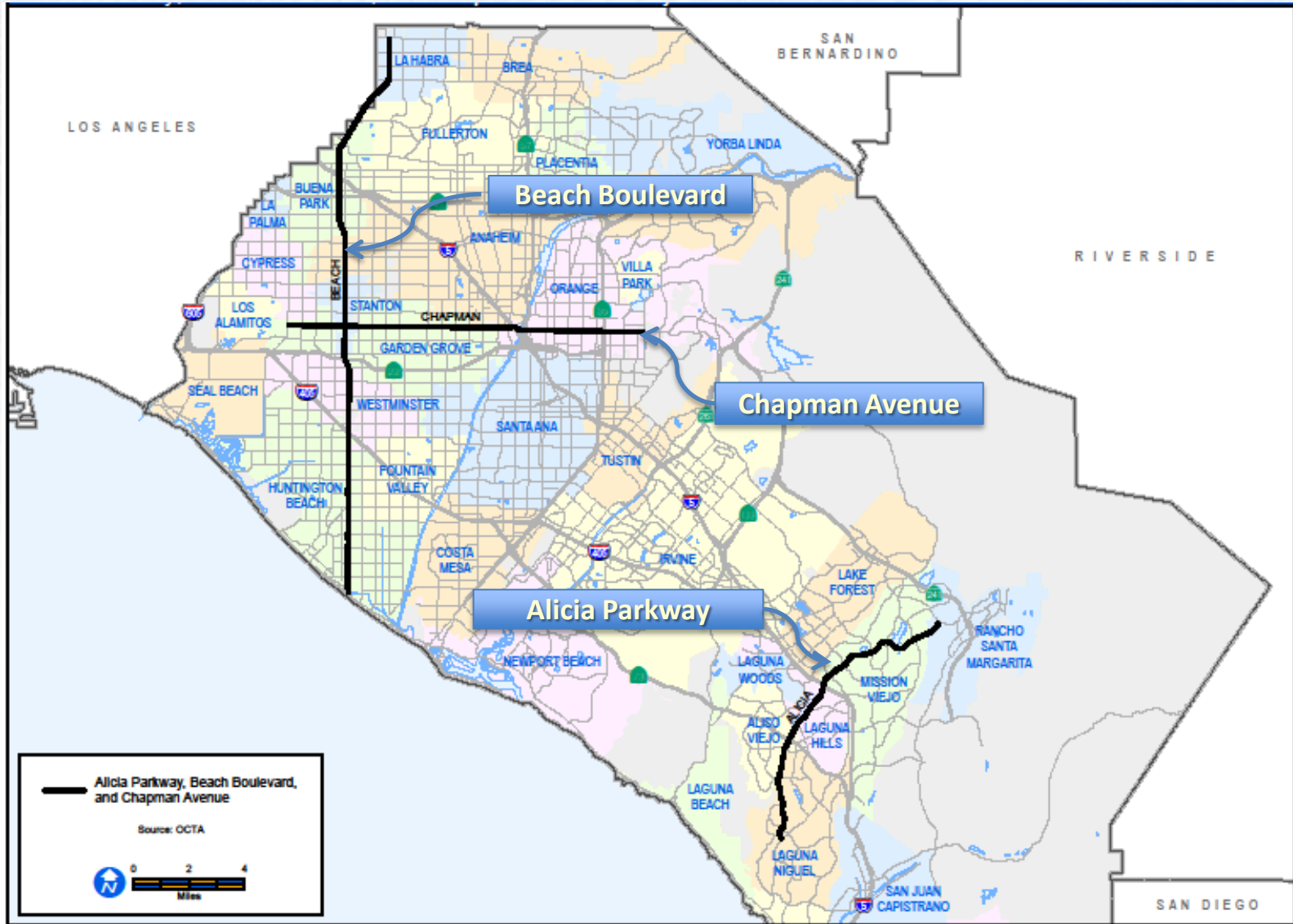


Proposition 1B/Measure M Traffic Light Synchronization Program Phase I Results



**Alicia Parkway, Beach Boulevard (State Route 39),
and Chapman Avenue**

Traffic Light Synchronization Program (TLSP) Phase I Corridors



TLSP Overall Framework

- **Cost effective and optimal use of existing traffic signal infrastructure:**
- **Optimized traffic signal timing**
 - **Global position satellite time source**
 - **Selected traffic signal controller/cabinet and communication upgrades**
 - **Traffic management system upgrades**

