



State Route 91 Corridor Plans



Transportation Corridor Agencies



SR 241/91 Express Lanes Connector Project

OCTA/RCTC State Route 91 Advisory Committee

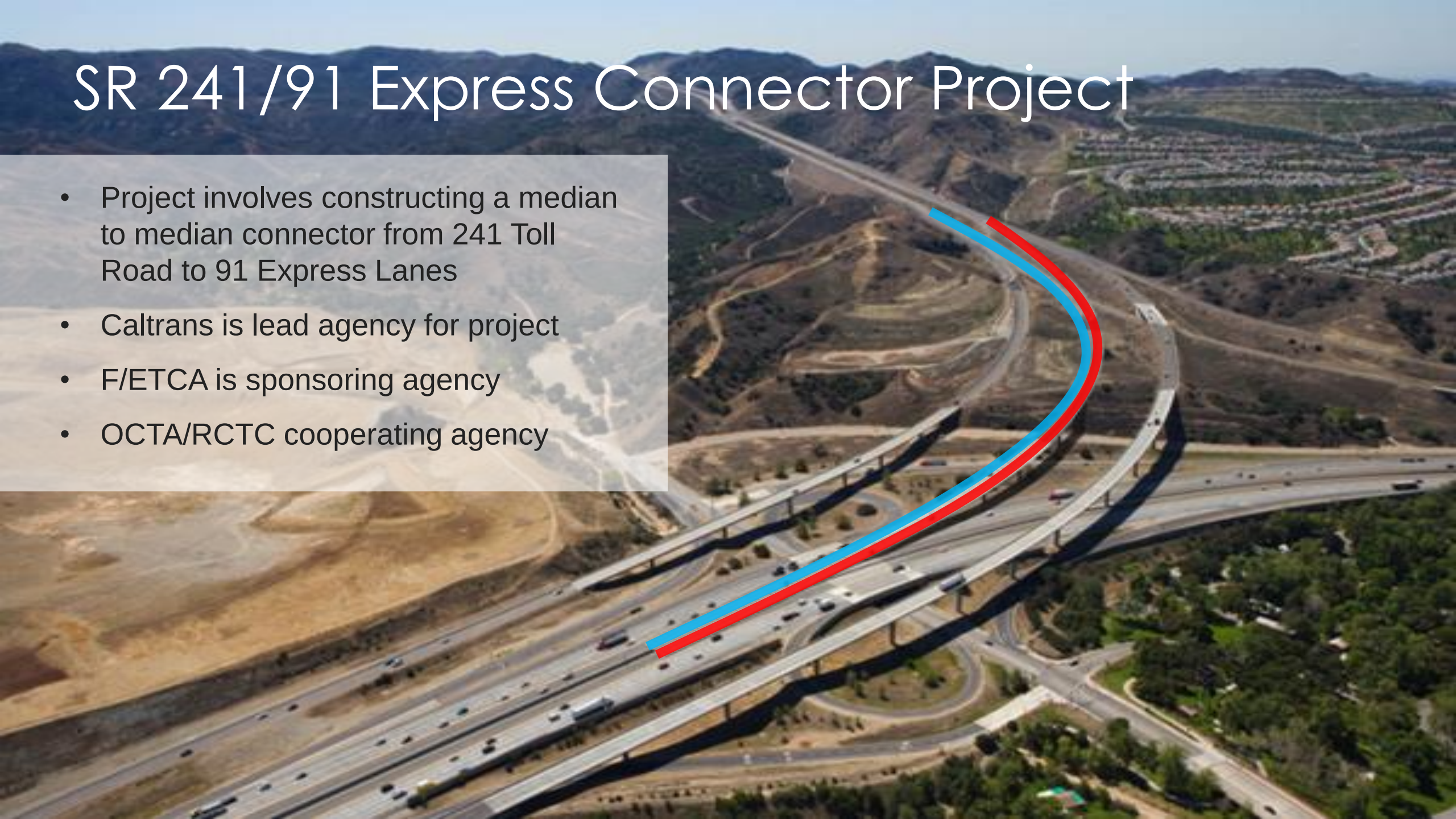
March 1, 2019



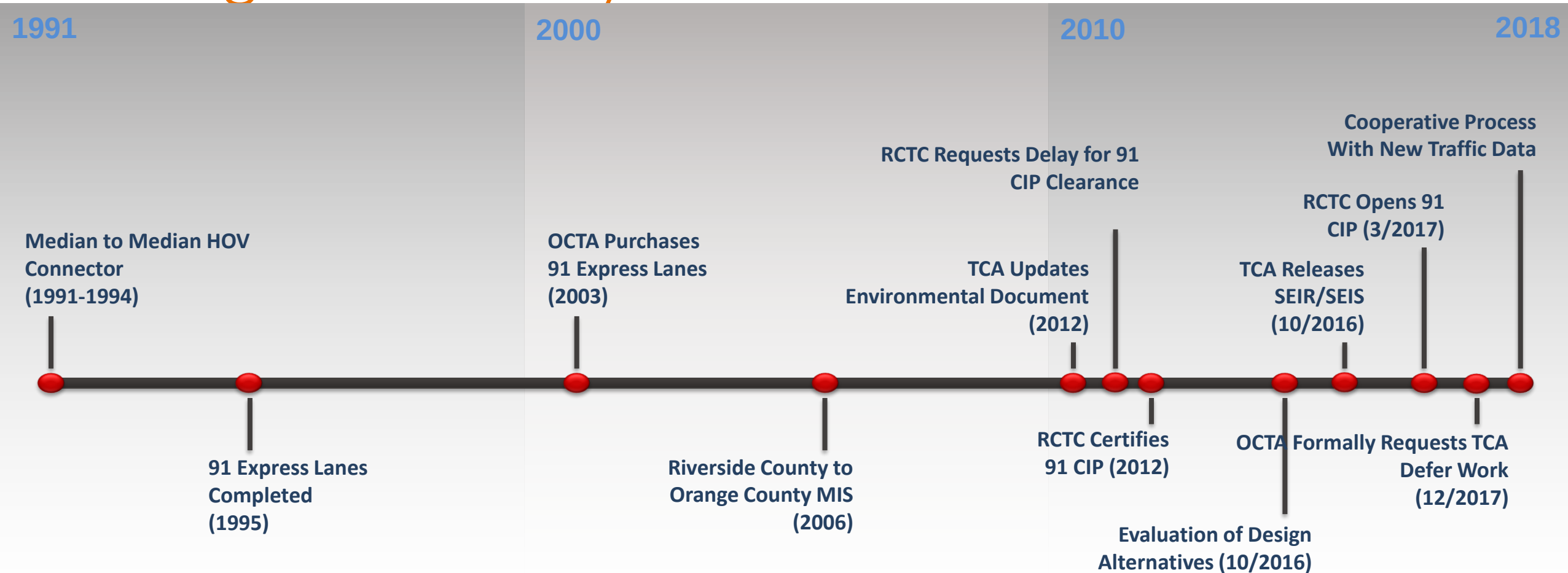
Transportation Corridor Agencies

SR 241/91 Express Connector Project

- Project involves constructing a median to median connector from 241 Toll Road to 91 Express Lanes
- Caltrans is lead agency for project
- F/ETCA is sponsoring agency
- OCTA/RCTC cooperating agency



