March
2016

Corridor Study for the
Pacific Coast Highway
Between Avenida Pico and Los Angeles County Line

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 S. Main Street
Orange County, CA 92868

CALTRANS DISTRICT 12
3347 Michelson Drive, Suite 100
Irvine, CA 92612

in association with:

Alta Planning + Design, Inc.
DKS Associates
Land CM Corp

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Executive Summary

Pacific Coast Highway (PCH) is the regional transportation corridor that connects the six coastal cities of Orange County – Seal Beach, Huntington Beach, Newport Beach, Laguna Beach, Dana Point and San Clemente. Corridor residents and visitors use multiple modes to travel to and from their activities (in and around the corridor) – vehicles, transit, walking, and bicycling. Non-motorized travel modes (walking and bicycling) serve greater numbers of travelers in this corridor than in most inland areas of the County, with weekday peak hour percentages as high as 20-30% in some areas.

Within this 37-mile corridor diverse community character and travel conditions result in numerous improvement needs that are specific to each local area; in addition to needs that are common throughout the corridor. This shared need to identify potential improvement options for the corridor led local, regional, and state agencies (with jurisdiction) to conduct this **Corridor Study for Pacific Coast Highway between Avenida Pico and the Los Angeles County Line (Corridor Study)**; which is a cooperative effort to address both long-term corridor-wide and specific sub-area improvement needs for PCH.

For purposes of identifying improvement needs and evaluating potential options that were specific to individual communities, the corridor was divided into seven subareas, which are identified below and are illustrated in **Figure ES.1**:

- Subarea 1: Seal Beach (Los Angeles County line to Huntington Beach City limit)
- Subarea 2: Huntington Beach (Seal Beach City limit to Santa Ana River)
- Subarea 3: Newport Beach (Santa Ana River to Pelican Point Drive)
- Subarea 4: Newport Coast (Pelican Point Drive to Laguna Beach City limit)
- Subarea 5: Laguna Beach (northern Laguna Beach City limit to Dana Point City limit)
- Subarea 6: Dana Point (Laguna Beach City limit to Doheny Park Road)
- Subarea 7: South Dana Point / San Clemente (Doheny Park Road to Avenida Pico)

The Corridor Study followed a seven step process consisting of the following:

1. Gathering data, reviewing related studies, and analyzing existing and future conditions in the corridor (identifying problems);
2. Developing the Statement of Purpose and Need (P & N) (identifying improvement objectives);
3. Identifying a broad range of potential improvement options to address identified needs (developing alternatives);
4. Screening initial improvement options and packaging them into five alternatives for evaluation (initial screening);
5. Evaluating alternatives in terms of benefits, costs, and feasibility (refinement and further detailed screening); and
6. Identifying improvement strategies that have potential to help address needs identified in the P&N statement (recommending alternatives).
7. Identifying implementation considerations and potential funding sources (outlining next steps).

This study was undertaken in coordination with the PCH Corridor Study Stakeholders' Working Group (SWG), which included representatives from each of the six corridor cities; the California Department of Transportation (Caltrans); the Southern California Association of Governments (SCAG); the County of Orange; the City of Long Beach; the Orange County Transportation Authority (OCTA); and its consultant team. The SWG met monthly to provide feedback on technical analyses and working documents. In addition, SWG members met individually with OCTA and the consultant team at the beginning of the Corridor Study to provide input on specific subarea needs and objectives; and also toward the end of the Corridor Study to review improvement options and recommendations identified for each of their respective subareas.

Figure ES.1: Study Area and Subareas along PCH

Source: HDR

1. Seal Beach (Los Angeles County line to Huntington Beach City limit)
2. Subarea 2: Huntington Beach (Seal Beach City limit to Santa Ana River)
3. Subarea 3: Newport Beach (Santa Ana River to Pelican Point Drive)
4. Subarea 4: Newport Coast (Pelican Point Drive to Laguna Beach City limit)
5. Subarea 5: Laguna Beach (northern Laguna Beach City limit to Dana Point City limit)
6. Subarea 6: Dana Point (Laguna Beach City limit to Doheny Park Road)
7. Subarea 7: South Dana Point / San Clemente (Doheny Park Road to Avenida Pico)

Existing and Future Conditions Analysis

Existing Conditions

The analysis of existing conditions included travel lanes and traffic volumes, bicycle facilities (including bike paths, bike lanes, and bike routes), transit routes and schedules, location of on-street parking, accident history, and existing peak hour traffic conditions throughout the corridor during typical weekday peak hours and on a summer season peak Saturday.

2040 Baseline Conditions

Forecast conditions in the Year 2040 were analyzed to identify future improvement needs and to establish a point of reference for comparing the effectiveness of potential improvement options.

Development of Purpose and Need Statement

The Purpose and Need statement was the guiding document for the Corridor Study. It provided the basis on which potential improvements were identified and evaluated. As a first step in developing the P&N statement, corridor-wide and subarea issues, opportunities and constraints were identified based on existing and future conditions analysis and input from agency representatives.

The analysis of issues, opportunities, and constraints led to development of a two-tiered P&N Statement, which identified needs (problems) and purposes (objectives) for future improvements on a corridor-wide and subarea basis.

Following is the P&N Statement as developed and approved by the SWG, and heard by the OCTA Board of Directors in January, 2015.

Corridor-wide

Corridor-wide Needs (Problems)

1. Various factors contribute to conflict between vehicles, bicycles, and pedestrians, increasing the risk to travelers' safety.
2. Travel in and through the corridor is impeded in numerous areas by traffic congestion and heavy volumes of pedestrians crossing the highway, adding to travel time and delay for corridor users.
3. The constrained right-of-way (ROW) through most of the corridor limits improvement opportunities.
4. Because of the corridor's coastal location, many visitors and recreational users are attracted to the area, resulting in travel patterns and peaking characteristics that are unique in relation to other parts of Orange County.
5. Aesthetic treatment of improvements is sometimes inconsistent with the scenic character of the corridor.
6. Due to limited parallel options, portions of the corridor are susceptible to interruption and closure due to events and incidents.

Corridor-wide Purposes (Objectives) of Improvements

1. Improve safety for all users and modes.
2. Improve mobility for all users and modes.
3. Improve separation between bicycles using PCH and moving or parked vehicles.
4. Reduce traveler delays caused by recurring congestion.
5. Improve the continuity of traffic flow through the corridor.
6. Increase the effectiveness of public transit service as an alternative to the automobile for travel in the corridor.
7. Address the specific subarea problems and objectives, as well as the corridor-wide problems and objectives.

8. Balance the mobility and safety needs of users and modes appropriately for the context of the specific area.
9. Accommodate and encourage transportation enhancements as part of corridor improvements to help create a more aesthetic and pleasant transportation experience.
10. Improve the corridor's ability to maintain operation during interruptions and closures.
11. Achieve the objectives cost-effectively.
12. Improve and encourage the use of parallel alternative routes.
13. Provide traffic control plans or intelligent transportation system improvements to accommodate special events, accidents, and congestion.

Subarea 1: Seal Beach (Los Angeles County line to Huntington Beach city limit)

Subarea 1 Needs (Problems)

1. Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH at Seal Beach Boulevard, PCH at Main Street).
2. Bicyclists and pedestrians using PCH (Anderson Street to Seal Beach Boulevard) face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities or sidewalks.
3. Bicyclists using PCH (Seal Beach Boulevard to Main Street) face potential conflicts when traveling between parked cars/bus stops and moving vehicles within a narrow roadway cross-section.
4. Bicyclists face conflicts between fast-moving cars and right-turn movements at PCH at Seal Beach Boulevard.

Subarea 1 Purposes (Objectives) of Improvements

1. Reduce recurring congestion and delays for PCH traffic.
2. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.
3. Reduce the potential for conflicts between bicycles and parked vehicles on PCH.
4. Improve continuity of traffic flow along PCH.

Subarea 2: Huntington Beach (Seal Beach city limit to Santa Ana River)

Subarea 2 Needs (Problems)

1. Vehicle conflict points exist for moving traffic on PCH due to non-standard design of local streets and off-street parking (Sunset Beach)
2. Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH at Warner Avenue).
3. Bicyclists using PCH face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities (Warner Avenue to Goldenwest Street).
4. Traffic backs up onto PCH when city parking lots near capacity, posing conflict hazard for moving traffic on PCH (Goldenwest Street to Seapoint Drive).
5. Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Goldenwest Avenue to Sixth Street).
6. Pedestrian crossings of PCH at Sixth Street substantially reduce traffic capacity and limit mobility through the area (PCH at Sixth Street).
7. Heavy pedestrian crossing volumes reduce capacity and limit mobility through the area (Main Street to Huntington Street).
8. Midblock pedestrian crossing volumes pose conflicts with traffic (Huntington Street to Beach Boulevard).
9. Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Huntington Street to Beach Boulevard).
10. Bicyclists using PCH face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities (Beach Boulevard to Brookhurst Street).

11. Traffic along PCH through the subarea experiences delays due to signal timing not being optimized for continuous traffic flow.

Subarea 2 Purposes (Objectives) of Improvements

1. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.
2. Reduce the potential for conflicts between bicycles and parked vehicles on PCH.
3. Reduce the potential for conflicts between vehicles and pedestrians crossing PCH.
4. Reduce recurring congestion and delays for PCH traffic.
5. Improve continuity of traffic flow along PCH.
6. Reduce likelihood of traffic backups onto PCH from City parking lots.

Subarea 3: Newport Beach (Santa Ana River to Pelican Point Drive)

Subarea 3 Needs (Problems)

1. Bicyclists using northbound PCH in West Newport face potential conflicts when traveling between parked cars and moving vehicles (Santa Ana River to Superior Avenue).
2. Heavy volumes of pedestrians, bicycles, and traffic aggravate conflict potential in West Newport (PCH at Superior Avenue, PCH at Orange Avenue, PCH at Prospect Street).
3. Recurring peak hour traffic congestion delays travelers and limits their mobility through the West Newport area (PCH at Superior Avenue).
4. Heavy traffic volumes and high pedestrian crossing activity delay travelers along PCH and limit mobility through the Mariners Mile area (State Route 55 {SR-55} to Dover Drive, PCH at Riverside Drive, PCH at Dover Drive).
5. Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (SR-55 to Dover Drive).
6. Heavy volumes of pedestrian crossings in Mariners Mile pose conflicts with traffic (SR-55 to Dover Drive PCH at Riverside Drive).
7. The combination of significant traffic volumes, constrained capacity, substantial pedestrian activity, substantial bicycle activity, and on-street parking friction delays travelers along PCH and limits mobility through the Corona del Mar area (MacArthur Boulevard to Seaward Road, PCH at Marguerite Avenue).
8. Heavy pedestrian crossing volumes pose conflicts with traffic (MacArthur to Seaward).
9. Bicyclists using PCH face potential conflicts when traveling in shared traffic lane adjacent to parked cars (MacArthur Boulevard to Seaward Road).
10. Traffic along PCH from the Santa Ana River to Jamboree Road experiences delays due to signal timing not being optimized for continuous traffic flow.

Subarea 3 Purposes (Objectives) of Improvements

1. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.
2. Reduce the potential for conflicts between bicycles and parked vehicles on PCH.
3. Reduce the potential for conflicts between vehicles and pedestrians crossing PCH.
4. Reduce recurring congestion and delays for PCH traffic.
5. Improve continuity of traffic flow along PCH.
6. Improve aesthetics.
7. Reduce or eliminate conflicts between bicycles and right-turning vehicles.

Subarea 4: Newport Coast (Pelican Point Drive to Laguna Beach city limit)

Subarea 4 Needs (Problems)

1. Bicycles on PCH face conflict with traffic using right turn lanes on Newport Coast Drive.

Subarea 4 Purposes (Objectives) of Improvements

1. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.

Subarea 5: Laguna Beach (North Laguna Beach city limit to Dana Point city limit)

Subarea 5 Needs (Problems)

1. The combination of significant traffic volumes, constrained traffic capacity, pedestrian activity, and on-street parking friction delays travelers along PCH and limits mobility through the area (Broadway Street to Cress Street).
2. Heavy pedestrian crossing volumes pose conflicts with traffic (Broadway Street to Mountain Drive).
3. The constrained width of PCH and presence of on-street parking means that bicyclists using PCH are traveling in close proximity to moving and parked cars (most of subarea).
4. Sections of PCH with narrow or missing sidewalks pose conflicts for pedestrians with moving traffic (South Laguna Beach).

Subarea 5 Purposes (Objectives) of Improvements

1. Reduce recurring congestion and delays for PCH traffic.
2. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.
3. Reduce the potential for conflicts between bicycles and parked vehicles on PCH.
4. Reduce the potential for conflicts between vehicles and pedestrians crossing PCH.
5. Reduce the potential for conflicts between vehicles and pedestrians walking along PCH.

Subarea 6: Dana Point (Laguna Beach city limit to Doheny Park Road)

Subarea 6 Needs (Problems)

1. Anticipated increases in pedestrian activity, combined with the concentration of higher traffic volumes on PCH, are expected to cause recurring delays for travelers and pedestrians along and across PCH, limiting mobility through the area (Blue Lantern Street to Copper Lantern Street).
2. Bicyclists using southbound PCH face potential conflicts traveling adjacent to moving vehicles (Blue Lantern Street to Del Obispo Street).
3. Bicyclists using PCH face potential conflicts traveling in a shared lane with moving and parked vehicles (Laguna Beach border to Blue Lantern Street, Copper Lantern Street to Del Obispo Street).
4. Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (Copper Lantern Street to Del Obispo Street) as use increases.
5. There is a lack of pedestrian facilities along portions of PCH.
6. There is no northbound bicycle route on Coast Highway from Doheny Park Road to Del Obispo Street.
7. Height of Coast Highway/Park Lantern bridge over San Juan Creek is inadequate to withstand flood waters from 100-year storm.
8. There are limited travel modes to accommodate connectivity to destinations within the community core areas (downtown Dana Point, Doheny Village, and the harbor area).
9. Lighting treatment is inconsistent in various segments of PCH, hampering nighttime mobility and use by bicyclists and pedestrians.
10. Aesthetic treatments are inconsistent.
11. Bicyclists using PCH face potential conflicts with moving vehicles (Del Obispo Street to Doheny Park Road).

Subarea 6 Purposes (Objectives) of Improvements

1. Reduce recurring congestion and delays for PCH traffic.
2. Reduce the potential for conflicts between bicycles and moving/parked vehicles on PCH.
3. Reduce the potential for conflicts between vehicles and pedestrians walking along and across PCH.
4. Improve the corridor's ability to maintain operation following major incidents or events.

5. Increase opportunities for other modes of transport.
6. Improve lighting where nighttime mobility of bicycles and pedestrians is important and currently inadequate.
7. Accommodate and encourage transportation enhancements as part of corridor improvements to help create a more aesthetic and pleasant transportation experience.

Subarea 7: South Dana Point/San Clemente (Doheny Park Road to Avenida Pico)

Subarea 7 Needs (Problems)

1. (a) Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Doheny Park Road to Palisades Drive).
   (b) Missing pedestrian facilities (Doheny Park Road to Palisades Drive).
2. The constrained width of the separated path (Palisades Drive to Camino Capistrano) means that bicyclists and pedestrians face potential conflicts when multiple users must pass each other.
3. Northbound bicyclists using PCH face potential conflicts with vehicles when crossing from the bike lane south of Camino Capistrano to the separated path north of Camino Capistrano.
4. Pedestrians and bicyclists face potential conflicts at the intersections of PCH (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.

Subarea 7 Purposes (Objectives) of Improvements

1. Reduce the potential for conflicts between bicycles and moving vehicles on Coast Highway.
2. Reduce the potential for conflicts between bicycles and parked vehicles on Coast Highway.
3. Reduce the potential for conflicts between bicycles and pedestrians using the separated path.
4. Reduce the potential for conflicts between bicycles, pedestrians, and vehicles using the intersections of Coast Highway (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.

Identification of Potential Improvement Options

Based upon the P&N Statement an extensive list of long-term improvement options was identified. The list included some potential long-term improvements that were identified in other studies, some suggested by the SWG, and some suggested by the consultant team.

Screening of Improvement Options

The list of long-term improvement options was initially screened at a high-level to determine which options were feasible; addressed an identified need in the corridor; and warranted further technical analyses at subsequent study phases. Improvements that satisfied these criteria were advanced for more detailed technical analyses.

This initial screening yielded five alternatives. The five alternatives were structured, so that the analysis would evaluate the benefits of increasing levels of investment and scope within the Corridor. The five alternatives included:

- Alternative 1: Baseline: the existing system plus committed and/or fully funded improvements;
- Alternative 2: Transportation System Management/Transportation Demand Management (TSM/TDM): included relatively low cost, easy to implement, and relatively non-controversial improvement options;
- Alternative 3: Operational Improvements: included options involving minimal capital investments;
- Alternative 4: Spot Capital Improvements: included improvements that were relatively limited in scope; and focused upon small areas.
- Alternative 5: Major Capital Improvements: included spot capital improvements that were expected to involve a major expenditure of funds; as well as improvements that were capital intensive and covered significant lengths of the corridor.

Evaluation of Alternatives

Each of the alternatives (identified above) was evaluated to assess the viability of its component improvement options for addressing corridor needs and achieving corridor-wide and subarea objectives. To evaluate how well the improvements achieved those objectives, seven more-detailed screening criteria were identified. Each criteria was defined with a rating of good, fair, or poor based upon an objective assessment of relative effectiveness in addressing the following objectives:

- Reducing potential for conflict;
- Reducing congestion and delay;
- Improving traffic flow;
- Improving alternative modes of travel;
- Addressing events and incidents along the corridor;
- Cost; and
- Feasibility of implementation

Each improvement was assigned an overall rating based upon how well it addressed both the objectives identified above and the needs identified in the P&N Statement.

Identification of Recommended Improvement Strategies

Based on the alternatives evaluation (described above), the five alternatives were revised and repackaged into four recommended alternatives. Improvements were recommended if the screening results indicated that they fulfilled the following objectives:

- Provided either a 'good' or 'fair' benefit in terms of addressing identified corridor needs;
- Had an estimated cost that was reasonable in light of the relative level of expected benefit;
- Did not face insurmountable barriers to implementation in the form of substantial property acquisitions or unachievable legal or regulatory requirements; and
- Were generally consistent with local agency plans and policies.

Table ES.1 presents the four recommended alternatives (also presented graphically by subareas in **Figure ES.2** through **Figure ES.8**), with improvements shown adjacent to the identified corridor needs that they were developed to address. In some cases, it may be beneficial for multiple strategies to be implemented together or in a phased manner, while in other cases some strategies addressing the same need may be incompatible and should be considered as a range of optional approaches to address the transportation need.

Table ES.1: Recommended Alternatives

Corridor-wide (no Baseline improvements identified)

Transportation System Management / Transportation Demand Management (TSM/TDM)	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Develop a corridor-wide consistent signage program to demarcate Class III bike routes and to guide recreational bikes to parallel bike facilities. The locations of the Class III bike facilities would be included in the educational programs or Traffic Management Programs (see below).	Provide bus turnouts for layover areas, route timepoints, and heavy boarding/alighting stops to remove buses from travel lanes at locations with longer dwell times.	Work with Coastal Commission on how parking space replacement could be traded for improved safety (eliminating conflicts) and accommodation of non-motorized activities such as walking and biking. These types of improvements would be in lieu of parking replacement when eliminating parking to accommodate a corridor wide Class II bike program or sidewalks
Develop a PCH Educational and Informational Bicycle and Pedestrian program for on-line and printed distributions. (Similar Bicycle programs referenced in the "5-E" - Encouragement, Education, Enforcement, Evaluations and Engineering discussions in both the District1/District 2 and District 5 Bikeways Strategies.)	Modernize traffic signal system including: - Traffic signal synchronization and optimization - Upgrade Traffic Signal equipment and provide fiber interconnect - Install Closed Circuit Television (CCTV) - Connect to Caltrans and City Traffic Management Centers - Develop corridor emergency response and re-route strategies	Develop transit hubs connected by city specific and/or shared shuttle services (example how the Laguna Beach shuttle connects with Dana Point). Some signal priority should be considered for transit, if warranted. Could include tracking for real-time schedule updates, publishing or display of information relating to parking, and events served could potentially be part of a Transportation Management Program (see Corridor-wide TSM/TDM alternative).
Adopt a Context Sensitive Design approach to implement improvements in the corridor. Improvements could include appropriate techniques or components to provide “comfortable and safe” accommodations of vehicles, pedestrians, transit, and bicycles.	Consistent with recommendation in OCTA D1-2 Bike Strategic Plan, Cities to collaborate with OCTA on Context Sensitive Solution approach to achieving MPAH buildout on a case-by-case basis.	Using a Shared Fiber Optic system, incorporate Connected Vehicle elements and other technical features to help in overall safe operation of the corridor. This could include Pedestrian and Bike Apps and alerts for special events.
Recommend improvements that avoid the need for significant right-of-way acquisition while recognizing the needs of all corridor users and modes.	Build on Basic Transportation Management Program and sharing the traffic signal fiber optics communication system, incorporate electronic features such as parking management, changeable message signs (matching the aesthetics of the scenic corridor), advisory APP info and other potential features that might be connected to real-time traffic notices with Google and other guidance programs on phones and vehicles.	
Traffic Management Program - Beach Travel APP corridor-wide information and media outreach to provide info such as updates on events, alternate routes, parking/transit options, schedules. Should be tailored to have information for all modes (vehicles, bicycle, pedestrian, transit). Can include City/Agency coordination of their annual schedules of events. Initial effort can include Phone APP and existing media sources.	Encourage PCH corridor cities to incorporate aesthetic enhancements in future corridor projects and programs.	
PCH Cities should pursue joint agency projects and submit multi-agency grant applications where this approach is supported to achieve mutually desired improvement objectives.		

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit (refer **Figure ES.2**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Los Angeles County Line to Main Street				
PCH at Main Street			• Intersection improvements at PCH/Main Street (Restripe WB (Main Street/ Bolsa Avenue) to provide dual right turns (RT, Thru/RT, LT))	
Main Street to Seal Beach Boulevard		• Provide wayfinding signs to guide bicyclists to parallel bike facility (proposed Class II bike lanes and existing multi-use path in median) on Electric Avenue between Main Street and Ocean Avenue.	• Minor street widening and travel lane width reduction to accommodate Class II bike lanes between on-street parking and travel lanes on PCH.	• Remove/relocate on street parking and install bike lanes
PCH at Seal Beach Boulevard		• Remove SB right-only lane on PCH at Seal Beach Boulevard and replace with bike lane.	• Provide northbound off-street bikeway (within Caltrans ROW) in advance of intersection to transition bicyclists off roadway and guide them to travel southerly along Seal Beach Boulevard Class I bikeway.	• Intersection improvements at PCH/Seal Beach Boulevard (Add SB dual left turn from PCH (away from the coast)) • Widen intersection approach (or narrow / remove median) and provide a through bike lane on PCH (between the through and right-turn vehicle lanes) on the inland side.
Seal Beach Boulevard to Huntington Beach City Limits		• Provide on-street painted buffer between bike lane and traffic lane on PCH between Seal Beach Boulevard and Anderson Street (where roadway and lane width permit) • Remove northbound right-turn only lane at driveway north of PCH/Mariner Dr. and replace with bike lanes. Remove southbound right-turn only lane at PCH/Phillips Street and replace with bike lanes.	• Add sidewalks in developed areas where they are currently missing (about 1,000 ft on the inland side of PCH, and about 2,000 ft. on the ocean side of PCH)	• Reduce or combine access points where feasible, especially in areas north of Piedmont Circle, as part of redevelopment. • Eliminate or relocate poles and other fixed objects at grade near driveways in sections north of Piedmont Circle. • Provide a two-way Class IV Cycle-Track with buffer on the southwest side of PCH and supplement with a northbound bike lane (OC Loop Gap L proposed alignment)

Table ES.1: Recommended Alternatives (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (refer **Figure ES.3**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Seal Beach City Limits to Warner Avenue	• Stripe Class III sharrows on Pacific from Anderson Street to Warner Avenue	• Stripe Class III sharrows on Anderson Street between PCH and Pacific Avenue • Provide enhanced signage highlighting for bicyclists the availability of low stress route along Pacific Avenue from Anderson Street to Warner Avenue.		• Redesign minor road accesses, road geometrics, remove on-street parking to improve visibility and sight angles as redevelopment occurs.
PCH at Warner Avenue	• Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Warner Avenue	• Provide treatments to reduce bike/vehicular conflicts at intersection (e.g. two stage left turn boxes, turn box protected by physical buffer or parking lane etc,) for bicyclists on PCH at Warner Avenue	• Install through bike lanes on PCH at Warner by narrowing median	• Intersection capacity improvement at PCH/Warner Avenue with design to avoid impact on adjacent sensitive area •
Warner Avenue to Goldenwest Street	• Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Goldenwest		• Install Class II bike lanes (on both sides of PCH) and add a 2-foot buffer (8'0" bike lane inclusive of 2'0 buffer) on PCH through Bolsa Chica – adjust vehicular lane widths/median as needed • Stripe through bike lanes at right-turn pockets and install green conflict striping in merge areas prior to and at beach access driveways (if bike lanes are developed on this segment of PCH) • Modify access to driveways and circulation within parking lots to provide multiple entry (access redesign) • Install intelligent parking management system to direct visitors away from full lots to available parking.	• Landscape existing median or construct a raised center median to visually narrow and provide aesthetic enhancements
Goldenwest Street to 6th Street		• Install sharrows on PCH in traffic lane next to on-street parking where no on-street bike lane is provided • Develop parallel Class III bike route along Walnut Avenue or Olive Avenue between Goldenwest Street and 1st Street.		
PCH at 6th Street		• Eliminate one pedestrian crosswalk at PCH/6th Street and prohibit pedestrian crossing across that leg of intersection in order to eliminate auto/pedestrian conflicts on one leg of the intersection and increase available green time for turning vehicles (improvement will include traffic signal modification, signing/striping, removal of crosswalk etc.)		• Widen exit driveway from beach side parking lot to allow for separate turn movements (may entail relocation of parking)
6th Street to Beach Boulevard		• Stripe Class II bicycle lanes on PCH from 1st Street to Beach Boulevard between parking and adjacent travel lane, where Class II bike lanes are missing and where roadway and lane width permit. • Paint shared lane markings (sharrows) in lane adjacent to parking and incorporate speed reduction mechanism • Develop Class III bike route on Pacific View Avenue and Class II bike lanes on Atlanta Avenue. • Restripe Pacific View Avenue to provide one travel lane and one Class II bike lane each way between 1st Street and Beach Boulevard.	• Add median barrier or fence (Huntington Street to Beach Boulevard)	• Remove/relocate parking, install Class II bike lanes (Huntington Street to Beach Boulevard)

Table ES.1: Recommended Alternatives (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (refer **Figure ES.3**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
PCH at Beach Boulevard	• Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Beach Boulevard	• Provide treatments to reduce bike/vehicular conflicts at intersection (e.g.,two stage left turn boxes, turn box protected by physical buffer or parking lane etc,) for bicyclists at PCH/Beach Boulevard		
Beach Boulevard to Santa Ana River	• Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Magnolia Street	• Provide treatments to reduce bike/vehicular conflicts at intersections (e.g., two stage left turn boxes, turn box protected by physical buffer or parking lane etc,) for bicyclists at Beach Boulevard, Newland Street, Magnolia Street, and Brookhurst Street	• Convert existing shoulder to Class II bike lanes with a 2 foot buffer (between Beach Boulevard and the Santa Ana River). This improvement may also include reduction of lane-width to accommodate Class II bike lanes within existing pavement.	• Add sidewalks on both sides of PCH (Beach to Newland)
PCH at Brookhurst Street			• Intersection improvement at PCH/Brookhurst Street in order to carry bike lanes through the intersection	

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (refer **Figure ES.4**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Santa Ana River to Superior Avenue		• Stripe class II bike lane along northbound PCH between Highland Street and 61st Street, wherever road and lane width permit.	• Provide bicycle/pedestrian trail linking to Santa Ana River Trail east bank to provide access to community of homes and businesses north of Coast Highway • PCH between Santa Ana River and Newport Boulevard: maintain existing southbound Class II bike lanes and restripe sections with shoulder to provide Class II bike lanes with a 2 foot buffer, where ROW permits	• Extend east bank Class I bikeway on Santa Ana River Trail under Coast Highway and link to Seashore Drive • Provide new Class I trail near Sunset Ridge Park linking to future Banning Ranch development for parallel routing between Superior and Santa Ana River Trail. • Remove/relocate on street parking and install Class II bike lanes • Reduce conflict points through access management strategies including consolidating access points and radius driveways, as redevelopment occurs. • Relocation/reduction of on-street parking on PCH between Santa Ana River and Superior Avenue to benefit operations and reduce disruption of traffic flow
PCH at Superior Avenue				• Develop mobility hub with Park and Ride parking spaces, transit center, bike and pedestrian amenities near PCH/Superior (at the northeast corner of Coast Highway at Superior) integrated with ITS and parking management signs. • Widen intersection of PCH/Superior Avenue to reduce peak period congestion and delay, possibly by adding a second turn lane on the westbound (Coast Highway) approach. • Grade separated pedestrian and bicycle crossing bridge and remove at-grade pedestrian crosswalks and re-time signal accordingly.

Table ES.1: Recommended Alternatives (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (refer **Figure ES.4**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Superior Avenue to Dover Drive		• Improve bicycle/pedestrian access to beach from Riverside Avenue using sidewalk on ocean side of Coast Highway to access Balboa Peninsula (SR-55 to Dover) • Enhance signing/striping/lighting to better alert motorists to pedestrian crossing at intersections (SR-55 to Dover).	• Improve northbound PCH through interchange with SR-55. including additional through lane, turning pocket, and Class II bike lane at Old Newport Boulevard • Park and ride lot between SR-55 and Old Newport Boulevard (vacant paved lot on the northwest quadrant of the intersection of Old Newport Boulevard and PCH) • Install median refuge island to shorten crossing distance and pedestrian signal timing (SR-55 to Dover Drive) • Implement access management strategies (including consolidating access points, radius driveways) as redevelopment occurs.	• Widen/restripe to provide three travel lanes in each direction with a center two way left turn median and Class II bike lanes with removal of on-street parking between Newport Boulevard and Dover Drive • Construct new Class I bike trail at end of Avon Street linking to Old Newport Boulevard and directing bicyclists to the loop leading to southbound Newport Boulevard to access Balboa Peninsula.
PCH at Riverside Avenue			• Add second southbound left turn lane on PCH at Riverside • Eliminate or relocate traffic signal at Tustin Avenue	• Develop pedestrian overcrossing in the core area of Mariner's Mile (near Riverside Avenue or Tustin Avenue)
Dover Drive to Bayside Drive		• Stripe Class II bike lanes across the Back Bay Bridge between Dover and Bayside		• Widen or add to bridge over Back Bay to provide Class I bikeway between Bayside Drive and Dover Drive.
Bayside Drive to MacArthur Boulevard				
MacArthur Boulevard to Pelican Point Drive		• Provide intersection treatments to reduce bike/vehicular conflicts at intersections • Extend shared lane markings (sharrows) on PCH south of Poppy Avenue	• Install curb extension (only on parking lanes) to shorten pedestrian crossing times (MacArthur Boulevard to Seaward Road) • Implement strategies to encourage drivers to use Newport Coast Drive, to remove traffic from PCH in Corona del Mar.	• Removal/relocation of on street parking and stripe Class II bike lanes • Implement access management strategies including radius driveways as redevelopment occurs. • Implement two bike boulevards in Corona Del Mar; northerly (Fifth to Orchid), and southerly (Avocado to Second to Goldenrod to Seaview to Poppy or Bayside to Marguerite to Poppy).

Subarea 4: Newport Coast: Pelican Point Drive to North Laguna Beach City Limit (refer **Figure ES.5**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
PCH at Newport Coast Drive		• Sign and restripe intersection to provide Class II bike lane through intersection.		
Pelican Point Drive to North Laguna Beach City Limit			• PCH (Seaward Road – Newport Beach City Limit): maintain existing Class II bike lanes and restripe sections with 8 foot shoulder to provide Class II lanes with a 2 foot buffer Add/designate on-street Class II bike lanes where gaps in system within identified limits. • Construct a raised median at the shopping center entrance near Crystal Heights Drive to preclude illegal turns across the striped median • Extend Class I bikeway through Crystal Cove Park to El Moro State Park signal.	• Develop Class I path or Class IV cycle track to provide a low stress bike facility for bicyclists from Newport Coast to Laguna Beach

Table ES.1: Recommended Alternatives (continued)

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit (refer **Figure ES.6**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Ledroit Street to Boat Canyon Drive			• On SR-1 from Ledroit Street to Boat Canyon Drive, Upgrade Sidewalk & pedestrian facilities to ADA standards	
Broadway Street to Mountain Road	• Expansion of summer seasonal festival trolley service and new off-season trolley service (began in March, 2015, between Broadway Street and Cress Street) • Provide Class III bike routes on parallel streets (along Cliff Drive, Cypress Drive and Glenneyre Street) with wayfinding signs from PCH • Widen east side of northbound PCH to provide a dedicated right turn lane onto eastbound Broadway	• Implement pedestrian "scramble" crossing at locations identified through coordination with City Council and community. • Striping and ADA improvements near Mountain Road	• Reconfigure Glenneyre (Caliope to Mermaid) from 4 to 2 travel lanes to accommodate Class II bike lanes with wayfinding signs. • Install illuminated pedestrian crossings with advanced warning systems at additional locations. Locations for this strategy can be obtained through detailed pedestrian activity study.	
Mountain Road to Dana Point City Limit			• On PCH from 7th Avenue to Moss Street update existing ADA curb ramps, widen sections of existing sidewalk to meet minimum clear width standards and add APS systems	• Remove center two-way left turn lane where appropriate, manage/consolidate turning movements to accommodate Class II bike lanes on PCH (Ruby to Nyes). • Add sidewalks where there is sufficient room to accommodate - includes acquisition of ROW
North Laguna Beach City Limit to Dana Point City Limit		• Install painted shared lane markings (sharrows) along with corresponding "Bicycles May Use Full Lane" signs • Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways		• Remove/relocate on street parking and stripe Class II bike lanes

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (refer **Figure ES.7**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Laguna Beach City Limit to Crown Valley Parkway	• PCH (Crown Valley Parkway to Dana Point northern city limit) Landscape beautification within medians (as part of major capital improvements).			
Crown Valley Parkway to Blue Lantern Street		• Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveway (Laguna Beach City Limit to Blue Lantern, Copper Lantern to Del Obispo).	• Provide Class I bike trail on the ocean side of PCH (Laguna Beach to Blue Lantern) • Install one way Class I Bike/Ped Trail on both sides of PCH between Laguna Beach City Limit and Blue Lantern. • Add sidewalks on both sides of PCH where none exist between Laguna Beach border and Selva where right-of-way permits. • Add retaining walls on inland side of PCH between Niguel to Selva and construct 5 ft sidewalk (minimum). • Review and include consistent lighting for bicyclists and pedestrians along PCH within each segment during project upgrades	

Table ES.1: Recommended Alternatives (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (refer **Figure ES.7**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Blue Lantern Street to Del Obispo Street	• PCH from Copper Lantern to Blue Lantern, change circulation on PCH and Del Prado to two-way traffic [Implemented September 2014]. • Third SB lane added between Copper Lantern and Crystal Lantern as part of one-way couplet removal • PCH from Copper Lantern to Blue Lantern: Streetscape improvements, road reconfiguration and curb adjustments to create a more pedestrian friendly business district. • Provide wayfinding signs on PCH encouraging bicyclists to use parallel alternative routes to PCH by directing them to facilities on Del Prado, Golden Lantern, Dana Point Harbor Drive and Park Lantern. • Summer weekend trolley services running on PCH, connecting area resorts through downtown. • Development of remote parking facility (use of Dana Hills High School parking lot) – already initiated. • Shuttle service throughout the summer and weekends throughout the year (augment current summer weekend service)		• PCH (Niguel Rd. to Dana Point northern city limit, Blue Lantern to Copper Lantern) landscape beautification and safety improvements (as part of major capital improvements) • Widening of sidewalks for pedestrians on PCH (inland side from Blue Lantern to Copper Lantern). • Widen PCH and add Class II bike lanes between Crystal Lantern and Del Obispo.	• Addition of bus turnouts from Blue Lantern to Copper Lantern, as redevelopment occurs. • Copper Lantern to Del Obispo – Landscape beautification and safety enhancement (as part of major capital improvement, as redevelopment occurs)
PCH at Golden Lantern Street				• Overcrossing on PCH at Golden Lantern for pedestrians crossing PCH, with prohibition of at-grade crossings.
PCH at Copper Lantern Street; Del Prado Avenue				• Improve PCH/Copper Lantern/Del Prado Intersection to enhance traffic flow (possibly with a roundabout)
PCH at Del Obispo Street				• Widen intersection of PCH/Del Obispo to provide congestion relief through the intersection.
Del Obispo Street to San Clemente		• Provide bike/vehicle conflict zone treatment leading to intersections (Coast Highway at Park Lantern).	• Widen existing sidewalk under railroad to Improve bicycle/pedestrian crossing under LOSSAN Railroad tracks near Coast Highway/Doheny Park Road.	• Construct Class I bike and pedestrian trail between Doheny Park Road and Del Obispo through Doheny State Park, using Park Lantern • Construct new wider/taller bridge and incorporate stress free bicycling and walking facility for north/south active transportation travel over San Juan Creek - includes widening of bridge sidewalk. • Install cycle track to encourage two-way bicycling and walking under railroad.

