CITY OF HUNTINGTON BEACH

LOCAL SIGNAL SYNCHRONIZATION PLAN

HUNTINGTON BEACH

May 26, 2020

CITY OF HUNTINGTON BEACH

Public Works Department

Tom Herbel, PE
Acting Director of Public Works

May 26, 2020

Mr. Archie Tan
Orange County Transportation Authority
Regional Modeling and Traffic Operations
Planning Division
P.O. Box 14184
Orange, CA 92863-1584

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

Dear Mr. Tan:

The City of Huntington Beach 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 2020/2021 to 2022/2023 including 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 made possible by Measure M2.

If you have any questions, please call me at (714) 374-1628.

Sincerely,

William F. Janusz, P.E., PTOE
Principal Civil Engineer

WFJ

Enclosures

LOCAL SIGNAL SYNCHRONIZATION PLAN CONSISTENCY REVIEW CHECKLIST

The Local Agency Name: City of Huntington Beach Plan Date: 5/26/20

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.	1,2,17,18	Yes
2. Traffic signal synchronization street routes are identified, including all corridors along the regional signal synchronization network located within the local agency.	3-4	Yes
3. Traffic signal inventory for all traffic signal synchronization street routes.	5-8	Yes
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.	9-12	Yes
5. Signal synchronization review, revision, and assessment of synchronization activities along the traffic signal synchronization street routes and traffic signals.	14-17	Yes

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

William F. Janusz 5/26/20

Signature Date

William F. Janusz, P.E. Principal Civil Engineer

Print Name, Title

CITY OF HUNTINGTON BEACH

LOCAL SIGNAL SYNCHRONIZATION PLAN

City of Huntington Beach
2000 Main Street
Huntington Beach, CA 92648

Prepared under the supervision of:
William F. Janusz, P.E., PTOE
Principal Civil Engineer
(714) 374-1628
May 26, 2020

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SECTION ONE

TRAFFIC SIGNAL SYNCHRONIZATION GOALS, POLICIES AND OBJECTIVES

Eligibility requirements included in the Renewed Measure M specify that each local jurisdiction must adopt a Local Signal Synchronization Plan (LSSP) and renew it on a three-year cycle. The initial LSSP was adopted by the City of Huntington Beach City Council on December 20, 2010, and was subsequently updated in 2014 and 2017. This document is the City of Huntington Beach's three-year update of the LSSP which is due to the Orange County Transportation Authority by June 30, 2020. This plan includes the following:

- Traffic signal synchronization street routes;
- Traffic signal inventory;
- Three-year plan showing costs, available funding and phasing for capital, operations, and maintenance of traffic signal synchronization street routes and traffic signals;
- Information on local signal synchronization policies, including how street routes and traffic signals may be synchronized with traffic signals on street routes in adjoining jurisdictions.

It is the City of Huntington Beach's goal to have in-place traffic signal coordination on all major arterial roadways and to have the communication and monitoring capabilities to remotely control the traffic signals from the City's Traffic Management Center (TMC) located at City Hall. Expanding on these primary goals is the objective to establish inter-agency communication with the traffic signal systems maintained by Caltrans and the adjacent local agencies.

Working toward these goals, the City maintains its coordinated traffic signal operations and continually monitors the operation for areas where operational improvements may be warranted. Over the past three years, the City has upgraded approximately three miles of its existing network of copper interconnect cable to fiber optic cable. In addition, approximately four and one-half miles of new communication conduit and fiber optic cable has been installed along with approximately one mile of new conduit with twisted pair copper interconnect cable, which can be upgraded to fiber optic cable in the future. The upgrade to fiber optic cable increases monitoring and communication capabilities and provides the infrastructure for the City to install closed circuit television cameras as

funding opportunities arise in order to monitor traffic from the TMC. The City is constantly looking for opportunities to further expand and upgrade its traffic signal system such as pursuing grant funds to achieve this objective. Ultimately the City strives for a completely interconnected system of traffic signals which can be remotely monitored and maintained with a reasonable level of Public Works staff supervision. While several arterials are coordinated across city boundaries, no actual inter-agency real time communication exists. Ultimately, such communication is a goal of the City of Huntington Beach.

This document also acknowledges that the City of Huntington Beach supports a multi-agency, corridor based approach that optimizes traffic signals based on existing traffic patterns. The City supports local agency responsibility for signal timing and working with neighboring agencies to develop synchronization timing.

This plan will require periodic updating on a three-year cycle throughout the duration of Renewed Measure M. The next update will be due to OCTA by June 30, 2023.