Background History/Timeline





SR-241/ SR-91 Express Lanes Connector

March 1, 2019

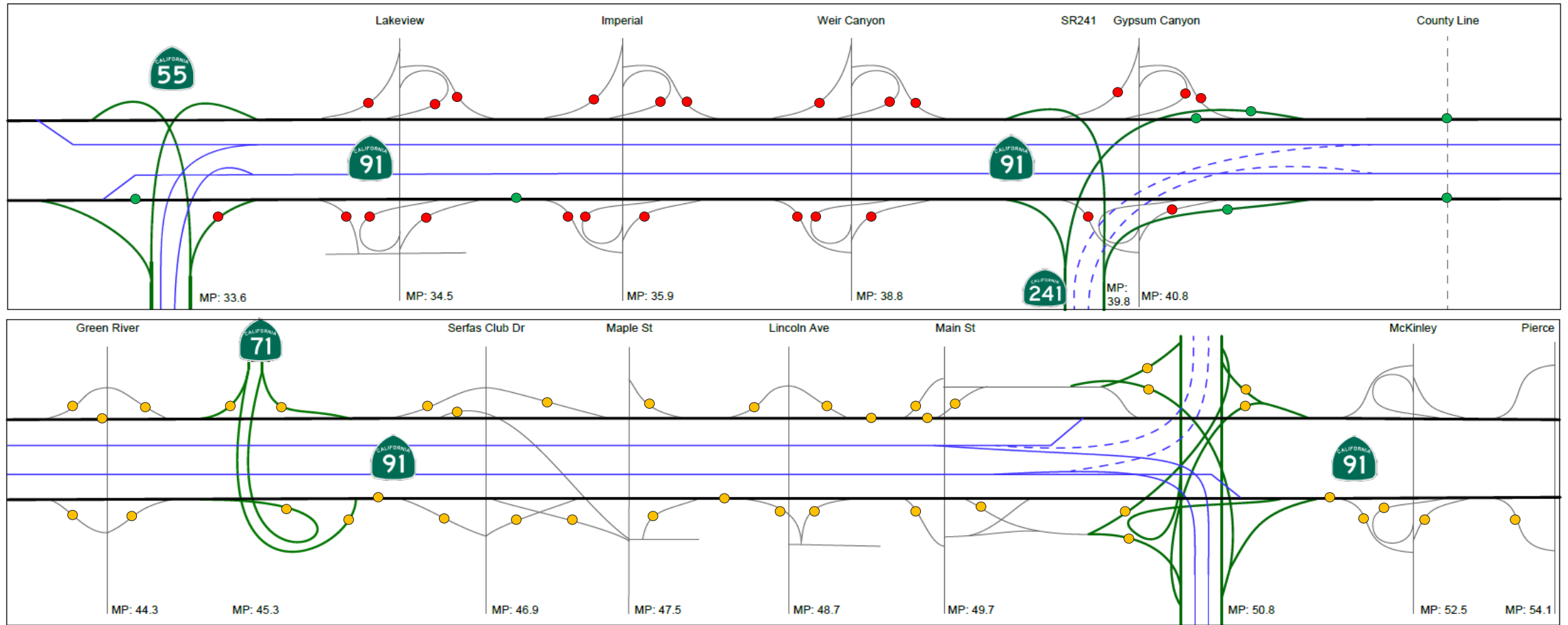
TRAFFIC ANALYSIS



Agenda

1. Data Collection Overview and Existing Conditions
2. Vissim Model Calibration
3. Scenarios Definition
4. 2025 Build vs No Build