Table ES.1: Recommended Alternatives (continued)

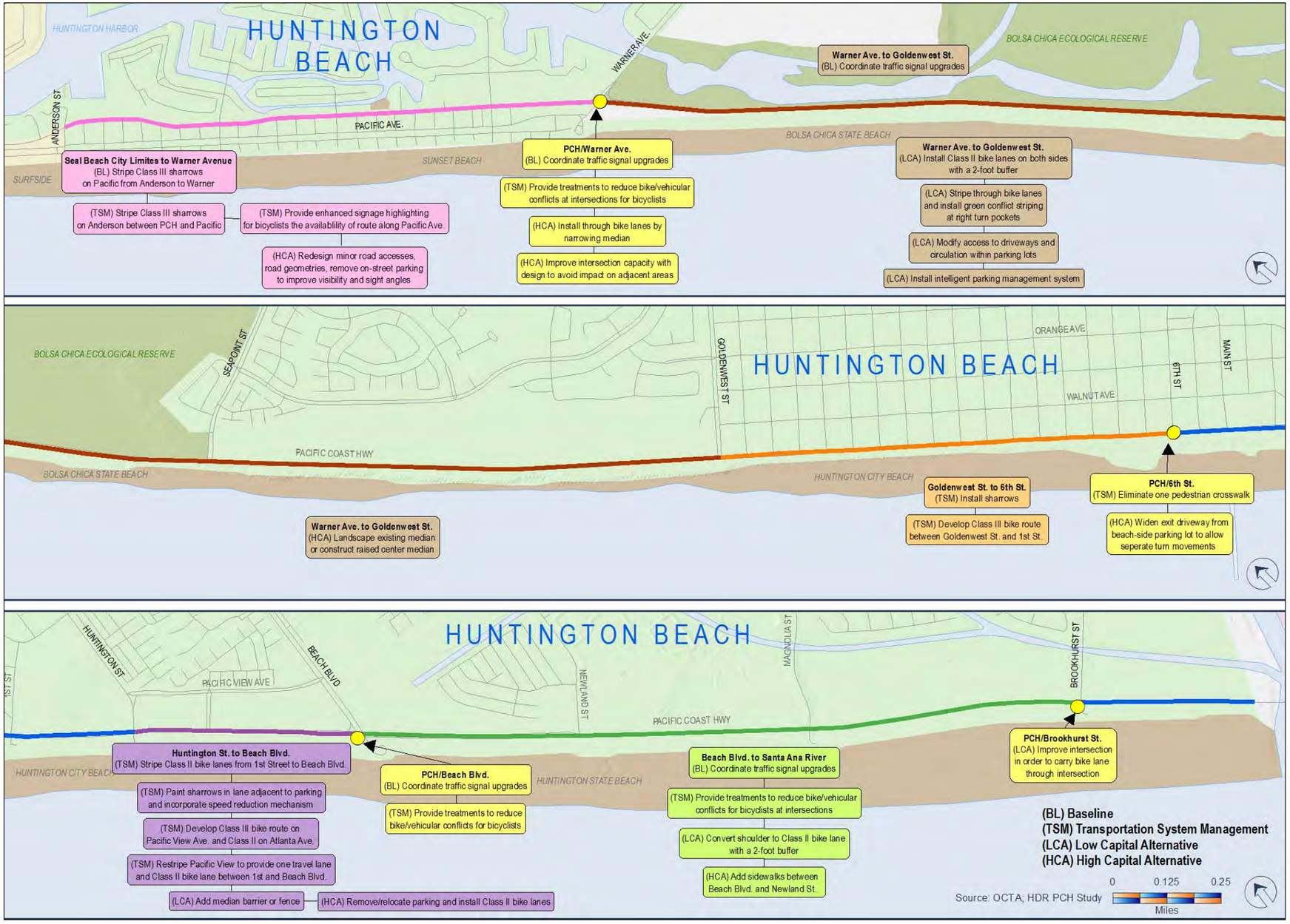
Subarea 7: South Dana Point / San Clemente: Doheny Park Road to Avenida Pico (refer **Figure ES.8**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Doheny Park Road to Palisades Drive	• Remove pedestrian bridge across Coast Highway (only the span across Coast Highway) between Dana Point Harbor and Palisades Drive to replace with traffic controlled pedestrian crossing to provide access to bikers and handicapped users. • Complete sidewalk on inland side of street as condition of redevelopment (Palisades to existing pedestrian bridge)	• New Class III bike route along Coast Highway between Doheny Park Road and Palisades Drive, on both sides of Coast Highway	• Restripe the street segment to provide for 2 vehicular lanes (one in each direction) and Class II bicycle lanes and maintain 2 northbound through lanes at intersection at Doheny Park and Coast Highway. Improvement would require MPAH amendment. • Widen existing sidewalk and create multi-use path on the ocean side (provide two-way Class I bike/ped facility (Doheny Park to Palisades Drive)). • Complete sidewalk on inland side of street (Doheny Park to Palisades)	• Remove/relocate on street parking and install Class II bike lanes (Doheny Park to Palisades Drive) • Remove/relocate on street parking and install Class IV cycle track with buffer protection between vehicles and pedestrians/bicyclists (Doheny Park to Palisades Drive). • Rebuild pedestrian bridge across railroad tracks between Dana Point Harbor and Palisades Drive.
Palisades Drive to Camino Capistrano		• Launch an educational campaign for users to slow down and share the path		• Widen protected Class I bike facility along PCH between Palisades Drive and Camino Capistrano.
PCH at Camino Capistrano		• Provide treatments to reduce bike/vehicular conflicts at intersection (e.g.two stage left turn boxes, turn box protected by physical buffer or parking lane etc,) for south-bound and westbound bicycles at Coast Highway/ Camino Capistrano intersection or add left-turn bicycle signal to provide for transition from bike lanes to bike path.		• Evaluate and implement feasible intersection improvements (options may include roundabout, if feasible) at intersections to reduce the potential for conflicts between bicycles, pedestrians, and vehicles.
Camino Capistrano to Avenida Pico	• Install Class I (and maintain existing Class II) bike facility on the coastal side of Coast Highway between Camino Capistrano and Avenida Estacion.			• Evaluate and implement feasible intersection improvements (options may include roundabout, if feasible) at following intersections to reduce the potential for conflicts between bicycles, pedestrians, and vehicles: Coast Highway @ Camino San Clemente Coast Highway @ Avenida Estacion

Figure ES.2: Recommended Alternatives for Subarea 1 – Seal Beach

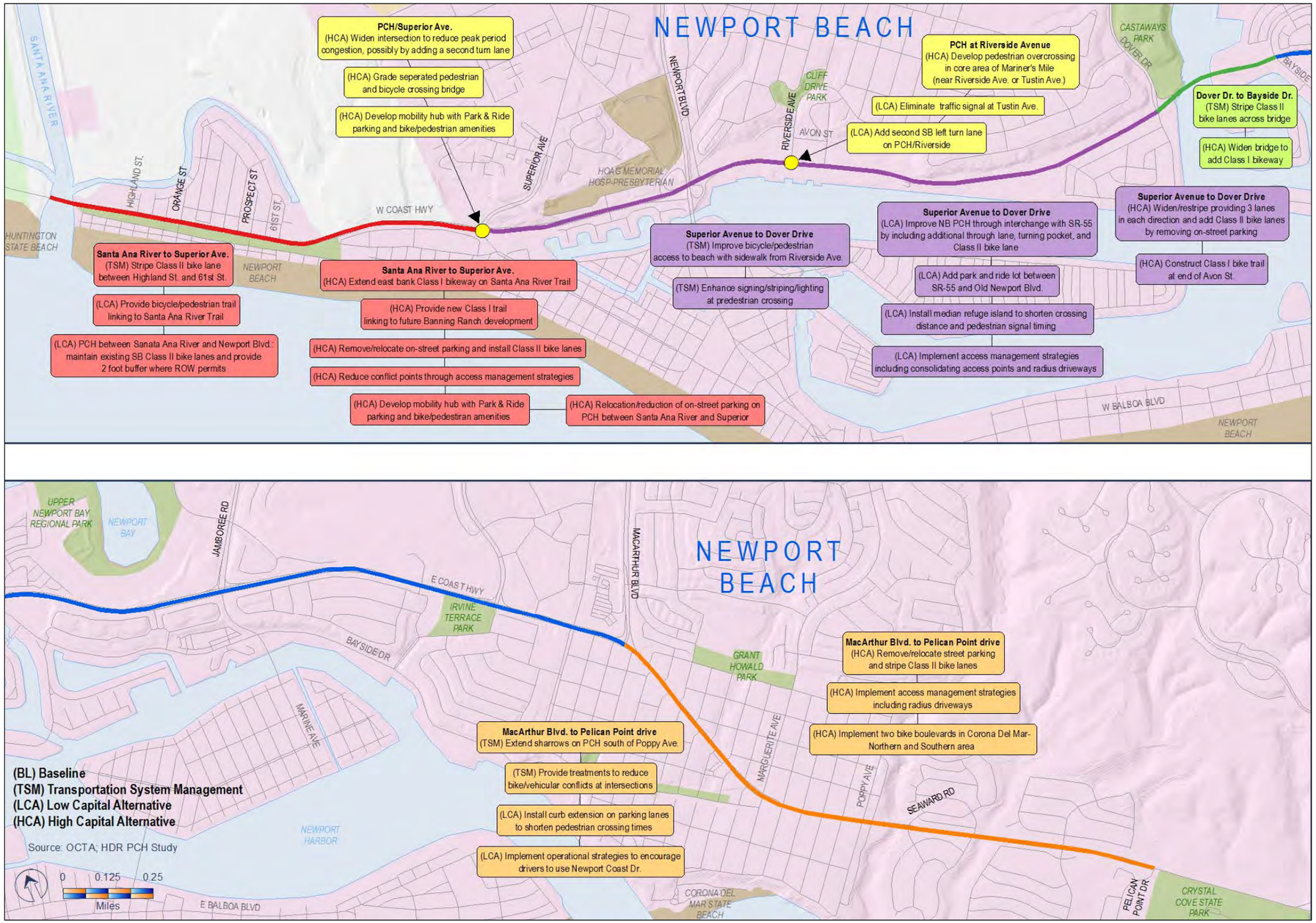
Source: HDR / OCTA

Figure ES.3: Recommended Alternatives for Subarea 2 – Huntington Beach



Source: HDR/OCTA

Figure ES.4: Recommended Alternatives for Subarea 3 – Newport Beach

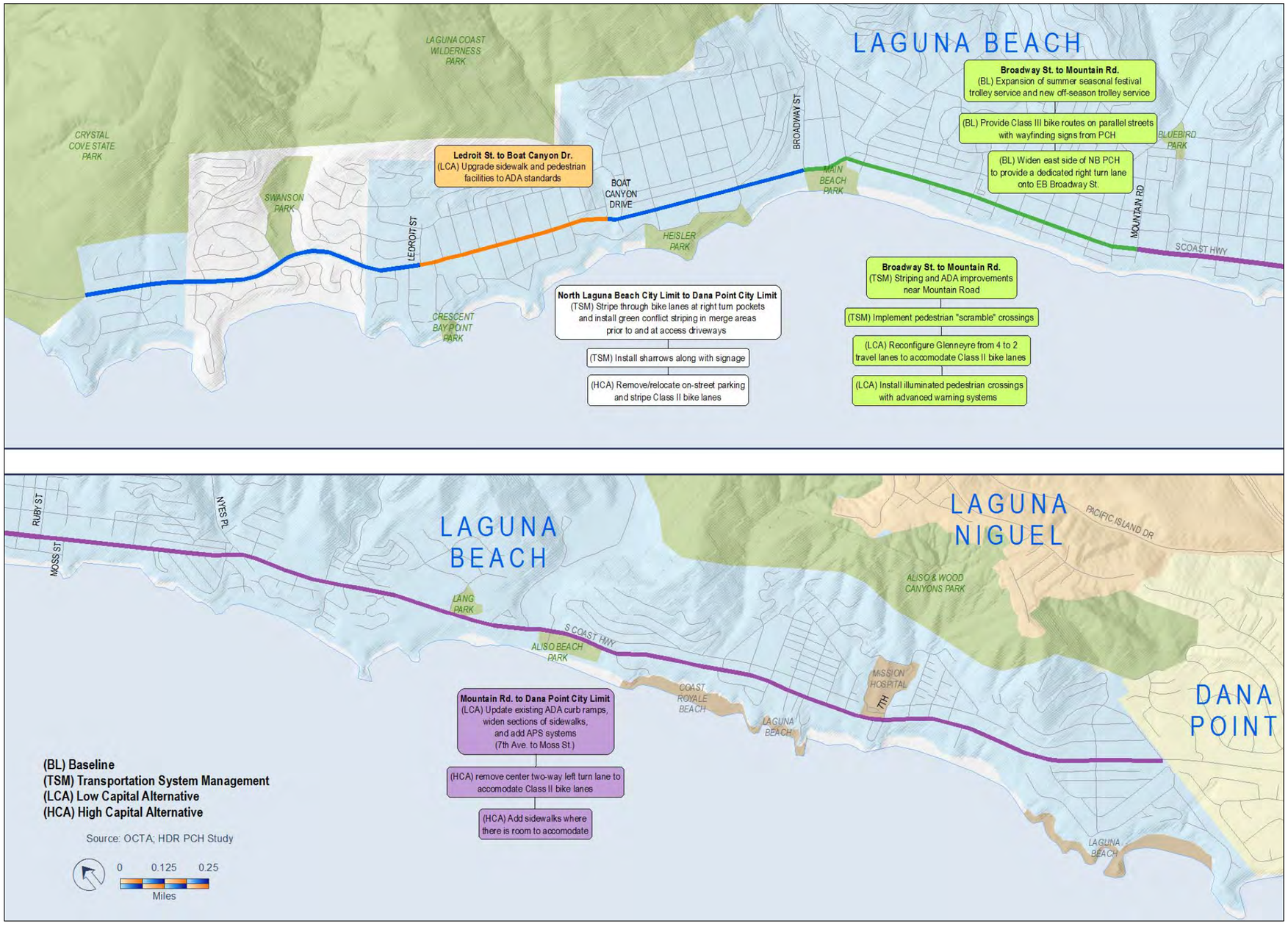


Source: HDR/OCTA

Figure ES.5: Recommended Alternatives for Subarea 4 – Newport Coast

Source: HDR/OCTA

Figure ES.6: Recommended Alternatives for Subarea 5 – Laguna Beach

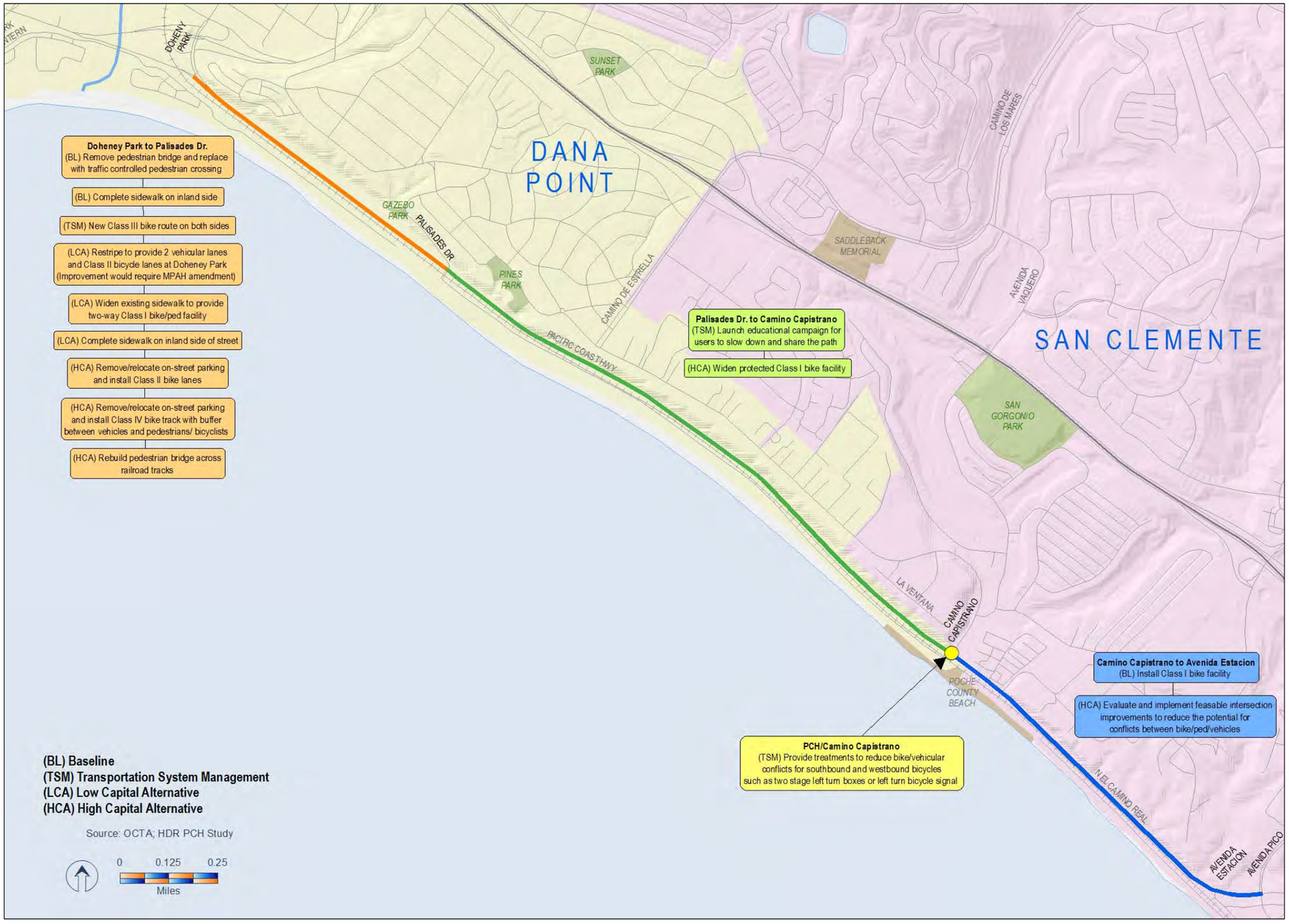


Source: HDR/OCTA

Figure ES.7: Recommended Alternatives for Subarea 6 – Dana Point

Source: HDR/OCTA

Figure ES.8: Recommended Alternatives for Subarea 7 – South Dana Point / San Clemente



Source: HDR / OCTA

The four recommended alternatives are comprised of plausible improvement strategies that could help address individual needs, whether corridor-wide; or in particular subareas. This array of recommended improvement strategies is intended to provide implementing agencies with choices for actions they can take to address specific needs, as they see fit; and as funding becomes available.

Roles and Responsibilities

Responsibility for making physical improvements, operating and maintaining PCH belongs to the jurisdiction in possession of the ROW.

- The State of California owns more than two-thirds of the corridor and hence, Caltrans is the responsible agency throughout most of the Corridor.
- The City of Newport Beach owns PCH ROW through Corona del Mar, from Jamboree Road to Newport Coast Drive.
- The City of Dana Point owns PCH ROW from the Laguna Beach city limit to San Juan Creek and from San Juan Creek to the city limit of San Clemente at Camino Capistrano. The State owns the piece of PCH which is State Route 1 between San Juan Creek and Interstate 5.
- The City of San Clemente owns PCH from Camino Capistrano to Avenida Pico.

Corridor-wide programs as well as cross-jurisdictional improvements, would require multi-agency cooperative efforts, whether through informal collaboration or through formal legal instruments such as a Cooperative (Co-op) Agreement or Joint Powers Authority (JPA).

For the state-owned segments of PCH, if a local agency desires to sponsor an improvement project, it would need to enter into a Co-op Agreement with Caltrans; which would require the local agency to adhere to Caltrans' specified design standards and project development processes.

For city-owned segments of PCH, the local agency would be responsible for the entire project development process (according to its own jurisdictional standards and specifications). Further, for improvements implemented on city-owned segments of PCH; the city would be responsible for providing for ongoing operations and maintenance once improvements are in place and complete. Additionally, a local agency may assume responsibility for maintaining an area or a specific element of the Caltrans' ROW by entering into a maintenance agreement with Caltrans, if they so desire. Local agencies can also assume full responsibility for the highway by taking ownership through the Caltrans relinquishment process, as has been done in Newport Beach and Dana Point. In this case, once cities assume responsibility for the ROW Caltrans specified design standards and project development processes would no longer apply, and the city may instead apply their own jurisdictional standards and specifications.

Key Issues Affecting Implementation

Throughout the Corridor Study, it became apparent that the following two outstanding issues (which remain unresolved) will likely continue to have significant influence over which recommended improvement strategies are ultimately implemented.

Context Sensitive Design

One of the key conclusions from this study is that the PCH ROW is highly constrained in many parts of the corridor, and acquisition of additional ROW for major capital improvements would in many cases affect adjacent businesses, homes, or coastal recreation areas. Many of the study's recommended improvements could be implemented with little or no ROW acquisition, if exceptions to the Caltrans' full-standard design criteria were accommodated. To achieve this, local agencies will need to work with Caltrans through its project development process, to review and approve design exceptions; with the ultimate objective of achieving an "optimal allocation of space within the right of way" based on "site specifics, community goals and user needs," as is stated in Caltrans' guidance document "Main Street, California".

Coastal Access and On-Street Parking

In response to one of the key corridor improvement needs for reducing potential conflicts between bicycles, parked cars, and moving vehicles, removing and replacing on-street parking with bike lanes is a recommended strategy. A key challenge in implementing this type of improvement is the determination by the California Coastal Commission (CCC) that the removal of on-street public parking in the coastal zone constitutes a reduction of public access to the coast, and therefore, requires replacement of public parking nearby. Relocation of on-street parking nearby is anticipated to be extremely difficult to implement. In almost all cases, immediately adjacent areas are either fully developed or are public beaches. The coastal cities, Caltrans, and OCTA should continue to work with the CCC to develop innovative approaches for on-street parking removal; that result in improved safety for bicyclists and pedestrians and improved overall coastal access for users of all modes.

Funding

The list of recommended improvement strategies was used to identify a reference list of potential sources of project funding (identified in **Table ES.2**), should local jurisdictions or Caltrans, elect to implement components of the recommended strategies. In many cases, the funding programs identified below are competitive, and would need to be undertaken as part of potentially larger multi-jurisdictional improvement programs and projects in order to have the greatest opportunity for success. So PCH corridor cities should consider proactively partnering with neighboring jurisdictions, to find opportunities for collaboration that could potentially yield better results in competitive funding processes.

Table ES.2: Potential Sources of Project Funding

Federal	**Regional & Local**
• Recreational Trails Program • TIGER Discretionary Grant • Highway Safety Improvement Program (HSIP)	• Bicycle Improvement Program Call for Projects (CMAQ) • Measure M2 – Local Fair Share Program • Measure M2 – Regional Capacity Program (Project O) • Measure M2 – Community-Based Transit/ Circulators (Project V) • Measure M2 – Signal Synchronization (Project P) • Parking Revenue District • Development Impact Fees • Local Gas Tax Subvention • Enhanced Infrastructure Financing District • City General or Other Discretionary Funds
State • Active Transportation Program • Cap and Trade: Affordable Housing & Sustainable Communities Program • Cap and Trade: Low Carbon Transit Operations Program • Regional Improvement Program • State Highway Operations Protection Program (SHOPP)	

Note: This list is not exhaustive and each funding source has its own unique set of requirements and/or approvals in order for projects to qualify and potentially compete for funding. Furthermore, final FAST Act distributions have yet to be determined.

Next Steps

Next steps in the PCH corridor improvement process will involve further development of individual projects and/or project components identified in the recommended alternatives matrix **Table ES.1.** In general project specific next steps would proceed along a path similar to the bulleted list below.

- Completion of more detailed feasibility studies (further planning);
- Completion of a Project Initiation Document (PID) or PID equivalent (further detailed engineering);
- Completion of an environmental evaluation. Requirements could potentially be based upon the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), or both, depending upon

- Completion of an environmental evaluation. Requirements could potentially be based upon the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), or both, depending upon the type of approvals needed and funding source being applied for. It is during this process where a project alternative would be selected and approved by the implementing agency (assessment of project alternatives and selection a preferred alternative);
- Plans, Permits, Specifications and Right of Way (final design and ROW acquisition);
- Prepare and advertise project (Initiate contractor selection); and
- Initiate construction (break ground).

Ultimately, the next steps identified above will depend on the nature and status of each individual project, and the specific project development processes the project will need to follow (i.e. local, Caltrans, CCC, or funding agency requirements). Although it was outside the scope of this study, the planning and development of PCH multi-modal transportation improvements should include consideration of Caltrans' Climate Change policies including future Sea Level Rising (SLR) guidelines that might be adopted for this coastal area.

This study's recommendations should be incorporated into State, Regional and Local transportation planning programs to ensure that they are part of a continuing planning process for implementation along with future development. These plans could include Caltrans' District Transportation Concept Report (DTCR), SCAG's Regional Transportation Plan (RTP), Orange County Master Plan of Arterial Highways (MPAH), and City General Plans. The benefits of identifying projects in adopted planning programs include:

- A common vision for the future of the route.
- Identifying, prioritizing, and addressing the greatest needs within the route.
- Protecting infrastructure.
- Logical sequencing of projects.
- Efficient use of available funding.

Chapter 1 - Introduction

The coastal communities of Orange County are strongly unified by the Pacific Ocean and the oceanfront location they enjoy. They are also unique in character and provide a diverse range of environments and activities for residents and visitors alike. Their mobility linkage to one another is provided by Pacific Coast Highway (PCH); a corridor covering 37 miles from Avenida Pico in San Clemente to the Los Angeles County Line in Seal Beach. PCH is a vital artery used by hundreds of thousands of people each day to get to where they live, work, eat, shop, play, exercise, socialize, relax, or do their business. Two-thirds of the corridor is owned, operated, and maintained by the State of California (Caltrans) and the remaining one-third is operated by local agencies (Newport Beach, Dana Point, and San Clemente).

The number of users and assortment of activities and the physical constraints of an aging corridor (built along the coast) put a daily strain on the highway and result in several challenges to the various users it serves. Traffic congestion, parking shortages, narrow (and missing) sidewalks, bicycles and pedestrians sharing pavement with vehicles, high-speed free-flow traffic in some areas, travel friction and high-activity conflict points between modes in other areas, are just some of the challenges the corridor faces. These challenges are exacerbated on weekends and during the summer season when activity levels peak.

PCH (in Orange County) is a regional travel corridor with specific improvement needs that are as diverse as the communities it serves. However, the coastal cities, out of a shared desire to address future mobility issues, requested that the Orange County Transportation Authority (OCTA), in partnership with Caltrans, conduct a cooperative long-range planning effort for the corridor. The following report chronicles the study processes that were conducted over the past year; and also identifies recommendations for long-term mobility improvements in the corridor.

1.1 Study Area

From a mobility perspective, the diverse character of the corridor results in unique system needs varying from one subarea to the next. In recognition of this, the corridor was divided into subareas and a two-tier Statement of Purpose and Need (P&N) was developed, with the top tier addressing P&N for common corridor-wide needs; and the second tier addressing P&N for each specific subarea.

Figure 1.1 identifies the corridor subareas that were used for purposes of defining subarea P&N statements. Seven subareas were identified. Because of the importance of the policy context for making and implementing improvements, city jurisdictional limits were used as the primary criterion for identifying subarea boundaries, so most of the subareas consist of a single local jurisdiction. However, the more rural character of south Newport Beach and Newport Coast, makes the area much more different than more densely populated areas to the north and south. Therefore, Newport Coast (including both south Newport Beach and Newport Coast) was identified as a separate subarea. This also occurred in the southernmost part of the corridor, where the southern part of Dana Point and San Clemente had very similar character and development patterns, and as such were combined as a separate subarea.

The seven subareas are identified below and shown on **Figure 1.1**:

- Subarea 1: Seal Beach (Los Angeles County line to Huntington Beach City limit)
- Subarea 2: Huntington Beach (Seal Beach City limit to Santa Ana River)
- Subarea 3: Newport Beach (Santa Ana River to Pelican Point Drive)
- Subarea 4: Newport Coast (Pelican Point Drive to Laguna Beach City limit)
- Subarea 5: Laguna Beach (northern Laguna Beach City limit to Dana Point City limit)
- Subarea 6: Dana Point (Laguna Beach City limit to Doheny Park Road)
- Subarea 7: South Dana Point / San Clemente (Doheny Park Road to Avenida Pico)

Figure 1.1: Study Area and Subareas along PCH

Source: HDR

1. Seal Beach
2. Huntington Beach
3. Newport Beach
4. Newport Coast
5. Laguna Beach
6. Dana Point
7. South Dana Point / San Clemente

1.2 Study Process

In September 2012, the six coastal cities in Orange County (Seal Beach, Huntington Beach, Newport Beach, Laguna Beach, Dana Point and San Clemente) requested that OCTA conduct this **Corridor Study for Pacific Coast Highway between Avenida Pico and the Los Angeles County line (Corridor Study)**; which is a cooperative effort of these multiple agencies (with jurisdiction) to address both long-term corridor-wide and specific sub-area improvement needs for PCH. OCTA worked with the cities and Caltrans to develop a scope of work, and Caltrans was able to secure a federal planning grant to fund a portion of this Corridor Study. OCTA led the procurement process to select a consultant for the Corridor Study, and the consultant contract commenced in the middle of 2014.

The Corridor Study followed a seven step process consisting of the following:

1. Gathering data, reviewing related studies, and analyzing existing and future conditions in the corridor (identifying problems);
2. Developing the Statement of Purpose and Need (P & N) (identifying improvement objectives);
3. Identifying a broad range of potential improvement options to address the identified needs (developing alternatives);
4. Screening the initial improvement options and packaging them into five alternatives for evaluation (initial screening);
5. Evaluating the alternatives in terms of benefits, costs, and feasibility (refinement and further detailed screening);
6. Identifying improvement strategies that have potential to help address needs identified in the P&N statement (recommending alternatives); and
7. Identifying implementation considerations and potential funding sources (outlining next steps).

This study was undertaken in coordination with the PCH Stakeholders' Working Group (SWG), which included representatives from each of the six coastal cities, Caltrans, the Southern California Association of Governments (SCAG), the County of Orange, the City of Long Beach, OCTA, and its consultant team. The SWG met monthly during the study to provide feedback on technical analyses and working documents. In addition, SWG members met individually with OCTA and the consultant team at the beginning of the study to provide input on their subarea needs and objectives, and toward the end of the study to review the viable improvement options identified for their respective subareas.

Chapter 2 - Existing Conditions

This chapter presents the existing conditions analysis of the corridor. Information presented includes traffic conditions for both weekdays and summer weekends, transit services, locations of on-street parking, bicycle facilities, and accident history.

2.1 Literature Search

As part of background research, existing local, regional, and state planning documents pertaining to the study area for all transportation modes and from relevant agencies were collected, in addition to available recent counts of traffic, bicycle, and pedestrian activities. Information was also gathered from relevant studies and projects that are underway within the study area. Apart from the six coastal jurisdictions and OCTA, "relevant agencies" included Caltrans, Gateway Cities Council of Governments (GCCOG), and the Cities of Costa Mesa and Long Beach. A list of background reference documents is presented in **Appendix A**.

2.2 Traffic Data Collection

Thirty-five(35) study intersections, representing locations throughout the corridor that handle a heavy volume of traffic and/or have substantial pedestrian or bike activity, were identified for analyses. The list includes all seven PCH intersections identified in OCTA's Congestion Management Program (CMP). An initial, longer, list of intersections was reviewed with staff of each corridor city and refined to obtain a final list of 35 intersections to be analyzed. Although PCH traverses both north-south and east-west, depending on its location along the coast, this study considers it to be a north-south arterial. In addition, with collaboration from the corridor cities, seventeen (17) arterial segments were also identified as representative of the corridor within each jurisdiction. **Figure 2.1** identifies the location of the study intersections.

2.2.1 Normal Weekday Traffic Data

OCTA and each of the corridor cities, as part of their ongoing projects and planning studies, had recent peak hour turning movement counts for some of the study intersections, and 24-hour arterial counts for some PCH segments. Upon review of the available count data, new counts were collected at 20 locations where counts were not available for 2011 or later. Weekday peak period counts, along with bicycle and pedestrian counts at crosswalks were collected either on a Tuesday, Wednesday, or Thursday during the weeks of May 19 and June 2, 2014. AM counts were conducted between 6:00 and 9:00 am and PM counts were conducted between 4:00 and 7:00 pm, and reported in 15-minute intervals. Peak hour counts for each intersection were determined as the highest four consecutive 15-minute interval volumes derived from peak period counts.

Of 17 arterial segments identified for analysis, new counts at ten 10 segments were collected during the same period in May and June as the intersections, and were reported at 15-minute intervals. For the remaining eight study arterials, recent counts (2012 or newer) were obtained from the corridor cities and Caltrans.

Lane geometry necessary for intersection level-of-service (LOS) analysis was obtained from aerial images and confirmed through field visits. Signal timing for each intersection was obtained from each jurisdiction and Caltrans. Roadway classification and roadway capacities were obtained from the Orange County Master Plan of Arterial Highways (MPAH) 2011 map.

Appendix B includes peak hour and 24-hour count sheets for locations where counts were collected in May/June 2014.

Figure 2.1: Location of Study Intersections

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

2.2.2 Summer Weekend Traffic Data

The PCH corridor is unique compared to the rest of Orange County because it also experiences high travel demand patterns on weekends and during the summer. Recognizing the importance for corridor circulation under summer conditions, in addition to the typical peak conditions, this study evaluated summer weekend mid-day peak period conditions at 25 of the 35 study intersections for summer traffic analysis.

The corridor cities provided summer weekend traffic counts at the identified study intersections. Five of the six cities conducted counts during the peak midday period of 11:00 am to 2:00 pm on Saturday, August 16, 2014. These counts, collected in 15-minute intervals, included vehicles, bicycles, and pedestrians passing through intersections. In addition to study intersections, the City of Huntington Beach also collected summer counts at the intersections of PCH at Anderson Street and Magnolia Street. Laguna Beach provided vehicle counts and pedestrian and bike crossing counts taken during the hours of 12:00 noon to 2:00 pm on Saturday, August 24, 2013. The locations of the summer counts are shown in **Figure 2.2** and counts sheets are included in **Appendix C**. **Table 2.1** lists each study intersection and arterial segments along with their jurisdiction and count collection dates.

Table 2.1: Traffic Data Collection

ID	Intersections	Jurisdiction	Count Date	Source
1	PCH at Main Street **	Seal Beach	05.21.14 08.16.14	New Counts
2	PCH at Seal Beach Boulevard **		05.21.14 08.16.14	New Counts
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	05.21.14	New Counts
4	PCH at Warner Avenue* **	Huntington Beach	2013 08.16.14	OCTA New Counts
5	PCH at Goldenwest Street **		05.21.14 08.16.14	New Counts
6	PCH at 6th Street **		05.22.14 08.16.14	New Counts
7	PCH at Main Street		05.22.14	New Counts
8	PCH at 1st Street		05.22.14	New Counts
9	PCH at Beach Boulevard* **		2013 08.16.14	OCTA New Counts
10	PCH at Brookhurst Street		05.22.14	New Counts
11	PCH at Superior Avenue/Balboa Boulevard **	Newport Beach	2014 04.16.14	Newport Beach New Counts
12	PCH at Newport Boulevard*		2013	OCTA/Newport Beach
13	PCH at Riverside Avenue		06.03.14	New Counts
14	PCH at Dover Drive **		2013 08.16.14	Newport Beach New Counts
15	PCH at Bayside Drive		06.03.14	New Counts
16	PCH at Jamboree Road **		2013 08.16.14	Newport Beach New Counts
17	PCH at Newport Center Drive		2013	Newport Beach
18	PCH at MacArthur Boulevard* **		2013 08.16.14	OCTA/Newport Beach New Counts
19	PCH at Goldenrod Avenue		2013	Newport Beach
20	PCH at Marguerite Avenue **		06.03.14 08.16.14	New Counts
21	PCH at Newport Coast Drive **		06.03.14 08.16.14	New Counts
22	PCH at Broadway Street/Laguna Canyon Road* **	Laguna Beach	2013 08.24.13	OCTA Laguna Beach

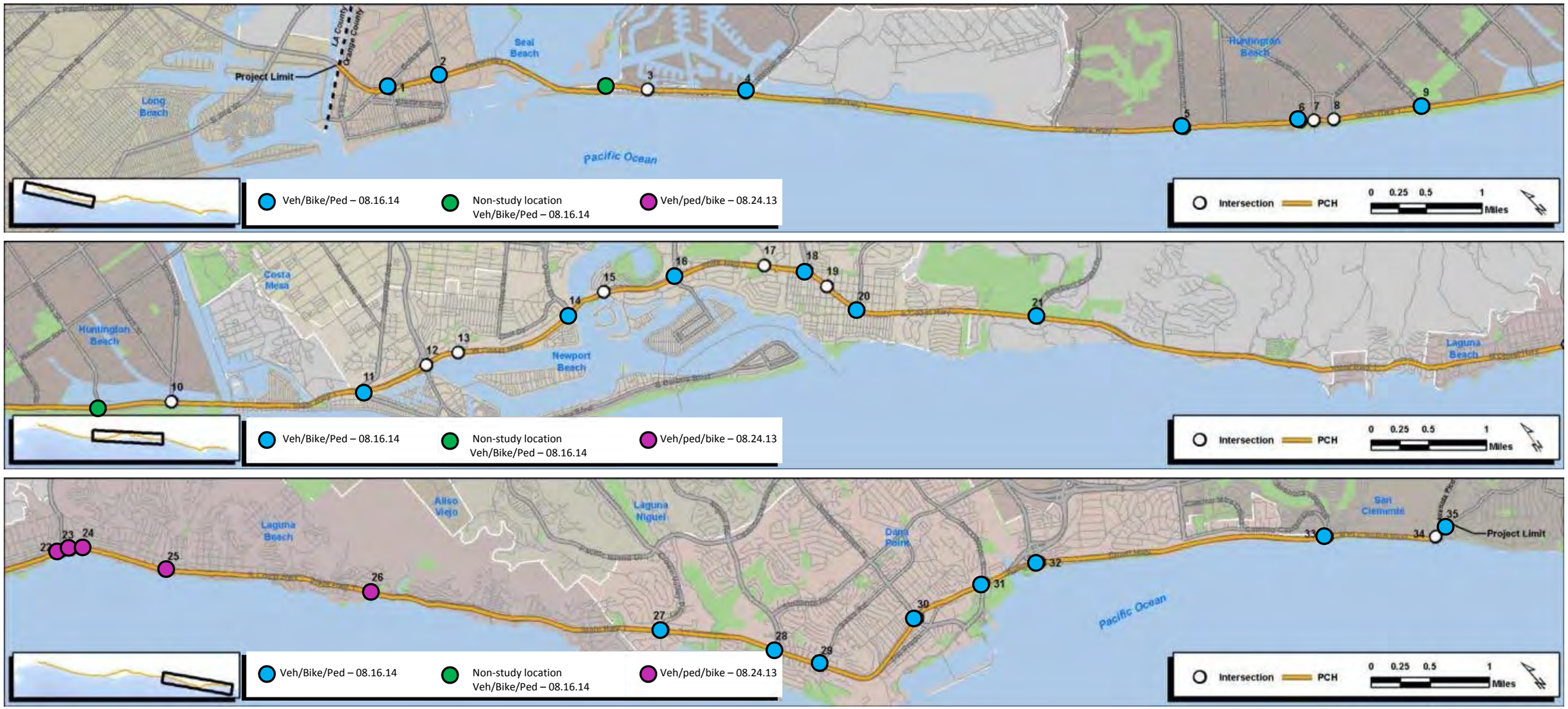
Table 2.1: Traffic Data Collection (continued)

ID	Intersection	Jurisdiction	Count Date	Source
23	PCH at Ocean Avenue **	Laguna Beach	06.04.14 08.24.13	New Counts Laguna Beach
24	PCH at Laguna Avenue **		06.04.14 08.24.13	New Counts Laguna Beach
25	PCH at Cress Street **		06.04.14 08.24.13	New Counts Laguna Beach
26	PCH at Wesley Drive **		06.04.14 08.24.13	New Counts Laguna Beach
27	PCH at Crown Valley Parkway/Monarch Bay Drive* **	Dana Point	2013 08.16.14	OCTA New Counts
28	PCH at Niguel Road/Ritz Carlton Drive **		06.04.14 08.16.14	New Counts
29	PCH at Selva Road **		2014 08.16.14	Dana Point New Counts
30	PCH at Street of the Golden Lantern* **		2013 08.16.14	OCTA New Counts
31	PCH at Del Obispo Street/Dana Point Harbor Drive **		06.05.14 08.16.14	New Counts
32	PCH at Doheny Park Road **		2013 08.16.14	National Data & Surveying ServicesNew Counts
33	PCH at Camino Capistrano **	San Clemente	06.05.14 08.16.14	New Counts
34	PCH at Avenida Estacion		06.05.14	New Counts
35	PCH at Avenida Pico **		2012 08.16.14	San Clemente New Counts

ID	Arterial	Jurisdiction	Count Date	Source
1	PCH near Main Street	Seal Beach	05.21.14	New Counts
2	PCH at 5th Street/Coral Cay		11.09.12	Caltrans
3	PCH n/o Main Street	Huntington Beach	05.22.14	New Counts
4	PCH between Main Street and Beach Boulevard		05.22.14	New Counts
5	PCH s/o Beach Boulevard		05.22.14	New Counts
6	PCH n/o Superior Avenue	Newport Beach	2013	Newport Beach
7	PCH s/o Superior Avenue		2013	Newport Beach
8	PCH n/o Dover Drive		2013	Newport Beach
9	PCH s/o Dover Drive		2013	Newport Beach
10	PCH near Bayside Drive		06.03.14	New Counts
11	PCH s/o Jamboree Road		2013	Newport Beach
12	PCH s/o MacArthur Boulevard		2013	Newport Beach
13	PCH s/o Newport Coast Drive		2013	Newport Beach
14	PCH n/o Broadway (SR-133)	Laguna Beach	06.04.14	New Counts
15	PCH s/o Broadway (SR-133)		06.04.14	New Counts
16	PCH Copper Lantern to Dana Point Harbor/Del Obispo	Dana Point	06.05.14	New Counts
17	PCH Camino Capistrano to Avenida Estacion	San Clemente	06.05.14	New Counts

Notes: * CMP locations ** Summer counts collected

Figure 2.2: Intersections with Summer Counts



Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
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26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

2.3 Methodology and Assumptions

LOS analysis of 35 study intersections and 17 arterial segments along PCH was performed for the Existing (Year 2014) conditions. This section outlines the LOS methodologies and the assumptions that were used for the analysis.