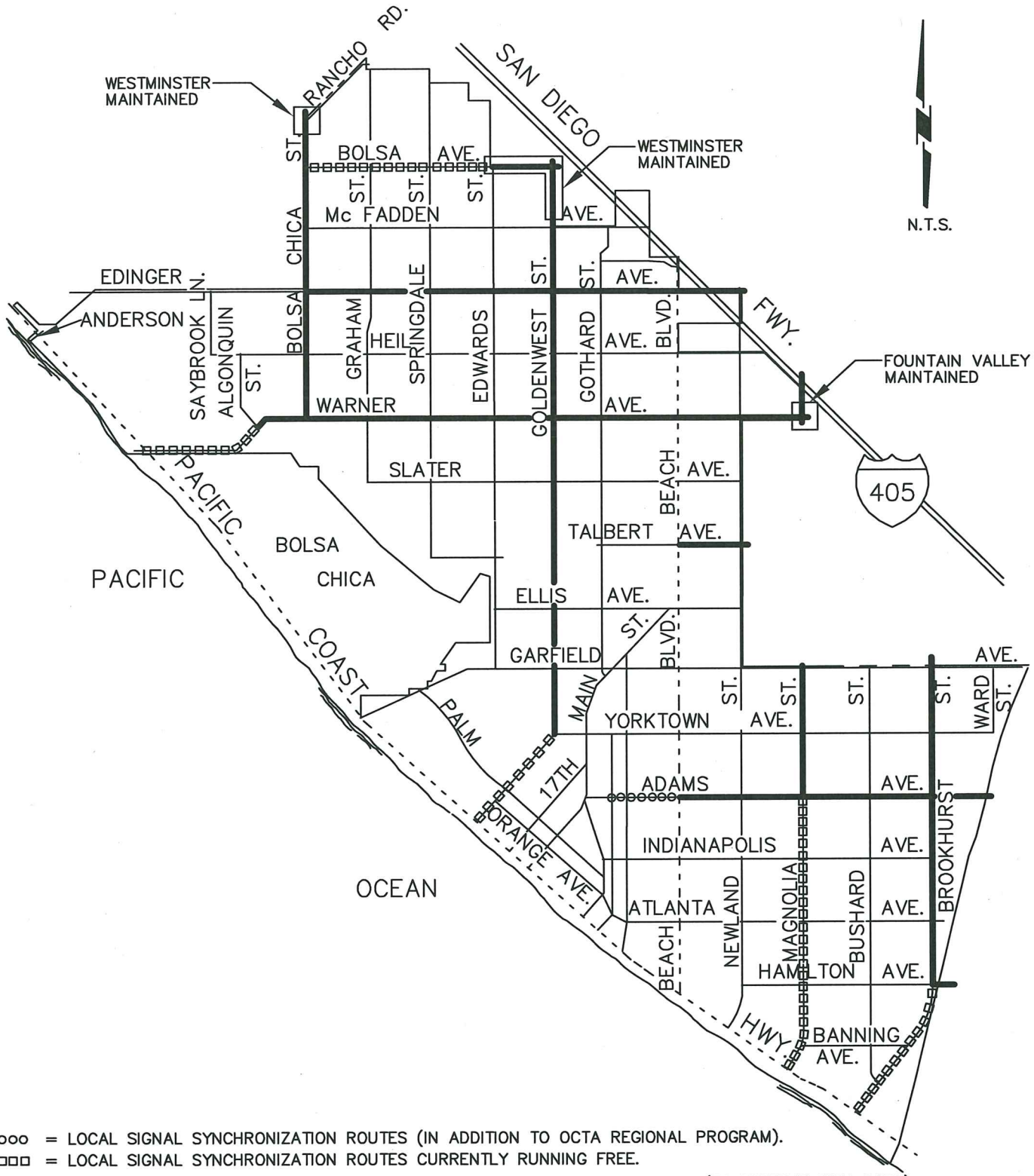
SECTION TWO

TRAFFIC SIGNAL SYNCHRONIZATION STREET ROUTES (EXISTING AND PLANNED)

Figure 1 illustrates the Traffic Signal Synchronization Street Routes within the City of Huntington Beach. These include the routes contained in OCTA's Regional Traffic Signal Synchronization Master Plan. As indicated on the Traffic Synchronization List, Table 1, and the Map of Signal Synchronization Routes, Figure 1, not all intersections on these routes currently operate under coordination.

The primary factor for not operating the traffic signals under coordination is low traffic volumes. While most of the arterial streets are under coordination continuously from approximately 6:30 a.m. until approximately 7:00 p.m., there are several segments where, due to low off-peak traffic volumes, the signals operate free in the midmorning and mid-afternoon periods. There are also some segments, primarily on the far south and west sides of the City where traffic volumes approaching the ocean are so low (less than 20,000 vehicles per day), that cross street delay does not warrant operating the signals under coordination at any time of the day.

REVISED 04/28/20



ooooo = LOCAL SIGNAL SYNCHRONIZATION ROUTES (IN ADDITION TO OCTA REGIONAL PROGRAM).
□□□□□ = LOCAL SIGNAL SYNCHRONIZATION ROUTES CURRENTLY RUNNING FREE.
—— = LOCAL SIGNAL SYNCHRONIZATION ROUTES CURRENTLY UNDER COORDINATION (CONSISTENT WITH OCTA).
– – – = LOCAL SIGNAL SYNCHRONIZATION ROUTES (CALTRANS ROUTE CONSISTENT WITH OCTA).

OCTA Coordination Vicmap.dwg

CITY OF HUNTINGTON BEACH * PUBLIC WORKS * TRAFFIC ENGINEERING

SIGNAL SYNCHRONIZATION ROUTES

FIGURE 1

SECTION THREE

TRAFFIC SIGNAL INVENTORY

Table 1 lists the corridors and intersections within the City that are included in the Local Signal Synchronization Plan and the present coordination status of each of these intersections.

