



RIVERSIDE  
COUNTY  
TRANSPORTATION  
COMMISSION

# 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

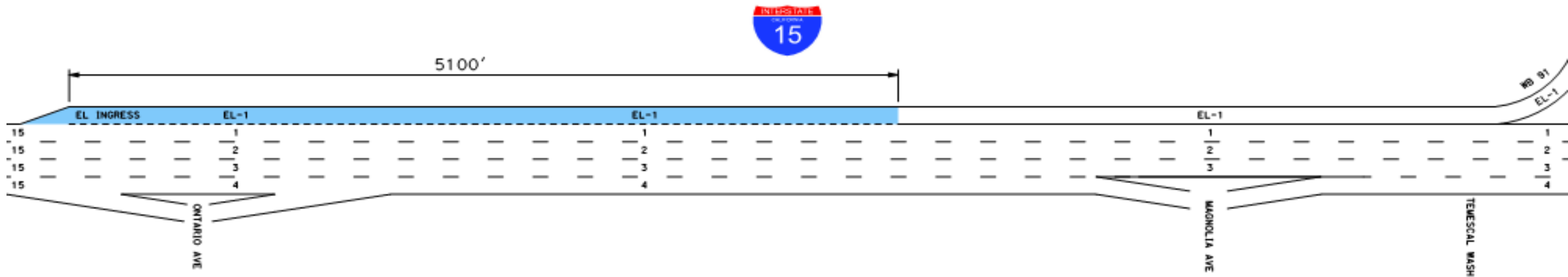
- Opening of the 91 Express Lanes March 20, 2017
- Key congestion areas
- Operational improvements evaluated
- May 9, 2018 Commission meeting

# 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

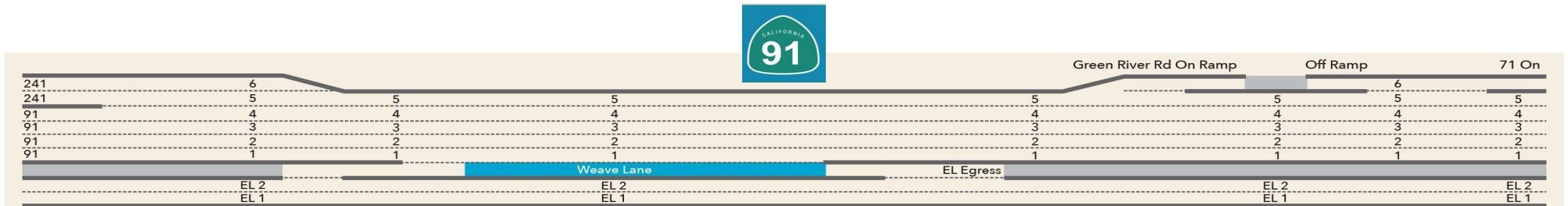
- Extend express lane entrance south
- Implemented on September 16, 2018
- Reduces impact to General Purpose lanes from queuing in the 91 Express Lanes



