Section 4

Mobility:

deliver programs, projects and services to improve the movement of people and good throughout Orange County and the region.

Objectives:

- Travel Time and Speed
- Capacity and Level of Service
- Operational Performance
- Quality and Ease of Use

Contents

I. Introduction

This section of the Strategic Plan focuses on programs and projects directly related to improving mobility throughout Orange County. Over the next five years, OCTA will be expanding bus operations, increasing transportation options, and improving freeways, streets, and roads. This section provides an overview of all the mobility services OCTA provides, and the benefits of undertaking them.

The following spreadsheet summarizes the programs and projects which support the primary objectives of the Mobility Goal Area. High level overviews of each program are discussed in this section and if further information is required, the guiding documents web links are provided.

Goal Area Objectives	Programs Supporting Objectives	Projects Supporting Programs	Benefit	Service Level Improvement	Pg.#
Mobility: ***deliver programs, projects and services to improve the movement of people and goods throughout Orange County and the region.***					
Objective 1 - **Travel Time and Speed** *deliver infrastructure investments that accommodate growth while maintaining travel time and speeds*					
	Fixed-Guideways				
		Cities of Santa Ana/ Garden Grove Fixed-Guideway	*Alleviate congestion on streets and freeways. *Provides safe, convenient, reliable public transportation option. *Better connections to Metrolink and Amtrak	* adds approximately 12 miles of light rail between the Santa Ana Regional Transit Center and the Garden Grove Regional Transit Station. Also includes light rail within the Santa Ana downtown commercial district.	107
	High Frequency Metrolink Service				
		* Grade crossing improvements * Track Improvements * Signal and communications systems improvements	*Viable alternative to vehicle travel. *Reduces congestion on roadways and freeways.	During peak hours, Metrolink carries the equivalent number of passengers that would fill one freeway lane on I-5.	113

Goal Area Objectives	Programs Supporting Objectives	Projects Supporting Programs	Benefit	Service Level Improvement	Pg.#
	Freeway Construction Projects				
		I-5/SR-74 Ortega Highway, Interchange Improvements	Alleviates congestion north and south. Improves intersection interchange.	Reconstructs the I-5/SR-74 interchange to accommodate future traffic volumes.	119
		SR-91 Widening, SR-55 to Tustin Ave.	Reduces operational problems on this section of WB SR-91, including weaving and merging maneuvers.	Adds 2 miles of WB auxiliary lane. Reconstruction of Santa Ana River Bridge. Reconstructs NB ramps at SR-91 and Lambert Rd.	137
	Freeway Environmentally Cleared Projects				
		I-5 at El Toro road Interchange Improvements	Reduce chokepoints to accommodate forecasted traffic demands	Improves the El Toro Road Interchange by widening roads, modifying entrance, exit ramps, and modifying existing bridge structures.	142
	OC Bridges, Grade Separation Projects				
		Raymond Avenue Undercrossing	* Greater driver/pedestrian safety * Shorter emergency response times * Elimination of delays * Easier business access	* Eliminates car and train conflicts along the Burlington Northern Santa Fe Railway in northern Orange County. These bridges will eliminate the need for commuters and commercial vehicles to stop, and wait at railroad crossings. * Currently, 70 trains per day. By 2030, 130 trains per day are anticipated.	161
		Placentia Avenue Undercrossing			165
		Kramer Boulevard Undercrossing			167
		Orangethorpe Avenue Overcrossing			169
		Tustin Avenue/Rose Drive Overcrossing			171
		Lakeview Avenue Overcrossing			173
		State College Boulevard Undercrossing			175

Goal Area Objectives	Programs Supporting Objectives	Projects Supporting Programs	Benefit	Service Level Improvement	Pg.#
	LOSSAN Grade Separation Project				
		Sand Canyon Avenue Undercrossing	* Greater driver/pedestrian safety * Shorter emergency response times * Elimination of delays * Easier business access	Eliminates car and train conflicts along the LOSSAN rail corridor.	177
	Traffic Signal Synchronization Projects				
		14 projects to be completed in FY 2013-14	Optimizing traffic signal timing is a low-cost, high-benefit approach to reducing congestion and improving traffic flow. Better signal timing results in fewer traffic stops, delays, and pollution, and saves gas and money.	Statistics since 2008 through 2013 * 18 projects completed * 1074 intersections synchronized * 16% travel time improvement * 18% speed improvement * 36% stops per mile improvement * 18 million gallons of fuel reduction	179

Goal Area Objectives	Programs Supporting Objectives	Projects Supporting Programs	Benefit	Service Level Improvement	Pg.#
Objective 2 - Capacity and Level of Service *expand capacity to accommodate growth while sustaining level of service on roadways*					
	Freeway Construction Projects				
		I-5 Widening, PCH to Avenida Pico	Eliminates SB lane drop, increases capacity.	Adds 8 miles of continuous HOV lanes. 4 miles in each direction.	119
		I-5 Widening, El Toro Road to SR-73	Reduces chokepoints and alleviates congestion at intersections.	Adds 13 miles of additional lane capacity. 6.5 miles in each direction.	123
		I-5 Widening, SR-55 to SR-57	*Increase capacity on the HOV I-5 *Provides direct HOV connectors from both the SR-55 and SR-57	Adds 8 miles of continuous HOV lines. 4 miles in each direction.	125
		I-405 Widening, SR-73 to I-605	Increased freeway capacity	Adds 24 miles of additional lane capacity. 12 miles in each direction.	127
		SR-55 Widening, I-405 to I-5	Improved mobility and congestion reduction on the SR-55 from I-405 to the I-5.	Adds 12 miles of additional lane capacity. 6 miles in each direction.	129
		SR-57 projects- 3 segments	Improved existing and future mobility, reduce congestion, improve mainline weaving, and merge/diverge movements.	Adds 8 miles of additional lane capacity. NB direction only.	131
		SR-91 Widening, I-5 to SR-57	Reduction of congestion, additional capacity and improved operations at intersections.	Adds 4.5 miles of additional lane capacity. WB direction only.	133
		SR-91 Widening, SR-55 to SR-241	Reduces weaving by reducing the volume of exiting vehicles. Alleviates congestion and reduces delays.	Added 12 miles of general purpose lanes. 6 miles in each direction.	135

Goal Area Objectives	Programs Supporting Objectives	Projects Supporting Programs	Benefit	Service Level Improvement	Pg.#
	Freeway Environmentally Cleared Projects				
		I-5 Widening, I-405 to SR-55	Alleviate congestion and reduce delay.	Adds 18 miles of general purpose lanes. 9 miles in each direction. Improves various intersections.	145
		SR-55 Widening, I-5 to SR-22	Alleviate congestion and reduce delay.	Adds 5 miles of general purpose lanes. 2.5 miles in each direction.	149
		SR-57 NB Widening, Orangewood Ave. to Katella Ave.	Improve existing and future mobility, reduce congestion, and eliminate mainline weaving.	Adds 1 mile of general purpose lane in the NB direction.	153
		SR-91 Widening, SR-57 to SR-55	Improves the connection from EB SR-91 to SB SR-55.	Adds 10 miles of general purpose lane. 5 miles in each direction. Improves 3 interchanges.	155

Goal Area Objectives	Programs Supporting Objectives	Projects Supporting Programs	Benefit	Service Level Improvement	Pg.#
Objective 3 - Operational Performance *improve operating performance on OCTA operated modes of travel*					
	Freeway Express Bus/Bus Rapid Transit: Regional limited stop service				
		Limited-stop service on Harbor Boulevard Route 543	Reduced travel times for commuters and additional commute options for longer distance travelers.	Initial time savings of 13%+ by skipping stops	98
		Anaheim Transportation Network	Improves last mile connections.	Improves last mile connections	110
		City of Lake Forest			111
	SR-91 Implementation Plan/Projects				
		Metrolink Short-Term Expansion	Enables development of expanded Metrolink service.	Congestion relief on the SR-91.	186
		SR-91 Widening	Widens the SR-91 by one general purpose lane in each direction east of the county line to the I-15	Improved traffic flow, less congestion, less weaving and merging maneuvers.	187
		Express Bus Improvements	Expands express bus service between Riverside/Orange counties.	Congestion relief on the SR-91	189
		SR-71/SR-91 Interchange Improvements	Constructs a new two-lane connector from EB SR-91 to NB SR-71	Improves traffic operations and operational efficiency by minimizing weaving conflicts.	191
		SR-241/SR-91 Express Lanes Connector	The project will close the current toll system gap between the future and existing SR-91 Express lanes.	Improves access to the SR-241 and South County for traffic	192

Goal Area Objectives	Programs Supporting Objectives	Projects Supporting Programs	Benefit	Service Level Improvement	Pg.#
Objective 4 - Quality and Ease of Use *Improve quality and ease of use of transportation system*					
	Motorist and Taxicab Services				
		Freeway Service Patrol	Keeps the freeways moving and reduces congestion by quickly removing disabled vehicles.	*Hours of vehicle delay eliminated: 1.9 million *Gallons of fuel saved: 3.2 million *Carbon Dioxide reduced: 28.2 million kilograms *Economic savings: $39.3 million	100
		Call Box Network	Motorists can report road hazards, mechanical breakdowns, traffic accidents or incidents.	Enhanced safety. Call boxes are spaced every 1 to 1 and a quarter males apart. 637 call boxes in Orange County.	100
		Orange County 511 Service	Minute-by-minute advisory and trip planning service.	Service program	100
		Taxi Administration	OCTA is the regulatory authority for permitting taxis.	Increased public safety. Customer service and industry standards have improved.	100
		Abandoned Vehicles	Removes abandoned vehicles from the roadways.	Program clears an average of 16,500 vehicles per year.	101
	Bus Capital Purchases				
		Vehicles	Clean, modern, meets government mandates	FY 2018 - 19 the following will be met: * All CNG Fleet - no diesel * 60' Bus - 100% less than 5 yrs. old * 40' Bus - 40% less than 5 yrs. old * 24' Van - 100% less than 5 yrs. old	102
		Facilities	Passenger ease of use.	Clean, modern, safe, centrally located for passenger ease of use.	103

II. Transit

A. Bus Operations

In 2013, OCTA bus service consisted of 76 bus routes and annual boarding's exceeding 52 million.[1] OCTA bus operations include local fixed-route, express, StationLink, rail feeders, and complementary paratransit bus service (OCTA Transit System Products and Bus System map are provided on page 96 and 97).

OCTA has three service product groups:

1. **Corridors:** Linear fixed-route services with a specific schedule designed to move high volumes of passengers on a regional and sub-regional level. Reference graphic titled "OCTA Transit System Products," Freeway Express Bus/BRT.

2. **Community:** Fixed route and flexible transit services designed around specific travel markets where travel volumes are less intense and community based. Reference graphic titled "OCTA Transit System Products," Rapid/Bus Arterial BRT and Local Bus.

3. **Destination/Demand Based:** Tailored service to serve specific destinations directly from a common origin, carrying smaller groups of passengers at specific times. Reference graphic titled "OCTA Transit System Products," Community Shuttle, Network Connections, Local Circulation, Station Link, Station Van Vanpool, and Mid-day Taxi Service."[2]

The anticipated transit operations projects for the next five years fall into four broad programs, namely:

1. Bus Rapid Transit (BRAVO) /Freeway Express Bus
2. Motorist and Taxicab Services
3. Vanpool
4. Capital (Bus) Purchases
5. ACCESS Services

[1] OCTA Comprehensive Business Plan, FY 2012-13, pg. 8

[2] OCTA Transit System Study, April 2012, pg. 91-93

OCTA Transit System Products

Freeway, Express Bus/BRT

Network Role: Structural network spine, fast regional service

Frequency: All-day, all-week, or peak period regional travel

Rapid/Bus Arterial BRT

Network Role: Structural network spine, fast sub-regional service

Frequency: All-day, all-week sub-regional travel

Local Bus

Network Role: Completes core network, key non-core corridors

Frequency: All-day, all-week community and sub-regional travel

Community Shuttle

Network Role: Network connections, local circulation

Frequency: Demand Based neighborhood circulation, school trips, senior/ADA mobility

Station Link

Network Role: Trip completion from regional network

Frequency: Demand based, "last-mile" work and school commute

Station Van Vanpool

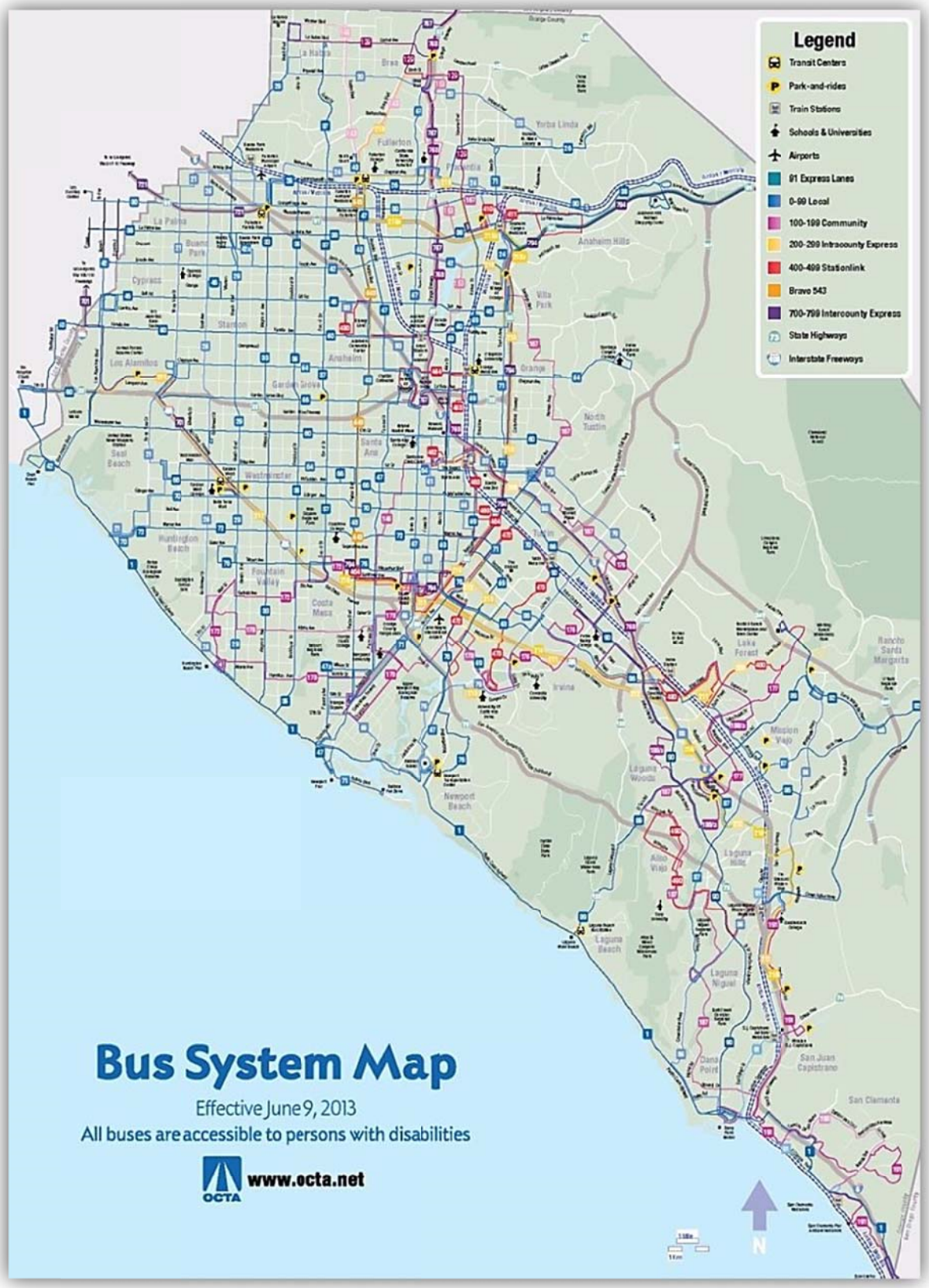
Network Role: Trip completion from regional network

Frequency: Demand based, "first" and "last-mile" work and school commute

Mid-Day Taxi Service

Network Role: Local circulation and trip completion with regional network

Frequency: Demand based, community circulation


Legend
Transit Centers
Park-and-rides
Train Stations
Schools & Universities
Airports
91 Express Lanes
0-99 Local
100-199 Community
200-299 Intracounty Express
400-499 Stationlink
Bravo 543
700-799 Intercounty Express
State Highways
Interstate Freeways
Bus System Map
Effective June 9, 2013
All buses are accessible to persons with disabilities
www.octa.net
OCTA
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1. Freeway Express Bus and Bus Rapid Transit Routes

"Freeway Express Bus services provide regional network connections or commute market mobility. Express routes operate during peak hours on weekdays on freeways for a large portion of the route, and provide faster bus service. There are currently five intracounty and five intercounty express routes serving Los Angeles, Riverside and San Bernardino Counties. " [3]

Bus Rapid Transit Routes are local buses that provide fewer, more widely-spaced stops to increase the speed of the route. Please see map titled "Current and Future BRT Routes" on the following page for the location of each of the new services:

a) Limited-Stop service on Harbor Boulevard (Route 543)

- Service began June 10, 2013
- Rapid service from the Fullerton Transportation Center to MacArthur Boulevard
- Initial travel-time savings from skip-stop operations (13 percent +)
- Weekday: ten-minute peak and 15-minute off-peak frequency
- Regular fare
- Funding: Congestion Mitigation and Air Quality funds [4]

b) Intracounty Express on State Route 73 (Route 273)

- Service start TBD
- Express service on State Route 73 (SR-73) between the Laguna Niguel/Mission Viejo Station and the Irvine Business Complex/South Coast Metro areas.
- Regular fare
- Funding: Congestion Mitigation and Air Quality funds

c) Inter-county Express on State Route 22 (Route 722)

- Service start TBD
- Express service on State Route 22 (SR-22) between the Santa Ana Station and Long Beach (Metro Blue Line).
- Funding: Congestion Mitigation and Air Quality funds

Benefits:

1. Reduced travel times for commuters.
2. Additional commute options for longer distance travels.

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[3] OCTA Transit System Study, April 2012, Appendix A

[4] OCTA Comprehensive Business Plan, FY 2012-13, pg. 8


Route 543
Start date: June 10, 2013
Fullerton to Fountain Valley
Route 722
Start date: TBD
Santa Ana to Long Beach
Route 273
Start date: TBD
Laguna Niguel/Mission Viejo
to Irvine Business Complex
Current and Future BRT Routes
Current BRT Route
Future BRT Routes
Norwalk
La Habra
Fullerton
Placentia
Bellflower
Artesia
Stanton
Garden Grove
Orange
Santa Ana
Fountain Valley
Huntington Beach
Irvine
Costa Mesa
Newport Beach
Lake Forest
Dana Point
Chino Hills State Park
Irvine Lake
Marine Corps Air Station Tustin
Naval Weapons Station
Joint Forces Training Center

2. Motorist and Taxicab Services

Orange County Motorist and Taxicab Services range from assisting stranded freeway motorists to overseeing a successful taxicab administration program. A brief overview of these services is provided below:

a) Freeway Service Patrol (FSP)

Freeway Service Patrol consists of tow truck teams that travel Orange County's freeways during peak commuting hours to help motorists with disabled vehicles. The FSP keeps the freeways moving and reduces congestion by quickly removing disabled vehicles. The FSP program began in 1992 in cooperation with the California Department of Transportation (Caltrans) and the California Highway Patrol (CHP). OCTA manages the program and the CHP provides dispatch, oversees operation of the contracted tow companies, and provides field services whenever law enforcement is required.

b) Call Box Network

The call box network in Orange County was launched in 1987 and implemented by the Service Authority for Freeway Emergencies (SAFE) program. It was developed to allow motorists to report road hazards, mechanical breakdowns, traffic accidents, and other incidents. Currently, more than three-quarters of the calls received by the call center have been made to report disabled vehicles. Funding for the call box network comes from a $1 annual fee collected per vehicle registration by the Department of Motor Vehicles.

c) Orange County 511 Service

Orange County's 511 service is a minute-by-minute travel advisory and trip planning information service. The 511 Motorist Aid and Travelers' Information System (MATIS) provides the following services:

- Traffic speed, congestion, and incident information
- Roadwork advisories
- Bus trip planner and information
- Rail trip planner and information
- Carpool and ride matching information
- Park-and-ride information
- Airport information (website only)
- Bike information (website only)
- Local weather conditions (website only)

Orange County's 511 service is connected to a sophisticated interactive voice response telephone system. Access to this system is provided throughout Orange County and while traveling in Los Angeles and Ventura counties.

d) Taxi Administration

OCTA is the regulatory authority administering the permitting of cab companies, vehicles, and drivers. Through this consolidation of regulatory functions, customer service industry standards have improved. Originally launched in 1998, the program continues to serve all 34 Orange County cities and the County of Orange.

e) Abandoned Vehicles

Orange County's Service Authority for Abandoned Vehicles (SAAV) was created in 1991 to keep the roads clear of abandoned vehicles.

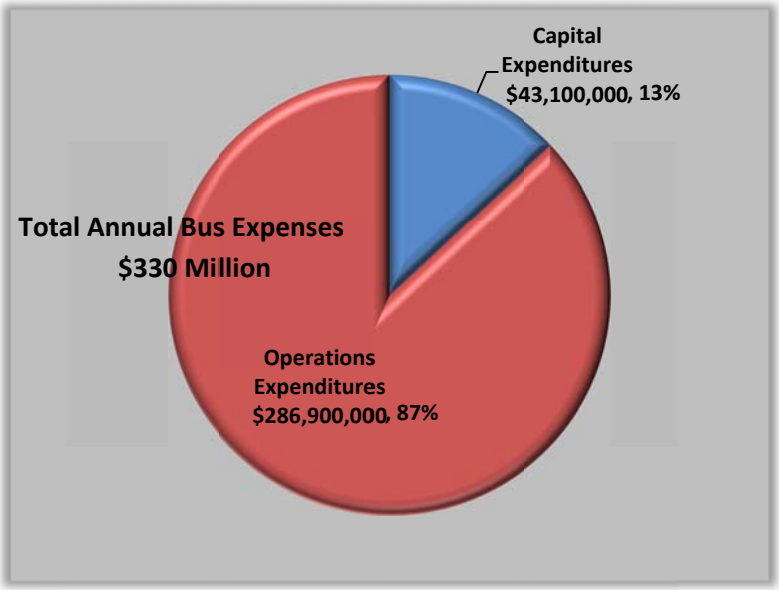
OCTA's Motorist Services team manages the SAAV program and oversees the allocation of funds collected from annual vehicle registration fees for the distribution to all 34 cities and the County of Orange. Over the past 20 years, SAAV has helped clear over 333,000 abandoned vehicles from neighborhoods and the streets.

3. Bus Capital Purchases

On September 30, 2011, OCTA developed the Bus Capital Plan. OCTA is currently undertaking a more detailed Bus Capital Plan for 2014. This Plan serves two purposes:

(1) "The Bus Capital Plan is to help develop a repeatable process to review and prioritize individual capital project improvements based upon factors including need, programming status, and project readiness. "[5]

(2) "The Bus Capital Plan is used to forecast project costs as compared to funding availability, and identify whether funding shortfalls are present. " [6]



OCTA projects that an average of $330 million of funding will be available annually for bus expenses. Of that amount, an average of nearly $43.1 million per year is expected to be applied towards capital purposes – an amount that is roughly in line with historical averages.

Existing bus capital assets consist of three primary asset types:

(1) vehicles
(2) facilities
(3) systems

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[5] Bus Capital Plan, September 2011, pg. 3

[6] Bus Capital Plan, September 2011, pg. 3

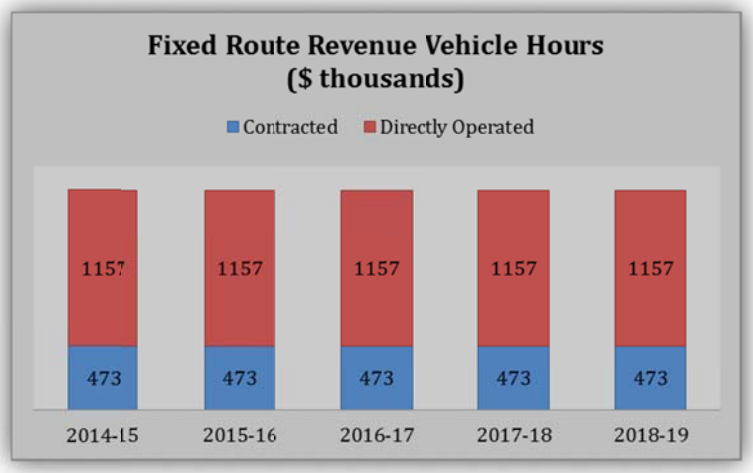
Although OCTA intends to keep its vehicle fleet size roughly constant, going forward, plans consist of converting the entire fixed-route fleet to compressed natural gas (CNG), and replacing CNG vehicles based on a 14-year useful life.

OCTA maintains its facility assets on the basis of an existing 20-year facility capital plan, and its information systems (IS) assets on the basis of a five-year IS capital plan. From 2011 to 2031 (20 years) the estimated cost to replace and rehabilitate OCTA's existing bus capital assets is $887 million - $747 million for vehicles, $118 million facilities, and $22 million for systems.

a) Existing Assets

(1) Vehicles

Below are graphs that identify the number of fixed route and ACCESS revenue vehicle hours OCTA expects to operate through 2019.

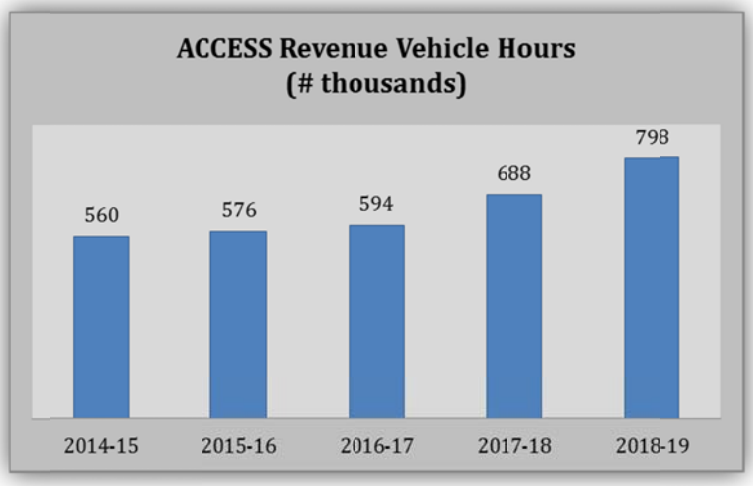


While OCTA expects to maintain current fixed-route service levels for the next 20 years, ACCESS service is anticipated to increase as demand continues.

To support the identified level of service, OCTA expects to have a stable revenue vehicle fleet size of 546 fixed-route vehicles and 248 ACCESS vehicles for a total of 804. Revenue vehicles will be replaced as they reach the end of their useful life.

The increased demand for ACCESS service will be met through the expanded use of taxicab service.

The non-revenue vehicle fleet of 211 vehicles, which supports primarily fixed-route operations, will also be replaced over time based on age and mileage.



(2) Facilities

The tables below detail OCTA's bus operating facilities.

Bus Operating Facilities	Year of Completion	Square Feet
Anaheim Base	1983	158,782
Garden Grove Base	1977	88,177
Irvine Base – Construction Circle	2001/2009	38,124
Irvine Base – Sand Canyon	1976/1981	71,875
Santa Ana Base	2005	144,816

Other OCTA facilities include park-and-ride lots and transportation centers/transit terminals. Please refer to the map on the next page.