Table 1
Traffic Synchronization Inventory
City of Huntington Beach

		Cycle Length					Operations			Equipment										
Corridor	Cross Street Intersection	AM	MID	PM	WKND	Maintenance Responsibility	Left	Right	Other	Cabinet	Type	Software	Detection	Bike Detection	CCTV	Power Backup	Comm	Other ITS	ATMS	Status
Adams Avenue	Lake Street	80	65	70	65	Huntington Beach	Permissive	Permissive		332	170/170E	BI Tran 200/233	Video	Yes	N/A	BBS	Wireless		Transparity	Online
	Delaware Street	80	65	70	65	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Video	Yes	N/A	N/A	Wireless		Transparity	Online
	Beach Boulevard	120	130	140	130	Caltrans	Protected	Prot/Overlap		332	2070	C8	Loops	Yes	Cohu	BBS	Copper		Transparity	State
	Coldwater Lane	120	130	140	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	N/A	Fiber		Transparity	Online
	Newland Street	130	130	140	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Magnolia Street	130	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	Cohu	BBS	Fiber		Transparity	Online
	Bushard Street	130	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Target Driveway	130	130	140	130	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Brookhurst Street	130	130	140	130	Huntington Beach	Protected	Permissive		332	2070	BI Tran 200/233	Loops	Yes	Cohu	BBS	Fiber		Transparity	Online
	Ranger Lane	130	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
Beach Boulevard	Center Avenue	140	130	140	130	Caltrans	Other	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Edinger Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Stark Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	MacDonald Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Heil Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	N/A	Copper			State
	Terry Drive	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Warner Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	Cohu	BBS	Copper			State
	Slater Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Newman Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Talbert Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	Cohu	BBS	Copper			State
	Ellis Avenue	140	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	Cohu	BBS	Copper			State
	Garfield Avenue	120	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Yorktown Avenue	120	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Utica Avenue	120	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Adams Avenue	120	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	Cohu	BBS	Copper			State
	Indianapolis Avenue	120	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Atlanta Avenue	120	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Pacific View Drive	120	130	140	130	Caltrans	Protected	Permissive		332	2070	TSCP	Loops	No	N/A	BBS	Copper			State
	Pacific Coast Highway	120	Free	120	Free	Caltrans	Protected	Permissive		332	2070	C8	Loops	Yes	N/A	BBS	Copper			State
Bolsa Avenue	Bolsa Chica Street	120	120	120	120	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Boeing Driveway	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	N/A	Copper		Transparity	Online
	Graham Street	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	N/A	Copper		Transparity	Online
	Able Lane/Dan Lane	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	N/A	Copper		Transparity	Online
	Springdale Street	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
Bolsa Chica Street	Bolsa Street	120	120	120	120	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Argosy Avenue	120	120	120	120	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	McFadden Avenue	120	120	120	120	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Robinwood Drive	140	130	140	130	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Edinger Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Heil Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Pearce Drive	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Warner Avenue	140	130	140	130	Huntington Beach	Protected	Perm/Overlap		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
Brookhurst Street	Garfield Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Yorktown Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Beachmont Plaza	140	130	140	130	Huntington Beach	PPLT	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Adams Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online

		Cycle Length					Operations			Equipment										
Corridor	Cross Street Intersection	AM	MID	PM	WKND	Maintenance Responsibility	Left	Right	Other	Cabinet	Type	Software	Detection	Bike Detection	CCTV	Power Backup	Comm	Other ITS	ATMS	Status
	Indianapolis Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Atlanta Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Hamilton Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Banning Avenue	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Bushard Street	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	2070	Omni	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Pacific Coast Highway	120	Free	120	Free	Caltrans	Protected	Permissive		332	2070	C8	Loops	No	N/A	BBS	Copper			State
Edinger Avenue	Bolsa Chica Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Graham Street	70	65	70	65	Huntington Beach	Permissive	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Springdale Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Edwards Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Goldenwest Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Golden West College	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Gothard Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Fortuna Lane	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Sher Lane	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Parkside Lane	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Beach Boulevard	140	130	140	130	Caltrans	Protected	Permissive		332	2070	C8	Loops	No	N/A	BBS	Copper			
	Newland Street	130	130	130	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
Goldenwest Street	McFadden Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Wireless		Transparity	Offline
	Rustler (Golden West College)	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Wireless		Transparity	Offline
	Edinger Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Online
	Heil Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Offline
	Norma Dr/ Lydia Dr	140	130	140	130	Huntington Beach	Permissive	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Offline
	Warner Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Slater Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Rio Vista Drive	140	130	140	130	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Library/Senior Center (Talbert)	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Ellis Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Garfield Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Video	Yes	N/A	BBS	Fiber		Transparity	Online
	Summit Drive	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Video	Yes	N/A	BBS	Fiber		Transparity	Online
	Yorktown Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Video	Yes	N/A	BBS	Fiber		Transparity	Online
	Palm Avenue	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Video	Yes	N/A	BBS	Copper		Transparity	Online
	Orange Avenue	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Video	Yes	N/A	BBS	Copper		Transparity	Online
	Pacific Coast Highway	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper			State
Magnolia Street	Garfield Avenue	140	130	140	130	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Home Depot	140	130	140	130	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Yorktown Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Adams Avenue	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Indianapolis Avenue	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Atlanta Avenue	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Edison H.S.	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	N/A	Fiber		Transparity	Online
	Hamilton Avenue	Free	Free	Free	Free	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Banning Avenue	Free	Free	Free	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Pacific Coast Highway	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	No	N/A	BBS	Copper			State
Pacific Coast Highway	Anderson Street	120	Free	140	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Admiralty Lane / 18th Street	120	Free	140	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Broadway	120	Free	140	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Corral Cay Ln/ 5th Street	120	Free	140	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Warner Avenue	130	120	140	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	Yes	N/A	BBS	Copper			State
	Bolsa Chica State Beach	Free	Free	Free	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State