Traffic Count Locations

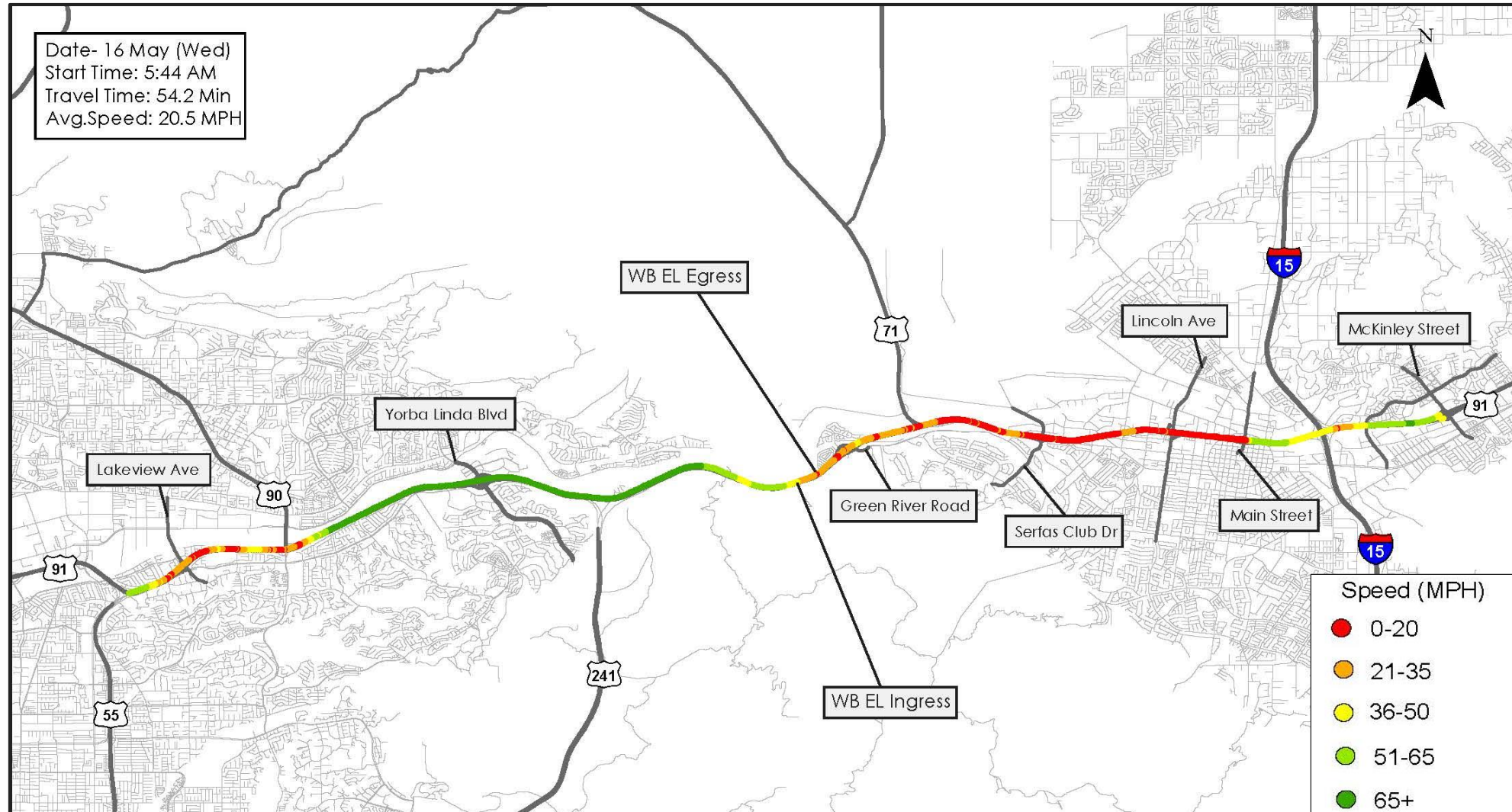


- Travel Time Runs on 05/15 to 05/18
- Supplemented by SigAlert Speed Data for Months of March to May and Google API historical speed data
- 24 locations of ATR counts week of 05/13 and 05/20
- 8 locations of Video counts week of 05/13 and 05/20
- Supplemented by PeMS counts, 91 XL counts

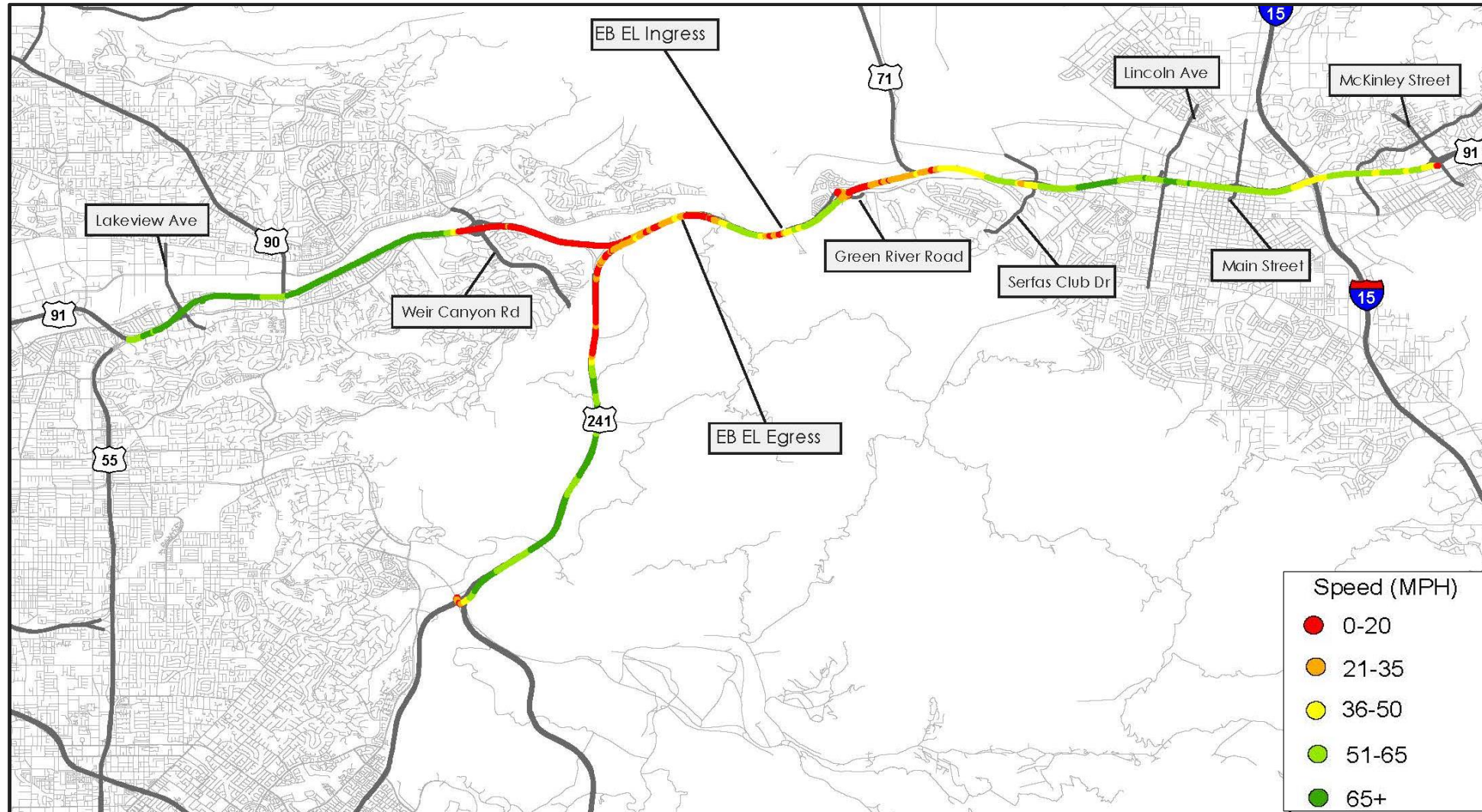
Legend

- Video Counts
- Tube Counts
- PeMS Counts
- Counts provided by Others

Existing Conditions AM WB - Peak



Existing Conditions PM EB - Peak



2018 Existing Conditions Vissim Model Calibration

2018 Existing Conditions Vissim Model Calibration

Calibration Criteria: Based on original Caltrans and FHWA guidelines and consistent with the original Traffic Analysis Report.

Acceptable Range is >85% of cases for individual link flows and within 5% for sum of all link flows.

