

CITY OF HUNTINGTON BEACH

LOCAL SIGNAL SYNCHRONIZATION PLAN



May 22, 2023



CITY OF HUNTINGTON BEACH

Public Works Department

Chau Vu
Acting Director of Public Works

May 22, 2023

Ms. Alicia Yang
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 Ms. Yang:

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 2023/2024 to 2025/2026 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 contact me at (714) 374-1628.

Sincerely,

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

Enclosures

CITY OF HUNTINGTON BEACH

LOCAL SIGNAL SYNCHRONIZATION PLAN



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

Prepared by:
William F. Janusz, P.E., PTOE
Principal Civil Engineer
(714) 374-1628
May 22, 2023

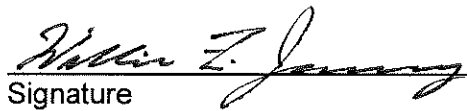
LOCAL SIGNAL SYNCHRONIZATION PLAN CONSISTENCY REVIEW CHECKLIST

The Local Agency Name: City of Huntington Beach Plan Date: 5/22/23

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.

| 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 which may include 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.


Signature

5/22/23
Date

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

Printed Name, Title

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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, 2017 and 2020. 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, 2023. 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 installed over three miles of new conduit with fiber optic cable. In addition, the city upgraded approximately one mile of its existing network of copper interconnect cable to fiber optic cable with another 3 and one-half miles currently scheduled for construction this year. 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.

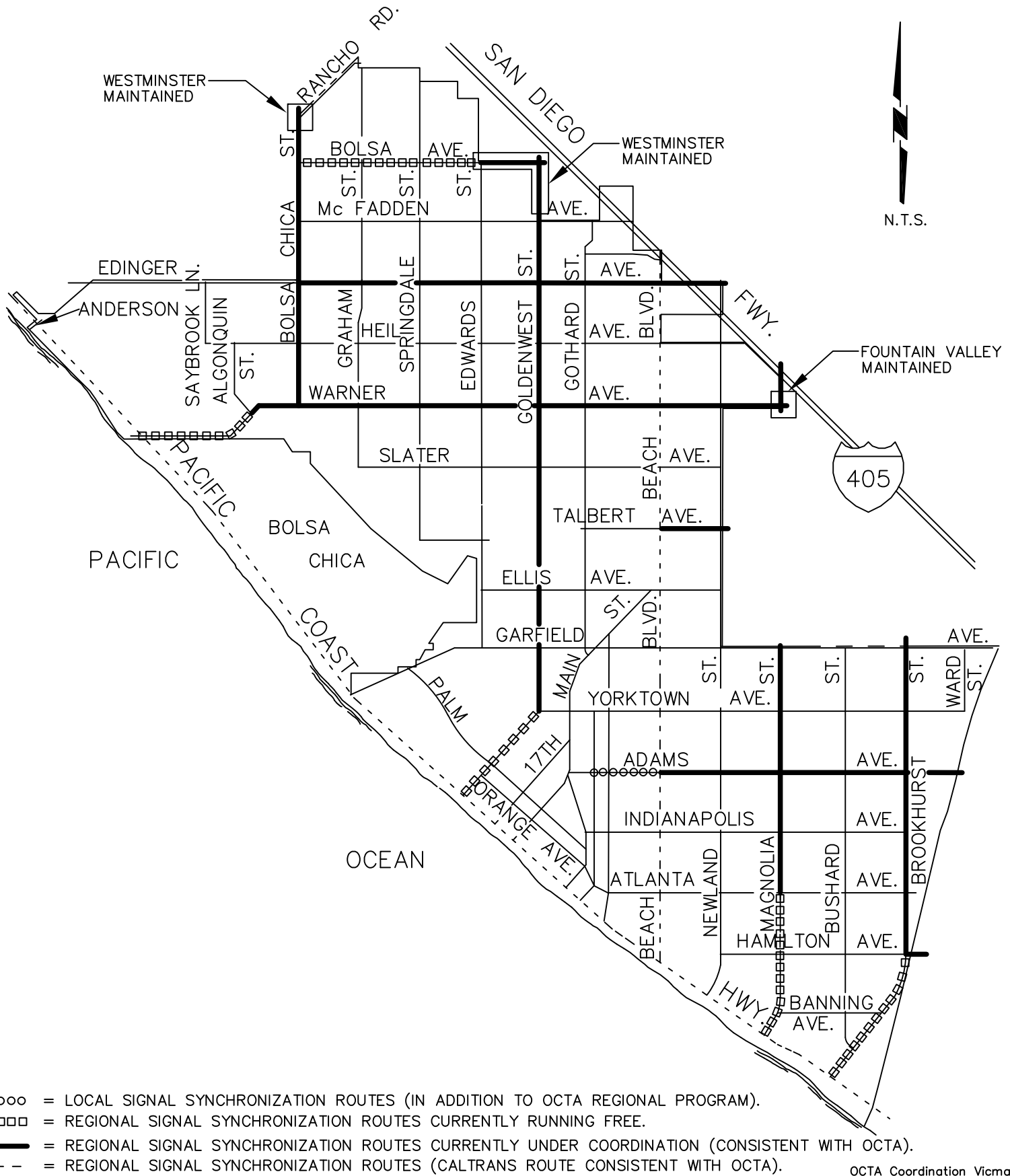
This plan will require periodic updating on a three-year cycle throughout the duration of Renewed Measure M. The next update will be due to OCTA by June 30, 2026.

