



# CITY OF GARDEN GROVE

June 30, 2017

Orange County Transportation Authority  
ATTN: Anup Kulkarni  
Regional Modeling and Traffic Operations  
Planning Division  
P.O. Box 14184  
Orange, CA 92863-1584

**Steven R. Jones**  
Mayor

**Phat Bui**  
Mayor Pro Tem - District 4

**Kris Beard**  
Council Member - District 1

**John R. O'Neill**  
Council Member - District 2

**Thu-Ha Nguyen**  
Council Member - District 3

**Stephanie Klopfenstein**  
Council Member - District 5

**Kim Bernice Nguyen**  
Council Member - District 6

**Subject: Local Signal Synchronization Plan Submittal as Part of the Measure M2 Eligibility Process**

Dear Mr. Kulkarni:

The City of Garden Grove is pleased to submit its Local Signal Synchronization Plan as part of the Measure M2 eligibility process. The submittal includes the following components:

1. A completed "Local Signal Synchronization Plan Consistency Review Checklist" form establishing consistency between the Local Signal Synchronization Plan and the Regional Traffic Signal Synchronization Master Plan.
2. An updated Local Signal Synchronization Plan for Fiscal Years 2017/2018 to 2019/20 including and all required elements as identified in the "Guidelines for the Preparation of Local Signal Synchronization Plans".

The City looks forward to continuing the implementation of the beneficial programs and construction projects required and made possible by Measure M2.

If you have any questions, please call me at (714) 741-5189.

Sincerely,

Dai Vu, P.E.  
City Traffic Engineer

Enclosures

- A. Local Signal Synchronization Plan Consistency Review Checklist
- B. Local Signal Synchronization Plan

## LOCAL SIGNAL SYNCHRONIZATION PLAN CONSISTENCY REVIEW CHECKLIST


The Local Agency Name: City of Garden Grove Plan Date: June 30, 2017

Local agencies must submit a copy of the Local Signal Synchronization Plan, a completed consistency review checklist, and any supporting documentation. Complete the table below.

Complete the table below:

Local Agency Statement	Page(s) in LSSP	Provided or N/A
1) Signal synchronization goals of the agency are consistent with those outlined as part of the Regional Traffic Signal Synchronization Master Plan. Include information on how the traffic signal synchronization street routes and traffic signals may be coordinated with traffic signals on the street routes in adjoining jurisdictions.	4-5	Provided
2) Traffic signal synchronization street routes are identified, including all corridors along the regional signal synchronization network located within the local agency.	6-7	Provided
3) Traffic signal inventory for all traffic signal synchronization street routes.	8-12	Provided
4) Three-year plan separately showing costs, available funding, and phasing for capital, operations, and maintenance of signal synchronization along the traffic signal synchronization street routes and traffic signals. Include a separate planning level estimate of complete system implementation cost.	13-16	Provided
5) Signal synchronization review, revision, and assessment of synchronization activities along the traffic signal synchronization street routes and traffic signals.	17-21	Provided

I certify that the above statements are true to the best of my knowledge.

  
 \_\_\_\_\_  
 Signature

6/12/17  
 \_\_\_\_\_  
 Date

\_\_\_\_\_ Dai Vu, City Traffic Engineer, City of Garden Grove  
 Printed Name, Title, & Local Agency

## **LOCAL SIGNAL SYNCHRONIZATION PLAN**

**SECTION ONE**  
**TRAFFIC SIGNAL SYNCHRONIZATION GOALS, POLICIES AND**  
**OBJECTIVES**

The City of Garden Grove's Local Signal Synchronization Plan (LSSP) is an integral part in helping establish the City's goal to optimize the signal progression throughout the City.

The City of Garden Grove is continually changing with new developments and growing families. With these changes comes additional traffic along our corridors, by maintaining and updating our LSSP every 3 years, we can proactively accommodate this growth.