Volume Calibration Results – Existing PM Peak Period (2-7 PM)

Measurment Type	Total Links	SR 91 Eastbound					
		2-3 PM	3-4 PM	4-5 PM	5-6 PM	6-7 PM	
Individual Link Flows	43.0	95%	100%	100%	100%	100%	93%
Sum of All Link Flows		4%	-1%	-1%	1%	0%	-1%

Volume Calibration Results – Existing AM Peak Period (5-10 AM)

Measurment Type	Total Links	SR 91 Westbound				
		5-6 AM	6-7 AM	7-8 AM	8-9 AM	9-10 AM
Individual Link Flows	45	93%	93%	93%	93%	98%
Sum of All Link Flows		-1%	-2%	-3%	0%	0%

Speed HEAT Map Westbound: 5 – 10 AM

WB GP Speeds	Lakeview Imperial Weir Canyon SR-241 On Gypsum Canyon SR-241 Off															Weave RC GP to OC GP	Green River SR-71 Serfas Club Maple Lincoln Main I-15														
Distance	0.4	0.2	0.2	1.0	0.2	0.3	2.4	0.2	0.7	0.4	0.7	0.2	0.3	0.3	1.1	1.2	0.4	0.7	0.5	0.6	1.0	0.3	0.4	0.3	0.8	0.6	0.3	0.3	0.6	0.5	0.5
2018 OBSERVED																															
5 - 6 AM	16	11	17	50	63	49	62	66	59	67	63	54	50	46	45	17	21	17	14	11	13	16	20	19	16	34	46	55	56	59	61
6 - 7 AM	36	28	42	45	47	70	77	74	70	73	74	71	71	70	49	19	22	20	14	11	8	8	10	8	7	8	27	67	53	58	64
7 - 8 AM	53	57	55	71	72	71	67	72	72	69	71	65	65	65	45	20	19	23	15	13	10	8	8	9	8	8	7	37	57	58	58
8 - 9 AM	51	53	59	66	66	69	71	69	69	64	59	66	67	69	51	19	25	19	17	13	14	11	19	18	15	7	28	63	65	66	67
9 - 10 AM	40	42	48	63	66	67	73	71	71	71	67	65	63	62	49	21	32	26	23	16	22	25	35	35	42	55	51	65	71	69	66
2018 EXISTING MODEL																															
5 - 6 AM	44	66	63	68	72	70	69	68	70	70	57	60	61	55	35	18	14	14	13	10	14	33	44	67	66	59	73	67	73	65	69
6 - 7 AM	29	31	41	69	73	72	71	68	72	72	67	72	70	68	46	18	14	14	13	10	10	8	6	7	71	74	73	70	73	68	70
7 - 8 AM	26	24	38	69	73	72	71	67	72	72	69	73	71	69	35	17	13	13	13	9	10	9	7	6	9	74	73	69	73	68	71
8 - 9 AM	37	49	56	69	73	72	71	68	72	71	68	72	70	67	42	17	14	13	13	9	11	8	7	9	26	74	73	67	73	66	70
9 - 10 AM	38	45	55	66	72	70	70	68	71	71	65	72	67	63	46	19	15	15	15	10	27	44	56	71	71	73	73	65	73	66	69

Speed HEAT Map Eastbound: 2 – 8 PM

EB GP Speeds	Lakeview Imperial Hwy																Weir Canyon	Off to SR241	Gypsum Canyon On from SR241						Weave OC GP to RC GP	Green River SR71																Serfas Club	Maple St	Lincoln Ave				Main St	I-15			
Distance (miles)	0.5	0.3	0.3	0.9	0.3	0.2	2.4			0.3	0.3	0.6	0.8	0.3	0.2	0.2	0.8	1.5	0.5	0.4	0.9	0.5	0.8	0.2	0.4	0.4	1.0	0.4	0.4	0.3	0.4	0.7	0.3	1.2																		
2018 OBSERVED																																																				
2 - 3 PM	71	69	71	71	69	70	69			56	33	13	23	18	14	20	36	33	32	52	64	67	67	69	72	64	57	57	47	43	36	38	43	43																		
3 - 4 PM	65	69	67	67	63	64	39			7	5	5	11	10	5	14	45	48	43	61	65	61	62	60	51	49	48	50	37	18	13	17	28	47																		
4 - 5 PM	64	70	69	67	63	65	37			5	5	6	10	11	6	15	34	45	44	58	63	68	70	66	51	47	42	40	29	14	10	16	20	39																		
5 - 6 PM	63	70	71	67	64	66	35			4	5	6	9	13	7	17	35	29	33	54	63	64	66	70	62	55	48	50	25	14	10	14	19	42																		
6 - 7 PM	59	59	67	67	69	69	44			19	27	6	6	6	7	18	28	37	48	60	64	63	65	65	61	60	58	55	53	49	39	33	35	49																		
7 - 8 PM	63	63	66	66	68	68	46			25	32	8	8	8	8	19	39	47	47	58	63	65	67	66	57	56	55	65	54	63	62	61	42	48																		
2018 EXISTING MODEL																																																				
2 - 3 PM	70	68	71	70	70	71	69			72	63	28	18	12	12	15	24	30	64	68	70	71	70	72	69	69	51	19	12	14	8	11	22	20																		
3 - 4 PM	72	71	73	72	72	73	72			16	4	5	7	6	8	12	19	29	62	68	70	71	71	72	69	69	34	11	8	9	5	8	13	16																		
4 - 5 PM	73	72	73	73	73	74	73			4	3	4	6	6	8	11	18	28	62	69	71	71	71	72	70	61	14	8	8	8	4	7	13	16																		
5 - 6 PM	72	72	73	73	73	73	73			7	4	5	7	7	9	12	19	27	43	66	70	71	71	72	70	71	38	18	18	19	6	8	14	16																		
6 - 7 PM	72	72	73	72	72	73	72			64	11	6	8	7	9	12	19	28	45	67	70	71	71	72	70	70	70	71	72	70	72	33	39	30																		
7 - 8 PM	72	71	73	72	72	73	72			73	72	39	13	13	14	19	22	29	46	67	70	71	70	72	69	69	69	71	71	67	70	70	70	70																		