2.3.1 Level of Service Methodology

Both Intersection Capacity Utilization (ICU) and Highway Capacity Manual (HCM) methodologies were used to determine intersection peak hour LOS. In general, the ICU methodology is based on the turning volumes and vehicle capacity of the intersection. It does not make allowances for the operational characteristics such as queuing, delay, speed, etc. In contrast, the HCM methodology is a performance measure based on delay (an average amount of time all vehicles have to wait to clear an intersection).

Intersection Capacity Utilization (ICU)

In conformance with the Orange County CMP 2013 requirements, existing AM and PM peak hour operating conditions for study intersections was evaluated using the ICU methodology. The ICU analysis is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the capacity required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

The ICU value translates to an LOS estimate, which is a relative measure of intersection performance. The degree of congestion at an intersection is described by the LOS, which ranges from LOS A to LOS F, with LOS A representing free-flow conditions and LOS F representing over-saturated traffic conditions throughout the peak hour. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements. The six qualitative LOS categories are defined along with the corresponding ICU values in **Table 2.2**.

Highway Capacity Manual 2000 (HCM 2000)

With the majority of PCH being under Caltrans' jurisdiction, HCM analyses were also performed consistent with both the Caltrans *Guide for The Preparation of Traffic Impact Studies, December 2002*; and the Highway Capacity Manual 2000 (HCM 2000) methodology. The HCM 2000 methodology presents LOS in terms of the average control delay (in seconds per vehicle) at signalized intersections and unsignalized (all-way stop) intersections. The worst approach delay (in seconds per vehicle) is used to present the LOS at unsignalized (two-way stop) intersections. The relationship between the control delay and the LOS for signalized and unsignalized intersections is shown in **Table 2.2.**

Table 2.2: Level of Service

LOS	ICU Methodology	HCM 2000 Methodology	
	V/C Ratio or ICU	Control Delay in Seconds (Signalized Intersections)	Control Delay in Seconds (Unsignalized Intersections)
A	0.00-0.60	0.0-10.0	0.0-10.0
B	0.61-0.70	10.1-20.0	10.1-15.0
C	0.71-0.80	20.1-35.0	15.1-25.0
D	0.81-0.90	35.1-55.0	25.1-35.0
E	0.91-1.00	55.1-80.0	35.1-50.0
F	1.01 or greater	80.1 or greater	50.1 or greater

Source: HCM 2000

Assumptions

Following is the list of assumptions that were taken into consideration during the LOS analysis:

- The Saturation Flow rate for the analysis using the ICU methodology was assumed to be 1,700 passenger cars per hour per lane (pc/h/lane) as per the CMP requirements.
- The Saturation Flow rate for the analysis using the HCM 2000 methodology was assumed to be 1,900 passenger cars per hour per lane (pc/h/lane) as per Transportation Research Board Report 209 cited in HCM.
- The peak hour factor was used from the existing counts for the analysis in the existing (2014) conditions. For future year conditions, the peak hour factor was assumed to be approximately1.00.
- Signal timing plans for all the study intersections were obtained from Caltrans and local jurisdictions. For the intersections where the signal timing information was not available, default parameters (cycle length, yellow time, all red, flashing don't walk) were assumed and the splits were optimized based on the volumes in the peak hour.
- Travel speed from field observations were used for the analysis.
- A de-facto right turn lane was assumed for a shared through-right turn lane with a width of at least 21 feet and prohibited on-street parking.

2.4 Existing Conditions Analysis

2.4.1 Number of Lanes

Over its length in Orange County, PCH varies from two to eight travel lanes. **Figure 2.3** graphically presents the number of lanes along the corridor. Following is a summary of number of lanes by jurisdiction:

- Seal Beach – mostly 4-lanes
- Huntington Beach – combination of 4 and 6-lanes
- Newport Beach – varied number of lanes ranging from 4 to 8-lanes
- Laguna Beach – mostly 4-lanes
- Dana Point – combination of 4 and 6-lanes; 2-lanes south of Palisades Drive
- San Clemente – mostly 2-lanes; 4-lanes between Avenida Estacion and Avenida Pico

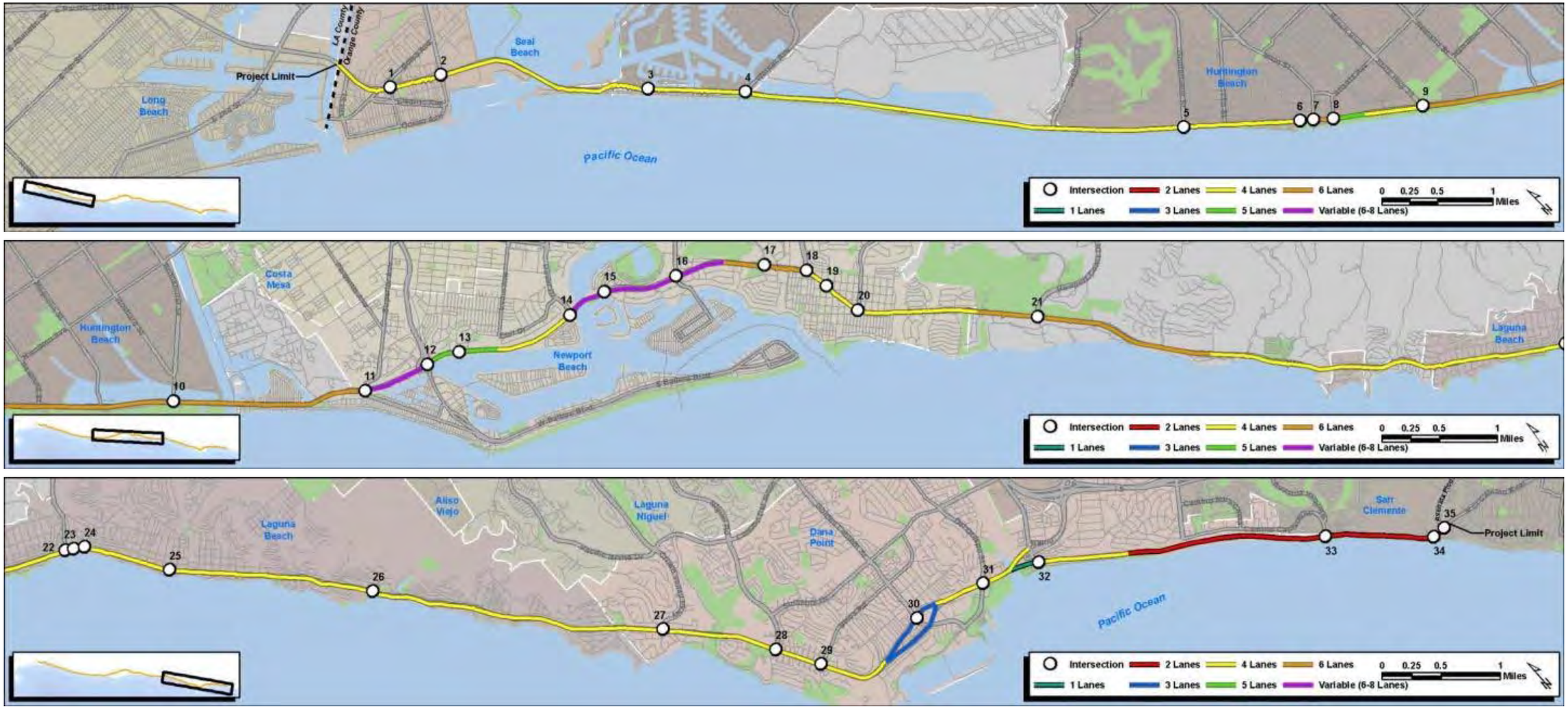
2.4.2 Existing Bicycle Facilities

Caltrans defines bicycle facilities based on the following three categories:

- Class I bike facilities provide completely separate right-of-way(ROW) and are designated for the exclusive use of bicycles and pedestrians with minimal vehicle and pedestrian cross-flow.
- Class II bike facilities provide restricted ROW and are designated for the use of bicycles with a striped lane on a street or highway.
- Class III bike facilities provide for a ROW designated by signs or pavement markings (sharrows) for shared use with pedestrians or motor vehicles.
- Class IV bikeway (separated bikeway) is designed for the exclusive use of bicycles alongside a vehicular ROW but separated from vehicular traffic. The separation may include grade separation, flexible posts, inflexible physical barriers, or on-street parking.

Figure 2.4 illustrates Class I, II and III bike facilities, while **Figure 2.5** presents a Class IV bike facility. **Figure 2.6** presents existing bicycle facilities along PCH. All three types of bike facilities (Class I, II, and III) are present along the corridor.

Figure 2.3: Existing Number of Lanes on Pacific Coast Highway



Source: HDR

1. Pacific Coast Highway at Main Street (Seal Beach)
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
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9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
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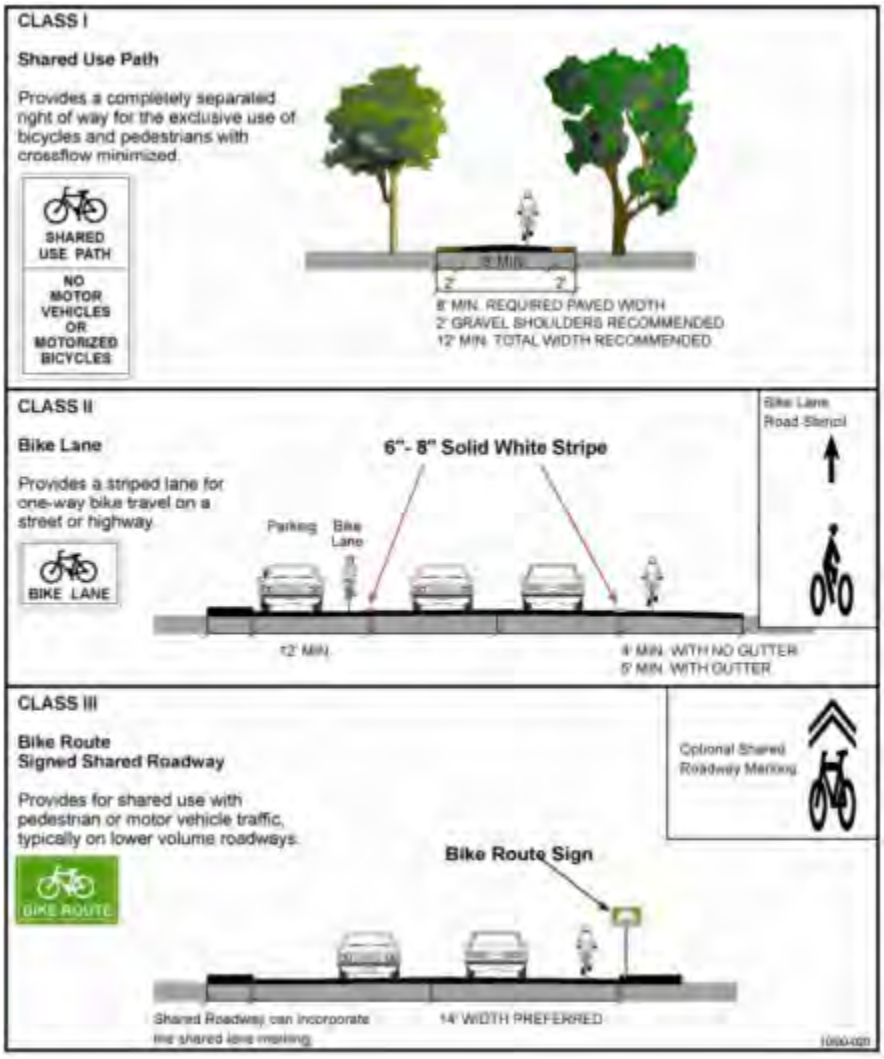
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 2.4: Class I, II and II Bicycle Facility



Source: 2009 OCTA Commuter Bikeways Strategic Plan

Figure 2.5: Class IV Bicycle Facility

Source: Google Images for Class IV Bikeways in Silicon Valley

Figure 2.6: Existing Bicycle Facilities in the PCH Corridor

Source: OCTA, City of Newport Beach (DRAFT) Bicycle Master Plan, City of Laguna Beach Bike Route Map

1. Pacific Coast Highway at Main Street (Seal Beach)
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
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34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Bicycle facilities along the study corridor vary based on location, provision of parking and context. Following is a breakdown of bike facilities on PCH by jurisdiction:

- Seal Beach – Class II
- Huntington Beach – mostly Class I (beach path) and II
- Newport Beach – some Class I, II and III
- Laguna Beach – no marked/designated bike lanes
- Dana Point – Class II and III, with a stretch of Class I facility between Doheny Park Road and Camino Capistrano
- San Clemente – Class II with Class IV also through much of the segment

2.4.3 Existing Transit Service - Bus

OCTA

Existing bus service along PCH was obtained from OCTA and is presented in **Figure 2.6**. OCTA is the primary bus service provider with Route 1 serving PCH, from Long Beach to San Clemente. On weekdays, Route 1 operates every 30 minutes between San Clemente and the Newport Transportation Center and every 60 minutes from the Newport Transportation Center to Long Beach. Weekend service is approximately every 60 minutes on the entire route. On weekdays, the first southbound bus starts at 5:41 am and the last northbound bus terminates at 11:07 pm. Neither the first southbound bus, nor the last northbound bus, serves Long Beach, instead they begin and terminate at the Newport Transportation Center. During weekdays, the first southbound bus from Long Beach starts at 5:30 am and the last northbound bus terminates at Long Beach at 9:57 pm. A summary of the Route 1 schedule is presented in **Table 2.3**. Further schedule details are provided in **Appendix D**.

Table 2.3: Summary of Route 1 Non-summer Schedule

Northbound						
Timed Stop	**Weekday**			**Weekend**		
	First Bus	**Last Bus**		**First Bus**	**Last Bus**	
San Clemente	4:39 AM	7:51 PM	10:01 PM	5:30 AM	6:18 PM	7:22 PM
Newport Transportation Center	5:37 AM	9:05 PM	11:07 PM	6:43 AM	7:43 PM	8:45 PM
Long Beach	6:24 AM	9:57 PM	N/A	7:36 AM	8:41 PM	N/A

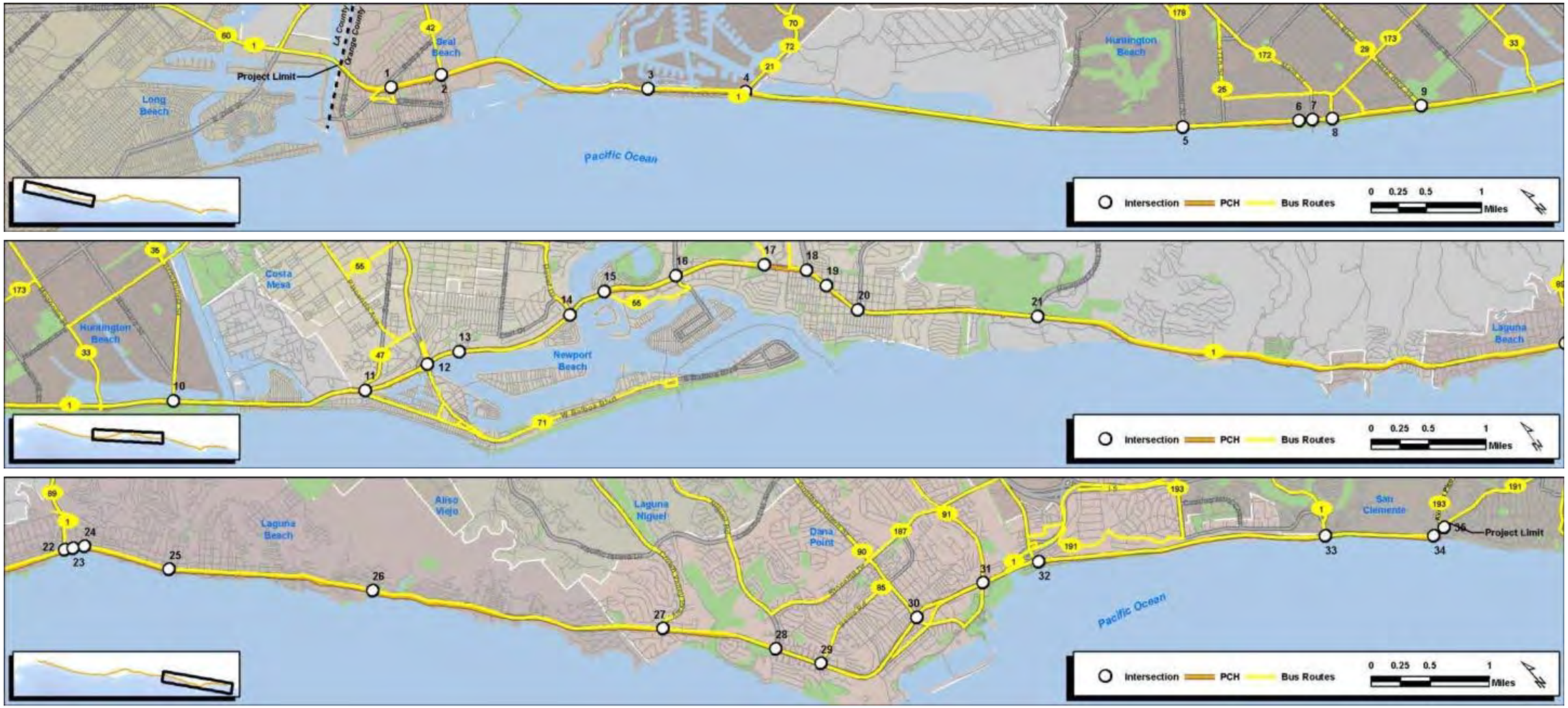
Southbound					
Timed Stop	**Weekday**			**Weekend**	
	First Bus		**Last Bus**	**First Bus**	**Last Bus**
Long Beach	N/A	5:30 AM	8:35 PM	5:25 AM	7:17 PM
Newport Transportation Center	5:41 AM	6:18 AM	9:30 PM	6:15 AM	8:15 PM
San Clemente	6:46 AM	7:23 AM	10:46 PM	7:27 AM	9:31 PM

Source: OCTA

During summer, OCTA runs Route 1 on a “summer schedule” that requires additional buses during weekends

In addition to Route 1, as illustrated in **Figure 2.7**and presented in **Table 2.4**, several OCTA bus routes running on intersecting corridors terminate at and/or several parts of PCH, facilitating transfers to Route 1 and connections to other transportation centers.

Figure 2.7: Existing OCTA Bus Routes along Pacific Coast Highway



Source: OCTA

1. Pacific Coast Highway at Main Street (Seal Beach)
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3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
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34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Table 2.4: OCTA Bus Services to parts of PCH Corridor

Route	From	To	Serves	Weekday Service Span	Weekend / Holidays Service Span	Service to other Transportation Centers
25	Fullerton	Huntington Beach	PCH/1st Street	18 hours	12 hours	Buena Park Metrolink Station Fullerton Park & Ride
29	La Habra	Huntington Beach	PCH/1st Street	20 hours	19.5 hours	Buena Park Metrolink Station Goldenwest Transportation Center / Park & Ride
33	Fullerton	Huntington Beach	PCH/Magnolia Street	15 hours	11 hours	Fullerton Park & Ride
35	Fullerton	Huntington Beach	PCH/Brookhurst Street	17.5 hours	14 hours	Fullerton Park & Ride
42	Seal Beach	Orange	PCH/Seal Beach Boulevard	18.5 hours	15 hours	N/A
47	Fullerton	Newport Beach	PCH/Superior Avenue-Balboa Boulevard	19 hours	18 hours	Fullerton Transportation Center
55	Santa Ana	Newport Beach	Parts of PCH between Newport Center Drive and Dover Drive	19 hours	17 hours	Newport Transportation Center / Park & Ride
70	Sunset Beach	Tustin	PCH/Warner Avenue	18 hours	14 - 17 hours	N/A
71	Yorba Linda	Balboa	PCH/Newport Boulevard	18 hours	12.5 - 15 hours	N/A
72	Sunset Beach	Tustin	PCH/Warner Avenue	16 hours	10 - 13 hours	N/A
85	Mission Viejo	Dana Point	PCH between Crown Valley Parkway and Del Obispo Street	15.5 hours	13 hours	N/A
89	Mission Viejo	Laguna Beach	PCH/Broadway Street	18 hours	15.5 hours	Laguna Hills Transportation Center / Park & Ride Laguna Beach Bus Station
90	Tustin	Dana Point	PCH/Del Obispo Street	17.5 - 19 hours	13.5 – 17 hours	Tustin Metrolink Station
91	Laguna Hills	San Clemente	PCH between Del Obispo Street and Los Molinos (just east of study area)	18 hours	13 hours	Laguna Hills Transportation Center / Park & Ride
172	Huntington Beach	Costa Mesa	PCH/1st Street	14 hours	No service	South Coast PLaza Transportation Center / Park & Ride
173	Huntington Beach	Costa Mesa	PCH/1st Street	14 hours	No service	South Coast PLaza Transportation Center / Park & Ride
187	Laguna Hills	Dana Point	PCH/Del Prado	13 hours	No service	Laguna Hills Transportation Center / Park & Ride
191	Mission Viejo	San Clemente	PCH/Avenida Pico PCH/Camino Capistrano	14 hours	13.5 hours	San Juan Capistrano Train Depot San Clemente Metrolink Station
193	Dana Point	San Clemente	PCH/Avenida Pico	13 hours	No service	San Clemente Metrolink Station

Source: OCTA

City of Laguna Beach

The City of Laguna Beach operates two fixed route transit services (Mainline and Summer Trolley) to provide intra-community transportation services and augment services provided by OCTA. Mainline service operates on three fixed routes (Grey, Blue and Red), Monday through Saturday, year around. During the week, service is provided on an hourly basis between 6:30 AM and 6:30 PM, while on Saturdays, the system runs between 9:30 AM and 6:30 PM. Of the three fixed routes, one (the Red Route) provides service along PCH, between downtown Laguna Beach and the Ritz Carlton in Dana Point.

Summer Trolley service runs on three fixed routes (Canyon, North and South route) for ten weeks from the end of June until the Sunday before Labor Day. The South Route predominantly provides service along PCH. Operating hours for the Summer Trolley are every half hour, seven days a week from 9:30 AM to 11:30 PM. This is a free service designed to accommodate locals and visitors who primarily come to Laguna Beach for the Pageant of the Masters, local art festivals and other day excursions during the ten week summer season. Details of Laguna Beach trolley services are provided in **Appendix D**.

City of Dana Point

During the summer of 2015, the City of Dana Point rolled initiated trolley service, on a trial basis for summer weekends. The service began on June 26, 2015 and terminated on September 7, 2015. The free trolley ran on Fridays, Saturdays, and Sundays providing service along the PCH, connecting with Laguna Beach's trolley service at the Ritz Carlton. The trolley route provided stops near major hotels, the Lantern District, Strand Beach (Selva Road), Dana Point Harbor, Doheny State Beach, timeshares along PCH, and Doheny Village. Further details on the City of Dana Point's trolley services are provided in **Appendix D**.

Long Beach Transit

Long Beach Transit operates Routes131 and 171 along PCH providing inter-county bus connections between Long Beach and Seal Beach.

Route 131 runs approximately every hour, between Wardlow Station on the Los Angeles Metropolitan Transportation Authority's (Metro) Blue Line in Long Beach and PCH at Main Street in Seal Beach. This route connects DeVry University and Harriman Jones Medical Center. Southbound service on weekdays begins at 4:40 AM, and continues through 8:05 PM. Northbound service starts at 6:19 AM and runs through 8:57 PM. On weekends, southbound bus service departs from the Wardlow Station at 5:30 AM and continues through 7:30 PM. Northbound bus service starts departures at 6:33 AM and continues through 8:33 PM. Details of the Route 131 schedule and route are provided in **Appendix D.**

Route 171 runs approximately every 30 minutes, between Technology Park in Long Beach and PCH at Main Street in Seal Beach. This route connects the California State University, Long Beach (CSULB) campus and Veterans Administration (VA) Hospital, and PCH Station on the Metro PCH Blue Line. The first eastbound (southbound) bus service on weekdays begins at 4:30 AM, and the last one departs at 8:30 PM. The last southbound bus on the route departs at 10:20 PM and terminates at CSULB. During weekdays the westbound (northbound) direction, begins in Seal Beach at 5:23 AM, and the last one departs at 9:35 PM. The last northbound departs from CSULB at 11:26 PM. During weekends and holidays, Route 171 does not provide service to Seal Beach; instead, all services are between Technology Place and the VA Hospital in Long Beach. Details of the Route 171 schedule and route are provided in **Appendix D.**

2.4.4 Existing Transit Service - Rail

The PCH corridor is served by two Metrolink lines (Orange County and Inland Empire – Orange County) at San Clemente. Metrolink is governed by the Southern California Regional Rail Authority (SCRRA) which provides regional commuter rail service in Southern California. The services provided on the Orange County and Inland Empire – Orange County Line are described below:

- The Orange County Line provides weekday and weekend service between downtown Los Angeles and Oceanside with station stops in between.
- The Inland Empire – Orange County Line provides weekday and weekend service between downtown San Bernardino, downtown Riverside and Oceanside with station stops in between.

Table 2.5 provides a summary of basic statistics for the two Metrolink lines serving the PCH corridor. Further service details are provided in **Appendix E**.

Table 2.5: Summary of Metrolink Lines

Line	Orange County Line	Inland Empire – Orange County Line
Stations	14	15
Route Miles	87.2	100.1
Trains Operated/Weekday (from San Clemente)	29(12)	16(4)
Trains Operated/Weekend (from San Clemente)	8(8)	4(4)
Average Weekday Service Riders *	7,900	4,600
Average Saturday Service Riders	1,800	600
Average Sunday Service Riders	1,500	600
Average Speed	39	38

Source: Metrolink 2014
http://www.metrolinktrains.com/pdfs/Facts&Numbers/Fact_Sheets/Fact_Sheet_2014_Q2.pdf

2.4.5 On-street Parking

As illustrated in **Figure 2.8**, several segments of PCH have on-street parking, which in some parts of the corridor serves adjacent commercial development, and in other parts serve primarily as parking for beach-goers.

2.4.6 Accident Data

Accident data for the PCH corridor obtained from the Statewide Integrated Traffic Records System (SWITRS) between 2006 and 2012 is presented in **Table 2.6.** Since this was a Corridor Study, the accident history was not used for safety evaluation, rather it was used as a tool to help identify potential areas of conflict in the corridor as part of broader corridor issue analyses. Accident history data for higher-volume non-study intersections were included to help illustrate where conflict points occurred in proximity to several adjacent intersections.

Figure 2.9 summarizes the total number of accidents at each of the 35 study intersections. The table also provides information on the total number of accidents that occurred on PCH mid-block segments between the study intersections. In addition, **Figure 2.9** identifies the locations of non-study intersections that had a total number of accidents comparable to or higher than the numbers reported at the study intersections.

Table 2.7 lists the total number of reported accidents, as well as the number involving bicycles and pedestrians, for the study intersections and the non-study intersections shown on **Figure 2.9**.

Table 2.6: Summary of Accidents Reported by Year by Jurisdiction

Jurisdiction	2006		2007		2008		2009		2010		2011		2012		Total		Percent
	Inter	Mid	Inter	Mid	Inter	Mid	Inter	Mid	Inter	Mid	Inter	Mid	Inter	Mid	Inter	Mid	Inter/Mid
Seal Beach	54	9	44	15	55	8	34	8	44	10	44	21	60	15	335	86	80% / 20%
Huntington Beach	134	63	171	54	153	44	139	57	125	49	130	61	124	48	976	376	72% / 28%
Newport Beach	229	79	234	74	167	71	168	53	158	45	130	50	133	65	1212	437	73% / 27%
Laguna Beach	267	30	259	25	244	26	232	27	234	30	181	29	163	17	1580	184	90% / 10%
Dana Point	106	19	107	26	920	22	87	16	74	30	72	28	102	48	638	189	77% / 23%
San Clemente	7	1	9	1	3	1	10	0	13	2	14	2	11	6	67	13	84% / 16%
Total	***790***	***201***	***824***	***195***	***712***	***172***	***670***	***161***	***648***	***166***	***571***	***191***	***593***	***199***	***4,808***	***1,285***	***79% / 21%***

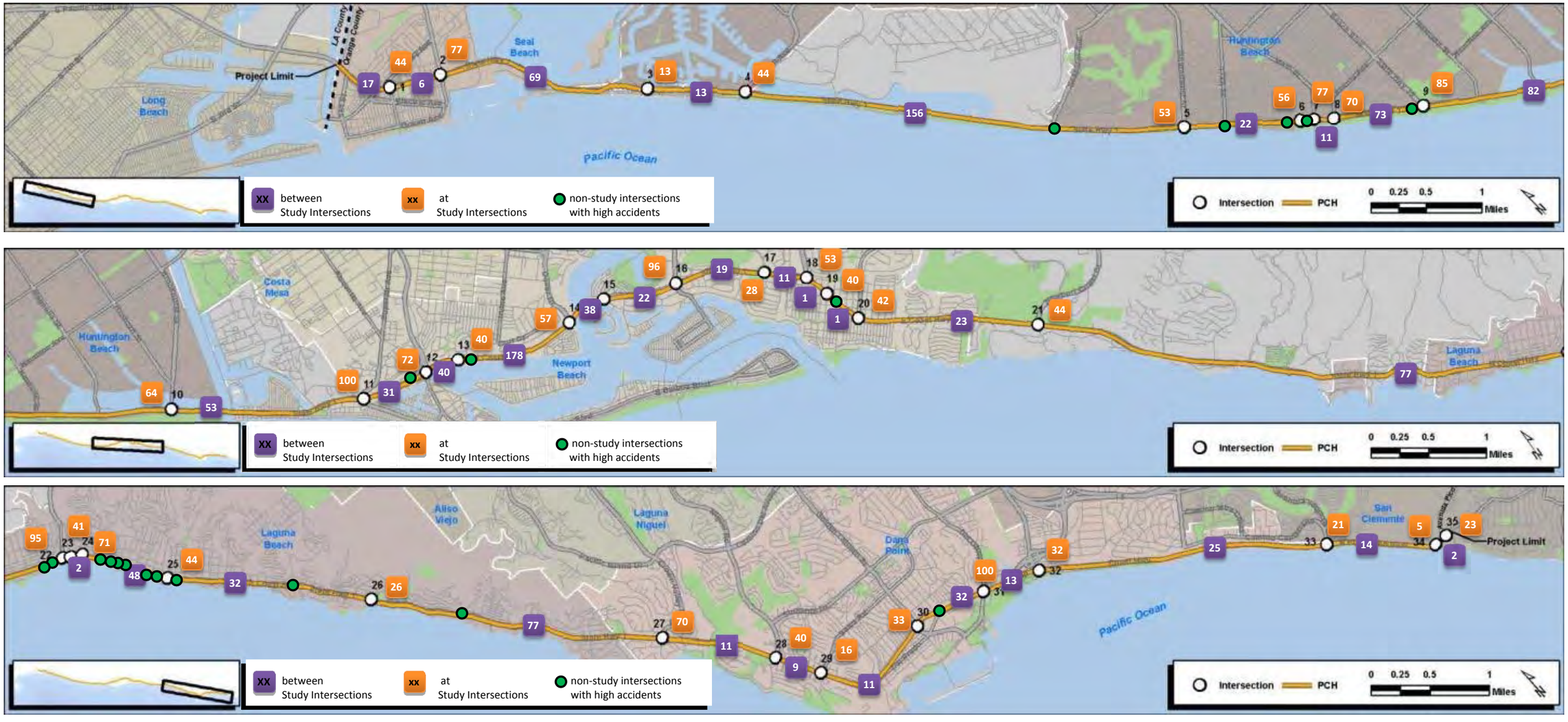
Source: SWITRS (2006-2012)
Note: Inter – at intersection; Mid – midblock between intersections
Accidents were assigned to an intersection if they occurred within 250 feet or less distance from the intersection, otherwise they were considered as being midblock incidents.

Figure 2.8: Existing On-street Parking along Pacific Coast Highway

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 2.9: Total Accidents Reported along PCH (2006-2012)



Source: SWITRS (2006-2012)

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Table 2.7: Accident Data Reported by Intersections

ID	Study Intersection	Jurisdiction	Total Collisions	Bike Involved in Collision	Pedestrian Involved in Collision
1	PCH at Main Street	Seal Beach	44	3	2
2	PCH at Seal Beach Boulevard	Seal Beach	77	1	1
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	13	2	0
4	PCH at Warner Avenue	Huntington Beach	44	3	1
5	PCH at Goldenwest Street	Huntington Beach	53	2	3
6	PCH at 6th Street	Huntington Beach	56	4	3
7	PCH at Main Street	Huntington Beach	70	3	5
8	PCH at 1st Street	Huntington Beach	77	5	5
9	PCH at Beach Boulevard	Huntington Beach	85	3	2
10	PCH at Brookhurst Street	Huntington Beach	64	3	4
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	100	7	1
12	PCH at Newport Boulevard	Newport Beach	72	6	1
13	PCH at Riverside Avenue	Newport Beach	40	4	3
14	PCH at Dover Drive	Newport Beach	57	3	0
15	PCH at Bayside Drive	Newport Beach	62	11	0
16	PCH at Jamboree Road	Newport Beach	96	2	2
17	PCH at Newport Center Drive	Newport Beach	28	1	0
18	PCH at MacArthur Boulevard	Newport Beach	53	0	0
19	PCH at Goldenrod Avenue	Newport Beach	40	3	1
20	PCH at Marguerite Avenue	Newport Beach	42	2	1
21	PCH at Newport Coast Drive	Newport Beach	44	3	0
22	PCH at Broadway Street/Laguna Canyon Road	Laguna Beach	95	1	2
23	PCH at Ocean Avenue	Laguna Beach	41	2	1
24	PCH at Laguna Avenue	Laguna Beach	71	3	2
25	PCH at Cress Street	Laguna Beach	44	0	4
26	PCH at Wesley Drive	Laguna Beach	26	0	0
27	PCH at Crown Valley Parkway/Monarch Bay Drive	Dana Point	70	1	0
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	40	1	0
29	PCH at Selva Road	Dana Point	16	0	0
30	PCH at Street of the Golden Lantern	Dana Point	33	1	5
31	PCH at Del Obispo Street/Dana Point Harbor Drive	Dana Point	100	4	3
32	PCH at Doheny Park Road	Dana Point	32	0	0
33	PCH at Camino Capistrano	San Clemente	21	6	1
34	PCH at Avenida Estacion	San Clemente	5	0	1
35	PCH at Avenida Pico	San Clemente	23	0	2

Non-Study Intersection	Jurisdiction	Total Collision	Bike Involved in Collision	Pedestrian Involved in Collision
PCH at Seapoint Street	Huntington Beach	27	1	1
PCH at 17th Street	Huntington Beach	35	2	0
PCH at 9th Street	Huntington Beach	25	1	0

Table 2.7: Accident Data Reported by Intersections (continued)

Non-Study Intersection	Jurisdiction	Total Collision	Bike Involved in Collision	Pedestrian Involved in Collision
PCH at 2nd Street	Huntington Beach	23	0	5
PCH at Twin Dolphin Drive	Huntington Beach	36	3	0
PCH at Hoag Drive	Newport Beach	31	2	0
PCH at Tustin Avenue	Newport Beach	27	2	1
PCH at Iris Avenue	Newport Beach	36	4	1
PCH at Jasmine Street	Laguna Beach	46	0	1
PCH at Aster Street	Laguna Beach	42	0	1
PCH at Legion Street	Laguna Beach	52	0	0
PCH at Cleo Street	Laguna Beach	52	2	1
PCH at Thalia Street	Laguna Beach	41	0	1
PCH at Anita Street	Laguna Beach	53	1	1
PCH at Oak Street	Laguna Beach	52	2	1
PCH at Brooks Street	Laguna Beach	59	1	8
PCH at Mountain Road	Laguna Beach	61	0	0
PCH at Nyles Place	Laguna Beach	45	0	3
PCH at Eagle Rock Way	Laguna Beach	52	0	3
PCH at Crystal Lantern	Dana Point	31	5	0

Source: SWITRS (2006-2012)

With the exception of Laguna Beach, where a number of non-study intersections were locations with high collisions, generally, the study intersections were locations with higher numbers of collisions. Although for most of the PCH corridor, 80% of accidents were located at intersections and the remaining 20% were arterial midblock between intersections. Laguna Beach had a higher intersection/midblock ratio than the corridor average.

