ATTACHMENT 5

LOCAL SIGNAL SYNCHRONIZATION PLAN CONSISTENCY REVIEW CHECKLIST

The Local Agency Name: City of Costa Mesa Plan Date: June 1, 2023

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.	1 - 6	Provided
2) Traffic signal synchronization street routes are identified, including all corridors along the regional signal synchronization network located within the local agency.	7 - 8	Provided
3) Traffic signal inventory for all traffic signal synchronization street routes.	9 - 14	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 for constrained, unconstrained and build-out scenarios.	15 - 18	Provided
5) Signal synchronization review, revision, and assessment of synchronization activities along the traffic signal synchronization street routes and traffic signals.	19 - 24	Provided

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

_____ _____

Signature Date

Jennifer Rosales, Transportation Services Manager, City of Costa Mesa

_____

Printed Name, Title, & Local Agency

CITY OF COSTA MESA

LOCAL SIGNAL SYNCHRONIZATION PLAN

June 1, 2023

SECTION ONE

TRAFFIC SIGNAL SYNCHRONIZATION GOALS, POLICIES AND OBJECTIVES

Introduction

Traffic signal coordination is one of the vital aspects of a traffic circulation system because it ensures that motorists are able to travel through multiple intersections along a corridor with minimal stops and short delays. A well-timed, coordinated system permits continuous movement along an arterial or throughout a network of major streets with minimum stops and delays, which, reduces fuel consumption and improves air quality

Goals, Objectives and Policies

The primary goals, objectives and policies included in the circulation element of the adopted 2015-2035 General Plan for the City of Costa Mesa are as follows;

- Goal C-1: Implement "Complete Streets" Policies on Roadways in Costa Mesa
    - Objective C-1A: Create a transportation network that meets the mobility needs of all Costa Mesa residents, businesses, and visitors.
        - C-1.3: Complete and annually maintain a needs assessment for traffic service levels and traffic safety. Develop and annually update a priority list of improvement projects, with priorities based on: 1) correcting identified hazards; 2) accommodating multimodal trips; 3) improving and/or maintaining peak-hour traffic volumes at critical intersections; 4) improving efficiency of existing infrastructure utilization; and 5) intergovernmental coordination.
- Goal C-2: Effectively Manage and Improve the Roadway System
    - Objective C-2A: Implement policies that encourage and accommodate all users while maintaining the efficiency of the circulation system.
        - C-2.6: Periodically review and update traffic signal timing at all signalized intersections to maintain traffic signal coordination and to accommodate bicycle and pedestrian needs.
    - Objective C-2B: Construct street improvements and apply congestion management tools to obtain efficient performance of the transportation system.
        - C-2.10: Continue to deploy intelligent transportation systems (ITS) strategies—such as adaptive signal controls, fiber optic communication equipment, closed circuit television cameras, real-time transit information, and real- time parking availability information—to reduce traffic delays, lower greenhouse gas emissions, improve travel times, and enhance safety for drivers, pedestrians, and cyclists.
- Goal C-3: Enhance Regional Mobility and Coordination
    - Objective C-3A: Promote development of transportation projects along regional corridors
        - C-3.1: Maintain compliance with Orange County Congestion Management Plan (CMP) requirements, including consistency with CMP level of service standards, adoption of a seven-year capital improvement program, analysis of impacts of land use decisions on the CMP highway system, and adoption and implementation of deficiency plans when intersections do not meet adopted performance standards.
        - C-3.2: Support the goals and objectives of the Orange County Long Range Transportation Plan, including expansion of transportation system choices,

improvement of transportation system performance, and sustainability of transportation infrastructure.
        - C-3.3: Support the goals and objectives of the SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), including expansion of transportation system choices, improvement of transportation system performance, and sustainability of transportation infrastructure.
        - C-3.4: Coordinate signal timing on all major arterials with a local signal synchronization program consistent with the Orange County Traffic Signal Synchronization Master Plan (TSSMP).
        - C-3.5: Ensure Costa Mesa's input, participation, and discretionary review of applicable region-wide transportation system policies, programs, and construction.
        - C-3.6: Develop short-term and long-term improvements to the SR-55 corridor in coordination with Caltrans and OCTA to address regional mobility needs.
    - Objective C-3B: Coordinate and partner with local and regional agencies to promote projects and polices that improve regional mobility.
        - C-3.8: Coordinate with adjacent jurisdictions to maintain or improve mobility within the City to achieve a standard Level of Service no worse than "D" at all intersections under State or joint control. Intersection Level of Service analyses for General Plan conditions for locations under State or joint control will be updated periodically and presented to the City Council.
        - C-3.11: Collaborate with Caltrans and neighboring jurisdiction to improve signal timing and coordination along major arterials across jurisdictional boundaries.
        - C-3.12: Work closely with the State of California and other government agencies to control traffic–related impacts of uses on State- or other agency-owned land (i.e., Orange County Fairgrounds, Orange Coast College, etc.).
        - C-3.13: Coordinate with other responsible agencies the planning, funding, prioritization, and implementation of bicycle, pedestrian, and transit programs and supporting infrastructure.
- Goal C-5: Ensure Coordination between the Land Use and Circulation Systems
    - Objective C-5A: Coordinate land use policies and development activities that support a sustainable transportation system.
        - C-5.9: Require that circulation necessary to provide or attain the minimum traffic level of service standard at an intersection to which a development project contributes measureable traffic be completed within three years of issuance of the first building permit for such development project, unless additional right-of-way or coordination with other government agencies is required to complete the improvement. Improvements may be required sooner if, because of extraordinary traffic generation characteristics of the project or extraordinary impacts to the surrounding circulation system, such improvements are necessary to prevent significant adverse impacts.

Signal Synchronization

The purpose of the Local Signal Synchronization Plan (LSSP) is to identify local and regional travel corridors within the City of Costa Mesa and develop a blue print for implementation of signal coordination along these corridors. The LSSP will include guidelines for synchronizing traffic signals based on equipment limitations, capacity restrictions and funding constraints.