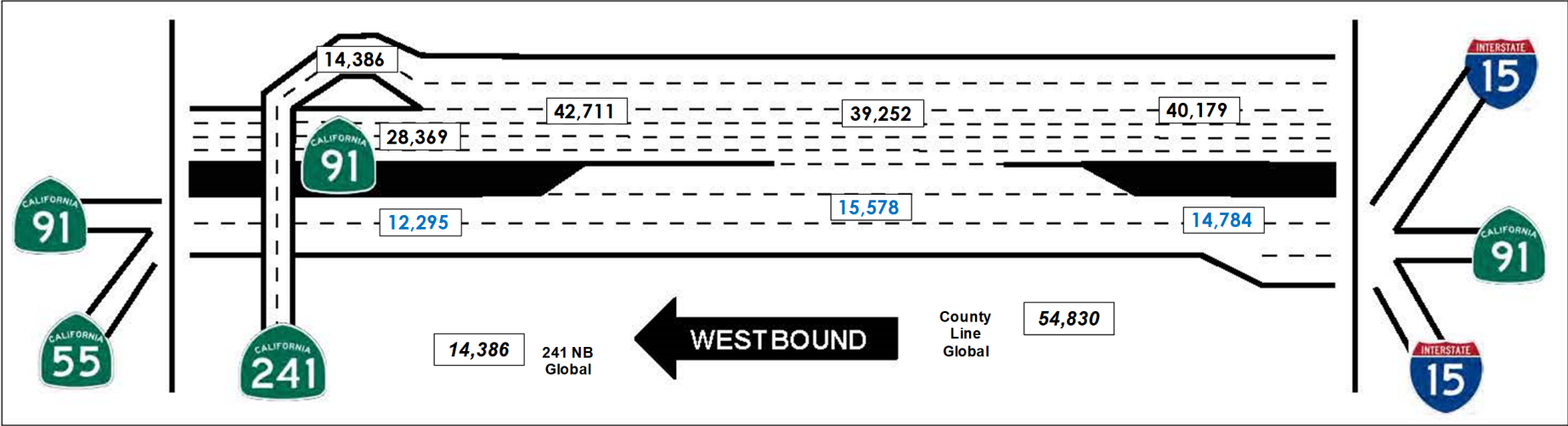
Scenarios Definition

No.	Project	Description	2018 Existing	2025 No-Build	2025 Build
1	RCTC ELC	Add 91 EB EL to 15 NB and 15 SB to 91 WB EL	--	X	X
2	WB AUX LANE	Add WB AUX Lane between Green River On and SR241 SB Off	--	X	X
3	WB CL Weave Change	Add full length express weaving area between RCTC egress and OCTA ingress at County Line	--	X	X
4	RCTC 91 EB Extension	Extend RC EL terminus to between I-15 and Promenade and extend 4 th GP lane to new express lane terminus	--	X	X
5	F/ETCA SR 241/SR 91 ELC	Add SR241 NB to RCTC 91 EB EL ELC and SR91 WB to SR241 SB ELC	--	--	X