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.



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

| Corridor | Cross Street Intersection | Cycle Length | | | | Operations | | | | Equipment | | | | | | | | | | |
|--------------------|---------------------------|--------------|------|------|------|----------------------------|------------|--------------|-------|-----------|----------|-----------------|-----------|----------------|-------|--------------|----------|-----------|-------------|--------|
| | | 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 | Fiber | | 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 | Protected | 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 | | Other | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | | State |
| | Edinger Avenue | 140 | 130 | 140 | 130 | Caltrans | Protected | Permissive | | Other | 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 | N/A | 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 |
| Bolsa Avenue | 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 |
| | Ufca 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 | 140 | Free | 140 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | C8 | Loops | Yes | N/A | BBS | Copper | | | State |
| | 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 |
| Bolsa Chica Street | Amazon Driveway | Free | Free | Free | Free | Huntington Beach | Permissive | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparity | Online |
| | Graham Street | Free | Free | Free | Free | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | 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 | BBS | 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 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 | Protected | 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 |
| Warner Avenue | 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 | Permissive | | 332 | 2070 | Omni | Loops | Yes | Bosch | BBS | Fiber | | Transparity | Online |

| Corridor | Cross Street Intersection | Cycle Length | | | | Operations | | | | Equipment | | | | | | | | | | |
|-------------------|---------------------------------|--------------|------|------|------|----------------------------|------------|------------|-------|-----------|----------|-----------------|-----------|----------------|------|--------------|----------|-----------|--------------|---------|
| | | AM | MID | PM | WKND | Maintenance Responsibility | Left | Right | Other | Cabinet | Type | Software | Detection | Bike Detection | CCTV | Power Backup | Comm | Other ITS | ATMS | Status |
| | | | | | | | | | | | | | | | | | | | | |
| Brookhurst Street | Garfield Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Yorcktown Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Beachmont Plaza | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Adams Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | Cohu | BBS | Fiber | | Transparency | Online |
| | Indianapolis Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Atlanta Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Hamilton Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | Cohu | BBS | Fiber | | Transparency | Online |
| | Banning Avenue | Free | Free | Free | Free | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Bushard Street | Free | Free | Free | Free | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Pacific Coast Highway | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | C8 | Loops | No | N/A | BBS | Copper | | Transparency | 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 | | Transparency | Online |
| | Graham Street | 70 | 65 | 70 | 65 | Huntington Beach | Permissive | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Springdale Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Edwards Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Goldenwest Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | 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 | | Transparency | Online |
| | Gothard Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Fortuna Lane | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Sher Lane | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Parkside Lane | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| Goldenwest Street | Beach Boulevard | 140 | 130 | 140 | 130 | Caltrans | Protected | Permissive | | 332 | 2070 | C8 | Loops | No | N/A | BBS | Copper | | Transparency | Online |
| | Newland Street | 130 | 130 | 130 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| | McFadden Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Wireless | | Transparency | 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 | | Transparency | Offline |
| | Edinger Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Heil Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | 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 | | Transparency | Offline |
| | Warner Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Slater Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | 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 | | Transparency | Online |
| Magnolia Street | 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 | | Transparency | Online |
| | Ellis Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Garfield Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Video | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Summit Drive | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Video | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Yorcktown Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Video | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Palm Avenue | Free | Free | Free | Free | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Video | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Orange Avenue | Free | Free | Free | Free | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Video | Yes | N/A | BBS | Copper | | Transparency | Online |
| | Pacific Coast Highway | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Copper | | Transparency | State |
| | Garfield Avenue | 140 | 130 | 140 | 130 | Huntington Beach | PPLT | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Home Depot | 140 | 130 | 140 | 130 | Huntington Beach | PPLT | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| Edison H.S. | Yorcktown Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Adams Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | Cohu | BBS | Fiber | | Transparency | Online |
| | Indianapolis Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Atlanta Avenue | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | | Transparency | Online |
| | Edison H.S. | Free | Free | Free | Free | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | N/A | Fiber | | Transparency | Online |
| | Hamilton Avenue | Free | Free | Free | Free | Huntington Beach | PPLT | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | Cohu | BBS | Fiber | | Transparency | Online |