TLSP Project Objectives

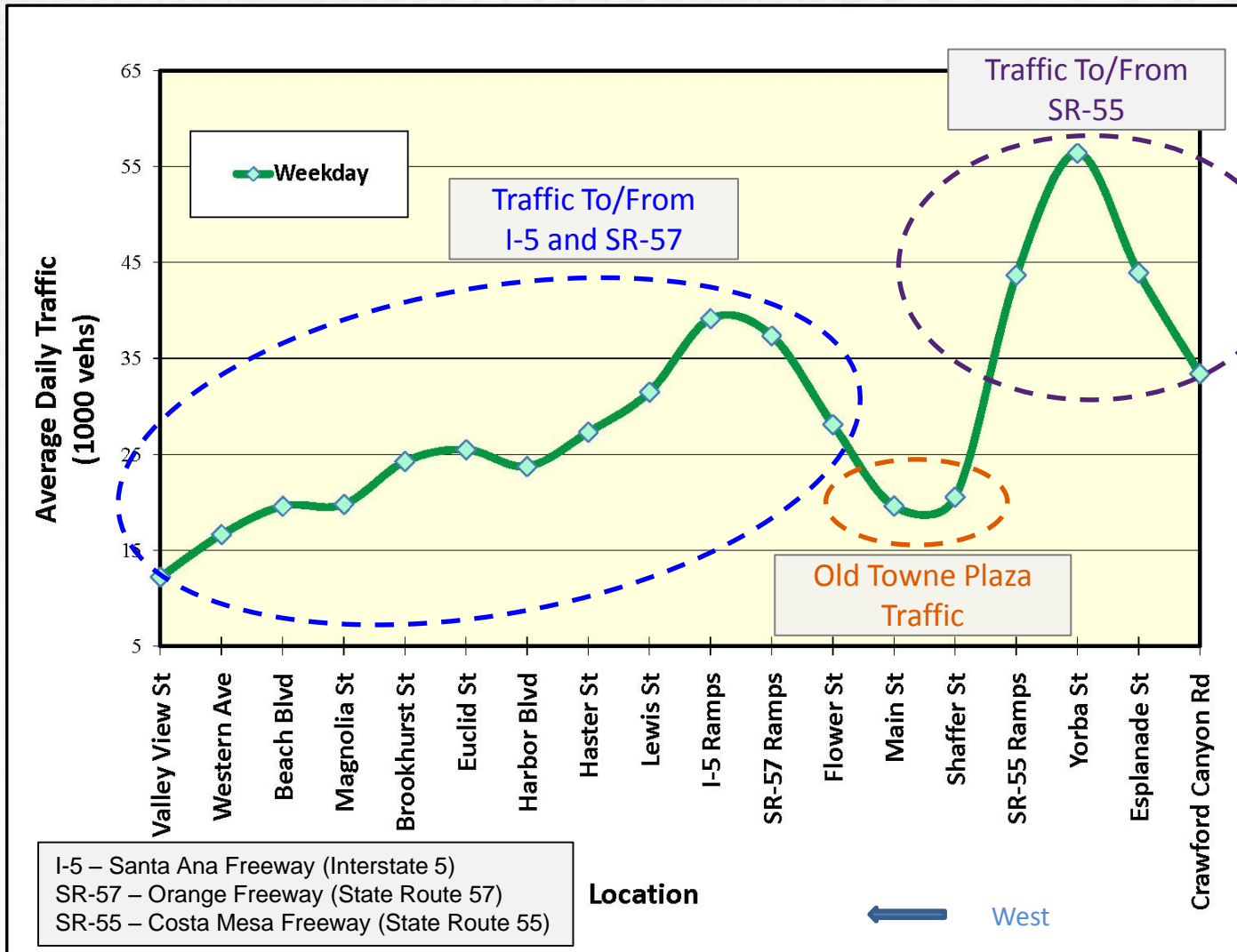
Successful multi-jurisdictional traffic signal synchronization project to:

- **Create timing plans to serve actual traffic destinations**
 - **Freeway centric – to/from freeway**
 - **Local traffic and corridor through traffic**
 - **Or a combination, as needed**
- **Reduce stops, delays, and travel times**
- **Reduce fuel consumption and greenhouse gases**
- **NEW: Reduce consumer out-of-pocket costs (fuel savings)**
- **Overall – Improve quality of the drive on Alicia Parkway, Beach Boulevard (State Route 39), and Chapman Avenue**

Chapman Avenue Project Details

- **15 Miles, 52 Intersections, 5 Agencies**
- **Garden Grove, Stanton, City of Orange, County of Orange, and Caltrans**
- **Selected Improvements**
 - **Traffic management system upgrades**
 - **Traffic signal controllers**
 - **Communication upgrades**
 - **Optimized traffic signal timing**

Chapman Avenue - Average Daily Traffic



Chapman Avenue Traffic Patterns

- **Vehicle traffic on Chapman Avenue is generally freeway-centric with some exceptions**
- **Peak traffic tends to be directional**
- **Chapman Avenue grouped into three segments:**
 - A. **Valley View Street – I-5/SR-57 Freeway**
 - B. **Main Street – Old Towne Plaza**
 - C. **SR-55 Freeway – Canyon View Street**
- **Signal timing based on the defined segments**
- **“Before” and “after” travel time studies reported on the defined segments**

Chapman Avenue

Morning Before and After Study Results

Segment (West to East)	Time Period and Direction	Morning Peak Hour					
		Eastbound			Westbound		
		Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: Valley View Street - I-5/SR-57 Freeways (33 traffic signals)							
Travel Time (min)		22	19	14%	24	19	21%
Number of Stops		11	7	36%	14	7	50%
Average Speed (mph)		24	28	17%	22	27	23%
Greenhouse Gas (lbs)		15,400	14,200	8%	12,600	11,200	11%
Segment B: Main Street - Old Towne Plaza (7 traffic signals)							
Travel Time (min)		5	4	20%	5	4	20%
Number of Stops		3	2	33%	3	1	67%
Average Speed (mph)		20	22	10%	20	24	20%
Greenhouse Gas (lbs)		1,050	1,000	5%	1,550	1,400	10%
Segment C: SR-55 Freeway - Canyon View Avenue (12 traffic signals)							
Travel Time (min)		7	5	29%	7	5	29%
Number of Stops		4	1	75%	4	1	75%
Average Speed (mph)		23	33	43%	24	34	42%
Greenhouse Gas (lbs)		7,700	6,000	22%	11,900	9,400	21%

Chapman Avenue

Midday Before and After Study Results

Segment (West to East)	Time Period and Direction	Midday Peak Hour					
		Eastbound			Westbound		
		Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: Valley View Street - I-5/SR-57 Freeways (33 traffic signals)							
Travel Time (min)		22	20	9%	23	20	13%
Number of Stops		15	8	47%	13	8	38%
Average Speed (mph)		24	27	13%	24	26	8%
Greenhouse Gas (lbs)		11,200	10,200	9%	10,200	9,800	4%
Segment B: Main Street - Old Towne Plaza (7 traffic signals)							
Travel Time (min)		5	4	20%	6	5	17%
Number of Stops		6	3	50%	6	4	33%
Average Speed (mph)		18	21	17%	17	20	18%
Greenhouse Gas (lbs)		870	800	8%	1,300	1,200	8%
Segment C: SR-55 Freeway - Canyon View Avenue (12 traffic signals)							
Travel Time (min)		6	5	17%	7	5	29%
Number of Stops		3	1	67%	4	1	75%
Average Speed (mph)		23	34	48%	24	33	38%
Greenhouse Gas (lbs)		7,100	5,800	18%	7,400	6,000	19%