The traffic on arterials and highways in the region continues to increase with minimal increase in capacity of the circulation system. This results in increased congestion and delay along important travel corridors in the City. Coordination of traffic signals along the corridors will increase the capacity of intersections thus reducing congestion and delay for all modes.

Implementation of Signal Coordination along major arterials will provide the following benefits:

- Effectively manage the throughput capacity of intersections to improve mobility through the use of appropriate layouts and control measures and regular reviews and updates to the operational parameters;
- Reduce vehicle stops and delays, thereby:
    - lessening the negative impacts to air quality; and
    - reducing fuel consumption.
- Improve and enhance signal timing for bicycles and for pedestrian crossings.

Goals for near term and long range implementation

The near term goal for the City is to upgrade the existing traffic signal infrastructure at intersections as well as at the Traffic Operation Center (TOC) and establish communication to all signalized intersections via fiber optic network. Currently, the City is working with Orange County Transportation Authority (OCTA) to upgrade traffic signal equipment and communication in order to establish a seamless City network.

The long term goal for the City is to develop a state-of-the-art TMC and upgrade the multimodal elements of the signal system to include a robust network of video detection for bicyclists and pedestrians, audible pedestrian signals, and Closed Circuit Television (CCTV) cameras. The implementation of these upgrades will provide the City with the necessary tools to identify traffic signal related issues quickly and address them efficiently for all users. It will also help in maintaining signal coordination along regional and local corridors.

Infrastructure upgrades, modernization, and maintenance needs

The City's signal synchronization plan includes various upgrades to infrastructure to support signal synchronization. The City's primary plan is to migrate from antiquated Multisonics 820 controllers to modern Cobalt ATC signal controllers necessary to support updated timing plans and coordination. This antiquated equipment is no longer supported by the manufacturer so parts and repair are now unavailable. Therefore, the City has been upgrading to Cobalt ATC signal controllers to establish communication to the Centracs Advanced Traffic Management System (ATMS). To provide increased reliability and bandwidth necessary for communication with Cobalt ATC controllers and relaying CCTV signals, the City has preferred to install single mode fiber optic (SMFO) cable along major corridors. Modern controller equipment requires additional components within the signal cabinet and in the City's TOC, such as Ethernet switches and

networking devices. Thus, additional maintenance of these components is required for increased reliability.

Multi-jurisdictional coordination opportunities and initiatives

Given the geographical location of the City of Costa Mesa, the system of highways and arterials in the region and the existing travel patterns create unique challenges for improving the overall mobility of the transportation system. The circulation network (including freeways) thru the City carries a considerable amount of regional (through) traffic that does not originate or terminate within the City. As a result, the City has to regularly coordinate with the neighboring cities and other agencies such as Caltrans and Orange County Transportation Authority (OCTA) to maintain a smooth traffic flow for all modes of travel on City arterials and highways. In the last three years since the last update, the City has partnered with several Cities and applied for Measure M/M2 funding for upgrading the traffic signal infrastructure and coordinating signals along regional corridors for the following projects.

- Fairview Road (Garden Grove Boulevard to Newport Boulevard) with the City of Santa Ana
- Red Hill Avenue (Bryan Avenue to Bristol Street) with the City of Irvine
- Bear Street (Segerstrom Avenue to Bristol Street) with the City of Santa Ana
- Baker Street, Placentia Avenue, Victoria Street, and 19th Street

The City continuously monitors the traffic conditions along its arterials and highways to identify issue and develop innovative solutions to address them.

Role of local system in regional context including consistency and participation in Project P

The local signal synchronization plan for the City is consistent with the regional synchronization plan developed by OCTA. All the corridors included in the regional plan are part of the local plan. The regional synchronization plan includes the following corridors in the City of Costa Mesa.

- Harbor Boulevard
- Fairview Road
- Bristol Street
- Red Hill Avenue
- Newport Boulevard
- Baker Street
- Placentia Avenue
- Adams Avenue
- Fair Drive
- Victoria Street
- 17th Street

The local signal synchronization plan includes the corridors listed above and the following additional corridors within the City.

- Bear Street
- 19th Street
- Sunflower Avenue
- Anton Boulevard
- Wilson Street
- Paularino Avenue