2.4.7 Existing Arterial Analysis

Based on recent 24-hour counts collected on the PCH corridor, existing average daily traffic (ADT) ranged between 17,400 (between Camino Capistrano and Avenida Estacion)and 64,000 (s/o Dover Drive)vehicles. Arterial segment analysis was performed at 17 selected locations, by calculating daily V/C ratios. V/C ratios were obtained by dividing the observed 24-hour traffic count on a PCH segment by OCTA MPAH capacity assumptions, except for the segment of the PCH between Camino Capistrano and Avenida Estacion. Although PCH is a two-lane undivided facility in this stretch, it has no cross-traffic due to lack of driveways and cross streets. This enables traffic to move faster than on a typical two-lane collector with cross-traffic, and warrants an augmented capacity assumption. The capacity of PCH between Camino Capistrano and Avenida Estacion is assumed at 18,800 vehicles per day, consistent with the City of San Clemente Circulation Element capacity assumption for an 'augmented local (2-lane) facility'.

Table 2.8 presents arterial segment performance, as well as information on daily traffic count and segment classification.

Table 2.8: Existing Arterial Daily V/C and LOS

ID	Arterial	Segment Limits	Jurisdiction	Count	Classification	Capacity	V/C	LOS
1	PCH	near Main Street	Seal Beach	34,639	Primary (4 Lane Divided)	37,500	0.92	E
2	PCH	at 5th Street/Coral Cay	Seal Beach	41,975	Primary (4 Lane Divided)	37,500	>1	F
3	PCH	n/o Main Street	Huntington Beach	33,898	Primary (4 Lane Divided)	37,500	0.90	E
4	PCH	between Main Street and Beach Boulevard	Huntington Beach	35,013	Primary (4 Lane Divided)	37,500	0.93	E
5	PCH	s/o Beach Boulevard	Huntington Beach	36,689	Major (6 Lane Divided)	56,300	0.65	B
6	PCH	n/o Superior Avenue	Newport Beach	47,000	Major (6 Lane Divided)	56,300	0.83	D
7	PCH	s/o Superior Avenue	Newport Beach	39,000	Major (6 Lane Divided)	56,300	0.69	B
8	PCH	n/o Dover Drive	Newport Beach	44,000	Primary (4 Lane Divided)	37,500	>1	F
9	PCH	s/o Dover Drive	Newport Beach	64,000	Principal (8 Lane Divided)	75,000	0.85	D
10	PCH	near Bayside Drive	Newport Beach	53,696	Principal (8 Lane Divided)	75,000	0.72	C
11	PCH	s/o Jamboree Road	Newport Beach	41,000	Major (6 Lane Divided)	56,300	0.73	C
12	PCH	s/o MacArthur Boulevard	Newport Beach (Corona Del Mar)	51,000	Primary (4 Lane Divided)	37,500	>1	F
13	PCH	s/o Newport Coast Drive	Newport Beach	38,000	Major (6 Lane Divided)	56,300	0.67	B
14	PCH	n/o Broadway (SR-133)	Laguna Beach	36,420	Primary (4 Lane Divided)	37,500	0.97	E
15	PCH	s/o Broadway (SR-133)	Laguna Beach	40,337	Primary (4 Lane Divided)	37,500	>1	F
16	PCH	between Copper Lantern and Dana Point Harbor/ Del Obispo	Dana Point	40,657	Primary (4 Lane Divided)	37,500	>1	F
17	PCH	between Camino Capistrano and Avenida Estacion	San Clemente	17,426	Collector (2 Lane Undivided)	18,800	0.93	E

Source: HDR, OCTA MPAH, City of San Clemente General Plan Circulation Element
Notes: For this study PCH is considered a north-south corridor
Existing daily Counts collected for the Study and recent counts from jurisdictions
Capacity on PCH in San Clemente is consistent with City of San Clemente Circulation Element capacity assumption for an 'augmented local (2-lane) facility'

2.4.8 Existing Intersection Analysis

As was mentioned in **Section 2.2**, in addition to vehicular counts, pedestrian and bicycle peak hour counts at intersection crosswalks were collected for all locations where vehicle counts were collected in May and June of 2014. For the remaining intersections, recent (no older than 2011 data) peak hour vehicular counts were collected from each of the corridor cities. Summer counts including vehicular, pedestrian and bike activity were collected in August, 2014.

Table 2.9 presents weekday and summer peak hour approach volumes at each intersection along with peak hour pedestrian and bicycle counts at intersection crosswalks, where available.

Table 2.9: Peak Hour Intersection Vehicle, Pedestrian, Bicycle Activity

ID	Intersection	Jurisdictions	AM Peak Hour						PM Peak Hour						Summer Peak Hour						Summer compared to			
			Veh Total	PCH		Cross Street		Bike/Ped Total	Veh Total	PCH		Cross Street		Bike/Ped Total	Veh Total	PCH		Cross Street		Bike/Ped Total	AM Peak Hour		PM Peak Hour	
				Ped	Bike	Ped	Bike			Ped	Bike	Ped	Bike			Ped	Bike	Ped	Bike		Veh	Bike/Ped	Veh	Bike/Ped
1	PCH at Main Street	Seal Beach	3,259	31	7	0	32	**70**	3,780	60	7	20	39	**126**	3,205	98	170	47	24	**339**	-2%	384%	-15%	169%
2	PCH at Seal Beach Boulevard	Seal Beach	4,085	28	1	3	44	**76**	4,395	10	5	2	30	**47**	3,883	10	188	4	29	**231**	-5%	204%	-12%	391%
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Bch	3,299	0	0	4	13	**17**	3,114	0	0	7	16	**23**										
4	PCH at Warner Avenue *	Huntington Beach	4,641	13		0		**13**	4,457	12		0		**12**	4,121	69	141	30	103	**343**	-13%	2538%	-8%	2758%
5	PCH at Goldenwest Street	Huntington Beach	3,636	31	11	9	12	**63**	3,483	49	17	6	0	**72**	2,931	219	157	238	70	**684**	-19%	986%	-16%	850%
6	PCH at 6th Street	Huntington Beach	3,039	54	12	26	35	**127**	3,162	215	31	80	23	**349**	2,855	314	195	394	76	**979**	-6%	671%	-10%	181%
7	PCH at Main Street	Huntington Beach	2,905	169	36	23	14	**242**	2,977	711	59	104	3	**877**										
8	PCH at 1st Street	Huntington Beach	3,007	25	4	15	24	**68**	3,183	64	22	25	13	**124**										
9	PCH at Beach Boulevard *	Huntington Beach	3,470	17		2		**19**	3,437	15		6		**21**	3,657	105	172	21	93	**391**	5%	1958%	6%	1762%
10	PCH at Brookhurst Street	Huntington Beach	3,284	3	5	0	7	**15**	3,854	36	23	5	18	**82**										
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	4,856	13	31	13	6	**63**	5,784	23	16	12	19	**70**	4,800	117	202	19	18	**356**	-1%	465%	-17%	409%
12	PCH at Newport Boulevard *	Newport Beach	3,871	2		3		**5**	4,904	0		5		**5**										
13	PCH at Riverside Avenue	Newport Beach	4,373	29	20	6	22	**77**	5,547	54	15	4	20	**93**										
14	PCH at Dover Drive	Newport Beach	5,335						6,174						5,237	0	163	0	5	**168**	-2%		-15%	
15	PCH at Bayside Drive	Newport Beach	4,052	13	11	16	17	**57**	5,221	14	13	0	16	**43**										
16	PCH at Jamboree Road	Newport Beach	4,985						6,300						5,338	7	83	2	21	**113**	7%		-15%	
17	PCH at Newport Center Drive	Newport Beach	3,342						3,925															
18	PCH at MacArthur Boulevard *	Newport Beach	4,461	0		5		**5**	4,715	0		12		**12**	4,205	0	56	0	5	**61**	-6%	1120%	-11%	408%
19	PCH at Goldenrod Avenue	Newport Beach	3,449						3,715															
20	PCH at Marguerite Avenue	Newport Beach	3,291	27	3	17	16	**63**	4,346	46	7	4	6	**63**	3,596	88	57	114	5	**264**	9%	319%	-17%	319%
21	PCH at Newport Coast Drive	Newport Beach	3,186	1	1	13	7	**22**	4,559	4	0	15	8	**27**	3,949	0	86	0	2	**88**	24%	300%	-13%	226%
22	PCH at Broadway Street/Laguna Canyon Road *	Laguna Beach	3,156	27		19		**46**	3,151	143		112		**255**	3,152									
23	PCH at Ocean Avenue	Laguna Beach	2,828	6	0	60	4	**70**	2,901	44	0	142	3	**189**	2,710						-4%		-7%	
24	PCH at Laguna Avenue	Laguna Beach	2,853	39	0	37	11	**87**	3,023	166	2	382	2	**552**	2,816						-1%		-7%	
25	PCH at Cress Street	Laguna Beach	2,770	56	1	36	12	**105**	3,012	187	2	134	3	**326**	2,871						4%		-5%	
26	PCH at Wesley Drive	Laguna Beach	2,812	23	0	1	4	**28**	3,081	49	0	9	4	**62**	3,079						9%		0%	
27	PCH at Crown Valley Parkway/Monarch Bay Drive *	Dana Point	3,180	3		3		**6**	3,470	1		3		**4**	3,985	5	66	24	7	**102**	25%	1600%	15%	2450%
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	2,439	16	2	16	4	**38**	3,584	15	2	5	8	**30**	3,541	18	65	6	6	**95**	45%	150%	-1%	217%
29	PCH at Selva Road	Dana Point	2,630						2,999						3,186	9	77	12	1	**99**	21%		6%	
30	PCH at Street of the Golden Lantern *	Dana Point	2,066	11		8		**19**	2,520	16		17		**33**	3,033	26	4	26	37	**93**	47%	389%	20%	182%
31	PCH at Del Obispo Street/Dana Point Harbor	Dana Point	3,759	8	5	22	5	**40**	4,751	8	13	19	7	**47**	5,262	24	18	49	18	**109**	40%	173%	11%	132%
32	PCH at Doheny Park Road	Dana Point	1,097						1,524						2,554	0	0	5	0	**5**	133%		68%	
33	PCH at Camino Capistrano	San Clemente	1,186		8		0	**8**	1,992		8		7	**15**	2,274	36	142	1	29	**208**	92%	2500%	14%	1287%
34	PCH at Avenida Estacion	San Clemente	1,119	9	9	0	8	**26**	1,788	6	5	0	6	**17**										
35	PCH at Avenida Pico	San Clemente	1,570						1,876						2,692	18	57	16	22	**113**	71%		43%	

Review of summer data indicates that overall traffic (vehicles, pedestrian and bikes) at study intersections increased during the summer peak. Comparison of vehicle volumes shows that typical midweek PM peak hour volumes were higher than typical summer peak volumes in the northern part of the corridor (Seal Beach to Laguna Beach), while the summer peak hour had more traffic in Dana Point and San Clemente. Summer peak traffic ranged between 5% and 17% lower than the PM peak hour traffic observed in the corridor from Seal Beach to Laguna Beach. In Dana Point, summer peak hour volumes were between 6% and 20% higher than weekday PM peak hour volumes, and in South Dana Point and San Clemente the summer peak volumes ranged between 14% and 68% higher than weekday PM peak hour volumes. When compared to non-summer peak hour volumes, the overall average increase in vehicular traffic was about 2%, while the difference at individual locations ranged from a 19% decrease (PCH/Goldenwest Street) to a 133% increase (PCH/Doheny Park Road).

Pedestrian and bike traffic was substantially higher on a summer weekend than during the weekday peak hours, with the summer peak hour volumes averaging one to three times the weekday peak hour volumes

Table 2.10 summarizes intersection peak hour ICU and HCM analysis, along with the corresponding LOS for each analysis. Detailed ICU and HCM peak hour analysis worksheets are presented in **Appendix F**. **Figure 2.10** through **Figure 2.13** graphically present ICU and HCM LOS under existing conditions.

Table 2.10: Existing Peak Hour Intersection LOS

ID	Intersection	Jurisdiction	AM Peak Hour				PM Peak Hour			
			ICU	LOS	HCM	LOS	ICU	LOS	HCM	LOS
1	PCH at Main Street	Seal Beach	0.59	A	21.4	C	0.75	C	23.2	C
2	PCH at Seal Beach Boulevard	Seal Beach	0.68	B	40.7	D	0.81	D	43.0	D
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	0.69	B	2.6	A	0.55	A	4.8	A
4	PCH at Warner Avenue *	Huntington Beach	0.78	C	43.3	D	0.79	C	36.7	D
5	PCH at Goldenwest Street	Huntington Beach	0.68	B	19.5	B	0.72	C	20.8	C
6	PCH at 6th Street	Huntington Beach	0.50	A	7.2	A	0.54	A	22.8	C
7	PCH at Main Street	Huntington Beach	0.46	A	4.4	A	0.42	A	7.8	A
8	PCH at 1st Street	Huntington Beach	0.48	A	11.2	B	0.52	A	19.9	B
9	PCH at Beach Boulevard *	Huntington Beach	0.58	A	27.3	C	0.62	B	27.1	C
10	PCH at Brookhurst Street	Huntington Beach	0.54	A	20.7	C	0.56	A	22.6	C
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	0.69	B	37.3	D	0.76	C	50.6	D
12	PCH at Newport Boulevard *	Newport Beach	0.82	D	16.4	B	0.72	C	32.3	C
13	PCH at Riverside Avenue	Newport Beach	0.72	C	16.4	B	0.95	E	48.7	D
14	PCH at Dover Drive	Newport Beach	0.75	C	64.4	E	0.77	C	50.3	D
15	PCH at Bayside Drive	Newport Beach	0.56	A	25.0	C	0.66	B	21.0	C
16	PCH at Jamboree Road	Newport Beach	0.62	B	37.6	D	0.71	C	39.7	D
17	PCH at Newport Center Drive	Newport Beach	0.42	A	6.7	A	0.51	A	13.0	B
18	PCH at MacArthur Boulevard *	Newport Beach	0.68	B	26.9	C	0.71	C	43.7	D
19	PCH at Goldenrod Avenue	Newport Beach	0.81	D	31.6	C	0.79	C	20.3	C
20	PCH at Marguerite Avenue	Newport Beach	0.73	C	29.6	C	0.89	D	41.7	D
21	PCH at Newport Coast Drive	Newport Beach	0.48	A	21.8	C	0.66	B	32.3	C

Table 2.10: Existing Peak Hour Intersection LOS (continued)

ID	Intersection	Jurisdiction	AM Peak Hour				PM Peak Hour			
			ICU	LOS	HCM	LOS	ICU	LOS	HCM	LOS
22	PCH at Broadway Street/Laguna Canyon Road *	Laguna Beach	0.78	C	26.4	C	0.64	B	26.6	C
23	PCH at Ocean Avenue	Laguna Beach	0.62	B	3.6	A	0.62	B	6.3	A
24	PCH at Laguna Avenue	Laguna Beach	0.61	B	5.5	A	0.64	B	5.9	A
25	PCH at Cress Street	Laguna Beach	0.67	B	5.5	A	0.63	B	9.0	A
26	PCH at Wesley Drive	Laguna Beach	0.68	B	10.6	B	0.60	B	11.4	B
27	PCH at Crown Valley Parkway/Monarch Bay Drive *	Dana Point	0.59	A	32.7	C	0.58	A	33.6	C
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	0.54	A	26.9	C	0.77	C	44.6	D
29	PCH at Selva Road	Dana Point	0.63	B	21.4	C	0.60	A	17.2	B
30	PCH at Street of the Golden Lantern *	Dana Point	0.44	A	23.4	C	0.49	A	28.1	C
31	PCH at Del Obispo Street/Dana Point Harbor Drive	Dana Point	0.73	C	30.7	C	0.89	D	74.8	E
32	PCH at Doheny Park Road	Dana Point	0.48	A	12.4	B	0.66	B	13.8	B
33	PCH at Camino Capistrano	San Clemente	0.78	C	31.9	C	0.64	B	34.8	C
34	PCH at Avenida Estacion	San Clemente	0.62	B	8.0	A	0.62	B	8.9	A
35	PCH at Avenida Pico	San Clemente	0.61	B	35.4	D	0.64	B	32.7	C

Notes: * CMP Locations – LOS E acceptable
Existing peak hour turning movement counts collected for the Study and recent counts from jurisdiction
ICU LOS is consistent with thresholds defined in Section 1.3.1 (Synchro outputs use different default threshold)

LOS D is the acceptable threshold of mobility adopted by all coastal cities for their intersection peak hour analysis, as long as the intersection is not an Orange County CMP location, where LOS E is acceptable. Based on this threshold, under the existing conditions, the following intersections operate at unacceptable LOS (LOS E or worse).

- ICU Analysis
  - AM Peak Hour :
    - No intersection at LOS E or worse
  - PM Peak Hour:
    - PCH at Riverside Avenue (LOS E)

- HCM Analysis
  - AM Peak Hour :
    - PCH at Dover Drive Road (LOS E)
  - PM Peak Hour:
    - PCH at Del Obispo Street/Dana Point Harbor Drive (LOS E)

Figure 2.10: Existing AM Peak Hour ICU LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 2.11: Existing PM Peak Hour ICU LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 2.12: Existing AM Peak Hour HCM LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 2.13: Existing PM Peak Hour HCM LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

2.4.9 Summer Condition Analysis

A summer peak hour LOS analysis was conducted for the purpose of understanding the difference between typical weekday peak conditions and summer weekend midday peak conditions. Summer counts used for this analysis are discussed in **Section 2.2.2**. HCM analysis was used to evaluate summer conditions because ICU analysis does not account for pedestrian and bike activity

Table 2.11 summarizes average traffic delay and intersection peak hour LOS for existing conditions during midweek peak hours and the summer peak hour. The summer analysis used weekend signal timing plans currently being applied by Caltrans, the City of Newport Beach (through Corona Del Mar),and the City of Dana Point. With the exception of intersections of PCH at MacArthur Boulevard, PCH at Dover Drive, and PCH at Del Obispo Street/ Dana Point Harbor Drive, the summer peak hour LOS was no more than one LOS grade different than typical midweek PM peak hour LOS.

Detailed HCM peak hour analysis worksheets are presented in **Appendix G**. **Figure 2.14** graphically present HCM LOS under existing weekday and summer peak conditions.

Table 2.11: Existing Summer Intersection LOS compared to Peak Hour Intersection LOS

ID	Intersection	Jurisdiction	AM Peak Hour		PM Peak Hour		Summer Peak	
			HCM	LOS	HCM	LOS	HCM	LOS
1	PCH at Main Street	Seal Beach	21.4	C	23.2	C	22.4	C
2	PCH at Seal Beach Boulevard	Seal Beach	40.7	D	43.0	D	39.7	D
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	2.6	A	4.8	A	N/A	N/A
4	PCH at Warner Avenue *	Huntington Beach	43.3	D	36.7	D	36.6	D
5	PCH at Goldenwest Street	Huntington Beach	19.5	B	20.8	C	24.0	C
6	PCH at 6th Street	Huntington Beach	7.2	A	22.8	C	12.1	B
7	PCH at Main Street	Huntington Beach	4.4	A	7.8	A	N/A	N/A
8	PCH at 1st Street	Huntington Beach	11.2	B	19.9	B	N/A	N/A
9	PCH at Beach Boulevard *	Huntington Beach	27.3	C	27.1	C	28.6	C
10	PCH at Brookhurst Street	Huntington Beach	20.7	C	22.6	C	N/A	N/A
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	37.3	D	50.6	D	39.3	D
12	PCH at Newport Boulevard *	Newport Beach	16.4	B	32.3	C	N/A	N/A
13	PCH at Riverside Avenue	Newport Beach	16.4	B	48.7	D	N/A	N/A
14	PCH at Dover Drive	Newport Beach	64.4	E	50.3	D	25.9	C
15	PCH at Bayside Drive	Newport Beach	25.0	C	21.0	C	N/A	N/A
16	PCH at Jamboree Road	Newport Beach	37.6	D	39.7	D	32.1	C
17	PCH at Newport Center Drive	Newport Beach	6.7	A	13.0	B	N/A	N/A
18	PCH at MacArthur Boulevard *	Newport Beach	26.9	C	43.7	D	19.2	B
19	PCH at Goldenrod Avenue	Newport Beach	31.6	C	20.3	C	N/A	N/A
20	PCH at Marguerite Avenue	Newport Beach	29.6	C	41.7	D	33.7	C
21	PCH at Newport Coast Drive	Newport Beach	21.8	C	32.3	C	33.6	C
22	PCH at Broadway Street/Laguna Canyon Road *	Laguna Beach	26.4	C	26.6	C	24.3	C
23	PCH at Ocean Avenue	Laguna Beach	3.6	A	6.3	A	5.0	A
24	PCH at Laguna Avenue	Laguna Beach	5.5	A	5.9	A	6.9	A
25	PCH at Cress Street	Laguna Beach	5.5	A	9.0	A	7.7	A
26	PCH at Wesley Drive	Laguna Beach	10.6	B	11.4	B	10.1	B

Table 2.11: Existing Summer Intersection LOS compared to Peak Hour Intersection LOS (continued)

ID	Intersection	Jurisdiction	AM Peak Hour		PM Peak Hour		Summer Peak	
			HCM	LOS	HCM	LOS	HCM	LOS
27	PCH at Crown Valley Parkway/Monarch Bay Drive *	Dana Point	32.7	C	33.6	C	35.9	D
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	26.9	C	44.6	D	32.1	C
29	PCH at Selva Road	Dana Point	21.4	C	17.2	B	21.3	C
30	PCH at Street of the Golden Lantern *	Dana Point	23.4	C	28.1	C	34.0	C
31	PCH at Del Obispo Street/Dana Point Harbor Drive	Dana Point	29.9	C	73.3	E	58.8	E
32	PCH at Doheny Park Road	Dana Point	12.4	B	13.8	B	22.8	C
33	PCH at Camino Capistrano	San Clemente	31.9	C	34.8	C	49.6	D
34	PCH at Avenida Estacion	San Clemente	8.0	A	8.9	A	N/A	N/A
35	PCH at Avenida Pico	San Clemente	35.4	D	32.7	C	35.9	D

Notes: * CMP Locations – LOS E acceptable
Existing peak hour turning movement counts collected for the Study and recent counts from jurisdiction
All HCM values are expressed in seconds
N/A – Summer counts unavailable

2.4.10 Select Link Analysis

A Select Link analysis demonstrates where traffic is coming from and going to on a selected arterial segment. It is a tool used to understand general traffic flow patterns. For the PCH corridor, select link analyses were conducted at the following seven locations:

- Adjacent to the Bolsa Chica Wetlands;
- South side of Main Street in downtown Huntington Beach;
- At Santa Ana River bridge;
- South of Marguerite Avenue in Corona del Mar;
- Between the northern Laguna Beach City Limits and Moro Canyon;
- South of SR-133 in downtown Laguna Beach; and
- North of Crown Valley Parkway.

These locations are presented in **Figure 2.15** and the results of the analysis in **Table 2.12**.

The analysis shows that a relatively small percentage of the north-south trips through the corridor are long-distance trips. A majority of the trips along PCH are five miles or less in length, suggesting that PCH trips tend to be more localized.

Figure 2.14: Summer Peak Hour HCM LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 2.15: Select Link Locations

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Table 2.12: Select Link Analysis

		Los Angeles County Line	Seal Beach	Bolsa Chica	Huntington Beach	Downtown	Santa Ana River	Newport Beach	Corona del Mar	Newport Coast Drive	Laguna Beach	North Laguna Beach	Downtown	North Dana Point	Dana Point	Crown Valley Parkway	San Juan Creek Road	San Clemente	Avenida Pico
Select Link: Adjacent to the Bolsa Chica Wetlands	*38%* 14		*51%* 18	*97%* 35	● **36**	*97%* 35	*20%* 7	*14%* 5	*5%* 2										
Select Link: South side of Main Street in downtown Huntington Beach	*19%* 7		*24%* 9		*44%* 16	*83%* 31	● **37**	*83%* 31	*56%* 21		*7%* 3	*6%* 2		*6%* 2						
Select Link: At Santa Ana River bridge	*6%* 3		*8%* 3		*14%* 6		*32%* 14	*94%* 40	● **43**	*84%* 36		*9%* 4	*7%* 3		*7%* 3	*7%* 3		*5%* 2		
Select Link: South of Marguerite Avenue in Corona del Mar				*6%* 3	*13%* 6				*13%* 6	*97%* 46	● **47**	*84%* 39		*82%* 39	*73%* 34		*47%* 22	*24%* 11	*21%* 10	*15%* 7	*6%* 3	
Select Link: Between the northern Laguna Beach City Limits and Moro Canyon				*5%* 2	*10%* 4				*11%* 4		*77%* 28	*82%* 30		*93%* 34	● **37**		*62%* 23	*32%* 12	*27%* 10	*20%* 7	*8%* 3	
Select Link: South of SR-133 in downtown Laguna Beach					*5%* 2				*5%* 2		*35%* 13	*37%* 13		*42%* 15	*44%* 16	*52%* 19	● **36**	*76%* 27	*29%* 10	*21%* 8	*9%* 3	
Select Link: North of Crown Valley Parkway									*5%* 2		*22%* 8	*24%* 9		*26%* 10	*29%* 11		*46%* 17	*77%* ● **37** 28	*61%* 23	*38%* 14	*8%* 3	*5%* 2

● = select link location *XX%* = percentage of traffic from select link location XX = ADT in 000s, which also crosses the select link locations **XX** = ADT in 000s at the select link location

Note: Major cross streets or physical barriers (LA County border. Santa Ana River etc.) are indicated as vertical columns. The result of each Select Link analysis is identified along the horizontal bars. For example, for the Select Link at the Santa Ana River, 6% of the traffic crossing the bridge comes from Los Angeles County on the north and 5% comes from Downtown Laguna Beach on the south. For the Select Link in Corona Del Mar (Marguerite Avenue), 6% comes from Downtown Huntington Beach and 6% comes from south of San Juan Creek.

Chapter 3 - 2040 Baseline Condition

A 2040 Baseline (no build) analysis was conducted to help determine future needs along the corridor, and to establish a point of reference against which future alternatives could be compared to determine the effectiveness of proposed improvement options. The 2040 Baseline forecast was based on Orange County Transportation Analysis Model (OCTAM) 2035 forecasts that were factored with an appropriate growth factor for 2040 (see discussion under **Section 3.1**). The 2040 Baseline (no build) model run included all committed improvements in the corridor for which funds have been secured or there is an approved environmental document.

3.1 Post Processing Methodology and Refined Forecast Traffic

A key component of the future forecast PCH corridor was the incorporation of a post-processor which refined future year forecast volumes for both PCH segments and study intersections. The post-processor developed for this study used existing count data for roadway segments and intersections as the basis of future forecast volumes. The post-processing methodology, consistent with the methodology applied in OCTAM, applied growth between the existing year and future year model output to the existing count volume to develop future year forecast volumes. Intersection peak hour turning movement volumes were estimated based on the difference between existing and future year intersection peak hour approach and departing(model) volumes and compared those to existing turning movement count volumes.

The arterial post-processing procedure implemented a ratio or incremental growth methodology, depending on whether the base year model volume was greater than or less than existing counts. The ratio or incremental difference between the existing and future model forecast volumes was applied to the count volume for a specific segment to generate a refined post-processed daily traffic forecast volume. Similarly, a ratio or incremental growth volume was applied to existing intersection approach volumes. The resulting refined approach volume was then distributed to the various turning movements in the same proportion as the existing turning movement volumes.

The growth ratio or increment for the future forecasts was derived from OCTAM base year 2010 and future year 2035 output. Since the forecast year for this study is 2040, a 1% growth was applied to the post-processed 2035 forecasts to develop 2040 forecasts.

3.2 2040 Baseline Improvements

3.2.1 2040 Programmed Improvements

Non-Motorized

- Stripe Class III sharrows on Pacific from Anderson Street to Warner Avenue
- Provide Class III bike routes on parallel streets (along Cliff Drive, Cypress Drive and Glenneyre Street) with wayfinding signs from PCH.
- Provide wayfinding signs on PCH encouraging bicyclists to use parallel alternatives routes to PCH by directing them to facilities on Del Prado, Golden Lantern, Dana Point Harbor Drive and Park Lantern.
- PCH from Copper Lantern to Blue Lantern: Streetscape improvements, road reconfiguration and curb adjustments to create a more pedestrian friendly business district.
- PCH (Crown Valley Parkway to Dana Point northern city limit) Landscape beautification within medians (as part of major capital improvements).
- Complete sidewalk on inland side of street as condition of redevelopment (Palisades to existing pedestrian bridge)
- Install Class I (and maintain existing Class II) bike facility on the coastal side of Coast Highway between Camino Capistrano and Avenida Estacion.
- Remove pedestrian bridge across Coast Highway (only the span across Coast Highway) between Dana Point Harbor and Palisades Drive to replace with traffic controlled pedestrian crossing to provide access to bikers and handicapped users.

Transit

- Huntington Beach: OCTA Project V award of about $90,000 funded a special event shuttle service for Independence Day and the U.S. Open of surfing competition.
- Laguna Beach: OCTA Project V award of $3.6 million will fund the expansion of a seasonal festival trolley service and will add a new off-season trolley service for spring and winter months[1].
- Laguna Beach: Expansion of summer seasonal festival trolley service and new off-season trolley service (began in March, 2015)
- Dana Point: The OCTA-approved grant of $2.45 million will allow the city to implement a summer weekend service along PCH between Dana Hills High School and Dana Point Harbor, and a special event shuttle that will operate year around [2][3].

Roadway Capacity

The following roadway capacity improvements were included in the 2040 Future Baseline arterial and intersection LOS analysis. Unless indicated, these projects are fully funded through Measure M and Renewed Measure M (M2) and are anticipated to be constructed within the Measure M Seven Year (2013/2014-2019/2020) Capital Improvements Program (CIP) cycle.

- Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Warner, Magnolia, Beach, Goldenwest.
- Newport Beach: at PCH and Newport Boulevard, add one westbound through lane on PCH and modify Old Newport Boulevard alignment. This project is only funded for engineering work with no current allocation of funds for ROW and construction.
- Laguna Beach: at PCH and Broadway Street, widen east side of northbound PCH to provide a dedicated right turn lane onto eastbound Broadway Street.
- Dana Point: on PCH from Copper Lantern to Blue Lantern, roadway construction to change circulation on PCH and Del Prado to two-way traffic. Streetscape improvements including road reconfiguration and curb adjustments to create a more pedestrian friendly business district.

3.3 2040 Baseline Conditions Analysis

3.3.1 2040 Baseline Arterial Analysis

Table 3.1 presents arterial segment performance comparison between existing and 2040 Baseline conditions. The analysis indicates that congested segments under existing conditions will remain congested in the future, since there are no significant capacity enhancements programmed along PCH.

PCH segments that are forecast to degrade to a worse LOS are:

- near Main Street in Seal Beach;
- south of Dover Drive in Newport Beach;
- south of Newport Coast Drive in Newport Beach;
- north of Broadway Street In Laguna Beach ; and
- between Camino Capistrano and Avenida Estacion in San Clemente.

[1] Laguna Beach Independent, June 02, 2014 (http://www.lagunabeachindy.com/trolleys-run-non-summer-weekends/)
[2] OCTA, Measure M and Renewed Measure M (M2) Seven Year CIP
[3] DP Times, April 25, 2014 (http://www.danapointtimes.com/dana-points-summer-trolley-not-likely-until-2015/)

Table 3.1: Existing vs. 2040 Baseline Comparison of Arterial Daily V/C and LOS

ID	Arterial	Segment Limits	Jurisdiction	Classification	Capacity	Existing			2040 Baseline		
						Count	V/C	LOS	Volume	V/C	LOS
1	PCH	near Main Street	Seal Beach	Primary (4 Lane Divided)	37,500	34,639	0.92	E	37,611	>1	F
2	PCH	at 5th Street/Coral Cay	Seal Beach	Primary (4 Lane Divided)	37,500	41,975	>1	F	43,809	>1	F
3	PCH	n/o Main Street	Huntington Beach	Major (6 Lane Divided)	56,300	33,898	0.60	B	34,237	0.61	B
4	PCH	between Main Street and Beach Boulevard	Huntington Beach	Major (6 Lane Divided)	56,300	35,013	0.62	B	35,363	0.63	B
5	PCH	s/o Beach Boulevard	Huntington Beach	Major (6 Lane Divided)	56,300	36,689	0.65	B	39,177	0.70	B
6	PCH	n/o Superior Avenue	Newport Beach	Major (6 Lane Divided)	56,300	47,000	0.83	D	50,024	0.89	D
7	PCH	s/o Superior Avenue	Newport Beach	Major (6 Lane Divided)	56,300	39,000	0.69	B	39,390	0.70	B
8	PCH	n/o Dover Drive	Newport Beach	Primary (4 Lane Divided)	37,500	44,000	>1	F	50,803	>1	F
9	PCH	s/o Dover Drive	Newport Beach	Principal (8 Lane Divided)	75,000	64,000	0.85	D	69,084	0.92	E
10	PCH	near Bayside Drive	Newport Beach	Principal (8 Lane Divided)	75,000	53,696	0.72	C	58,652	0.78	C
11	PCH	s/o Jamboree Road	Newport Beach	Major (6 Lane Divided)	56,300	41,000	0.73	C	44,541	0.79	C
12	PCH	s/o MacArthur Boulevard	Newport Beach (Corona Del Mar)	Primary (4 Lane Divided)	37,500	51,000	>1	F	51,510	>1	F
13	PCH	s/o Newport Coast Drive	Newport Beach	Major (6 Lane Divided)	56,300	38,000	0.67	B	43,127	0.77	C
14	PCH	n/o Broadway (SR-133)	Laguna Beach	Primary (4 Lane Divided)	37,500	36,420	0.97	E	41,495	>1	F
15	PCH	s/o Broadway (SR-133)	Laguna Beach	Primary (4 Lane Divided)	37,500	40,337	>1	F	45,992	>1	F
16	PCH	between Copper Lantern and Dana Point Harbor/Del Obispo	Dana Point	Primary (4 Lane Divided)	37,500	40,657	>1	F	45,811	>1	F
17	PCH	between Camino Capistrano and Avenida Estacion	San Clemente	Collector (2 Lane Undivided)	18,800	17,426	0.93	E	20,125	>1	F

Notes: For this study PCH is considered a north-south corridor
Existing daily Counts collected for the Study and recent counts from jurisdiction
Output from OCTAM 2010 and 2035 model was used to develop 2040 forecasts
Capacity on PCH in San Clemente is consistent with City of San Clemente Circulation Element capacity assumption for an 'augmented local (2-lane) facility'

3.3.2 2040 Baseline Intersection Peak Hour Analysis

Tables 3.2 and**3.3** summarize intersection peak hour ICU and HCM LOS results under 2040 Baseline conditions, and then compare them with existing conditions. Detailed ICU and HCM peak hour analysis worksheets are presented in **Appendix H**. **Figures 3.1** through **3.4** graphically present ICU and HCM LOS under 2040 Future Baseline conditions.

2040 Baseline analysis show that the following intersections operate at LOS E or worse. For CMP intersections (PCH at Warner Avenue; PCH at Newport Boulevard; and PCH at Broadway Street/Laguna Canyon Road) LOS E is acceptable.