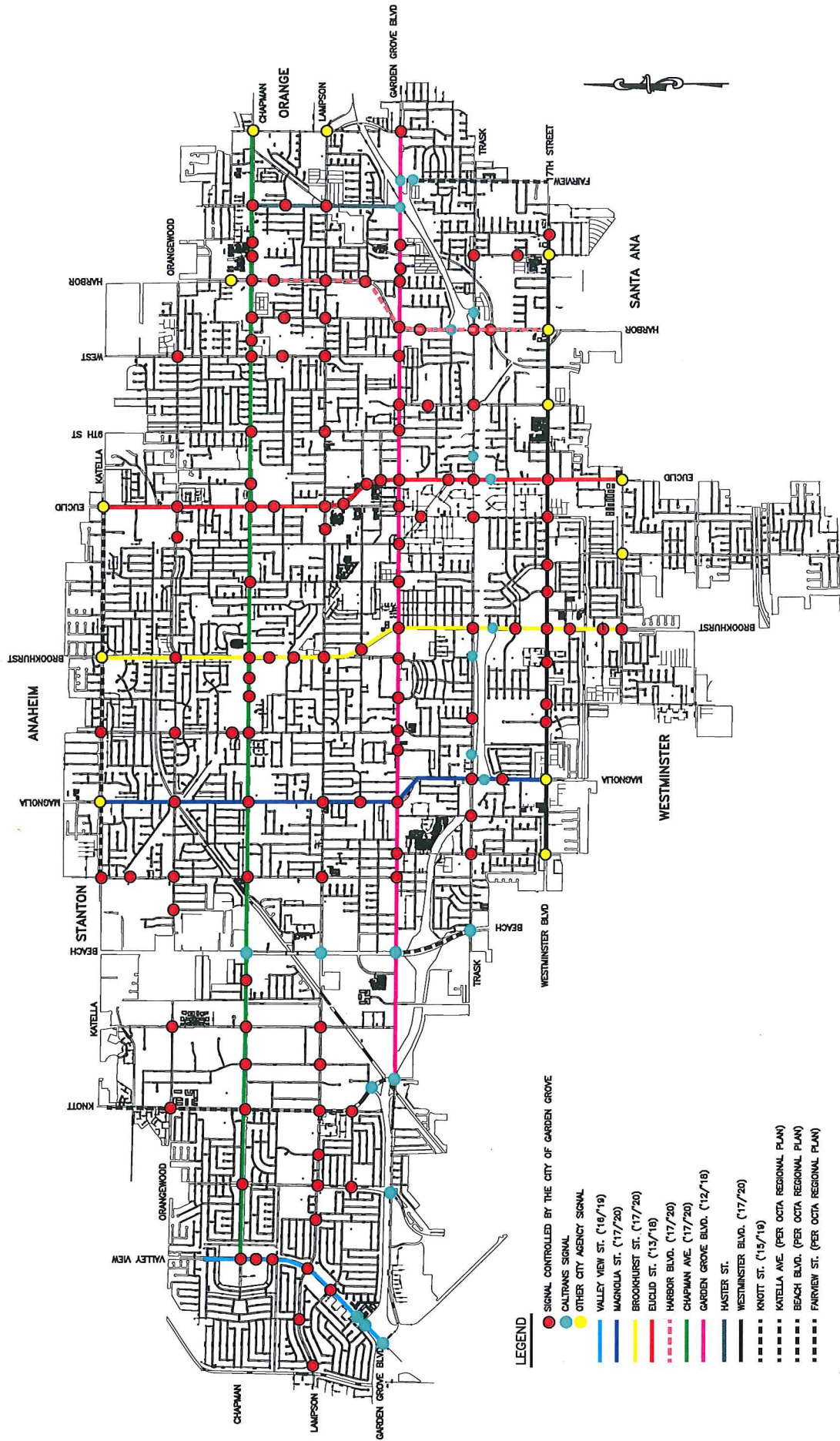
The City's Traffic Management Center (TMC) is an integral part of our signal synchronization network. The City currently uses Centracs to communicate with all our signals on our fiber optic network. The TMC also allows staff to view the 37 video cameras that were strategically placed on our busiest corridors. The video is invaluable because it enables staff to monitor entire corridors at one time and Centracs allows staff to monitor the timing and make any adjustments necessary right at the TMC.

The City currently has 109 of 132 total traffic signals connected to the fiber network. In order for the City to establish connectivity to the remaining 23 signals, certain equipment upgrades and infrastructure improvements need to be made. These upgrades and improvements are integral to keeping our network up to date and is an important part of the LSSP.