| Corridor | Cross Street Intersection | Cycle Length | | | | Operations | | | | Equipment | | | | | | | | | | |
|------------------------------|------------------------------|--------------|------|------|------|------------------------------|------------|--------------|-------|-----------|----------|-----------------|-----------|----------------|-------|--------------|--------|--------------|---------|--------|
| | | AM | MID | PM | WKND | Maintenance Responsibility | Left | Right | Other | Cabinet | Type | Software | Detection | Bike Detection | CCTV | Power Backup | Comm | Other ITS | ATMS | Status |
| | | Free | Free | Free | Free | Huntington Beach Caltrans | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | Transparency | Online | |
| | Banning Avenue | Free | Free | Free | Free | Huntington Beach | Protected | Permissive | | 332 | 170/170E | BI Tran 200/233 | Loops | Yes | N/A | BBS | Fiber | Transparency | 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 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Admiralty Lane / 18th Street | 120 | Free | 140 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Broadway | 120 | Free | 140 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Corral Cay Ln/ 5th Street | 120 | Free | 140 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Warner Avenue | 130 | 120 | 140 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | Yes | N/A | BBS | Copper | | State | |
| | Bolsa Chica State Beach | Free | Free | Free | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Seapoint Avenue | Free | Free | Free | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Goldenwest Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | Yes | N/A | BBS | Copper | | State | |
| | Seventeenth Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Ninth Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Sixth Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Main Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | First Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | Yes | N/A | BBS | Copper | | State | |
| | Huntington Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | Yes | N/A | BBS | Copper | | State | |
| | Twin Dolphin Drive | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Beach Boulevard | 140 | Free | 140 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Newland Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | Yes | N/A | BBS | Copper | | State | |
| | Magnolia Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | Loops | No | N/A | BBS | Copper | | State | |
| | Brookhurst Street | 120 | Free | 120 | Free | Caltrans | Protected | Permissive | | 332 | 2070 | TSCP | 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 | 2070 | Omni | Video | Yes | Bosch | N/A | Fiber | Transparency | Offline | |
| | Newland Street | 120 | 120 | 120 | Free | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | Bosch | BBS | Fiber | Transparency | 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 | 2070 | Omni | Loops | Yes | Bosch | BBS | Fiber | Transparency | Offline | |
| | Algonquin Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | Bosch | BBS | Fiber | Transparency | Online | |
| | Bolsa Chica Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | Bosch | BBS | Fiber | Transparency | Online | |
| | Greentree Lane/ Plaza Lane | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | Transparency | Online | |
| | Graham Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | Transparency | Online | |
| | Springdale Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | Bosch | BBS | Fiber | Transparency | Online | |
| | Edwards Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | Transparency | Online | |
| | Goldenwest Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | Bosch | BBS | Fiber | Transparency | Online | |
| | Home Depot | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | Transparency | Online | |
| | Gothard Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | Bosch | BBS | Fiber | Transparency | Online | |
| | Nichols Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | Transparency | Online | |
| | Ash Street | 140 | 130 | 140 | 130 | Huntington Beach | PPLT | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | Transparency | Online | |
| | Beach Boulevard | 140 | 130 | 140 | 130 | Caltrans | Protected | Permissive | | 332 | 2070 | C8 | Loops | No | N/A | BBS | Fiber | Transparency | Online | |
| | Rotterdam Lane | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | Transparency | Online | |
| | Newland Street | 140 | 130 | 140 | 130 | Huntington Beach | Protected | Permissive | | 332 | 2070 | Omni | Loops | Yes | N/A | BBS | Fiber | Transparency | 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 that is dedicated to traffic signal synchronization.