Park-and-Ride	Year of Completion
Brea	1989
Fullerton	1974 to 1981
Santa Ana	1981

Transit Terminals	Year of Completion
Fullerton	1983
Goldenwest	1994
Laguna Beach	1982
Laguna Hills	1988
Newport	1991
Santa Ana	1984


Fullerton Transportation Center
Anaheim Base
Note: The OCTA administrative building is not a bus facility or transportation terminal.
OCTA Admin Building
Garden Grove Base
Santa Ana Transportation Center
Goldenwest Transportation Center
Santa Ana Base
Irvine Base Maintenance
Irvine Construction Circle
Newport Transportation Center
Laguna Hills Transportation Center
Laguna Beach Transportation Center
OCTA Facilities Map
OCTA Bus Operating Facilities
OCTA Transportation/Transit Terminals

b) Revenue Vehicle Purchases

The table below identifies the revenue vehicle replacement schedule, based on a 14-year useful life for fixed-route vehicles and a seven-year useful life for ACCESS vehicles.

Number of new buses by type and year to be purchased

Fiscal Year	60' CNG Bus (every 14 years)	40' CNG Bus (every 14 years)	Mid-Size CNG Bus (every 14 years)	ACCESS Vehicle (every 7 years)
2014-15	16	40	11	99
2015-16	0	90	8	99
2016-17	0	72	0	0
2017-18	0	0	0	0
2018-19	0	0	0	0
Total	16	202	18	198

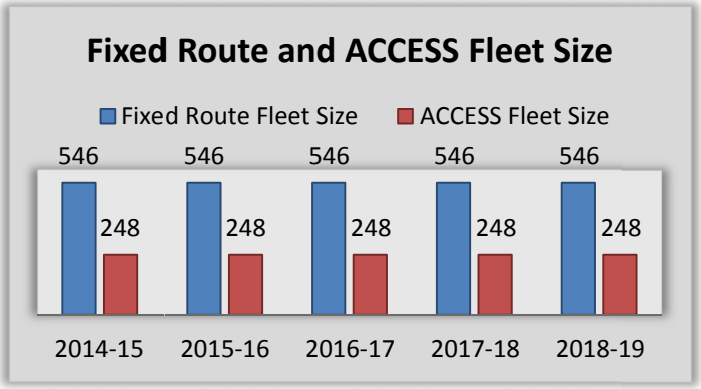
The estimated capital needed to fund the vehicle purchases is shown in the following table. The Bus Capital Plan assumes an annual average of $43.1 million of funding to be made available. Cost per bus is as follows:

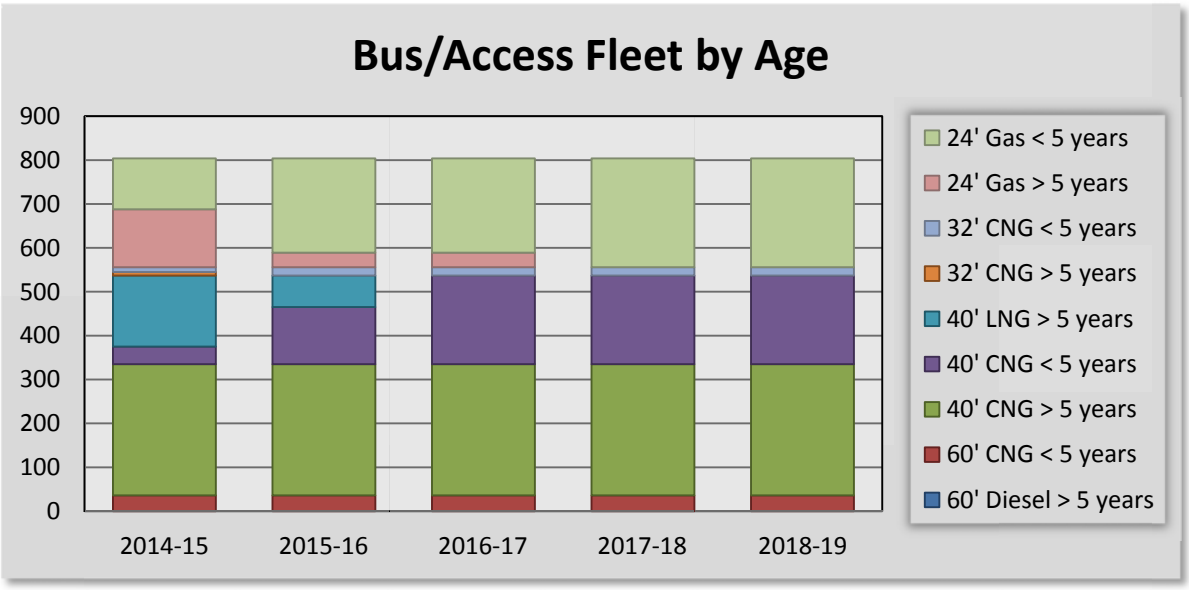
- 60' CNG Bus = $855,000/bus, 2013 price
- 40' CNG Bus = $570,000/bus, 2013 price
- Mid-Size Bus = $208,790/bus, 2013 price
- ACCESS Vehicle = $125,000/bus, 2013 price

Cost of new buses by type and year to be purchased

Fiscal Year	60' CNG Bus (every 14 years)	40' CNG Bus (every 14 years)	Mid-Size CNG Bus (every 14 years)	ACCESS Vehicle (every 7 years)	Total
2014-15	$13,680,000	$22,800,000	$2,296,690	$12,375,000	$51,151,690
2015-16	$0	$51,300,000	$1,670,320	$12,375,000	$65,345,320
2016-17	$0	$41,000,000	$0	$0	$41,000,000
2017-18	$0	$0	$0	$0	$0
2018-19	$0	$0	$0	$0	$0
Total	$13,680,000	$115,100,000	$3,967,010	$24,750,000	$157,497,010

The chart to the right titled "Fixed-Route and Access Fleet Size" shows the fixed route fleet remaining the same size over the next five years. The ACCESS fleet will continue to grow to meet demand for the next two years and then remain constant for the next three years.





Fleet by # and Age	2014-15	2015-16	2016-17	2017-18	2018-19
60' Diesel > 5 years	0	0	0	0	0
60' CNG < 5 years	36	36	36	36	36
40' CNG > 5 years	299	299	299	299	299
40' CNG < 5 years	40	130	202	202	202
40' LNG > 5 years	162	72	0	0	0
32' CNG > 5 years	8	0	0	0	0
32' CNG < 5 years	11	19	19	19	19
24' Gas > 5 years	132	33	33	0	0
24' Gas < 5 years	116	215	215	248	248
Total	804	804	804	804	804

Over the next five years, the fleet size is expected to remain at 804 vehicles. However, the age of the fleet will decrease as more assets are purchased. The chart titled “Bus/Access Fleet by Age” shows that by 2019; approximately half of the fleet will be less than five years old.

The table titled “Number of new buses by type and year to be purchased” on the previous page shows a total of 434 vehicles will be purchased and the number and type of buses OCTA plans on purchasing.

c) Facility and Infrastructure Costs

"Capital expenditures fall into a variety of Asset Categories. The funding for these costs is comprised of both grant and local sources. Grant funding includes sources from federal, state, and local agencies that typically cover 80 percent of the asset cost. The local portion, or 20 percent match, is paid from the capital replacement fund. "[7]

Fixed Asset Replacement Schedule (millions)

Asset Category	2014-15	2015-16	2016-17	Total
Support Equipment	$1.60	$0.60	$0.60	$2.80
Facility Modifications	$14.50	$2.30	$3.20	$20.00
Vehicle Modifications	$4.80	$5.30	$1.70	$11.8
Miscellaneous	0.0	$0.00	$0.00	$0.00
Total	$20.90	$8.20	$5.50	$34.60

A list of fixed-asset projects over the next five years will come from the Short Range Transit Plan which will be published in late 2014.

4. Extensions to Metrolink (Project S)

"Transit Extensions to Metrolink" (Project S) program. Metrolink Commuter Rail service provides a high-capacity system that links Orange County with two-thirds of the county's population within a four-mile radius of a station. Project S establishes a competitive program for local jurisdictions to extend the benefits of rail service by improving transit connectivity to 11 Metrolink stations.[8] Two types of projects are eligible for funding through Project S: (1) fixed-guideways and (2) bus and station vans.

a) Fixed-Guideways (Project S)

Fixed-Guideways (Project S) will provide light rail or light rail transit in cities within Orange County using steel-tracked fixed- guideways that will operate primarily along exclusive right of ways and have vehicles capable of operating as a single train or as multiple units coupled together.

Nearly $575 million in M2 and external funding (includes $58 million in local match funds) to implement Board-selected fixed-guideway projects. Based on the level of interest from local jurisdictions, additional funds are anticipated to be available for proposed/future local jurisdiction projects for bus and van connections to Metrolink in the future.

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[7] OCTA Comprehensive Business Plan, pg. 13

[8] 2012 M2020 Plan, pg. 60

(1) Project 1: Cities of Santa Ana/Garden Grove Fixed-Guideway Project

The proposed Santa Ana/Garden Grove fixed-guideway project travels along an east-west corridor between the Santa Ana Regional Transportation Center (SARTC) and a new multimodal transit hub on Harbor Boulevard in the City of Garden Grove (see map next page). The proposed street car system will extend the reach of Metrolink into the cities of Santa Ana and Garden Grove by providing easy transit access to Santa Ana's downtown area and civic center, including federal, state, and county government offices and courthouses.

Benefits:

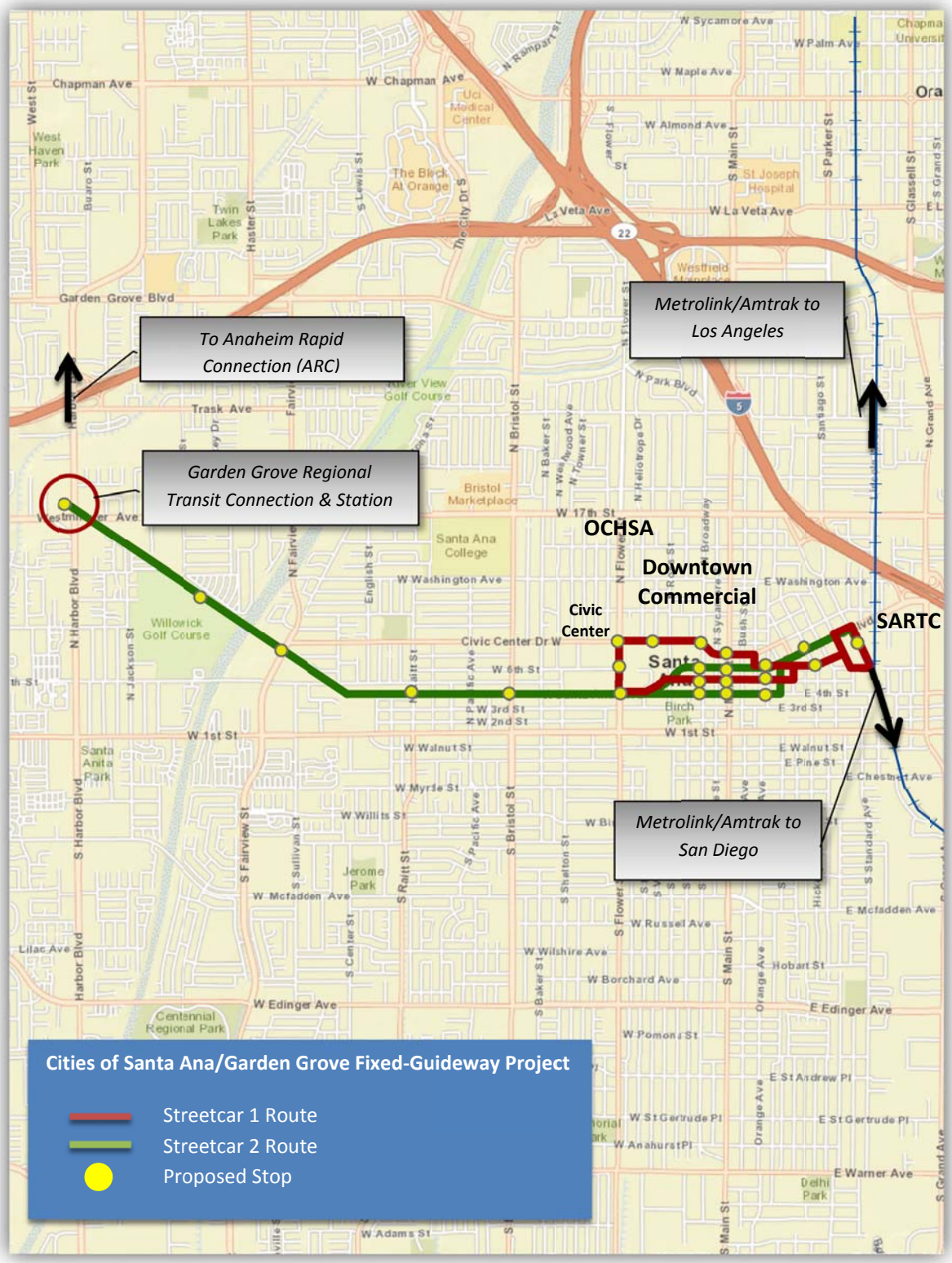
- Alleviate congestion on streets and freeways.
- Better connections to Metrolink and Amtrak rail services.
- Improved solutions for meeting the needs of the transit-dependent.
- Enrich the community by providing an alternative to traveling by automobile.
- Provides a safe, convenient, and reliable public transportation option.
- Streetcar systems spur economic development and create jobs.
- Modern streetcars systems are a green, healthy technology that enhances community livability.

Cost: Approximately $11 million (project study funds) in Project S and additional funds have been awarded to the Santa Ana/Garden Grove team. Total cost estimated at $200 million.

Schedule: Note: The schedule below is tentative and is conditional on OCTA Board policy approval in 2014.

Milestone	Calendar Year
Conceptual Engineering and Environmental Analysis	Q3, 2009 to Q2, 2013
Project Development (Engineering, Right-of-Way, Final Design)	Q4, 2013 to Q2, 2014
Vehicle Acquisition	Q2, 2014 to Q3, 2016
Construction	Q3, 2015 to Q3, 2017
Operations Begin	Q4, 2017

Reference: http://santaanatransitvision.com/fixed_guideway_project.html


To Anaheim Rapid Connection (ARC)
Garden Grove Regional Transit Connection & Station
Metrolink/Amtrak to Los Angeles
Metrolink/Amtrak to San Diego
OCHSA
Downtown Commercial
Civic Center
SARTC
Cities of Santa Ana/Garden Grove Fixed-Guideway Project
Streetcar 1 Route
Streetcar 2 Route
Proposed Stop

(2) Project 2: Anaheim Rapid Connection (ARC) Fixed Guideway Project

The proposed Anaheim Rapid Connection (ARC) is a fixed-guideway transit system that will connect Anaheim area destinations. Starting from the Anaheim Regional Intermodal Transportation Center (ARTIC), this transit system will connect visitors, high-speed rail riders, employees, and area residents to and from Platinum Triangle, Anaheim Resort, and Anaheim Convention Center. To view documents and information regarding ARC (including the September 12, 2012 Community Meeting presentation and the October 3, 2012 Alternatives Analysis) follow the link at the bottom of this page.

Benefits:

- ARC will provide a cleaner, safer, and more efficient way to enjoy Anaheim by enabling economic development, providing mobility opportunities for the community, and supporting livability.

- Greatly improves last mile connection to regional transit for workers, residents and visitors, as well as internal circulation, making transit a viable option for many.

    - Saves travel time
    - Improves reliability
    - Increases transit ridership

- Enables development of a new and highly livable urban place – dense, mixed use, and walkable-built around transit, where no car is needed.

Cost:

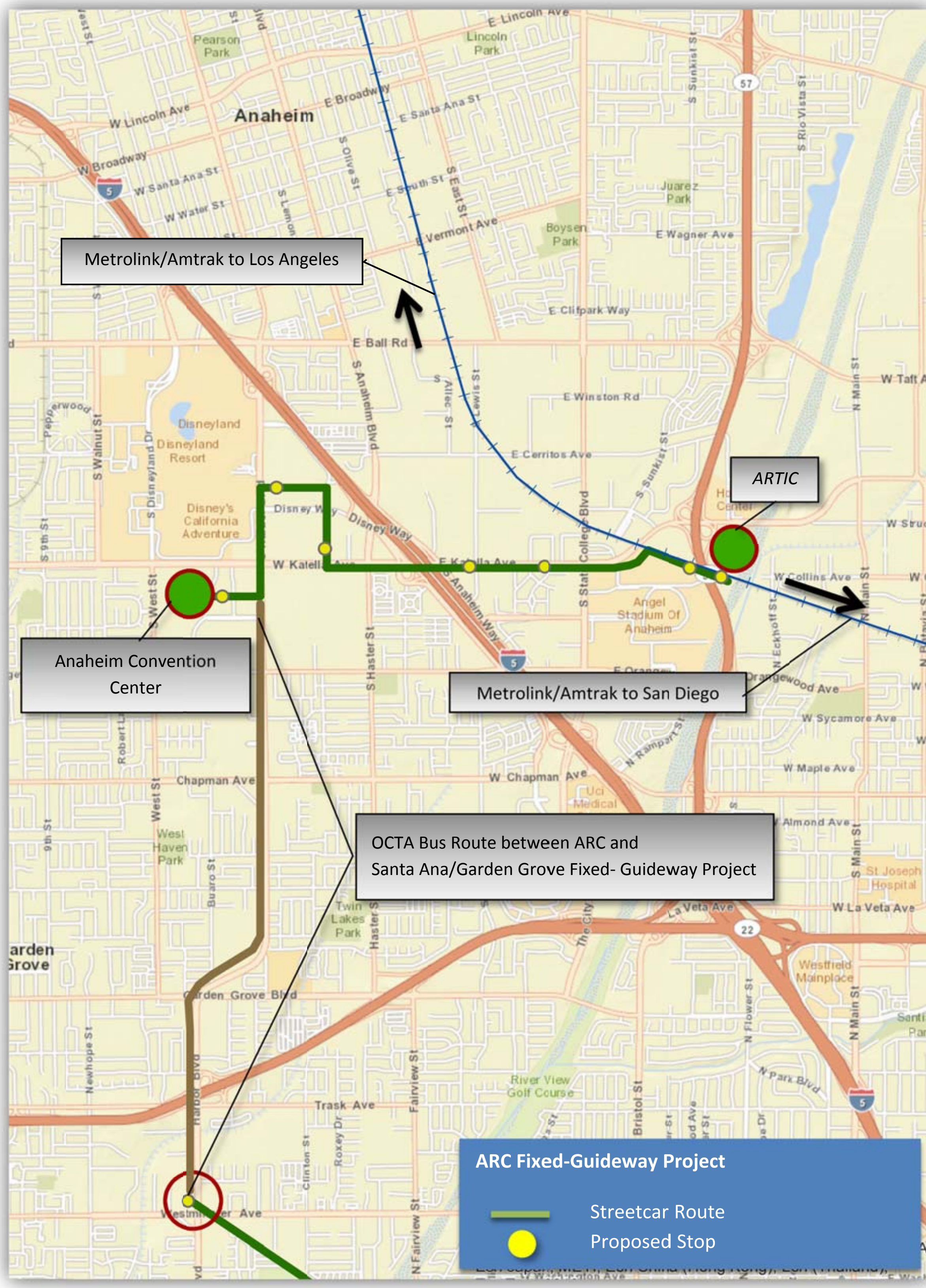
- ARC Capital Cost - $318 million
- Public Funding: Measure M – Project "S," federal funding, state and local transit funds
- Operations and Maintenance - $10 million annual cost. Fully funded by local sources

Schedule:

- Currently in the Alternatives Analysis (AA) phase
    - Alternatives under review include an enhanced bus, and streetcar
    - Elevated fixed-guideway

Milestone	Schedule
Project Development (Environmental Clearance)/Engineering	2013-2015
Begin Final Design	2016
Construction	2017
Operations Begin	2018

Reference: **http://aconnext.com/arc/overview/and**
http://www.anaheim.net/title/Public+Works/Transit+Planning/page.htm


Metrolink/Amtrak to Los Angeles
ARTIC
Anaheim Convention Center
Metrolink/Amtrak to San Diego
OCTA Bus Route between ARC and Santa Ana/Garden Grove Fixed- Guideway Project
ARC Fixed-Guideway Project
Streetcar Route
Proposed Stop

b) Bus and Station Van Extension Projects (Project S)

Bus and Station Van Extension projects provide funding for programs that improve transit connectivity between rail stations and popular local destinations and businesses located nearest to rail stations.

During the first call for projects in 2012, nearly $10 million was made available to local cities to implement bus and station van concepts. Through planning efforts, 35 concepts were developed and evaluated as part of OCTA's Transit System Study to determine how they could integrate and compliment service already provided by OCTA.

Four applications were received for the 2012 Project S Call for Project, and all four connections (three van routes plus one bus route) were approved by the Board for fiscal year 2012-2013. These projects will be in the operations and maintenance phase for the next five years.

Benefits: The benefits of the bus and station van network are similar to those provided by the fixed-guideway projects. By providing bus and station van connections, this program improves last mile connections for regional transit workers, residents and visitors, as well as internal circulation, making transit a viable option for many.

Project Descriptions:

(1) Project 1: Anaheim Transportation Network: The network will operate two buses serving seven Metrolink trains daily (four trains in the morning and three trains in the afternoon) carrying passengers from the Anaheim Canyon Station to:

- La Palma Avenue/State College Boulevard
- Anaheim Civic Center
- Vermont Avenue/Melrose Street
- Ball Road/East Street
- Harbor Boulevard/Ball Road
- Disney East Esplanade on Harbor Boulevard

(2) Project 2: City of Lake Forest, station van from the Irvine Station to Oakley, Inc.

(3) Project 3: City of Lake Forest, station van from the Irvine Station to Panasonic Avionics Corporation.

(4) Project 4: City of Lake Forest, station van from the Irvine Station to Invensys.

The spreadsheet below shows the approved bus and station van projects by funds, including the estimated operational and maintenance costs for five years.

Agency	Capital Dollars Requested	Operations and Maintenance Dollars Requested	Total
Anaheim	$202,000	$242,888	$444,888
Lake Forest	n/a	$ 60,465	$ 60,465
Lake Forest	n/a	$174,095	$174,095
Lake Forest	n/a	$ 53,165	$ 53,165
Total funding for five years subject to annual audit and monthly ridership			$732,613

c) High-Frequency Metrolink Service (Project R)

High-Frequency Metrolink Service expand Metrolink peak-period capacity and address gaps in the existing schedule, as well as make continued investments to improve rail stations, such as the Orange and Laguna Niguel/Mission Viejo stations and operating facilities.

"Project R provides for sustained and potential increased rail service and capacity along three Metrolink lines serving Orange County.[9] The program provides for safety and operational improvements to the railroad infrastructure necessary to support existing and expanded train service. These infrastructure improvements include:

- Grade crossing improvements
- Track improvements
- Signal and communications systems improvements
- Grade crossing improvements

Benefits: **"**Project R allows for sustained operation and enhanced capacity of Metrolink trains serving Orange County, providing a viable alternative to vehicle travel, thereby reducing congestion on crowded roadways and freeways. During the peak hours, Metrolink carries the equivalent number of passengers that would fill one freeway lane on the I-5."[10]

Cost: $221.5 million between 2013 and 2020.

[9] 2012 M2020 Plan, pg. 59

[10] 2012 M2020 Plan, pg. 59

Schedule: Capital improvements required for expansion of Metrolink service during mid-day are nearly complete. OCTA and partner agencies are working together with Metrolink and BNSF Railway Company to implement improvements allowing expansion of service to Los Angeles. OCTA is also working with the LOSSAN Corridor agencies to enact legislation to support better coordination of services in the corridor for greater integration. The map below illustrates the three Orange County Metrolink lines and the stations they serve.

III. Overview - M2020 Plan

The M2020 Plan outlines the projects and programs for most transportation modes that can be delivered on an expedited schedule by the year 2020. [11] Through the M2020 plan, projects are funded using Orange County's one-half cent sales tax for transportation improvements known as Measure M. Orange County voters originally approved Measure M in 1990 (M1) for a 20-year timeframe. Given the tremendous benefits delivered to taxpayers from the M1 program, in November 2006, voters approved the renewal of Measure M (M2) for another 30 years to 2041.

In 2007, an Early Action Plan to accelerate the implementation of M2 projects and programs was approved by the Board of Directors. As a result, the M2020 Plan was completed in September 2012; this eight-year plan outlines 14 objectives to be delivered on an expedited schedule between now and the year 2020. "By the year 2020, OCTA expects to accomplish the 14 objectives of the M2020 Plan, including:

- Finishing two-thirds of the M2 freeway program
- Completing the environmental phase for the remaining one-third
- Synchronizing 2,000 traffic signals across Orange County while expanding roadway capacity and protecting pavement conditions.
- Expanding and improving Metrolink service to L.A. County.
- Improving Orange County water and air quality and preserving approximately 1,000 acres of open space."[12]

[11] OCTA M2020 Plan, pg. 1

[12] OCTA Fiscal Year 2013-14 Budget, pg. 32

The M2020 Plan represents a blueprint for continued advancement of M2 for the period of 2013 through 2020. The M2020 Plan also supports and enhances the ability of OCTA to support the regional Sustainable Communities Strategy (SCS) in Orange County.

For a complete list of the 14 objectives identified in the M2020 Plan, please refer to Appendix A.

The following freeway projects are listed according to the M2020 Plan objective to which they are assigned. Projects under the M2020 Plan are also assigned by letter designation, A through X. For a complete list of the designation summaries refer to Appendix B and for a summary list of all projects by objectives please refer to Appendix C.

A. Freeways-Freeway Construction Projects

The goal of the freeway construction projects is to "Deliver 14 construction projects along Interstate 405 (I-405), Interstate 5 (I-5), State Route 55 (SR-55), and State Route 91 (SR-91). (M2 projects A, C, D, E, F, G, H, I, J, & K). This comprises two-thirds of the M2 freeway program, amounting to nearly $3 billion in year-of-expenditure (YOE) dollars' worth of transportation investments inclusive of what has already been delivered."[13]

The map on page 118 provides an overview of the freeway construction projects from 2014 to 2019. These projects are in various stages of completion. The remainder of this section provides a short summary description and schedule of each of the projects. For detailed information please reference the OCTA M2020 Plan.