Policies and strategies for updating signal timing

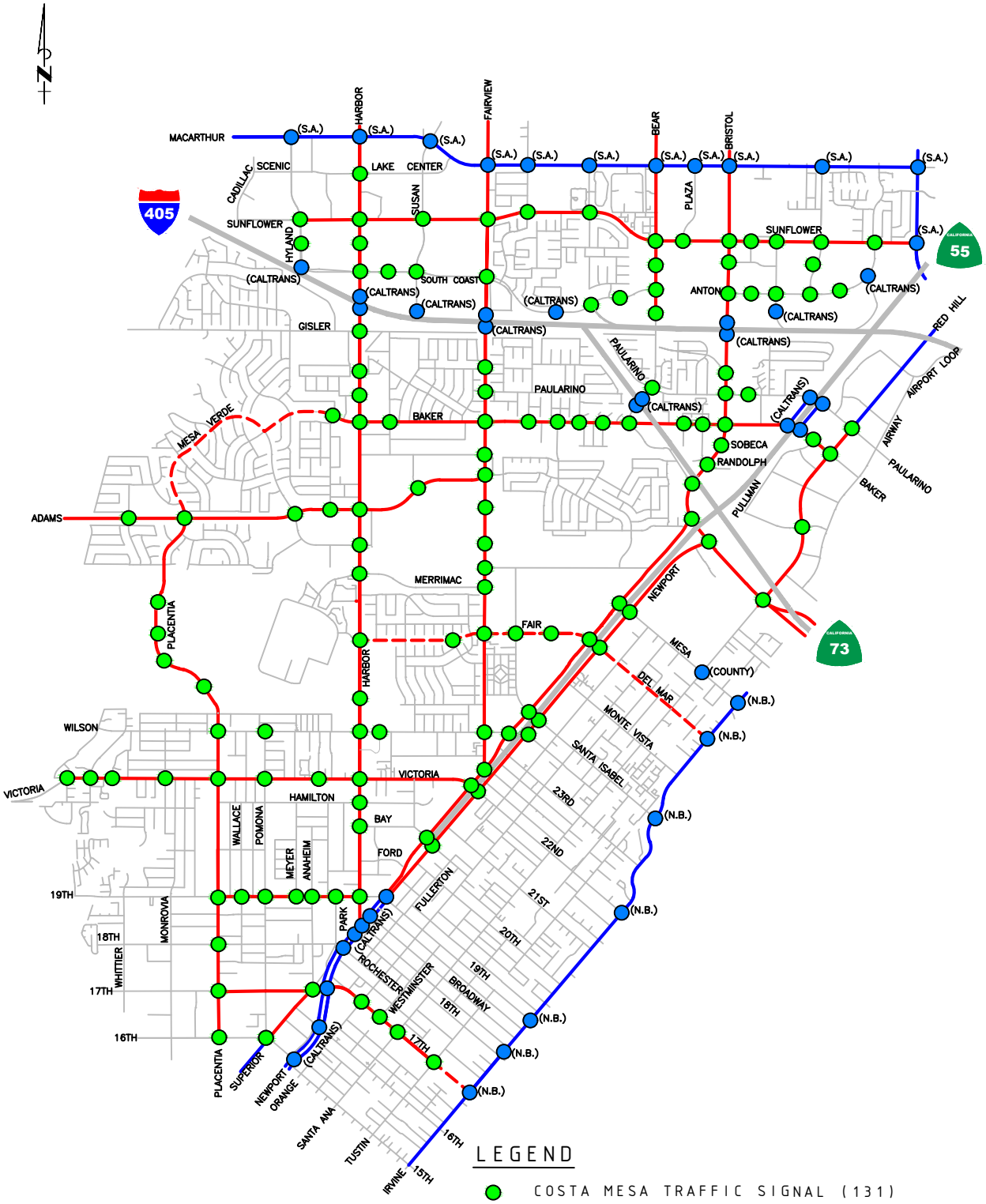
The City has periodically undertaken updates to signal timing with goals of improving traffic flow and reducing delay for all travel modes. The established minimum timing of phases are derived from standards set forth in the California Manual of Uniform Traffic Control Devices (CA-MUTCD). The City has regularly refined and improved timing plans to adapt to current travel patterns. The City has implemented traffic signal synchronization plans along major arterial corridors such as Harbor Boulevard and Fairview Road. Modern ASC/3 controllers and SMFO were deployed with these projects and existing timing and coordination plans were reviewed and revised to adhere to current standards. ASC/3 and Cobalt ATC controllers also provide advanced timing features not available with 820 controllers. The City has taken advantage of these features to further improve traffic flow and reduce unnecessary delay for all users.

SECTION TWO

TRAFFIC SIGNAL SYNCHRONIZATION STREET ROUTES (EXISTING AND PLANNED)

COSTA MESA
City of the Arts

CITY OF COSTA MESA
TRAFFIC SIGNAL
SYNCHRONIZATION NETWORK



LEGEND

- COSTA MESA TRAFFIC SIGNAL (131)
- OTHER AGENCY SIGNAL
- COSTA MESA COORDINATED CORRIDOR
- COSTA MESA FUTURE COORDINATED CORRIDOR
- OTHER AGENCY COORDINATED CORRIDOR

SECTION THREE

TRAFFIC SIGNAL INVENTORY

Traffic Synchronization Inventory

City of Costa Mesa

		Cycle Length					Equipment										
Corridor	Cross Street Intersection	AM	MID	PM	WKND	Maintenance Responsibility	Cabinet	Type	Software	Detection	Bike Detection	CCTV	Power Backup	Comm	Other ITS	ATMS	Status
Adams	Pincreek	130	110	130	100	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Video	Yes	Bosch		Fiber		Centracs	Online
Adams	Royal Palm	130	110	130	110	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Adams	Mesa Verde East	130	110	130	110	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Offline
Adams	Mesa Verde W/ Placentia	130	110	130	110	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Offline
Adams	Albatross/ Shantar	130	Free	130	Free	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Loops				Fiber		Centracs	Offline
Anton	Park Center	100	80	100	80	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Offline
Anton	Ave of the Arts	Free	Free	Free	Free	Costa Mesa	P (TS1)	820	Multisonic	Loops				Fiber		Centracs	Offline
Anton	Sakioka	Free	Free	Free	Free	Costa Mesa	P (TS1)	820	Multisonic	Loops				Fiber		Centracs	Offline
Anton	Experian	Free	Free	Free	Free	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops	Yes	Cohu		Fiber		Centracs	Offline
Baker	Mendoza	130	90	130	90	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Bosch		Fiber		Centracs	Offline
Baker	Babb	65	90	65	90	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Offline
Baker	Milbro	130	90	130	90	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Online
Baker	Bear	130	90	130	90	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Offline
Baker	College	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Offline
Baker	Royal Palm	65	65	65	65	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Online
Baker	Coolidge	65	90	130	90	Costa Mesa	M	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Baker	Fire Station #2	Free	Free	Free	Free	Costa Mesa	M	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Baker	Randolph	130	65	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Video	Yes			Fiber		Centracs	Online
Baker	Pullman	90	90	90	85	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Bear	Paularino	Free	Free	Free	Free	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Loops				Copper		Centracs	Offline
Bear	Metro Point/ May Co	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	EOS	Loops		Bosch		Fiber		Centracs	Online
Bear	South Coast	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	EOS	Loops		Bosch		Fiber		Centracs	Online
Bear	Crystal Court/ SCP II	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Online
Bristol	Sunflower	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	ASC/3	Other		Cohu		Fiber		Centracs	Online
Bristol	Town Center	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Bristol	Anton/ South Coast Plaza	130	130	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Loops		Cohu	BBS	Fiber		Centracs	Online
Bristol	405 NB					Caltrans	332	820	Multisonic	Loops				Fiber			Online
Bristol	405 SB					Caltrans	332	820	Multisonic	Loops				Fiber			Online