The City of Huntington Beach has several traffic signal communication construction projects that have either been completed within the past three years or are currently underway.

Four current projects are under the Orange County Transportation Authority's Regional Traffic Signal Synchronization Program (RTSSP). These projects include conduit and fiber optic installation along segments of Warner Avenue, Edinger Avenue and Talbert Avenue. The fiber optic cable installation is complete along Talbert Avenue and Warner Avenue and is scheduled to begin this summer on Edinger Avenue. A fourth RTSSP project along Bolsa Avenue will maintain the existing twisted copper interconnect cable for communication and will include controller and detection upgrades. All four of these RTSSP projects will include the installation of updated coordinated traffic signal timing. The projects along Edinger Avenue, Warner Avenue and Talbert Avenue will include the installation of new closed circuit television cameras.

City funded projects completed within the past three years include installation of fiber optic cable and conduit along Lake Street and the replacement of existing twisted copper interconnect cable along Garfield Avenue and Main Street as part of the buildout of the City's fiber optic backbone.

The City of Huntington Beach has one project pending under the Orange County Transportation Authority's Regional Traffic Signal Synchronization Program (RTSSP). This project, in conjunction with the Cities of Garden Grove and Westminster, will provide improvements along Bolsa Chica Street within the City of Huntington Beach from Rancho Road to Warner Avenue. 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 Goldenwest Street Fiber Optic installation. Actual project selection will be based on funding opportunities and restrictions.

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 23/24 | FY 24/25 | FY 25/26 | TOTAL |
|--|----------|----------|----------|--------|
| Communication and Software Maintenance | 20,000 | 20,000 | 20,000 | 60,000 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Subtotal Maintenance | 20,000 | 20,000 | 20,000 | 60,000 |

CONSTRUCTION

| PROJECT | FY 23/24 | FY 24/25 | FY 25/26 | TOTAL |
|--------------------------------|----------|----------|----------|---------|
| Bolsa Chica Street TSSP (OCTA) | 760,000 | | | 760,000 |
| | | | | |
| | | | | |
| | | | | |
| Subtotal Construction | 760,000 | | | 760,000 |

OPERATIONS

| PROJECT | FY 23/24 | FY 24/25 | FY 25/26 | TOTAL |
|------------------------------------|----------|----------|----------|---------|
| Citywide Signal Timing Maintenance | 10,000 | 10,000 | 10,000 | 30,000 |
| | | | | |
| Subtotal Operations | 10,000 | 10,000 | 10,000 | 30,000 |
| | 790,000 | 30,000 | 30,000 | 850,000 |

**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 23/24 | FY 24/25 | FY 25/26 | 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 23/24 | FY 24/25 | FY 25/26 | TOTAL |
|-------------------------------------|----------|----------|----------|-----------|
| Citywide Signal Synchronization (a) | | | | |
| DESIGN | | 25,000 | 50,000 | 75,000 |
| CONSTRUCTION | | 800,000 | 900,000 | 1,700,000 |
| | | | | |
| Carryover from table 2 | 760,000 | | | 760,000 |
| Subtotal Construction | 760,000 | 825,000 | 950,000 | 2,535,000 |

OPERATIONS

| PROJECT | FY 22/24 | FY 24/25 | FY 25/26 | 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 |
| | 930,000 | 1,145,000 | 1,270,000 | 3,345,000 |

- (a) For illustrative purposes, projects include the North Backbone Fiber Completion project and the Goldenwest Street Fiber Optic Installation (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. | \$650,000 |
| 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 | \$950,000 |
| North Backbone Completion | Install interconnect conduit and fiber optic cable on Gothard Street from Edinger Avenue to Warner Avenue. | \$825,000 |
| 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. | \$3,000,000 |
| Citywide | Change out of existing 170 controllers to new 2070 ATC controllers | \$775,000 |
| | | |
| | | |
| Total Estimated Cost | | \$6,200,000 |
| | | |
| | | |

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

Over the past three years, the City of Huntington Beach has undertaken traffic signal retiming efforts on five of the routes within the City that are included in OCTA's Regional Traffic Signal Synchronization Master Plan. These projects along Magnolia Street, Edinger Avenue, Warner Avenue, Talbert Avenue and Bolsa Avenue 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".

Adams Avenue

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.

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.