Chapman Avenue

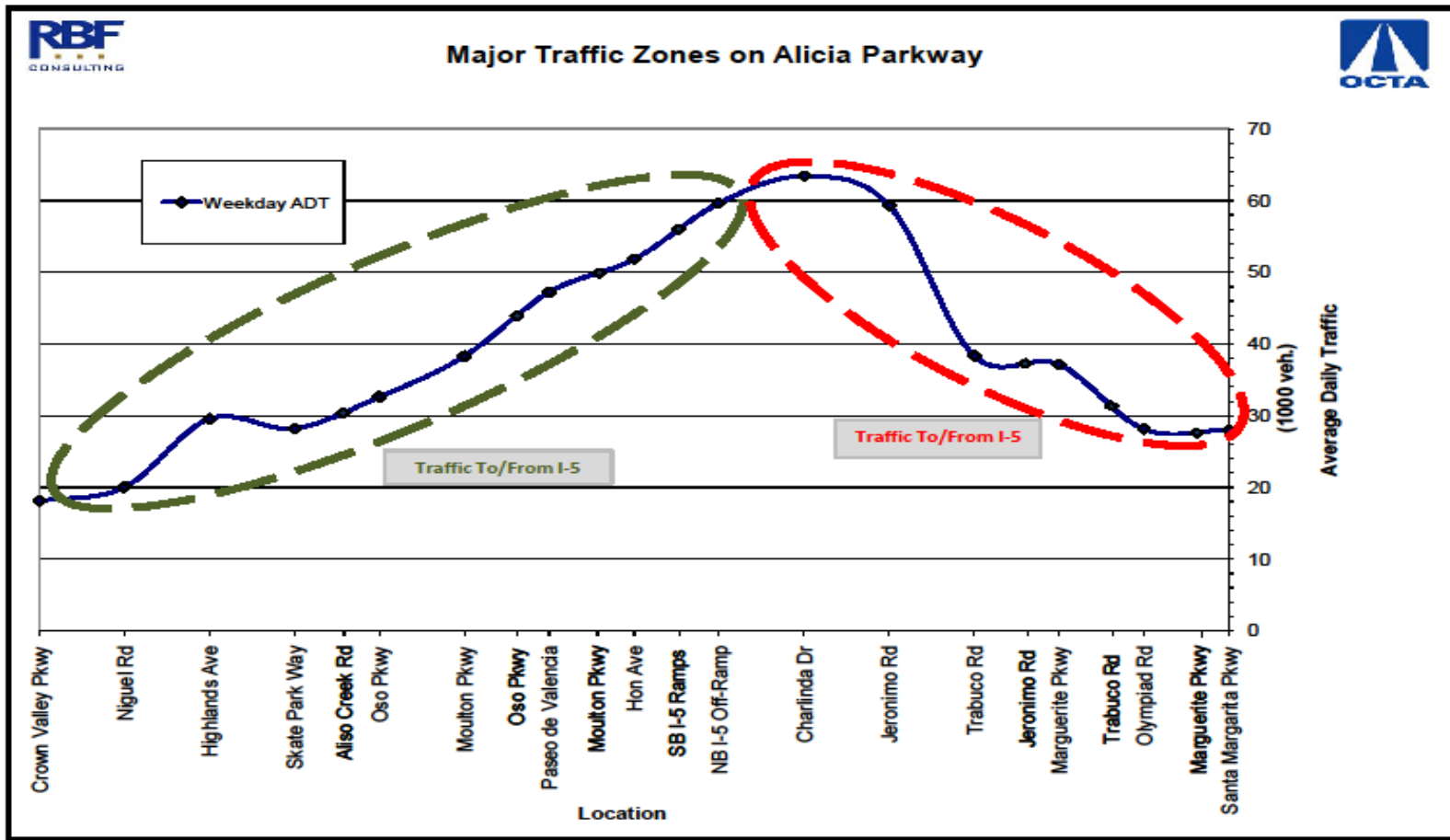
Evening Before and After Study Results

Segment (West to East)	Time Period and Direction	Evening Peak Hour					
		Eastbound			Westbound		
		Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: Valley View Street - I-5/SR-57 Freeways (33 traffic signals)							
Travel Time (min)		22	19	14%	25	20	20%
Number of Stops		11	7	36%	14	7	50%
Average Speed (mph)		24	27	13%	21	27	29%
Greenhouse Gas (lbs)		14,600	13,600	7%	18,800	16,000	15%
Segment B: Main Street - Old Towne Plaza (7 traffic signals)							
Travel Time (min)		6	5	17%	6	5	17%
Number of Stops		4	3	25%	6	4	33%
Average Speed (mph)		17	20	18%	17	18	6%
Greenhouse Gas (lbs)		1,300	1,200	8%	1,030	1,000	3%
Segment C: SR-55 Freeway - Canyon View Avenue (12 traffic signals)							
Travel Time (min)		6	5	17%	7	5	29%
Number of Stops		3	2	33%	4	2	50%
Average Speed (mph)		25	30	20%	24	32	33%
Greenhouse Gas (lbs)		9,300	8,400	10%	7,800	6,600	15%

Alicia Parkway Project Details

- **11 Miles, 41 Intersections, 6 Agencies**
- **Aliso Viejo, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, and Caltrans**
- **Selected Improvements**
 - **Traffic management system upgrades**
 - **Traffic signal controllers**
 - **Communication upgrades**
 - **Optimized traffic signal timing**

Alicia Parkway Average Daily Traffic