		Cycle Length					Operations			Equipment										
Corridor	Cross Street Intersection	AM	MID	PM	WKND	Maintenance Responsibility	Left	Right	Other	Cabinet	Type	Software	Detection	Bike Detection	CCTV	Power Backup	Comm	Other ITS	ATMS	Status
	Seapoint Avenue	Free	Free	Free	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Goldenwest Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	Yes	N/A	BBS	Copper			State
	Seventeenth Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Ninth Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Sixth Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Main Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	First Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	Yes	N/A	BBS	Copper			State
	Huntington Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	Yes	N/A	BBS	Copper			State
	Twin Dolphin Drive	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Beach Boulevard	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Newland Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	Yes	N/A	BBS	Copper			State
	Magnolia Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
	Brookhurst Street	120	Free	120	Free	Caltrans	Protected	Permissive		332	170/170E	C8	Loops	No	N/A	BBS	Copper			State
Talbert Avenue	Beach Boulevard	140	130	140	130	Caltrans	Protected	Permissive		332	2070	C8	Loops	No	N/A	BBS	Copper			State
	Walmart Driveway	Free	120	120	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Video	Yes	N/A	N/A	Wireless		Transparity	Offline
	Newland Street	120	120	120	Free	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
Warner Avenue	Pacific Coast Highway	120	100	100	100	Caltrans	Protected	Perm/Overlap		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper			State
	Fire Signal/Warner Dock	(y)	(y)	(y)	(y)	Huntington Beach	Permissive	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Copper		Transparity	Offline
	Algonquin Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Bolsa Chica Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Greentree Lane/Plaza Lane	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Graham Street	140	130	140	130	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Springdale Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Edwards Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Goldenwest Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Home Depot	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Gothard Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Nichols Street	140	130	140	130	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Ash Street	140	130	140	130	Huntington Beach	PPLT	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Beach Boulevard	140	130	140	130	Caltrans	Protected	Permissive		332	2070	C8	Loops	No	N/A	BBS	Fiber			State
	Rotterdam Lane	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online
	Newland Street	140	130	140	130	Huntington Beach	Protected	Permissive		332	170/170E	BI Tran 200/233	Loops	Yes	N/A	BBS	Fiber		Transparity	Online

(y) indicates intersection receives an end of yellow sync pulse from adjacent intersection
Intersections designated as offline but running coordination are operating under time-based coordination.
With upgrades to the TMC underway, intersections designated as "online" may be offline while work is in progress. Time-based coordination is maintained during this period.

SECTION FOUR

TRAFFIC SIGNAL SYNCHRONIZATION SYSTEM AND THREE YEAR PLAN

The City of Huntington Beach utilizes in-house staff for the maintenance and operations of the traffic signal system. The traffic signal system maintenance and operations are only one of numerous duties that these staff members perform, so there is no exact dollar amount which is dedicated to traffic signal synchronization.

The City of Huntington Beach has recently completed traffic signal communication construction on two corridors under the Orange County Transportation Authority's Regional Traffic Signal Synchronization Program (RTSSP). These projects included fiber optic installation on Brookhurst Street along with conduit and fiber optic installation on Magnolia Street. The coordination timing was also updated along these corridors. The updated timing was installed on Brookhurst Street in early 2020. The implementation of the new timing for Magnolia Street has been delayed due to the current public health situation. It is anticipated that the Magnolia Street timing will be implemented upon stabilization of the public health situation.

As part of the Brookhurst Street project, the City was able to make improvements to the Traffic Management Center (TMC) located in City Hall. The major components were an installation of a video wall to view the CCTV cameras along with an upgrade of the operating software to McCain Transparity.

Through the federal Highway Safety Improvement Program (HSIP), the city received grant funding to install additional interconnect conduit and cable. Recently completed segments include Newland Street from Warner Avenue to Garfield Avenue, Gothard Street from McFadden Avenue to Edinger Avenue, Main Street from Yorktown Avenue to Utica Avenue and along Slater Avenue from Goldenwest Street to Gothard Street. A construction contract has been issued for the installation of interconnect conduit and cable along Goldenwest Street from Heil Avenue to Warner Avenue.

The City of Huntington Beach has four projects pending under the Orange County Transportation Authority's Regional Traffic Signal Synchronization Program (RTSSP).

<u>Edinger Avenue from Bolsa Chica Street to Newland Street-</u> The Edinger Avenue RTSSP project includes the change out of approximately four and one-half miles of twisted pair copper interconnect cable to fiber optic cable. Also included is the

change out of 12 existing type 170 controllers to 2070 ATC controllers and the installation of seven CCTV cameras.

Warner Avenue from Pacific Coast Highway to Newland Street- The Warner Avenue RTSSP project includes the construction of approximately one and one-half miles of new conduit with fiber optic cable. This will provide for fiber optic communication to every city-maintained traffic signal along Warner Avenue. Also included is the change out of 13 existing type 170 controllers to 2070 ATC controllers and the installation of seven CCTV cameras.