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



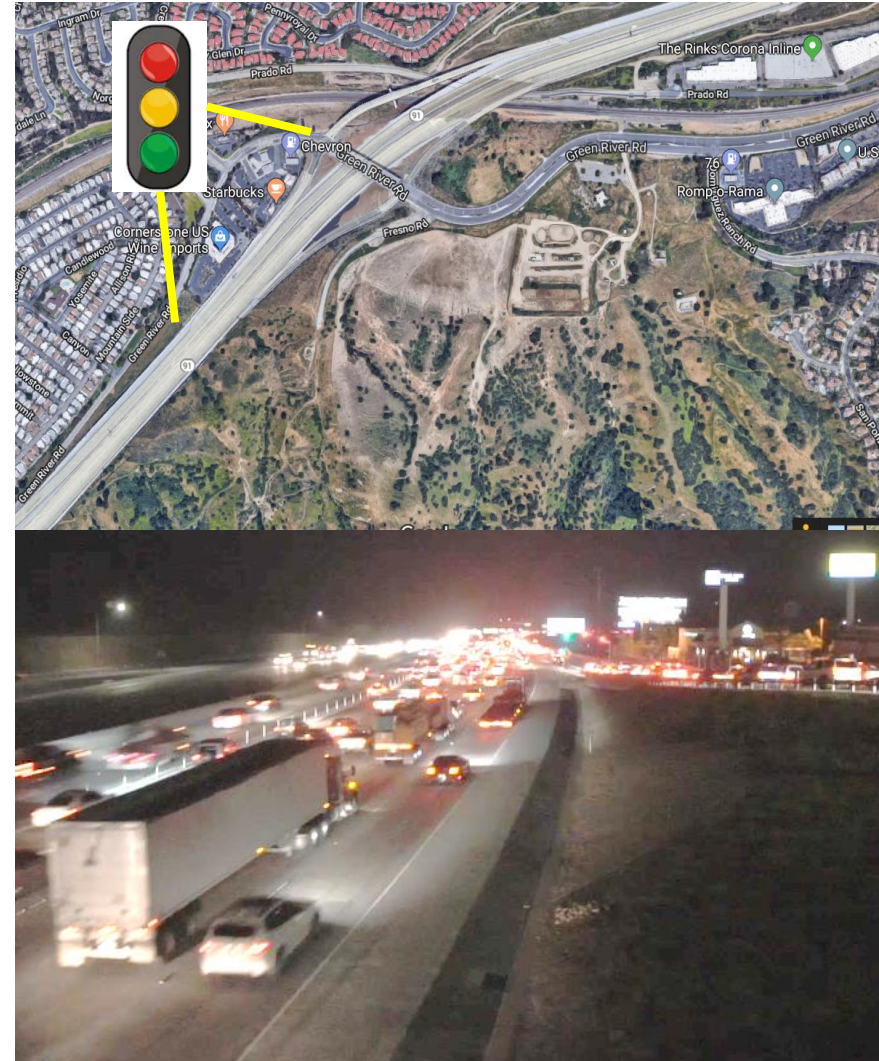
# Agenda

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



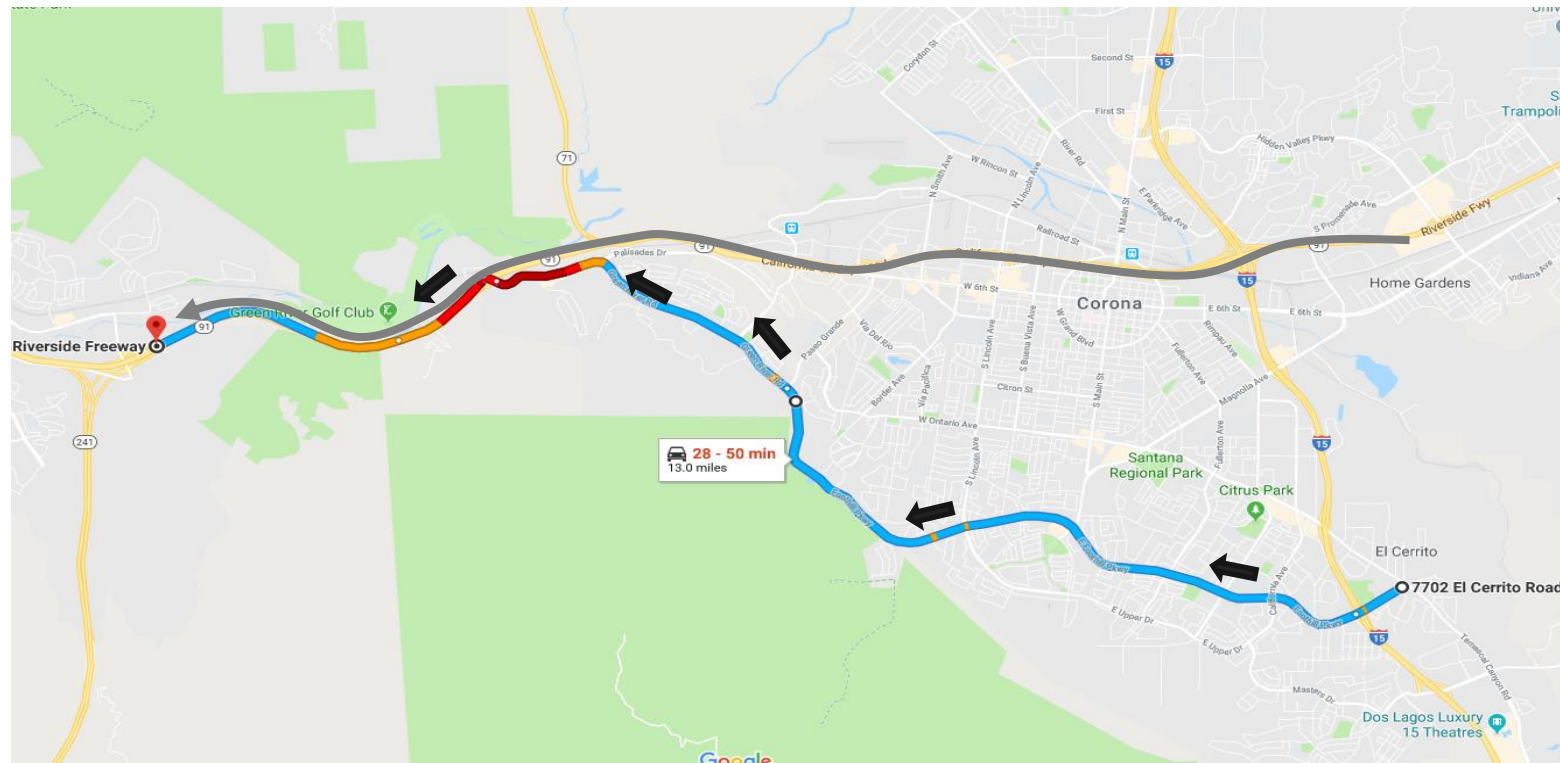
# Background of the Green River Road Meter

- 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



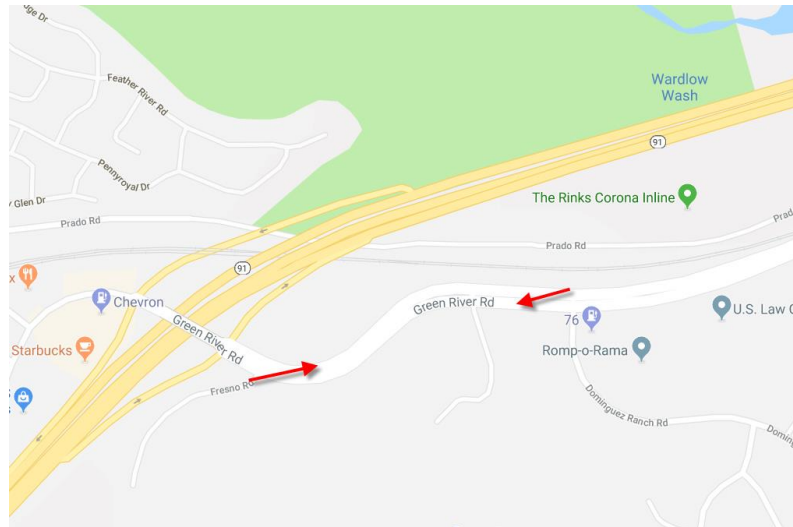
# Monitor Traffic Conditions before and after *Travel Time Runs*