The City of Garden Grove has been a supporter and partner in multiple multi-jurisdictional signal coordination projects. These projects include Harbor Blvd., Chapman Ave., Westminster Ave., Magnolia St. and Brookhurst St. The City currently does not have the staff to be a lead partner in any of these projects, but the City is always eager to be a participant and partner in these very important signal coordination projects.

**SECTION TWO**  
**TRAFFIC SIGNAL SYNCHRONIZATION STREET ROUTES**  
**(EXISTING AND PLANNED)**

# CITY OF GARDEN GROVE LOCAL SIGNAL COORDINATION PLAN



- LEGEND**
- SIGNAL CONTROLLED BY THE CITY OF GARDEN GROVE
  - CALTRANS SIGNAL
  - OTHER CITY AGENCY SIGNAL
  - VALLEY VIEW ST. (\*18/'19)
  - MAGNOLIA ST. (\*17/20)
  - BROOKHURST ST. (\*17/20)
  - EUCLID ST. (\*13/'18)
  - HARBOR BLVD. (\*17/20)
  - CHAPMAN AVE. (\*17/20)
  - GARDEN GROVE BLVD. (\*12/'18)
  - HASTER ST.
  - WESTMINSTER BLVD. (\*17/20)
  - KNOTT ST. (\*15/'19)
  - KATELLA AVE. (PER OCTA REGIONAL PLAN)
  - BEACH BLVD. (PER OCTA REGIONAL PLAN)
  - FARRVIEW ST. (PER OCTA REGIONAL PLAN)

\*YEAR COORDINATED/ANTICIPATED RE-COORDINATION YEAR

**SECTION THREE**  
**TRAFFIC SIGNAL INVENTORY**



### TRAFFIC SYNCHRONIZATION LIST

Corridor	Cross-street Intersection	Cycle Length				Controller Type	Maintenance Responsibility
		AM	MD	PM	WKND		
Valley View	Chapman	130	120	130	FREE	ASC3	GG
	Fire Sta.	130	120	130	FREE	ASC2/S	GG
	Belgrave	130	120	130	FREE	ASC2/S	GG
	Lampson	130	120	130	FREE	ASC2/S	GG
	Cerulean	130	120	130	FREE	ASC2/S	GG
	Tiffany*	120	FREE	120	FREE	170	CALTRANS
	WB 22 Off Ramp*	*	*	*	*	170	CALTRANS
	Garden Grove*	*	*	*	*	170	CALTRANS
Brookhurst	Orangewood	120	120	120	120	ASC3	GG
	Chapman	130	130	130	130	ASC3	GG
	Pavillion	120	120	120	120	ASC3	GG
	Bixby	120	120	120	120	ASC3	GG
	Lampson	120	120	120	120	ASC3	GG
	Stanford	120	120	120	120	ASC3	GG
	Garden Grove	120	120	120	120	ASC3	GG
	Trask	120	120	120	120	ASC3	GG
	EB 22 On Ramp*	120	120	120	120	2070	CALTRANS
	Woodbury	120	120	120	120	ASC3	GG
	Westminster	120	120	120	130	ASC3	GG
	15 <sup>th</sup> /Reading	120	120	120	130	ASC3	GG
	11 <sup>th</sup> St.	120	120	120	130	ASC3	GG
	Hazard	120	120	120	130	ASC3	GG
						GG	
Euclid	Orangewood	120	120	120	120	ASC3	GG
	Chapman	130	130	130	130	ASC3	GG
	Marian	120	120	120	120	ASC3	GG
	Lampson	120	120	120	120	ASC3	GG
	Main/College	120	120	120	120	ASC3	GG
	Stanford	120	120	120	120	ASC3	GG
	Acacia	120	120	120	120	ASC3	GG
	Garden Grove	120	120	120	120	ASC3	GG
	Century	120	120	120	120	ASC3	GG
	Trask	120	120	120	120	ASC3	GG
	SR-22*	120	120	120	120	2070	CALTRANS
Westminster	120	120	120	120	ASC3	GG	