[13] OCTA M2020 Plan, pg. 3

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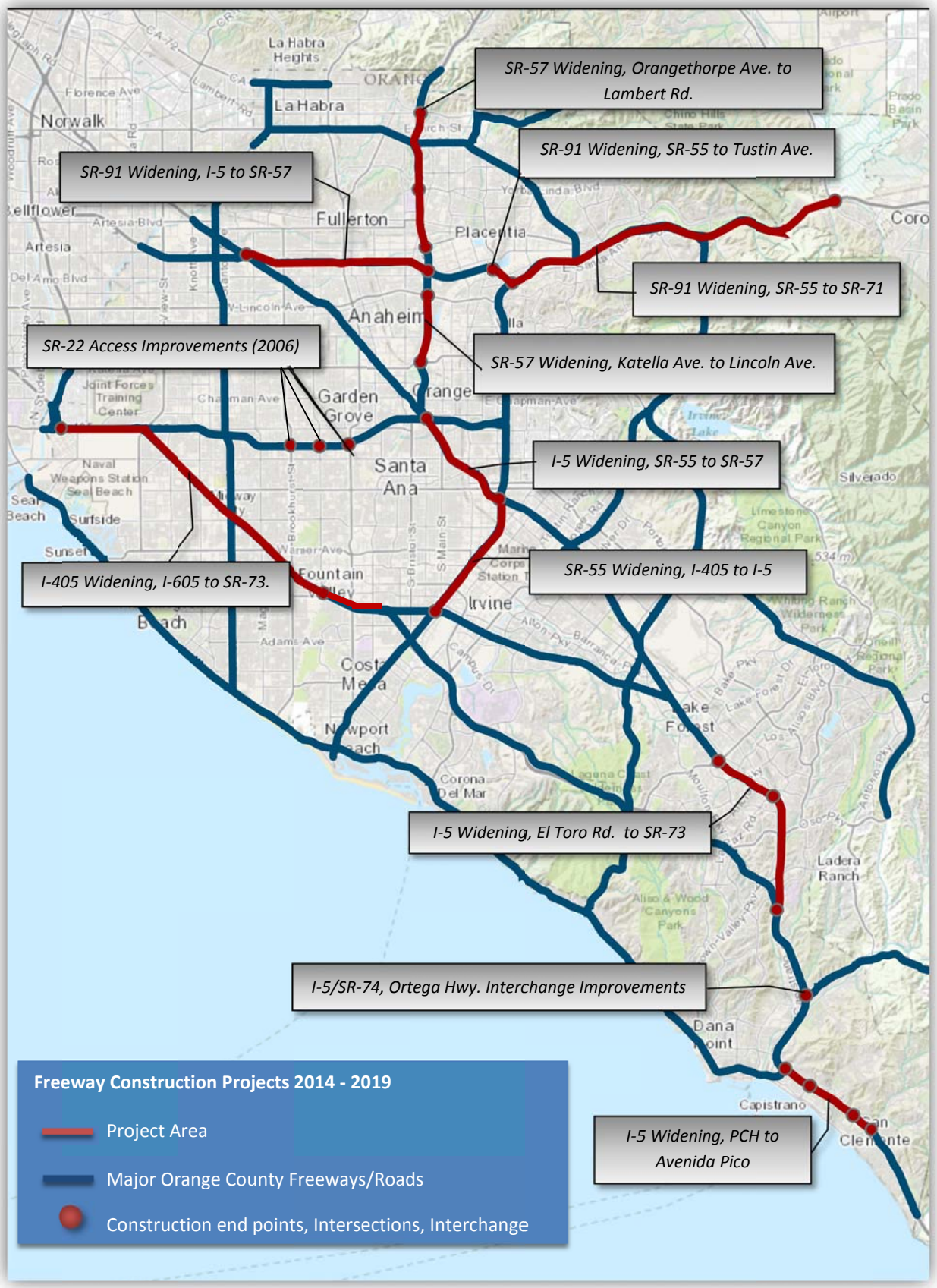

SR-57 Widening, Orangethorpe Ave. to Lambert Rd.
SR-91 Widening, SR-55 to Tustin Ave.
SR-91 Widening, I-5 to SR-57
SR-91 Widening, SR-55 to SR-71
SR-22 Access Improvements (2006)
SR-57 Widening, Katella Ave. to Lincoln Ave.
I-5 Widening, SR-55 to SR-57
SR-55 Widening, I-405 to I-5
I-405 Widening, I-605 to SR-73.
I-5 Widening, El Toro Rd. to SR-73
I-5/SR-74, Ortega Hwy. Interchange Improvements
I-5 Widening, PCH to Avenida Pico
Freeway Construction Projects 2014 - 2019
Project Area
Major Orange County Freeways/Roads
Construction end points, Intersections, Interchange

1. Interstate 5 (I-5) Projects

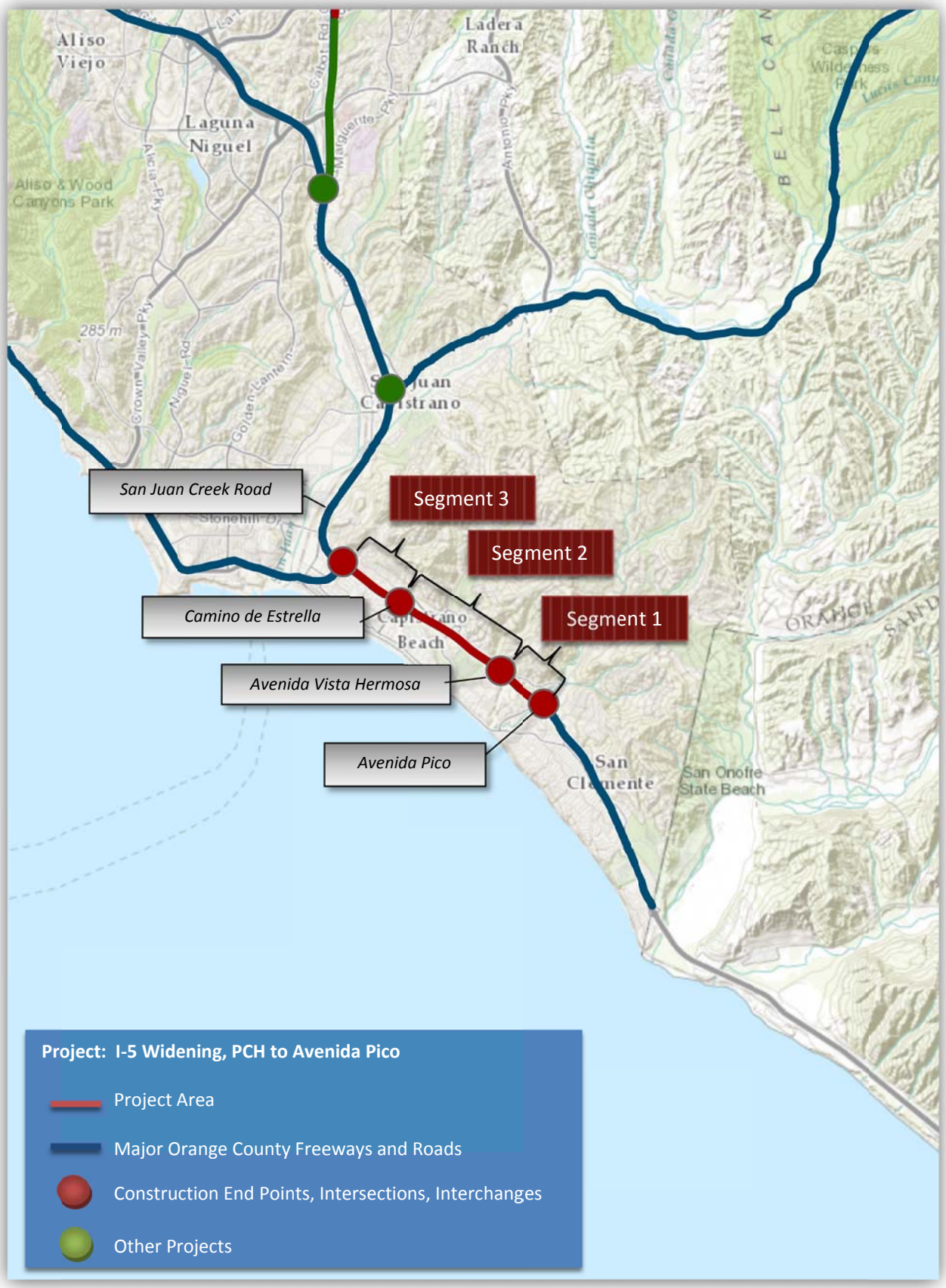
a) I-5 Widening, PCH to Avenida Pico

(1) Segment 1: Extends from south of the Avenida Pico interchange to south of the Avenida Vista Hermosa interchange.

(2) Segment 2: Begins south of Avenida Vista Hermosa interchange and ends to the north of the Camino de Estrella interchange.

(3) Segment 3: Extends from north of the I-5 Camino de Estrella interchange to south of San Juan Creek Road.

I-5 Widening, Avenida Pico to Pacific Coast Highway Summary	
Description	(Description of segments 1, 2, and 3 are provided above) a. Extends HOV lanes from Avenida Pico to San Juan Creek Road. b. Interchange improvements at Avenida Pico.
Project	Measure M, Projects C and D
Benefit	Eliminate a southbound lane drop at PCH and enable more efficient operation of general purpose lanes.
Cost	Segment 1: $110 million Segment 2: $ 75 million Segment 3: $ 63 million $248 million
Funding Source	M2
Environmental Phase	Segment 1: Completed calendar year Q4, 2011 Segment 2: Completed calendar year Q4, 2011 Segment 3: Completed calendar year Q4, 2011
Engineering Phase	Segment 1: Completed calendar year Q4, 2013 Segment 2: Completed calendar year Q2, 2013 Segment 3: Completed calendar year Q1, 2013
Construction Phase	Segment 1: Calendar year Q2, 2014 to Q4, 2017 Segment 2: Calendar year Q2, 2014 to Q2, 2016 Segment 3: Calendar year Q1, 2014 to Q3, 2016
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


Aliso Viejo
Laguna Niguel
Ladera Ranch
Aliso & Wood Canyons Park
San Juan Capistrano
San Juan Creek Road
Segment 3
Segment 2
Segment 1
Camino de Estrella
Avenida Vista Hermosa
Avenida Pico
Capistrano Beach
San Clemente
San Onofre State Beach
Project: I-5 Widening, PCH to Avenida Pico
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects

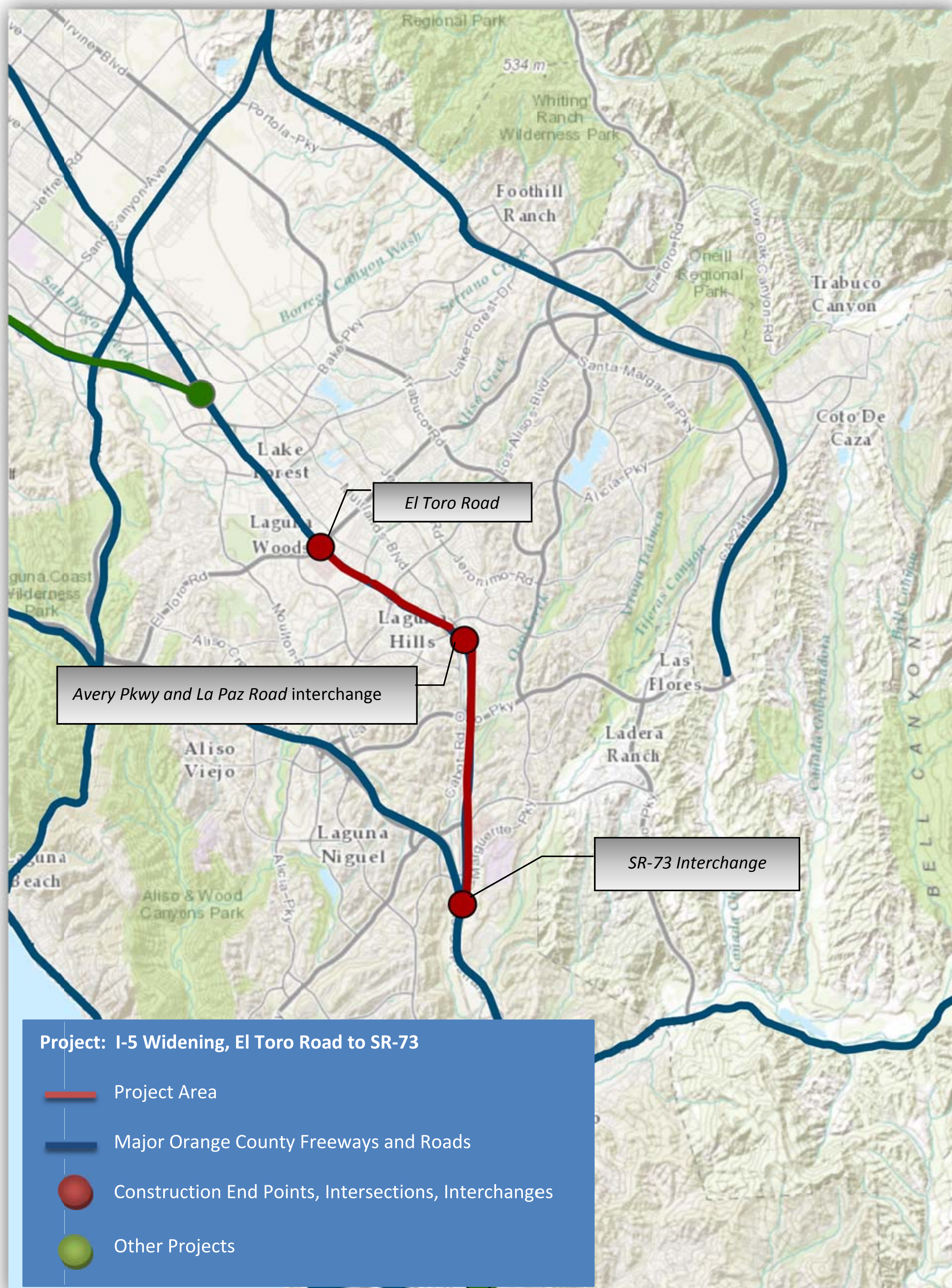
b) I-5/SR-74 Ortega Highway, Interchange Improvements

I-5/SR-74 Ortega Interchange Improvements Summary	
Description	Reconstruct the I-5/SR-74 Interchange to better accommodate existing and future traffic volumes, and alleviate the congestion within the interchange area. Improvements along the I-5 are within 1000 feet of SR-74 to both the north and south. Improvements along SR-74 are from El Camino Real to approximately 500 feet east of Los Cerritos Avenue.
Project	Measure M, Project D
Benefit	Eliminates a major chokepoint, reduces congestion
Cost	$81 Million
Funding Source	M2
Environmental Phase	Completed: Calendar year Q2, 2009
Engineering Phase	Completed: Calendar year Q4, 2011
Construction Phase	Calendar year Q3, 2012 to Q3, 2015
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


I-5/SR-74 Interchange
Project: I-5/SR-74 Ortega Highway, Interchange Improvements
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects

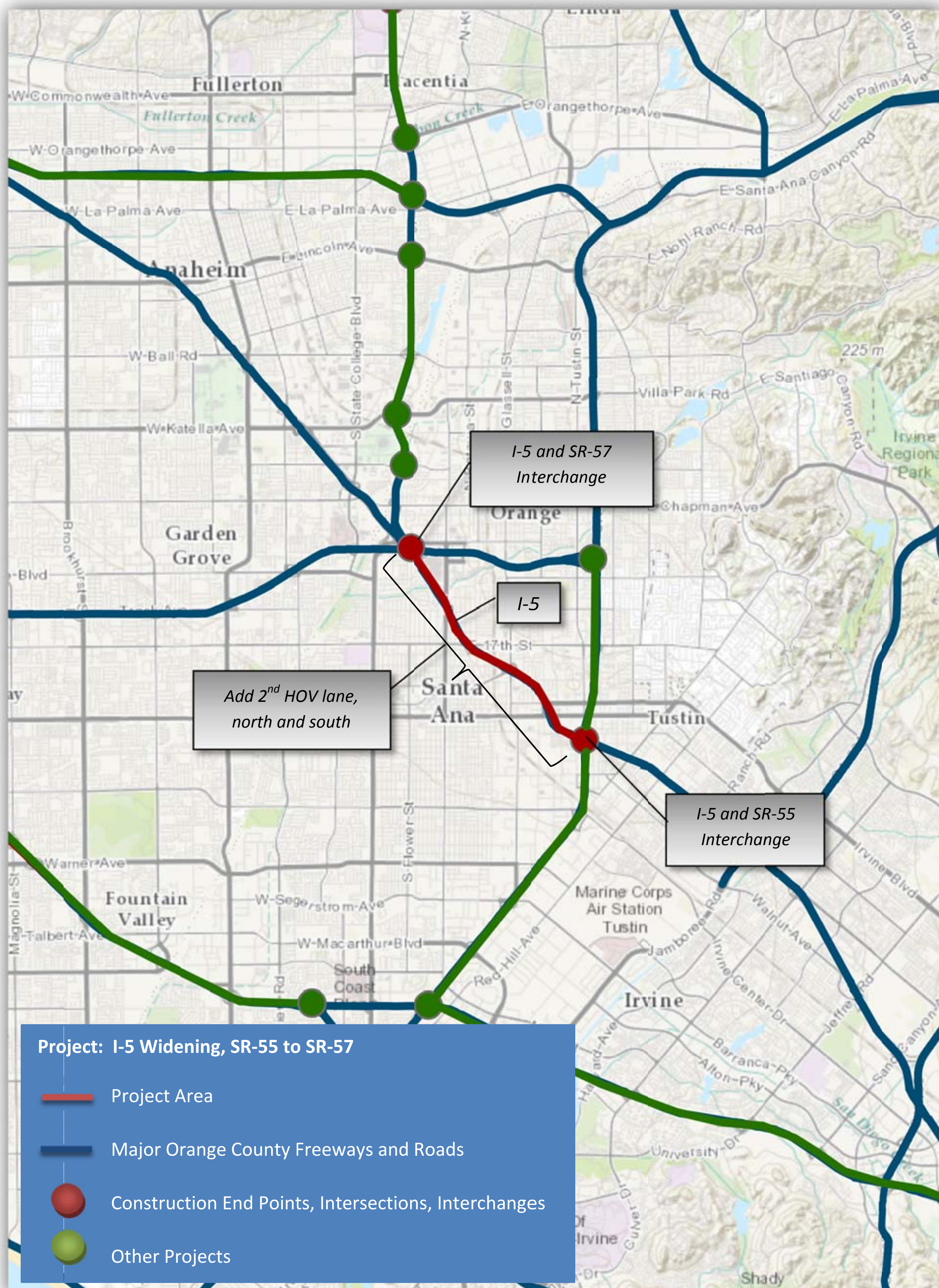
c) I-5 Widening, El Toro Road to SR-73 (includes Avery & La Paz Interchange)

I-5 Widening, El Toro Road to SR-73 Summary	
Description	The project will widen I-5 in each direction between SR-73 and El Toro Road (approximately 6.5 miles) to increase freeway capacity and reduce congestion in the Lake Forest, Laguna Hills, and Laguna Niguel, and Mission Viejo, areas. The project will add one general purpose lane in each direction, extend the second HOV lane on both directions from El Toro Road to Alicia Parkway, and reconstruct La Paz Road and Avery Parkway interchanges.
Project	Measure M, Project D
Benefit	Reduce chokepoints and alleviate congestion at adjacent intersections.
Cost	$526 million
Funding Source	Federal and M2
Environmental Phase	In environmental to calendar year Q2, 2014
Engineering Phase	Calendar year Q3, 2014 – Q3, 2017
Construction Phase	Calendar year Q3, 2018 – Q2, 2022
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


El Toro Road
Avery Pkwy and La Paz Road interchange
SR-73 Interchange
Project: I-5 Widening, El Toro Road to SR-73
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
Lake Forest
Laguna Woods
Laguna Hills
Aliso Viejo
Laguna Niguel
Foothill Ranch
Trabuco Canyon
Coto De Caza
Las Flores
Ladera Ranch
Whiting Ranch Wilderness Park
Aliso & Wood Canyons Park
BELL CANYON

d) I-5 Widening, SR-55 to SR-57

I-5 Widening, SR-55 to SR-57 Summary	
Description	Project will incorporate two project study report (PSR). The first is to add a second HOV lane in each direction on I-5 between SR-55 and SR-57 interchanges to increase freeway capacity and reduce congestion.
Project	Measure M, Project A
Benefit	a. Increase capacity on the HOV I-5 in Santa Ana b. Provides direct HOV connectors from both the SR-55 and SR-57
Cost	$46.3 million
Funding Source	State
Environmental Phase	Calendar year Q2, 2011 to Q4, 2014
Engineering Phase	Calendar year Q4, 2014 to Q3, 2016
Right-of-way	Calendar year Q4, 2015 to Q3, 2016
Construction Phase	Calendar year Q2, 2017 to Q2, 2019
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


I-5 and SR-57 Interchange
I-5
Add 2nd HOV lane, north and south
I-5 and SR-55 Interchange
Project: I-5 Widening, SR-55 to SR-57
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
Fullerton
Anaheim
Garden Grove
Orange
Santa Ana
Tustin
Fountain Valley
Irvine
Marine Corps Air Station Tustin
Irvine Regional Park

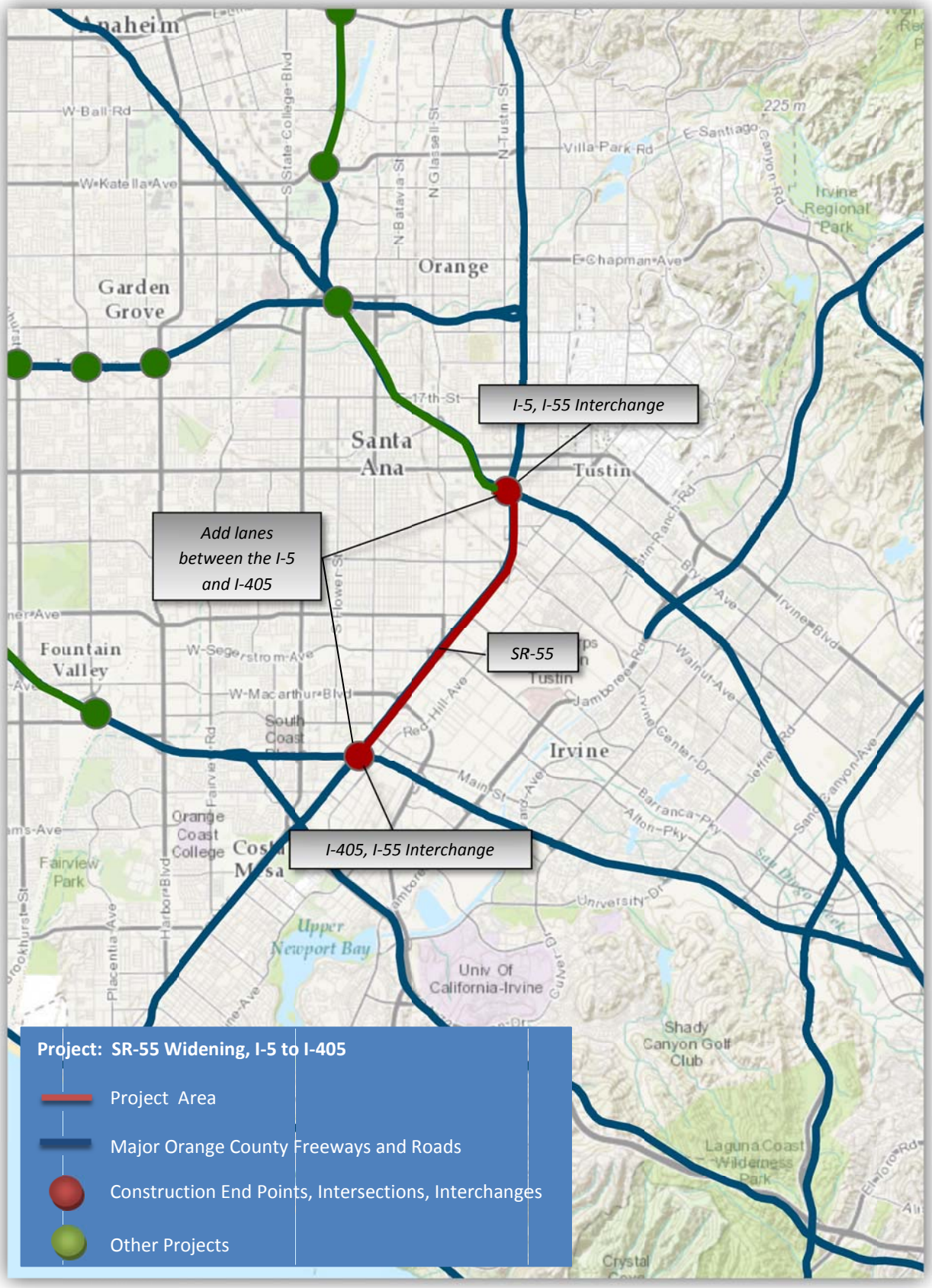
2. Interstate 405 (I-405) Widening, SR-73 to I-605, Design-Build Project

I-405 Widening, SR-73 to I-605, Design-Build Project	
Description	The project will add new lanes, improve interchanges and widen local overcrossings to the San Diego Freeway from SR-73 in Costa Mesa to the San Gabriel River Freeway (Interstate 605) near the Orange County/ Los Angeles County border. There are three alternatives: (1) add one general purpose lane in each direction; (2) add two general purpose lanes in each direction; and (3) add one general purpose lane and one express lane in each direction; the new express lane and existing high-occupancy vehicle (HOV) lane would be operated as a two-lane express facility in each direction.
Project	Measure M, Project K
Benefit	Increased freeway capacity
Cost	$1.3 billion for one general purpose lane in each direction
Funding Source	General purpose lanes funded by M2 Eligible for federal and state funding
Environmental Phase	Calendar year Q1, 2009 to Q4, 2014
Engineering Phase	Calendar year Q1, 2014 to Q4, 2014
Right-of-Way	Calendar year Q1, 2014 to Q3, 2018
Construction Phase	Calendar year Q4, 2015 to Q4, 2019
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


I-405 and I-605 Interchange
Euclid St.
I-405 and SR-73 Interchange
Hawaiian Gardens
Cypress
Los Alamitos
Garden Grove
Naval Weapons Station Seal Beach
Midway City
Sunset Beach
Fountain Valley
Bolsa Chica Ecological Reserve
Seacliff Country Club
Newport Beach
Newport Bay
Project: I-405 Widening, SR-73 to I-605, Design Build
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects

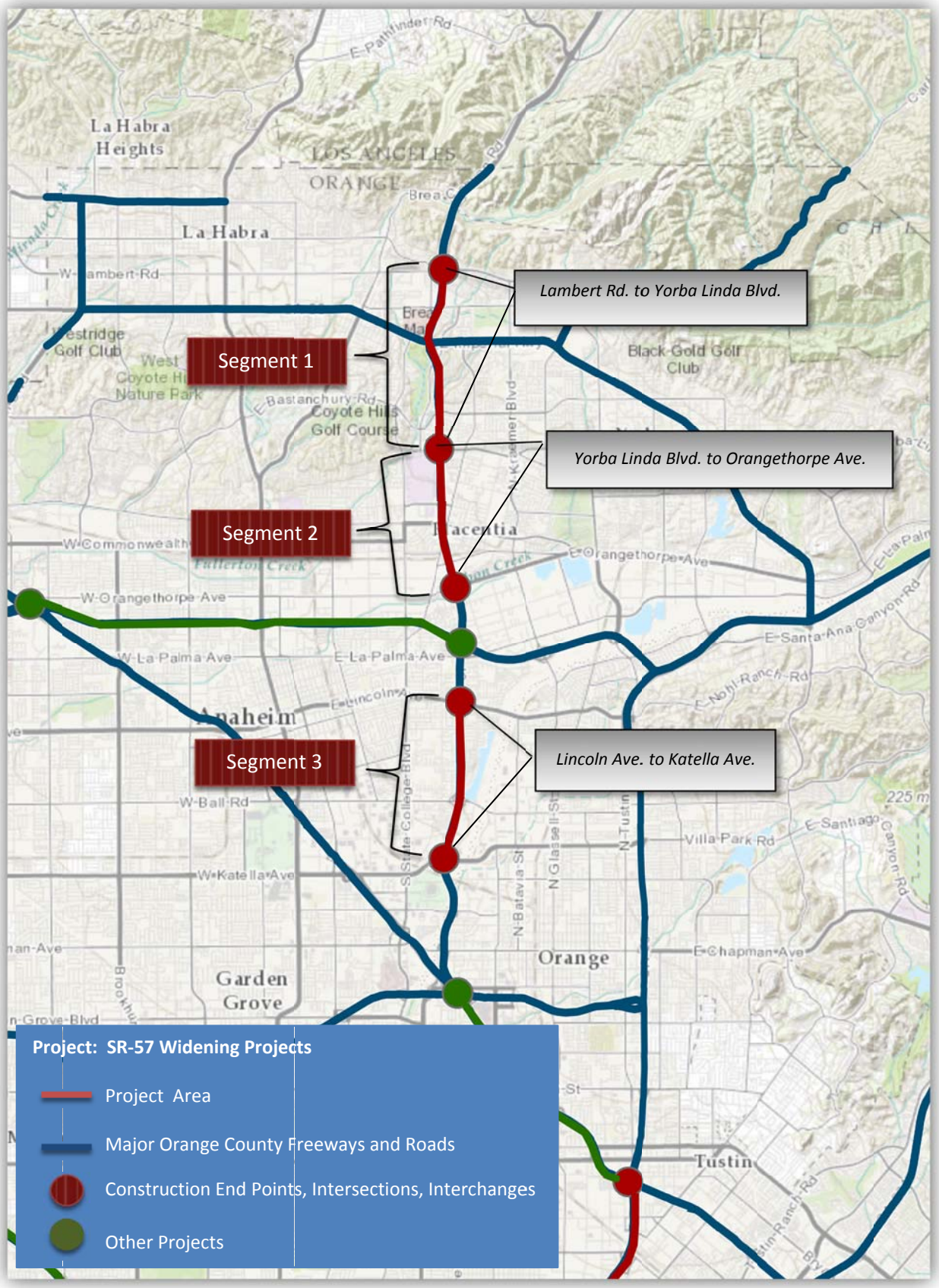
3. State Route 55 (SR-55) Widening, I-405 to I-5