- 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



*METER ON: Sep 11*



*METER OFF: Sep 18*



*METER OFF: Sep 25*



*2 cars / green: Oct 2*

# Drone Observation Upstream: 6:45 AM



*METER ON: Sep 11*



*METER OFF: Sep 18*



*METER OFF: Sep 25*



*2 cars / green: Oct 2*

# Drone Observation at On-Ramp: 7:30 AM



*METER ON: Sep 11*



*METER OFF: Sep 18*



*METER OFF: Sep 25*



*2 cars / green: Oct 2*

# Drone Observation Upstream: 7:30 AM



*METER ON: Sep. 11*



*METER OFF: Sep 18*



*METER OFF: Sep 25*



*2 cars / green: Oct 2*



## Week 4: 2 cars per green



- Portable message signs were placed at two locations, before and after meter

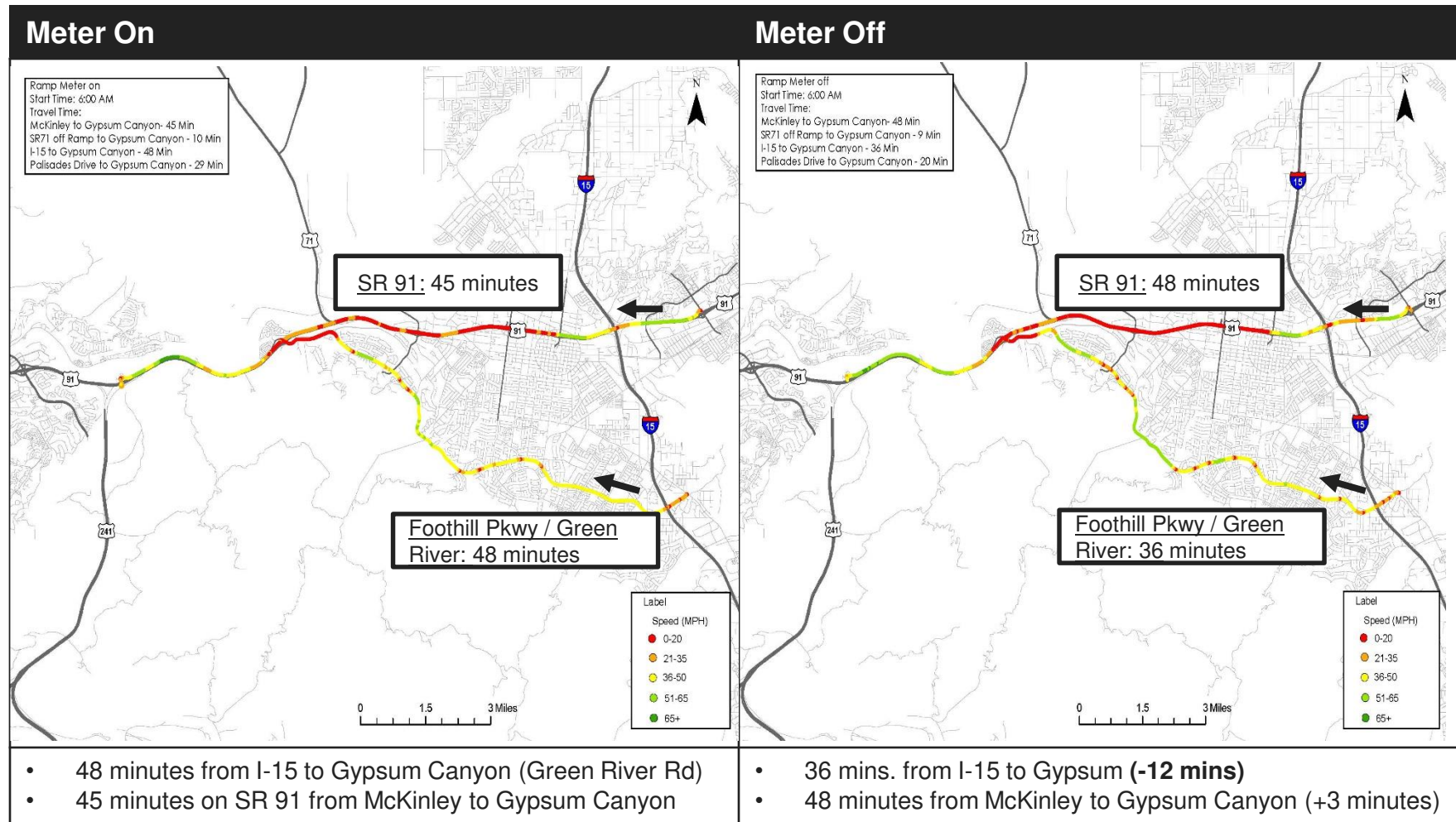
## 2 cars per green: Compliance Statistics

Date of Observation	Time Interval	No. of times 2 cars go on Green	No. of times 1 car go on green	% of Time 2 cars departed per green signal
October 1	15 minutes	53	112	32%
October 2	10 minutes	81	50	62%
October 3	10 minutes	82	39	67%