- ICU Analysis
  - AM Peak Hour :
    - No intersection at LOS E or worse
  - PM Peak Hour:
    - PCH at Riverside Avenue (LOS F)
- HCM Analysis
  - AM Peak Hour :
    - PCH at Dover Drive Road (LOS E)
  - PM Peak Hour:
    - PCH at Seal Beach Boulevard(LOS E)
    - PCH at Superior Avenue/Balboa Boulevard(LOS E)
    - PCH at Newport Boulevard(LOS E)
    - PCH at Riverside Avenue(LOS E)
    - PCH at Dover Drive (LOS E)
    - PCH at Marguerite Avenue (LOS F)
    - PCH at Del Obispo Street/Dana Point Harbor Drive (LOS F)

Table 3.2: Existing vs. 2040 Baseline Comparison of Peak Hour Intersection LOS (ICU method)

ID	Intersection	Jurisdiction	Existing				2040 Baseline			
			AM Peak		PM Peak		AM Peak		PM Peak	
			ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
1	PCH at Main Street	Seal Beach	0.59	A	0.75	C	0.68	B	0.81	D
2	PCH at Seal Beach Boulevard	Seal Beach	0.68	B	0.81	D	0.76	C	0.86	D
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	0.69	B	0.55	A	0.76	C	0.60	A
4	PCH at Warner Avenue *	Huntington Beach	0.78	C	0.79	C	0.84	D	0.86	D
5	PCH at Goldenwest Street	Huntington Beach	0.68	B	0.72	C	0.72	C	0.76	C
6	PCH at 6th Street	Huntington Beach	0.50	A	0.54	A	0.53	A	0.57	A
7	PCH at Main Street	Huntington Beach	0.46	A	0.42	A	0.49	A	0.44	A
8	PCH at 1st Street	Huntington Beach	0.48	A	0.52	A	0.51	A	0.56	A
9	PCH at Beach Boulevard *	Huntington Beach	0.58	A	0.62	B	0.62	B	0.66	B
10	PCH at Brookhurst Street	Huntington Beach	0.54	A	0.56	A	0.57	A	0.60	A
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	0.69	B	0.76	C	0.72	C	0.81	D
12	PCH at Newport Boulevard *	Newport Beach	0.82	D	0.72	C	0.86	D	0.85	D
13	PCH at Riverside Avenue	Newport Beach	0.72	C	0.95	E	0.77	C	1.01	F
14	PCH at Dover Drive	Newport Beach	0.75	C	0.77	C	0.82	D	0.83	D
15	PCH at Bayside Drive	Newport Beach	0.56	A	0.66	B	0.60	B	0.72	C
16	PCH at Jamboree Road	Newport Beach	0.62	B	0.71	C	0.67	B	0.77	C

Table 3.2: Existing vs. 2040 Baseline Comparison of Peak Hour Intersection LOS (ICU method) - continued

ID	Intersection	Jurisdiction	Existing				2040 Baseline			
			AM Peak		PM Peak		AM Peak		PM Peak	
			ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
17	PCH at Newport Center Drive	Newport Beach	0.42	A	0.51	A	0.49	A	0.56	A
18	PCH at MacArthur Boulevard *	Newport Beach	0.68	B	0.71	C	0.74	C	0.77	C
19	PCH at Goldenrod Avenue	Newport Beach	0.81	D	0.79	C	0.87	D	0.83	D
20	PCH at Marguerite Avenue	Newport Beach	0.73	C	0.89	D	0.81	D	1.00	
21	PCH at Newport Coast Drive	Newport Beach	0.48	A	0.66	B	0.53	A	0.73	C
22	PCH at Broadway Street/Laguna Canyon Road *	Laguna Beach	0.78	C	0.64	B	0.77	C	0.67	B
23	PCH at Ocean Avenue	Laguna Beach	0.62	B	0.62	B	0.68	B	0.68	B
24	PCH at Laguna Avenue	Laguna Beach	0.61	B	0.64	B	0.68	B	0.72	C
25	PCH at Cress Street	Laguna Beach	0.67	B	0.63	B	0.72	C	0.67	B
26	PCH at Wesley Drive	Laguna Beach	0.68	B	0.60	B	0.75	C	0.67	B
27	PCH at Crown Valley Parkway/Monarch Bay Drive *	Dana Point	0.59	A	0.58	A	0.66	B	0.63	B
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	0.54	A	0.77	C	0.60	A	0.85	D
29	PCH at Selva Road	Dana Point	0.63	B	0.60	A	0.74	C	0.67	B
30	PCH at Street of the Golden Lantern *	Dana Point	0.44	A	0.49	A	0.63	B	0.72	C
31	PCH at Del Obispo Street/Dana Point Harbor Drive	Dana Point	0.59	A	0.75	C	0.68	B	0.81	D
32	PCH at Doheny Park Road	Dana Point	0.68	B	0.81	D	0.76	C	0.86	D
33	PCH at Camino Capistrano	San Clemente	0.69	B	0.55	A	0.76	C	0.60	A
34	PCH at Avenida Estacion	San Clemente	0.78	C	0.79	C	0.84	D	0.86	D
35	PCH at Avenida Pico	San Clemente	0.68	B	0.72	C	0.72	C	0.76	C

Notes: * CMP Locations – LOS E acceptable
Existing peak hour turning movement counts collected for the Study and recent counts from jurisdiction
Output from OCTAM 2010 and 2035 Constrained model was used to develop 2040 Baseline forecasts
ICU LOS is consistent with thresholds defined in Section 1.3.1 (Synchro outputs use different default threshold)

Table 3.3: Existing vs. 2040 Baseline Comparison of Peak Hour Intersection LOS (HCM method)

ID	Intersection	Jurisdiction	Existing				2040 Baseline			
			AM Peak		PM Peak		AM Peak		PM Peak	
			HCM	LOS	HCM	LOS	HCM	LOS	HCM	LOS
1	PCH at Main Street	Seal Beach	21.4	C	23.2	C	23.5	C	26.4	C
2	PCH at Seal Beach Boulevard	Seal Beach	40.7	D	43.0	D	43.7	D	58.2	E
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	2.6	A	4.8	A	3.2	A	5.0	A
4	PCH at Warner Avenue *	Huntington Beach	43.3	D	36.7	D	52.3	D	41.7	D
5	PCH at Goldenwest Street	Huntington Beach	19.5	B	20.8	C	20.8	C	22.4	C
6	PCH at 6th Street	Huntington Beach	7.2	A	22.8	C	7.4	A	24.7	C
7	PCH at Main Street	Huntington Beach	4.4	A	7.8	A	4.5	A	8.4	A
8	PCH at 1st Street	Huntington Beach	11.2	B	19.9	B	12.1	B	22.1	C
9	PCH at Beach Boulevard *	Huntington Beach	27.3	C	27.1	C	35.1	D	29.0	C
10	PCH at Brookhurst Street	Huntington Beach	20.7	C	22.6	C	21.8	C	24.6	C

Table 3.4: Existing vs. 2040 Baseline Comparison of Peak Hour Intersection LOS (HCM method) - continued

ID	Intersection	Jurisdiction	Existing				2040 Baseline			
			AM Peak		PM Peak		AM Peak		PM Peak	
			HCM	LOS	HCM	LOS	HCM	LOS	HCM	LOS
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	37.3	D	50.6	D	39.2	D	69.2	E
12	PCH at Newport Boulevard *	Newport Beach	16.4	B	32.3	C	17.7	B	55.3	E
13	PCH at Riverside Avenue	Newport Beach	16.4	B	48.7	D	17.9	B	74.1	E
14	PCH at Dover Drive	Newport Beach	64.4	E	50.3	D	77.9	E	72.9	E
15	PCH at Bayside Drive	Newport Beach	25.0	C	21.0	C	26.2	C	23.9	C
16	PCH at Jamboree Road	Newport Beach	37.6	D	39.7	D	39.8	D	43.4	D
17	PCH at Newport Center Drive	Newport Beach	6.7	A	13.0	B	6.7	A	14.0	B
18	PCH at MacArthur Boulevard *	Newport Beach	26.9	C	43.7	D	28.4	C	46.5	D
19	PCH at Goldenrod Avenue	Newport Beach	31.6	C	20.3	C	36.4	D	25.2	C
20	PCH at Marguerite Avenue	Newport Beach	29.6	C	41.7	D	36.8	D	84.6	F
21	PCH at Newport Coast Drive	Newport Beach	21.8	C	32.3	C	24.6	C	36.0	D
22	PCH at Broadway Street/Laguna Canyon Road *	Laguna Beach	26.4	C	26.6	C	24.4	C	25.6	C
23	PCH at Ocean Avenue	Laguna Beach	3.6	A	6.3	A	4.2	A	7.9	A
24	PCH at Laguna Avenue	Laguna Beach	5.5	A	5.9	A	7.2	A	8.4	A
25	PCH at Cress Street	Laguna Beach	5.5	A	9.0	A	6.0	A	9.9	A
26	PCH at Wesley Drive	Laguna Beach	10.6	B	11.4	B	12.7	B	12.9	B
27	PCH at Crown Valley Parkway/Monarch Bay Drive *	Dana Point	32.7	C	33.6	C	33.1	C	34.2	C
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	26.9	C	44.6	D	27.4	C	54.9	D
29	PCH at Selva Road	Dana Point	21.4	C	17.2	B	24.4	C	18.9	B
30	PCH at Street of the Golden Lantern *	Dana Point	23.4	C	28.1	C	31.8	C	40.5	D
31	PCH at Del Obispo Street/Dana Point Harbor Drive	Dana Point	30.7	C	74.8	E	36.3	D	83.0	F
32	PCH at Doheny Park Road	Dana Point	12.4	B	13.8	B	13.0	B	14.4	B
33	PCH at Camino Capistrano	San Clemente	31.9	C	34.8	C	29.8	C	40.8	D
34	PCH at Avenida Estacion	San Clemente	8.0	A	8.9	A	6.6	A	9.7	A
35	PCH at Avenida Pico	San Clemente	35.4	D	32.7	C	37.1	D	35.4	D

Notes: * CMP Locations – LOS E acceptable
Existing peak hour turning movement counts collected for the study and recent counts from jurisdiction
Output from OCTAM 2010 and 2035 Constrained model was used to develop 2040 Baseline forecasts
ICU LOS is consistent with thresholds defined in Section 1.3.1 (Synchro outputs use different default threshold)

Figure 3.1: Year 2040 Baseline AM Peak Hour ICU LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 3.2: Year 2040 Baseline PM Peak Hour ICU LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 3.3: Year 2040 Baseline AM Peak Hour HCM LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Figure 3.4: Year 2040 Baseline PM Peak Hour HCM LOS

Source: HDR

1. Pacific Coast Highway at Main Street (Seal
2. Pacific Coast Highway at Seal Beach Boulevard
3. Pacific Coast Highway at 19th Street/Admiralty Drive
4. Pacific Coast Highway at Warner Avenue
5. Pacific Coast Highway at Goldenwest Street
6. Pacific Coast Highway at 6th Street
7. Pacific Coast Highway at Main Street (Huntington Beach)
8. Pacific Coast Highway at 1st Street
9. Pacific Coast Highway at Beach Boulevard
10. Pacific Coast Highway at Brookhurst Street
11. Pacific Coast Highway at Superior Avenue/Balboa Boulevard
12. Pacific Coast Highway at Newport Boulevard
13. Pacific Coast Highway at Riverside Avenue
14. Pacific Coast Highway at Dover Drive
15. Pacific Coast Highway at Bayside Drive
16. Pacific Coast Highway at Jamboree Road
17. Pacific Coast Highway at Newport Center Drive
18. Pacific Coast Highway at MacArthur Boulevard
19. Pacific Coast Highway at Goldenrod Avenue
20. Pacific Coast Highway at Marguerite Avenue
21. Pacific Coast Highway at Newport Coast Drive
22. Pacific Coast Highway at Broadway Street/Laguna Canyon Road
23. Pacific Coast Highway at Ocean Avenue
24. Pacific Coast Highway at Laguna Avenue
25. Pacific Coast Highway at Cress Street
26. Pacific Coast Highway at Wesley Drive
27. Pacific Coast Highway at Crown Valley Parkway/Monarch Bay
28. Pacific Coast Highway at Niguel Road/Ritz Carlton
29. Pacific Coast Highway at Selva Street
30. Pacific Coast Highway at Street of the Golden Lantern
31. Pacific Coast Highway at Del Obispo Street/Dana Point Harbor
32. Pacific Coast Highway at Doheny Park Road
33. Pacific Coast Highway at Camino Capistrano
34. Pacific Coast Highway at Avenida Estacion
35. Pacific Coast Highway at Avenida Pico

Chapter 4 - Purpose and Need

The Corridor Study's P&N statement provides the guiding framework for alternatives analyses, by identifying the corridor's needs and problems to be addressed along with the purpose and objectives to be accomplished by recommended improvements. The P&N statement provides the basis for defining and evaluating future improvement options. The first step in developing the Study's P&N statement was to develop a constraints analysis including issues and opportunities.

4.1 Issues, Opportunities and Constraints

Corridor-wide and subarea issues, opportunities, and constraints were developed using the following inputs:

- Literature reviews;
- Analyses and findings identified **Chapters 2 and 3;** and
- Input from the participating agencies.

Table 4.1 summarizes the initial issues, opportunities, and constraints identified in the study area.

Table 4.1: Issues, Opportunities and Constraints Matrix

Subarea	Issues	Opportunities	Constraints
Corridor-wide	Desire for consistency in application of traffic control devices, designs, and informational signing		
	Desire to improve safety and mobility for all types of users and modes.		
	Desire to improve aesthetics of the corridor.		
	Desire to improve efficiency and consistency of traffic flow.		
	Desire to have continuous bicycle facility through the corridor.		
	Improve the system's ability to adapt to changing conditions on weekends and summer days.		
	Lower-speed "recreational" bicyclists have different needs than higher-speed "enthusiast" bicyclists, and both needs can't be met by a single bicycle facility		
	Coastal Commission mandate to provide coastal access and maintain environmentally sensitive areas limits improvement options to address other issues		
	Caltrans ownership of major portions of PCH limits improvement options to address issues in those areas		
Seal Beach	PCH/Seal Beach Boulevard: vehicle delays with existing and future recurring congestion		
	Desire to have Class II bike lanes on PCH through the city		Difficult to remove on-street parking near businesses; difficult to acquire ROW from Navy; improvements would need to involve Caltrans as well as the City.
	Desire to improve aesthetics of medians.		Improvements need to be consistent with Caltrans standards.

Table 4.1: Issues, Opportunities and Constraints Matrix (continued)

Subarea	Issues	Opportunities	Constraints
Huntington Beach	PCH through Sunset Beach: conflict points and side friction due to frequent small intersections of streets and alleys with PCH, parking that backs directly onto PCH, and restricted sight distance from some of the intersecting streets.		Most of these issues are associated with the area's history of development and previously approved design
	PCH/Warner Avenue: recurring congestion and vehicle delays with existing and future recurring traffic congestion		Coastal Commission restrictions on improvements that affect wetlands. MPAH planned Edinger Avenue extension to PCH unlikely to be constructed.
	PCH from Warner Avenue to Goldenwest Street: high travel speeds on PCH with no bike lanes to help separate bicycles from much higher speed vehicles; poor speed transitions to adjacent lower-speed areas of PCH.	Striped shoulder area might be converted to bike lane.	Blowing sand in this area would be a maintenance issue if bike lanes installed.
	Between Goldenwest Street and Seapoint Street poorly designed City beach parking lots cause traffic backups onto PCH when lots are near capacity.		Coastal Commission requires nearby replacement of removed parking spaces.
	PCH from Goldenwest Street to Sixth Street: conflict issue with on-street parking maneuvers, no bike lane, significant vehicle speeds, and common pedestrian crossings at unsignalized and median-restricted intersections		Coastal Commission requires nearby replacement of removed parking spaces.
	PCH/Sixth Street: capacity issues caused by use of much green time by pedestrians and interaction with cross street vehicles; recurring congestion projected for future condition		Redesign of parking lot exit would require removal of parking in beach lot.
	PCH from Sixth Street to First Street: (1) slow travel speeds and delays for vehicles with high traffic volumes, very high pedestrian activity, and no room for bike lane or shoulder on roadway; (2) conflict issues with very high pedestrian crossing volumes and no bike lanes.		
	PCH from First Street to Beach Boulevard: vehicle conflict issues with heavy volumes of traffic, pedestrians, and bicycles and on-street parking maneuvers.		
	PCH from Beach Boulevard to Brookhurst Street: high travel speeds on PCH with no bike lanes to help separate bicycles from much higher speed vehicles.	Striped shoulder area might be converted to bike lane.	Blowing sand in this area would be a maintenance issue if bike lanes installed.
	PCH signals through Huntington Beach do not communicate, or old interconnect system is no longer being used for signal coordination.		Improvements would need to involve Caltrans as well as the City.
Newport Beach	PCH from Santa Ana River to Superior Avenue: conflict issues with heavy traffic volumes, no bike lanes, and on-street parking maneuvers.		
	PCH/Superior Avenue: (1) Conflict issues with high volumes of vehicles, bikes, and pedestrians using intersection. (2) Congested location with future LOS E.		

Table 4.1: Issues, Opportunities and Constraints Matrix (continued)

Subarea	Issues	Opportunities	Constraints
Newport Beach (continued)	PCH through Mariners' Mile (SR-55 to Dover Drive): (1) delays for vehicles due to congested traffic conditions and high pedestrian activity and narrow roadway with on-street parking; existing and future recurring congestion at PCH intersections with Riverside Avenue, and Dover Drive (2) conflict issues with high pedestrian volumes and on-street parking.		
	PCH through Corona del Mar: (1) slow travel speeds and vehicle delay issues with significant traffic volumes and constrained capacity, high pedestrian activity, and narrow roadway with on-street parking; existing and future recurring traffic congestion at intersection of PCH/Marguerite Avenue (2) conflict issues with high pedestrian crossing volumes, on-street parking maneuvers, and bikes using shared traffic lane next to on-street parking.		
	PCH from Dover Drive to Bayside Drive: conflict issues.		
	PCH/Jamboree Road: conflict issue with high traffic volumes through intersection.		
	Desire to improve aesthetics of medians.		Improvements need to be consistent with Caltrans standards.
Newport Coast	Signal equipment along PCH is older, not reliable, interconnect needs to be improved or implemented.		
	PCH/Newport Coast Drive: conflict point with through bicycles and vehicles using right turn lane.	City working on design to incorporate painted bike lane between through traffic lane and right turn lane	Improvements need to be consistent with Caltrans standards.
Laguna Beach	PCH through downtown: (1) slow travel speeds and delays for vehicles with high traffic volumes, very high pedestrian activity, and narrow roadway with on-street parking; (2) conflict issues with very high pedestrian crossing volumes, on-street parking maneuvers, and no bike lanes.	Laguna Beach transit system provides local travel alternative to driving. City has investigated opportunities to develop nearby off-street parking lots.	General Plan policy precludes adding lanes to PCH or removing parking. Coastal Commission requires replacement of removed parking nearby. Expensive to acquire land and develop off-street replacement parking.
	In South Laguna, sections of PCH have narrow or missing sidewalks so pedestrians must walk on narrow shoulder or in the on-street parking area		

Table 4.1: Issues, Opportunities and Constraints Matrix (continued)

Subarea	Issues	Opportunities	Constraints
Laguna Beach (continued)	Lack of a coastal bike route through the City.	The City has implemented Class III facilities on some streets parallel to PCH.	Installation of bike lanes inhibited by constrained ROW, businesses adjacent to sidewalks, on-street parking on PCH through most of City, General Plan policy that precludes removal of parking on PCH, Coastal Commission requirement to replace removed parking nearby.
	PCH from through most of Laguna Beach: conflict issues with heavy traffic volumes, no bike lanes, and on-street parking maneuvers.		
Dana Point	After removal of couplet through downtown, expected increase in pedestrian activity combined with concentration of through traffic on PCH will reduce green time and increase delays for traffic through downtown area.	Funded summer shuttle system (starting on summer weekends in 2015) to carry people from remote parking area through downtown to harbor area.	
	After removal of couplet, PCH through downtown will be more constrained for bicycles, with heavy traffic volumes in both direction and a bike lane on the northbound side only.	The redesigned Del Prado Avenue will have bike lanes through downtown, with traffic controlled by stop signs.	Bike lane required to be on northbound side of PCH as part of relinquishment agreement.
	PCH does not have sufficient width for bike lanes south of the Del Obispo Street intersection and no northbound lane over San Juan Creek	Potential alternate route for bikes around downtown area and Del Obispo Street using Del Prado Avenue, Golden Lantern Street , Dana Harbor Drive, and road through Doheny State Beach. Potential to move K-rail to facilitate sharing of San Juan Creek Bridge by people in Doheny State Park.	Improvements would need to involve Caltrans and State Parks as well as the City.
	PCH/Del Obispo Street: vehicle delays with existing and future recurring traffic congestion	Pedestrian overcrossing over PCH (opened in 2009) has removed most pedestrians from the intersection.	
	Several high speed limit traffic sections unfriendly to cyclists	Much of PCH is wide enough for adding 14 feet Class I bike lanes within existing curbed ROW	
South Dana Point and San Clemente	Coast Highway from Doheny Park Road to Palisades: conflict issues with on-street parking and no bike lanes.		
	Dana Point bike path (Palisades Drive to Camino Capistrano) is too narrow to accommodate bicycles and pedestrians passing at the same time.		Constrained ROW due to cliffs on one side of Coast Highway and railroad on the other.

Table 4.1: Issues, Opportunities and Constraints Matrix (continued)

Subarea	Issues	Opportunities	Constraints
South Dana Point and San Clemente	Coast Highway/Camino Capistrano: Bicycle-vehicle conflict point as bicycles must cross from inland side of roadway to connect with Dana Point bike path on coastal side and many do not use intersection crosswalks.	Approved San Clemente bike path will move many bicycles to coast side of traffic lanes, in line with Dana Point bike path. Potential for redesign of Camino Capistrano intersection.	Bike path on PCH won't eliminate all bikes crossing near Camino Capistrano.
	MPAH designation for Coast Highway (four-lane Secondary Arterial) may not be needed to accommodate future traffic	Adjacent Metrolink station can remove some trips from the roadways.	

4.2 Purpose and Need Statement

Once the Corridor Constraints Analysis was finalized, it was used to develop the following P&N statement, which provided the foundation for all subsequent study tasks.

4.2.1 Corridor-wide

Corridor Needs (Problems)

1. Various factors contribute to conflict between vehicles, bicycles, and pedestrians, increasing the risk to travelers' safety.
2. Travel in and through the corridor is impeded in numerous areas by traffic congestion and heavy volumes of pedestrians crossing the highway, adding to travel time and delay for corridor users.
3. The constrained ROW through most of the corridor limits improvement opportunities.
4. Because of the corridor's coastal location, many visitors and recreational users are attracted to the area, resulting in travel patterns and peaking characteristics that are unique in relation to other parts of Orange County.
5. Aesthetic treatment of improvements is sometimes inconsistent with the scenic character of the corridor.
6. Due to limited parallel options, portions of the corridor are susceptible to interruption and closure due to events and incidents.

Corridor Purposes (Objectives) of Improvements

1. Improve safety for all users and modes.
2. Improve mobility for all users and modes.
3. Improve separation between bicycles using PCH and moving or parked vehicles.
4. Reduce traveler delays caused by recurring congestion.
5. Improve the continuity of traffic flow through the corridor.
6. Increase the effectiveness of public transit service as an alternative to the automobile for travel in the corridor.
7. Address the specific subarea problems and objectives, as well as the corridor-wide problems and objectives.
8. Balance the mobility and safety needs of users and modes appropriately for the context of the specific area.
9. Accommodate and encourage transportation enhancements as part of corridor improvements to help create a more aesthetic and pleasant transportation experience.
10. Improve the corridor's ability to maintain operation during interruptions and closures.
11. Achieve the objectives cost-effectively.
12. Improve and encourage the use of parallel alternative routes.
13. Provide traffic control plans or intelligent transportation system improvements to accommodate special events, accidents, and congestion.

4.2.2 Subarea 1: Seal Beach (Los Angeles County line to Huntington Beach city limit)

Subarea 1 Needs (Problems)

1. Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH at Seal Beach Boulevard, PCH at Main Street).
2. Bicyclists and pedestrians using PCH (Anderson Street to Seal Beach Boulevard) face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities or sidewalks.
3. Bicyclists using PCH (Seal Beach Boulevard to Main Street) face potential conflicts when traveling between parked cars/bus stops and moving vehicles within a narrow roadway cross-section.
4. Bicyclists face conflicts between fast-moving cars and right-turn movements at PCH at Seal Beach Boulevard.

Subarea 1Purposes (Objectives) of Improvements

1. Reduce recurring congestion and delays for PCH traffic.
2. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.
3. Reduce the potential for conflicts between bicycles and parked vehicles on PCH.
4. Improve continuity of traffic flow along PCH.

4.2.3 Subarea 2: Huntington Beach (Seal Beach city limit to Santa Ana River)

Subarea 2 Needs (Problems)

1. Vehicle conflict points exist for moving traffic on PCH due to non-standard design of local streets and off-street parking (Sunset Beach).
2. Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH at Warner Avenue).
3. Bicyclists using PCH face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities (Warner Avenue to Goldenwest Street).
4. Traffic backs up onto PCH when city parking lots near capacity, posing conflict hazard for moving traffic on PCH (Goldenwest Street to Seapoint Drive).
5. Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Goldenwest Avenue to Sixth Street).
6. Pedestrian crossings of PCH at Sixth Street substantially reduce traffic capacity and limit mobility through the area (PCH at Sixth Street).
7. Heavy pedestrian crossing volumes reduce capacity and limit mobility through the area (Main Street to Huntington Street).
8. Midblock pedestrian crossing volumes pose conflicts with traffic (Huntington Street to Beach Boulevard).
9. Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Huntington Street to Beach Boulevard).
10. Bicyclists using PCH face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities (Beach Boulevard to Brookhurst Street).
11. Traffic along PCH through the subarea experiences delays due to signal timing not being optimized for continuous traffic flow.

Subarea 2 Purposes (Objectives) of Improvements

1. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.
2. Reduce the potential for conflicts between bicycles and parked vehicles on PCH.
3. Reduce the potential for conflicts between vehicles and pedestrians crossing PCH.
4. Reduce recurring congestion and delays for PCH traffic.

5. Improve continuity of traffic flow along PCH.
6. Reduce likelihood of traffic backups onto PCH from City parking lots.

4.2.4 Subarea 3: Newport Beach (Santa Ana River to Pelican Point Drive)

Subarea 3 Needs (Problems)

1. Bicyclists using northbound PCH in West Newport face potential conflicts when traveling between parked cars and moving vehicles (Santa Ana River to Superior Avenue).
2. Heavy volumes of pedestrians, bicycles, and traffic aggravate conflict potential in West Newport (PCH at Superior Avenue, PCH at Orange Avenue, PCH at Prospect Street).
3. Recurring peak hour traffic congestion delays travelers and limits their mobility through the West Newport area (PCH at Superior Avenue).
4. Heavy traffic volumes and high pedestrian crossing activity delay travelers along PCH and limit mobility through the Mariners Mile area (State Route 55 {SR-55} to Dover Drive, PCH at Riverside Drive, and PCH at Dover Drive).
5. Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (SR-55 to Dover Drive).
6. Heavy volumes of pedestrian crossings in Mariners Mile pose conflicts with traffic (SR-55 to Dover Drive PCH at Riverside Drive).
7. The combination of significant traffic volumes, constrained capacity, substantial pedestrian activity, substantial bicycle activity, and on-street parking friction delays travelers along PCH and limits mobility through the Corona del Mar area.
   (MacArthur Boulevard to Seaward Road, PCH at Marguerite Avenue).
8. Heavy pedestrian crossing volumes pose conflicts with traffic (MacArthur Boulevard to Seaward Road).
9. Bicyclists using PCH face potential conflicts when traveling in shared traffic lane adjacent to parked cars (MacArthur Boulevard to Seaward Road).
10. Traffic along PCH from the Santa Ana River to Jamboree Road experiences delays due to signal timing not being optimized for continuous traffic flow.

Subarea 3 Purposes (Objectives) of Improvements

1. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.
2. Reduce the potential for conflicts between bicycles and parked vehicles on PCH.
3. Reduce the potential for conflicts between vehicles and pedestrians crossing PCH.
4. Reduce recurring congestion and delays for PCH traffic.
5. Improve continuity of traffic flow along PCH.
6. Improve aesthetics.
7. Reduce or eliminate conflicts between bicycles and right-turning vehicles.

4.2.5 Subarea 4: Newport Coast (Pelican Point Drive to Laguna Beach city limit)

Subarea 4 Needs (Problems)

1. Bicycles on PCH face conflict with traffic using right turn lanes on Newport Coast Drive.

Subarea 4 Purposes (Objectives) of Improvements

1. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.

4.2.6 Subarea 5: Laguna Beach (North Laguna Beach city limit to Dana Point city limit)

Subarea 5 Needs (Problems)

1. The combination of significant traffic volumes, constrained traffic capacity, pedestrian activity, and on-street parking friction delays travelers along PCH and limits mobility through the area (Broadway Street to Cress Street).
2. Heavy pedestrian crossing volumes pose conflicts with traffic (Broadway Street to Mountain Drive).
3. The constrained width of PCH and presence of on-street parking means that bicyclists using PCH are traveling in close proximity to moving and parked cars (most of subarea).
4. Sections of PCH with narrow or missing sidewalks pose conflicts for pedestrians with moving traffic (South Laguna Beach).

Subarea 5 Purposes (Objectives) of Improvements

1. Reduce recurring congestion and delays for PCH traffic.
2. Reduce the potential for conflicts between bicycles and moving vehicles on PCH.
3. Reduce the potential for conflicts between bicycles and parked vehicles on PCH.
4. Reduce the potential for conflicts between vehicles and pedestrians crossing PCH.
5. Reduce the potential for conflicts between vehicles and pedestrians walking along PCH.

4.2.7 Subarea 6: Dana Point (Laguna Beach city limit to Doheny Park Road)

Subarea 6 Needs (Problems)

1. Anticipated increases in pedestrian activity, combined with the concentration of higher traffic volumes on PCH, are expected to cause recurring delays for travelers and pedestrians along and across PCH, limiting mobility through the area (Blue Lantern Street to Copper Lantern Street).
2. Bicyclists using southbound PCH face potential conflicts traveling adjacent to moving vehicles (Blue Lantern Street to Del Obispo Street).
3. Bicyclists using PCH face potential conflicts traveling in a shared lane with moving and parked vehicles (Laguna Beach border to Blue Lantern Street, Copper Lantern Street to Del Obispo Street).
4. Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (Copper Lantern Street to Del Obispo Street) as use increases.
5. There is a lack of pedestrian facilities along portions of PCH.
6. There is no northbound bicycle route on Coast Highway from Doheny Park Road to Del Obispo Street.
7. Height of Coast Highway/Park Lantern bridge over San Juan Creek is inadequate to withstand flood waters from 100-year storm.
8. There are limited travel modes to accommodate connectivity to destinations within the community core areas (downtown Dana Point, Doheny Village, and the harbor area).
9. Lighting treatment is inconsistent in various segments of PCH, hampering nighttime mobility and use by bicyclists and pedestrians.
10. Aesthetic treatments are inconsistent.
11. Bicyclists using PCH face potential conflicts with moving vehicles (Del Obispo Street to Doheny Park Road).

Subarea 6 Purposes (Objectives) of Improvements

1. Reduce recurring congestion and delays for PCH traffic.
2. Reduce the potential for conflicts between bicycles and moving/parked vehicles on PCH.
3. Reduce the potential for conflicts between vehicles and pedestrians walking along and across PCH.
4. Improve the corridor's ability to maintain operation following major incidents or events.
5. Increase opportunities for other modes of transport.

6. Improve lighting where nighttime mobility of bicycles and pedestrians is important and currently inadequate.
7. Accommodate and encourage transportation enhancements as part of corridor improvements to help create a more aesthetic and pleasant transportation experience.

4.2.8 Subarea 7: South Dana Point/San Clemente (Doheny Park Road to Avenida Pico)

Subarea 7 Needs (Problems)

1. (a) Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Doheny Park Road to Palisades Drive).
   (b) Missing pedestrian facilities (Doheny Park Road to Palisades Drive).
2. The constrained width of the separated path (Palisades Drive to Camino Capistrano) means that bicyclists and pedestrians face potential conflicts when multiple users must pass each other.
3. Northbound bicyclists using PCH face potential conflicts with vehicles when crossing from the bike lane south of Camino Capistrano to the separated path north of Camino Capistrano.
4. Pedestrians and bicyclists face potential conflicts at the intersections of PCH (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.

Subarea 7 Purposes (Objectives) of Improvements

1. Reduce the potential for conflicts between bicycles and moving vehicles on Coast Highway.
2. Reduce the potential for conflicts between bicycles and parked vehicles on Coast Highway.
3. Reduce the potential for conflicts between bicycles and pedestrians using the separated path.
4. Reduce the potential for conflicts between bicycles, pedestrians, and vehicles using the intersections of Coast Highway (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.

Chapter 5 - Development of Improvement Alternatives

Based on the P&N statement, and in collaboration with the SWG, an initial list of improvement options was developed for the PCH corridor. These improvements were a combination of those referenced in previous planning studies (researched under **Section 2.1**) and new options identified as part of this study process.

5.1 2040 Planned (Partially Funded and Unfunded) Improvements

Based on the background research, following is a list of Future Planned improvements on PCH or in the immediate vicinity of the corridor. The list of improvements, categorized by mode and jurisdictions was intended to document corridor improvements that had been planned prior to this Corridor Study and based on SWG input some of these improvements were included in study alternatives for further evaluation.

Non-motorized [4]

- Huntington Beach:
  - Stripe Class III sharrows on Pacific Avenue between Anderson Street and Warner Avenue.
  - Convert existing shoulder to Class II bike lanes on PCH between Beach Boulevard and Santa Ana River.
  - Provide two-stage left turn boxes for bicyclists at PCH/Beach Boulevard, PCH/Newland Street, PCH/Magnolia Street, PCH/Brookhurst Street.

- Newport Beach:
  - Stripe a new Class II bike lane along northbound PCH between Highland Street and 61st Street.
  - Provide intersection treatments to reduce bike/vehicular conflicts at intersections.
  - Restripe PCH to provide 3 lanes in each direction between Newport Boulevard and Dover Drive to accommodate Class II bike lanes on either side of the street.

- Dana Point[5]:
  - 10'-12' Class I new bike trail on the ocean side of PCH between northerly city limits and Niguel Road.
  - Add 5' pedestrian sidewalk on inland side of PCH between Niguel Road and Selva Road.
  - Widen sidewalk on ocean side of PCH between Niguel Road and Selva Road to accommodate shared use Class I bike trail.
  - Widen northbound #2 lane on PCH between Copper Lantern and Del Obispo Street to add Class II bike lanes.
  - Widen northbound #3 lane on PCH between Del Obispo Street and San Juan Creek Bridge to add Class II bike lanes on both sides of PCH.
  - Add Class I bike trail on PCH between San Juan Creek Bridge and Doheny Park Road.
  - New bike route along PCH between Dana Point Harbor and Palisades Drive.
  - Add sidewalk on inland side of PCH between Dana Point Harbor and Palisades Drive.
  - Remove pedestrian bridge across Coast Highway between Dana Point Harbor and Palisades Drive to replace with traffic controlled pedestrian crossing.
  - Widen protected Class I bike lane along PCH between Palisade Drive and Camino Capistrano.

- San Clemente[6]:
  - Add bike path on ocean side of Coast Highway.

[4] District 1 and 2 Bikeways Feasibility Study, OCTA
[5] City of Dana Point – Pacific Coast Highway Possible Improvement Elements
[6] OC Register, July 02, 2014 (http://www.ocregister.com/articles/council-627805-highway-clemente.html)

Transit

- Dana Point:
  - Bus turnouts on PCH at Crown Valley Parkway and Niguel Road.

Roadway Capacity[7]

- Seal Beach:
  - Add 2 lanes on Main Street between PCH and Bolsa Avenue.
  - Add 2 lanes on Seal Beach Boulevard between PCH and Electric Avenue.
  - Extend Edinger Avenue to PCH.

- Huntington Beach:
  - Add 2 lanes on PCH between Warner Avenue and Seapoint Street.
  - Add 2 lanes on PCH between Seapoint Street and Goldenwest Street.
  - Add 2 lanes on PCH between Goldenwest Street and 17th Street.
  - Add 1 lane on PCH between 1st Street and Delaware Street.
  - Add 2 lanes on PCH between Delaware Street and Beach Boulevard.
  - Add 1 lane to 1st Street between PCH and Walnut Avenue.
  - Add 2 lanes on Warner Avenue between PCH and Algonquin Street.

- Newport Beach:
  - Add 1 lane on PCH between Dover Drive and Bayside Drive.
  - Add 2 lanes on MacArthur Boulevard between PCH and San Miguel Drive.
  - Restripe PCH to provide 3 lanes in each direction with a center two-way left-turn median.

- Laguna Beach:
  - Add 1 lane on Broadway Street between PCH and Laguna Canyon Road.

- Dana Point:
  - Add 2 lanes on PCH between Crown Valley Parkway and Niguel Road.
  - Add 2 lanes on PCH between Niguel Road and Selva Road.
  - Add 2 lanes on PCH between Selva Road and Del Prado .
  - Add 2 lanes on PCH between Del Prado and Dana Point Harbor Drive.
  - Add 1 lane on PCH at Doheny Park Road.
  - Add 2 lanes on Crown Valley Parkway between Camino Del Avion to PCH.
  - Add 2 lanes on Niguel Road between PCH and Stonehill Drive.
  - Add 2 lanes on Street of the Golden Lantern at PCH.

- San Clemente:
  - Add through and right turn lane at PCH and Camino Capistrano (partially funded).
  - Construct roundabout and intersection control improvements at PCH and Camino San Clemente.
  - Add 1 lane on Camino Capistrano between PCH and Avenida Vaquero.

5.2 Initial List of Improvements and Screening

The list of potential improvement options (covering corridor-wide options and each of the seven subareas) is included in **Table 5.1** through **Table 5.8.**

[7]OCTA, Measure M and Renewed Measure M (M2) Seven Year CIP, OCTA MPAH Buildout

The list of improvement options was initially screened to determine how or whether each option would be carried forward into the development and analysis of alternatives. The screening process was conducted as follows:

- Each of the identified improvement options was reviewed to determine: (1) if it was relevant to addressing an identified need in the corridor, and (2) whether, in the estimation of the SWG, it was physically feasible (technically possible to implement) and financially plausible (i.e. within a range of expenditure that seemed plausible for projects in the corridor).
- If an improvement option was determined to not meet these criteria, it was not included in the Corridor Study.
- If an improvement option clearly met both criteria, it was recommended to be carried forward into the development of alternatives phase of study and its subsequent analyses.
- If an improvement option met one of the criteria but could be modified to more clearly meet both, a modified version of the improvement was defined and carried forward into the development of alternatives.

After the initial screening process, the recommended disposition of each improvement option (i.e. whether or not it was recommended for further advancement; and to which alternative it was assigned to moving forward) was identified in the improvement options table (See **Tables 5.1–5.8).** Based upon the findings and recommendations identified in **Tables 5.1-5.8**, five corridor alternatives were defined for purposes of further detailed technical evaluation. The alternatives were structured so that analyses would evaluate the benefits of increasing levels of investment and project scope. The five alternatives identified for analysis were:

- **Alternative 1:** Baseline – Existing system plus committed or fully funded improvements.
- **Alternative 2:** Transportation System Management/Transportation Demand Management (TSM/TDM) – included Alternative 1 plus improvement options that were relatively low cost, easy to implement, and relatively non-controversial.
- **Alternative 3:** Operational Improvements: included Alternative 1 plus improvement options that could be implemented with minimal capital improvements.
- **Alternative 4:** Spot Capital Improvements – included Alternative 1 plus improvement options (roadway, transit and non-motorized) that were limited in scope and focused in small areas.
- **Alternative 5:** Major Capital Improvements – included Alternative 1 plus improvement options that would require substantial investment. All capital improvements that cover a significant length of the PCH corridor (more than just isolated “spots”) were included in this alternative, as well as improvements at “spot locations” that are expected to involve a major expenditure of funds.