Traffic Synchronization Inventory
City of Costa Mesa

		Cycle Length					Equipment										
Corridor	Cross Street Intersection	AM	MID	PM	WKND	Maintenance Responsibility	Cabinet	Type	Software	Detection	Bike Detection	CCTV	Power Backup	Comm	Other ITS	ATMS	Status
Bristol	Hotel Way	130	130	130	130	Costa Mesa	M	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Bristol	Paularino	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops			BBS	Fiber		Centracs	Online
Bristol	Baker	130	130	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Other		Cohu	BBS	Fiber		Centracs	Online
Bristol	Randolph	100	120	100	120	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Bristol	Bear	100	120	104	120	Costa Mesa	M	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Bristol	Red Hill	130	130	130	Free	Costa Mesa	332	Cobalt	ASC/3	Video	Yes	Cohu	BBS	Fiber		Centracs	Online
Bristol	SB Newport	100	80	104	90	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Loops		Cohu	BBS	Fiber		Centracs	Online
Bristol	NB Newport	100	80	104	90	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Loops		Cohu	BBS	Fiber		Centracs	Online
Bristol	SOBECA Way	100	120	104	120	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Other		Cohu	BBS	Fiber		Centracs	Online
E. 17th	Anaheim/Superior	90	75	80	75	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
E. 17th	Orange	90	90	90	90	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops		Cohu		Fiber		Centracs	Online
E. 17th	Santa Ana	90	90	90	90	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops		Bosch		Fiber		Centracs	Online
E. 17th	Tustin	90	90	90	90	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
E. 17th	Westminster	90	90	90	90	Costa Mesa	M	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Fair	Fairgrounds/City Hall	Free	Free	Free	Free	Costa Mesa	P (TS1)	820	Multisonic	Loops						Centracs	Offline
Fair	Vanguard	Free	Free	Free	Free	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Fair	Loyola	Free	Free	Free	Free	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Fairview	Wilson	110	110	110	110	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video		Cohu		Fiber		Centracs	Offline
Fairview	Fair	110	110	110	110	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video		Cohu	BBS	Fiber		Centracs	Online
Fairview	Merrimac	110	110	110	110	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video				Fiber		Centracs	Online
Fairview	Arlington	110	110	110	110	Costa Mesa	P (TS1)	Cobalt	ASC/3	Video		Bosch		Fiber		Centracs	Online
Fairview	OCC/ CMHS Entrance	110	110	110	110	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video				Fiber		Centracs	Online
Fairview	Monitor	110	110	110	110	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video				Fiber		Centracs	Online
Fairview	Adams/ El Camino	140	130	140	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Video		Cohu	BBS	Fiber		Centracs	Online
Fairview	Village Way	140	130	140	130	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Video	Yes	Bosch		Fiber		Centracs	Online
Fairview	Baker	140	130	140	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video		Cohu	BBS	Fiber		Centracs	Online
Fairview	Paularino	140	130	140	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Fairview	South Coast	140	130	140	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video		Cohu	BBS	Fiber		Centracs	Online

Traffic Synchronization Inventory
City of Costa Mesa

		Cycle Length					Equipment										
Corridor	Cross Street Intersection	AM	MID	PM	WKND	Maintenance Responsibility	Cabinet	Type	Software	Detection	Bike Detection	CCTV	Power Backup	Comm	Other ITS	ATMS	Status
Fairview	Sunflower	140	130	140	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video		Cohu	BBS	Fiber		Centracs	Online
Fairview	McCormack	140	130	140	130	Costa Mesa	M	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Harbor	19th	130	130	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Online
Harbor	Bay	130	130	130	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Loops		Cohu		Fiber		Centracs	Online
Harbor	Hamilton	130	130	130	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Loops			BBS	Fiber		Centracs	Online
Harbor	Victoria	130	130	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Online
Harbor	Wilson	130	130	130	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Loops	Yes	Cohu		Fiber		Centracs	Online
Harbor	Harbor Center	130	130	130	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Video	Yes	Bosch		Fiber		Centracs	Online
Harbor	Fair Drive	130	130	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Loops		Cohu		Fiber		Centracs	Online
Harbor	Merrimac	130	130	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Video	Yes		BBS	Fiber		Centracs	Online
Harbor	Mesa Verde E/Peterson	130	130	130	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Harbor	Adams	130	130	130	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Other		Cohu		Fiber		Centracs	Online
Harbor	Baker	130	130	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Online
Harbor	Nutmeg/Target	130	130	130	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Harbor	Gisler	130	130	130	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Other	Yes	Cohu		Fiber		Centracs	Online
Harbor	South Coast	130	130	130	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops		Cohu		Fiber		Centracs	Online
Harbor	Law Court	130	130	130	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Harbor	Sunflower	130	130	130	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops		Cohu		Fiber		Centracs	Online
Harbor	Scenic	130	130	130	130	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops				Copper		Centracs	Online
Harbor	Date	130	130	130	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Loops		Cohu		Fiber		Centracs	Online
Hyland	Vans	65	Free	65	Free	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Video	Yes		BBS	Wireless		Centracs	Online
Newport NB	Mesa	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops				Wireless		Centracs	Online
Newport NB	Del Mar	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops				Copper		Centracs	Online
Newport NB	Santa Isabel	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops	Yes			Fiber		Centracs	Online
Newport NB	Wilson	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops	Yes			Fiber		Centracs	Online
Newport NB	22nd	100	80	100	80	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Online
Newport NB	Bay	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Newport SB	Mesa	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops				Fiber		Centracs	Online