← West

Alicia Parkway

Morning Before and After Study Results

Time Period and Direction Segment (West to East)	Morning Peak Hour					
	Eastbound			Westbound		
	Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: Crown Valley Parkway to I-5 (24 traffic signals)						
Travel Time (min)	10	9	10%	10	10	0%
Number of Stops	4	1	75%	4	4	0%
Average Speed (mph)	36	39	8%	35	36	3%
Greenhouse Gas (lbs)	12,500	12,000	4%	8,200	8,000	2%
Segment B: I-5 to Santa Margarita Parkway (17 traffic signals)						
Travel Time (min)	8	7	13%	7	6	14%
Number of Stops	4	1	75%	3	3	0%
Average Speed (mph)	32	37	14%	35	39	11%
Greenhouse Gas (lbs)	9,000	8,400	7%	12,400	11,600	6%

Alicia Parkway

Midday Before and After Study Results

Time Period and Direction Segment (West to East)	Midday Peak Hour					
	Eastbound			Westbound		
	Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: Crown Valley Parkway to I-5 (24 traffic signals)						
Travel Time (min)	11	10	9%	11	8	27%
Number of Stops	5	3	40%	5	2	60%
Average Speed (mph)	30	37	23%	32	42	31%
Greenhouse Gas (lbs)	9,000	8,000	11%	8,900	7,600	15%
Segment B: I-5 to Santa Margarita Parkway (17 traffic signals)						
Travel Time (min)	8	7	13%	8	7	13%
Number of Stops	3	3	0%	3	3	0%
Average Speed (mph)	32	36	13%	32	36	13%
Greenhouse Gas (lbs)	6,800	6,400	6%	6,200	5,800	6%