SR-55 Widening, I-405 to I-5	
Description	The project will add new lanes (approximately six miles) on SR-55 between north of I-405 to south of I-5 connectors to increase freeway capacity and reduce congestion in central Orange County areas. The project is located in the cities of Santa Ana, Irvine and Tustin. The PSR has five build alternatives: (1) add one auxiliary lane in both directions and provides full freeway standard features; (2) adds a fifth general purpose (GP) lane in both directions in lieu of auxiliary lanes; (3) combines Alternative 1 and Alternative 2 to provide an auxiliary lane and GP lane in both directions; (4) combines Alternative 1 and Alternative 2 and adds a HOV lane; (5) combines Alternative 1 and adds a new lane in each direction to increase capacity of the existing freeway.
Project	Measure M, Project F
Benefit	Improved mobility and congestion reduction on the SR-55 from I-405 to the I-5
Cost	Phase I: $275 million
Funding Source	M2 The project is eligible for future state and federal funds
Environmental Phase	Calendar year Q2, 2011 to Q4, 2014
Engineering Phase	Calendar year Q4, 2014 to Q4, 2017
Right-of Way	Calendar year Q1, 2016 to Q1, 2018
Construction Phase	Calendar year Q3, 2018 to Q3, 2021
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


I-5, I-55 Interchange
Add lanes between the I-5 and I-405
SR-55
I-405, I-55 Interchange
Project: SR-55 Widening, I-5 to I-405
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
Anaheim
Garden Grove
Orange
Santa Ana
Tustin
Fountain Valley
Irvine
Costa Mesa
Orange Coast College
Fairview Park
Upper Newport Bay
Univ Of California-Irvine
Irvine Regional Park
Shady Canyon Golf Club
Laguna Coast Wilderness Park
Villa Park Rd
E Chapman Ave
17th St
W Ball Rd
W Katella Ave
W Macarthur Blvd
Red Hill Ave
Jamboree Rd
Irvine Blvd
Walnut Ave
Main St
Barranca Pky
Alton Pky
University Dr
225 m

4. **State Route 57 (SR-57) Projects**
    a) **Segment 1:** Lambert Road to Yorba Linda Boulevard
    b) **Segment 2:** Orangethorpe Avenue to Yorba Linda Boulevard
    c) **Segment 3:** Katella Avenue to Lincoln Avenue

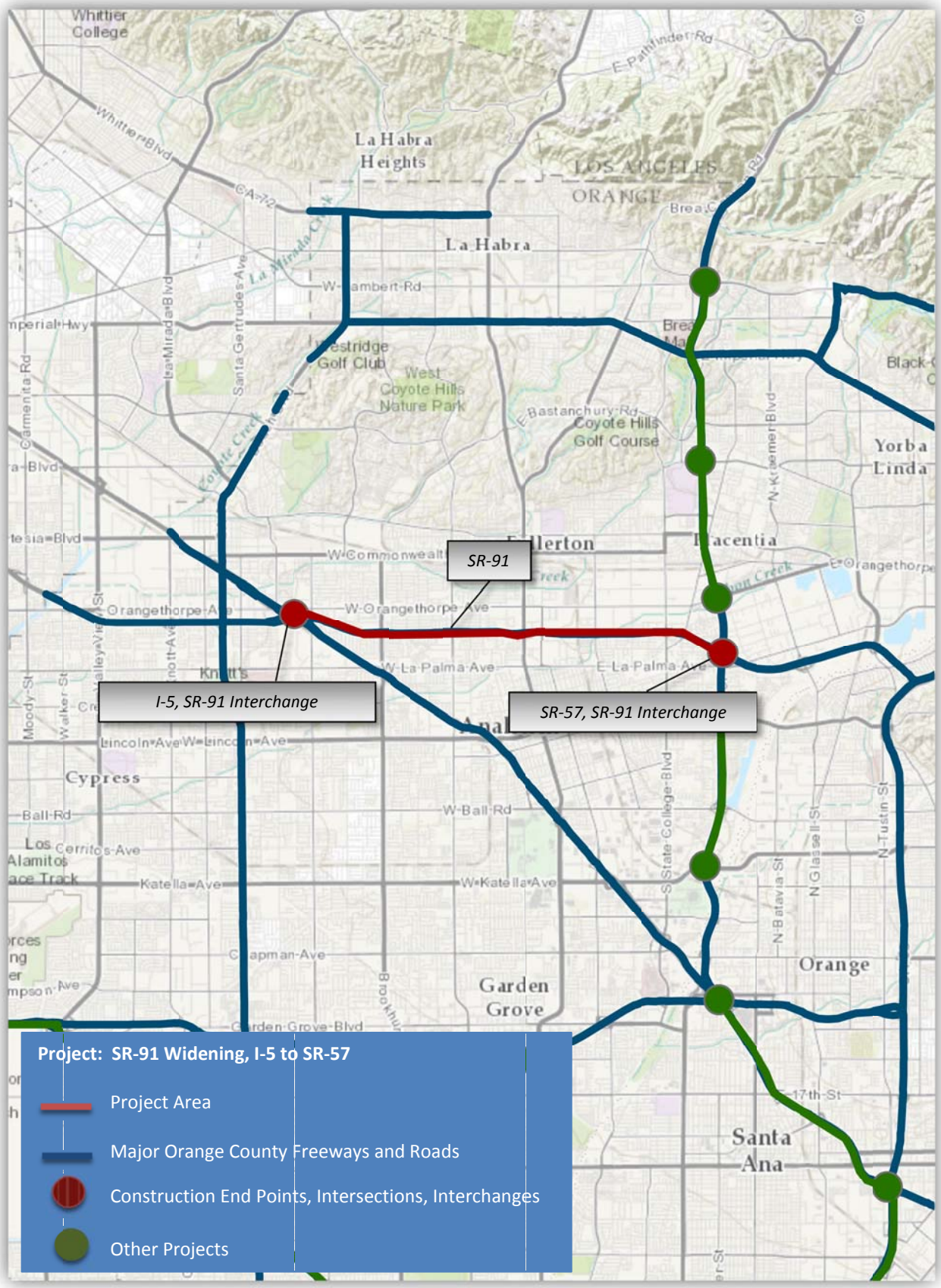
SR-57 Widening, (Northbound)	
Description	Add one general purpose lane in the northbound direction from the City of Orange to the City of Brea. Phase I, Three segments: Segment 1: Yorba Linda Boulevard to Lambert Road Segment 2: Orangethorpe Avenue to Yorba Linda Blvd Segment 3: Katella Avenue to Lincoln Avenue
Project	Measure M, Project G
Benefit	Improved existing and future mobility, reduce congestion, improve mainline weaving, and merge/diverge movements. Improved traffic operations and safety
Cost	Segment 1: $56.5 million Segment 2: $56.9 million Segment 3: $38.4 million
Funding Source	M2 and state funds
Environmental Phase	Segment 1: Completed calendar year, Q4, 2007 Segment 2: Completed calendar year, Q4, 2007 Segment 3: Completed calendar year, Q4, 2009
Engineering Phase	Segment 1: Completed calendar year, Q2, 2009 Segment 2: Completed calendar year, Q2, 2009 Segment 3: Completed calendar year, Q4, 2010
Construction Phase	Segment 1: Calendar year Q4, 2010 to Q1, 2014 Segment 2: Calendar year Q4, 2010 to Q2, 2014 Segment 3: Calendar year Q4, 2011 to Q3, 2014
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


Segment 1
Lambert Rd. to Yorba Linda Blvd.
Segment 2
Yorba Linda Blvd. to Orangethorpe Ave.
Segment 3
Lincoln Ave. to Katella Ave.
Project: SR-57 Widening Projects
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
La Habra Heights
La Habra
Anaheim
Placentia
Orange
Garden Grove
Tustin
Black Gold Golf Club
Coyote Hills Golf Course
W Lambert Rd
E Bastanchury Rd
W Commonwealth Ave
W Orangethorpe Ave
E Orangethorpe Ave
W La Palma Ave
E La Palma Ave
W Ball Rd
W Katella Ave
E Chapman Ave
Villa Park Rd
E Santa Ana Canyon Rd
E Nohl Ranch Rd

5. State Route 91 (SR-91) Projects

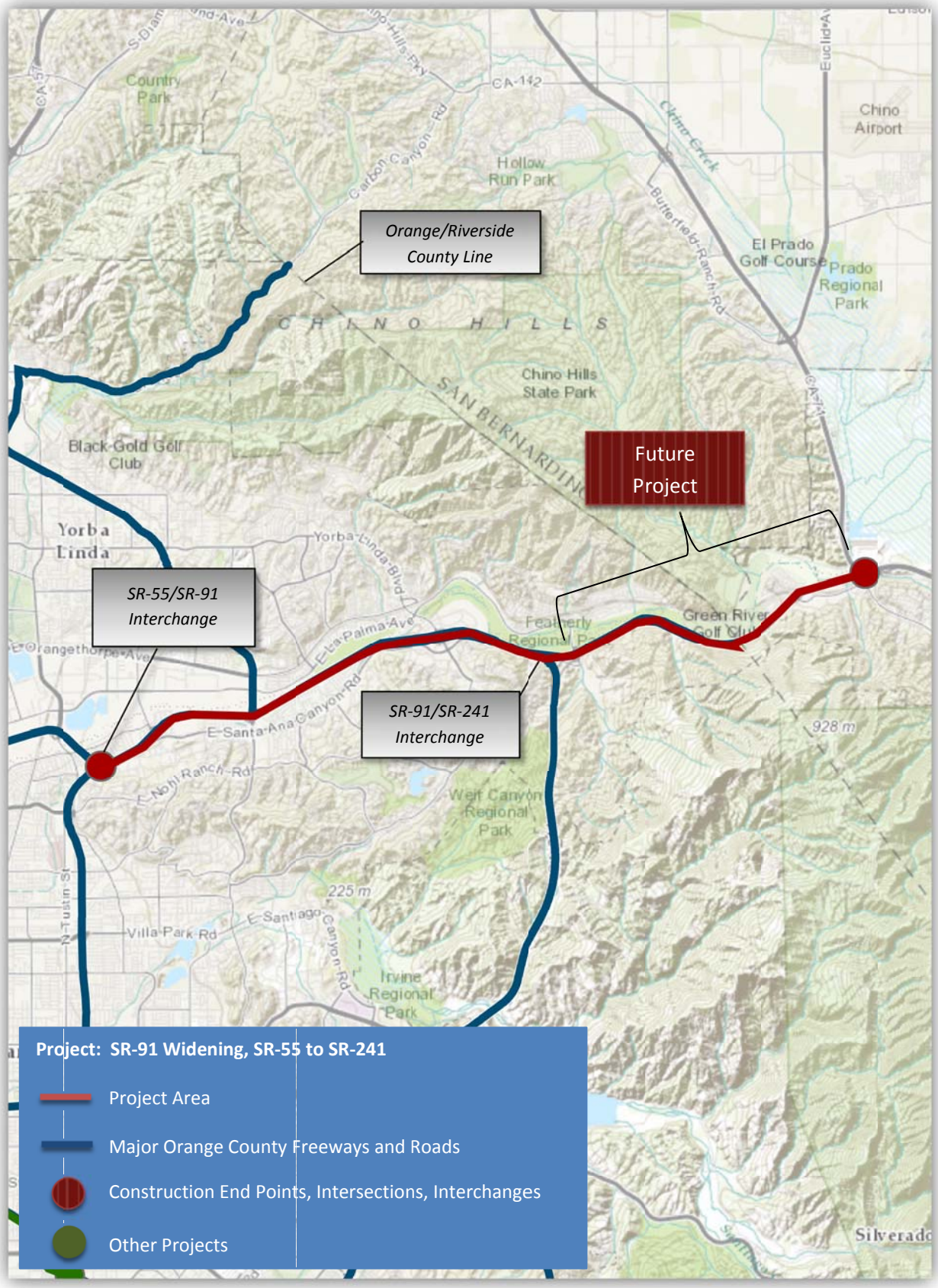
a) SR-91 Widening, I-5 to SR-57

SR-91 Widening, I-5 to SR-57	
Description	Implementation of this project will provide an additional general purpose lane on the Riverside Freeway (SR-91) in the westbound (WB) direction by connecting existing auxiliary lanes through the interchanges within the project limits to create a 4th continuous WB general purpose lane. The project is located on SR-91 between SR-57 (to the east) and I-5 (to the west) and traverses through the Cities of Anaheim and Fullerton. WB auxiliary lanes will be replaced or added, and exit ramp will be modified to two lane exit ramps. Additional features include widening on the WB side of Brookhurst Street undercrossing (UC), Euclid Street UC, East Street/Raymond Avenue UC, State College Boulevard UC, North Anaheim, and Acacia Avenue UC. The overall project length is approximately 4.5 miles.
Project	Measure M, Project H
Benefit	Reduction of congestion, additional capacity and improved operations at each interchange.
Cost	$67.8 million
Funding Source	State and local funds. $34.95 million in Proposition 1B funds.
Environmental Phase	Completed: Calendar year Q2, 2010
Engineering Phase	Completed: Calendar year Q2, 2012
Right-of-way	Completed: Calendar year Q3, 2012
Construction Phase	Calendar year Q1, 2013 to Q2, 2016
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


SR-91
I-5, SR-91 Interchange
SR-57, SR-91 Interchange
Project: SR-91 Widening, I-5 to SR-57
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects

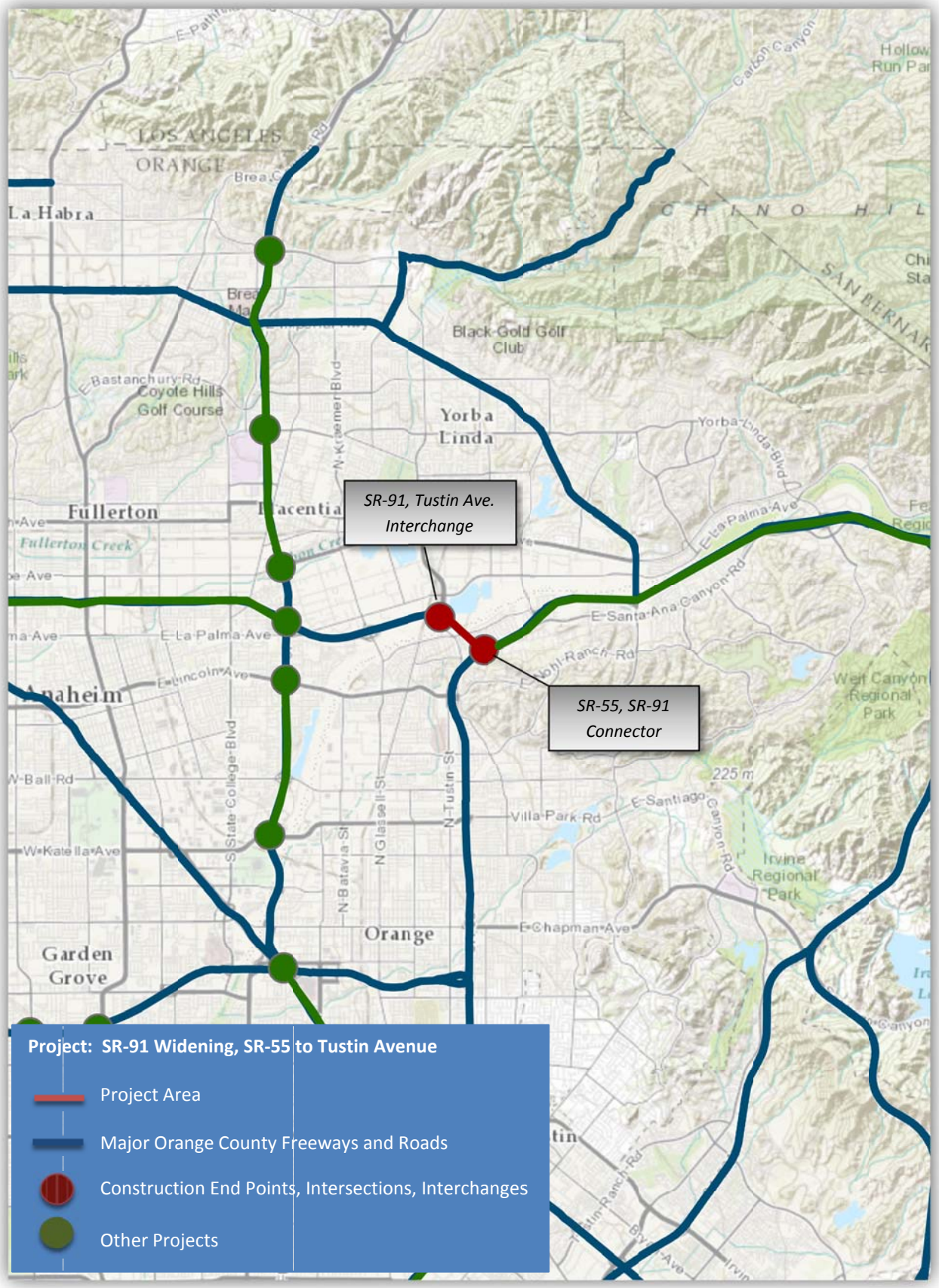
b) SR-91 Widening, SR-55 to SR-241

SR-91 (SR-55 to SR-241)	
Description	Project limits are from the SR-91/SR-55 connector to a mile east of the Weir Canyon Road interchange, approximately six miles in total. This project will provide an additional general purpose lane on the Riverside Freeway (SR-91) in both directions (EB and WB), and will widen the existing general-purpose lanes and outside shoulders to standard widths within the project limits. The project includes improvements to the WB on-ramps from Lakeview Avenue. No mainline freeway widening is planned on the westbound side from the Lakeview Avenue interchange to the Imperial Highway (SR-90) interchange. A high emphasis will be placed on aesthetic features for this segment of scenic highway. Additional features of the project include widening and seismic retrofit of the following two bridges on both the EB and WB sides: Imperial Highway UC (SR-91/SR-90 Separation); and, Weir Canyon Road UC.
Project	Measure M, Project J
Benefit	Reduces weaving by reducing the volume of exiting vehicles Alleviates congestion and reduces delay
Cost	$81.5 million
Funding Source	$128.3 in state and federal funds
Environmental Phase	Completed calendar year Q2, 2009
Engineering Phase	Completed calendar year Q3, 2010
Construction Phase	Completed calendar year Q1, 2013
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


Orange/Riverside County Line
Future Project
SR-55/SR-91 Interchange
SR-91/SR-241 Interchange
Project: SR-91 Widening, SR-55 to SR-241
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
Country Park
Hollow Run Park
Chino Airport
El Prado Golf Course
Prado Regional Park
Chino Hills State Park
Black Gold Golf Club
Yorba Linda
Yorba Linda Blvd
E La Palma Ave
E Santa Ana Canyon Rd
E Nohl Ranch Rd
Weir Canyon Regional Park
Villa Park Rd
E Santiago Canyon Rd
Irvine Regional Park
Green River Golf Club
928 m
225 m

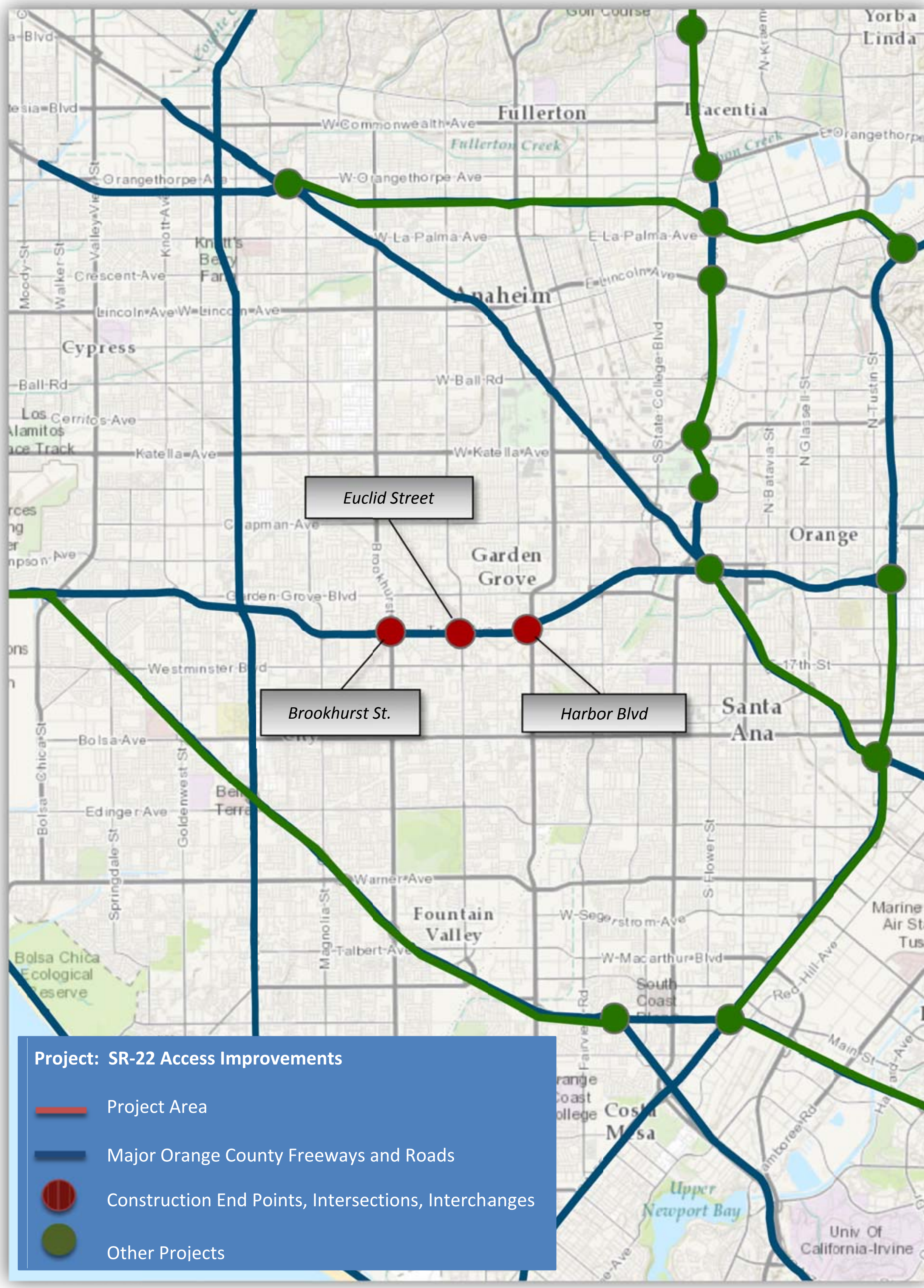
c) SR-91 Widening, SR-55 to Tustin Avenue

SR-91 Widening SR-55 to Tustin Avenue	
Description	Implementation of this project will add a westbound auxiliary lane beginning at the northbound SR-55 to westbound SR-91 connector through the Tustin Avenue interchange. The overall project length is approximately 2 miles. The project is intended to relieve weaving congestion in this area. Additional features of the project include reconstruction of the Santa Ana River Bridge to accommodate additional lanes and possible reconstruction of the Riverdale Avenue overcrossing (OC) and partial reconstruction of the NB ramps at the Imperial Highway (SR-90) Interchange and Lambert Road exit ramp.
Project	Measure M, Project I
Benefit	This project is intended to reduce operational problems on this section of westbound SR-91, including weaving and merging maneuvers.
Cost	$47.4 million
Funding Source	State and local funds $34.95 million in Proposition 1B funds
Environmental Phase	Completed calendar year, Q2, 2011
Engineering Phase	Completed calendar year , Q1, 2013
Right-of-way	Completed calendar, Q2, 2013
Construction Phase	Calendar year Q4, 2013 to Q3, 2016
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


SR-91, Tustin Ave. Interchange
SR-55, SR-91 Connector
Project: SR-91 Widening, SR-55 to Tustin Avenue
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
LOS ANGELES
ORANGE
La Habra
Black Gold Golf Club
Coyote Hills Golf Course
Yorba Linda
Fullerton
Anaheim
Orange
Garden Grove
Villa Park
Irvine Regional Park
West Canyon Regional Park
E La Palma Ave
E Santa Ana Canyon Rd
E Chapman Ave
E Santiago Canyon Rd
Villa Park Rd
N Tustin St
N Glassell St
N Batavia St
S State College Blvd
N Kraemer Blvd
Yorba Linda Blvd
E Lincoln Ave
W Ball Rd
W Katella Ave
Fullerton Creek

6. SR-22 Access Improvements

SR-22 Access Improvements	
Description	Add capacity on the SR-91 beginning at the SR-55 and extending to SR-71 in Riverside County. Project 1: add one eastbound lane to the segment of SR-91 from one mile east of SR-241 to SR-71 in Riverside County. Project 2: improve the segment of SR-91 between SR-55 and SR-241. Project 3: improve lanes between SR-241 and the Riverside County line.
Project	Measure M, Project J
Benefit	Reduces weaving by reducing the volume of exiting vehicles Alleviates congestion and reduces delay
Cost	$25.8 million
Funding Source	Federal, state, and M1 funding
Environmental Phase	Completed
Design Phase	Completed
Construction Phase	Completed
Reference	M2020 Plan, pg. 29


Euclid Street
Brookhurst St.
Harbor Blvd
Fullerton
Placentia
Yorba Linda
Anaheim
Cypress
Garden Grove
Orange
Santa Ana
Fountain Valley
Costa Mesa
Project: SR-22 Access Improvements
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects

B. Environmentally Cleared/Shelf-Ready Freeway Projects

Goal: Complete the environmental phase of the nine remaining M2 projects making them shelf ready for early delivery as external funds become available. (Projects B, D, F, G, I, J, L, & M). This positions the remaining freeway projects, estimated at $1.4 billion in current year dollars ($2.6 billion YOE) in transportation investment, for implementation and potentially advancement as additional funds become available.

Reference map provided on the following page.