Talbert Avenue from Walmart Driveway to Newland Street- The segment within the City of Huntington Beach is less than one-half mile long. Improvements are limited to a change out of one type 170 controller to a 2070 ATC controller and retiming the two intersections within the City of Huntington Beach to be compatible with the signal network to the east.

Bolsa Chica Street from Rancho Road to Warner Avenue- Although not formally approved to date, this project received the recommendation of OCTA's Technical Advisory Committee at their meeting on April 8, 2020. This project includes the change out of approximately one and one-half miles of twisted pair copper interconnect cable to fiber optic cable. Also included is the change out of four existing type 170 controllers to 2070 ATC controllers and the installation of three CCTV cameras.

The Traffic Signal Synchronization Reporting Forms as provided in the guidelines are included as Tables 2 and 3. Only the projects located on the Regional Traffic Signal Synchronization Master Plan roadway network are shown. Table 4 lists candidate signal synchronization projects. These projects, while not funded at this time, have been identified in the City's Traffic Signal System Master Plan.

For purposes of the unconstrained three year outlook of Table 3, two projects from Table 4 have been identified as candidate projects; the North Fiber Backbone Completion and the Citywide Change out to ATC Controllers. Actual project selection will be based on funding opportunities and restrictions.

Table 4 also contains a line item for the upgrade of the City's existing 170 controllers to new controllers conforming to the latest Advanced Transportation Controller (ATC) standards. The City has recently changed out nine controllers along Brookhurst Street to 2070 ATC controllers with Omni ex software.

Table 2

3-YEAR OUTLOOK
TRAFFIC SIGNAL SYNCHRONIZATION

Funding Needs for Synchronized Operation (Constrained)

Reporting Jurisdiction Expenditures: City of Huntington Beach

–

Type of Traffic Signal Synchronization Expenditures in Year of Expenditure Dollars

MAINTENANCE

PROJECT	FY 20/21	FY 21/22	FY 22/23	TOTAL
Communication and Software Maintenance	15,000	15,000	35,000	65,000
Subtotal Maintenance	15,000	15,000	35,000	65,000

CONSTRUCTION

PROJECT	FY 20/21	FY 21/22	FY 22/23	TOTAL
Edinger Avenue TSSP (OCTA)	1,700,000			1,700,000
Warner Avenue TSSP (OCTA)	1,050,000			1,050,000
Talbert Avenue TSSP (OCTA)	30,000			30,000
Bolsa Chica Street TSSP (OCTA)	800,000			800,000
Subtotal Construction	3,580,000			3,580,000

OPERATIONS

PROJECT	FY 20/21	FY 21/22	FY 22/23	TOTAL
Citywide Signal Timing Maintenance	10,000	10,000	10,000	30,000
Subtotal Operations	10,000	10,000	10,000	30,000
	3,605,000	25,000	45,000	3,675,000

Table 3
3-YEAR OUTLOOK
TRAFFIC SIGNAL SYNCHRONIZATION

Funding Needs for Synchronized Operation (Unconstrained)

Reporting Jurisdiction Expenditures: City of Huntington Beach

–

Type of Traffic Signal Synchronization Expenditures in Year of Expenditure Dollars

MAINTENANCE

PROJECT	FY 20/21	FY 21/22	FY 22/23	TOTAL
Communication and Software Maintenance	80,000	80,000	80,000	240,000
Subtotal Maintenance	80,000	80,000	80,000	240,000

CONSTRUCTION

PROJECT	FY 20/21	FY 21/22	FY 22/23	TOTAL
Citywide Signal Synchronization (a)				
DESIGN		160,000	30,000	190,000
CONSTRUCTION		600,000	850,000	1,450,000
Carryover from table 2	3,580,000			3,580,000
Subtotal Construction	3,580,000	760,000	880,000	5,220,000

OPERATIONS

PROJECT	FY 20/21	FY 21/22	FY 22/23	TOTAL
Citywide Signal Timing Maintenance	90,000	90,000	90,000	270,000
Consultant Services – Signal Timing		150,000	150,000	300,000
Subtotal Operations	90,000	240,000	240,000	570,000
	3,750,000	1,080,000	1,200,000	6,030,000

(a) For illustrative purposes projects include the North Fiber Backbone Completion and Change out to ATC Controllers (as shown in table 4). Actual candidate projects are contained in Table 4 and project selection will depend upon funding opportunities and restrictions.

Table 4
LSSP IMPLEMENTATION – CANDIDATE SIGNAL SYNCHORNIZATION PROJECTS WITH ESTIMATED COSTS

Reporting Jurisdiction Expenditures: City of Huntington Beach

The following projects, while not funded at this time, have been identified in the City's Traffic Signal System Master Plan. These projects will be considered as funding opportunities are identified.