Currently, an RTSSP project is underway along Bolsa Avenue. This project will develop traffic signal timing recommendations along Bolsa Avenue. At that time, a determination will be made regarding whether to implement the recommended coordination timing and significantly impact cross street delay or to leave the traffic signals running free as they currently operate.

Bolsa Chica Street

The City maintains coordinated traffic signal timings on Bolsa Chica Street from Bolsa Avenue to Warner Avenue. From Robinwood Drive to Warner Avenue there is a 140 second cycle length in the morning and afternoon and 130 seconds in the midday period. From McFadden Avenue to the north, Bolsa Chica Street has a 120 second cycle length throughout the day.

There is currently an OCTA Regional Traffic Signal Synchronization Program (RTSSP) project commencing along Bolsa Chica Street. This project is envisioned to bring the entire segment of Bolsa Chica Street within the City of Huntington Beach to operate under a consistent cycle length.

Brookhurst Street

The current traffic signal timing was implemented in 2020 as part of an OCTA Regional Traffic Signal Synchronization Program (RTSSP). The existing cycle lengths are 130 seconds in the morning and midday and 140 seconds in the afternoon.

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 a current OCTA RTSSP project. It is anticipated that the new optimized timings will be installed by summer 2023 and will retain the existing cycle lengths. This project includes the replacement of the

existing twisted 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 was installed along Goldenwest Street from Heil Avenue to Warner Avenue, a distance of approximately one-half mile. This brought two additional signalized intersections into communication with the City's TMC utilizing fiber optic cable and eliminating the need for a wireless link.

Magnolia Street

Revised traffic signal timing was 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 was installed, eliminating the need for a wireless link to four signalized intersections. The cycle lengths are 130 seconds in the morning and midday and 140 seconds in the afternoon, maintaining crossing arterial coordination with Adams Avenue.

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

Revised traffic signal timing was implemented in 2023 as part of an OCTA Regional Traffic Signal Synchronization Program (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 the RTSSP project, new fiber optic cable and conduit was installed along with CCTV cameras.

Warner Avenue

Warner Avenue from Algonquin Street to Newland Street was retimed in 2023 as part of an RTSSP project. Coordinated traffic signal timings operate at a 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.

Included with the 2023 RTSSP project is the change out of the existing 170 controllers to 2070 ATC controllers and the installation of seven CCTV cameras.

As the new timing has been recently implemented, the after-analysis is not complete and it can be anticipated that there may be fine tuning adjustments.

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, Edinger Avenue, Warner Avenue, Magnolia Street, Brookhurst Street, Adams Avenue and Talbert Avenue placed fiber optic cable and conduit along most of the City's major arterials, connecting with the City's traffic management center located in City Hall. 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.

A component of the 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.

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) | | | | | | CSPI Score* | |
|-------------------------------|--------------------------------|-------------------------------|---|-------|----------------|-------|----------------|-------|-------------|-------|
| | | | Speed Travel | | Stops per mile | | Greens per red | | Before | After |
| | | | Before | After | Before | After | Before | After | Before | After |
| Adams Avenue | No | (c) | No Significant Timing Modifications | | | | | | | |
| Beach Boulevard (CALTRANS) | (b) | (c) | Studies not available. | | | | | | | |
| Bolsa Avenue | Yes | (a) | Current TSSP Corridor – Timing Study Underway | | | | | | | |
| Bolsa Chica Street | No | (d) | Current TSSP Corridor – Project Commences Fall 2023 | | | | | | | |
| Brookhurst Street | Yes | Winter 2020 | No Significant Timing Modifications | | | | | | | |
| Eclinger Avenue | Yes | (a) | Current TSSP Corridor – Timing Study Underway | | | | | | | |
| Goldenwest Street | No | (c) | No Significant Timing Modifications | | | | | | | |
| Magnolia Street | Yes | Summer 2020 | (b) | 26.4 | (b) | 1.4 | (b) | 1.9 | (b) | 66.0 |
| Pacific Coast Hwy. (CALTRANS) | (b) | (c) | Studies not available. | | | | | | | |
| Talbert Avenue | Yes | (a) | Current TSSP Corridor – Timing Study Underway | | | | | | | |
| Warner Avenue | Yes | (a) | Current TSSP Corridor – Timing Study Underway | | | | | | | |