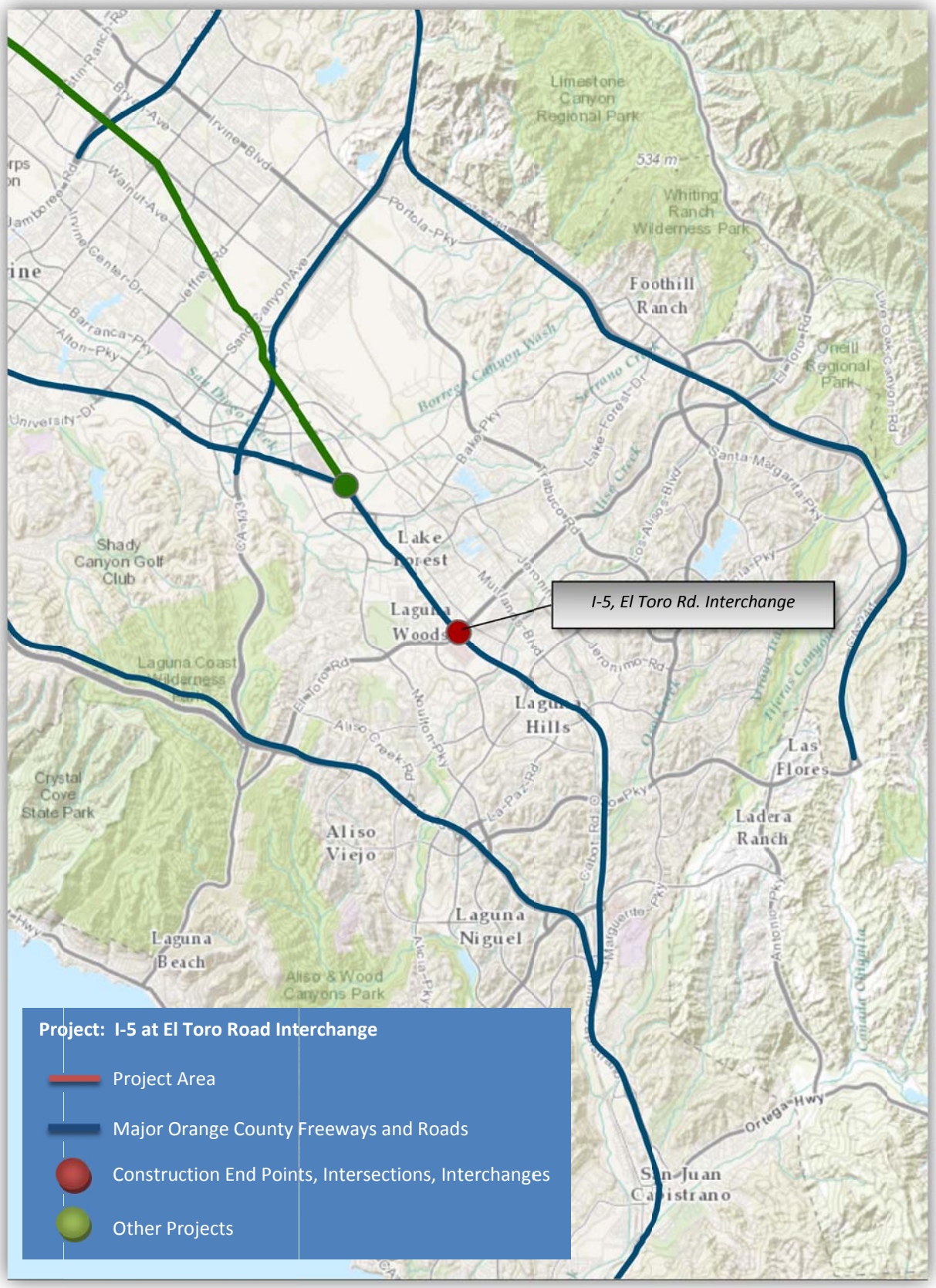

SR-57 NB Widening, Lambert Rd. to County Line
SR-91 Widening, SR-57 to SR-55
SR-91 Widening, SR-241 to I-15
I-605/Katella Ave. Interchange Improvements
SR-57 NB Widening, Orangewood to Katella Ave.
SR-55 Widening, I-5 to SR-22
I-5 Widening, SR-55 to I-405
I-405 Widening, SR-55 to I-5
I-5 at El Toro Rd. Interchange Improvements
La Habra Heights
La Habra
Norwalk
Fullerton
Placentia
Anaheim
Stanton
Garden Grove
Santa Ana
Huntington Beach
Irvine
Newport Beach
Lake Forest
Dana Point
Surfside
Sunset Beach
Fountain Valley
Corona Del Mar
Chino Hills State Park
Naval Weapons Station Seal Beach
Marine Corps Air Station Tustin
Crystal Cove State Park
Aliso & Wood Canyons Park
Joint Forces Training Center
OCTA Environmental Projects
Project Area
Construction End Points, Intersections, Interchanges

i. Interstate 5 (I-5) Projects

1. I-5 at El Toro Road Interchange Improvements

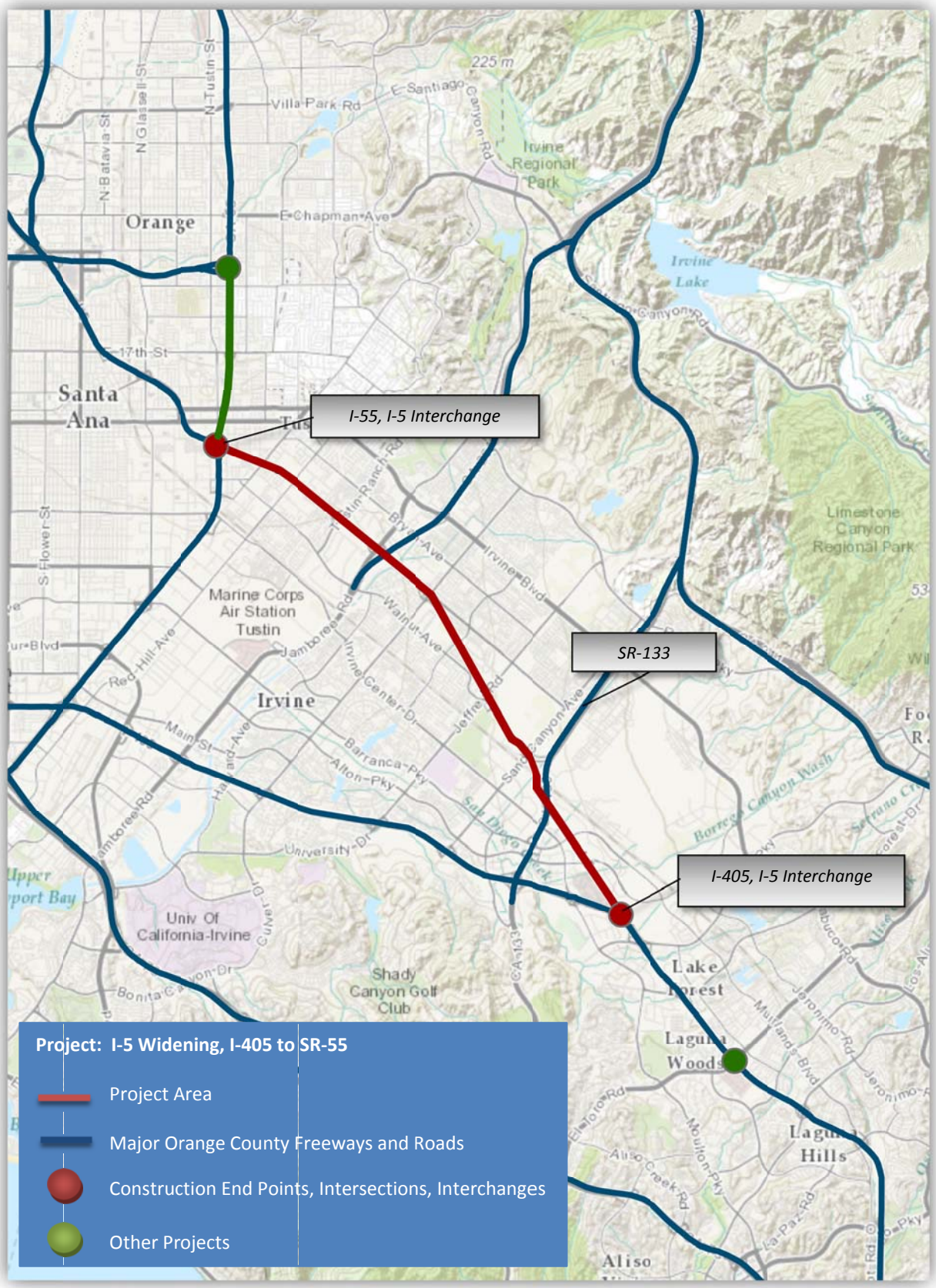
I-5 at El Toro Road Interchange[14]	
Description	Improvements at the El Toro Road Interchange include widening the local roads, modifying entrance and exit ramps, and modifying or replacing existing bridge structures.
Project	Measure M, Project D
Benefit	Reduce chokepoints and accommodate forecast traffic demands. Modify entrance and exit ramps to alleviate congestion at adjacent intersections.
Cost	$134.4 million
Funding Source	Eligible for future state and federal funding
Environmental Phase	Calendar year Q4, 2014 to Q3, 2017
Engineering Phase	TBD
Construction Phase	TBD
Reference	2012 M2020 Plan, pg. 25-26

[14] 2012 M2020 Plan, pg. 25-26


Limestone Canyon Regional Park
534 m
Whiting Ranch Wilderness Park
Foothill Ranch
Oneill Regional Park
Irvine Blvd
Portola Pky
Walnut Ave
Irvine Center Dr
Jeffrey Rd
Sand Canyon Ave
Barranca Pky
Alton Pky
University Dr
Borrego Canyon Wash
Bake Pky
Lake Forest Dr
Trabuco Rd
Ulise Creek
Los Alisos Blvd
Santa Margarita Pky
El Toro Rd
Shady Canyon Golf Club
Lake Forest
Laguna Woods
I-5, El Toro Rd. Interchange
Jeronimo Rd
Moulton Pky
Laguna Coast Wilderness Park
Laguna Hills
Aliso Creek Rd
La Paz Rd
Las Flores
Ladera Ranch
Crystal Cove State Park
Aliso Viejo
Laguna Niguel
Laguna Beach
Aliso & Wood Canyons Park
Marguerite Pky
Antonio Pky
Ortega Hwy
San Juan Capistrano
Project: I-5 at El Toro Road Interchange
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects

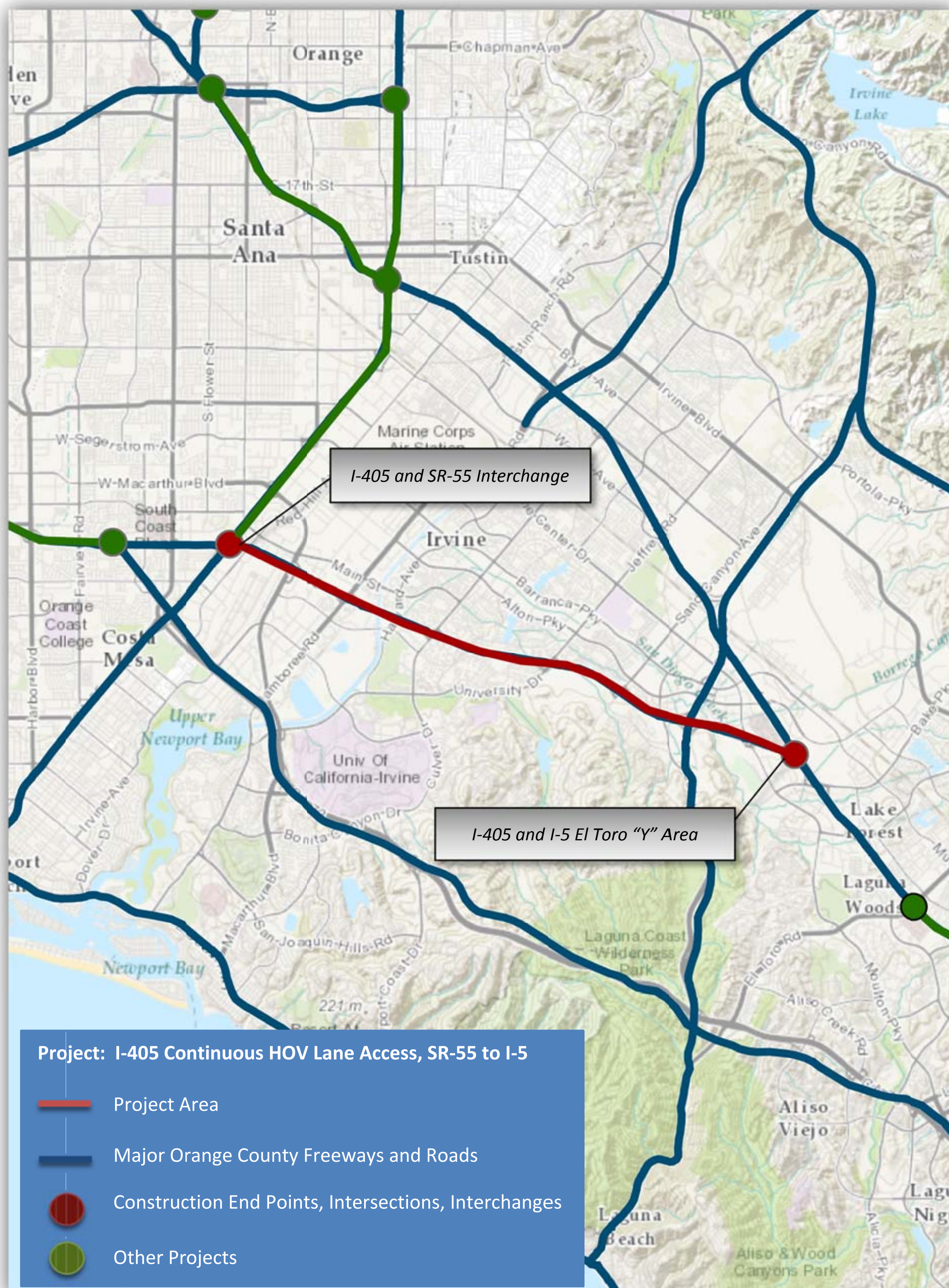
2. I-5 Widening, I-405 to SR-55

I-5, I-405 to SR-55	
Description	This project will add one general-purpose lane in both directions of the Santa Ana Freeway (I-5) from I-405 to SR-55. The PSR proposes two build alternatives. Alternative 2a will add a general-purpose lane in each direction, implement a continuous access HOV ingress/egress configuration, provide standard lane, and shoulder widths. Alternative 2b will add a general-purpose lane in each direction; implement a continuous access HOV ingress/egress configuration using nonstandard lane and shoulder widths to limit right-of-way impacts. Project length is nine miles. Additional features of the project include improvements to various interchanges. Auxiliary lanes will be added in some segments and re-established in others within the project limits.
Project	Measure M, Project B
Benefit	Alleviate congestion and reduce delay
Cost	$728.12 million
Funding Source	M2 Eligible for federal and State funding
Environmental Phase	Calendar year Q1, 2014 to Q4, 2016
Engineering Phase	TBD
Right-of-Way	TBD
Construction Phase	TBD
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


I-55, I-5 Interchange
SR-133
I-405, I-5 Interchange
Project: I-5 Widening, I-405 to SR-55
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
Orange
Santa Ana
Irvine
Marine Corps Air Station Tustin
Univ Of California-Irvine
Shady Canyon Golf Club
Irvine Regional Park
Limestone Canyon Regional Park
Lake Forest
Laguna Hills
Aliso

ii. Interstate 405 (I-405) Continuous HOV Lane Access, SR-55 to I-5

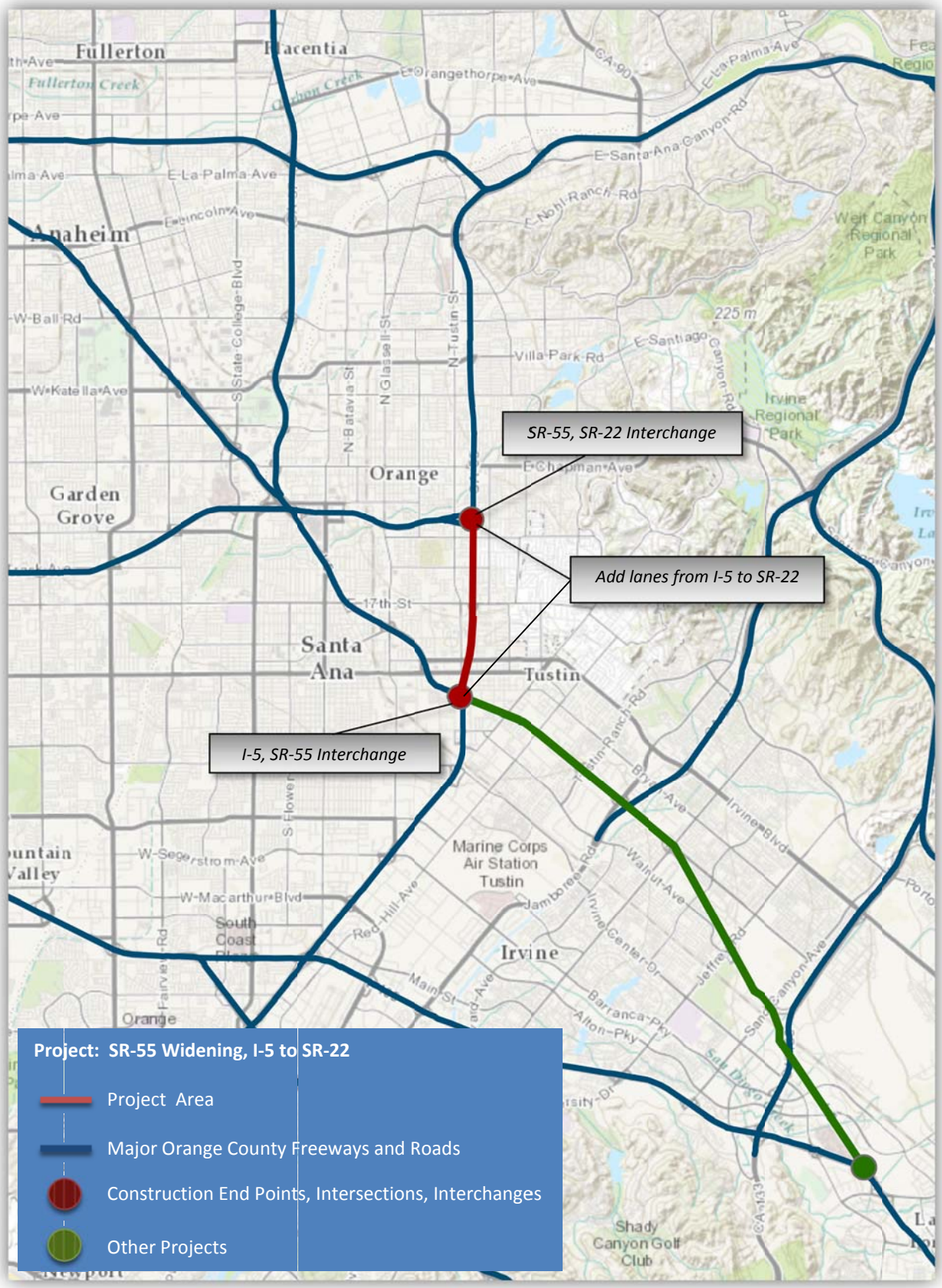
I-405 (SR-55 to I-5) Summary	
Description	The project proposes to convert the existing HOV facility from a buffer separated and limited access operation to full-time continuous access HOV facility on Interstate 405 between Interstate 5 and State Route 73. The project limits are approximately 10 miles. The proposed modifications will allow motorists to access or leave the HOV facility at any convenient point along the entire route within the project limits. There is no capacity increase or right of way acquisition requirement.
Project	Not a Measure M project
Benefit	Alleviates congestion on the I-405 between the SR-55 and the El Toro "Y"
Cost	$994 K
Funding Source	Federal and state
Environmental Phase	Calendar year Q3, 2011 to Q1, 2014
Engineering Phase	N/A
Right-of-Way	N/A
Construction Phase	N/A
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


I-405 and SR-55 Interchange
I-405 and I-5 El Toro "Y" Area
Project: I-405 Continuous HOV Lane Access, SR-55 to I-5
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects

iii. State Route 55 (SR-55) Widening, I-5 to SR-22

SR-55 Widening, I-5 to SR-22[15]	
Description	Add new lanes to the SR-55 between the SR-22 and the I-5. Operational improvements between SR-22 and SR-91.
Project	Measure M, Project F
Benefit	Increase freeway capacity, improved mobility and congestion reduction on the SR-55 from I-5 to the SR-22
Cost	$148.5 million
Funding Source	M2 The project is eligible for future state and federal funds
Environmental Phase	Environmental phase to be completed by 2020 Q1, 2015 to Q2, 2017
Design Phase	TBD
Construction Phase	TBD
Reference	2012 M2020 Plan, pg. 30-31

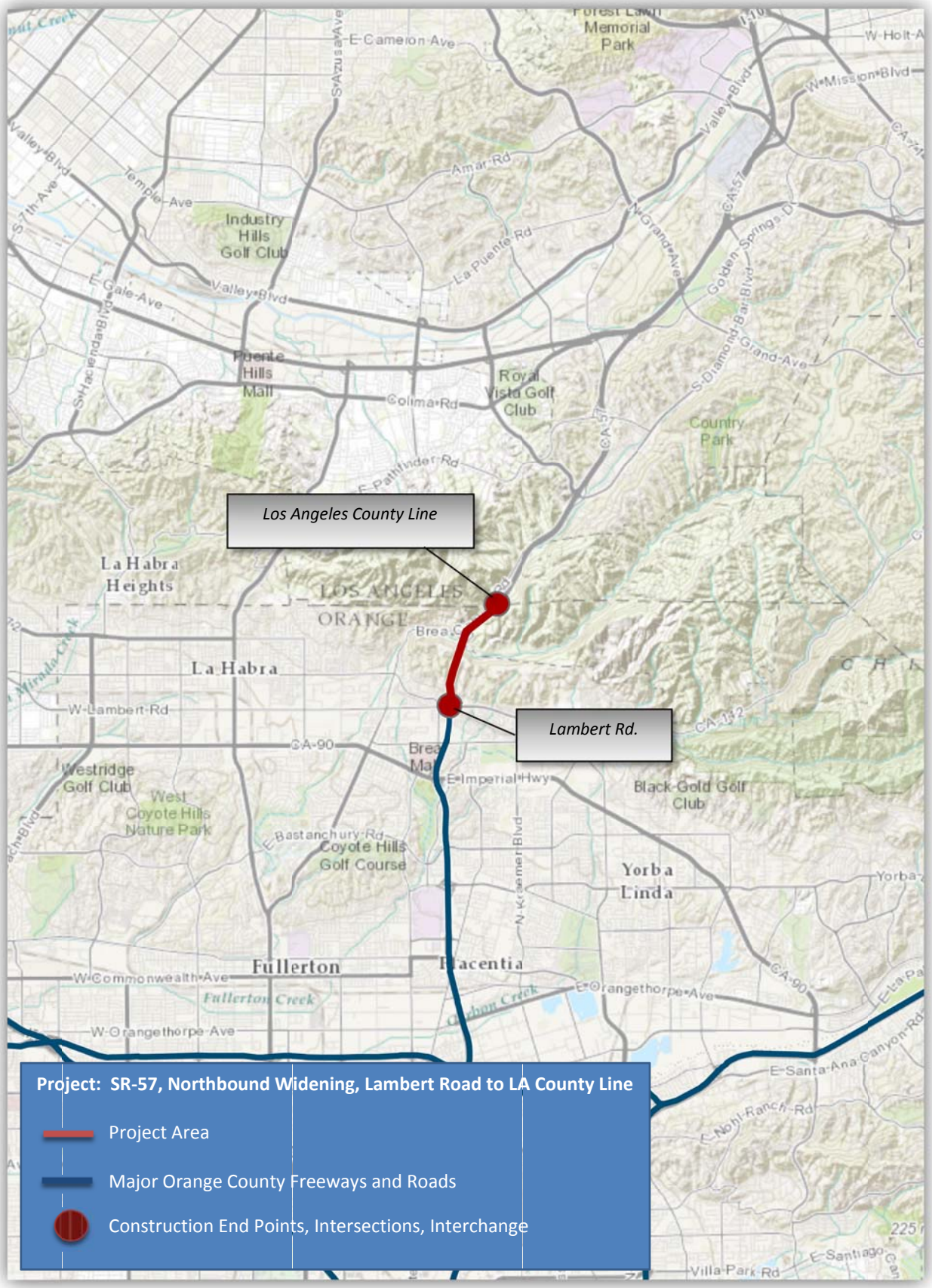
[15] OCTA M2020 Plan, pg. 30-31


SR-55, SR-22 Interchange
Add lanes from I-5 to SR-22
I-5, SR-55 Interchange
Project: SR-55 Widening, I-5 to SR-22
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
Fullerton
Placentia
Anaheim
Orange
Garden Grove
Santa Ana
Tustin
Irvine
Marine Corps Air Station Tustin
Villa Park Rd
E Santiago Canyon Rd
Irvine Regional Park
West Canyon Regional Park
E Orangethorpe Ave
E La Palma Ave
E Santa Ana Canyon Rd
Shady Canyon Golf Club

iv. State Route 57 (SR-57) Projects

1. SR-57, Northbound Widening, Lambert Road to Los Angeles County Line

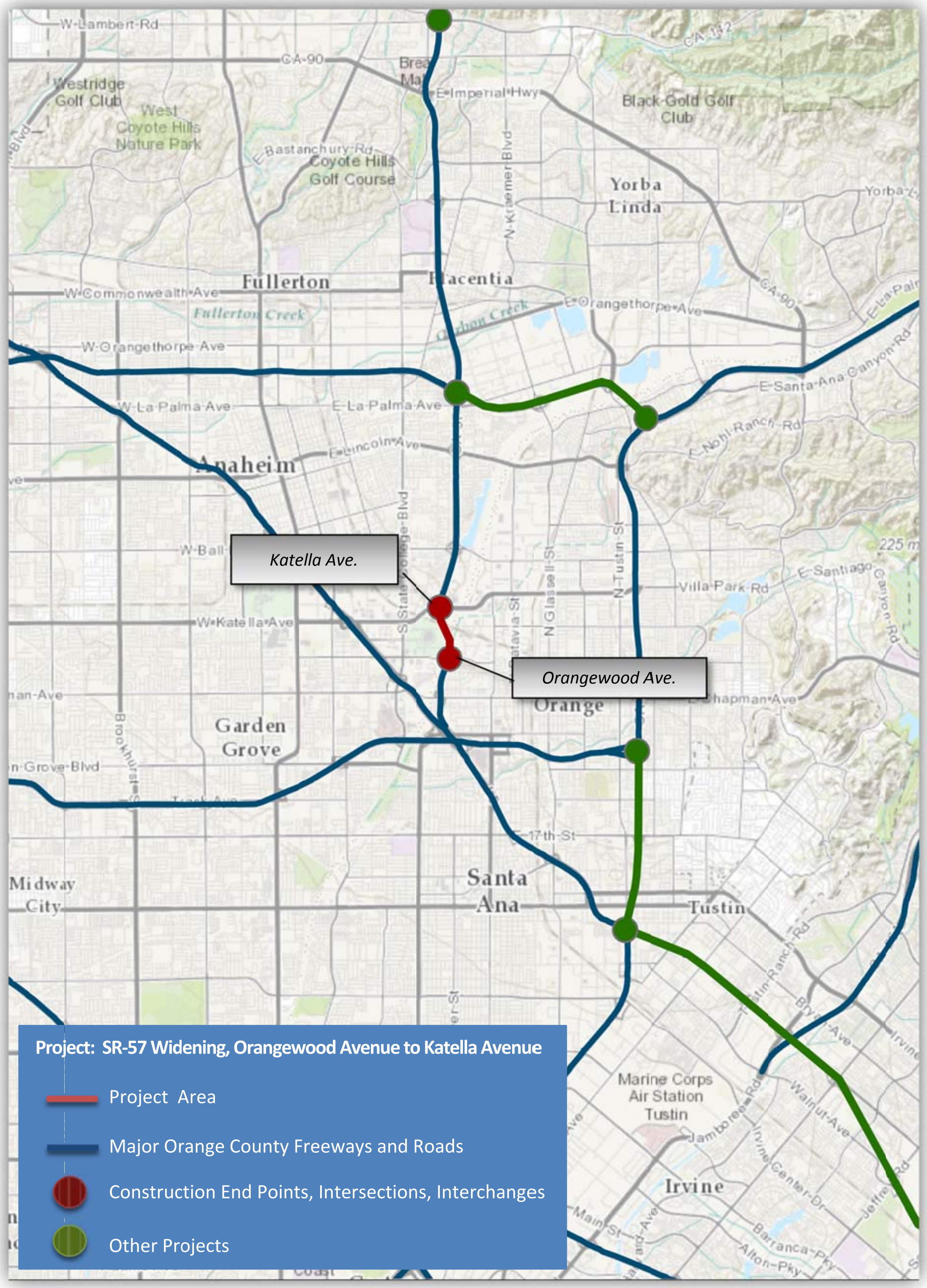
SR-57, Northbound Widening (Lambert Road to LA County Line)	
Description	Add northbound improvements from the City of Brea to the Los Angeles County line. Possible addition of a northbound truck climbing lane.
Project	Measure M, Project G
Benefit	Improved existing and future mobility, reduce congestion, improve mainline weaving, and merge/diverge movements. Improved traffic operations and safety.
Cost	$170.4 million
Funding Source	M2 Eligible for future state and federal funds.
Environmental Phase	Calendar year Q2, 2016 to Q2, 2019
Design Phase	TBD
Right-of-way	TBD
Construction Phase	TBD
Reference	2012 M2020 Plan, pg. 32-33