CORRIDOR	IMPROVEMENT SUMMARY	ESTIMATED COST
Magnolia Street	Install interconnect conduit and fiber optic cable from Hamilton Avenue to Pacific Coast Highway.	$200,000
Goldenwest Street	Install interconnect conduit and fiber optic cable from Bolsa Avenue to Heil Avenue. Install fiber optic cable in existing conduit from Yorktown Avenue to Pacific Coast Highway	$650,000
North Backbone Completion	Install interconnect conduit and fiber optic cable on Gothard Street from Edinger Avenue to Warner Avenue, Garfield Avenue from Florida Street to Newland Street. Change out interconnect cable along Garfield Avenue to fiber optic cable.	$600,000
South Backbone Completion	Install interconnect conduit and fiber optic cable on Main Street from Utica Avenue to Orange Avenue/Atlanta Avenue, along Orange Avenue/Atlanta Avenue to Newland Street, along Newland Street from Atlanta Avenue to Hamilton Avenue and along Hamilton Avenue from Newland Street to Brookhurst Street. Install 1.5 miles of fiber in existing conduit.	$1,200,000
Citywide	Change out of existing 170 controllers to new 2070 ATC controllers	$850,000
Total Estimated Cost		$3,500,000

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 2017/2018 through 2019/2020

Over the past three years, the City of Huntington Beach has undertaken traffic signal retiming efforts on two of the routes within the City that are included in OCTA's Regional Traffic Signal Synchronization Master Plan. These projects along Magnolia Street and Brookhurst Street were undertaken as part of OCTA's Regional Traffic Signal Synchronization Program (RTSSP). Smaller scale retiming efforts were undertaken at various locations as changing traffic patterns or opportunities for improvement were identified.

Figure 2 is the Corridor Synchronization Performance Index (CSPI) map for the City of Huntington Beach. The CSPI is a performance measure utilized by OCTA that factors the average speed, greens per red and the number of stops per mile. It is a 100 point scale with any score over 80 considered to be "very good progression" and a score under 60 being classified as 'limited progression".

At the time this Local Signal Synchronization Plan update was developed, updated coordinated traffic signal timing had been installed along Brookhurst, however no analysis had been performed comparing the before and after conditions. Along Magnolia Street, updated coordinated traffic signal timings have been developed, but not implemented. It is projected that the final traffic signal timings will be implemented and the after analysis will be performed in the spring of 2020, dependent on the limitations imposed by the public health emergency.

<u>Adams Avenue</u>

The timings on Adams Avenue were updated in 2016 as part of the Adams Avenue RTSSP project and have not been significantly revised since that time. Adams Avenue operates at a cycle length of 130 seconds in the morning, 130 seconds in the midday and 140 seconds in the evening. This provides for continuous coordination in the midday and evening from Beach Boulevard to Ranger Lane. Since Caltrans runs a 120 second cycle in the morning, there is still a break point between Coldwater Lane and Newland Street during this period, although the traffic signals from Lake Street to Coldwater Lane are coordinated with respect to Beach Boulevard.

The Brookhurst Street RTSSP project included the change out of the twisted pair copper interconnect cable along Adams Avenue from Magnolia Street to Brookhurst

Street. While primarily serving as a connection between Brookhurst Street and the Traffic Management Center at City Hall, this fiber expansion brought three additional Adams Avenue signals under fiber optic communication.

Beach Boulevard

Beach Boulevard is a state highway, operated and maintained by Caltrans. The state indicates that there are no immediate plans for retiming.

Bolsa Avenue

The City of Huntington Beach maintains only five traffic signals at the far westerly end of Bolsa Avenue. With traffic volumes ranging from 15,000 to 19,000 vehicles per day, the negative impacts to cross street traffic will outweigh any benefit of traffic signal coordination on Bolsa Avenue.

Bolsa Chica Street

The City maintains coordinated traffic signal timings on Bolsa Chica Street from Bolsa Avenue to Warner Avenue. Prior to the retiming of Edinger Avenue in 2014, the cycle length was 120 seconds throughout the day (excluding the Warner Avenue intersection, which was previously retimed with different cycle lengths). With the retiming of both Warner Avenue and Edinger Avenue to a 140 second cycle length in the morning and afternoon and 130 seconds in the midday, gaps were created in the Bolsa Chica Street coordination timing. City staff developed new timings for the intersections at Heil Avenue and at Robinwood Lane to be compatible with the Edinger Avenue and Warner Avenue intersections. With this timing effort, there remains a single timing break along Bolsa Chica Street, between McFadden Avenue and Robinwood Lane.

At their meeting on April 8, 2020, OCTA's Technical Advisory Committee approved a RTSSP project along Bolsa Chica Street encompassing all of the traffic signals within Huntington Beach from Warner Avenue to the north. The communication improvements and new traffic signal timings are anticipated to be installed during fiscal year 2020/2021.

Brookhurst Street

Revised traffic signal timing was implemented in 2020 as part of an OCTA Regional Traffic Signal Synchronization Program (RTSSP). This project included the change out of the existing twisted pair interconnect cable with fiber optic cable. The existing cycle lengths of 130 seconds in the morning and midday and 140 seconds in the afternoon were maintained in order not to impact crossing arterial coordination.

Edinger Avenue

The timings on Edinger Avenue were updated in 2014 as part of the Edinger Avenue RTSSP project. Currently the Edinger Avenue signals operate on cycle lengths of 140 seconds in the morning, 130 seconds in the midday and 140 seconds in the evening for the segment from Bolsa Chica Street to Beach Boulevard. This provides for continuous coordination with the Caltrans-operated Beach Boulevard and Edinger Avenue intersection. Edinger Avenue from Newland Street eastward into Westminster, runs at a cycle length of 130 seconds during peak periods with a free operation during the mid-morning and mid-afternoon periods.