Alicia Parkway

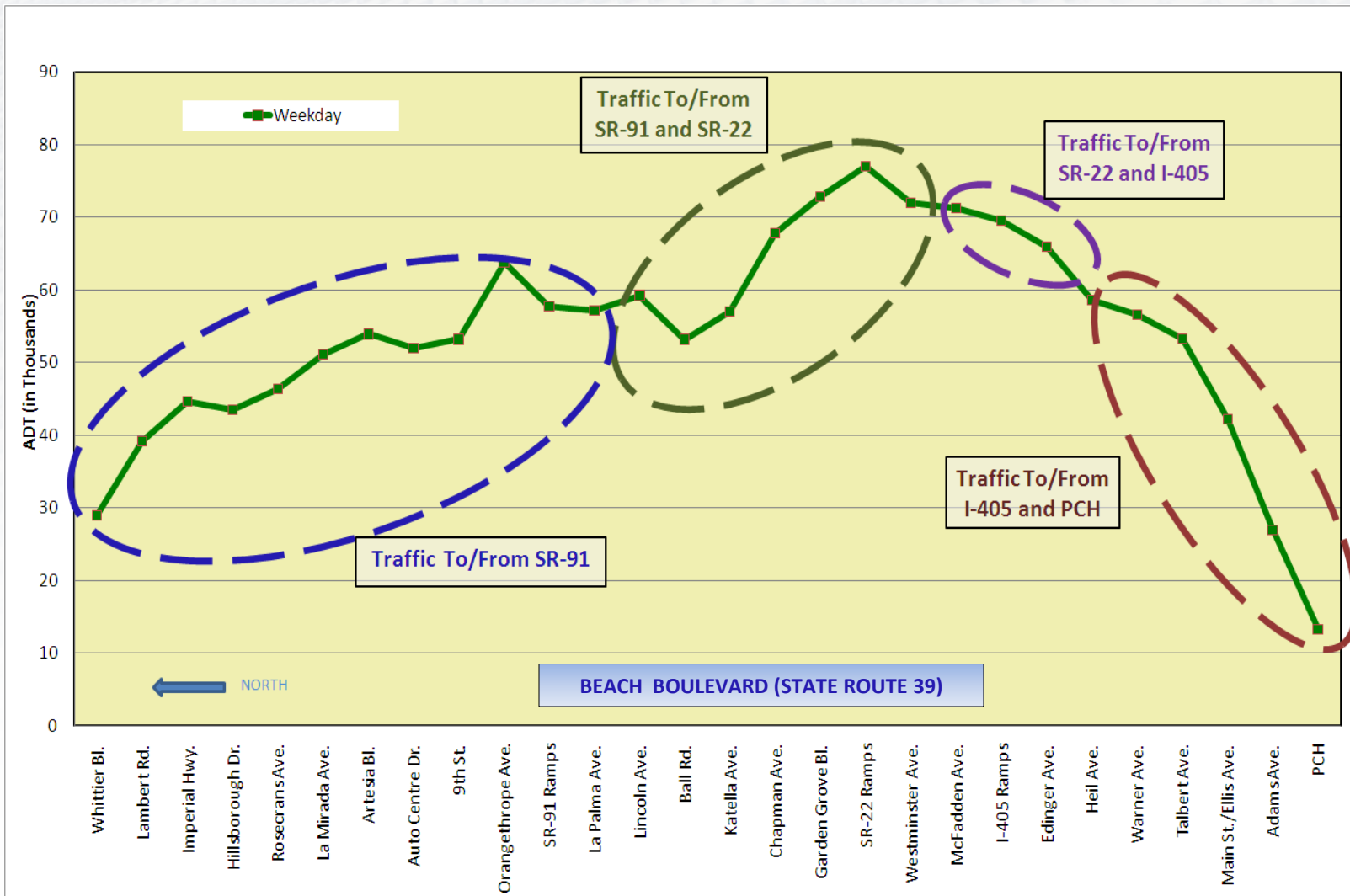
Evening Before and After Study Results

Time Period and Direction Segment (West to East)	Evening Peak Hour					
	Eastbound			Westbound		
	Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: Crown Valley Parkway to I-5 (24 traffic signals)						
Travel Time (min)	10	10	0%	11	10	9%
Number of Stops	3	4	-33%	4	3	25%
Average Speed (mph)	36	36	0%	32	36	13%
Greenhouse Gas (lbs)	10,600	10,600	0%	12,900	12,000	7%
Segment B: I-5 to Santa Margarita Parkway (17 traffic signals)						
Travel Time (min)	9	8	11%	7	6	14%
Number of Stops	3	2	33%	4	1	75%
Average Speed (mph)	30	33	10%	34	37	9%
Greenhouse Gas (lbs)	12,000	11,400	5%	8,400	8,000	5%

Beach Boulevard (State Route 39) Project Details

- **20 Miles, 70 Intersections, 7 Agencies**
- **Anaheim, Buena Park, Fullerton, Huntington Beach, Stanton, Westminster, and Caltrans**
- **Selected Improvements**
 - **Traffic signal controllers**
 - **Communication upgrades**
 - **Optimized traffic signal timing along key eight-mile segment**

Beach Boulevard (State Route 39) Average Daily Traffic



I-405 – San Diego Freeway (Interstate 405)
SR-91 – Riverside Freeway (State Route 91)