* Optional

(a)- Current TSSP corridor. New timing planned 2023

(b)- Information not available

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

(d)- Current TSSP corridor

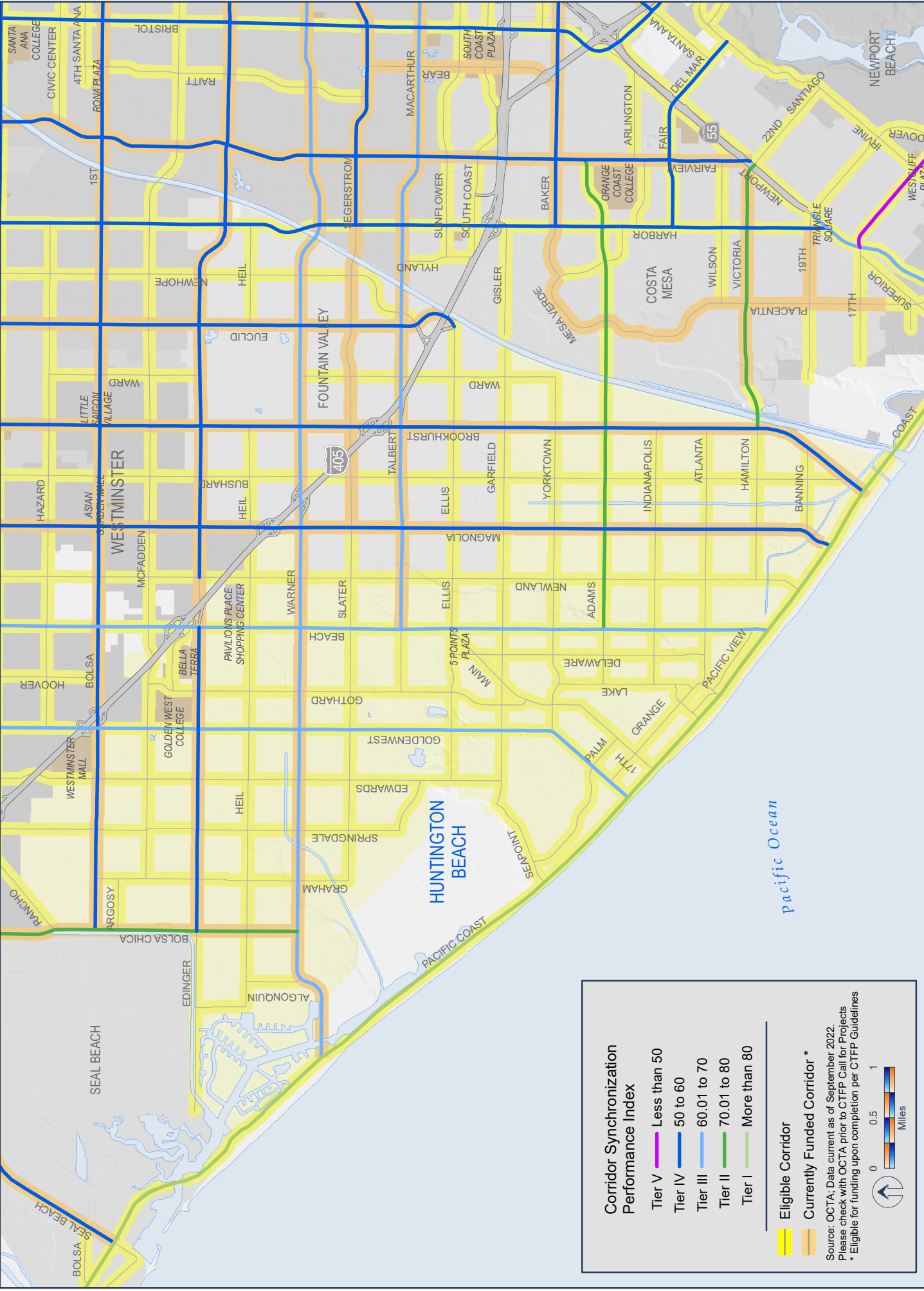
Table 6
SIGNAL TIMING REVISIONS

| PROJECT CORRIDOR | CROSS STREET | CYCLE LENGTH (sec)(a) |
|-------------------------|---------------------|------------------------------|
| Magnolia Street | Garfield Avenue | 130/130/140 |
| | Hamilton Avenue | |
| Warner Avenue | Algonquin Street | 140/130/140 (b) |
| | Newland Street | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

(a) Indicates AM/MIDDAY/PM

(b) Fine tuning / modifications still in progress

2023 Corridor Operational Performance Huntington Beach



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