Edinger Avenue is being retimed as part of an OCTA RTSSP project commencing in 2020. This project will include the replacement of the existing twister pair copper interconnect cable with fiber optic cable. New 2070 ATC controllers will be installed along with seven new CCTV cameras.

Goldenwest Street

The timings on Goldenwest Street were last updated in 2016 as part of the Goldenwest Street RTSSP project. The current cycle lengths are 140 seconds in the morning, 130 seconds in the midday and 140 seconds in the evening. As part of a federal Highway Safety Improvement Program (HSIP) project, new interconnect conduit with fiber optic cable is being installed along Goldenwest Street from Heil Avenue to Warner Avenue, a distance of approximately one-half mile. This will bring two additional signalized intersections into communication with the City's TMC utilizing fiber optic cable and eliminating the need for a wireless link. A construction contract has been awarded for this work and it is scheduled to be completed in the summer of 2020.

Magnolia Street

Revised traffic signal timing is scheduled to be implemented in 2020 as part of an OCTA Regional Traffic Signal Synchronization Program (RTSSP) project. This project included the change out of approximately one mile of existing twisted pair interconnect cable with fiber optic cable. In addition, approximately one and one-half mile of new conduit and fiber optic cable has been installed, eliminating the need for a wireless link to four signalized intersections. The existing cycle lengths of 130 seconds in the morning and midday and 140 seconds in the afternoon will be maintained in order not to impact crossing arterial coordination.

The new timing is planned for implementation before the summer of 2020.

Pacific Coast Highway

Pacific Coast Highway is a state highway, operated and maintained by Caltrans. The state indicates that there are no immediate plans for retiming.

Talbert Avenue

Talbert Avenue was running free until new timing was installed as part of a RTSSP project in conjunction with the Cities of Fountain Valley and Santa Ana. A cycle length of 120 seconds operates in the midday and afternoon periods. The corridor is dependent on radios for communications which have historically been maintenance concerns for the City.

Warner Avenue

Warner Avenue from Algonquin Street to Newland Street was retimed in 2015 as part of an RTSSP project. Coordinated traffic signal timings were developed at cycle lengths of 140 seconds in the morning, 130 seconds in the midday and 140 seconds in the evening. This provides for continuous coordination with the Caltrans-operated Beach Boulevard and Warner Avenue intersection.

Warner Avenue is being retimed as part of an OCTA RTSSP project commencing in 2020. This project will include the installation of approximately one and one-half mile of new conduit and fiber optic cable from Pacific Coast Highway to Algonquin Street which will complete the fiber optic communication along Warner Avenue from Pacific Coast Highway to Newland Street. Also included with the RTSSP project is the change out of the existing 170 controllers to 2070 ATC controllers and the installation of seven CCTV cameras.

General Signal Timing Practice

It is typically the City's practice to coordinate its major arterials at 140 seconds in the morning and afternoon periods and at 130 seconds in the midday to ensure consistency with Caltrans at Beach Boulevard. The exception to this practice is along Adams Avenue, Brookhurst Street and Magnolia Street which run at a cycle length of 130 seconds during the morning period. Caltrans morning cycle length south of Ellis Avenue is 120 seconds which cannot be accommodated along Adams Avenue, Magnolia Street and Brookhurst while maintaining an acceptable operation including accommodation of proper clearance intervals.

Coordination Equipment

In 2011, the city completed a Traffic Signal System Master Plan (TSSMP) which planned out a communication system for the City. Principal elements in this plan include establishing hardwire communications to almost all signalized intersections

and creating a fiber optic backbone for system reliability and redundancy. The RTSSP projects on Goldenwest Street, Warner Avenue and Adams Avenue provided for the initial fiber optic segments running from the City's traffic management center in City Hall into the field. The TSSMP identified two fiber optic backbones and additional conduit and cable links to ensure a comprehensive traffic signal system operation.

Over the past three years, the City has upgraded approximately three miles of its existing network of copper interconnect cable to fiber optic cable. In addition, approximately four and one-half miles of new communication conduit and fiber optic cable has been installed along with approximately one mile of new conduit with twisted pair copper interconnect cable, which can be upgraded to fiber optic cable in the future.

Currently many of the City's intersections utilize radios for communication which have presented maintenance concerns over the years. The City is continually investigating opportunities to install as much conduit as possible in order to replace these radio links. Over the past three years, nine radios have been removed, having been replaced by fiber optic cable.

A component of the recently completed Traffic Signal System Master Plan is to identify opportunities to communicate with the traffic signal systems in the adjacent cities and with Caltrans. Although no formal projects have been programmed, intertie opportunities have been identified with Westminster at the intersection of Bolsa Chica Street and Rancho Road, Fountain Valley at the intersection of Warner Avenue and Magnolia Street and with Costa Mesa at the intersection of Adams Avenue and Shantar Drive. Possible intertie locations with Caltrans will be discussed as part of the Interstate 405 widening efforts.

Currently approved OCTA RTSSP projects will install approximately one and one-half mile of additional conduit and approximately six miles of fiber optic cable, toward a goal of interconnecting virtually every City traffic signal and providing the gateway for interagency communication.