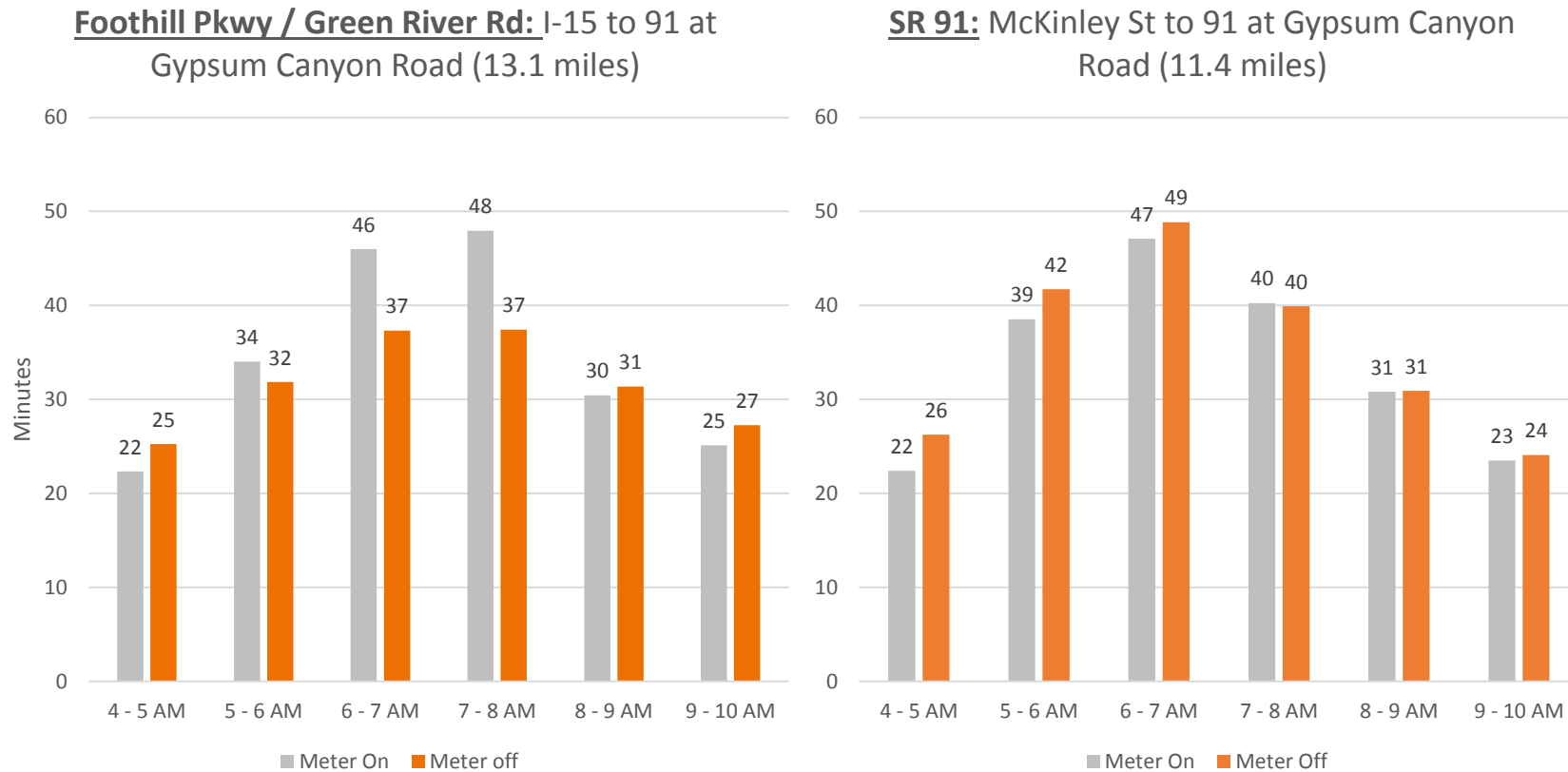
- One-third of the time only 1 car left the meter
- Ramp throughput and travel time on Green River Road degraded due to lack of compliance

# Travel Time Results 6:00 AM

## SR91 GP and Green River Road



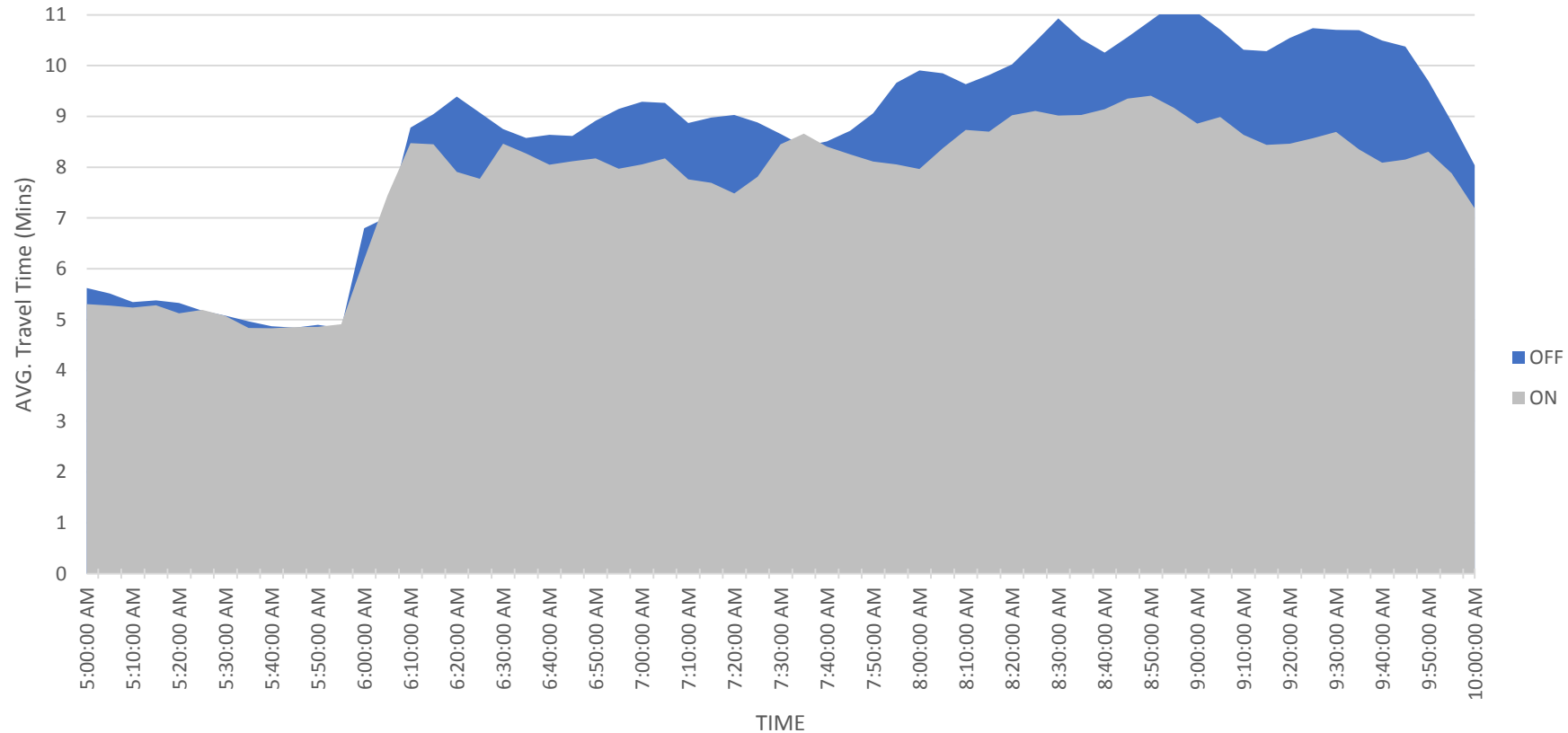
# Travel Time Impact: Green River Road and SR 91