Traffic Synchronization Inventory
City of Costa Mesa

		Cycle Length					Equipment										
Corridor	Cross Street Intersection	AM	MID	PM	WKND	Maintenance Responsibility	Cabinet	Type	Software	Detection	Bike Detection	CCTV	Power Backup	Comm	Other ITS	ATMS	Status
Newport SB	Fair	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops		Cohu		Fiber		Centracs	Offline
Newport SB	Vanguard	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Newport SB	Wilson	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Newport SB	Fairview	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Newport SB	Victoria	100	80	100	80	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Online
Newport SB	Bay	100	80	100	80	Costa Mesa	332	ASC/3	ASC/3	Loops				Fiber		Centracs	Online
Paularino	Jian Way	65	65	65	65	Costa Mesa	M	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Placentia	16th	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Online
Placentia	Bike Xing					Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Other	Yes						Online
Placentia	17th	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Online
Placentia	18th	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Online
Placentia	19th	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Online
Placentia	Victoria	130	110	130	110	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Copper		Centracs	Online
Placentia	Wilson	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Copper		Centracs	Online
Placentia	Estancia South	Free	Free	Free	Free	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Copper		Centracs	Online
Placentia	Estancia North	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Bosch		Copper		Centracs	Offline
Placentia	Fairview Park East Ent.	100	100	100	100	Costa Mesa	M	Cobalt	EOS	Loops		Bosch		Copper		Centracs	Online
Red Hill	Kalmus	120	120	120	Free	Costa Mesa	P (TS1)	Cobalt	EOS	Loops	Yes	Bosch		Fiber		Centracs	Online
Red Hill	Baker	120	120	120	Free	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Cohu		Fiber		Centracs	Online
Red Hill	Paularino	120	120	120	Free	Costa Mesa	P (TS1)	Cobalt	EOS	Loops	Yes			Fiber		Centracs	Offline
Sakioka	Vista Way (Enclave)	Free	Free	Free	Free	Costa Mesa	P (TS1)	820	Multisonic	Loops						Centracs	Offline
South Coast	Susan	Free	Free	Free	Free	Costa Mesa	P (TS1)	820	Multisonic	Loops				Copper		Centracs	Offline
South Coast	Metro West	Free	Free	Free	Free	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Copper		Centracs	Online
South Coast	Metro East	Free	Free	Free	Free	Costa Mesa	M	Cobalt	EOS	Loops		Bosch		Copper		Centracs	Online
South Coast	The Press	120	Free	Free	Free	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Video	Yes		BBS	Wireless		Centracs	Online
Sunflower	Susan	130	120	130	120	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops		Bosch		Fiber		Centracs	Online
Sunflower	Wimbeldon/ Greenville	130	120	130	120	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Sunflower	Fuschia/ Raitt	130	120	130	120	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online

Traffic Synchronization Inventory
City of Costa Mesa

		Cycle Length					Equipment										
Corridor	Cross Street Intersection	AM	MID	PM	WKND	Maintenance Responsibility	Cabinet	Type	Software	Detection	Bike Detection	CCTV	Power Backup	Comm	Other ITS	ATMS	Status
Sunflower	Bear	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	EOS	Loops		Bosch		Fiber		Centracs	Online
Sunflower	Plaza	130	110	130	110	Costa Mesa	M	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Sunflower	Park Center	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Sunflower	Avenue of the Arts	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops		Bosch		Fiber		Centracs	Online
Sunflower	Sakioka/ Flower	130	130	130	130	Costa Mesa	P (TS2 Type 2)	Cobalt	ASC/3	Loops				Fiber		Centracs	Online
Sunflower	Anton	130	130	130	130	Costa Mesa	P (TS2 Type 2)	ASC/3	ASC/3	Video	Yes	Cohu		Fiber		Centracs	Online
Sunflower	Hyland	130	130	130	130	Costa Mesa	P (TS1)	Cobalt	ASC/3	Loops				Wireless		Centracs	Offline
16th	Pomona-Industrial Way	Free	Free	Free	Free	Costa Mesa	P (TS1)	820	Multisonic	Loops	Yes			Fiber		Centracs	Offline
Victoria	American	130	110	130	110	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes			Fiber		Centracs	Online
Victoria	Valley/Pacific	130	110	130	110	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Video	Yes	Bosch		Fiber		Centracs	Online
Victoria	Canyon	130	110	130	110	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Bosch		Fiber		Centracs	Online
Victoria	National	120	95	130	Free	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes			Fiber		Centracs	Online
Victoria	Pomona	130	110	130	110	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Online
Victoria	Maple	130	110	130	110	Costa Mesa	M	Cobalt	EOS	Video				Fiber		Centracs	Online
W. 19th	Wallace	100	100	100	100	Costa Mesa	P (TS2 Type 2)	Cobalt	EOS	Video	Yes			Fiber		Centracs	Online
W. 19th	Pomona	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Online
W. 19th	Meyer	100	100	100	100	Costa Mesa	M	Cobalt	EOS	Video	Yes			Fiber		Centracs	Online
W. 19th	Anaheim	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Video	Yes	Bosch		Fiber		Centracs	Online
W. 19th	Park	100	100	100	100	Costa Mesa	P (TS1)	Cobalt	EOS	Loops				Fiber		Centracs	Online
Wilson	Pomona	130	110	130	110	Costa Mesa	M	ASC/3	ASC/3	Loops	Yes			Copper		Centracs	Online
Wilson	Center Way	130	130	130	Free	Costa Mesa	P (TS1)	ASC/3	ASC/3	Loops	Yes			Fiber		Centracs	Online