### TRAFFIC SYNCHRONIZATION LIST

Corridor	Cross-street Intersection	Cycle Length				Controller Type	Maintenance Responsibility
		AM	MD	PM	WKND		
Harbor	Chapman	130	130	130	130	ASC3	GG
	Resort Way	130	130	130	130	ASC3	GG
	Twintree (HAWK)	130	130	130	130	Cobalt	GG
	Lampson	130	130	130	130	ASC3	GG
	Great Wolf	130	130	130	130	Cobalt	GG
	Palm	130	130	130	130	ASC3	GG
	Garden Grove	130	130	130	130	ASC3	GG
	Albertsons	130	130	130	130	ASC3	GG
	SR-22/Banner*	120	120	140	120	170	CALTRANS
	Trask	130	130	130	130	ASC3	GG
	Cardinal	130	130	130	130	ASC3	GG
Chapman	Valley View	130	120	130	120	ASC3	GG
	Springdale	130	110	130	110	ASC3	GG
	Knott	130	110	130	110	ASC3	GG
	Monarch	130	110	130	110	ASC3	GG
	Western	130	110	130	110	ASC3	GG
	Ped Signal	65	55	65	55	ASC3	GG
	Beach*	140	120	140	120	170	GG
	Nearing	130	130	130	130	ASC3	Orange County
	Dale	130	130	130	130	ASC3	GG
	Magnolia	130	130	130	130	ASC3	GG
	Gilbert	130	130	130	130	ASC3	GG
	Promenade	130	130	130	130	ASC3	GG
	Covey	130	130	130	130	ASC3	GG
	Brookhurst	130	130	130	130	ASC3	GG
	Nutwood	130	130	130	130	ASC3	GG
	Euclid	130	130	130	130	ASC3	GG
	Della	130	130	130	130	ASC3	GG
	9 <sup>th</sup> St.	130	130	130	130	ASC3	GG
	West	130	130	130	130	ASC3	GG
	Buaro	130	130	130	130	ASC3	GG
Harbor	130	130	130	130	ASC3	GG	
Willowbrook	130	130	130	130	ASC3	GG	
Somerset	130	130	130	130	ASC3	GG	
Haster	130	130	130	130	ASC3	GG	

### TRAFFIC SYNCHRONIZATION LIST

Corridor	Cross-street Intersection	Cycle Length				Controller Type	Maintenance Responsibility
		AM	MD	PM	WKND		
Garden Grove	Knott	NA	NA	NA	NA	ASC3	CALTRANS
	Beach	NA	NA	NA	NA	ASC3	CALTRANS
	Dale	120	120	120	120	ASC3	GG
	Newland	120	120	120	120	ASC3	GG
	Magnolia	120	120	120	120	ASC3	GG
	Casa Linda	120	120	120	120	ASC3	GG
	Gilbert	120	120	120	120	ASC3	GG
	Galway	120	120	120	120	ASC3	GG
	Brookhurst Wy	120	120	120	120	ASC3	GG
	Brookhurst St	120	120	120	120	ASC3	GG
	Nutwood	120	120	120	120	ASC3	GG
	Nelson/Century	120	120	120	120	ASC3	GG
	Main	120	120	120	120	ASC3	GG
	Euclid	120	120	120	120	ASC3	GG
	9 <sup>th</sup> St.	120	120	120	120	ASC3	GG
	Newhope	120	120	120	120	ASC3	GG
	West	120	120	120	120	ASC3	GG
	Harbor	130	130	130	130	ASC3	GG
	Palm	120	120	120	120	ASC3	GG
	Ped. Signal	60	60	60	60	ASC3	GG
Partridge	FREE	FREE	FREE	FREE	ASC3	GG	
Haster	*	*	*	*	170	CALTRANS	
Fairview	*	*	*	*	170	CALTRANS	
Lewis	FREE	FREE	FREE	FREE	ASC2/S	GG	
Magnolia	Orangewood	120	60	120	60	ASC3	GG
	Chapman	130	130	130	130	ASC3	GG
	Lampson	120	120	120	120	ASC3	GG
	Stanford	120	120	120	120	ASC3	GG
	Garden Grove	120	120	120	120	ASC3	GG
	Trask	120	120	120	120	ASC3	GG
	EB22 Ramp	120	120	120	120	170	CALTRANS
	Mays	120	FREE	120	FREE	ASC3	GG