SR-22 – Garden Grove Freeway (State Route 22)
PCH – Pacific Coast Highway

Beach Boulevard (State Route 39) Morning Before and After Study Results

Segment (North to South)	Time Period and Direction		Morning			
	Northbound			Southbound		
	Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: SR-91 to SR-22 (25 traffic signals)						
Travel Time (min)	15	13	13%	18	15	17%
Number of Stops	5	2	60%	7	6	14%
Average Speed (mph)	32	38	19%	28	32	14%
Greenhouse Gas (lbs)	22,000	20,000	9%	26,000	24,000	8%

Beach Boulevard (State Route 39) Midday Before and After Study Results

Segment (North to South)	Time Period and Direction		Midday			
	Northbound			Southbound		
	Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: SR-91 to SR-22 (25 traffic signals)						
Travel Time (min)	16	14	13%	16	15	6%
Number of Stops	6	5	17%	5	4	20%
Average Speed (mph)	30	33	10%	31	32	3%
Greenhouse Gas (lbs)	16,800	16,000	5%	16,300	16,000	2%

Beach Boulevard (State Route 39) Evening Before and After Study Results

Segment (North to South)	Time Period and Direction		Evening			
	Northbound			Southbound		
	Before	After	Improvement (%)	Before	After	Improvement (%)
Segment A: SR-91 to SR-22 (25 traffic signals)						
Travel Time (min)	21	18	14%	19	18	5%
Number of Stops	10	7	30%	9	8	11%
Average Speed (mph)	24	27	13%	26	27	4%
Greenhouse Gas (lbs)	23,400	22,000	6%	22,500	22,000	2%

Committee Discussion

Estimated Three-Year Fuel Savings in Gallons and Dollars Alicia Parkway, Beach Boulevard, and Chapman Avenue

Direction Segment	Estimated Three-Year Fuel Savings in Gallons and Dollars					
	Gallons	Dollars	Gallons	Dollars	Gallons	Dollars
Alicia Parkway	Eastbound		Westbound		Both Directions	
Segment A: Crown Valley Parkway to I-5 (24 traffic signals)	185,400	\$556,200	378,000	\$1,133,900	563,400	\$1,690,100
Segment B: I-5 to Santa Margarita Parkway (17 traffic signals)	285,300	\$855,800	271,000	\$813,000	556,300	\$1,668,800
<i>All Segments</i>	<i>470,700</i>	<i>\$1,412,000</i>	<i>649,000</i>	<i>\$1,946,900</i>	<i>1,119,700</i>	<i>\$3,358,900</i>
Beach Boulevard	Northbound		Southbound		Both Directions	
Segment A: SR-91 to SR-22 (25 traffic signals)	748,800	\$2,246,300	492,100	\$1,476,200	1,240,900	\$3,722,500
Chapman Avenue	Eastbound		Westbound		Both Directions	
Segment A: Valley View Street - I-5/SR-57 Freeways (33 traffic signals)	527,700	\$1,583,100	492,100	\$1,476,200	1,019,800	\$3,059,300
Segment B: Main Street - Old Towne Plaza (7 traffic signals)	49,900	\$149,800	52,800	\$158,300	102,700	\$308,100
Segment C: SR-55 Freeway - Canyon View Avenue (12 traffic signals)	620,400	\$1,861,300	848,600	\$2,545,900	1,469,000	\$4,407,200
<i>All Segments</i>	<i>1,198,000</i>	<i>\$3,594,200</i>	<i>1,393,500</i>	<i>\$4,180,400</i>	<i>2,591,500</i>	<i>\$7,774,600</i>

Assumptions used in analysis:

1. \$3 / gallon fuel
2. 250 weekdays per year
3. Fuel savings from Synchro 7 software output

TLSP Next Steps

- **Phase I – Final Implementation Phase**
 - Implementation complete – Alicia Parkway and Chapman Avenue
 - Final implementation on Beach Boulevard (State Route 39) in October/November 2010
 - Monthly (or as needed) corridor operations monitoring
- **Phase II – Projects Underway**
 - Brookhurst Street, Edinger Avenue, El Toro Road, and Orangethorpe Avenue
- **Phase III – Expected Start Mid – 2011**
 - Katella Avenue, La Palma Avenue, and Yorba Linda Boulevard
 - Pending California Transportation Commission allocation