5.3 Definition of Alternatives

Each improvement option that remained after initial screening was assigned to the alternative that most closely corresponded with the improvement’s characteristics. In some cases, options were subsequently moved to a different alternative in order to achieve consistency of options within each alternative and avoid conflicting improvements. (For example, in Subarea 2 Need #2, the intersection capacity improvement at PCH/Warner was ultimately assigned to Alternative 4 so that it could be evaluated separately from the Edinger extension which was assigned to Alternative 5, even though the intersection improvement is expected to involve a major expense.) **Table 5.9** through **Table 5.16** present each alternative with improvement options and how they relate to corresponding needs from the P&N Statement.

Table 5.1: Possible Improvement Options – Corridor-wide

Corridor-wide

#	Need	Baseline Improvements	Improvement Options to be Considered for Development of Alternatives					
1	Various factors contribute to conflict between vehicles, bicycles, and pedestrians, increasing the risk to travelers' safety		**Option 1:** Reduce lane widths, implement other design features, and optimize signal timing to manage traffic operations based on context and desired speeds.	**Option 2:** Eliminate on-street parking where possible and relocate where needed for coastal access.	**Option 3:** Construct sidewalks (where feasible) to close missing gaps in walkways.	**Option 4:** Coordinate signal operation and timing to balance pedestrian and vehicle movement.	**Option 5:** Develop bikeway along or adjacent to PCH. Develop process to streamline consideration of innovative bicycle facility treatments in high conflict areas.	**Option 6:** At selected and high priority locations, implement pedestrian safety engineering projects such as signing and striping, lighting, median refuges, traffic controls and timing, and other measures.
			Alt 3	**Alt 5**	**Alt 2**	**Alt 3**	**Alt 5**	**Alt 4**
			Option 7: Install median refuge island to shorten crossing distance and pedestrian signal timing.	**Option 8:** Explore options to reduce pedestrian crossing time by installing curb extenders on parking lane only.	**Option 9:** Establish target speeds along corridor to guide roadway modifications based on context. Consider increased number of pedestrian crossings (over/under) roadway.	**Option 10:** Develop context based design exception review to ensure flexibility in corridor management. Apply greater flexibility in corridor design based on roadway context (village, transitional areas, and throughways).	**Option 11:** Apply treatments based on lower design speed for additional flexibility and speed management. Develop toolkit of pedestrian treatments and applicability for consideration along entire corridor.	**Option 12:** Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways (where applicable).
	Initial Screening Results		**Eliminate – improvement included under Option 6**	**Alt 4**	**Alt 5**	**Alt 2**	**Alt 2**	**Alt 2**
2	Travel in and through the corridor is impeded in numerous areas by traffic congestion and heavy volumes of pedestrians crossing the highway, adding to travel time and delay for corridor users. .		**Option 1:** Locate transportation/parking hubs at key points throughout the corridor. Transit hubs should include parking and accommodate transit service from Route #1, local shuttles, bike sharing. Include establishing a process to facilitate flexibility in parking management tools though Coastal Commission review.	**Option 2:** Implement techniques to improve transit travel speed (Options include queue jumps, far-side bus stops, and bulb outs (consistent with MPAH policy).	**Option 3:** Promote ridership on existing transit services in corridor. Could include free rides during peak season.	**Option 4:** Optimize signal timing to prioritize movement of vehicle throughput for select segments along the PCH corridor.	**Option 5:** Improve existing transit connections and transfers (review OCTA bus schedules to ensure optimize wait time for transfers).	**Option 6:** Consider implementation of limited stop bus service, and/or destination specific shuttle/loop service within village areas along PCH.
			Alt 4	**Alt 4**	**Alt 5**	**Alt 3**	**Alt 2**	**Alt 5**
			Option 7: Install bus pullouts at high ridership stops and route timepoints.	**Option 8:** Modernize the traffic signal system through the corridor and connect corridor signals to Caltrans and city traffic management centers.	**Option 9** Conduct a study to identify potential funding sources for transit operations and maintenance costs to expand service.	**Option 10:** Encourage destination specific shuttle/loop service within village areas.	**Option 11:** Explore additional university/school transit service similar to UCI shuttle.	**Option: 12** Identify specific chokepoints in the corridor and improve to alleviate congestion.
	Initial Screening Results		**Alt 4**	**Alt 5**	**Alt 2**	**Alt 4**	**Alt 5**	**Alt 4**
3	The constrained ROW through most of the corridor limits improvement opportunities		**Option 1:** Secure ROW where opportunities exist (at choke points), as redevelopment occurs or through property purchase in order to facilitate improvements.	**Option 2:** Develop a documentation process that considers all options, but highlights key factors that lead to the preferred option.				
	Initial Screening Results		**Alt 5**	**Alt 3**				
4	Because of the corridor's coastal location, many visitors and recreational users are attracted to the area, resulting in travel patterns and peaking characteristics that are unique in relation to other parts of Orange County		**Option 1:** City sponsored event-driven transit services.	**Option 2:** City sponsored summer surf-rider transit service connecting San Clemente Metrolink station to beach areas.	**Option 3:** Uniform way-finding signs to direct visitors to beach parking and other tourist destination areas.	**Option 4:** Provide remote visitor parking and shuttle services.	**Option 5:** Review M2 funding criteria to consider potentially allowing project eligibility based on peak event conditions such as summer conditions, if supported by the TSC, TAC, and OCTA Board.	**Option 6:** Conduct a study to provide traffic management techniques to respond to summer peak conditions.
	Initial Screening Results		**Alt 4**	**Alt 4**	**Alt 2**	**Alt 4**	**Alt 2**	**Alt 2**

Table 5.1: Possible Improvement Options – Corridor-wide (continued)

Corridor-wide

#	Need	Baseline Improvements	Improvement Options to be Considered for Development of Alternatives					
5	Aesthetic treatment of improvements is sometimes inconsistent with the scenic character of the corridor.		**Option 1:** Aesthetic treatment should be considered as part of project concept and design, including median landscaping projects, structural features, retaining walls, bridges, street furnishings, and decorative paving.					
	Initial Screening Results		**Alt 5**					
6	Due to limited parallel options, portions of the corridor are susceptible to interruption and closure due to events and incidents.		**Option 1:** Install intelligent transportation system (such as changeable message/ traffic information / traveler advisory system etc.).	**Option 2:** Identify by-pass and detour routes in advance and have detour plans ready in case of emergency issues.	**Option 3:** Modernize signal system for synchronization and event management.			
	Initial Screening Results		**Alt 5**	**Alt 3**	**Alt 4**			

Table 5.2: Possible Improvement Options – Seal Beach

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
1	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Seal Beach, PCH/Main).		**Option 1:** Intersection improvements at PCH/Seal Beach Boulevard (Add EB (SB) dual left turn from PCH going towards Seal Beach (away from the coast)).	**Option 2:** Intersection improvements at PCH/Main Street (Restripe SB (WB) Bolsa to provide dual right turns (RT, Thru/RT, LT)).	**Option 3:** Extend Edinger Avenue to PCH (MPAH).	**Option 4:** Traffic signal synchronization through congested areas to smooth operations and manage traveler expectations.	**Option 5:** Upgrade TS equipment and Improve peak hour traffic signal coordination.	
	Initial Screening Results		**Alt 4**	**Alt 4**	**Alt 5**	**Alt 3**	**Alt 5**	
2	Bicyclists using PCH (Main Street to Seal Beach Boulevard) face potential conflicts when traveling between parked cars/bus stops and moving vehicles within a narrow roadway cross-section.		**Option 1:** Remove/relocate on street parking and install bike lanes.	**Option 2:** Minor street widening and travel lane width reduction to accommodate class II bike lanes between on-street parking and travel lanes.	**Option 3:** Provide wayfinding signs to direct bicyclists to parallel bike facility (under feasibility review) on Electric Avenue between Marina Drive and Ocean Avenue. Stripe Class III shared lane markings (sharrows) on Seal Beach Boulevard from PCH to Electric Avenue. (OC1-2).	**Option 4:** Provide wayfinding signs to direct bicyclists to parallel bike facility on Ocean Avenue between Electric Avenue and 1st Street.	**Option 5:** Restripe 5th Street to accommodate on-street Class II bike lanes to direct cyclists to Marina Drive to Electric Avenue to Seal Beach Boulevard.	
	Initial Screening Results		**Alt 5**	**Alt 5**	**Alt 2**	**Alt 2**	**Alt 3**	
3	Bicyclists face conflicts between fast-moving cars and right-turn movements at PCH/ Seal Beach Boulevard		**Option 1:** Provide 2 stage left turn bike box for bicycles at Seal Beach Boulevard (OC1-2).	**Option 2:** Widen intersection approach (or narrow/remove raised median)and provide a through bike lane on PCH (between the through and right-turn vehicle lanes).	**Option 3:** Remove SB/EB right-only lane and replace with bike lane (on PCH).	**Option 4:** Provide northbound off-street bikeway (within Caltrans ROW) in advance of traffic signal for bicyclists to transition off roadway and guide cyclists to travel southerly along Seal Beach Boulevard Class I bikeway.		
	Initial Screening Results		**Eliminate - City not supportive**	**Alt 4**	**Alt 3**	**Alt 2**		

Table 5.2: Possible Improvement Options – Seal Beach (continued)

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
4	Bicyclists and pedestrians using PCH (Seal Beach Boulevard to Anderson Street) face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities or sidewalks.		**Option 1:** Provide on-street painted buffer between bike lane and traffic lane on PCH between Seal Beach Boulevard and Anderson Street (where roadway and lane width permit) (OC1-2).	**Option 2:** Add sidewalks in developed areas where it is currently missing (about 1,000 ft on the inland side of PCH, and about 2,000 ft. on the ocean side of PCH).	**Option 3:** Reduce or combine access points where feasible, especially in areas north of Piedmont (TCR).	**Option 4:** Eliminate or relocate poles and other fixed objects at grade near driveways in sections north of Piedmont.	**Option 5:** Provide a two-way Class IV Cycle-Track with buffer on the southwest side of PCH and supplement with a northbound bike lane (OC Loop Gap L proposed alignment).	**Option 6:** Implement pedestrian safety engineering projects such as signing and striping, lighting, median refuges, traffic controls and timing, and other measures.
	Initial Screening Results		**Alt 2**	**Alt 4**	**Alt 3**	**Alt 4**	**Alt 5**	**Alt 2**
			Option 7: Remove northbound right-turn only lane at north of PCH/Mariner Dr. Remove southbound right-turn only lane at PCH/Phillips Street.					
			Alt 3					
	Other potential improvements not related to any defined need		**Option 1:** 5th Street/Marina Drive from PCH to Electric Ave – restripe 5th Street to accommodate on-street Class II bike lanes, use existing class II bike lanes on Marina (OC1-2).	**Option 2:** ADA improvements on PCH from Seal Beach Boulevard to LA/OC Line (TCR).	**Option 3:** Stripe Class III sharrows on Seal Beach Boulevard from PCH to Electric Avenue to supplement existing Class I bike path along south side of the street (OC1-2).			
	Initial Screening Results		**Part of Need 2, Option3**	**Eliminate – does not address need**	**Part of Need 2, Option3**			
	MPAH improvements not related to any defined need		**Option 1:** Add 2 lanes on Seal Beach Boulevard from PCH to Electric Avenue (MPAH).	**Option 2:** Add 2 lanes on Main street between PCH to Bolsa Avenue (MPAH).				
	Initial Screening Results		**Eliminate – does not address need**	**Eliminate – does not address need**				

Table 5.3: Possible Improvement Options – Huntington Beach

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
1	Vehicle conflict points exist for moving traffic on PCH due to non-standard design of local streets and off-street parking (Sunset Beach)	Stripe Class III sharrows on PCH from Anderson Street to Warner Avenue (OC1-2).	**Option 1:** Consolidate access points where applicable as redevelopment occurs (TCR).	**Option 2:** Provide enhanced signage highlighting to bicyclists the availability of stress free route along Pacific Avenue to Warner Avenue.	**Option 3:** Upgrade roadway to "full standard design" and install missing sidewalks (example Admiralty and Broadway), providing restripes to accommodate vehicles, bikes and parking as needed.	**Option 4:** As consolidation of access points occur consider signalizing selected locations.	**Option 5:** Bus turnouts at high ridership stops and route timepoints.	**Option 1:** Stripe Class III on Anderson Street sharrows between PCH and Pacific Avenue.
	Initial Screening Results	**Alt 1**	**Eliminate - Probably not possible since most of the problem locations are actual streets or alleys with direct access to PCH.**	**Alt 2**	**Alt 5**	**Eliminate – same as Option 1**	**Alt 4**	**Alt 3**
2	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Warner Avenue).		**Option 1:** Add 2 lanes on PCH between Warner Avenue and Seapoint Street (MPAH).	**Option 2:** Add 2 lanes on Warner Avenue between PCH and Algonquin Street (MPAH).	**Option 3:** Extend Edinger Avenue to PCH (MPAH).	**Option 4:** Capacity improvement at PCH/Warner Avenue – (jug handle treatment)(HB recommendation).	**Option 5:** Modify signal coordination on PCH between 19th/Admiralty and Warner.	
	Initial Screening Results		**Not included in as an Alternative – adding lanes on this segment goes beyond what is needed to address congestion at the intersection**	**Not included in as an Alternative – congestion is the result of limited intersection capacity rather than through lane capacity.**	**Alt 5**	**Alt 4**	**Alt 3**	

Notes:
MPAH: OCTA Master Plan of Arterial Highway, 2014 (http://issuu.com/octamarketing/docs/mpah_2014-0904/1?e=1085240/9568377)
OC1-2: Orange County Districts 1 and 2 Bike Study (Alta Planning + Design and IBI Group)
TCR: State Route 1 Transportation Concept Report – District 12
M/M2: Measure M/Measure M2 (Seven Year Capital Improvement Program, Fiscal Years 2013/2014 through 2019/2020)

Table 5.3: Possible Improvement Options – Huntington Beach (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
3	Bicyclists using PCH face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities (Warner Avenue to Goldenwest Street)		**Option 1:** Maintain or install Class II bike lanes and add a 2-foot buffer on PCH between Warner Avenue and Goldenwest Street, where roadway and lane widths permit (OC1-2).	**Option 2:** Add 2 stage left turn bike boxes for bicyclists at Warner Avenue (OC1-2).	**Option 3:** Remove temporary K-rails and replace with 500 feet of metal beam guardrail between Seapoint Street and Warner Avenue (TCR).	**Option 4:** Reduce lane widths, implement other design features to manage traffic operations, optimize signal timing based on context and desired speeds.	**Option 5:** Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways (city parking lots on the beach side).	**Option 6:** Landscape existing median or construct a raised center median to visually narrow and provide aesthetic enhancements.
			Alt 3	**Alt 3**	**Alt 3**	**Alt 3**	**Alt 4**	**Alt 4**
			Option 7: PCH MPAH Buildout from Secondary to Major Arterial from Warner Avenue to Goldenwest (TCR).	**Option 8:** Install through bike lanes on PCH at Warner Avenue by narrowing median.				
	Initial Screening Results		**Not included in as an Alternative – adding traffic lanes would not reduce the conflict potential.**	**Alt 4**				
4	Traffic backs up onto PCH when city parking lots near capacity, posing conflict hazard for moving traffic on PCH (Goldenwest Street to Seapoint Drive)		**Option 1:** Add storage lane on PCH approaching parking entry driveways.	**Option 2:** PCH MPAH Buildout from Secondary to Major Arterial from Warner Avenue to Goldenwest (TCR).	**Option 3:** Install intelligent parking management system to direct visitors away from full lots to available parking			
	Initial Screening Results		**Alt 4**	**Not included in as an Alternative – adding traffic lanes would not significantly reduce the conflict hazard**	**Alt 5**			
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Goldenwest Avenue to 6th Street)		**Option 1:** Use existing Class I bicycle path to the west of PCH (on the beach) for most cyclists. Install "Bikes May Use Full Lane" signs (R4-11) on PCH where no on-street bike lane is provided (TCR/OC1-2).	**Option 2:** Add 2 stage left turn bike boxes for bicyclists at Goldenwest Street (OC1-2).	**Option 3:** Remove/relocate on-street parking and install buffered bike lanes.	**Option 4:** Develop Class III bike route on parallel street (along Walnut Avenue or Olive Avenue (between Goldenwest Street to 1st Street) and Pacific View (1st Street and Beach Boulevard)).	**Option 5:** Remove/relocate on-street parking, shift street centerline inland, install two-way Class IV Cycle track on coast side of roadway per concepts developed for the City of Huntington Beach Bicycle Master Plan.	**Option 6:** Install "Bikes May Use Full Lane" signs (R4-11) on PCH where no on-street bike lane is provided. Install shared lane markings (sharrows) in lane adjacent to parking.
			Alt 2	**Eliminate - Doesn't address the stated problem.**	**Eliminate – same as Option 5**	**Alt 2**	**Alt 5**	**Alt 3**
			Option 7: Restripe to narrow travel lane to slow vehicular traffic.	**Option 8:** Paint sharrows in lane adjacent to parking.				
	Initial Screening Results		**Alt 3**	**Alt 3**				
6	Pedestrian crossings of PCH at Sixth Street substantially reduce traffic capacity and limit mobility through the area (PCH/Sixth Street)		**Option 1:** Eliminate one pedestrian crosswalk at PCH/6th Street and prohibit pedestrian crossing (traffic signal modification, signing/striping, removal of crosswalk etc.).	**Option 2:** Pedestrian grade separation (preferably on the north crosswalk) and limit all at-grade pedestrian crossing.	**Option 3:** Widen driveway to beach side parking lot to allow for separate turn movements and reducing effect of pedestrian conflicts.	**Option 4:** Install median refuge island to shorten crossing distance and pedestrian signal timing.	**Option 5:** Explore options to reduce pedestrian crossing time by installing curb extenders on parking lane only.	**Option 6:** Prohibit southbound left-turn to 6th Street to maximize green time to PCH. Prohibit westbound 6th Street travel and change roadway to 1-way inbound away from beach.
	Initial Screening Results		**Alt 3**	**Alt 5**	**Alt 5**	**Eliminate – not feasible given pedestrian volume**	**Alt 4**	**Eliminated – No City Support**
7	Heavy pedestrian crossing volumes reduce capacity and limit mobility through the area (Main Street to Huntington Street)		**Option 1:** Pedestrian grade separation and prohibit all at-grade pedestrian crossing at Main Street.	**Option 2:** Viaduct for PCH traffic through downtown; park/pedestrian plaza underneath connecting downtown with the beach.	**Option 3:** Eliminate vehicle access at Main Street and implement "scramble" crossing.	**Option 4:** Prohibit left-turns in downtown area at select intersections to minimize conflicts.		
	Initial Screening Results		**Alt 5**	**Alt 5**	**Eliminate as scramble crossing exists and vehicle closure has been formally reviewed many times and rejected each time by the City Council**	**Eliminate – No City Support**		

Table 5.3: Possible Improvement Options – Huntington Beach (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
8	Midblock pedestrian crossing volumes pose conflicts with traffic (Huntington Street to Beach Boulevard)		**Option 1:** Median barrier or fence.	**Option 2:** Add curbside barriers between 1st and Beach curbside barrier .	**Option 3:** Additional overcrossing or tunnels.	**Option 4:** Add curb-adjacent sidewalks on both sides of PCH (Beach to Newland) and add curbside barriers.		
	Initial Screening Results		**Alt 3**	**Alt 5**	**Alt 5**	**Alt 4**		
9	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Huntington Street to Beach Boulevard)		**Option 1:** Stripe Class II bicycle lanes on PCH from 1st to Beach Boulevard between parking and adjacent travel lane, where Class II bike lanes are missing – (on the beach side of PCH between 1st Street and Beach Boulevard; on the inland side of PCH between Huntington Street and Beach Boulevard) (OC1-2).	**Option 2:** Provide two stage left turn boxes for bicyclists at PCH/Beach Boulevard.	**Option 3:** Develop Class III bike route on Pacific View Avenue and Class II bike lanes on Atlanta Avenue.	**Option 4:** Remove/relocate parking, shift street centerline inland, install two-way Class IV cycle track on coast side of roadway.	**Option 5:** Paint shared lane markings (sharrows) in lane adjacent to parking and incorporate speed reduction mechanism.	**Option 6:** Restripe Pacific View Avenue to provide one travel lane and Class II bike lanes between 1st Street and Beach Boulevard.
	Initial Screening Results		**Alt 3**	**Alt 3**	**Alt 3**	**Alt 5**	**Alt 3**	**Alt 3**
10	Bicyclists using PCH face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities (Beach Boulevards to Brookhurst Street)		**Option 1:** Convert existing shoulder to Class II bike lanes with a 2 foot buffer between Beach Boulevard and the Santa Ana River (OC1-2).	**Option 2:** Add 2 stage left turn boxes for bicyclists at Beach Boulevard, Newland Street, Magnolia Street, and Brookhurst Street (OC1-2).	**Option 3:** Reduce lane widths on PCH to manage traffic speeds.	**Option 4:** Capacity improvement at PCH/Brookhurst Street – add 2nd SBL lane, allow WBR turn overlap (HB-Circ).	**Option 5:** Capacity improvement at PCH/Brookhurst Street in order to carry bike lanes through the intersection.	
	Initial Screening Results		**Alt 3**	**Alt 3**	**Alt 3**	**Not included as an alternative – addition of intersection turn lanes does not address the issue of bike conflicts.**	**Alt 4**	
11	Traffic along PCH through the subarea experiences delays due to signal timing not being optimized for continuous traffic flow	Provide operational and infrastructure upgrades including signal timing and installation of fiber optic along Warner Avenue – 90% funded(M/M2) Provide operational and infrastructure upgrades including signal timing and installation of fiber optic along Goldenwest Street – 90% funded(M/M2)	**Option 1:** Upgrade Traffic Signal equipment and communication on PCH with traffic signal timing coordination update.	**Option 2:** Retime signals between Warner and Beach (TCR).	**Option 3:** Optimize signal timing to prioritize movement of vehicle platoons through the area.	**Option 4:** Optimize signal timing to give priority to continuous traffic flow with provisions to accommodate pedestrian/bike safety and transit flow as needed.		
	Initial Screening Results		**Alt 5**	**Alt 2**	**Alt 3**	**Alt 3**	**Alt 3**	**Alt 3**
	Other potential improvements not related to any defined need	Special event shuttle service for Independence Day and US Open Surfing Competition (M/M2)	**Option 1:** New street furnishings and decorative paving are recommended along PCH in the downtown area (HB-DtnSP) Public Plazas are required at the corners of PCH/Main (HB-DtnSP).	**Option 2:** Implementation of streetscape and landscape improvements including sidewalk furniture, shade trees, and pedestrian linkages along commercial corridors in Huntington Beach (HB-GP).	**Option 3:** Stripe Class III on Anderson Street shared lane marking (sharrows) between PCH and Pacific Avenue (OC1-2).	**Option 4:** ADA improvements in Sunset Beach - Anderson Street to Warner Avenue (TCR).	**Option 5:** Replace traffic signal heads and pedestrian heads on PCH between Beach Boulevard and Goldenwest (TCR).	**Option 6:** 1st to Huntington – on southbound PCH, stripe Class II bike lane (OC 1-2).
			Not included as an alternative – does not address need	**Not included as an alternative – does not address need**	**Included in Alt 3, under Need #1**	**Not included as an alternative – does not address need**	**Not included as an alternative – does not address need**	**Included in Alt 2, under Need #9**
			Option 7: Capacity improvement at PCH/Goldenwest Street – add 2nd SBL lane, allow WBR turn overlap(HB-Circ).					
	Initial Screening Results		**Eliminate – does not address need**					

Table 5.3: Possible Improvement Options – Huntington Beach (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
	MPAH improvements identified		**Option 1:** Add 2 lanes on PCH between Seapoint and Goldenwest Street (MPAH).	**Option 2:** Add 2 lanes on PCH between Goldenwest Street and 17th Street (MPAH).	**Option 3:** PCH between Beach and Goldenwest: MPAH buildout from Primary to Major arterial (TCR).	**Option 4:** Add 2 lanes on PCH between Huntington Street and Beach Boulevard (MPAH).	**Option 5:** Add 1 lane on PCH between 1st Street and Huntington Street (MPAH).	
	Initial Screening Results		**Eliminate – does not address need**	**Eliminate – does not address need**	**Eliminate – does not address need, most congested segment already a major arterial**	**Eliminate – does not address need**	**Eliminate – does not address need**	

Table 5.4: Possible Improvement Options – Newport Beach

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
1	Bicyclists using PCH in West Newport face potential conflicts when traveling between parked cars and moving vehicles (Santa Ana River to Superior Avenue).		**Option 1:** PCH between Santa Ana River and Newport Boulevard: maintain existing southbound Class II bike lanes and restripe sections with 8 foot shoulder to provide Class II bike lanes with a 2 foot buffer (OC1-2).	**Option 2:** Stripe Class II bike lane along northbound PCH between Highland Street and 61st Street (OC1-2) - Where road and lane width permit.	**Option 3:** Provide 2 stage left turn boxes for bicyclists at PCH/Superior Avenue (OC1-2).	**Option 4:** Remove/relocate on street parking and install bike lanes.	**Option 6:** Reduce conflict points through access management strategies including consolidating access points, radius driveways.	**Option 6:** Provide green conflict striping where vehicles merge into right-turn lanes (NB BMP).
			Alt 3	**Alt 3**	**Eliminated – City not supportive**	**Alt 5**	**Alt 2**	**Eliminated – City not supportive**
			Option 7: Provide new Class I trail near Sunset Ridge Park linking to future Banning Ranch development for parallel routing between Superior and Santa Ana River Trail (NB BMP).	**Option 8:** Extend east bank Class I bikeway on Santa Ana River Trail under Coast Highway and link to Seashore Drive (NB BMP).				
	Initial Screening Results		**Alt 5**	**Alt 5**				
2	Heavy volumes of pedestrians, bicycles, and traffic aggravate conflict potential in West Newport (PCH/Superior Avenue, PCH/Orange Avenue, PCH/Prospect Street).		**Option 1:** Through private sector development, construct bicycle and pedestrian bridge approximately 300 yards south of 61st street, crossing over PCH (TCR).	**Option 2:** Provide 2 stage left turn boxes for bicyclists at Superior Avenue (OC1-2).	**Option 3:** Optimize traffic signal timing at Orange and Prospect intersections.	**Option 4:** Develop mobility hub with Park and Ride parking spaces, transit center, bike and pedestrian amenities at PCH/Superior, integrated with ITS, parking management signs.	**Option 5:** Pedestrian and bicycle grade separated crossing at PCH/ Superior Avenue.	**Option 6:** Bus turnout at high ridership stops/ route timepoints and relocation/reduction of on-street parking on PCH between Santa Ana River and Superior Avenue to benefit operations and reduce disruption of traffic flow (TCR).
			Eliminated – City not supportive	**Eliminated – City not supportive**	**Alt 3**	**Alt 5**	**Alt 5**	**Alt 4.**
			Develop mobility hub with bike and pedestrian amenities at PCH/Orange, integrated with ITS, parking management signs. (NB BMP).	Provide bicycle/pedestrian trail linking to Santa Ana River Trail east bank to provide access to community of homes and businesses north of Coast Highway.				
	Initial Screening Results		**Alt 5**	**Alt 5**				
3	Recurring peak hour traffic congestion delays travelers and limits their mobility through the West Newport area (PCH/Superior Avenue).		**Option 1:** Widen intersection of PCH/Superior Avenue.	**Option 2:** Grade separate pedestrian and bicycle crossing and remove at-grade pedestrian crosswalks and re-time traffic signal accordingly.				
	Initial Screening Results		**Alt 5**	**Alt 5**				

Notes: MPAH: OCTA Master Plan of Arterial Highway, 2014 (http://issuu.com/octamarketing/docs/mpah_2014-0904/1?e=1085240/9568377)
OC1-2: Orange County Districts 1 and 2 Bike Study (Alta Planning + Design and IBI Group)
TCR: State Route 1 Transportation Concept Report – District 12
M/M2: Measure M/Measure M2 (Seven Year Capital Improvement Program, Fiscal Years 2013/2014 through 2019/2020)

Table 5.4: Possible Improvement Options – Newport Beach (Continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
4	Traffic along PCH from the Santa Ana River to Jamboree Road experiences delays due to signal timing not being optimized for continuous traffic flow.		**Option 1:** Upgrade Traffic Signal equipment and coordinate signals to prioritize movement of vehicle platoons through the area.	**Option 2:** Upgrade Traffic Signal Equipment (infrastructure upgrades including installation of fiber optic cable between Santa Ana River and MacArthur) and communication on PCH.	**Option 3:** Install CCTV cameras at key intersections between Santa Ana River and Jamboree Road and link to the City Traffic Management Center.			
	Initial Screening Results		**Alt 5**	**Alt 5**	**Alt 5**			
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (SR-55 to Dover)		**Option 1:** Provide 2 stage left turn boxes for bicyclists at Dover Drive (OC1-2).	**Option 2:** Widen/restripe to provide three travel lanes in each direction with a center two way left turn median and Class II bike lanes with removal of on-street parking between Newport Boulevard and Dover Drive (OC1-2).	**Option 3:** Additional through lane, turning pocket, and Class II bike lane at Old Newport Boulevard (NB-Bike).	**Option 4:** Widen or add to bridge over Back Bay to provide Class I bikeway between Bayside Drive and Dover Drive. (NB BMP)	**Option 5:** Improve bicycle/pedestrian access to beach from Riverside Avenue using sidewalk on ocean side of PCH to access Balboa Peninsula. (NB BMP)	**Option 6:** Construct new Class I bike trail at end of Avon Street linking to Old Newport Boulevard and directing bicyclists to the loop leading to southbound Newport Boulevard to access Balboa Peninsula. (NB BMP)
			Eliminated – City not supportive	**Alt 5**	**Alt 4**	**Alt 5**	**Alt 3**	**Alt 5**
			Option 7: Stripe Class II bike lanes across the Back Bay Bridge between Dover and Bayside.					
	Initial Screening Results		**Alt 3**					
6	Heavy volumes of pedestrian crossings in Mariners Mile pose conflicts with traffic (SR-55 to Dover Drive, PCH/Riverside Avenue)		**Option 1:** PCH (Mariner's Mile) Pedestrian overcrossing between Tustin Avenue and Dover Drive (TCR) – preferred at PCH/Riverside.	**Option 2:** Install median refuge island to shorten crossing distance and pedestrian signal timing.	**Option 3:** Install signing/striping/lighting to reduce conflicts between pedestrians and motorists at intersection.	**Option 4:** Reduce traffic lane width / widen median / install curb extension (only on parking lanes) to shorten pedestrian crossing times.		
	Initial Screening Results		**Alt 5**	**Alt 4**	**Alt 2**	**Alt 4**		
7	The combination of significant traffic volumes, constrained capacity, substantial pedestrian activity, substantial bicycle activity, and on-street parking friction delays travelers along PCH and limits mobility through the Corona del Mar area (MacArthur Boulevard to Seaward Road, PCH/Marguerite Avenue).		**Option 1:** Eliminate or reduce tolls on SR-73 to encourage drivers to use Newport Coast Drive (NB-Bike) to relieve traffic congestion in Corona del Mar.	**Option 2:** Implement access management strategies including radius driveways on PCH in Corona del Mar.	**Option 3:** Removal/relocation of on street parking and stripe Class II bike lanes.	**Option 4:** Provide advance changeable message signs to encourage through traffic on Coast Highway to use Newport Coast Drive and San Joaquin Hills Road as alternate route.	**Option 5:** Remove / relocate parking to construct bus pull-outs at high ridership stop or route timepoints.	**Option 6:** Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area.
	Initial Screening Results		**Alt 5**	**Alt 2**	**Alt 5**	**Alt 4**	**Alt 4**	**Alt 5**
8	Heavy pedestrian crossing volumes pose conflicts with traffic (MacArthur Boulevard to Seaward Road)		**Option 1:** Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area.	**Option 2:** Explore options to reduce pedestrian crossing time by installing curb extenders on parking lane only.	**Option 3:** Explore options to reduce pedestrian crossing time by installing median refuges with pedestrian push button.			
	Initial Screening Results		**Alt 5**	**Alt 4**	**Alt 4**			
9	Bicycles traveling in traffic lane in close proximity to parked cars (MacArthur Boulevard to Seaward Road)		**Option 1:** Provide two-stage left turn boxes for bicyclists at Marguerite Avenue (OC1-2).	**Option 1:** Extend shared lane markings (sharrows) on PCH between Poppy Avenue and Seaward Road(OC1-2).	**Option 1:** Remove/relocate parking (convert residential lots adjacent to commercial areas to replace on-street parking) and stripe Class II bike lanes.	**Option 1:** Implement two bike boulevards in Corona Del Mar; northerly (Fifth to Orchid), and southerly (Avocado to Second to Goldenrod to Seaview to Poppy) or Bayside to Marguerite to Poppy. (NB BMP).	**Option 1:** Extend Class III shared lane markings (sharrows) treatment south of Poppy Avenue.	**Option 1:** Restrict Poppy Avenue south of Coast Highway to one-way traffic and provide two-way cycletrack for cyclists to encourage greater use of Poppy-Ocean-Bayside alternate route for bicyclists.
	Initial Screening Results		**Alt 3**	**Alt 2**	**Alt 5**	**Alt 5**	**Alt 2**	**Eliminated – City not supportive**

Table 5.4: Possible Improvement Options – Newport Beach (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
10	Traffic along PCH from the Santa Ana River to Jamboree Road experience delays due to signal timing not being optimized for continuous traffic flow.	Add one westbound through lane and modify intersection alignment at PCH and Old Newport Boulevard (M/M2).	**Option 1:** Widen/restripe to provide three travel lanes in each direction with a center two way left turn median and Class II bike lanes with removal of on-street parking between Newport Boulevard and Dover Drive (OC1-2).	**Option 2:** MPAH build-out from Secondary to Major Arterial (TCR/MPAH)***	**Option 3:** Provide green conflict striping in proposed bike lanes at SR-55 interchange ramps.	**Option 4:** Develop a park and ride lot between SR-55 and Old Newport Boulevard (TCR).	**Option 1:** Implement access management strategies including consolidating access points, radius driveways.	**Option 6:** Provide slip lanes for turning vehicles with green conflict striping where vehicles move through proposed Class II bike lane.
		Alt 1	**Alt 5**	**Alt 5**	**Eliminated – Inconsistent with City's Bicycle Master Plan**	**Alt 5**	**Eliminate – does not address need**	**Alt 4**
			Option 7: Eliminate traffic signal at Tustin Avenue. Add southbound left turn lane at Riverside.	**Option 8:** Potential park and ride lot off of Avon Street.	**Option 9:** Reduce lane widths and stripe Class II bike lanes between on-street parking and outside traffic lanes.	**Options 10:** Signal sync and optimization on PCH between Santa Ana River to Jamboree Road.		
	Initial Screening Results		**Alt 4**	**Alt 5**	**Alt 4**	**Alt 2**		
	Other potential improvements not related to any defined need		**Option 1:** ADA Improvements on PCH between Santa Ana River and Superior Avenue (TCR).	**Option 2:** ADA Improvements on PCH between Superior Avenue and Newport Boulevard (TCR).	**Option 3:** ADA Improvements in Mariners' Mile (TCR).	**Option 4:** Add 2 foot buffer between existing bike lanes and adjacent travel lanes between Dover Drive and MacArthur Boulevard (OC1-2).	**Option 5:** Stripe Class II bike lanes across the Back Bay Bridge between Dover and Bayside (OC1-2).	**Option 6:** Provide 2 stage left turn boxes for bicyclists at Jamboree(OC1-2).
			Not included in an alternative – does not address need	**Not included in an alternative – does not address need**	**Not included in an alternative – does not address need**	**Included in Alt 3 for Need 5**	**Included in Alt 3 for Need 6**	**Eliminated – City not supportive**
			Option 7: Intersection widening, restriping, and sidewalk improvements at the intersection of PCH and Bluff (NB).	**Option 8:** Modify signals and lighting and replace existing pavement delineation between Jamboree Road and Bayside Drive (TCR).				
	Initial Screening Results		**Not included in an alternative – does not address need**	**Not included in an alternative – does not address need**				
	MPAH improvements identified		**Option 1:** Add 1 lane on PCH between Dover Drive and Bayside Drive (MPAH).	**Option 2:** Add 2 lanes on MacArthur Boulevard between PCH and San Miguel Drive (MPAH).				
	Initial Screening Results		**Not included in an alternative – does not address need**	**Not included in an alternative – does not address need**				

Notes:
MPAH: OCTA Master Plan of Arterial Highway, 2014 (http://issuu.com/octamarketing/docs/mpah_2014-0904/1?e=1085240/9568377)
OC1-2: Orange County Districts 1 and 2 Bike Study (Alta Planning + Design and IBI Group)
*** City of Newport Beach recommended a "Modified" Major Arterial
TCR: State Route 1 Transportation Concept Report – District 12
M/M2: Measure M/Measure M2 (Seven Year Capital Improvement Program, Fiscal Years 2013/2014 through 2019/2020)

Table 5.5: Possible Improvement Options – Newport Coast

Subarea 4: Newport Coast: Pelican Point Drive to North Laguna Beach City Limit

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
1	Bicycles on PCH face conflict with traffic using right turn lanes on Newport Coast Drive.		**Option 1:** Sign and restripe intersection to provide Class II bike lane through intersection.	**Option 2:** PCH (Seaward Road – Newport Beach City Limit): maintain existing Class II bike lanes and restripe sections with 8 foot shoulder to provide Class II lanes with a 2 foot buffer Add/designate on-street Class II bike lanes where gaps in system within identified limits. (OC1-2).	**Option 3:** Provide 2 stage left turn boxes for bicyclists at Newport Coast Drive (OC1-2).	**Option 4:** Provide green conflict striping where vehicles merge over the bike lane into right-turn lane.	**Option 5:** Construction of a raised median at the shopping center entrance near Crystal Heights Drive would reduce existing conflicts and potential accidents. Drivers currently make the illegal turns over the striped median.	**Option 6:** Extend Class I bikeway through Crystal Cove Park to El Moro State Park Signal. (NB BMP).
	Initial Screening Results		**Alt 2**	**Alt 3**	**Eliminated – City not supportive**	**Eliminated – City not supportive**	**Alt 4**	**Alt 3**
	MPAH improvements identified		**Option 1:** PCH (Newport Coast Drive to Southern city limits): ADA improvements (TCR).	**Option 2:** Provide right turn lane at El Moro School intersection, between El Moro School and Reef Point Drive (TCR).	**Option 3:** Construct raised median adjacent to shopping center entrance between Crystal Heights Drive and Reef Point Drive.	**Option 4:** Landscape rehabilitation between El Moro School and Reef Point Drive (TCR).		
	Initial Screening Results		**Eliminate – does not address need**	**Eliminate – does not address need**	**Eliminate – does not address need**	**Eliminate – does not address need**		