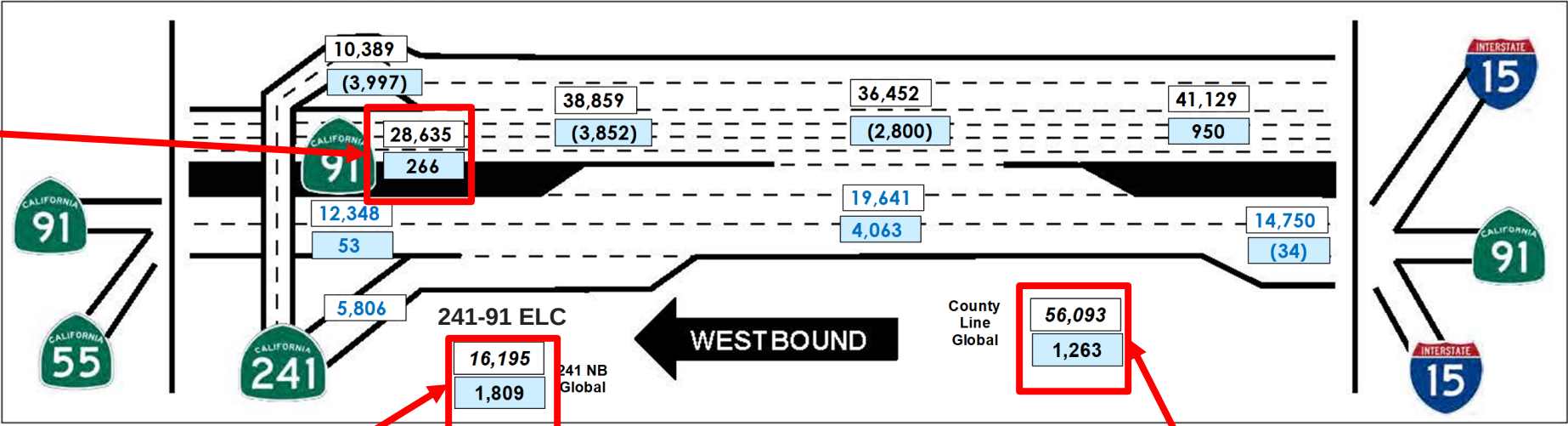
2025 Build vs.
2025 No Build

AM Period Volumes at County Line: 5 - 10 AM

FUTURE NO BUILD MODEL



FUTURE BUILD MODEL



Speed HEAT Map Westbound: 5 – 10 AM

WB GP Speeds	Lakeview Imperial Weir Canyon SR-241 On Gypsum Canyon SR-241 Off														Weave RC GP to OC GP	Green River SR-71 Serfas Club Maple Lincoln Main I-15																
	Distance		0.4	0.2	0.2	1.0	0.2	0.3	2.4	0.2	0.7	0.4	0.7	0.2		0.3	0.3	1.1	1.2	0.4	0.7	0.5	0.6	1.0	0.3	0.4	0.3	0.8	0.6	0.3	0.3	0.6
2018 OBSERVED																																
5 - 6 AM	16	11	17	50	63	49	62	66	59	67	63	54	50	46	45	17	21	17	14	11	13	16	20	19	16	34	46	55	56	59	61	
6 - 7 AM	36	28	42	45	47	70	77	74	70	73	74	71	71	70	49	19	22	20	14	11	8	8	10	8	7	8	27	67	53	58	64	
7 - 8 AM	53	57	55	71	72	71	67	72	72	69	71	65	65	65	45	20	19	23	15	13	10	8	8	9	8	8	7	37	57	58	58	
8 - 9 AM	51	53	59	66	66	69	71	69	69	64	59	66	67	69	51	19	25	19	17	13	14	11	19	18	15	7	28	63	65	66	67	
9 - 10 AM	40	42	48	63	66	67	73	71	71	71	67	65	63	62	49	21	32	26	23	16	22	25	35	35	42	55	51	65	71	69	66	
2025 NO BUILD MODEL																																
5 - 6 AM	48	60	68	71	72	69	69	69	71	70	57	50	61	55	23	13	14	18	25	31	58	67	71	71	70	73	72	61	71	68	69	
6 - 7 AM	28	28	27	29	63	70	70	68	71	71	66	72	68	64	24	13	15	13	14	10	10	8	10	28	64	74	72	62	72	70	71	
7 - 8 AM	27	24	21	12	40	71	71	67	72	71	68	72	70	65	23	13	14	15	13	10	10	9	6	6	8	74	73	65	73	71	71	
8 - 9 AM	29	25	23	13	43	69	71	68	72	71	69	72	70	64	23	13	13	14	14	10	11	10	9	23	61	74	72	63	72	70	70	
9 - 10 AM	29	27	27	39	72	70	70	68	71	70	64	72	66	59	25	14	15	18	15	25	46	59	72	71	71	73	72	60	72	69	70	
2025 BUILD MODEL																																
5 - 6 AM	52	69	68	71	72	69	69	70	69	52	39	59	51	21	13	15	19	17	19	47	71	69	69	67	73	72	65	67	69	69		
6 - 7 AM	27	26	26	23	31	70	70	68	71	70	60	71	65	59	24	14	19	24	19	19	45	71	73	73	72	74	73	69	70	70	71	
7 - 8 AM	29	23	22	12	8	11	71	67	72	71	67	72	69	65	23	41	45	51	58	72	72	72	73	73	73	74	73	68	70	71	71	
8 - 9 AM	30	26	24	15	45	57	71	68	72	72	69	73	70	68	63	73	72	70	72	72	73	72	73	72	72	74	73	67	69	71	71	
9 - 10 AM	29	26	26	71	73	71	71	69	72	71	68	73	69	66	70	73	72	70	72	72	72	72	72	71	71	73	73	65	67	69	70	

Queue length in Riverside County is shortened due to more capacity at CL

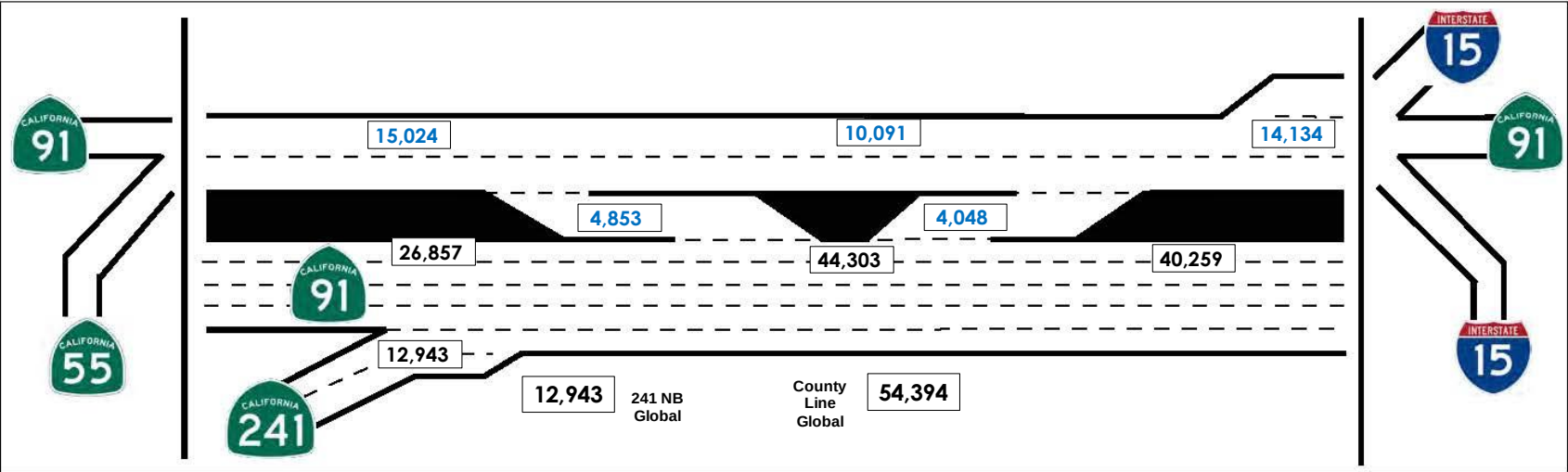
Travel Time Summary Westbound: 5 – 10 AM