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 Costa Mesa

MAINTENANCE

PROJECT	FY23/24	FY24/25	FY25/26	TOTAL
Traffic Signal Maintenance	$500,000	$500,000	$500,000	$1,500,000
Subtotal Maintenance	*$500,000*	*$500,000*	*$500,000*	*$1,500,000*

CONSTRUCTION

PROJECT	FY23/24	FY24/25	FY25/26	TOTAL
Baker -Placentia-Victoria-19th Sync	$725,000			$725,000
W 19th St/Wallace Ave Traffic Signal	$330,000			$330,000
Signal Modernization for Multi-Modal Systemic Safety Improvements		$4,340,100		$4,340,100
Subtotal Construction	*$1,055,000*	*$4,340,100*	*$0*	*$5,395,100*

OPERATIONS

PROJECT	FY23/24	FY24/25	FY25/26	TOTAL
Red Hill Avenue Signal Synchronization	$5,600	$5,600		$11,200
Baker -Placentia-Victoria-19th Sync	$74,880	$74,880	$74,880	$224,640
Subtotal Operations	*$80,480*	*$80,480*	*$74,880*	*$235,840*
	$1,635,480	***$4,920,580***	***$574,880***	***$7,130,940***

3-YEAR OUTLOOK
TRAFFIC SIGNAL SYNCHRONIZATION

Funding Needs for Synchronized Operation (Unconstrained)

Reporting Jurisdiction Expenditures: City of Costa Mesa

MAINTENANCE

PROJECT	FY23/24	FY24/25	FY25/26	TOTAL
Traffic Signal Maintenance	$500,000	$550,000	$600,000	$1,650,000
Subtotal Maintenance	*$500,000*	*$550,000*	*$600,000*	*$1,650,000*

CONSTRUCTION

PROJECT	FY23/24	FY24/25	FY25/26	TOTAL
Citywide Traffic Signal Improvements			$250,000	$250,000
Baker -Placentia-Victoria-19th Sync	$725,000			$725,000
Baker – Coolidge Signal Modifications			$40,000	$40,000
Baker – Babb Signal Modifications	$240,000			$240,000
Fairview – Belfast Traffic Signal	$600,000			$600,000
Costa Mesa ITS Improvements (Communications, Central Sys, CCTV)			$250,000	$250,000
Signal Modernization for Multi-Modal Systemic Safety Improvements		$4,340,100		$4,340,100
Placentia Ave/20th St. HAWK Signal		$175,000	$175,000	$350,000
Signal System Upgrade – Paularino, Fair, Wilson, Anton			$300,000	$300,000
W 19th St/Wallace Ave Traffic Signal	$330,000			$330,000
Subtotal Construction	*$1,895,000*	*$4,515,100*	*$1,015,000*	*$7,425,100*

OPERATIONS

PROJECT	FY23/24	FY24/25	FY25/26	TOTAL
Red Hill Avenue Signal Synchronization	$5,600	$5,600		$11,200
Baker -Placentia-Victoria-19th Sync	$74,880	$74,880	$74,880	$224,640
Centracs Software Maintenance	$25,000			$25,000
Subtotal Operations	*$105,480*	*$80,480*	*$74,880*	*$260,840*
	$2,500,480	***$5,145,580***	***$1,689,880***	***$9,335,940***

LSSP IMPLEMENTATION – CANDIDATE SIGNAL SYNCHRONIZATION PROJECTS WITH ESTIMATED COSTS

Reporting Jurisdiction Expenditures: City of Costa Mesa

CORRIDOR	IMPROVEMENT SUMMARY	ESTIMATED COST
Fairview Road	Upgrade timing and replace cabinets and detection.	$1,300,000
Bear Street	Upgrade timing existing intersections and install new cabinet for pedestrian signal.	$600,000
Citywide	Upgrade traffic signal and provide ITS improvements.	$1,000,000
Baker Street	Upgrade and replace cabinets and conduit for needed intersections.	$300,000
Placentia Avenue	Install and integrate HAWK Signal.	$175,000
Paularino-Fair-Wilson-Anton	Upgrade timing and existing traffic signals.	$300,000
17th Street	Upgrade timing and replace cabinets, detection.	$400,000
W 19th Street	Install new traffic signal at Wallace Avenue and integrate into existing traffic network.	$330,000
TMC Upgrade	Centracs Software Maintenance Agreement for 2 Years (Centracs ATMS Upgrades and Support)	$50,000
	Total Estimated Cost	$4,455,000

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 2020/2021 through 2022/2023

Overall performance results.

The completed TSS projects have yielded improvements in traffic flow during AM, midday, PM and weekend peak hours and generally reduced delay. Tangible benefits in the following areas have been documented.

1. **Travel Time Savings** – These savings apply to automobile, truck and transit passengers, who benefit from reduced costs according to their "value of time".
2. **Fuel Consumption Savings** – These are primarily the reduction in fuel consumption for all types of vehicles as a function of distance and time.
3. **Vehicle Maintenance Savings** – These are savings associated with the reduction in wear and tear on vehicles correlated to the reduction in number of stops.
4. **Greenhouse Gas Emission Reduction** – These are savings in Environmental related Health Costs due to reduction in greenhouse gases (CO2 emissions).

The following corridor projects have been completed or in progress since June 2020:

- Fairview Road TSSP (Completed in 2022)
  - Upgrade timing, replace controllers, replace select cabinets, install Video Detection, install fiber optic cable, and install CCTV cameras
- Bear Street TSSP (O&M Phase)
  - Upgrade timing, replace controllers, replace select cabinets, and install fiber optic cable
- Red Hill Avenue TSSP (In Progress)
  - Upgrade timing, replace controllers, install fiber optic cable, install video detection, and install CCTV cameras
- Baker Placentia Victoria 19TH St TSSP (In Progress)
  - Upgrade timing, replace controllers, install EVP, install video detection, install CCTV cameras and implement LPI at select locations.

For the 'In Progress' projects, the performance results will be available in the next LSSP update.