## TRAFFIC SYNCHRONIZATION LIST

Corridor	Cross-street Intersection	Cycle Length				Controller Type	Maintenance Responsibility
		AM	MD	PM	WKND		
Trask	Beach	130	130	130	130	2070	CALTRANS
	Newland	120	FREE	120	FREE	ASC3	CALTRANS
	Yockey	120	FREE	120	FREE	ASC3	GG
	Magnolia	120	120	120	120	ASC3	GG
	22 Fwy Off Ramp	120	*	120	*	170	CALTRANS
	Ped Signal	120	FREE	120	FREE	ASC3	GG
	22 On/Off Ramps	120	*	120	*	170	CALTRANS
	Brookhurst	120	120	120	120	ASC3	GG
	Taft	120	FREE	120	FREE	ASC3	GG
	Newhope	120	FREE	120	FREE	ASC3	GG
	Harbor	130	130	130	130	ASC3	GG
	22 On/Off Ramps	120	*	120	*	170	CALTRANS
	Clinton	120	FREE	120	FREE	ASC3	GG
Westminster	Deodara	130	130	130	130	ASC3	GG
	Bushard	130	130	130	130	ASC3	GG
	Kerry	130	130	130	130	ASC3	GG
	Brookhurst St.	130	130	130	130	ASC3	GG
	Bowen	130	130	130	130	ASC3	GG
	Taft	130	130	130	130	ASC3	GG
	Euclid	130	130	130	130	ASC3	GG
Knott	Orangewood	130	110	130	110	ASC3	GG
	Chapman	130	110	130	110	ASC3	GG
	Lampson	130	110	130	110	ASC3	GG
	Stanford	65	110	130	110	ASC3	GG
	Acacia	*	*	*	*	170	CALTRANS
	Garden Grove	*	*	*	*	170	CALTRANS
Katella	Dale	120	120	120	120	ASC3	GG
	Gilbert	120	120	120	120	ASC3	GG
Fairview	22 Fwy On-Ramp	*	*	*	*	170	CALTRANS
	22 Fwy Off-Ramp	*	*	*	*	170	CALTRANS

Central System (Indicate if multiple systems in use):           Centracs          

Controller Operating System:           ASC/3 - Econolite          

\* Not Available

**SECTION FOUR**  
**TRAFFIC SIGNAL SYNCHRONIZATION SYSTEM AND THREE**  
**YEAR PLAN**

## 3-YEAR OUTLOOK TRAFFIC SIGNAL SYNCHRONIZATION

### Funding Needs for Synchronized Operation (Constrained)

Reporting Jurisdiction Expenditures: City of Garden Grove

Type of Traffic Signal Synchronization Expenditures in Year of Expenditure  
Dollars

#### MAINTENANCE

PROJECT	FY17/18	FY18/19	FY19/20	TOTAL
Communication and Software Maintenance	30,000	30,000	30,000	90,000
Subtotal Maintenance	30,000	30,000	30,000	90,000

#### CONSTRUCTION

PROJECT	FY17/18	FY18/19	FY19/20	TOTAL
Citywide Signal Synchronization	1,450,000	50,000	50,000	1,550,000
Subtotal Construction	1,450,000	50,000	50,000	1,550,000

#### OPERATIONS

PROJECT	FY17/18	FY18/19	FY19/20	TOTAL
Citywide Signal Timing Maintenance	35,000	35,000	35,000	105,000
Subtotal Operations	35,000	35,000	35,000	105,000
	1,515,000	115,000	115,000	1,745,000

### 3-YEAR OUTLOOK TRAFFIC SIGNAL SYNCHRONIZATION

#### Funding Needs for Synchronized Operation (Unconstrained)

Reporting Jurisdiction Expenditures: City of Garden Grove

Type of Traffic Signal Synchronization Expenditures in Year of Expenditure  
Dollars

**MAINTENANCE**

PROJECT	FY17/18	FY18/19	FY19/20	TOTAL
Communication and Software Maintenance	65,000	65,000	65,000	195,000
Subtotal Maintenance	65,000	65,000	65,000	195,000

**CONSTRUCTION**

PROJECT	FY17/18	FY18/19	FY19/20	TOTAL
Citywide Signal Synchronization	1,500,000	1,910,000	590,000	4,000,000
Upgrade timing and replace controllers, cabinets, switches, detection, fiber splicing and TMC upgrades.				
Subtotal Construction	1,500,000	1,910,000	590,000	4,000,000