- 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

# Travel Time Impact: SR 71 to SR 241

SR 91 Westbound (71 to 241) Avg. Travel Time - Meter ON vs. OFF

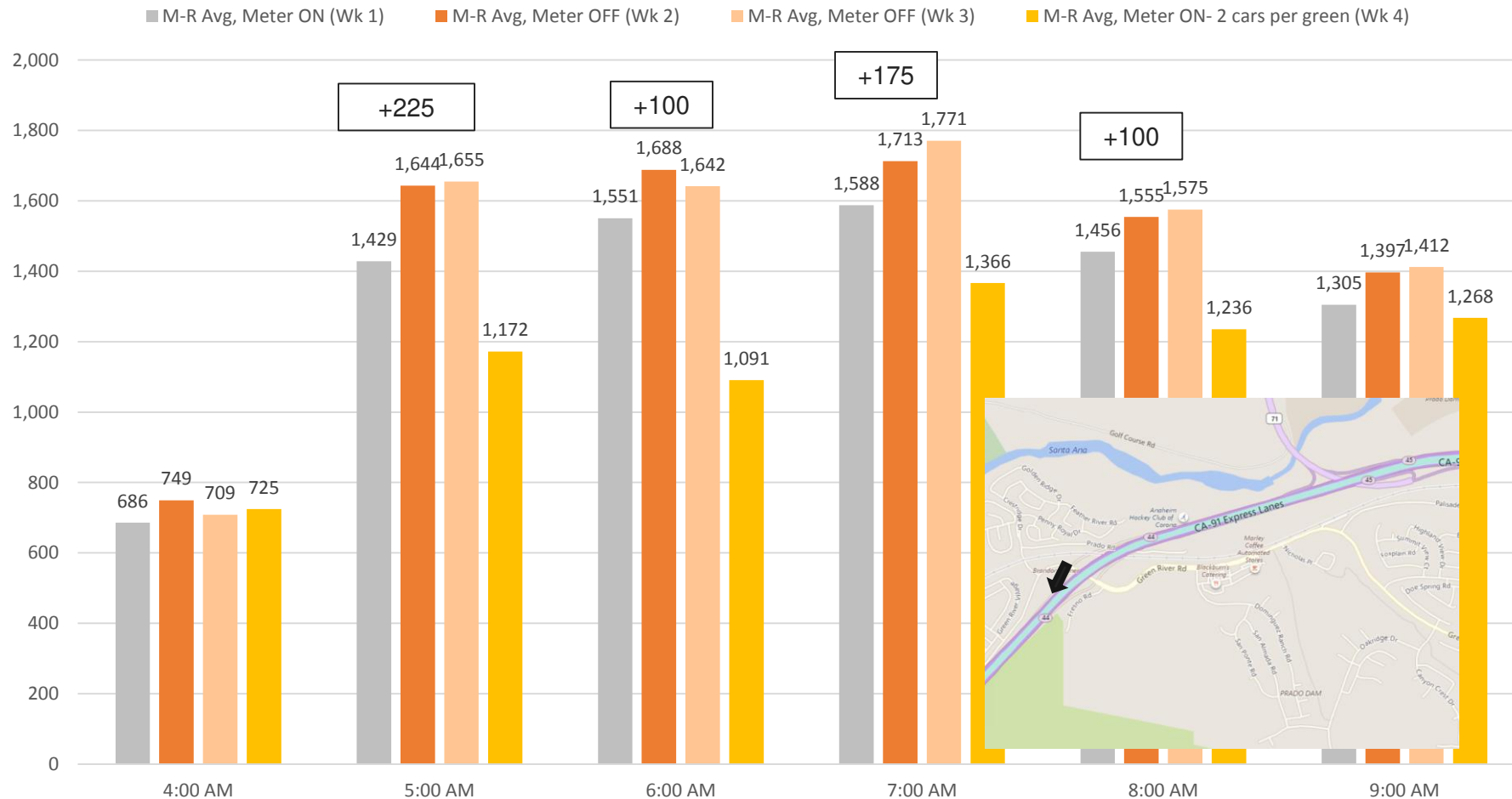


- 1 to 2 minute travel time increase on SR 91 westbound GP (SR 71 to 241)
- *Source: Caltrans*