The performance results of Fairview Road and Bear Street TSSP projects are attached.

City's approach and strategy for updating timing plans on a periodic basis.

City staff reviews timing on a quarterly basis based on observed multi-modal travel patterns, traffic counts, and capital improvement projects that involve traffic signal upgrades or roadway improvements. Hard copies of timing plans for all traffic signals are printed and archived once every year. Both basic timing parameters and coordination parameters are evaluated for consistency with timing standards set forth in the California Manual of Uniform Traffic Control Devices (CA-MUTCD). The City has implemented several traffic signal synchronization projects where signal controllers are upgraded to implement updated timing plans for all transportation modes. The City's overall master plan is to migrate away from antiquated equipment and concurrently review and update existing timing parameters. The City's overall plan is to implement revised timing along all major corridors for all modes of transportation through future cycles of Project P implementation.

Performance Evaluation for Corridors in the City

Performance Measure: OCTA developed Corridor Synchronization Performance Index (CSPI) to compare and prioritize corridors having different characteristics for signal synchronization. The index is obtained from data recorded during 'floating car' runs. A corridor is scored based on recorded travel parameters including average speed, number of greens made vs. number of reds stopped, and stops per mile. The sum of the scores from each of the categories gives the total of the index. A 70 is considered the baseline for good operational performance. CSPI value ranging between 50 and 69 indicates a problem generally fixable with a low-cost solutions or signal timing modification. A CSPI below 50 however, indicates a poor corridor performance thereby necessitating larger scale investigation into corridor operations. The figure below is the CSPI scoring rubric. The '2023 Corridor Operational Performance' map at the end of the plan displays the City's CSPI values.

Speed (mph)	Score	Green/ Red	Score	Stops per Mile	Score
34	36	5.0	40	0.7	33
32	33	4.5	36	0.9	31
30	30	4.0	32	1.1	29
28	27	3.5	28	1.3	27
26	24	3.0	24	1.5	25
24	21	2.5	20	1.7	23
22	18	2.0	16	1.9	21
20	15	1.5	12	2.1	19
15	8	1.0	8	2.3	17

Note: CSPI is the sum of each of the three component scores. Scores shall not exceed highest values for each performance measure.

Synchronized Corridors: As discussed earlier, traffic signal synchronization has been recently implemented along Fairview Road and Bear Street in the City.

Table 1 and Table 2 provide direction-wise CSPI for 'Before' and 'After' conditions for the Fairview Road corridor for AM, Mid-Day, and PM Weekday and Weekend Peak periods, respectively.

Table 3 and Table 4 provide the overall output statistics for the Bear Street corridor. As shown in Table 4, the 'Before' and 'After' CSPI shows an improvement in traffic operations, and project tier level is attributable to a relatively short corridor length (1.9 miles) and travel time.

Table 1: MOE and CSPI for Fairview Road 'Before' and 'After' Study Conditions (Weekday)

Period	Parameters	Average Speed (mph)		Greens per Red		Stops per Mile		Total CSPI Score		CSPI Tier	
		NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
AM	Before	21.0	17.0	1.2	1.3	1.8	2.4	48.5	38.3	V	V
	After	31.4	30.5	4.7	3.8	0.7	0.8	102.6	93.5	I	I
	Improvement	**50%**	**79%**	**292%**	**192%**	**61%**	**67%**	**112%**	**144%**		
Midday	Before	25.9	25.4	2.1	2.1	1.3	1.2	68.4	67.6	III	III
	After	29.8	28.0	4.0	2.7	0.8	1.0	93.9	78.7	I	II
	Improvement	**15%**	**10%**	**90%**	**29%**	**38%**	**17%**	**37%**	**16%**		
PM	Before	14.1	20.6	0.9	1.4	2.7	1.8	33.0	49.6	V	V
	After	26.1	27.2	3.6	2.6	1.0	1.1	82.5	75.8	I	II
	Improvement	**85%**	**32%**	**300%**	**86%**	**63%**	**39%**	**150%**	**53%**		

Table 2: MOE and CSPI for Fairview Road 'Before' and 'After' Study Conditions (Weekend)