Table 5

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
Adams Avenue	Yes	(c)	No Significant Timing Modifications							
Beach Boulevard (CALTRANS)	(b)	(b)	Studies not available.							
Bolsa Avenue	Yes	(c)	No Significant Timing Modifications							
Bolsa Chica Street	Yes	(c)	No Significant Timing Modifications							
Brookhurst Street	RTSSP	February 2020	Timing Updated 2020 – Studies not complete							
Edinger Avenue	Yes (d)	(c)(d)	No Significant Timing Modifications							
Goldenwest Street	Yes	(c)	No Significant Timing Modifications							
Magnolia Street	RTSSP	(a)	Revised Timing Developed – Implementation planned by summer 2020							
Pacific Coast Hwy. (CALTRANS)	(b)	(b)	Studies not available.							
Talbert Avenue	Yes (d)	(c)(d)	No Significant Timing Modifications							
Warner Avenue	Yes (d)	(c)(d)	No Significant Timing Modifications							

* Optional

(a)- Current TSSP corridor. New timing planned 2020

(b)- Information not available

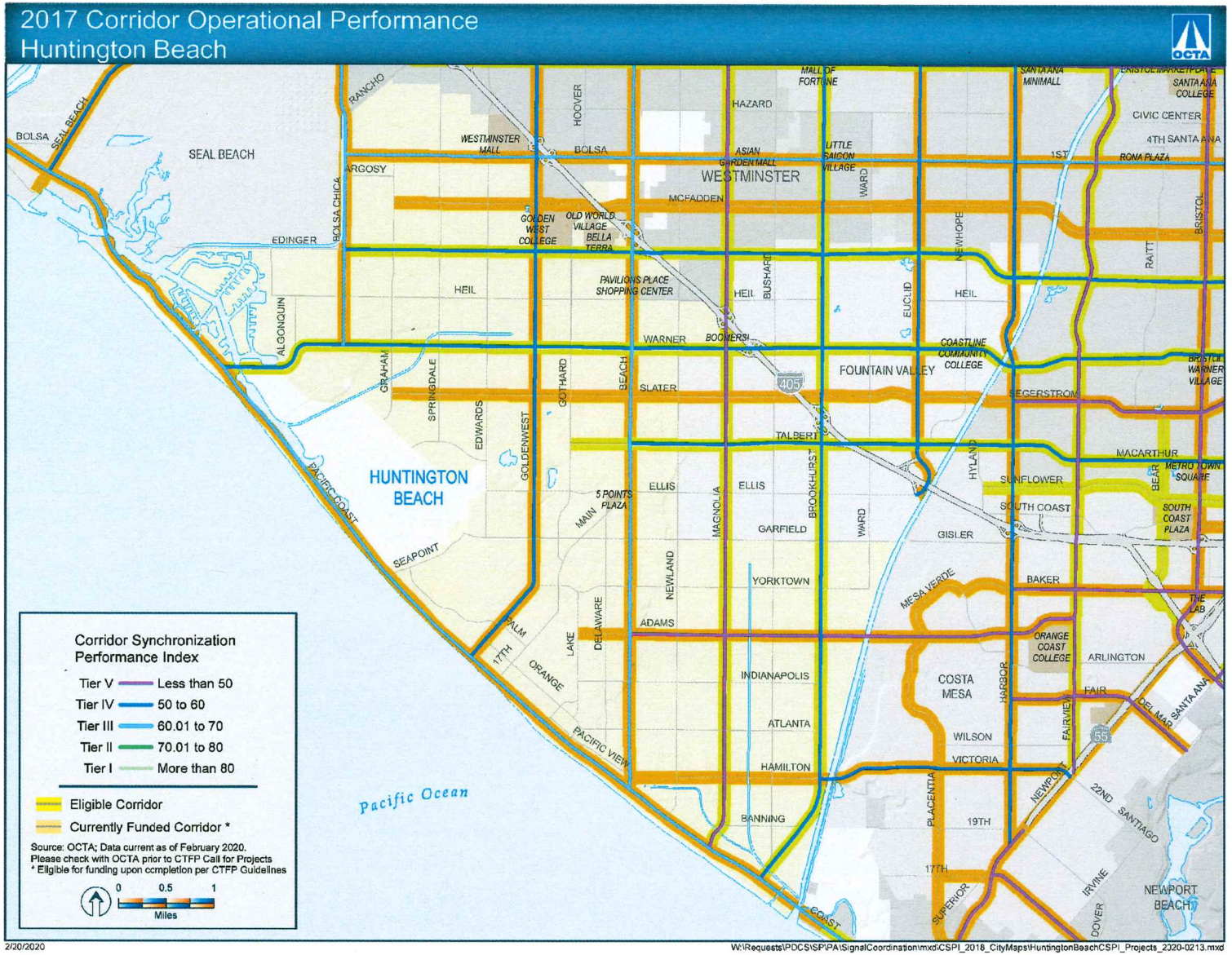
(c)- No significant modifications (Cycles and offsets unchanged)

(d)- Current TSSP corridor – Commencing 2020

Table 6
SIGNAL TIMING REVISIONS

PROJECT CORRIDOR	CROSS STREET	CYCLE LENGTH (sec)(a)
Brookhurst Street	Garfield Avenue	130/130/140
	Hamilton Avenue	

(a) Indicates AM/MIDDAY/PM



CORRIDOR SYNCHRONIZATION PERFORMANCE INDEX (CSPI) MAP

FIGURE 2