# 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.

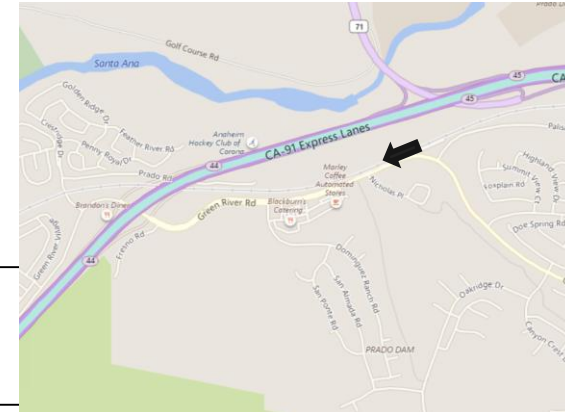
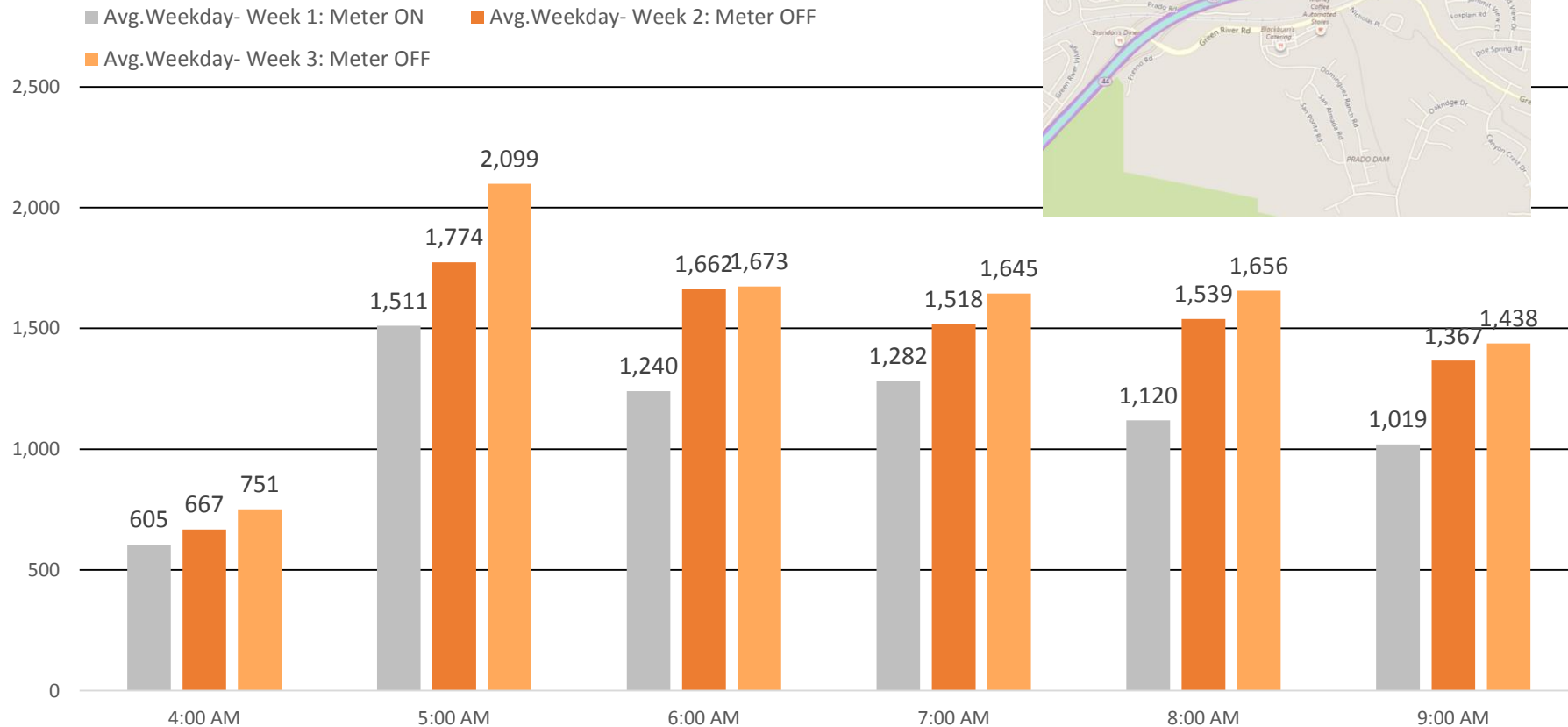