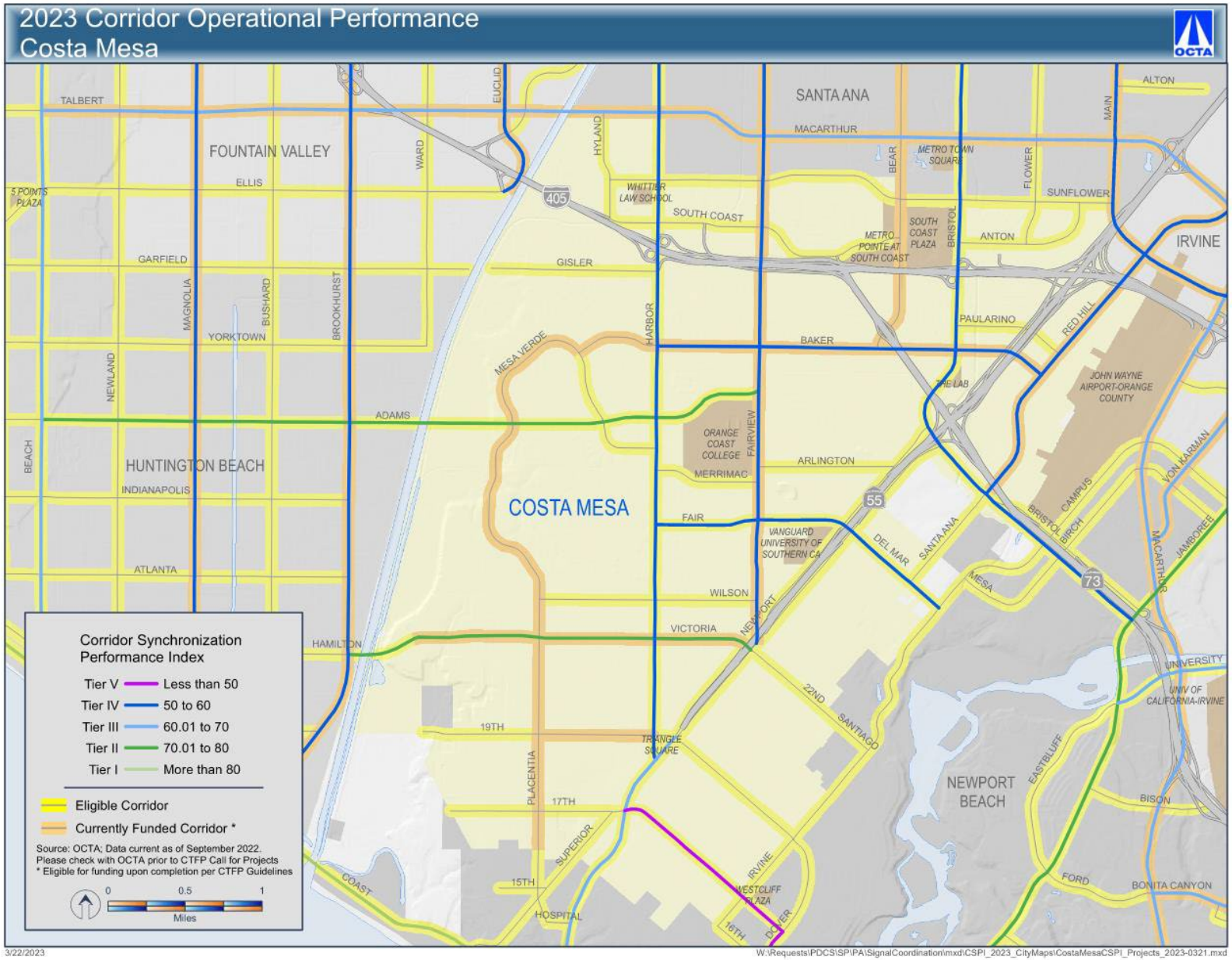
Weekend	Before	23.5	27.3	1.6	3.6	1.5	0.9	58.3	85.2	IV	I
	After	27.1	27.5	4.1	2.3	0.8	1.2	91.2	73.2	I	II
	Improvement	**15%**	**1%**	**156%**	**-36%**	**47%**	**-33%**	**56%**	**-14%**		

Table 3: MOE for Bear Street 'Before' and 'After' Study Conditions

Measures of Effectiveness \ Time Period	Bidirectional Average							
	AM		MD		PM		Weekend	
	Before	After	Before	After	Before	After	Before	After
Travel Time (min)	6.3	5.5	6.2	5.8	6.9	6.1	6.9	6.4
Percent Improvement	*13%*		*7%*		*11%*		*8%*	
Number of Stops	4.4	3.5	5.4	4.3	5.6	4.3	6.6	4.5
Percent Improvement	*20%*		*20%*		*23%*		*32%*	
Average Speed (mph)	18.7	21.2	18.5	19.8	16.7	18.8	16.7	18.2
Percent Improvement	*13%*		*7%*		*13%*		*9%*	
Delay (sec)	168.9	127.0	162.1	135.3	191.5	149.9	182.0	157.9
Percent Improvement	*25%*		*17%*		*22%*		*13%*	

Table 4: CSPI for Bear Street 'Before' and 'After' Study Conditions

Time Period	Before			After		
	NB	SB	Average	NB	SB	Average
AM	45.7	38.2	42.0	55.7	55.2	55.5
MD	38.5	37.9	38.2	43.1	46.7	44.9
PM	35.5	35.5	35.5	40.8	47.5	44.2
Weekend	35.5	35.5	35.5	41.6	41.2	41.4
CSPI	**Before Project Average Score**		**38**	**After Project Average Score**		**46**
	Level		**Tier 5**	**Level**		**Tier 5**


2023 Corridor Operational Performance
Costa Mesa
OCTA
TALBERT
FOUNTAIN VALLEY
ELLIS
5 POINTS PLAZA
GARFIELD
MAGNOLIA
BUSHARD
BROOKHURST
NEWLAND
YORKTOWN
ADAMS
BEACH
HUNTINGTON BEACH
INDIANAPOLIS
ATLANTA
HAMILTON
WARD
EUCLID
HYLAND
405
WHITTIER LAW SCHOOL
SOUTH COAST
GISLER
HARBOR
MESA VERDE
BAKER
SANTA ANA
MACARTHUR
METRO TOWN SQUARE
BEAR
FLOWER
MAIN
ALTON
SUNFLOWER
METRO POINTE AT SOUTH COAST
SOUTH COAST PLAZA
BRISTOL
ANTON
IRVINE
PAULARINO
RED HILL
JOHN WAYNE AIRPORT-ORANGE COUNTY
ORANGE COAST COLLEGE
FAIRVIEW
MERRIMAC
ARLINGTON
COSTA MESA
FAIR
VANGUARD UNIVERSITY OF SOUTHERN CA
DEL MAR
SANTA ANA
55
73
VON KARMAN
CAMPUS
BIRCH
JAMBOREE
MESA
WILSON
VICTORIA
NEWPORT
22ND
SANTIAGO
TRIANGLE SQUARE
19TH
PLACENTIA
17TH
SUPERIOR
15TH
HOSPITAL
COAST
IRVINE
WESTCLIFF PLAZA
16TH
DOVER
NEWPORT BEACH
EASTBLUFF
UNIVERSITY
UNIV OF CALIFORNIA-IRVINE
BISON
FORD
BONITA CANYON
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
Eligible Corridor
Currently Funded Corridor *
Source: OCTA; Data current as of September 2022.
Please check with OCTA prior to CTFP Call for Projects
* Eligible for funding upon completion per CTFP Guidelines
0 0.5 1
Miles
3/22/2023
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