Table 5.6: Possible Improvement Options – Laguna Beach

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
1	The combination of significant traffic volumes, constrained traffic capacity, pedestrian activity, and on-street parking friction delays travelers along PCH and limits mobility through the area (Broadway Street to Cress Street).	Expansion of a summer festival trolley service and adding a new off-season trolley service beginning March 6, 2015 (M/M2) Broadway Street: widen east side of northbound PCH to provide a dedicated right turn lane onto eastbound Broadway Street (M/M2).	**Option 1**: Facilitate Traffic Signal equipment upgrade and signal synchronization programs with adaptive signal control capabilities (LB-GP).	**Option 2:** Provide bus turnouts along PCH at high ridership stops and route timepoints.	**Option 3:** PCH MPAH buildout from Secondary to Primary Arterial from SR-133 to Dana Point City Limit (TCR/MPAH).	**Option 4:** PCH MPAH buildout from Secondary to Primary Arterial from Northern Laguna Beach City Limits to SR-133 (TCR/MPAH).	**Option 5:** Synchronize signals to prioritize pedestrian/ bicycle safety and transit flow (LB-GP).	
	Initial Screening Results	**Alt 1**	**Alt 4**	**Alt 4**	**Eliminate – physically and financially not feasible**	**Eliminate – physically and financially not feasible**	**Alt 3**	
2	Heavy pedestrian volumes pose conflicts with traffic (Broadway Street to Mountain Road)		**Option 1:** Striping and ADA improvements near Mountain Avenue (TCR).	**Option 2:** Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area.	**Option3:** Install illuminated pedestrian crossings with advanced warning systems at select pedestrian crossings.	**Option4:** Upgrade Traffic Signal equipment.	**Option5:** Implement pedestrian "scramble" crossing at locations identified through coordination with local City Council and community.	
	Initial Screening Results		**Alt 3**	**Alt 3**	**Alt 3**	**Alt 5**	**Alt 2**	

Notes:
MPAH: OCTA Master Plan of Arterial Highway, 2014 (http://issuu.com/octamarketing/docs/mpah_2014-0904/1?e=1085240/9568377)
OC1-2: Orange County Districts 1 and 2 Bike Study (Alta Planning + Design and IBI Group)
TCR: State Route 1 Transportation Concept Report – District 12
M/M2: Measure M/Measure M2 (Seven Year Capital Improvement Program, Fiscal Years 2013/2014 through 2019/2020)

Table 5.6: Possible Improvement Options – Laguna Beach (continued)

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
3	The constrained width of PCH and presence of on-street parking means that bicyclists using PCH are traveling in close proximity to moving and parked cars (most of subarea).	Provide Class III bike routes on parallel streets (along Cliff Drive, Cypress Drive and Glenneyre Street) with wayfinding signs from PCH.	**Option 1:** Install class II bike lanes throughout segment (TCR).	**Option 2:** Remove /relocate on street parking and stripe Class II bike lanes.	**Option 3:** Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways.	**Option 4:** Remove/relocate on-street parking and develop separated bikeway (cycletrack) on one or both sides of roadway similar to recent installation on Rosemead Boulevard in Temple City. (LB-citizen).	**Option 5:** Install painted shared lane markings (sharrows) along with corresponding "Bicycles May Use Full Lane" signs.	**Option 6:** Split one road lane into two opposing bicycle lanes, maintain one traffic lane in each direction, and operate the third traffic lane as a reversible lane.
		Alt 1	**Eliminate – inadequate lane width**	**Alt 5**	**Alt 3**	**Eliminate – inadequate ROW width**	**Alt 3**	**Eliminate – peak traffic is not directional enough to remove a lane without creating significant traffic back-ups**
			Option 7: Reconfigure Glenneyre Street (Caliope to Mermaid) from 4 to 2 travel lanes to accommodate Class II bike lanes with wayfinding signs.	**Option 8:** Install a bike boulevard on Cliff Drive (N Coast Hwy to S Coast Hwy) to make bicycle through travel more convenient.	**Option 9:** Remove center two-way left turn lane where appropriate, manage/consolidate turning movements to accommodate Class II bike lanes on PCH (Ruby to Nyes).			
	Initial Screening Results		**Alt 4**	**Alt 4**	**Alt 5**			
4	Sections of PCH with narrow or missing sidewalks pose conflicts for pedestrians with moving traffic (South Laguna Beach).		**Option 1:** Add sidewalks where current width is sufficient to accommodate.	**Option 2:** Relocate on-street parking and add sidewalks where current width is not sufficient.	**Option 3:** Acquire ROW to add sidewalks where the current width is not sufficient.			
	Initial Screening Results		**Alt 4**	**Alt 5**	**Alt 5**			
	Other potential improvements not related to any defined need		**Option 1:** Add 1 lane on Broadway between PCH and Laguna Canyon Road (MPAH).					
	Initial Screening Results		**Eliminate – does not address need**					

Notes:
MPAH: OCTA Master Plan of Arterial Highway, 2014 (http://issuu.com/octamarketing/docs/mpah_2014-0904/1?e=1085240/9568377)
LB*: Laguna Beach documents and feedback
TCR: State Route 1 Transportation Concept Report – District 12
OC1-2: Orange County Districts 1 and 2 Bike Study (Alta Planning + Design and IBI Group)
M/M2: Measure M/Measure M2 (Seven Year Capital Improvement Program, Fiscal Years 2013/2014 through 2019/2020)

Table 5.7: Possible Improvement Options – Dana Point

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
1	Anticipated increases in pedestrian activity, combined with the concentration of higher traffic volumes on PCH is expected to cause recurring delays for travelers and pedestrians along and across PCH, limiting mobility through the area (Blue Lantern to Copper Lantern).	PCH from Copper Lantern to Blue Lantern, change circulation on PCH and Del Prado to two-way traffic. NB Class II bike lane included. (M/M2) [Implemented September 2014].	**Option 1:** Pedestrian overcrossing on PCH at Golden Lantern.	**Option 2:** Add 2 lanes at the intersection of Street of the Golden Lantern at PCH (MPAH).	**Option 3:** Widening of sidewalks for pedestrians on PCH.	**Option 4:** Peak season shuttle from remote parking to downtown/harbor.	**Option 5:** Addition of bus turnouts from Blue Lantern to Copper Lantern (DP-Imp).	**Option 6:** Development of remote parking facility.
	Initial Screening Results	**Alt 1**	**Alt 5**	**Alt 4**	**Alt 4**	**Included in Need #8, Option #1**	**Alt 4**	**Same as Option 4**
2	Bicyclists using southbound PCH face potential conflicts traveling adjacent to moving vehicles (Blue Lantern to Del Obispo).	Widen NB #2 lanes and add Class II bike lanes where possible between Copper Lantern and Del Obispo (DP-Imp).	**Option 1:** Addition of Class II Bike Lanes (Blue Lantern to Copper Lantern) (DP-Imp).	**Option 2:** Discourage use of PCH by directing cyclists to use parallel alternative Del Prado, Golden, Dana Point Harbor, Park Lantern (DP).	**Option 3:** 14 foot Class I bike trail on the ocean side of PCH between Golden Lantern and Del Obispo (DP-Imp).	**Option 4:** Provide wayfinding signs on PCH directing bicyclists to parallel facility on Del Prado (DP).	**Option 5:** Widen PCH to provide Class I, II or III bike facility (DP).	
	Initial Screening Results	Alt 1	**Included as part of Option #6**	**Alt 2**	**Alt 5 (included as part of Option 6)**	**Alt 2**	**Alt 5**	
3	Bicyclists using PCH face potential conflicts traveling in a shared lane with moving and parked vehicles (Laguna Beach border to Blue Lantern, Copper Lantern to Del Obispo).		**Option 1:** 14 foot Class I bike trail on the ocean side of PCH between northerly city limits and Blue Lantern (DP-Imp).	**Option 2:** Widen PCH to accommodate Class I, II or III bicycle lane (DP).	**Option 3:** Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways.	**Option 4:** Widen the sidewalk on the ocean side to accommodate Class I bike trail (DP-Imp).	**Option 5:** Add 2 lanes on PCH between Crown Valley Parkway and Del Prado if traffic volumes dictate (MPAH).	**Option 6:** Install one way Class I Bike/Ped Trial on both sides of PCH btwn Laguna City Limit and Blue lantern.
	Initial Screening Results		**Alt 5**	**Alt 5**	**Alt 3**	**Alt 5**	**Not included in an alternative – addition of lanes would not reduce traffic conflict**	**Alt 5**
4	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (Copper Lantern to Del Obispo) as use increases.	Widen northbound lane #2 on PCH between Copper Lantern to Del Obispo street (DP-Imp).	**Option 1:** Widen intersection of PCH/Del Obispo.	**Option 2:** Peak season trolley/transit from remote parking.	**Option 3:** Development of remote parking facility.	**Option 4:** Retime traffic signals after proposed intersection and roadway improvements to facilitate the traffic flows, accommodating pedestrian/bicycle safety and transit flow.		
	Initial Screening Results		**Alt 4**	**Alt 5**	**Covered in Alt 1, for Need 1**	**Alt 3**		
5	There is a lack of pedestrian facilities along portions of PCH.		**Option 1:** Add sidewalks where none exists between Laguna border and Selva Road where ROW permits.	**Option 2:** Widen current sidewalk widths between Blue Lantern and Copper Lantern.	**Option 3:** Add retaining walls on inland side of PCH between Niguel to Selva and construct 5 ft sidewalk minimum (DP-Imp).	**Option 4:** Widening sidewalk on ocean side of PCH between Laguna border and Blue Lantern to 14 feet and convert to shared use Class I trail (includes retaining walls) (DP-Imp).	**Option 5:** Improve crossings in high pedestrian areas.	**Option 6:** Add 5 foot pedestrian sidewalk on inland side of PCH between Niguel Road and Selva Road (DP-Imp).
			Alt 4	**Alt 4**	**Alt 4**	**Alt 5**	**Alt 4**	**Alt 4**
			Option 7: Install one way Class I Bike/Ped Trial on both sides of PCH btwn Laguna City Limit and Blue lantern.					
	Initial Screening Results		**Alt 5**					

Notes:

Table 5.7: Possible Improvement Options – Dana Point (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
6	There is no northbound bicycle route on PCH/Coast Highway from Doheny Park Road to Del Obispo.		**Option 1:** Widen northbound #3 lane on PCH between Del Obispo Street and San Juan Creek Bridge to add Class II bike lanes on both sides of PCH.	**Option 2:** Provide wayfinding signs on PCH directing bicyclists to parallel Class I Bike Trail facility on south side of PCH between Doheney Park, through Doheney State Park (Park Lantern) to Del Obispo.	**Option 3:** Construct 14 foot Class I parallel bike trail on the ocean side of PCH between Doheny Park Road, through Doheny State Park (using Park Lantern) and Del Obispo.	**Option 4:** Provide bike/vehicle conflict zone treatment leading to intersections (Coast Highway/Doheny Park Road at Park Lantern).	**Option 5:** Improve bicycle/pedestrian crossing under LOSSAN Railroad tracks and at Coast Highway/Doheny Park Road intersection to guide bicyclists and pedestrians to Coast Highway-Park Lantern access. Consider installation of separated/buffered cycletrack to encourage two-way bicycling and walking under railroad.	**Option 6:** Provide wayfinding at Doheny Park Road/SR-1 Ramps to guide pedestrians and bicyclists to Coast Highway-Park Lantern to avoid bicycle and pedestrian access on SR-1 constructed as freeway. http://goo.gl/maps/8wUK8
	Initial Screening Results		**Alt 5**	**Alt 2**	**Same as Option 5**	**Alt 3**	**Alt 4**	**Eliminate – included as Option 2**
7	Height of Coast Highway/ Park Lantern bridge over San Juan Creek is inadequate to withstand flood waters from 100-year storm.		**Option 1:** Construct new wider/taller bridge and incorporate stress free bicycling and walking facility for north/south active transportation travel over San Juan Creek.					
	Initial Screening Results		**Alt 5**					
8	There are limited travel modes to accommodate connectivity to destinations within the community core areas (downtown Dana Point and the harbor area).	Summer weekend trolley services running on the PCH, connecting area resorts through downtown, from Dana Hills High School to Dana Point Harbor (M/M2).	**Option 1:** Shuttle service throughout the summer and weekends throughout the year.					
	Initial Screening Results	**Alt 1**	**Alt 5**					
9	Lighting treatment is inconsistent in various segments of PCH, hampering nighttime mobility and use by bicyclists and pedestrians.		**Option 1:** Improve street lighting (Review lighting adequacy considerations with each segment project upgrades).					
	Initial Screening Results		**Alt 5**					
10	Aesthetic treatments are inconsistent.	PCH from Copper Lantern to Blue Lantern: Streetscape improvements including road reconfiguration and curb adjustments to create a more pedestrian friendly business district (M/M2). Dana Point citywide - Traffic calming, signing and striping, signal modifications and traffic safety work related to pedestrian and vehicle safety (M/M2). PCH (Crown Valley Parkway to Dana Point northern city limit) Landscape beautification within medians (M/M2).	**Option 1:** PCH (Niguel Rd. to Dana Point northern city limit, Blue Lantern to Copper Lantern) landscape beautification and safety improvements. (DP-Imp / M/M2).	**Option 2:** Copper Lantern to Del Obispo – Landscape beautification and safety enhancement .				
	Initial Screening Results	**Alt 1**	**Alt 5 – as part of major capital improvements**	**Alt 5 – as part of major capital improvements**	**Alt 5**	**Alt 5**		

Table 5.7: Possible Improvement Options – Dana Point (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
11	Bicyclists using PCH face potential conflicts traveling in shared lane with moving vehicles (Del Obispo to Doheny Park Road).		**Option 1:** New Class III bike route along PCH between Del Obispo and San Juan Creek (DP-Imp).	**Option 2:** Widen roadway/bridge to provide 14 foot Class I bike trail on the ocean side of PCH between Del Obispo and Doheny Park Road (DP-Imp).	**Option 3:** Widen Park Lantern and bridge in Doheny State Beach Park to allow cyclist/pedestrians to better cross San Juan Creek. (DP-Imp).	**Option 4:** Widen northbound #3 lane on PCH between Del Obispo Street and San Juan Creek Bridge to add Class II bike lanes on both sides of PCH..Includes demolition and reconstruction of pedestrian bridge (DP-Imp).	**Option 5:** Install signage to better inform cyclists of parallel route on Park Lantern between Dana Point Harbor Drive and Doheny Park Road.	**Option 6:** Add 1 lane on PCH at Doheny Park Road if traffic volumes dictate(MPAH).
			Alt 3	**Same as Need 6, Option 5**	**Alt 4**	**Alt 5**	**Alt 2**	**Eliminate – does not address need**
			Option 7: Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways. Provide on-street buffer where excess ROW exists between travel lanes and on-street parking.	**Option8:** Provide Class III bikeway signage/striping on PCH (southbound only) between Del Obispo and Doheny Park Road/Coast Highway.	**Option 9:** Widen southbound PCH between Del Obispo Street and Coast Highway link to Doheny Park Road to add Class II bike lanes or Class IV cycle track.	**Option 10:** Provide Class III bikeway signage/striping on Coast Highway (northbound only) between Del Obispo and Doheny Park Road.	**Option 11:** Widening of bridge sidewalk at San Juan Creek Bridge.	**Option 12:** Install Class I bicycle facility between Double Tree hotel and Doheny Park Road to allow cyclist/pedstrians to cross San Juan Creek. Widen sidewalk on ocean side just before Doheny Park Road.
	Initial Screening Results		**Alt 3**	**Alt 3 – included as part of Option 1**	**Alt 5**	**Alt 3**	**Alt 5**	**Al t4**
	Other potential improvements not related to any defined need		**Option 1:** Add bus turnouts on PCH at Crown Valley Parkway and Niguel Road (DP-Imp).	**Option 2:** Streetscape improvements on Del Prado to provide a more pedestrian friendly environment (M/M2).	**Option 3:** New bike route to improve connectivity between Dana Point Harbor area to the Capistrano Beach area (Palisade Drive) (M/M2).			
	Initial Screening Results		**Not included in an alternative – does not address any specific need**	**Not included in an alternative– outside PCH**	**Included as Alternative 2 for Need 11 Eliminate – does not address any specific need**			
	MPAH improvements not related to any defined need		**Option 1:** Add 2 lanes on Crown Valley Parkway between Camino Del Avion to PCH if traffic volumes dictate (MPAH).	**Option 2:** Add 2 lanes on Niguel Road between PCH and Stonehill Drive if traffic volumes dictate (MPAH).				
	Initial Screening Results		**Not included in an alternative – does not address any specific need**	**Not included in an alternative – does not address any specific need**				

Notes: MPAH: OCTA Master Plan of Arterial Highway, 2014 (http://issuu.com/octamarketing/docs/mpah_2014-0904/1?e=1085240/9568377)
OC1-2: Orange County Districts 1 and 2 Bike Study (Alta Planning + Design and IBI Group)
DP-Imp: Map of potential improvement projects provided by the City of Dana Point
DB*: Dana Point documents and feedback
M/M2: Measure M/Measure M2 (Seven Year Capital Improvement Program, Fiscal Years 2013/2014 through 2019/2020)
TCR: State Route 1 Transportation Concept Report – District 12

Table 5.8: Possible Improvement Options – San Clemente

Subarea 7: South Dana Point / San Clemente: Doheny Park Road to Avenida Pico

#	Need	Baseline	Improvement Options to be Considered for Development of Alternatives					
1a	Bicyclists using Coast Highway face potential conflicts when traveling between parked cars and moving vehicles (Doheny Park to Palisades).		**Option 1:** Provide Class III bikeway signage/striping on between Doheny Park Road and Palisades Drive (M/M2).	**Option 2:** Remove/relocate on street parking and install Class II bike lanes.	**Option 3:** Widen existing sidewalk and create multi-use path.	**Option 4:** Remove/relocate on street parking and install Class IV cycle track with buffer protection between vehicles and pedestrians/bicyclists.		
	Initial Screening Results		**Alt 2**	**Alt 5**	**Alt 4**	**Alt 5**		
1b	Missing pedestrian facilities (Doheny Park to Palisades).		**Option 1:** Complete sidewalk on inland side of street.	**Option 2:** Remove pedestrian bridge across PCH between Dana Point Harbor and Palisades Drive to replace with traffic controlled pedestrian crossing (DP-Imp).				
	Initial Screening Results		**Alt 4**	**Alt 4**				
2	The constrained width of the separated path (Palisades to Camino Capistrano) means that bicyclists and pedestrians face potential conflicts when multiple users must pass each other.		**Option 1:** Widen protected Class I bike lane along PCH between Palisade Drive and Camino Capistrano (DP-Imp).	**Option 2:** Remove separated path and install Class II bike lanes on each side of Coast Highway.	**Option 3:** Launch an educational campaign for users to slow down and share the path.	**Option 4:** Widen the street segment to provide for 2 vehicular lanes (one in each direction), Class I and Class II bicycle lanes.		
	Initial Screening Results		**Alt 5**	**Alt 4**	**Alt 2**	**Alt 5**		
3	Northbound bicyclists using Coast Highway face potential conflicts with vehicles when crossing from the bike lane south of Camino Capistrano to the separated path north of Camino Capistrano.		**Option 1:** Install Class I bike facility on the coastal side of Coast Highway between Camino Capistrano and Avenida Estacion.	**Option 2:** Evaluate feasible intersection improvements at intersection of Camino Capistrano. Implement the preferred alternative from the feasibility analysis.	**Option 3:** Widen the street segment to provide for 2 vehicular lanes (one in each direction), Class I and Class II bicycle lanes .	**Option 5:** Provide 2 stage left turn bike box for north-bound bicycles at Camino Capistrano or add left-turn bicycle signal to provide for transition from bike lanes to bike path.	**Option 5:** Add through and right turn lane at PCH and Camino Capistrano – partially funded (M/M2).	
	Initial Screening Results		**Alt 5**	**Alt 4**	**Alt 5**	**Alt 3**	**Eliminate – part of Option 2**	
4	Pedestrians and bicyclists face potential conflicts at the intersections of Coast Highway (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.		**Option 1:** Evaluate and implement feasible intersection improvements at intersections of Camino San Clemente to reduce the potential for conflicts between bicycles, pedestrians, and vehicles.	**Option 1:** Evaluate and implement feasible intersection improvements at intersections of Avenida Estacion to reduce the potential for conflicts between bicycles, pedestrians, and vehicles.	**Option 4:** Intersection improvements at PCH/Camino Capistrano and bridge rehabilitation at Prima Deschecha Canada/PCH (SC-Cap0809).	**Option 4:** Construct roundabout and intersection control improvements at PCH and Camino San Clemente (M/M2).	**Option 5:** Evaluate feasible intersection improvements at intersections of Camino Capistrano, Camino San Clemente and Avenida Estacion to reduce the potential for conflicts between bicycles, pedestrians, and vehicles. Implement the preferred alternative from the feasibility analysis.	**Option 6:** Evaluate feasible intersection improvements at Avenida Vaquero. Implement the preferred alternative from the feasibility analysis.
	Initial Screening Results		**Alt 4**	**Alt 4**	**Alt 4**	**Eliminate – part of Option 1**	**Alt 4**	**Eliminated – not part of he corridor study**
	Other potential improvements not related to any defined need		**Option 1:** ~~A~~dd 1 lane on Camino Capistrano between PCH and Avenida Vaquero (MPAH).					
	Initial Screening Results		**Not included in an Alternative – does not address need**					

Notes:
MPAH: OCTA Master Plan of Arterial Highway, 2014 (http://issuu.com/octamarketing/docs/mpah_2014-0904/1?e=1085240/9568377)
OC1-2: Orange County Districts 1 and 2 Bike Study (Alta Planning + Design and IBI Group)
SC*: San Clemente documents and feedback
TCR: State Route 1 Transportation Concept Report – District 12
M/M2: Measure M/Measure M2 (Seven Year Capital Improvement Program, Fiscal Years 2013/2014 through 2019/2020)

Table 5.9: Definition of Alternatives – Corridor-wide

Corridor-wide

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
1	Various factors contribute to conflict between vehicles, bicycles, and pedestrians, increasing the risk to travelers' safety		Construct sidewalks (where feasible) to close missing gaps in walkways Develop context based design exception review to ensure flexibility in corridor management. Apply greater flexibility in corridor design based on roadway context (village, transitional areas, and throughways) Apply treatments based on lower design speed for additional flexibility and speed management. Develop toolkit of pedestrian treatments and applicability for consideration along entire corridor	Coordinate signal operation and timing to balance pedestrian and vehicle movement Reduce lane widths, implement other design features, and optimize signal timing to manage traffic operations based on context and desired speeds Coordinate signal operation and timing to give priority to pedestrian crossing needs where appropriate for local context	Install median refuge island to shorten crossing distance and pedestrian signal timing. Explore options to reduce pedestrian crossing time by installing curb extenders on parking lane only At selected and high priority locations, implement pedestrian safety engineering projects such as signing and striping, lighting, median refuges, traffic controls and timing, and other measures Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways (where applicable)	Eliminate on-street parking where possible and relocate where needed for coastal access. Develop stress free bikeway along or adjacent to PCH. Develop process to streamline consideration of innovative bicycle facility treatments in high conflict areas Establish target speeds along corridor to guide roadway modifications based on context. Consider increased number of pedestrian crossings (over/under) roadway.
2	Travel in and through the corridor is impeded in numerous areas by traffic congestion and heavy volumes of pedestrians crossing the highway, adding to travel time and delay for corridor users.		Improve existing transit connections and transfers (review OCTA bus schedules to ensure optimize wait time for transfers) Conduct a study to identify potential funding sources for transit operations and maintenance costs to expand service	Optimize signal timing to prioritize movement of vehicle throughput for select segments along the PCH corridor	Locate transportation/parking hubs at key points throughout the corridor. Transit hubs should include parking and accommodate transit service from Route #1, local shuttles, bike sharing. Include establishing a process to facilitate flexibility in parking management tools though Coastal Commission review. Implement techniques to improve transit travel speed (Options include queue jumps, far-side bus stops, and bulb outs). Install bus pullouts at high ridership stops and route timepoints to enable buses to stop without impeding traffic flow Encourage destination specific shuttle/loop service within village areas. Identify specific chokepoints in the corridor and improve to alleviate congestion	Promote ridership on existing transit services in corridor. Could include free rides during peak season Consider implementation of limited stop bus service, and/or destination specific shuttle/loop service within village areas along PCH. Modernize the traffic signal system through the corridor and connect corridor signal s to Caltrans and city traffic management centers Explore additional university/school transit service similar to UCI shuttle.
3	The constrained ROW through most of the corridor limits improvement opportunities			Establish process to facilitate flexibility in design through Caltrans exception review		Secure ROW where opportunities exist (at choke points), as redevelopment occurs or through property purchase in order to facilitate improvements

Table 5.9: Definition of Alternatives – Corridor-wide (continued)

Corridor-wide

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
4	Because of the corridor's coastal location, many visitors and recreational users are attracted to the area, resulting in travel patterns and peaking characteristics that are unique in relation to other parts of Orange County		Uniform way-finding signs to direct visitors to beach parking and other tourist destination areas. Review M2 funding criteria to potentially allow project eligibility based on peak event conditions such as summer conditions. Conduct a study to provide traffic management techniques to respond to summer peak conditions		City sponsored event-driven transit services City sponsored summer surf-rider transit service connecting San Clemente Metrolink station to beach areas. Provide remote visitor parking and shuttle services.	
5	Aesthetic treatment of improvements is sometimes inconsistent with the scenic character of the corridor.					Aesthetic treatment should be considered as part of project concept and design, including median landscaping projects, structural features, retaining walls, bridges, street furnishings, decorative paving.
6	Due to limited parallel options, portions of the corridor are susceptible to interruption and closure due to events and incidents.			Identify by-pass and detour routes in advance and have detour plans ready in case of emergency issues	Modernize signal system for synchronization and event management.	Install intelligent transportation system (such as changeable message/ traffic information / traveler advisory system etc.)

Table 5.10: Definition of Alternatives – Seal Beach

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
1	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Seal Beach, PCH/Main).			Traffic signal synchronization through congested areas to smooth operations and manage traveler expectations	Intersection improvements at PCH/Main Street (Restripe SB (WB) Bolsa to provide dual right turns (RT, Thru/RT, LT)) Intersection improvements at PCH/Seal Beach Boulevard (Add EB (SB) dual left turn from PCH going towards Seal Beach (away from the coast))	Upgrade TS equipment and Improve peak hour traffic signal coordination Extend Edinger Avenue to PCH
2	Bicyclists using PCH (Main Street to Seal Beach Boulevard) face potential conflicts when traveling between parked cars/bus stops and moving vehicles within a narrow roadway cross-section.		Provide wayfinding signs to direct bicyclists to parallel bike facility (proposed Class II bike lanes and existing multi-use path in median) on Electric Avenue between Main Street and Ocean Avenue (include these two projects: *5th Street/Marina Drive from PCH to Electric Ave – restripe 5th Street to accommodate on-street Class II bike lanes, use existing class II bike lanes on Marina* *Stripe Class III sharrows on Seal Beach Boulevard from PCH to Electric Avenue to supplement existing Class I bike path along south side of the street* *Provide wayfinding signs to direct bicyclists to parallel bike facility on Ocean Avenue between Electric Avenue and 1st Street.*	Restripe 5th Street to accommodate on-street Class II bike lanes to direct cyclists to Marina Drive to Electric Avenue to Seal Beach Boulevard.		Remove/relocate on street parking and install bike lanes Minor street widening and travel lane width reduction to accommodate class II bike lanes between on-street parking and travel lanes
3	Bicyclists face conflicts between fast-moving cars and right-turn movements at PCH/ Seal Beach Boulevard		Provide northbound off-street bikeway (within Caltrans ROW) in advance of traffic signal for bicyclists to transition off roadway and guide cyclists to travel southerly along Seal Beach Boulevard Class I bikeway.	Remove SB/EB right-only lane and replace with bike lane (on PCH)	Widen intersection approach (or narrow/remove raised median)and provide a through bike lane on PCH (between the through and right-turn vehicle lanes)	
4	Bicyclists and pedestrians using PCH (Seal Beach Boulevard to Anderson Street) face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities or sidewalks.		Provide on-street painted buffer between bike lane and traffic lane on PCH between Seal Beach Boulevard and Anderson Street (where roadway and lane width permit) Implement pedestrian safety engineering projects such as signing and striping, lighting, median refuges, traffic controls and timing, and other measures.	Reduce or combine access points where feasible, especially in areas north of Piedmont Remove northbound right-turn only lane at north of PCH/Mariner Dr. Remove southbound right-turn only lane at PCH/Phillips Street.	Add sidewalks in developed areas where it is currently missing (about 1,000 ft on the inland side of PCH, and about 2,000 ft. on the ocean side of PCH) Eliminate or relocate poles and other fixed objects at grade near driveways in sections north of Piedmont	Provide a two-way Class IV Cycle-Track with buffer on the southwest side of PCH and supplement with a northbound bike lane (OC Loop Gap L proposed alignment)

Table 5.11: Definition of Alternatives – Huntington Beach

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
1	Vehicle conflict points exist for moving traffic on PCH due to non-standard design of local streets and off-street parking (Sunset Beach)	Stripe Class III sharrows on PCH from Anderson Street to Warner Avenue	Provide enhanced signage highlighting bicyclists the availability of stress free route along Pacific Avenue to Warner Avenue.	Stripe Class III on Anderson Street sharrows between PCH and Pacific Avenue	Bus turnouts at high ridership stops and route timepoints	Upgrade roadway to "full standard design" and install missing sidewalks (example Admiralty and Broadway), providing restripes to accommodate vehicles, bikes and parking as needed
2	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Warner Avenue).			Modify signal coordination on PCH between 19th/Admiralty and Warner	Intersection capacity improvement at PCH/Warner Avenue – (jug handle treatment)	Extend Edinger Avenue to PCH
3	Bicycles in close proximity to higher-speed moving vehicles (Warner Avenue to Goldenwest Street)			Install Class II bike lanes (on both sides of PCH) and add a 2-foot buffer (8'0" bike lane inclusive of 2'0 buffer) on PCH between Warner 'Avenue and Goldenwest Street – adjust vehicular lane widths/median as needed Add 2 stage left turn bike boxes for bicyclists at Warner Avenue Reduce lane widths on PCH to slow down traffic Remove temporary K-rails and replace 500 feet of metal beam guardrail between Seapoint Street and Warner Avenue	Install through bike lanes on PCH/Warner by narrowing median Stripe through bike lanes at right-turn pockets and install green conflict striping in merge areas prior to and at access driveways (city parking lots on the beach side) Landscape existing median or construct a raised center median to visually narrow and provide aesthetic enhancements	
4	Traffic backs up from city parking lots onto PCH (Seapoint Street to Goldenwest Street)				Add storage lane on PCH approaching parking entry driveways	InInstall intelligent parking management system to direct visitors away from full lots to available parking
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Goldenwest Street to 6th Street).		Use existing Class I bicycle path to the west of PCH (on the beach) for most cyclists. Install "Bikes May Use Full Lane" signs on PCH where no on-street bike lane is provided Develop Class III bike route on parallel street (along Walnut Avenue or Olive Avenue (between Goldenwest Street to 1st Street) and Pacific View (1st Street and Beach Boulevard))	Restripe to narrow travel lane to slow vehicular traffic Paint sharrows in lane adjacent to parking.		PCH between Beach and Goldenwest: MPAH buildout from Primary to Major arterial Remove/relocate on-street parking, shift street centerline inland, install two-way Class IV Cycle track on coast side of roadway per concepts developed for the City of Huntington Beach Bicycle Master Plan.
6	Pedestrian crossings of PCH at Sixth Street substantially reduce traffic capacity and limit mobility through the area (PCH/6th Street).			Eliminate one pedestrian crosswalk at PCH/6th Street and prohibit pedestrian crossing (traffic signal modification, signing/striping, removal of crosswalk etc.)	Explore options to reduce pedestrian crossing time by installing curb extenders on parking lane only	Widen driveway to beach side parking lot to allow for separate turn movements and reducing effect of pedestrian conflicts. Pedestrian grade separation (preferably on the north crosswalk) and limit all at-grade pedestrian crossing
7	Heavy pedestrian crossing volumes reduce capacity (Main Street to Huntington Street)					Pedestrian grade separation and limit at-grade pedestrian crossing Viaduct for PCH traffic through downtown; park/pedestrian plaza underneath connecting downtown with the beach

Table 5.11: Definition of Alternatives – Huntington Beach (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
8	Midblock pedestrian crossing volumes pose conflicts with traffic (Huntington Street to Beach Boulevard).			Add median barrier or fence	Add sidewalks on both sides of PCH (Beach to Newland) and add curbside barriers	Add curbside barriers between 1st and Beach Additional overcrossings and tunnels
9	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Huntington Street to Beach Boulevard)			Stripe Class II bicycle lanes on PCH from 1st Street o Beach Boulevard between parking and adjacent travel lane, where Class II bike lanes are missing (on the beach side of PCH between 1st Street and Beach Boulevard; on the inland side of PCH between Huntington Street and Beach Boulevard) Paint shared lane markings (sharrows) in lane adjacent to parking and incorporate speed reduction mechanism Provide two stage left turn boxes for bicyclists at PCH/Beach Boulevard Develop Class III bike route on Pacific View Avenue and Class II bike lanes on Atlanta Avenue. Restripe Pacific View Avenue to provide one travel lane and Class II bike lanes between 1st Street and Beach Boulevard.		Remove/relocate parking, shift street centerline inland, install two-way bike track (Class IV) on coast side of roadway.
10	Bicycles in close proximity to higher-speed moving vehicles (Beach Boulevard to Brookhurst Street)			Convert existing shoulder to Class II bike lanes with a 2 foot buffer (between Beach Boulevard and the Santa Ana River) Add 2 stage left turn boxes for bicyclists at Beach Boulevard, Newland Street, Magnolia Street, and Brookhurst Street Reduce lane widths on PCH to slow down traffic	Capacity improvement at PCH/Brookhurst Street in order to carry bike lanes through the intersection	
11	Signal timing not optimized for continuous traffic flow	Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Warner, Magnolia, Beach, Goldenwest	Retime signals between Warner and Beach	Optimize signal timing to prioritize movement of vehicle platoons through the area. Optimize signal timing to give priority to continuous traffic flow with provisions to accommodate pedestrian/bike safety and transit flow as needed	Replace traffic signal heads and pedestrian heads (count down) on PCH between Warner to Beach (TCR) – see corridor-wide Need #7	Upgrade Traffic Signal equipment and communication on PCH with traffic signal timing coordination update.

Table 5.12: Definition of Alternatives – Newport Beach

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
1	Bicyclists using PCH in West Newport face potential conflicts when traveling between parked cars and moving vehicles (Santa Ana River to Superior Avenue).		Reduce conflict points through access management strategies including consolidating access points, radius driveways	PCH between Santa Ana River and Newport Boulevard: maintain existing southbound Class II bike lanes and restripe sections with 8 foot shoulder to provide Class II bike lanes with a 2 foot buffer Stripe class II bike lane along northbound PCH between Highland Street and 61st Street, wherever road and lane width permits		Remove/relocate on street parking and install Class II bike lanes Provide new Class I trail near Sunset Ridge Park linking to future Banning Ranch development for parallel routing between Superior and Santa Ana River Trail. Extend east bank Class I bikeway on Santa Ana River Trail under Coast Highway and link to Seashore Drive
2	Heavy volumes of pedestrians, bicycles, and traffic aggravate conflict potential in West Newport (PCH/Superior Avenue, PCH/Orange Avenue, PCH/Prospect Street).			Optimize traffic signal timing at Orange and Prospect intersections, with provision to incorporate bike/ped safety	Bus turnout at high ridership stops / route timepoints and relocation/reduction of on-street parking on PCH between Santa Ana River and Superior Avenue to benefit operations and reduce disruption of traffic flow	Pedestrian and bicycle grade separated crossing at PCH/ Superior Avenue. Develop mobility hub with Park and Ride parking spaces, transit center, bike and pedestrian amenities at PCH/Superior, PCH/Orange integrated with ITS, parking management signs. Provide bicycle/pedestrian trail linking to Santa Ana River Trail east bank to provide access to community of homes and businesses north of Coast Highway.
3	Recurring peak hour traffic congestion delays travelers and limits their mobility through the West Newport area (PCH/Superior Avenue).					Widen intersection of PCH/Superior Avenue Grade separate pedestrian and bicycle crossing and remove at-grade pedestrian crosswalks and re-time traffic signal accordingly.
4	Traffic along PCH from the Santa Ana River to Jamboree Road experiences delays due to signal timing not being optimized for continuous traffic flow.					Upgrade Traffic Signal Equipment (infrastructure upgrades including installation of fiber optic cable between Santa Ana River and MacArthur) and communication on PCH Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area. Install CCTV cameras at key intersections between Santa Ana River and Jamboree Road and link to the City Traffic Management Center.