# Traffic Volume Results

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

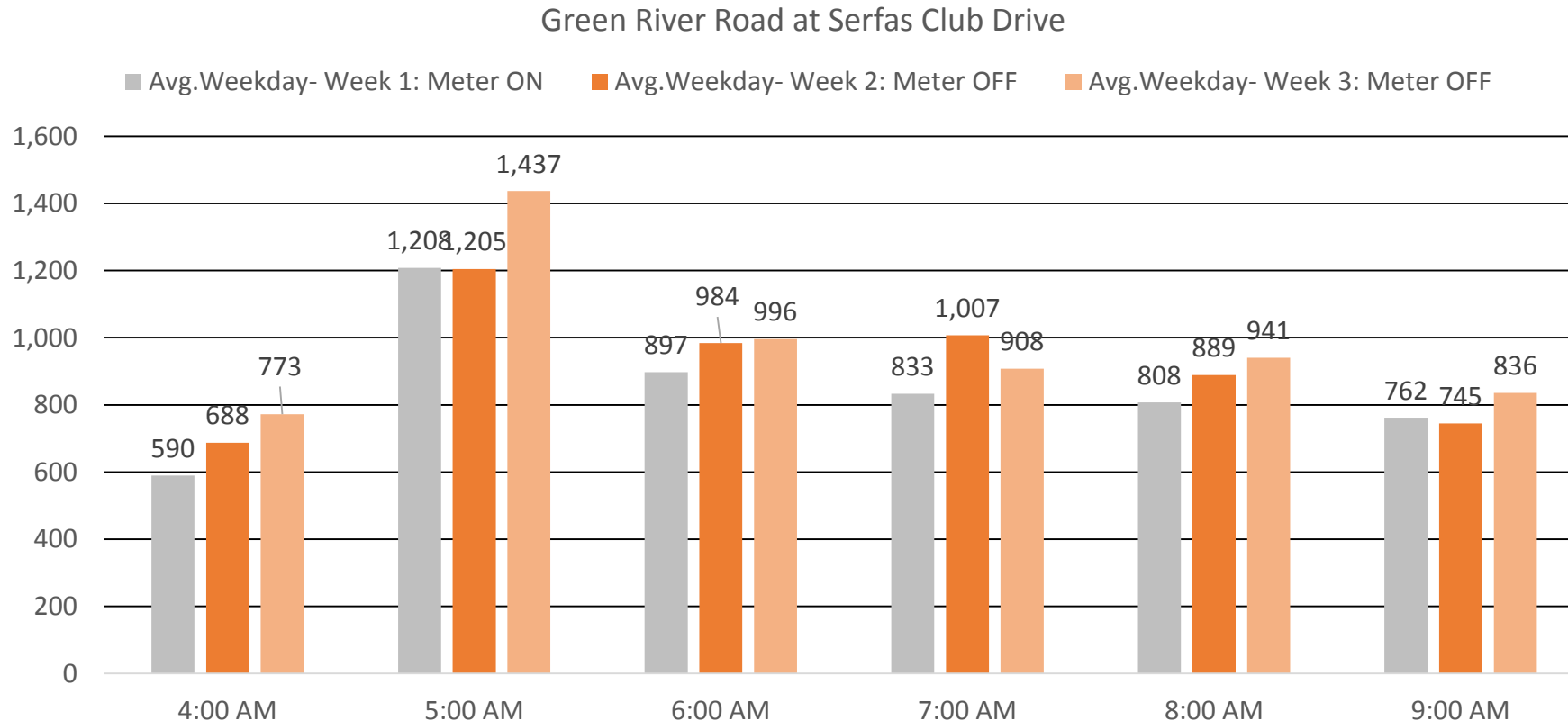
## Green River Road at Palisades



# Traffic Volume Results

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

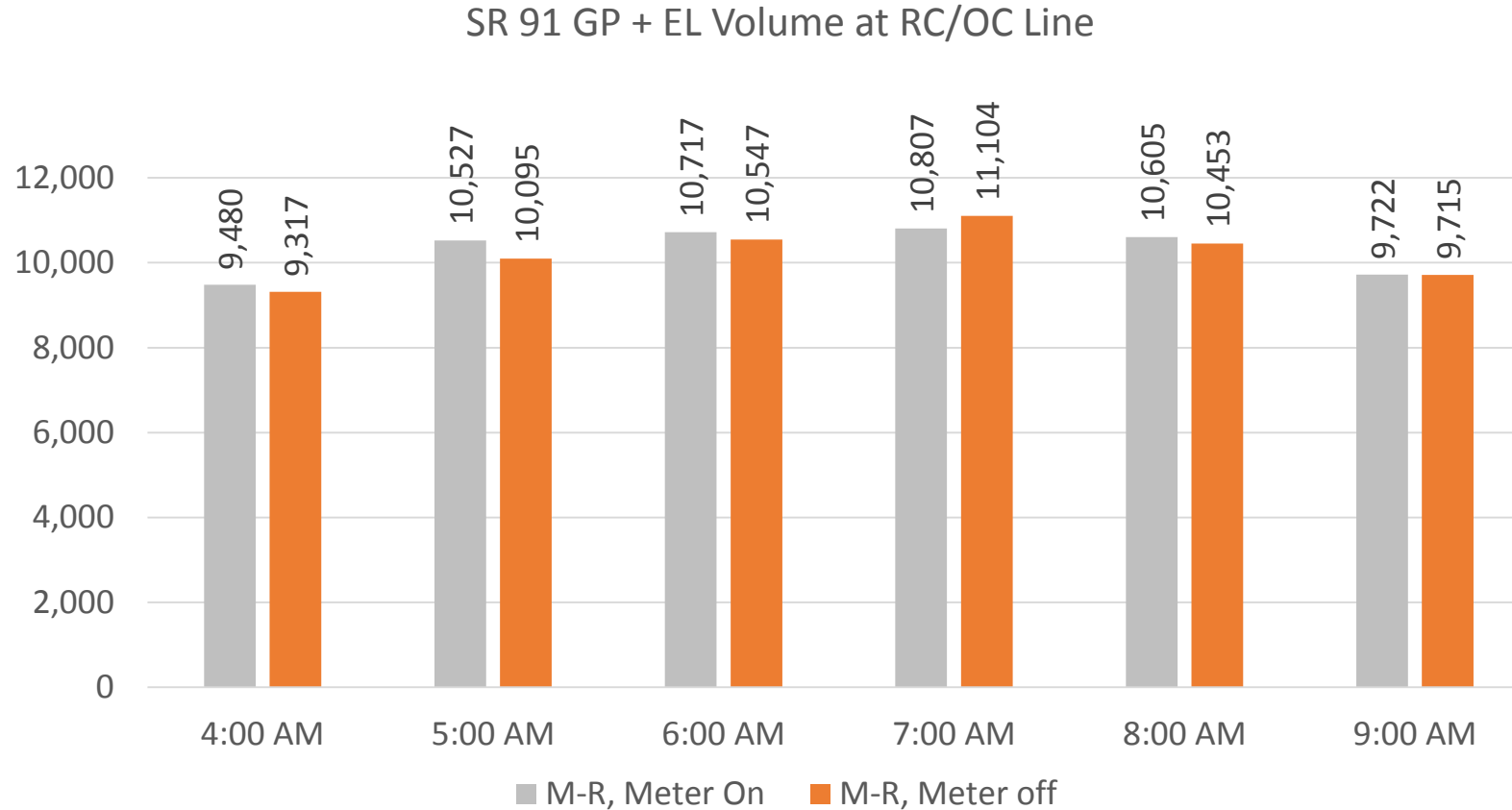
- Green River Road volume increases during peak hours
- Reflects increased activity on Green River Road / Foothill Parkway