Los Angeles County Line
Lambert Rd.
Project: SR-57, Northbound Widening, Lambert Road to LA County Line
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchange

2. SR-57 Northbound Widening, Orangewood Avenue to Katella Avenue

SR-57 Northbound Widening, Orangewood Avenue to Katella Avenue[16]	
Description	Adds one general purpose lane in the northbound direction from Orangewood Avenue to Katella Avenue.
Project	Measure M, Project G
Benefit	For all of the SR-57 projects, they will substantially improve existing and future mobility, reduce congestion, improve mainline weaving, and merge/diverge movements.
Cost	$34.5 million
Funding Source	M2 Eligible for future state and federal funding
Environmental Phase	Calendar Q3, 2015 to Q2, 2017
Engineering Phase	TBD
Right-of-way	TBD
Construction Phase	TBD
Reference	2012 M2020 Plan, pg. 32-33

[16] 2012 M2020 Plan, pg. 32-33

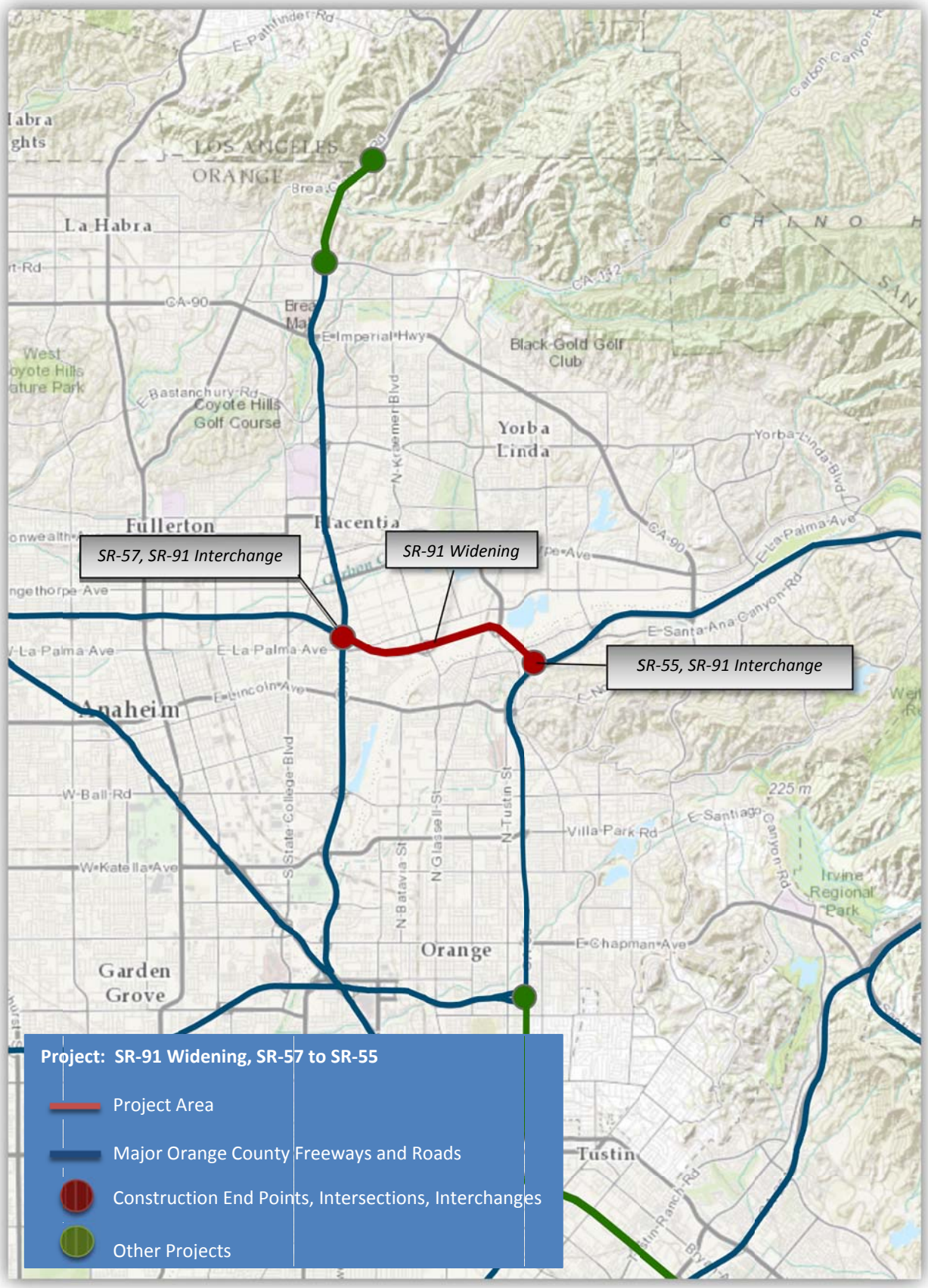

Project: SR-57 Widening, Orangewood Avenue to Katella Avenue
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
Katella Ave.
Orangewood Ave.
Fullerton
Placentia
Yorba Linda
Anaheim
Garden Grove
Orange
Santa Ana
Tustin
Irvine
Midway City
Westridge Golf Club
West Coyote Hills Nature Park
Coyote Hills Golf Course
Black Gold Golf Club
Marine Corps Air Station Tustin
W-Lambert-Rd
CA-90
E-Imperial-Hwy
W-Commonwealth-Ave
Fullerton Creek
W-Orangethorpe-Ave
E-Orangethorpe-Ave
W-La-Palma-Ave
E-La-Palma-Ave
E-Lincoln-Ave
E-Santa-Ana-Canyon-Rd
E-Nohl-Ranch-Rd
W-Katella-Ave
Villa-Park-Rd
E-Santiago-Canyon-Rd
17th-St
Walnut-Ave
Jamboree-Rd
Irvine-Center-Dr
Barranca-Pky
Alton-Pky

v. State Route 91 (SR-91) Projects

1. SR-91 Widening, SR-57 to SR-55

SR-91 Widening SR-57 to SR-55[17]	
Description	Implementation of this project on the Riverside Freeway (SR-91) will add one general purpose lane eastbound from SR-57 to SR-55 and one general purpose lane westbound from Glassell Street to State College Boulevard. The overall project length is approximately 5 miles. Additional features of the project include improvements to the Glassell, Tustin and Lakeview interchanges and freeway to freeway connectors from the NB SR-57 to SR-91. Auxiliary lanes will be added in some segments and re-established in others within the project limits.
Project	Measure M, Project I
Benefit	Improve the connection from eastbound SR-91 to southbound SR-55
Cost	$550.7 million
Funding Source	Federal, state, and M2
Environmental Phase	Calendar year Q1, 2014 to Q4, 2016
Engineering Phase	TBD
Right-of-way	TBD
Construction Phase	TBD
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf

[17] 2012 M2020 Plan, pg. 36-37


SR-57, SR-91 Interchange
SR-91 Widening
SR-55, SR-91 Interchange
Project: SR-91 Widening, SR-57 to SR-55
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
La Habra
Fullerton
Anaheim
Orange
Garden Grove
Yorba Linda
Tustin
Black Gold Golf Club
Coyote Hills Golf Course
Irvine Regional Park
E Imperial Hwy
E La Palma Ave
E Santa Ana Canyon Rd
Villa Park Rd
E Chapman Ave
W Ball Rd
W Katella Ave
E Lincoln Ave
CA-90
CA-91
CA-57
CA-55

2. SR-91 Widening, SR-241 to I-15

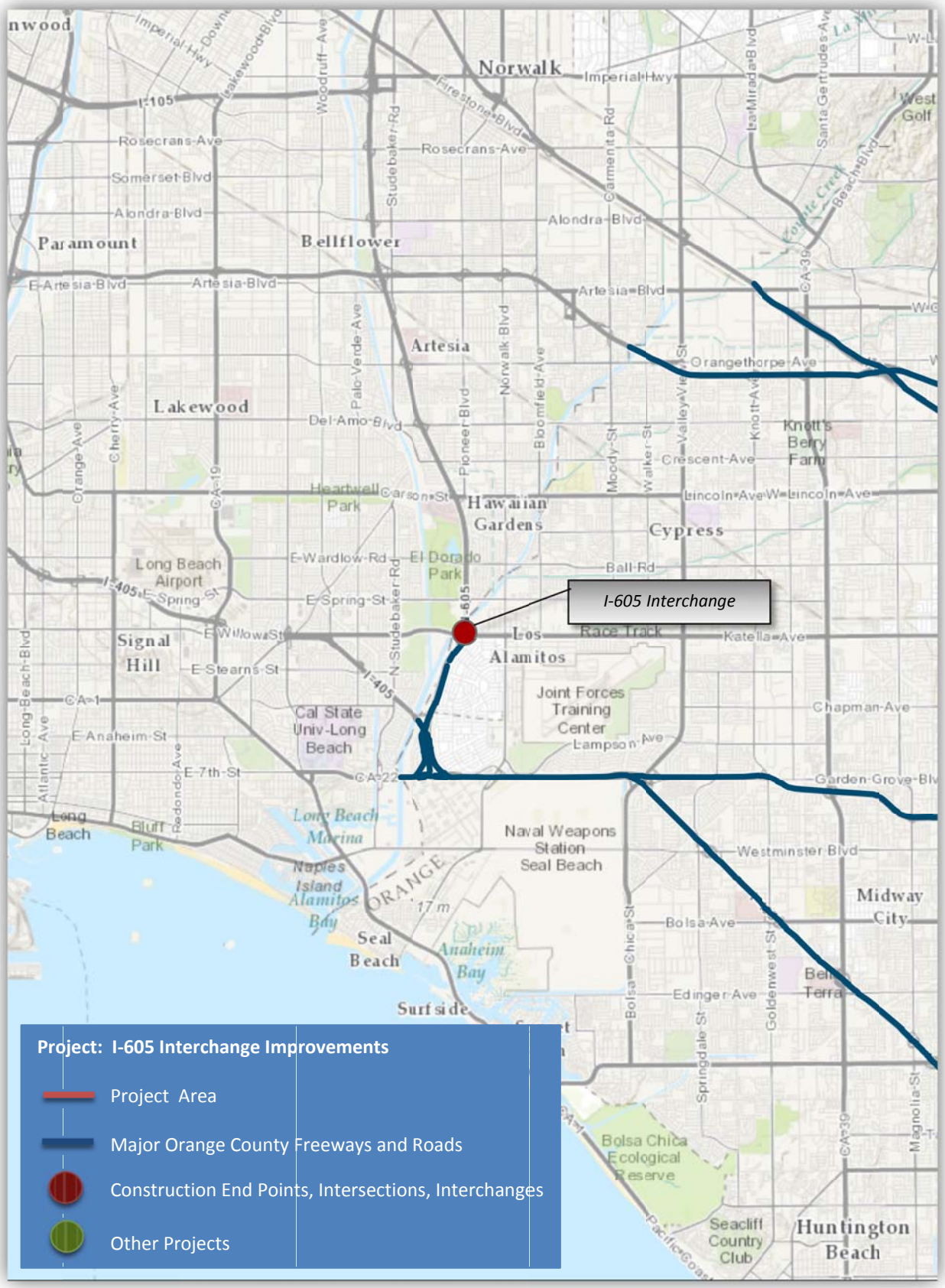
SR-91 Widening, SR-241 to I-15	
Description	Future project dependent on OCTA Board policy and contingent of future Riverside County planned lane policy.
Project	Measure M, Project J
Benefit	Relieve congestion and delay through Orange and Riverside Counties
Cost	$124 million
Funding Source	TBD
Environmental Phase	TBD
Design Phase	TBD
Construction Phase	TBD
Reference	2012 M2020 Plan, pg. 38-39.


Edison Ave
CA-142
Chino Airport
Hollow Run Park
El Prado Golf Course
Prado Regional Park
River Trails Park
Norco
Chino Hills State Park
Prado Basin Park
SR-91/I-15 Interchange
SR-91/SR-241 Interchange
Featherly Regional Park
Green River Golf Course
Weir Canyon Regional Park
928 m
1146 m
Project: SR-91 Widening, SR-241 to I-15
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges

vi. I-605 Katella Interchange Improvement

I-605 Interchange Improvements[18]	
Description	Improve freeway access and arterial connection to I-605 at Katella Avenue, which serves the communities of Los Alamitos and Cypress.
Project	Measure M, Project M
Benefit	The I-605/Katella Avenue interchange project will include both freeway and arterial improvements that will reduce congestion, traffic queuing, and delay within the interchange area.
Cost	$50 million
Funding Source	Eligible for future state and federal funding
Environmental Phase	Q1, 2016 to Q1, 2018
Engineering Phase	TBD
Right-of-way	TBD
Construction Phase	TBD
Reference	2012 M2020 Plan, pg. 44

[18] 2012 M2020 Plan, pg. 44


I-605 Interchange
Project: I-605 Interchange Improvements
Project Area
Major Orange County Freeways and Roads
Construction End Points, Intersections, Interchanges
Other Projects
Norwalk
Paramount
Bellflower
Artesia
Lakewood
Hawaiian Gardens
Cypress
Long Beach Airport
Signal Hill
Los Alamitos
Joint Forces Training Center
Cal State Univ-Long Beach
Long Beach
Naval Weapons Station Seal Beach
Seal Beach
Surfside
Midway City
Westminster Blvd
Garden Grove Blvd
Chapman Ave
Katella Ave
Lincoln Ave
Orangethorpe Ave
Crescent Ave
Knott's Berry Farm
Bolsa Ave
Edinger Ave
Bolsa Chica Ecological Reserve
Seacliff Country Club
Huntington Beach
Rosecrans Ave
Somerset Blvd
Alondra Blvd
Artesia Blvd
Del Amo Blvd
Carson St
E Wardlow Rd
E Spring St
E Willow St
E Stearns St
E Anaheim St
E 7th St
Ball Rd
Lampson Ave
Imperial Hwy
I-105
I-405
I-605
CA-1
CA-19
CA-22
CA-39

IV. Streets and Roads

Purpose: Local streets provide the capacity for the movement of people and goods which is essential to Orange County's commerce and vitality. Orange County "streets carry approximately half of Orange County's car and truck traffic and nearly all of Orange County's bicycle and pedestrian traffic."[19]

Goal: Invest nearly $1.2 billion of funding for street and road improvement projects to expand roadway capacity and protect pavement conditions. (Measure M Projects O and Q).

A. Regional Capacity Program (Measure M Project O) Overview

Purpose: The Regional Capacity Program, Project O provides for the following activities:

- Funded in combination with M2 and local matching funds.
- Funds roadway improvements as defined through the Master Plan of Arterial Highways (MPAH).
- Includes considerations for bicycle and pedestrian components as part of each project.
- Provides for intersection improvements and other projects to help improve street operations and reduce congestion.
- Provides funding for completion of seven grade separations that will eliminate car and train conflicts along the Burlington Northern Santa Fe Railway in northern Orange County.

1. OC Bridges, Seven Grade Separation Projects

Purpose: The OCTA Grade Separation Projects, also known as the OC Bridges projects provides funding for completion of seven grade separations that will eliminate car and train conflicts along the BNSF railway in northern Orange County. These bridges will eliminate the need for commuters and commercial vehicles to stop, and wait at railroad crossings. Approximately 70 BNSF trains use the Orangethorpe Corridor in the cities of Anaheim, Fullerton, and Placentia daily, causing delays and safety hazards, restricting emergency response, and business access. By 2030, an estimated 130 trains per day are anticipated."[20]

The following map provides the location of the seven grade separation projects. Details of each grade separation project are also provided in this section.

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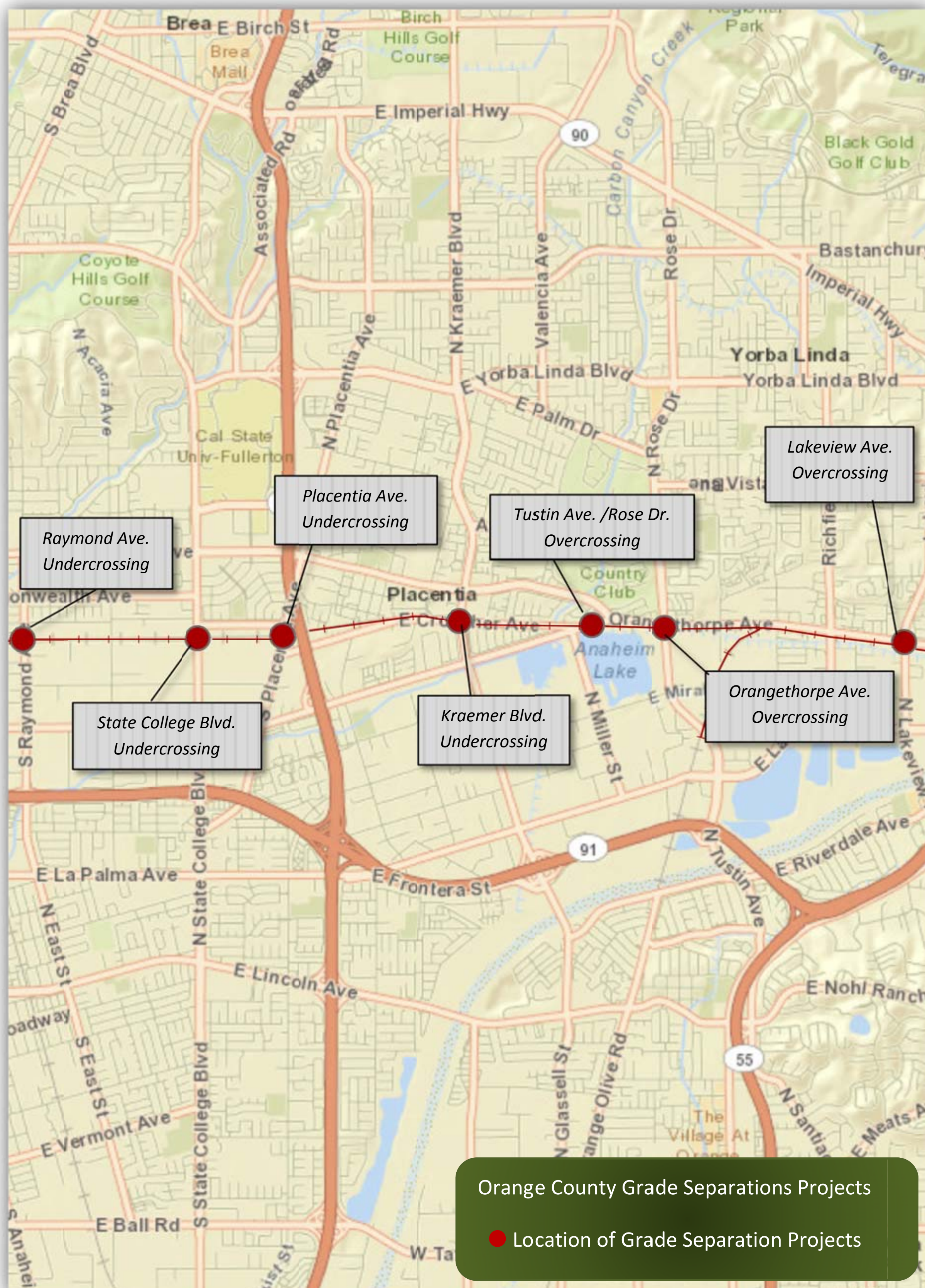
[19] 2012 M2020 Plan, pg. 52

[20] http://www.octa.net/Freeways-and-Streets/Streets/OC-Bridges/Project-Overview/


Raymond Ave. Undercrossing
State College Blvd. Undercrossing
Placentia Ave. Undercrossing
Kraemer Blvd. Undercrossing
Tustin Ave. /Rose Dr. Overcrossing
Orangethorpe Ave. Overcrossing
Lakeview Ave. Overcrossing
Placentia
Yorba Linda
Brea
Anaheim Lake
Orange County Grade Separations Projects
Location of Grade Separation Projects

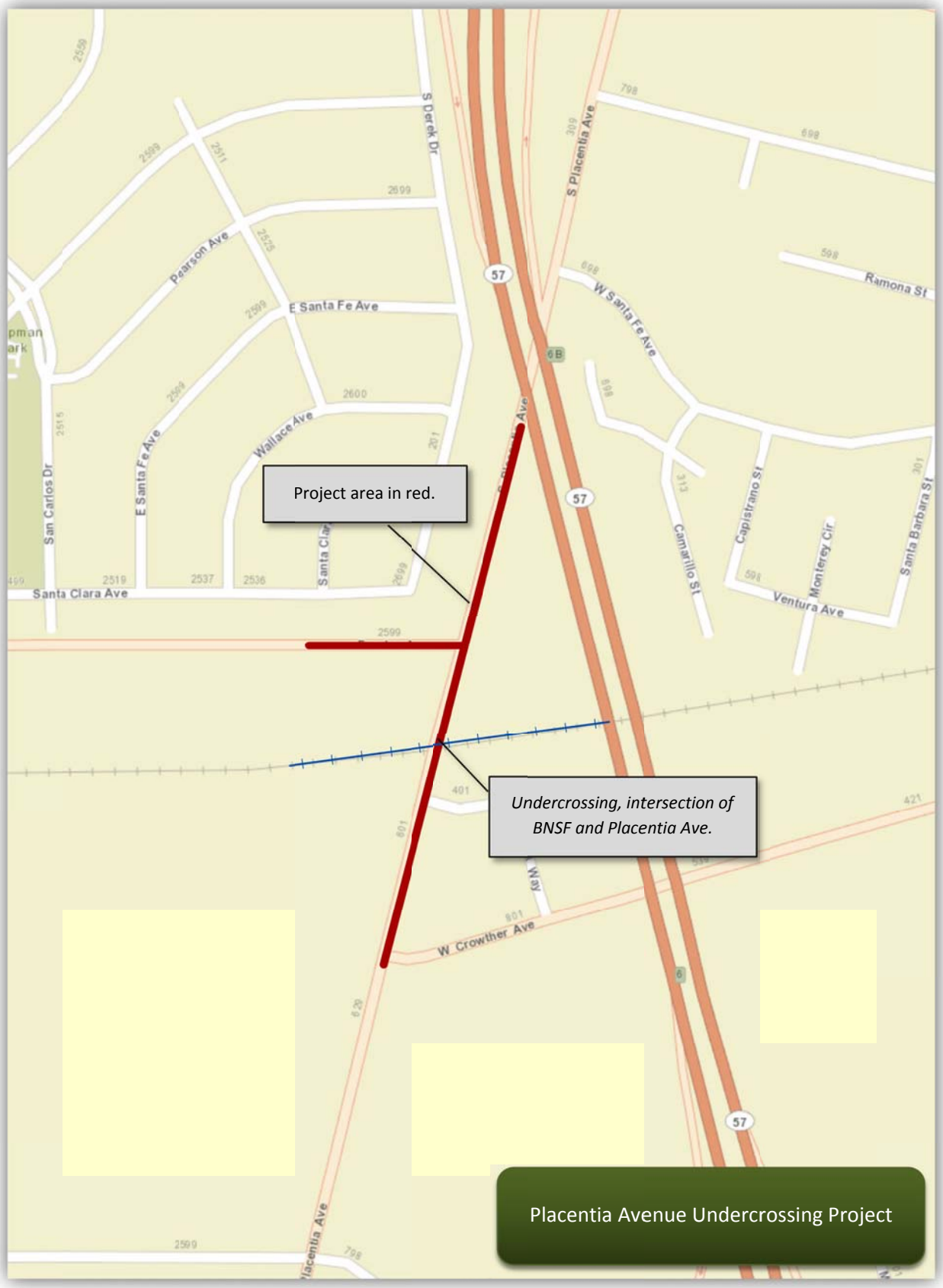
a) Raymond Avenue Undercrossing Project

Raymond Avenue Undercrossing Project	
Description	The Raymond Avenue undercrossing project includes construction of a vehicular underpass at BNSF tracks that cross at Raymond Avenue, between Walnut Avenue and Ash Avenue, to alleviate the current and potential traffic impacts and to enhance safety at existing at-grade rail crossings. The current plan includes lowering Raymond Avenue under the BNSF tracks and Valencia Drive. Two separate bridges will be constructed, one for the railroad and one for the road traffic. Connector roads on the west side of Raymond Avenue will provide a connection for Valencia Drive south of the crossing and Truslow Avenue north of the crossing. Raymond Avenue will be shifted 10 feet to the west to minimize impact to businesses on the east side of Raymond Avenue.
Project	Measure M, Project O
Benefit	• Greater driver/pedestrian safety • Shorter emergency response times • Elimination of delays • Easier business access
Cost	Total $115.0
Funding Source	M2 and state
Environmental Phase	Completed: Calendar year Q4, 2009
Engineering Phase	Completed: Calendar year Q4, 2012
Right-of-way	Completed: Calendar year Q3, 2013
Construction	Calendar year Q1, 2014 to Q3, 2018
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


Byerrum Park
E Chapman Ave
Central Ave
E Whiting Ave
N Princeton Ave
N Yale Ave
N Lincoln Ave
N Raymond Ave
N Montague Ave
N Janet Pl
N Annin Ave
N Harrington Dr
Revere Dr
E Commonwealth Ave
S Yale Ave
Sudene Ave
S Montague Ave
S Hart Pl
S Annin Ave
E Walnut Ave
E Walnut Ave
Project area in red.
Undercrossing, intersection of BNSF and Raymond Ave.
Magnolia Via
Palm Via
Ash Via
E Ash Ave
E Elm Ave
Cherry Via
Lemon Via
Fir Via
Orange Via
Maple Via
Elm Via
Spruce Via
Cypress Via
N Orangethorpe Park
E Raymond Way
Raymond Avenue Undercrossing Project

b) Placentia Undercrossing Project

Placentia Avenue Undercrossing Project	
Description	The Placentia Avenue undercrossing will be constructed approximately between 85 feet south of Crowther Avenue and 670 feet north of Fender Avenue, in the cities of Placentia and Fullerton. A railroad bridge to accommodate two existing BNSF tracks and a future third track will be built, while Placentia Avenue will be depressed. Construction of bypass tracks or shoofly and a temporary four lane roadway to reroute traffic, are necessary to proceed with this project. Improvements to adjoining streets and commercial driveways will also be part of this project. Placentia Avenue is planned to remain open during construction and two lanes of traffic would be in operation in both directions during construction. Traffic will be diverted onto the temporary roadway to the east of the current route.
Project	Measure M, Project O
Benefit	• Greater driver/pedestrian safety • Shorter emergency response times • Elimination of delays • Easier business access
Cost	Total $69.4 million
Funding Source	State and M2
Environmental Phase	Completed: Calendar year Q2, 2001
Engineering Phase	Completed: Calendar year Q2, 2010
Right-of-way	Completed: Calendar year Q1, 2011
Construction	Calendar year Q4, 2011 to Q3, 2014
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