**OPERATIONS**

PROJECT	FY17/18	FY18/19	FY19/20	TOTAL
Citywide Signal Timing Maintenance	75,000	75,000	75,000	225,000
Subtotal Operations	75,000	75,000	75,000	225,000
	1,640,000	2,050,000	730,000	4,420,000





**SECTION FIVE**

**TRAFFIC SIGNAL SYNCHRONIZATION ASSESSMENT REVIEW  
AND REVISE, AS MAY BE NECESSARY, THE TIMING OF  
TRAFFIC SIGNALS**

**Significant timing plan updates and projects completed FY  
2014/2015 through 2016/2017**

The City of Garden Grove in conjunction with several other government agencies and consultants completed the synchronization of 3 corridors since 2014. The corridors completed are shown in the Table on Page 19.

Optimizing progression along our major corridors is a priority in the City of Garden Grove. Reducing stops and travel times results reduced emissions, increase in safety, and overall driver satisfaction. As part of the synchronization projects, the selected consultant was required to perform before and after studies which included several measures of effectiveness. All the corridors showed a significant decrease in travel times as well as decrease in stops per mile. Speeds along Knott St. were increased by 18% and stops per mile were decreased by 43%. Speeds along Valley View St. were increased by 46% and stops per mile were decreased by 43%. The Corridor Synchronization Performance Index (CSPI) were improved for both corridors. The CSPI score for Knott St. was increased by 25 points while the CSPI score of Valley View St. was increased by 30 points.

As part of the Project P funded projects, consultants are required to maintain the synchronization for 3 years. This has been a useful tool in keeping our timing plans current. City staff also periodically drives the corridors to determine any problem areas in the synchronization that may have arisen. The City also monitors the progression along the corridors through the Centracs central system and CCTV Cameras in the Traffic Management Center.

It is paramount to the City that the corridors in the Local Signal Coordination Plan be updated on a timely basis. The City understands that driving patterns, new developments, and population increases require that the synchronization on our corridors be kept up to date. The City of Garden Grove will be an eager participant in all multi-jurisdictional synchronization projects. However, because of staffing issues, the City currently cannot take the lead on any of the multi-jurisdictional synchronization project.

## TRAFFIC SIGNAL SYNCHRONIZATION ASSESSMENT, REVIEW, AND REVISION

LOCAL AGENCY CORRIDOR	TIMING REVIEWED (Past 3 Years)	DID TIMING REQUIRE AN UPDATE?	TIMING UPDATE RESULTS (if available)							
			Speed Travel		Stops per mile		Greens per red		CSPI Score*	
			Before	After	Before	After	Before	After	Before	After
Knott St. <sup>1</sup>	2015	Yes	23.0	27.3	1.6	1.0	1.8	3.3	58	83
Valley View St.	2016	Yes	15.5	22.6	3.3	1.9	2.5	4.8	35	65
Harbor Blvd. <sup>1</sup>	2017	Yes	Studies not completed							