Vissim Travel Time (in Minutes)					2025 NO BUILD MODEL					2025 BUILD MODEL					2025 BUILD vs 2025 NO BUILD				
#	Origin	#	Destination	Dist	5am	6am	7am	8am	9am	5am	6am	7am	8am	9am	5am	6am	7am	8am	9am
3	SR 91 WB GP Lanes east of Serfas Club Rd	1	SR91 WB GP Lanes west of Weir Canyon Rd	9.0	19.2	30.1	36.4	37.8	29.1	21.6	23.2	15.3	7.7	7.6	2.4	(6.9)	(21.1)	(30.1)	(21.5)
		2	SR91 WB Exp Lanes west of Weir Canyon Rd	9.0	12.4	24.6	25.6	32.9	19.7	15.4	16.2	9.3	7.8	7.8	3.0	(8.4)	(16.3)	(25.1)	(11.9)
		5	SR241 SB south of SR91 (via GP Ramp)	9.8	20.8	30.2	34.6	36.7	31.8	22.5	22.8	15.8	8.4	8.1	1.7	(7.4)	(18.8)	(28.3)	(23.7)
		7	SR71 NB north of SR91	2.3	2.3	12.5	13.1	11.1	6.8	2.7	2.9	1.9	2.0	2.1	0.4	(9.5)	(11.1)	(9.1)	(4.7)
		11	County Line	4.5	11.7	22.3	28.2	29.9	18.7	13.0	13.1	5.7	3.7	3.7	1.2	(9.2)	(22.4)	(26.2)	(15.0)
4	SR91 WB Exp lanes east of Serfas Club Rd	1	SR91 WB GP Lanes west of Weir Canyon Rd	9.0	10.8	10.2	10.2	10.2	9.9	11.1	10.2	10.0	8.0	7.9	0.3	(0.0)	(0.1)	(2.2)	(2.0)
		2	SR91 WB Exp Lanes west of Weir Canyon Rd	9.0	8.2	8.2	8.2	8.1	8.1	8.1	8.1	8.2	8.1	8.1	(0.0)	(0.1)	0.0	(0.1)	(0.0)
		5	SR241 SB south of SR91 (via GP Ramp)	9.8	10.9	-	11.5	11.8	10.7	8.7	8.9	9.0	8.7	8.7	(2.2)	--	(2.5)	(3.1)	(2.0)
5	SR241 NB south of SR91 (via GP Ramp)	1	SR91 WB GP Lanes west of Weir Canyon Rd	2.7	2.4	2.2	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	(0.0)	0.0	0.0	0.0	0.0
7	SR71 SB north of SR91	1	SR91 WB GP Lanes west of Weir Canyon Rd	6.9	19.2	19.6	19.9	19.8	18.7	20.1	17.0	12.9	6.1	6.0	0.9	(2.6)	(7.0)	(13.7)	(12.7)
		2	SR91 WB Exp Lanes west of Weir Canyon Rd	6.9	10.3	11.5	11.4	11.8	11.1	10.2	9.2	7.7	6.2	6.2	(0.1)	(2.4)	(3.8)	(5.6)	(4.9)
		5	SR241 SB south of SR91 (via GP Ramp)	7.6	19.5	19.9	20.7	21.1	19.1	17.8	15.2	12.9	6.8	6.6	(1.7)	(4.7)	(7.8)	(14.3)	(12.5)
9	McKinley	8	SR 55/SR 91 Split	18.4	25.5	38.1	46.6	46.1	36.6	28.6	35.4	34.9	20.3	16.1	3.1	(2.7)	(11.7)	(25.7)	(19.8)
		5	SR241 SB south of SR91 (via GP Ramp)	14.6	23.6	31.5	38.4	41.0	35.3	21.1	23.2	18.3	12.8	12.7	(2.5)	(8.3)	(20.1)	(28.2)	(22.6)
		11	County Line	9.0	11.2	21.6	27.3	27.4	22.3	13.3	17.9	12.8	6.7	7.8	2.1	(3.7)	(14.5)	(20.7)	(14.5)
11	County Line	8	SR 55/SR 91 Split	9.4	14.3	16.5	19.3	18.7	14.3	15.3	17.5	22.1	13.6	9.1	0.9	1.0	2.8	(5.1)	(5.2)
		1	Weir Canyon	4.8	10.1	9.1	9.3	9.3	8.6	11.1	9.0	8.4	4.2	4.1	1.0	(0.1)	(0.9)	(5.1)	(4.5)

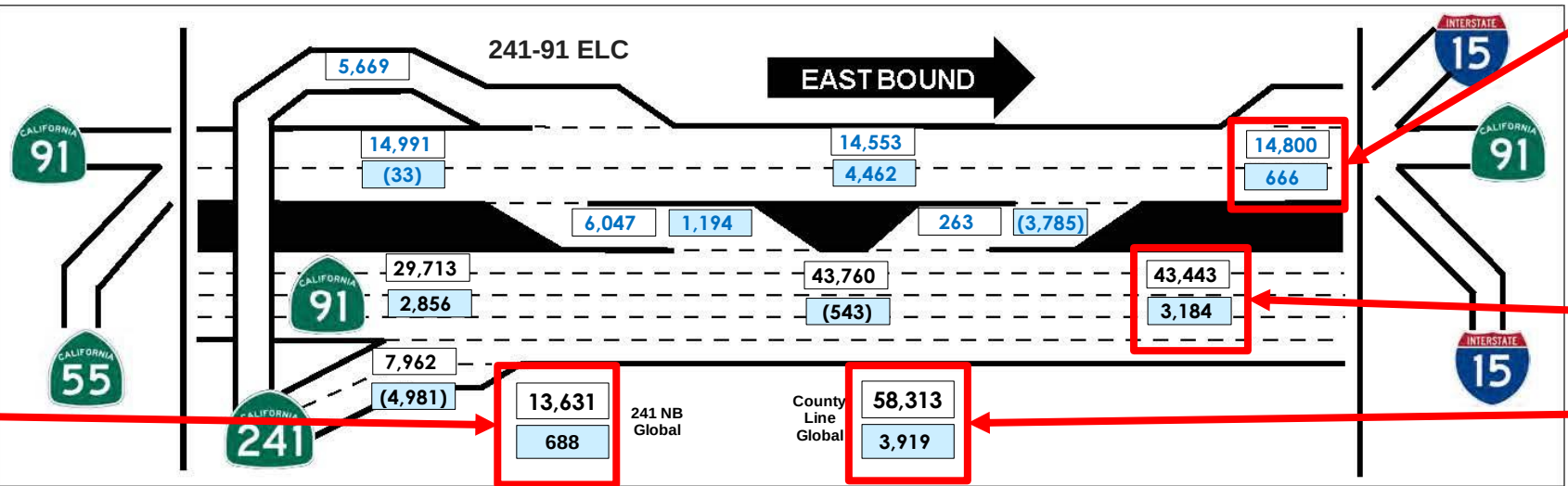
Full-length trip is 2.7-25.7 min shorter during peak except for 5 AM