Project area in red.
Undercrossing, intersection of BNSF and Placentia Ave.
Placentia Avenue Undercrossing Project
S Derek Dr
S Placentia Ave
Pearson Ave
E Santa Fe Ave
W Santa Fe Ave
Wallace Ave
San Carlos Dr
Santa Clara Ave
Ramona St
Capistrano St
Monterey Cir
Santa Barbara St
Camarillo St
Ventura Ave
W Crowther Ave
57
6B
6

c) Kramer Boulevard Undercrossing Project

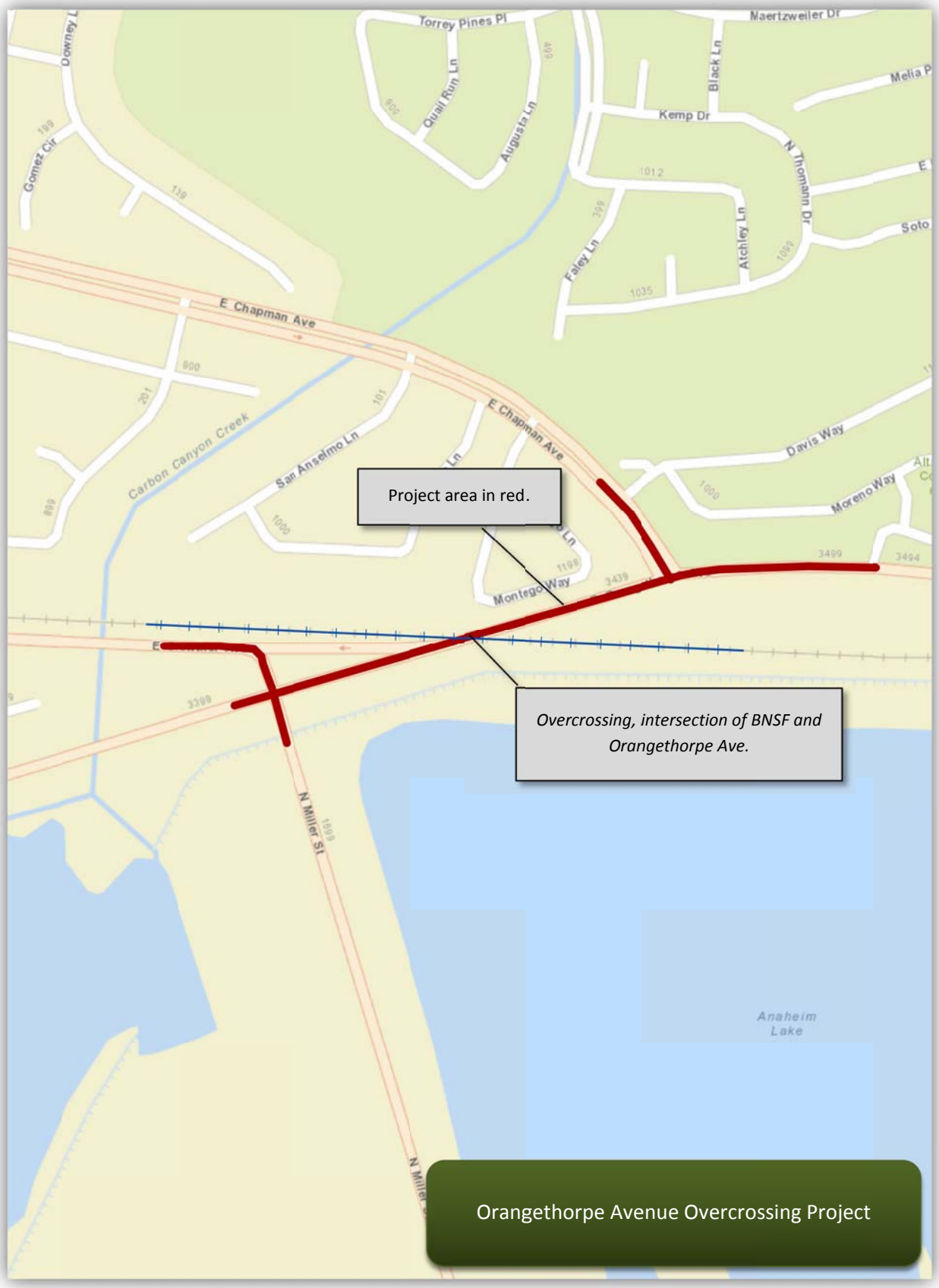
Kraemer Boulevard Undercrossing Project	
Description	The Kraemer Boulevard undercrossing will be constructed approximately between 840 feet south of Crowther Avenue and 750 feet north of Crowther Avenue, in the cities of Placentia and Anaheim. This project includes the lowering of Kraemer Boulevard 24 feet below the BNSF mainline with a railroad bridge to accommodate the two existing mainline tracks and a future third track. In addition, a second structure is required for Crowther Avenue over the depressed Kraemer Boulevard. A shoofly will be constructed to divert rail traffic and allow bridge construction to go on uninterrupted. Kraemer Boulevard will be completely closed to traffic and constructed concurrently with the Placentia Avenue grade separation project. Improvements to adjoining streets will be necessary to complete this project.
Project	Measure M Project O
Benefit	• Greater driver/pedestrian safety • Shorter emergency response times • Elimination of delays • Easier business access
Cost	Total $66.6 million
Funding Source	Federal, state and M2
Environmental	Completed: Calendar year Q3, 2009
Engineering Phase	Completed: Calendar year Q3, 2010
Right-of-way	Completed: Calendar year Q1, 2011
Construction	Calendar year Q4, 2011 to Q3, 2014
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


Project area in red.
Undercrossing, intersection of BNSF and Kraemer Blvd.
Kraemer Avenue Undercrossing Project
Placentia
E Chapman Ave
N Kraemer Blvd
Connecticut Way
Marion Pl
Dartmouth Dr
Franklin Dr
Liberty Ln
E Concord Way
St Michel Ct
Marseille Dr
Harvard Ct
Mission Way
Maui Dr
Oahu Way
Hawaii Way
S Angelina Dr
Kauai Ln
Lanai Ln
Molokai Dr
Los Padres Ln
Pala Cir
El Camino
E Cardinal St
E Lancaster Ave
N Oxford St
N Sheffield St
N Rutherford St
Landlair St
Kensington Ave
N Community Dr
N Partridge St
N Meadowlark Ln
N Pheasant St
E Orangethorpe Ave

d) Orangethorpe Avenue Overcrossing Project

Orangethorpe Avenue Overcrossing Project[21]	
Description	The Orangethorpe Avenue overcrossing will be constructed approximately between 600 feet west of Carbon Creek and 400 feet east of Traub Lane, in the cities of Placentia and Anaheim. The overcrossing project will include a construction of a roadway overpass with the BNSF mainline tracks to remain at grade. Two additional structures are required for Chapman Avenue and Miller Street to connect to the elevated Orangethorpe Avenue. Under the proposed alignment, the existing intersection of Orangethorpe Avenue and Chapman Avenue would be eliminated and replaced with abridge separating the two streets. Chapman Avenue would cross under Orangethorpe Avenue and reconnect to Orangethorpe Avenue at Traub Lane. Orangethorpe Avenue will remain open during construction by maintaining one lane of traffic in each direction.
Project	Measure M, Project O
Benefit	• Greater driver/pedestrian safety • Shorter emergency response times • Elimination of delays • Easier business access
Cost	Total $110.5 million
Funding Source	Federal, state and M2
Environmental Phase	Completed: Calendar year Q3, 2009
Engineering Phase	Completed: Calendar year Q4, 2011
Right-of-way	Completed: Calendar year Q2, 2012
Construction	Calendar year Q2, 2013 to Q3, 2016
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf

[21] http://www.octa.net/uploadedFiles/OC_Bridges/Orangethorpe/OrangethorpeFlyer.pdf


Project area in red.
Overcrossing, intersection of BNSF and Orangethorpe Ave.
Orangethorpe Avenue Overcrossing Project
E Chapman Ave
Carbon Canyon Creek
San Anselmo Ln
Montego Way
N Miller St
Anaheim Lake
Torrey Pines Pl
Quail Run Ln
Augusta Ln
Maertzweiler Dr
Black Ln
Kemp Dr
N Thomann Dr
Atchley Ln
Faley Ln
Davis Way
Moreno Way
Soto
Gomez Cir

e) Tustin Avenue/Rose Drive Overcrossing Project

Tustin Avenue/Rose Drive Overcrossing Project	
Description	The Tustin Avenue/Rose Drive overcrossing will be constructed approximately between 1,500 feet south of Atwood Channel and 1200 feet north of Orangethorpe Avenue, in the cities of Placentia and Anaheim. The project will include construction of a roadway over the BNSF railroad tracks. Additional structures are required for connection from Orangethrope Avenue to Tustin Avenue. Improvements to adjoining streets will also be necessary to complete this project. A bypass road will be constructed to allow traffic through Tustin Avenue / Rose Drive during construction. Tustin Avenue / Rose Drive grade separation will be constructed concurrently with the Orangethrope Avenue project.
Project	Measure M, Project O
Benefit	• Greater driver/pedestrian safety • Shorter emergency response times • Elimination of delays • Easier business access
Cost	Total $98.8 million
Funding Source	Federal, state and M2
Environmental Phase	Completed: Calendar year Q3, 2009
Engineering Phase	Completed: Calendar year Q3, 2011
Right-of-way	Completed: Calendar year Q2, 2012
Construction Phase	Calendar year Q2, 2013 to Q2, 2016
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


Project area in red.
Overcrossing, intersection of BNSF and Tustin Ave. /Rose Dr.
Tustin Avenue/Rose Drive Overcrossing Project
Mella Pl
N Little Dr
E Little Dr
N Thomann Dr
Soto Pl
Castner Dr
Loyd Way
Belfi Ln
Campanis Ln
S Rose Dr
Pear St
Elm St
Fern St
Maple St
Oak Dr
Lime St
Elm St
Del Cerro Blvd
Birch St
Ash St
Cherry St
Davis Way
Moreno Way
Alta Vista Country Club
Curie Ln
Salk Way
Pasteur Pl

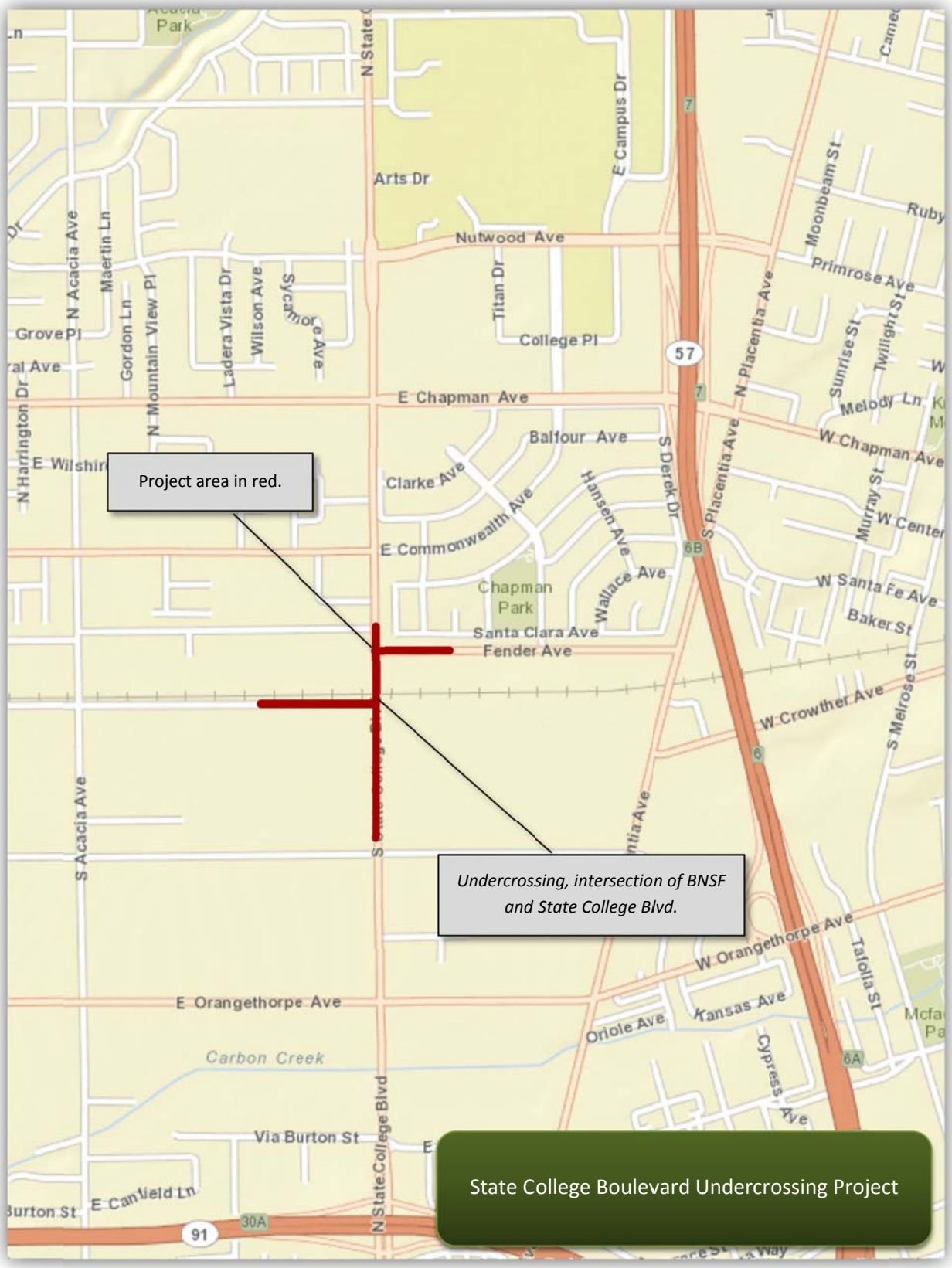
f) Lakeview Avenue Overcrossing Project

Lakeview Avenue Overcrossing Project	
Description	The Lakeview Avenue overcrossing will be constructed between 240 feet south of Eisenhower Circle and at the north end of Orchard Drive, in the cities of Placentia and Anaheim. This project will include construction of a vehicular overpass on the BNSF mainline tracks. Also included is a connector road from Orangethorpe Avenue to the new Lakeview Avenue overpass. The connector will allow traffic to flow from Orangethorpe Avenue to Lakeview Avenue as it was prior to the improvements. Because of Lakeview Avenue's proximity to the Atwood Channel, a bridge over the channel and flood control improvements along the channel are essential. Also included in the project is the addition of a connector road between Lakeview Avenue and Eisenhower Circle to provide access to the industrial complex. Lakeview Avenue will be completely closed to traffic during construction and will be constructed simultaneously with Raymond Avenue and State College Boulevard.
Project	Measure M Project O
Benefit	• Greater driver/pedestrian safety • Shorter emergency response times • Elimination of delays • Easier business access
Cost	Total $101.6 million
Funding Source	Federal, state and M2
Environmental Phase	Completed: Calendar year Q3, 2009
Engineering Phase	Completed: Calendar year Q1, 2013
Right-of-way	Completed: Calendar year Q2, 2013
Construction Phase	Calendar year Q1, 2014 to Q1, 2017
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf


Project area in red.
Overcrossing, intersection of BNSF and Lakeview Ave.
Lakeview Avenue Overcrossing Project
Orchard Dr
Los Alamitos Dr
E Ford Ln
Lakeview Ave
Baymeadows Dr
Saratoga Ave
Tanforan Ave
S Highland Ave
Horseshoe Dr
Aqueduct Dr
Josie Cir
N Sabel Ct
N Azure St
E Meadowhill Ave
N Bubach St
N Oakwood Ave
Nancila Cir
Orangeview Ave
Estelle Ln
Petra Ln
E Eisenhower Cir
E Wesley Dr
S Via Rodeo

g) State College Boulevard Undercrossing Project

State College Boulevard Undercrossing Project	
Description	The State College Boulevard corridor is a route that carries heavy commuter traffic due to commercial and industrial zoning. The route also serves as one of the primary accesses to California State Fullerton and the primary alternate route when SR-57 is congested. The State College Boulevard separation project aims to construct a vehicular undercrossing at State College Boulevard and BNSF railroad crossing. The project limit extends from Santa Fe Avenue at the northerly terminus, and approximately 700 feet south of East Valencia Drive at the southerly terminus. State College Boulevard will be depressed under the BNSF railroad; therefore, Walnut Avenue, Valencia Drive, and Fender Avenue would need to be lowered to meet the depressed State College Boulevard.
Project	Measure M, Project O
Benefit	• Greater driver/pedestrian safety • Shorter emergency response times • Elimination of delays • Easier business access
Cost	Total $84.7 million
Funding Source	Federal, state and M2
Environmental Phase	Completed: Calendar year Q2, 2011
Engineering Phase	Completed Q1, 2013
Right of Way	Completed: Calendar year Q2, 2013
Construction Phase	Calendar year Q1, 2014 – Q2, 2018
Reference	https://octatoday.octa.net/capitalprograms/projcontrols/Documents/2013-11%20Status%20Report.pdf

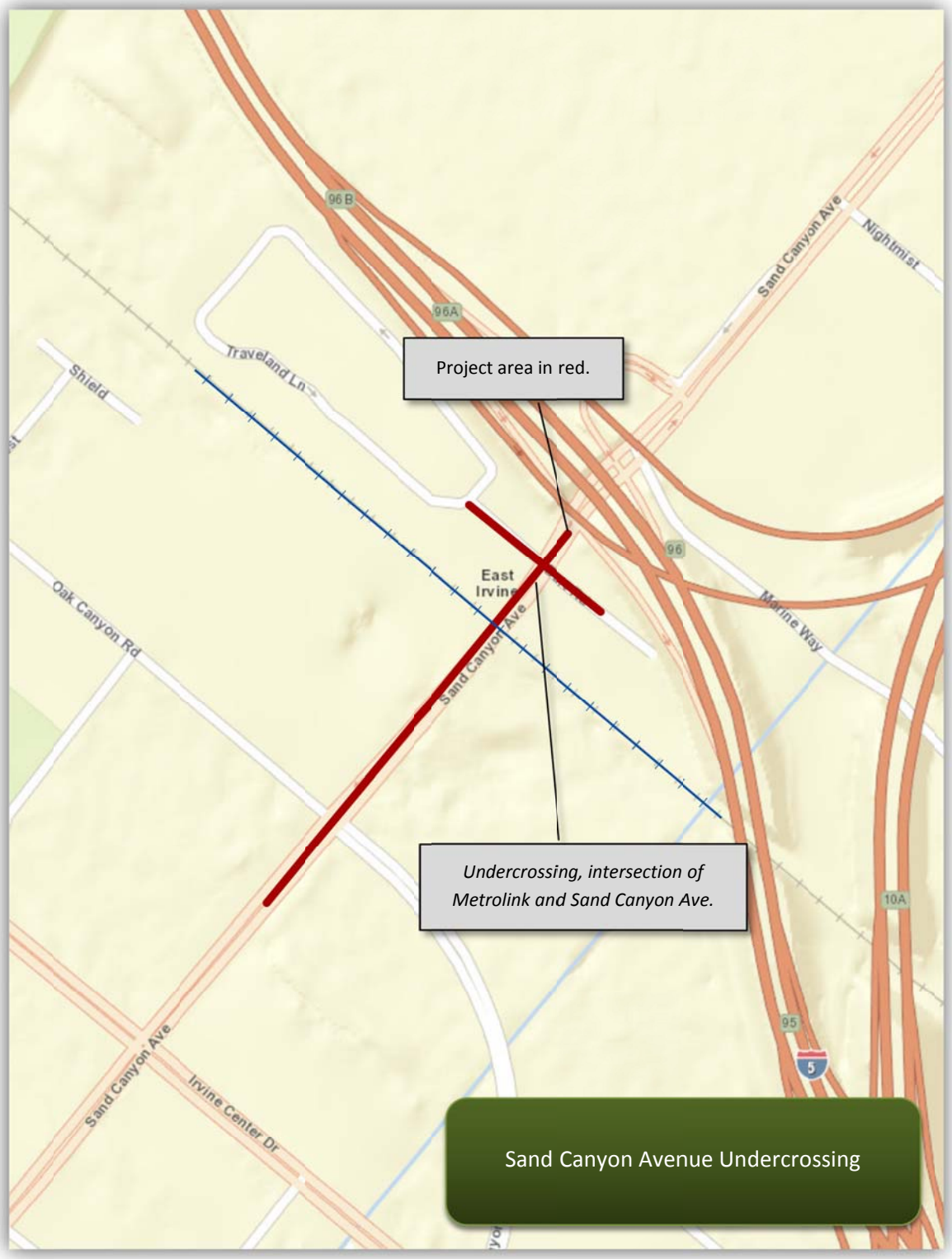

Project area in red.
Undercrossing, intersection of BNSF and State College Blvd.
State College Boulevard Undercrossing Project
Arts Dr
Nutwood Ave
College Pl
E Chapman Ave
Balfour Ave
Clarke Ave
E Commonwealth Ave
Chapman Park
Santa Clara Ave
Fender Ave
W Crowther Ave
W Orangethorpe Ave
E Orangethorpe Ave
Carbon Creek
Via Burton St
E Canfield Ln
N State College Blvd
S Acacia Ave
N Acacia Ave
Maertin Ln
Gordon Ln
N Mountain View Pl
Ladera Vista Dr
Wilson Ave
Grove Pl
N Harrington Dr
E Wilshire
E Campus Dr
Titan Dr
Hansen Ave
Wallace Ave
S Derek Dr
S Placentia Ave
N Placentia Ave
Moonbeam St
Primrose Ave
Sunrise St
Twilight St
Melody Ln
W Chapman Ave
Murray St
W Center
W Santa Fe Ave
Baker St
S Melrose St
Tafolla St
Kansas Ave
Oriole Ave
Cypress Ave
57
91
30A
6
6A
6B
7

2. Los Angeles - San Diego -San Luis Obispo (LOSSAN) Grade Separation Project

Purpose: The City of Irvine and OCTA are working together to improve traffic congestion and safety along Sand Canyon Avenue. The agencies have teamed up to build an undercrossing at the intersection of Sand Canyon Avenue and the Metrolink railroad tracks in Irvine. The project will lower Sand Canyon beneath the existing Metrolink tracks used for Metrolink and Amtrak passenger rail service and BNSF freight service.

a) Sand Canyon Avenue Undercrossing

Sand Canyon Avenue Undercrossing	
Description	The Sand Canyon Ave. grade separation project is located along the Los Angeles - San Diego -San Luis Obispo (LOSSAN) rail corridor. The proposed project consists of lowering Sand Canyon Avenue under the Southern California Regional Rail Authority (SCRRA) to provide a grade separated crossing. The Sand Canyon Ave. undercrossing will be constructed approximately between Interstate 5 and Oak Canyon/Laguna Canyon Rd., in the City of Irvine. A railroad bridge to accommodate two existing railroad tracks and a future third track will be built, while Sand Canyon Ave. will be depressed and reconstructed to accommodate six lanes of traffic. Construction of bypass tracks or shoofly and a temporary four-lane roadway to reroute traffic, are necessary to construct this project. Sand Canyon Ave. is planned to remain open during construction and traffic will be diverted onto a temporary roadway. A pump station will be located on the southeastern side of Sand Canyon Ave. to drain water accumulating during heavy rains.
Benefit	• Eliminate delays caused by waiting for trains to pass • Provide easier access to local businesses • Boost economic vitality by improved access • Enhance driver/pedestrian/cyclist safety by removing conflicts with trains • Shorten times for police, fire and ambulance to respond to emergencies • Improve air/noise conditions by reducing pollution from idling motorist and noise from train horns • Provide an overall better quality of life for the area
Cost	Total $62.4 million
Funding Source	State, local, and M2
Environmental Phase	Completed
Engineering Phase	Completed Q3, 2010
Right of Way	Completed: Calendar year Q2, 2010
Construction Phase	Calendar year Q2, 2011 – Q3, 2014
Reference	


96 B
96A
Traveland Ln
Shield
Sand Canyon Ave
Nightmist
Project area in red.
96
East
Irvine
Oak Canyon Rd
Sand Canyon Ave
Marine Way
Undercrossing, intersection of
Metrolink and Sand Canyon Ave.
10A
95
5
Sand Canyon Ave
Irvine Center Dr
Sand Canyon Avenue Undercrossing

3. Traffic Signal Synchronization Projects (Project P)

Purpose: Synchronize 2,000 traffic signals across the County to ease traffic flow (Project P). Measure 2, Project P, Regional Traffic Signal Synchronization Program (RTSSP) provides funds to local agencies to implement new signal timing on a 750 mile regional network that covers most of Orange County.

Local Agency	Project Description	Total Request
Anaheim	State College Boulevard	$1,041,579
Anaheim	Harbor Boulevard	$ 731,867
Costa Mesa	Newport Boulevard	$1,304,596
Huntington Beach	Adams Avenue	$1,042,374
Irvine	Barranca Parkway	$2,106,434
Lake Forest	Bake Parkway	$ 532,603
Lake Forest	Trabuco Road	$ 266,971
Mission Viejo	Jeronimo Road	$ 267,360
Orange County	Antonio Parkway	$1,156,920
Orange County	Newport Avenue	$ 946,045
Placentia	Kraemer Boulevard	$2,433,520
Seal Beach	Seal Beach Boulevard	$ 586,720
Santa Ana	Main Street	$1,350,506

The chart spreadsheet above and the map on the following page show the funded traffic Signal Synchronization projects for Fiscal Year 2013-14. These projects are scheduled utilizing Measure M2 funding. The funding is provided for a three-year period that includes the implementation of signal synchronization, as well as a limited amount of funding for ongoing maintenance and monitoring to keep the investments in optimal condition.


Kraemer Blvd.
Harbor Blvd.
State College Blvd.
Seal Beach Blvd.
Newport Ave.
Main St.
Barranca Pkwy.
Adams Ave.
Trabuco Rd.
Alton Pkwy.
Bake Parkway
Newport Blvd.
Jeronimo Blvd.
Antonio Pkwy.
Traffic Signal Synchronization Projects
(Funded projects for fiscal year 2013-2014)

RTSSP Goal: The target of the program is to regularly coordinate signals along 750 miles of roadway and 2,000 intersections as the basis for synchronized operation across Orange County.

RTSSP Funding: RTSSP projects are funded as part of the M2 RTSSP, a 30-year competitive grant program that started in 2010. As part of the signal program, OCTA seeks to work with cities, the County, and the California Department of Transportation (Caltrans) to accelerate the implementation of the traffic signal coordination. Funding is provided in the form of a three-year competitive grant for the implementation of signal synchronization along corridors. The funding provides for the updating of signal synchronization timing for every intersection, plus necessary improvement to the signal control and communications infrastructure. Each project also includes a significant local agency contribution and an allocation for ongoing maintenance and monitoring to keep the investments in optimal condition over the three-year grant period. Once the three-year grant is completed, local agencies are encouraged to reapply for signal program grants along the same corridor(s) to maintain an optimal level of signal synchronization performance and to build on previous investments.

The budget is $110 million for Project P projects between 2013 and 2020. Local agencies are required to provide a 20 percent minimum local match.

Annual RTSSP Cycle: OCTA releases an annual call for projects for signal synchronization to all 34 cities and the County of Orange. Local agency projects compete for funding in a competitive process. Projects submitted by local agencies as part of the competition must meet specific criteria. Projects are rated based on scoring criteria and are selected based on competitive ratings. Projects are implemented with a single local agency lead.

