<td>941</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>762</td>
<td>984</td>
<td>836</td>
</tr>
</tbody>
</table>
Traffic Volume Results

Traffic Volume – SR 91 GP + EL at County Line

- Total SR 91 throughput declines with meter off
- 600 vehicle reduction across the 6-hour period
Drone Observation at On-Ramp: Gore Jumpers
Drone Observation at On-Ramp

Limited observations show more gore jumping with meter off.

- Meter off: 150-400 vph (11-35 in 5-6 minutes)
- Meter on: 10-60 vph (1-5 in 5-6 minutes)

5-6 minutes drone observation
## Summary of Findings

<table>
<thead>
<tr>
<th></th>
<th>Travel Time (91 GP)</th>
<th>Travel Time (Green River Road)</th>
<th>CL Throughput</th>
<th>Green River Road Demand</th>
<th>Gore Jumpers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change with meter off</td>
<td>+1-3 mins</td>
<td>- 5 to 10 mins</td>
<td>- 600 vehicle total reduction</td>
<td>+100 to +200 vph</td>
<td>200 vph</td>
</tr>
<tr>
<td><strong>Base Case</strong></td>
<td>40-50 minutes base</td>
<td>35-50 minutes base</td>
<td>11,000 vph</td>
<td>1,500 vph</td>
<td>30 vph</td>
</tr>
</tbody>
</table>

- Improvement on Green River Road coupled with more traffic.
- Degradation along 91
- Net change in delay 270 vehicle-hours
- Increase in “gore jumping”
General Purpose Lane 91 Westbound near the County Line

- Add one lane on SR-91 westbound from Green River Road to SR-241
- Expected to further reduce congestion periods and improve travel times in the westbound 91 general purpose lanes
- Staff recommended implementing modified Option 4 in two steps
- Amendment with Parsons for Environmental and Design for $4,790,973
### General Purpose Lane 91 Westbound near the County Line – Toll Revenue Impacts

<table>
<thead>
<tr>
<th>Year</th>
<th>Baseline Revenue</th>
<th>91 WB Option 4M Revenue</th>
<th>Revenue Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022</td>
<td>$57,250,000</td>
<td>$49,730,000</td>
<td>$7,520,000</td>
</tr>
<tr>
<td>2023</td>
<td>62,250,000</td>
<td>54,070,000</td>
<td>8,180,000</td>
</tr>
<tr>
<td>2024</td>
<td>67,690,000</td>
<td>58,790,000</td>
<td>8,900,000</td>
</tr>
<tr>
<td>2025</td>
<td>73,600,000</td>
<td>63,930,000</td>
<td>9,670,000</td>
</tr>
<tr>
<td>2026</td>
<td>79,240,000</td>
<td>68,840,000</td>
<td>10,400,000</td>
</tr>
<tr>
<td>2027</td>
<td>84,550,000</td>
<td>73,460,000</td>
<td>11,090,000</td>
</tr>
<tr>
<td>2028</td>
<td>90,200,000</td>
<td>78,390,000</td>
<td>11,810,000</td>
</tr>
<tr>
<td>2029</td>
<td>96,240,000</td>
<td>83,650,000</td>
<td>12,590,000</td>
</tr>
<tr>
<td>2030</td>
<td>102,690,000</td>
<td>89,270,000</td>
<td>13,420,000</td>
</tr>
<tr>
<td>2031</td>
<td>109,560,000</td>
<td>95,270,000</td>
<td>14,290,000</td>
</tr>
<tr>
<td>2032</td>
<td>116,890,000</td>
<td>101,660,000</td>
<td>15,230,000</td>
</tr>
<tr>
<td>2033</td>
<td>124,710,000</td>
<td>108,490,000</td>
<td>16,220,000</td>
</tr>
<tr>
<td>2034</td>
<td>133,060,000</td>
<td>115,770,000</td>
<td>17,290,000</td>
</tr>
<tr>
<td>2035</td>
<td>134,580,000</td>
<td>125,660,000</td>
<td>8,920,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$165,530,000</td>
</tr>
</tbody>
</table>

**Total Yearly Revenue:** $165,530,000
General Purpose Lane 91 Westbound near the County Line – **Recommendations**

- Staff recommendation: Authorize implementation of the construction phase after completing environmental and design approvals
- Staff recommendation: Authorize inclusion in the list of Commission projects for prioritization and funding determination
- Staff recommendation: Authorize all necessary agency agreements for construction (potential agreements with Caltrans, OCTA, CHP, etc.)
THANK YOU