# Traffic Volume Results

## Traffic Volume – SR 91 GP + EL at County Line

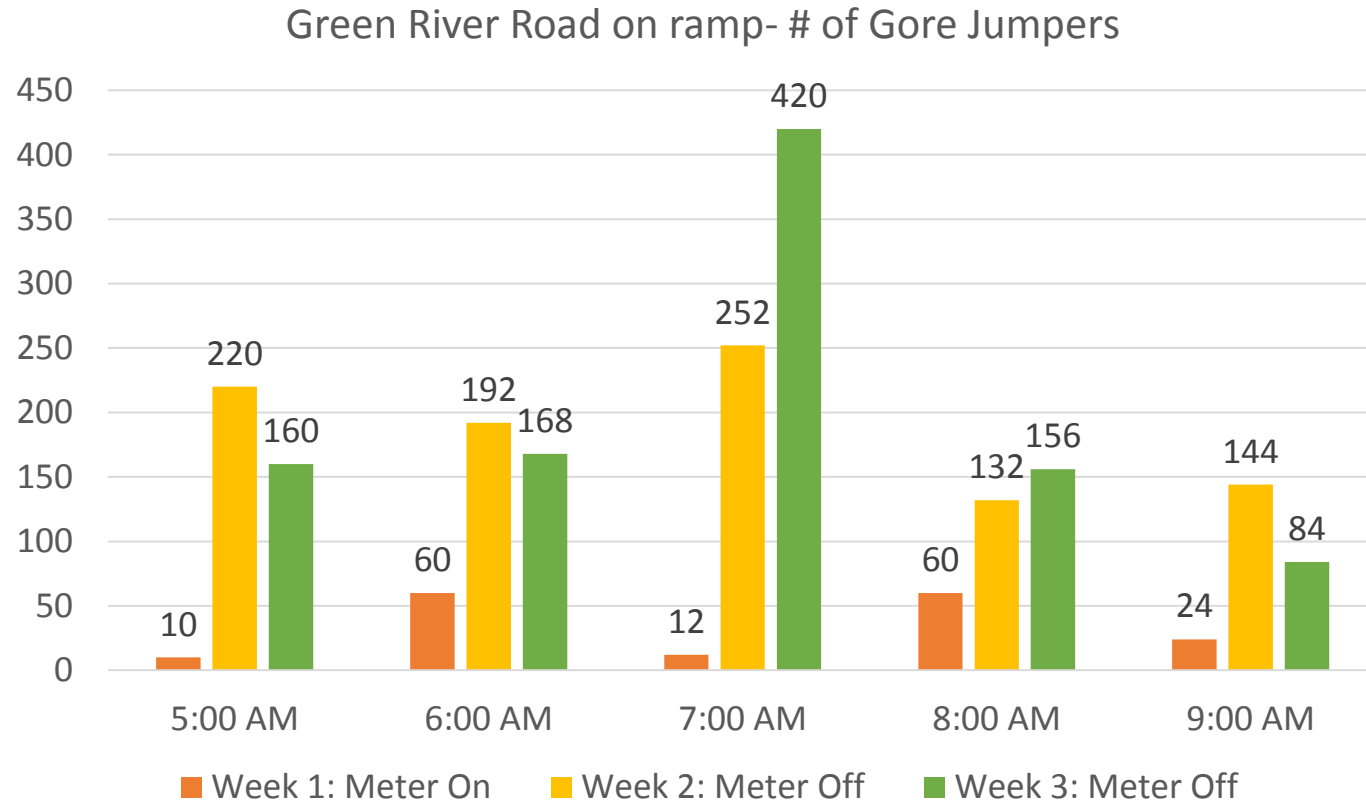


- Total SR 91 throughput declines with meter off
- 600 vehicle reduction across the 6-hour period

# 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

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

- 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



				Green River Rd On Ramp		Off Ramp		71 On
241	6	6	6				6	
241	5	5	5	5	5	5	5	5
91	4	4	4	4	4	4	4	4
91	3	3	3	3	3	3	3	3
91	2	2	2	2	2	2	2	2
91	1	1	1	1	1	1	1	1
	EL Ingress			EL Egress				
		EL 2				EL 2		EL 2
		EL 1				EL 1		EL 1

SR-91 WB GP Option 4

# General Purpose Lane 91 Westbound near the County Line – Toll Revenue Impacts

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

# 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.)



	Green River Rd On Ramp			Off Ramp			71 On
241	6	6	6			6	
241	5	5	5	5	5	5	5
91	4	4	4	4	4	4	4
91	3	3	3	3	3	3	3
91	2	2	2	2	2	2	2
91	1	1	1	1	1	1	1
	EL Ingress			EL Egress			
		EL 2 EL 1			EL 2 EL 1		EL 2 EL 1

SR-91 WB GP Option 4



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**THANK YOU**