PM Peak Period Volumes at County Line: 2 – 7 PM

FUTURE NO BUILD MODEL



FUTURE BUILD MODEL



RCTC XL volumes up 5%

RCTC GP throughput up 8%

CL GP throughput up 7%

241 throughput up 5%

Speed HEAT Map Eastbound: 2 – 8 PM

EB GP Speeds	Lakeview Imperial Hwy Weir Canyon Off to SR241 Gypsum Canyon On from SR241																Weave OC GP to RC GP	Green River SR71 Serfas Club Maple St Lincoln Ave Main St I-15															
Distance (miles)	0.5	0.3	0.3	0.9	0.3	0.2	2.4	0.3	0.3	0.6	0.8	0.3	0.2	0.2	0.8	1.5	0.5	0.4	0.9	0.5	0.8	0.2	0.4	0.4	1.0	0.4	0.4	0.3	0.4	0.7	0.3	1.2	
2018 OBSERVED																																	
2 - 3 PM	71	69	71	71	69	70	69	56	33	13	23	18	14	20	36	33	32	52	64	67	67	69	72	64	57	57	47	43	36	38	43	43	
3 - 4 PM	65	69	67	67	63	64	39	7	5	5	11	10	5	14	45	48	43	61	65	61	62	60	51	49	48	50	37	18	13	17	28	47	
4 - 5 PM	64	70	69	67	63	65	37	5	5	6	10	11	6	15	34	45	44	58	63	68	70	66	51	47	42	40	29	14	10	16	20	39	
5 - 6 PM	63	70	71	67	64	66	35	4	5	6	9	13	7	17	35	29	33	54	63	64	66	70	62	55	48	50	25	14	10	14	19	42	
6 - 7 PM	59	59	67	67	69	69	44	19	27	6	6	6	7	18	28	37	48	60	64	63	65	65	61	60	58	55	53	49	39	33	35	49	
7 - 8 PM	63	63	66	66	68	68	46	25	32	8	8	8	8	19	39	47	47	58	63	65	67	66	57	56	55	65	54	63	62	61	42	48	
2025 NO BUILD MODEL																																	
2 - 3 PM	68	65	70	68	68	70	59	24	17	14	14	11	11	15	23	37	66	69	70	71	70	72	70	70	69	71	52	23	9	9	14	18	
3 - 4 PM	70	68	71	70	57	35	10	4	4	5	7	7	8	12	20	33	67	69	71	71	70	72	70	70	70	58	15	11	6	8	14	17	
4 - 5 PM	72	72	73	38	5	5	6	3	4	4	6	6	7	12	19	33	67	70	71	71	70	72	71	71	71	72	28	10	5	7	13	16	
5 - 6 PM	72	71	52	13	4	5	5	3	4	5	7	7	8	12	19	33	67	70	71	72	70	72	71	71	71	72	72	71	20	12	17	17	
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2025 BUILD MODEL																																	
2 - 3 PM	70	68	71	70	69	71	68	70	46	17	16	14	14	21	25	34	63	68	70	71	70	72	69	70	68	47	13	12	8	9	14	17	
3 - 4 PM	71	70	72	71	72	73	71	13	5	6	8	8	9	14	18	31	58	68	70	71	70	72	70	70	69	30	15	17	7	8	13	17	
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5 - 6 PM	72	72	73	72	72	73	72	73	20	8	10	10	11	16	18	29	42	66	71	71	70	72	71	71	71	72	72	71	73	48	18	17	
6 - 7 PM	71	71	72	72	72	73	72	73	73	70	26	19	18	23	21	28	43	67	70	71	69	72	69	70	70	71	72	70	72	72	70	59	
7 - 8 PM	71	70	72	71	72	73	71	73	73	73	72	71	70	64	70	64	62	70	71	71	70	72	70	71	70	71	72	69	71	72	70	68	

Queue length in Orange County is shortened by 2-3 miles due to operational improvements at CL

Overall, full length trip in 91 GP improves

Travel Time Summary Eastbound: 2 – 7 PM

Vissim Travel Time (in Minutes)					2025 NO BUILD MODEL					2025 BUILD MODEL					2025 BUILD vs 2025 NO BUILD				
#	Origin	#	Destination	Dist	2pm	3pm	4pm	5pm	6pm	2pm	3pm	4pm	5pm	6pm	2pm	3pm	4pm	5pm	6pm
1	SR91 EB GP Lanes west of Weir Canyon Rd	3	SR 91 EB GP Lanes east of Serfas Club Rd	8.8	19.1	36.5	40.6	38.8	36.1	14.7	25.1	31.6	27.9	16.7	(4.4)	(11.4)	(9.0)	(11.0)	(19.4)
		5	SR241 SB south of SR91	2.2	7.6	21.5	23.2	19.5	22.4	4.5	14.3	15.0	12.4	1.8	(3.1)	(7.2)	(8.2)	(7.1)	(20.6)
		7	SR71 NB north of SR91	7.4	17.9	35.3	39.4	37.7	35.0	13.8	25.6	29.0	27.7	15.8	(4.1)	(9.7)	(10.5)	(10.0)	(19.2)
		11	County Line	4.5	16.4	33.8	37.9	36.1	33.4	11.6	22.0	27.1	23.0	11.4	(4.7)	(11.8)	(10.8)	(13.1)	(22.0)
2	SR91 EB Exp Lanes west of Weir Canyon Rd	3	SR 91 EB GP Lanes east of Serfas Club Rd	8.8	8.0	8.2	8.3	8.2	8.3	8.0	8.3	8.5	8.5	8.7	(0.1)	0.1	0.3	0.3	0.4
		4	SR91 EB Exp lanes east of Serfas Club Rd	5.5	4.9	5.0	5.0	4.9	4.9	5.0	5.0	5.1	5.0	5.1	0.1	0.1	0.1	0.1	0.2
		7	SR71 NB north of SR91	7.7	7.3	7.5	7.5	7.5	7.6	7.3	7.6	8.1	8.0	7.9	0.0	0.1	0.6	0.4	0.4
5	SR 241 NB south of SR91 (via GP Ramp)	3	SR 91 EB GP Lanes east of Serfas Club Rd	7.2	10.9	13.6	13.8	13.7	13.7	8.1	8.7	9.0	9.1	9.2	(2.8)	(4.9)	(4.8)	(4.5)	(4.5)
		7	SR71 NB north of SR91	5.8	10.0	12.7	12.7	12.7	12.8	7.4	7.9	8.3	8.3	8.2	(2.6)	(4.9)	(4.3)	(4.4)	(4.6)
7	SR71 SB north of SR91	3	SR 91 EB GP Lanes east of Serfas Club Rd	2.2	2.3	2.3	2.4	2.3	2.3	2.2	2.3	2.4	2.3	2.4	(0.1)	(0.0)	0.0	(0.0)	0.0
8	SR55/SR 91 merge	9	McKinley	18.6	28.2	46.2	65.8	73.1	70.6	31.4	41.9	49.5	41.0	25.3	3.2	(4.3)	(16.3)	(32.1)	(45.4)
		11	County Line	9.3	16.2	33.4	51.8	58.4	61.1	15.8	25.9	30.7	26.7	15.2	(0.4)	(7.5)	(21.1)	(31.8)	(45.9)
11	County Line	3	SR 91 EB GP Lanes east of Serfas Club Rd	4.3	3.8	3.8	3.8	3.8	3.7	3.8	3.9	4.1	4.2	4.4	0.0	0.1	0.4	0.5	0.7
		9	McKinley	9.3	15.7	18.4	18.8	15.0	8.2	18.1	20.1	17.7	12.2	8.8	2.3	1.6	(1.0)	(2.8)	0.6

Full-length trip is shorter on average during peak

Questions?