<sup>1</sup> Project P

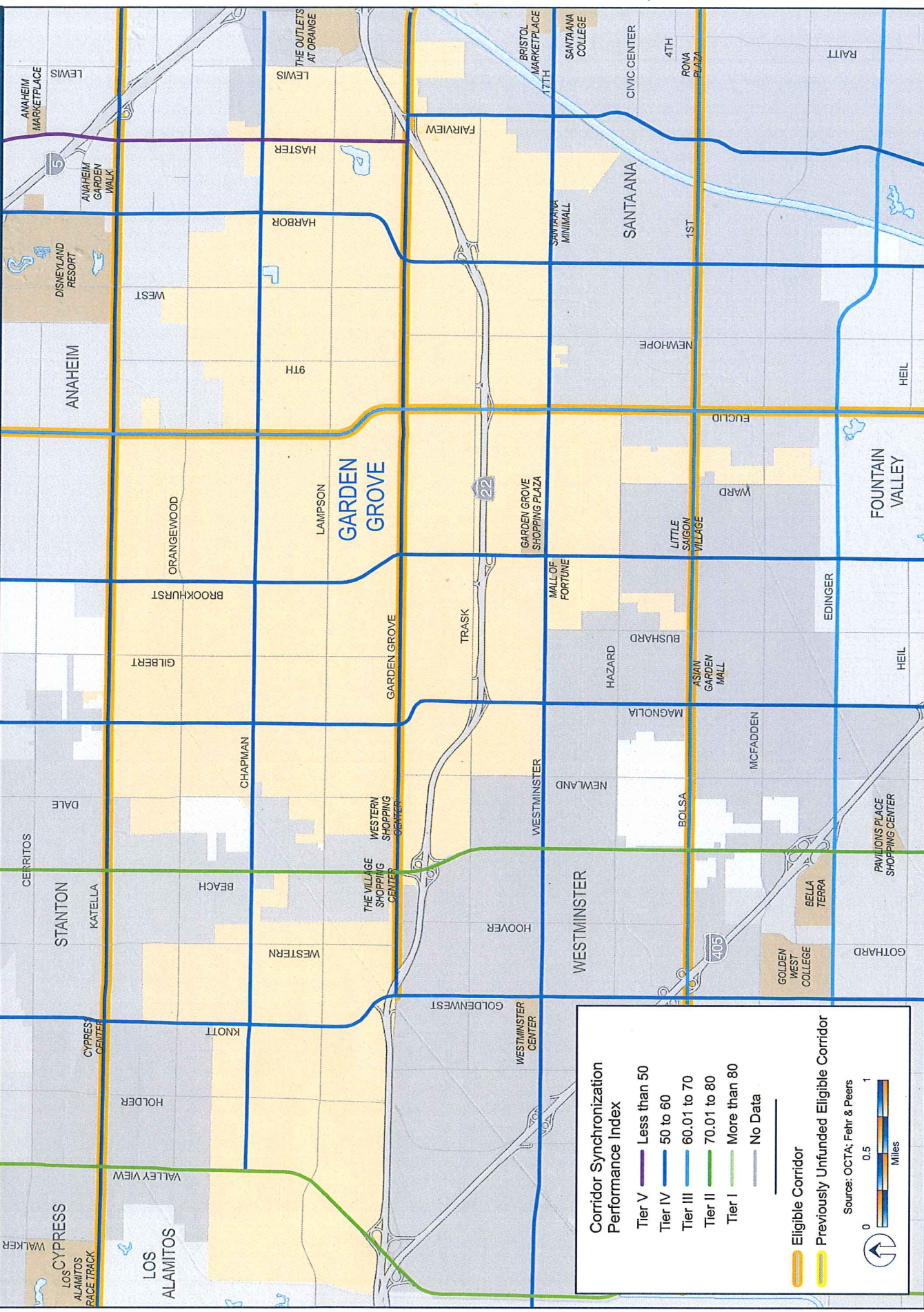
## SIGNAL TIMING REVISIONS

PROJECT CORRIDOR	CROSS STREET	CYCLE LENGTH (Before/After)
Knott St.	Entire Corridor	Before = 120 & 110 / After = 130 & 110
Valley View Blvd.	Entire Corridor	Before = 120 & Free / After = 130 & 120
Harbor Blvd.	Entire Corridor	Before = 120 / After = 130

## **CSPI MAP**

In 2009, OCTA identified a new parameter to gauge the signal synchronization performance of arterial corridors. The parameter is called Corridor Synchronization Performance Index (CSPI). The CSPI is categorized into five levels: Tier I through Tier V. Tier I indicates very good signal synchronization conditions while Tier V indicates that the corridor would greatly benefit from improvements to signal synchronization. Attached is the 2016 Corridor Operational Performance map for Garden Grove. The map shows the CSPI of the City's arterial corridors which helps City to evaluate traffic mobility and identify candidate corridors for future signal synchronization projects.

# 2016 Corridor Operational Performance Garden Grove



**Corridor Synchronization Performance Index**

- Tier V — Less than 50
- Tier IV — 50 to 60
- Tier III — 60.01 to 70
- Tier II — 70.01 to 80
- Tier I — More than 80
- No Data —

**Eligible Corridor** — Yellow line

**Previously Unfunded Eligible Corridor** — Orange line

Source: OCTA; Fehr & Peers

0 0.5 1 Miles