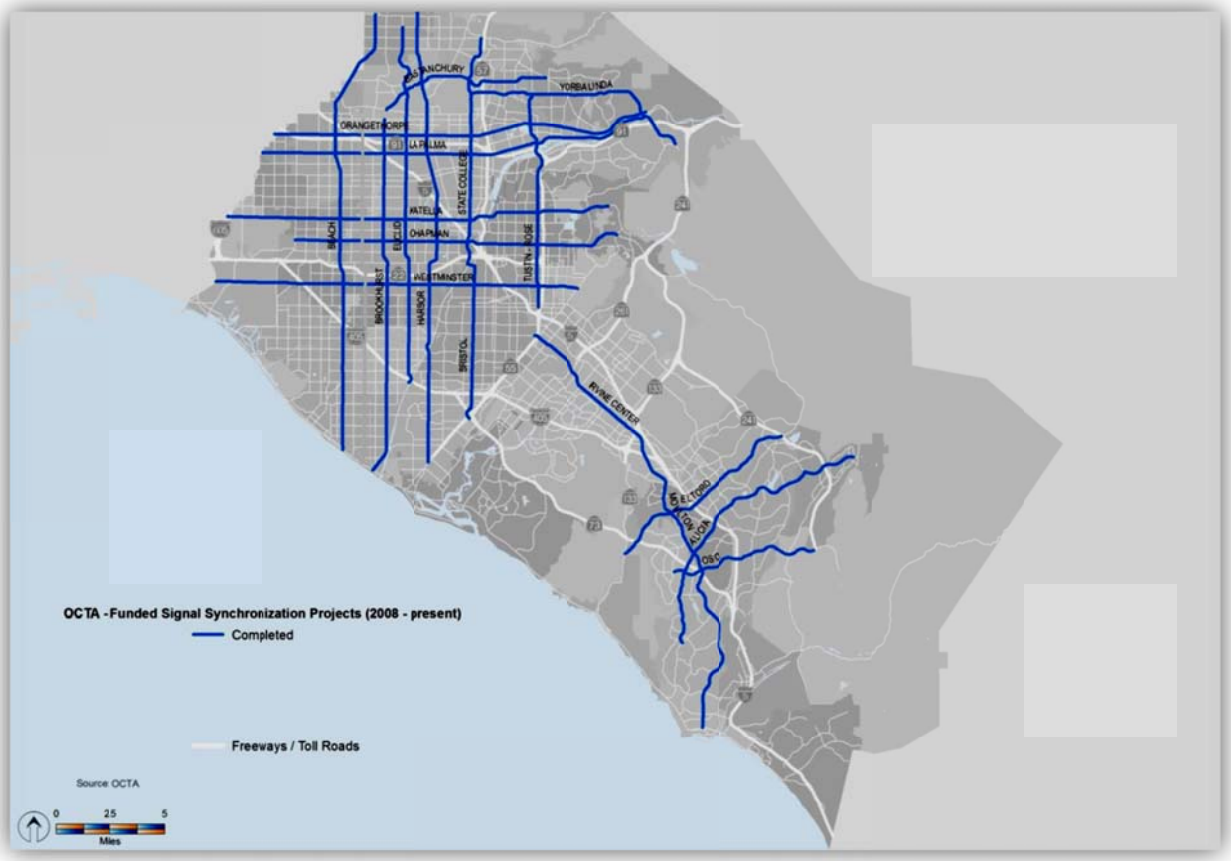
Synchronization Strategy: The key to the success of this program is maintaining a regular dialogue between all participating agencies including Caltrans. Projects are corridor-based, and optimized signal timings are developed based on existing traffic patterns. A coordination strategy is developed that combines interconnected time–based synchronization of the respective agencies' systems, including the necessary modifications in the infrastructure to accomplish this task and in preparation for future uses and upgrades. In order to keep the public informed of signal synchronization benefits, "before and after" studies are conducted to evaluate the improvements.

RTSSP statistics since 2008 through 2013:

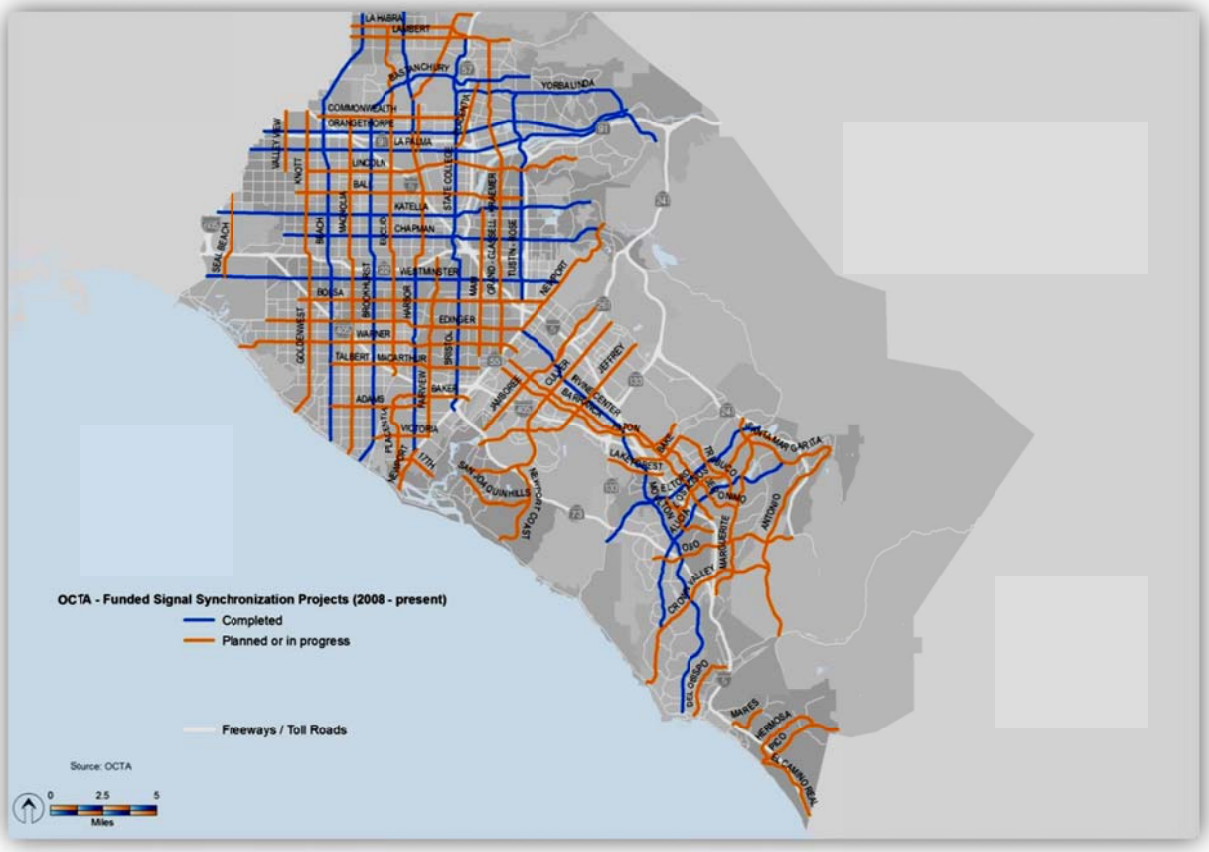
- Number of completed projects: 18
- Signalized intersections: 1074
- Number of miles: 269
- Total cost: over $13 million
- Travel time improvement: 16%
- Speed improvement: 18%
- Stops per mile improvement: 36%
- Greenhouse gas reductions: 381 million pounds
- Fuel reduction: 18 million gallons

RTSSP Benefits: Optimizing traffic signal timing is a low-cost, high-benefit approach to reducing congestion and improving traffic flow. Better signal timing results in fewer traffic stops, delays, and pollution, and saves commuters gas and money.

Since 2008, a total of 18 OCTA-funded signal synchronization projects, targeting 1,074 signalized intersections over 269 miles of arterial highways, have been completed. The total cost of these projects was over $13 million. These completed projects have all included the participation of local agency staff in project meeting, reviews, and field work. The map below identifies the completed projects.



Currently, OCTA is funding 51 signal synchronization projects that are in various stages of implementation. The committed funding from OCTA is primarily from the competitive signal program, and the total cost of these projects is $38 million. Once completed, these funded projects will synchronize an additional 363 miles and 1,360 signals. It is anticipated that all of the currently funded projects will implement synchronized signal timing by 2016. The map below depicts projects that are currently ongoing.



RTSSP Next Steps: OCTA continually works with local agencies through various venues including the Technical Steering Committee and Technical Advisory Committee to identify corridors that are eligible for funding and would benefit from signal program funding.

Note: OCTA selects and funds RTSSP projects annually through the annual call for projects.

B. 2013 State Route 91 Implementation Plan

Purpose: The 2013 State Route 91 Implementation Plan "is the result of the requirement to provide the State Legislature with an annual Implementation Plan for SR-91 improvements."[22] This plan includes projects identified in the Riverside County – Orange County Major Investment Study as well as other project development efforts. The Implementation Plan addresses the following traffic conditions below. *(As shown in blue on the map on page 179)*

- Heavy traffic volumes from I-15 (north and south) converge with SR-91. The weaving and merging condition is complicated by the close proximity of the Westbound (WB) Main Street off-ramp.

- High demand from several on-ramps within the eastern segment exacerbates traffic conditions during peak hours.

- High traffic volumes from Gypsum Canyon Road and Santa Ana Canyon Road contribute to congestion on the mainline.

- The Eastern Transportation Corridor (State Route 241) merges with SR-91 causing additional congestion in the Eastbound (EB) direction. One of the two EB lanes from State Route 241 (SR-241) is dropped at the merge to State Route 91 (SR-91).

- Heavy traffic reentering the freeway merges at slow speeds from existing WB and EB truck scales, impacting the general-purpose lanes.

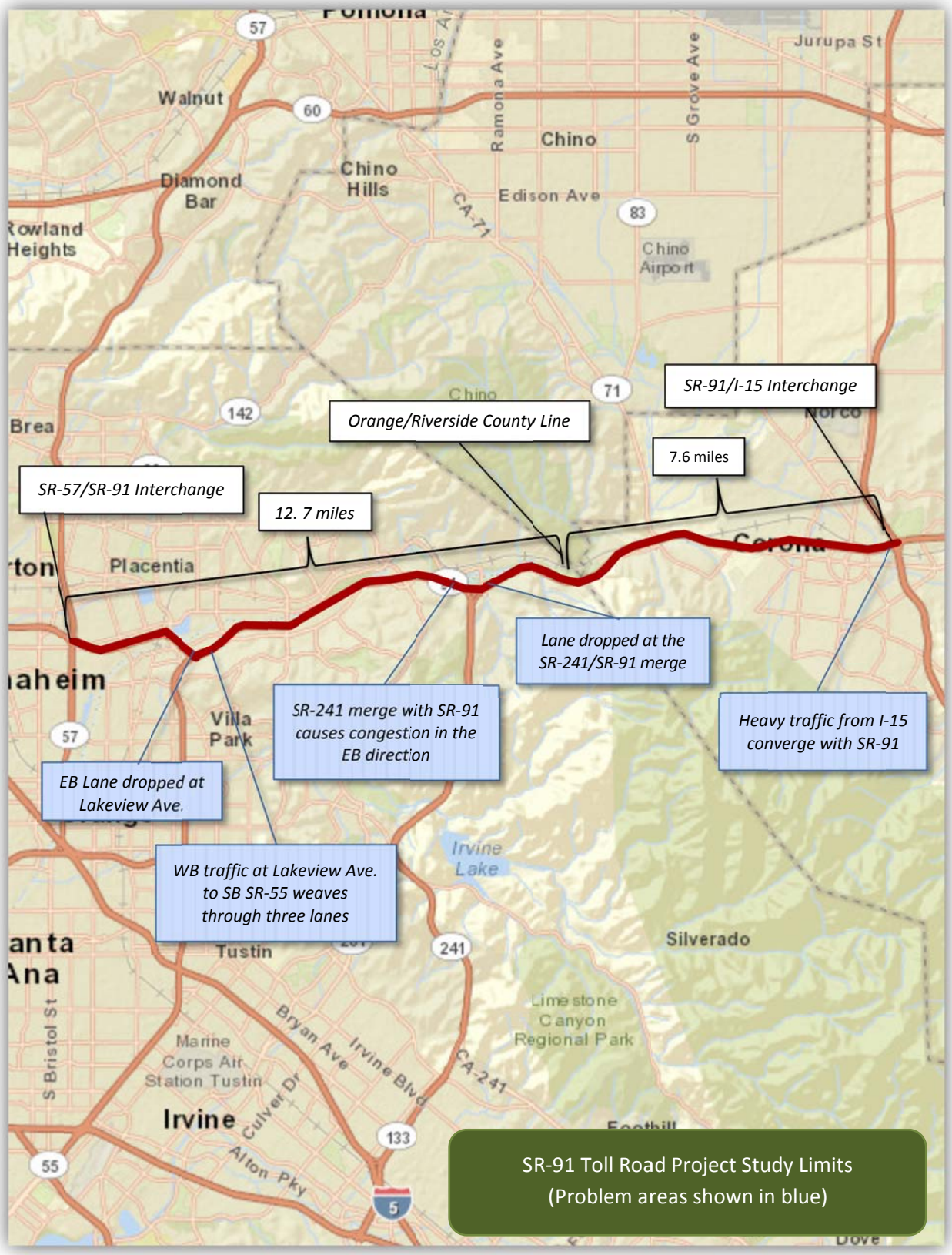
- SR-55 merges with SR-91. An EB lane on SR-91 is dropped at Lakeview Avenue and a second EB lane is dropped at Imperial Highway creating a severe merge condition.

- WB SR-91 drops a GP lane and a 91 Express Lane to SB SR-55, which contributes to mainline congestion. This drop also occurs on the left-hand side of SR-91 as opposed to the typical right-hand exit.

- High demand from Weir Canyon Road, Imperial Highway, and Lakeview Avenue increases delay during the peak hours.

- WB traffic entering SR-91 at Lakeview Avenue to Southbound (SB) SR-55 contributes to mainline congestion by weaving through three lanes on WB SR-91.

[22] 2013 State Route 91 Implementation Plan, pg. 1


SR-91/I-15 Interchange
Orange/Riverside County Line
7.6 miles
SR-57/SR-91 Interchange
12. 7 miles
Lane dropped at the SR-241/SR-91 merge
SR-241 merge with SR-91 causes congestion in the EB direction
Heavy traffic from I-15 converge with SR-91
EB Lane dropped at Lakeview Ave.
WB traffic at Lakeview Ave. to SB SR-55 weaves through three lanes
SR-91 Toll Road Project Study Limits
(Problem areas shown in blue)
Walnut
Diamond Bar
Chino Hills
Chino
Rowland Heights
Brea
Placentia
Villa Park
Tustin
Irvine
Silverado
Limestone Canyon Regional Park
Marine Corps Air Station Tustin
Irvine Lake
Chino Airport
Norco
Jurupa St
Ramona Ave
S Grove Ave
Edison Ave
Bryan Ave
Irvine Blvd
Culver Dr
Alton Pky
S Bristol St
CA-71
CA-241
57
60
71
142
83
241
133
55
5

C. SR-91 Project Summaries

Projects to be completed by 2015: "The first set of projects anticipated to be completed by 2015 and includes two improvements at a total cost of approximately $111.2 million. The projects include the Metrolink short-term expansion plan, and a new SR-91 Westbound (WB) lane at Tustin Avenue (see details of Tustin project - SR-91 Widening, SR-55 to Tustin Ave, pg. 131). These projects are in the process of final design, construction, or procurement and implementation. "[23]

Project No.	Project Summary (Implementation Year)	Cost ($M)
1	Metrolink Short-Term Expansion Plan (2014)	$66
2	SR-91 Westbound Lane at Tustin Avenue (2015)	$47.4
3	Initial Phase Capital Improvement Program (CIP): Widen SR-91 by one general purpose lane in each direction east of county line, I-15/SR-91 direct south connector, extension of express lanes to I-15 and system/local interchange improvements (2017)	$1,345
4	Express bus improvements between Orange County and Riverside County (2017)	$9.5
5	SR-71/SR-91 Interchange Improvement (2018)	$122.7
6	SR-241/SR-91 Express Lanes Connector (2018)	$135 - $150
	Total	$172.34 - $187.34

Project 1: Metrolink Short-Term Expansion Plan

Description: OCTA working with the RCTC, San Bernardino Associated Governments, and the Southern California Regional Rail Authority plans a short-term expansion of the train service from the Inland Empire to Orange County. Additional trains are planned on the Inland Empire - Orange County Line that currently runs between San Bernardino, Riverside, and Orange counties as well as the "91 Line" that goes from the Inland Empire to Los Angeles via Orange County, paralleling SR-91.

Metrolink Short-Term Expansion Plan Benefit: Enables development of expanded Metrolink Service and improves efficiency, which will contribute to congestion relief on the SR-91.

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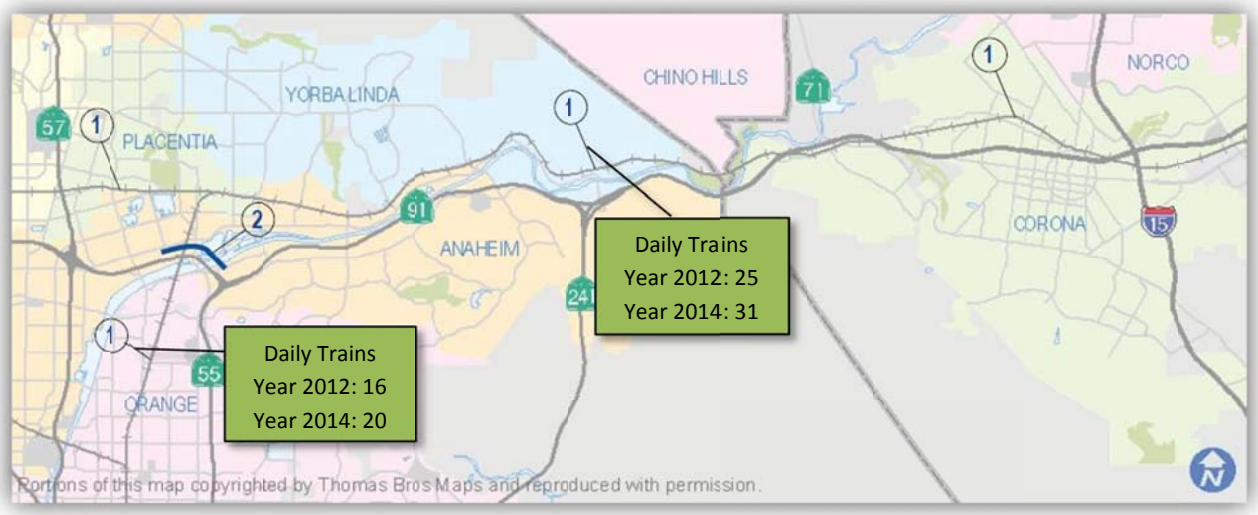
[23] 2013 SR 91 Implementation Plan, pg. 2, 10

Metrolink Short-Term Expansion Plan Funding: Capital costs necessary for this expansion include the purchase of engines and coaches to operate the new service as well as a new station in the City of Placentia. OCTA costs are estimated at $66 million.

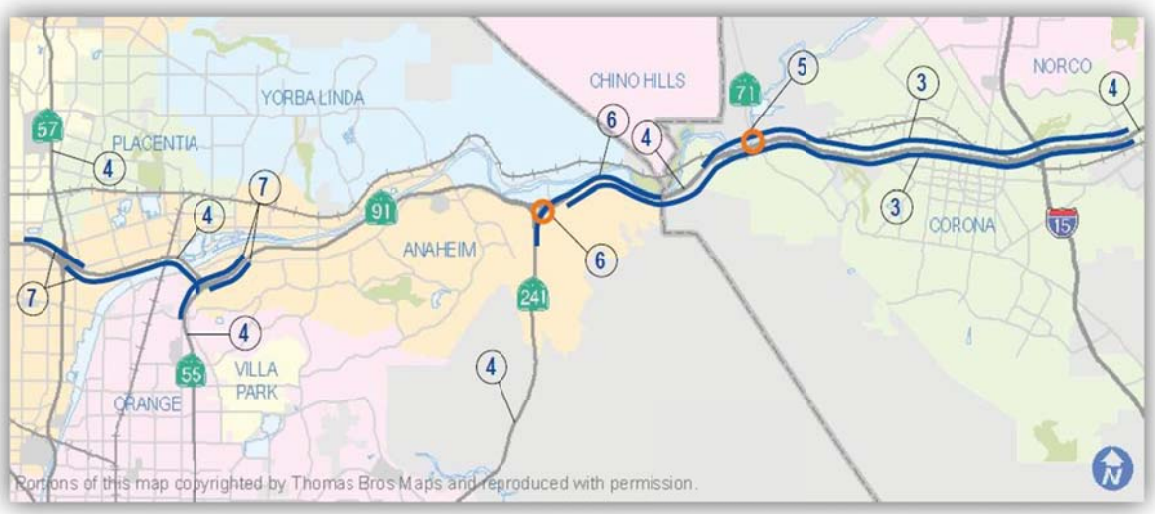


Metrolink Short-Term Expansion Plan - Project Cost Estimate	
Stations	$39 million
Equipment	$27 million
Total	$66 million

Project 2: SR-91 Westbound Lane at Tustin Avenue Project

Description: A status report for the SR-91 Westbound Lane at Tustin Avenue project was provided on page 131. The project will add a westbound (WB) auxiliary lane on SR-91 beginning at the northbound (NB) SR-55 to WB SR-91 connector through the Tustin Avenue interchange.

SR-91 Westbound Lane at Tustin Avenue Benefit: The project would reduce or eliminate operational problems and deficiencies on this section of WB SR-91 including weaving and merging maneuvers. This project would also address chokepoint conditions, which are caused primarily by extensive weaving between the NB SR-55 to WB SR-91 connector and the WB SR-91 off-ramp to Tustin Avenue.



SR-91 Westbound Lane at Tustin Avenue Costs

SR-91 Westbound Lane at Tustin Avenue - Project Cost Estimate	
Capital Costs	$21.8 million
Support Costs	$18.9 million
ROW Costs	$6.7 million
Total	$47.4 million

SR-91 Westbound Lane at Tustin Avenue Schedule

SR-91 Westbound Lane at Tustin Avenue - Project Schedule	
Preliminary Engineering	Completed
Environmental	Completed
Design	Completed
Construction	2016

Project 3: Initial Phase Corridor Improvement Project (CIP): Widen SR-91 by one general purpose lane in each direction east of county line, collector-distributer (CD) roads and I-15/SR-91 direct south connector, extension of express lanes to I-15 and system/local interchange improvements.

Description: "The Project Study Report (PSR) for the SR-91 CIP from SR-241 to Pierce Street recommended the addition of a 5th lane in each direction, the addition of auxiliary lanes at various locations, and the addition of CD lanes at the SR-71/SR-91 interchange and at the I-15/SR-91 interchange. Subsequently, the Riverside County Transportation Commission's (RCTC) 10-Year Delivery Plan recommended the following in addition to the PSR recommended improvements: the extension of

the 91 Express Lanes from the Orange County line to the I-15, the construction of the SR-91 (EB/WB) I-15 (SB/NB) Express lanes median direct connectors, and the construction of one Express Lane in each direction from the I-15/SR-91 interchange southerly to I-15/Cajalco Road, and northerly to I-15/Hidden Valley Parkway. " [24]

Benefit: The initial phase and ultimate CIP projects will reduce congestion and delays by providing additional SR-91 capacity from SR-241 to Pierce Street, along I-15 from SR-91 to Cajalco Road to the south, and to Hidden Valley Parkway to the south. Traffic operation will improve by eliminating or reducing weaving conflicts along SR-91 and I-15 by the use of auxiliary lanes. The project will provide motorists a choice to use Express Lanes for a fee in exchange for time savings.

Project 3 Costs

Project 3 – Project Cost Estimate	
Capital Costs	$1.1 billion
Support Costs	$245.0 million
Total	$1.345 billion

Project 3 Schedule

Project 3 - Project Schedule	
Preliminary Engineering	Completed
Environmental	Completed
Design	2013-2017
Construction	2013-2017

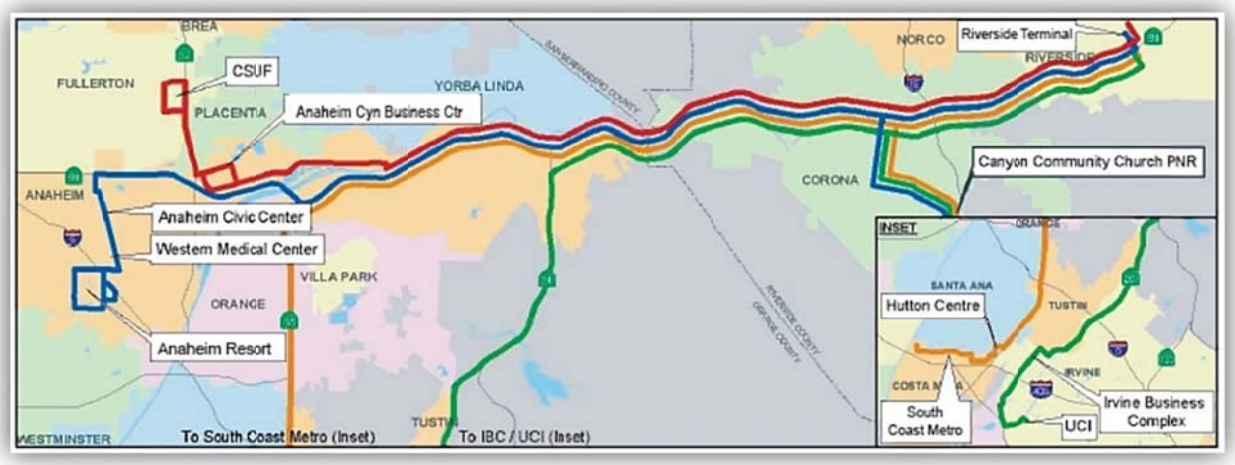
Project 4: Express Bus Improvements between Orange County and Riverside County

Express Bus Description: "OCTA, working with the RCTC, and the Riverside Transit Agency (RTA), plans an extensive expansive expansion of Express Bus service between Riverside and Orange counties. Commuters lack direct transit connections to many Orange County employment centers, and new Express Bus service will provide connections to major employment centers in Anaheim, Costa Mesa, Fullerton, and Irvine.

[24] 2013 SR 91 Implementation Plan, pg. 14

Three new Express Bus routes are planned from Riverside County to the Anaheim Canyon Business Center and California State University Fullerton; Anaheim Civic Center, Western Medical Center, and Anaheim Resort; and Irvine Business Complex and University of California, Irvine (UCI). Routes would run every 30 to 45 minutes in the peak period, and service will be tailored to match demand. Implementation began in Fall 2006 with the Riverside County to Hutton Center and South Coast Metro route. The other routes are planned for implementation by Fiscal Year 2016/2017 contingent on future budget authority."[25]

Express Bus Benefit: Development of express bus services will contribute to congestion relief on SR-91.



Express Bus Costs

SR-91 Westbound Lane at Tustin Avenue - Project Cost Estimate	
Capital Costs	$9.5 million
Annual Operating Cost	$1.0 million
Total	$10.5 million

[25] 2013 SR-91 Implementation Plan, pg. 15

Express Bus Schedule

SR-91 Westbound Lane at Tustin Avenue - Project Schedule	
Riverside/Corona to La Sierra Metrolink Station to Irvine Business Complex/UCI	2016-2017
Riverside/Corona to North East Anaheim CSUF	2016-2017
Riverside/Corona to Anaheim Resort	2016-2017
Village at Orange to Riverside/Corona	Existing (RTA 216)
Riverside/Corona to South Coast metro	Existing (OCTA 794)

Project 5: SR-71/SR-91 Interchange Improvements

Description: "The current project includes a new two-lane direct connector flyover from eastbound SR-91 to northbound SR-71 and modifications to the existing Green River eastbound SR-91 On-Ramp."[26]

Benefit: The project will provide a new direct connector improvement from eastbound SR-91 to northbound SR-71, replacing the geometric chokepoint created by the existing connector. The project will also improve traffic operations and operational efficiency by eliminating or minimizing weaving conflicts through the use of auxiliary lanes.

SR-71/SR-91 Interchange Improvements Costs

SR-91 Westbound Lane at Tustin Avenue - Project Cost Estimate	
Total Costs	$122.7 million

SR-71/SR-91 Interchange Improvements Schedule

SR-91 Westbound Lane at Tustin Avenue - Project Schedule	
Preliminary Engineering	Completed
Environmental	Completed
Design/Construction	2012-2018

[26] 2013 SR 91 Implementation Plan, pg. 16

Project 6: SR-241/SR-91 Express Lanes Connector

Description: "The SR-241/SR-91 Express Lanes connector will carry northbound SR-241 traffic to eastbound SR-91 Express Lanes and carry westbound SR-91 Express Lanes traffic to southbound SR-241. Outside widening would be required mainly on the south side of SR-91 for realignment of eastbound lanes up to the Coal Canyon Wildlife Corridor Crossing."[27]

Benefit: The project will close the current toll system gap between the future and existing 91 Express Lanes and the SR-241 Eastern Transportation Corridor System. The project improves access to SR-241 and South County for traffic that does not currently utilize the 91 Express Lanes.

SR-241/SR-91 Express Lanes Connector Costs

SR-91 Westbound Lane at Tustin Avenue - Project Cost Estimate	
Total Costs	Between $135.0 million and $150.0 million

SR-241/SR-91 Express Lanes Connector Schedule

SR-91 Westbound Lane at Tustin Avenue - Project Schedule	
Preliminary Engineering	Completed
Environmental	2012-2015
Design/Construction	2015-2018

[27] 2013 SR 91 Implementation Plan, pg. 17