Table 5.12: Definition of Alternatives – Newport Beach (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (SR-55 to Dover)			Stripe Class II bike lanes across the Back Bay Bridge between Dover and Bayside Improve bicycle/pedestrian access to beach from Riverside Avenue using sidewalk on ocean side of Coast Highway to access Balboa Peninsula	Additional through lane, turning pocket, and Class II bike lane at Old Newport Boulevard	Widen/restripe to provide three travel lanes in each direction with a center two way left turn median and Class II bike lanes with removal of on-street parking between Newport Boulevard and Dover Drive Widen or add to bridge over Back Bay to provide Class I bikeway between Bayside Drive and Dover Drive. Construct new Class I bike trail at end of Avon Street linking to Old Newport Boulevard and directing bicyclists to the loop leading to southbound Newport Boulevard to access Balboa Peninsula.
6	Heavy volumes of pedestrian crossings in Mariners Mile pose conflicts with traffic (SR-55 to Dover Drive, PCH/Riverside Avenue)		Install signing/striping/lighting to reduce conflicts between pedestrians and motorists at intersection.		Reduce traffic lane width / widen median / install curb extension (only on parking lanes) to shorten pedestrian crossing times Install median refuge island to shorten crossing distance and pedestrian signal timing	PCH (Mariner's Mile) Pedestrian overcrossing between Tustin Avenue and Dover Drive – preferred at PCH/RIverside
7	The combination of significant traffic volumes, constrained capacity, substantial pedestrian activity, substantial bicycle activity, and on-street parking friction delays travelers along PCH and limits mobility through the Corona del Mar area (MacArthur Boulevard to Seaward Road, PCH/Marguerite Avenue).		Implement access management strategies including radius driveways on PCH in Corona del Mar.		Provide advance changeable message signs to encourage through traffic on Coast Highway to use Newport Coast Drive, San Joaquin Hills Road, Jamboree and MacArthur as alternate route. Remove / relocate parking to construct bus pull-outs at high ridership stop or route timepoints.	Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area. Eliminate or reduce tolls on SR-73 to encourage drivers to use Newport Coast Drive to relieve traffic congestion in Corona del Mar Removal/relocation of on street parking and stripe Class II bike lanes
8	Heavy pedestrian crossing volumes pose conflicts with traffic (MacArthur Boulevard to Seaward Road)				Explore options to reduce pedestrian crossing time by installing curb extenders on parking lane only	Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area.
9	Bicycles traveling in traffic lane in close proximity to parked cars (MacArthur Boulevard to Seaward Road)		Extend shared lane markings (sharrows) on PCH between Poppy Avenue and Seaward Road Extend Class III shared lane markings (sharrows) treatment south of Poppy Avenue.	Provide intersection treatments to reduce bike/vehicular conflicts at intersections.		Remove/relocate parking (convert residential lots adjacent to commercial areas to replace on-street parking) and stripe Class II bike lanes Implement two bike boulevards in Corona Del Mar; northerly (Fifth to Orchid), and southerly (Avocado to Second to Goldenrod to Seaview to Poppy) or Bayside to Marguerite to Poppy.

Table 5.12: Definition of Alternatives – Newport Beach (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
10	Traffic along PCH from the Santa Ana River to Jamboree Road experience delays due to signal timing not being optimized for continuous traffic flow.	Add one westbound through lane and modify intersection alignment at PCH and Newport Boulevard (M/M2)	Signal sync and optimization on PCH between Santa Ana River to Jamboree Road		Add second southbound left turn lane at Riverside. Eliminate traffic signal at Tustin Avenue Reduce lane widths and stripe Class II bike lanes between on-street parking and outside traffic lanes	Park and ride lot between SR-55 and Old Newport Boulevard Park and ride lot off of Avon Street. Widen/restripe to provide three travel lanes in each direction with a center two way left turn median and Class II bike lanes with removal of on-street parking between Newport Boulevard and Dover Drive MPAH build-out from Secondary to a Major Arterial***

*** City of Newport Beach recommended a “Modified” Major Arterial

Table 5.13: Definition of Alternatives – Newport Coast

Subarea 4: Newport Coast: Pelican Point Drive to North Laguna Beach City Limit

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 2 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 3 + Improvements** (examples. of improvements include: Intersection Spot Widening, , Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 4 + Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
1	Bicycles on PCH face conflict with traffic using right turn lanes on Newport Coast Drive.		Sign and restripe intersection to provide Class II bike lane through intersection.	PCH (Seaward Road – Newport Beach City Limit): maintain existing Class II bike lanes and restripe sections with 8 foot shoulder to provide Class II lanes with a 2 foot buffer Add/designate on-street Class II bike lanes where gaps in system within identified limits. Extend Class I bikeway through Crystal Cove Park to El Moro State Park Signal.	Construction of a raised median at the shopping center entrance near Crystal Heights Drive would reduce existing conflicts and potential accidents. Drivers currently make the illegal turns over the striped median.	

Table 5.14: Definition of Alternatives – Laguna Beach

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
1	The combination of significant traffic volumes, constrained traffic capacity, pedestrian activity, and on-street parking friction delays travelers along PCH and limits mobility through the area (Broadway Street to Cress Street).	Expansion of a summer seasonal festival trolley service and will adding a new off-season trolley service beginning March 6, 2015 Broadway Street: widen east side of northbound PCH to provide a dedicated right turn lane onto eastbound Broadway Street		Synchronize signals to prioritize pedestrian/ bicycle safety and transit flow	Facilitate Traffic Signal equipment upgrade and signal synchronization programs with adaptive signal control capabilities Provide bus turnouts along PCH at high ridership stops and route timepoints.	
2	Heavy pedestrian volumes pose conflicts with traffic (Broadway Street to Mountain Road)		Implement pedestrian “scramble” crossing at locations identified through coordination with local City Council and community.	Striping and ADA improvements near Mountain Avenue Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area. Install illuminated pedestrian crossings with advanced warning systems when used at additional locations		Upgrade Traffic Signal equipment
3	The constrained width of PCH and presence of on-street parking means that bicyclists using PCH are traveling in close proximity to moving and parked cars (most of subarea).	Provide Class III bike routes on parallel streets (along Cliff Drive, Cypress Drive and Glenneyre Street) with wayfinding signs from PCH		Install painted shared lane markings (sharrows) along with corresponding “Bicycles May Use Full Lane” signs Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways	Reconfigure Glenneyre (Caliope to Mermaid) from 4 to 2 travel lanes to accommodate Class II bike lanes with wayfinding signs. Install a bike boulevard on Cliff Drive (N Coast Hwy to S Coast Hwy) to make bicycle through travel more convenient.	Remove/relocate on street parking and stripe Class II bike lanes Remove center two-way left turn lane where appropriate, manage/consolidate turning movements to accommodate Class II bike lanes on PCH (Ruby to Nyes).
4	Sections of PCH with narrow or missing sidewalks pose conflicts for pedestrians with moving traffic (South Laguna Beach).				Add sidewalks where current width is sufficient to accommodate.	Relocate on-street parking and add sidewalks where current width is not sufficient. Acquire ROW to add sidewalks where the current width is not sufficient.

Table 5.15: Definition of Alternatives – Dana Point

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
1	Anticipated increases in pedestrian activity, combined with the concentration of higher traffic volumes on PCH is expected to cause recurring delays for travelers and pedestrians along and across PCH, limiting mobility through the area (Blue Lantern to Copper Lantern)	PCH from Copper Lantern to Blue Lantern, change circulation on PCH and Del Prado to two-way traffic [Implemented September 2014]			Widening of sidewalks for pedestrians on PCH Addition of bus turnouts from Blue Lantern to Copper Lantern Add 2 lanes at intersection of Street of the Golden Lantern at PCH	Pedestrian overcrossing on PCH at Golden Lantern for cross traffic
2	Bicyclists using southbound PCH face potential conflicts traveling adjacent to moving vehicles (Blue Lantern to Del Obispo).	Widen NB #2 lanes and add Class II bike lanes where possible between Copper Lantern and Del Obispo	Provide wayfinding signs on PCH directing bicyclists to parallel facility on Del Prado Discourage use of PCH by directing cyclists to use parallel alternative Del Prado, Golden, Dana Point Harbor, Park Lantern			Widen PCH to provide Class I, II or III bike facility 14 foot Class I bike trail on the ocean side of PCH between Golden Lantern and Del Obispo
3	Bicyclists using PCH face potential conflicts traveling in a shared lane with moving and parked vehicles (Laguna Beach border to Blue Lantern, Copper Lantern to Del Obispo).			Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways		Widen PCH to accommodate Class I, II or III bicycle lane Widen the sidewalk on the ocean side to accommodate Class I bike trail 14 foot Class I bike trail on the ocean side of PCH between northerly city limits and Blue Lantern Install one way Class I Bike/Ped Trial on both sides of PCH between Laguna City Limit and Blue lantern
4	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (Copper Lantern to Del Obispo) as use increases.	Widen northbound lane #2 on PCH between Copper Lantern to Del Obispo street		Retime traffic signals after proposed intersection and roadway improvements to facilitate the traffic flows, accommodating pedestrian/bicycle safety and transit flow	Widen intersection of PCH/Del Obispo Develop remote parking facility	Peak season PCH trolley/transit from remote parking to downtown harbor
5	There is a lack of pedestrian facilities along portions of PCH.				Add sidewalks on both sides of PCH where none exist between Laguna border and Selva where ROW permits (corridor-wide) Widen current sidewalk widths between Blue Lantern and Copper Lantern. Improve crossings in high pedestrian areas Add retaining walls on inland side of PCH between Niguel to Selva and construct 5 ft sidewalk (minimum)	Widening sidewalk on ocean side of PCH between Laguna border and Selva to 14 feet and convert to shared use Class I trail (includes retaining walls) Install one way Class I Bike/Ped Trial on both sides of PCH btwn Laguna City Limit and Blue lantern

Table 5.15: Definition of Alternatives – Dana Point (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
6	There is no northbound bicycle route on PCH/Coast Highway from Doheny Park Road to Del Obispo.		Provide wayfinding signs on PCH directing bicycists to parallel Class I Bike Trail facility on south side of PCH between Doheny Park, through Doheney State Park (Park Lantern) to Del Obispo	Provide bike/vehicle conflict zone treatment leading to intersections(Coast Highway/Doheny Park Road at Park Lantern)	Improve bicycle/pedestrian crossing under LOSSAN Railroad tracks and at Coast Highway/Doheny Park Road intersection to guide bicyclists and pedestrians to Coast Highway-Park Lantern access. Consider installation of separated/buffered cycletrack to encourage two-way bicycling and walking under railroad. Construct 14 foot Class I parallel bike trail on the ocean side of PCH between Doheney Park Road, through Doheney State Park (using Park Lantern) and Del Obispo	Widen northbound #3 lane on PCH between Del Obispo Street and San Juan Creek Bridge to add Class II bike lanes on both sides of PCH
7	Height of Coast Highway/ Park Lantern bridge over San Juan Creek is inadequate to withstand flood waters from 100-year storm.					Construct new wider/taller bridge and incorporate stress free bicycling and walking facility for north/south active transportation travel over San Juan Creek.
8	Limited travel modes to accommodate connectivity to destinations within community core areas	Summer weekend trolley services running on the PCH, connecting area resorts through downtown, from Dana Hills High School to Dana Point Harbor				Shuttle service throughout the summer and weekends throughout the year
9	Lighting treatment for bicyclists and pedestrians is inconsistent in various segments.					Improve street lighting (Review and include consistent lighting for bicyclists and pedestrians along PCH within each segment during project upgrades)
10	Aesthetic treatment of improvements is inconsistent	PCH from Copper Lantern to Blue Lantern: Streetscape improvements including road reconfiguration and curb adjustments to create a more pedestrian friendly business district Dana Point citywide - Traffic calming, signing and striping, signal modifications and traffic safety work related to pedestrian and vehicle safety PCH (Crown Valley Parkway to Dana Point northern city limit) Landscape beautification within medians (as part of major capital improvements)				PCH (Niguel Rd. to Dana Point northern city limit, Blue Lantern to Copper Lantern) landscape beautification and safety improvements (as part of major capital improvements) Copper Lantern to Del Obispo – Landscape beautification and safety enhancement

Table 5.15: Definition of Alternatives – Dana Point (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

#	Need	Alternatives				
11	Bicyclists using PCH face potential conflicts traveling in shared lane with moving vehicles (Del Obispo to Doheny Park Road).		Install signage to better inform cyclists of parallel route on Park Lantern between Dana Point Harbor Drive and Doheny Park Road New bike route to improve connectivity between Dana Point Harbor area to the Capistrano Beach area (Palisade Drive)	Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways. Provide on-street buffer where excess ROW exists between travel lanes and on-street parking Provide Class III bikeway signage/striping on PCH between Del Obispo and Doheny Park Road/Coast Highway New Class III bike route along PCH between Del Obispo and San Juan Creek	Install Class I bicycle facility between Double Tree hotel and Doheny Park Road to allow cyclist/pedestrians to cross San Juan Creek. Widen sidewalk on ocean side just before Doheny Park Road.	Widen northbound #3 lane on PCH between Del Obispo Street and San Juan Creek Bridge to add Class II bike lanes on both sides of PCH. Includes demolition and reconstruction of pedestrian bridge Widen southbound PCH between Del Obispo Street and Coast Highway link to Doheny Park Road to add Class II bike lanes or Class IV cycle track. Widening of bridge sidewalk at San Juan Creek Bridge

Table 5.16: Definition of Alternatives – San Clemente

Subarea 7: South Dana Point / San Clemente: Doheny Park Road to Avenida Pico

#	Need	Alternatives				
		ALT 1: Baseline (includes Existing Conditions + Committed Improvements (fully funded))	**ALT 2: TSM/TDM** **Includes ALT 1 + Improvements** (examples of improvements include: low cost Improvements easy to implement)	**ALT 3: Operational Improvements** **Includes ALT 1 + Improvements** (examples of improvements include: Signal Coordination w/o capital improvements, Restriping Projects)	**ALT 4: Spot Capital Improvements** **Includes ALT 1 + Improvements** (examples. of improvements include: Intersection Spot Widening, Bus Turnouts Transit for Weekends/Festivals)	**ALT 5: Major Corridor Improvements (Capital and Operational)** **Includes ALT 1+ Improvements** (examples of improvements include: Remove/relocated parking for Class II bike lanes Pedestrian Grade Separation, Year-round transit service for subareas Upgrade corridor transit service Corridor-wide ITS system)
1a	Bicyclists using Coast Highway face potential conflicts when traveling between parked cars and moving vehicles (Doheny Park to Palisades).		New Class III bike route along PCH between Doheny Park Road and Palisades Drive		Widen existing sidewalk and create multi-use path	Remove/relocate on street parking and install Class II bike lanes Widen the street segment to provide for 2 vehicular lanes (one in each direction), Class I and Class II bicycle lanes Remove/relocate on street parking and install Class IV cycle track with buffer protection between vehicles and pedestrians/bicyclists.
1b	Missing pedestrian facilities (Doheny Park to Palisades).				Complete sidewalk on inland side of street Remove pedestrian bridge across PCH between Dana Point Harbor and Palisades Drive to replace with traffic controlled pedestrian crossing	
2	The constrained width of the separated path (Palisades to Camino Capistrano) means that bicyclists and pedestrians face potential conflicts when multiple users must pass each other.		Launch an educational campaign for users to slow down and share the path		Remove separated path and install Class II bike lanes on each side of Coast Highway	Widen protected Class I bike lane along PCH between Palisade Drive and Camino Capistrano Widen the street segment to provide for 2 vehicular lanes (one in each direction), Class I and Class II bicycle lanes

Table 5.16: Definition of Alternatives – San Clemente (continued)

Subarea 7: South Dana Point / San Clemente: Doheny Park Road to Avenida Pico

#	Need	Alternatives				
3	Northbound bicyclists using Coast Highway face potential conflicts with vehicles when crossing from the bike lane south of Camino Capistrano to the separated path north of Camino Capistrano.			Provide 2 stage left turn bike box for north-bound bicycles at Camino Capistrano or add left-turn bicycle signal to provide for transition from bike lanes to bike path	Evaluate feasible intersection improvements at intersection of Camino Capistrano. Implement the preferred alternative from the feasibility analysis.	Install Class I bike facility on the coastal side of Coast Highway between Camino Capistrano and Avenida Estacion Widen the street segment to provide for 2 vehicular lanes (one in each direction), Class I and Class II bicycle lanes
4	Pedestrians and bicyclists face potential conflicts at the intersections of Coast Highway (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.				Evaluate and implement feasible intersection improvements at following intersections of to reduce the potential for conflicts between bicycles, pedestrians, and vehicles: Camino Capistrano Camino San Clemente Avenida Estacion Bridge rehabilitation at Prima Deschecha Canada/PCH	

Chapter 6 - Methodologies and Assumptions for Alternatives Analysis

Five corridor improvement alternatives emerged from the Initial Screening process described in **Chapter 5** and are listed below:

- Alternative 1: Baseline;
- Alternative 2: TSM/TDM;
- Alternative 3: Operational Improvements;
- Alternative 4: Spot Capital Improvements; and
- Alternative 5: Major Corridor Improvements.

6.1 Evaluation Methodology

The purpose of evaluating these alternatives was to conduct detailed screening and feasibility analyses, in order to determine the viability of remaining improvement options in addressing P&N. The corridor P&N statement includes 13 corridor-wide objectives and a total of 34 specific objectives for the seven study subareas (see **Chapter 4**). These objectives are generally summarized below.

- Improve safety of travelers, especially through reducing the potential for conflicts between modes, and for one subarea providing appropriate lighting treatment.
- Improve mobility of travelers, especially through reducing traffic congestion and traveler delay, improving the continuity of traffic flow, and making it more convenient for people to travel in the corridor without needing an automobile.
- Help create a more pleasant corridor experience by encouraging aesthetic enhancements as part of corridor improvement projects.
- Better accommodate the unique travel characteristics associated with the corridor's coastal location, events and festivals, incidents and closures.
- Achieve cost-effective and feasible improvements.

In order to evaluate how well remaining improvement options addressed the objectives identified above, seven detailed screening criteria were identified. Note: the objective of encouraging aesthetic enhancements does not have a screening criterion because that objective applied to all improvements and is anticipated to be addressed through subsequent project design processes. Each of the seven detailed screening criteria is described below.

6.2 Evaluation Criteria and Rating Convention

6.2.1 Reduce Potential for Conflict

Conflict reduction potential was evaluated qualitatively. Improvements earned a rating of good, fair, or poor based on how effectively the improvement reduced potential conflicts. **Table 6.1** illustrates the good/fair/poor rating system for conflict reduction potential, with examples of ratings for bicycle and pedestrian improvements:

Table 6.1: Reduce Potential for Conflict

Bicycle Improvements

Rating	Symbol	Definition	Examples
Good	■	Potential for conflict is substantially reduced.	• Remove/relocate on-street parking and install Class II bike lanes • Widen sidewalk and create multi-use path. • Install bike track (Class IV)
Fair	☒	Potential for conflict is reduced.	• Develop Class III bike route on parallel street • Provide Class II bike lanes between on-street parking and traffic lane • Provide painted buffer between Class II bike lane and traffic lane • Provide 2 stage left turn bike box
Poor	□	Potential for conflict is slightly reduced or not reduced.	• Paint sharrows in traffic lane adjacent to on-street parking • Provide wayfinding signs to direct bicyclists to parallel bike facility

Pedestrian Improvements

Rating	Symbol	Definition	Examples
Good	■	Potential for conflict is substantially reduced.	• Construct pedestrian grade separation and limit at-grade crossings • Prohibit midblock crossing by adding a median barrier or fence or curbside barriers
Fair	☒	Potential for conflict is reduced.	• Construct pedestrian grade separation without limiting at-grade crossing • Widen median, install curb extenders, install signing/lighting for crosswalks, implement pedestrian “scrambles”
Poor	□	Potential for conflict is slightly reduced or not reduced.	• Optimize signal timing to enhance bicycle/pedestrian safety

6.2.2 Reduce Congestion and Delay

Congestion reduction was measured through traffic delay analysis at study intersections. Capacity enhancements, changes in vehicle/pedestrian volumes, and signal coordination/optimization were incorporated into the Synchro model’s calculation of delay at study intersections throughout the corridor. After AM and PM peak hour delay were calculated for study intersections in each alternative, the range of delay reduction values were divided into three groups to produce a good/fair/poor rating for intersection improvements. For the rating, the highest benefit from the peak hours was considered along with the total number of vehicles that entered the intersection for that peak hour. The range for the god/fair/poor rating for this criterion illustrated in **Table 6.2**and was obtained by multiplying the average delay per vehicle for the peak hour by the total volume of vehicles at the intersection for the corresponding peak hour.

Table 6.2: Reduce Congestion and Delay

Rating	Symbol	Definition	Examples
Good	■	Congestion and delay reduced substantially	• More than 700 minutes of delay reduction
Fair	☒	Congestion and delay reduced moderately	• Between 100 and 700 minutes of delay reduction
Poor	□	Congestion and delay is either reduced minimally, or improvement will lead to congestion	• Increase in congestion or up to 100 minutes of delay reduction

6.2.3 Improve Continuity of Traffic Flow

Improvements to the continuity of traffic flow (i.e., improved coordination of signals) were measured using a qualitative rating of the improvement’s ability to improve upon existing signal coordination. **Table 6.3** illustrates the good/fair/poor rating system for improving traffic flow:

Table 6.3: Improve Continuity of Traffic Flow

Rating	Symbol	Definition	Examples
Good	■	Provides potential for substantial improvement in continuity of flow.	• Install new traffic signal and communications equipment and optimize signal timing
Fair	☒	Provides potential for improvement in continuity of flow.	• Optimize signal timing to prioritize movement of traffic platoons
Poor	□	Provides potential for minor or no improvement in continuity of flow.	• Optimize signal timing to enhance bicycle/pedestrian safety

6.2.4 Improve Alternative Modes

Improvements to alternative modes were measured using a qualitative rating of the improvement's ability to serve the mobility needs of corridor travelers without driving on PCH. **Table 6.4** illustrates the good/fair/poor rating system for improving alternative modes:

Table 6.4: Improve Alternative Modes

Transit Improvements

Rating	Symbol	Definition	Examples
Good	■	Substantially improves mobility within the corridor using transit.	• Implement shuttle/loop service within village areas
Fair	☒	Improves mobility within the corridor using transit.	• Improve existing transit connections and transfers
Poor	□	Slightly improves mobility within the corridor using transit.	• Promote existing transit services

Bicycle Improvements

Rating	Symbol	Definition	Examples
Good	■	Substantially improves the ease and attractiveness of bicycle as an alternative travel mode.	• Remove/relocate on-street parking and install Class II bike lanes • Widen sidewalk and create multi-use path. • Provide painted buffer between Class II bike lane and traffic lane • Install bike track (Class IV)
Fair	☒	Improves the ease and attractiveness of bicycle as an alternative travel mode.	• Develop Class III bike route on parallel street • Provide Class II bike lanes between on-street parking and traffic lane • Paint sharrows in traffic lane adjacent to on-street parking
Poor	□	Slightly improves the ease and attractiveness of the bicycle as an alternative travel mode.	• Provide wayfinding signs to direct bicyclists to parallel bike facility

Pedestrian Improvements

Rating	Symbol	Definition	Examples
Good	■	Substantially improves the ease and attractiveness of walking.	• Construct pedestrian grade separation and limit at-grade crossings • Construct pedestrian grade separation without limiting at-grade crossing
Fair	☒	Improves the ease and attractiveness of walking.	• Widen median, install curb extenders, install signing/lighting for crosswalks, implement pedestrian "scrambles" • Prohibit midblock crossing by adding a median barrier or fence or curbside barriers
Poor	□	Slightly improves the ease and attractiveness of walking.	• Optimize signal timing to enhance bicycle/pedestrian safety

6.2.5 Address Events and Incidents

Improvements that enhance the ability of the transportation system to serve mobility needs during events and incidents were measured using a qualitative rating. **Table 6.5** illustrates the good/fair/poor rating system for addressing events and incidents:

Table 6.5: Address Corridor Events and Incidents

Rating	Symbol	Definition	Examples
Good	■	Substantially increases system capacity, flexibility, or traveler information for events or incidents.	• Install corridor intelligent transportation system. • Implement remote parking with shuttle service.
Fair	☒	Increases system capacity, flexibility, or traveler information for events or incidents.	• Modernize signal system for synchronization and event management. • Develop plan of bypass and detour routes.
Poor	□	Slightly increases system capacity, flexibility, or traveler information for events or incidents.	• Install wayfinding signs for event venues.

6.2.6 Cost of Improvements

For each improvement an order-of-magnitude capital cost estimate was developed based upon typical unit costs for similar recent projects. Any available project cost estimates that were provided by the SWG were also used. For transit services, estimates of annual operating costs were prepared based on estimated annual hours of service. Cost estimates are in current (2015) dollars. After cost estimates were developed for all improvements, the range of cost values were divided into three groups so each improvement could be assigned a good/fair/poor rating for cost based on the overall cost range of improvements throughout the corridor. Details of Cost Methodology are presented in **Section 6.2.9**.

Table 6.6 illustrates the good/fair/poor rating system for improvement costs:

Table 6.6: Cost of Improvements

Rating	Symbol	Definition	Examples
Good	■	Affordable improvement	• Cost of improvement up to $250,000
Fair	☒	Moderately priced improvement	• Cost of improvement greater than $250,000 but up to $5,000,000
Poor	□	Expensive improvement	• Cost of improvement >$5,000,000

6.2.7 Feasibility of Improvements

Considerations affecting a project's feasibility included right of way (ROW) requirements; regulatory issues (particularly California Coastal Commission (CCC) regulations); design feasibility (potential need for modification to responsible agency's standard design criteria); and potential for environmental impacts. Each feasibility consideration was identified based on available information and rated according to the type of issues involved, so a qualitative assessment rating of good, fair or poor was assigned to each improvement option based on the feasibility considerations shown in **Table 6.7**.

Table 6.7: Feasibility Evaluation

Rating	Symbol	Definition	Examples	ROW	Reg.	Des	Env	Notes
Good	■	No constraining feasibility considerations	• Paint sharrows in traffic lane adjacent to on-street parking					
Fair	☒	Has potential for environmental constraints or would require design exceptions.	• Reduce traffic lanes width / install curb extension to shorten pedestrian crossing time			X		Would require Caltrans to approve design exceptions
Poor	□	Would require ROW acquisition or involve significant regulatory issues.	• Remove/relocate on-street parking and install Class II bike lanes	X	X			Need to acquire property for relocation of replacement parking Coastal Commission requires nearby replacement of on-street parking

ROW: Right-of-Way; Reg: Regulatory Requirements; Des: Design Feasibility; Env: Potential for Substantial Environmental Impacts

6.2.8 Overall Rating for Each Improvement

The overall evaluation result for each improvement was summarized by a rating that qualitatively assessed how well the improvement addressed all the criteria discussed in **Section 6.2.1** through **Section 6.2.7**. Based on individual ratings for addressing needs, estimated cost, and feasibility, each improvement was assigned an overall rating of good/fair/poor in order to assess overall effectiveness.

6.2.9 Cost Methodology

Order-of-magnitude cost estimates were developed for the purpose of evaluating project effectiveness in relation to cost. Since engineering and design work have not been performed for most of the improvement options, costs were estimated based on typical unit costs for similar project types. Unit cost information from recent construction projects and from various sources of project cost data were the basis of cost calculations. In cases where a local agency had developed a cost estimate for a particular improvement option, that cost was used. The estimated cost for ROW was based on existing market data research and averages of real estate values in the six coastal jurisdictions through which the PCH traverses. Further details are presented in **Appendix I**.

Table 6.8 lists the unit cost assumptions applied to the various types of improvements.

Table 6.8: Unit Cost Assumptions

Improvements	Unit	Unit Cost	Notes
Hardware / Infrastructure			
Remove Traffic Signal System (T Intersection)	Intersection	$125,000	Obtained from OCTA
Remove Traffic Signal System (4-Way Intersection)	Intersection	$125,000	Obtained from OCTA
Install New Traffic Signal System	intersection	$300,000	Obtained from OCTA
Modify/Upgrade Traffic Signal	EA	$250,000	Engineer's Estimate
Install Pedestrian Scramble (Signal, Signing & Striping)	EA	$100,000	Engineer's Estimate

Table 6.8: Unit Cost Assumptions (continued)

Improvements	Unit	Unit Cost	Notes
Hardware / Infrastructure (continued)			
Install Traffic Signal Interconnect	LF	$30	Based on recent bids
Install CCTV Camera System Complete (New Pole)	EA	$25,000	Obtained from OCTA
Install CCTV Camera System Complete (Existing Pole)	EA	$18,000	Obtained from OCTA
Retime/coordinate traffic signals (no new equipment)	intersection	$3,750	Obtained from OCTA
Wayfinding/Trailblazer Signs Complete	EA	$200	Assume up to 10 per mile
Relocate Existing Utility Poles	EA	$500,000	Engineer's Estimate
Removal Temporary Barrier	LF	$8	Based on recent bids
Install Guard Rail	LF	$40	Based on recent bids
Intersection			
Remove Existing Striping	SF	$1.50	Obtained from OCTA
Remove Existing Pavement Marking	SF	$1.50	Obtained from OCTA
Install 4" Stripe	LF	$0.50	Lane Line Striping Obtained from OCTA
Install 6" Stripe	LF	$0.75	Bike Lane Striping Obtained from OCTA
Install 8" Stripe	LF	$1	Turn Pocket Striping Obtained from OCTA
Install 12" Stripe	LF	$1.50	Crosswalk & Limit Line Striping, Double Yellow Obtained from OCTA
Install Raised Pavement Markings	EA	$5	Every 17' Linear Feet, Obtained from OCTA
Roadway			
Construct AC Pavement	SF	$60	Based on recent bids
Construct PCC Pavement	SF	$75	Based on recent bids
Remove Raised Median	SF	$20	Based on recent bids
Construct Raised Median (No Landscaping)	LF	$1,000	Assume a 14' median
Construct Landscaped Raised Median	LF	$800	Assume a 14' median
Bulb-Outs	EA	$23,000	8' x 20' with Access Ramp
Add median/curb barriers/fence	LF	$30	Engineer's Estimate
Roadway Viaduct	SF	$150	Engineer's Estimate
Bicycle Facilities			
Class III Sharrows and Signs (Bicycles May Use Full Lane)	EA	$500	Engineer's Estimate
Class III Bike Routes (Sharrows and Lane markings)	Mile	$20,000	Obtained from OCTA
Class II Bike Lane Striping (new)	Mile	$50,000	Obtained from OCTA
Class II or III Bike Lane Striping (road widening/added paved shoulder)	Mile	$400,000	LA County Bike Master Plan - 2012 Engineering Unit Cost Estimates
Construct AC Pavement (Bike Path)	SF	$40	10-foot width Based on recent bids
Two-way Class IV Cycle-Track Barrier	LF	$20	12" Curb Based on recent bids

Table 6.8: Unit Cost Assumptions (continued)

Improvements	Unit	Unit Cost	Notes
Bicycle Facilities (continued)			
2 stage left turn bike boxes	EA	$500	Based on recent bids
Bike/vehicle conflict zone treatment	EA	$500	Based on recent bids
Bicycle Boulevard (signing and stenciling)	miles	$4,500	Santa Rosa 2010 Bicycle Master Plan
Bicycle Boulevard (traffic Calming)	miles	$30,000	LA County Bike Master Plan - 2012 Engineering Unit Cost Estimates
Class I bike facility (construct multi-use pathway)	miles	$550,000	Engineer's Estimate
Pedestrian Facilities			
Remove Sidewalk	SF	$15	Based on recent bids
Construct 8' PCC Sidewalk	SF	$20	Based on recent bids
Pedestrian/Bicycle Grade Separation (Bridge)	EA	$3,000,000	Engineer's Estimate
Illuminated pedestrian crossing	EA	$40,000	Engineer's Estimate
ADA Compliance Improvements	EA	$8,000	Curb Ramps Engineer's Estimate
Traffic Calming Device**	EA	$10,000	Santa Rosa 2010 Bicycle Master Plan
Widening of existing bridge	SF	$125	Engineer's Estimate
Transit Facilities			
Construct PCC Bus Pad	SF	$75	Based on recent bids
Construct PCC Bus Pullout	SF	$150	Includes removals & curb, and gutter Excludes ROW cost Based on recent bids
Parking Management CMS Sign System	EA	$800	Electronic signs that show spaces available in a parking lot - Unit price is for sign only
Intelligent Parking Management Sensors	EA	$400	One sensor per space
Parking Management Communications System	EA	$15,000	Engineer's Estimate
Construct AC Parking Lot (Includes Striping)	SF	$70	Engineer's Estimate
Transit Center/Mobility Hub	EA	$5,000,000 - $150,000,000	Obtained from OCTA
Purchase Shuttle Bus	EA	$300,000	City of Laguna Beach bus purchase cost
Bus O&M	HOUR	$85	City of Laguna Beach bus O&M cost
Other			
Construct surface parking lot	SPACE	$4,000	
Construct parking structure	SPACE	$20,000 - $40,000	MTC data and recent OCTA construction.
ROW (mostly for parking relocation)			
Seal Beach, Huntington Beach, Dana Point, San Clemente	SF	$350	HDR Real Estate Market Analysis
Newport Beach	SF	$550	HDR Real Estate Market Analysis
Laguna Beach	SF	$600	HDR Real Estate Market Analysis

Table 6.9 shows key quantity assumptions for estimating cost for major improvements for which the cost calculation involved more than simply multiplying the unit cost and quantity.

Table 6.9: Quantity Assumptions for Selected Improvement Options

Improvements	Quantity Assumptions
Hardware / Infrastructure	
Modernize traffic signal system through corridor and connect to TMCs	Assume 25 miles of new interconnect installation, 50 upgraded signals, 100 new CCTV cameras
Install ITS System (costs from USDOT ITS cost database spreadsheet)	Changeable message signs: 10 portable dynamic message signs per city at $19K Traffic information system: 1 Hwy Advisory Radio per city at $37K, 5 HAR signs per city at $7K per sign traveler advisory system
Roadway	
Remove and relocate on-street parking	158 spaces per mile of on-street parking (one side of street)
Roadway Viaduct – downtown Huntington Beach	80-foot wide structure, ½ mile long
Edinger Avenue extension	24-foot widening of existing roadway for 1 mile, 64-foot wide elevated structure for ½ mile, ROW acquisition for both
Bicycle Facilities	
Corridor-wide stress-free bikeway for length of the corridor	37 miles: eliminate existing striping, restripe street (assume 4 lanes + painted median), stripe bike lanes, install curb for Class IV, widen where necessary to fit in the Class IV - assume restriping of traffic lanes for the whole 37 miles, but assume new bike lane striping needed for only 25 miles and Class IV curb for 35 miles - assume that widening and parking relocation + bike lane striping are covered in subarea projects - assume that all widening needed to accomplish this is included in subarea projects
Pedestrian Facilities	
Pedestrian/Bicycle Grade Separation (Bridge)	assume PCH at 4-lanes,($2.2M) 2 elevators ($125K/each), 2 ADA ramps ($250K each), ped bridge width - 10 feet
Transit Facilities	
Summer weekend and weekday shuttle service	13 weeks per year, 7 days per week, 8 hours per day (# of buses in services estimated individually for each community)
Weekend and summer shuttle service	7 days per week 13 weeks per year, 2 days per week 39 weeks per year, 8 hours per day (# of buses in service estimated individually for each community)
Transit hub	50-75 parking spaces, parking management signs, transit center, bike share facility
Promote ridership on existing transit services in corridor	Free fare on Route 1 on weekends and summer Assume lost revenue of 800 riders per bus trip, 4 trips per hour, 2 directions, 8 hours per day, 169 days per year, $1.00 fare lost per rider
Destination specific shuttle loop services within villages	Dana Point has theirs as part of Alt. 5, Laguna Beach has theirs. Assume one each for Seal Beach, Huntington Beach, and San Clemente, two for Newport Beach Assume a smallish "village" loop in each case, with 1 bus for each, 8 hours per day, 169 days per year, $85/hour 5 buses, 2 spares @$300K each
Campus shuttles	UCI runs M-F during the school year, operates 2 buses on a route down to Newport Peninsula Assume 4 other campuses, M-F, 9 months per year (35 weeks), 10 hours per day, 2 buses per campus, $85/hour capital assume $400K per bus, 3 buses per campus

Table 6.9: Quantity Assumptions for Selected Improvement Options (continued)

Improvements	Quantity Assumptions
Miscellaneous	
Remove tolls on SR-73 for traffic using Newport Coast and Bonita Canyon interchanges	Cost represents lost toll revenue from ramp tolls (at Bonita Canyon Drive and Newport Coast Drive), using OCTAM estimates of existing daily ramp volumes to/from north on SR-73, average ramp toll $2.31 at Newport Coast $1.02 at Bonita Canyon, 15 years of traffic, 260 days per year
Property area needed for surface parking	350 square feet per space
Property area needed for structure parking	120 square feet per space

Chapter 7 - 2040 Traffic Forecast for Alternatives 2, 3, 4, and 5

This chapter presents the intersection peak hour ICU and HCMLOS results for four 2040 build alternatives and compares them to the existing and 2040 Baseline conditions presented in **Sections 2.4** and **3.3**. As described in **Chapter 5**, the five alternatives that were analyzed included:

- Alternative 1: Baseline;
- Alternative 2: TSM/TDM;
- Alternative 3: Operational Improvements;
- Alternative 4: Localized Capital Improvements; and
- Alternative 5: Major Corridor Improvements.

7.1 Proposed Capacity Improvements

The 2040 Baseline traffic volumes and LOS presented in Chapter 3 represent the future Baseline condition (Alternative 1). Since Alternatives 2, 3, and 4 did not include capacity modifications that would significantly alter travel patterns in the corridor, the traffic volumes in the 2040 Baseline forecast were also used for analyzing these Alternatives and the LOS analysis was modified for intersections with enhancements. HCM analysis was conducted at all intersections where the alternative included operational improvements or capacity enhancements. ICU analysis was conducted only at intersections where capacity enhancements (modification of lane geometry at the intersection) were identified.

Alternative 5 included improvements that would potentially affect regional travel patterns. Some of the improvements included building a missing link in the arterial system, adding lanes on PCH, and increasing capacity on a regional roadway, thereby reducing congestion on a substantial segment of PCH. The OCTAM model was used to prepare a 2040 traffic forecast for Alternative 5 to estimate the traffic volume changes in the PCH Corridor that would result from proposed improvements. The LOS analysis for Alternative 5 was based upon these 2040 traffic volumes. Results of the model run indicated that traffic volume changes were limited to the areas where these improvements were implemented and did not affect the corridor as a whole.

Table 7.1 lists vehicular mobility related improvements evaluated for each intersection for each alternative and identifies for each location whether ICU or HCM or both types of analyses were conducted. At locations where either or both HCM or ICU analysis was not conducted, the ICU, delay and LOS results were obtained from the previous alternative.

7.2 2040 Future Intersection Peak Hour Analysis

Tables 7.2 and**7.3** summarize intersection peak hour ICU and HCM LOS results for the five alternatives under 2040 conditions and include existing conditions for purposes of comparison.

The ICU analysis in **Table 7.2** indicates that traffic service levels across most study intersections remain fairly consistent in Alternatives 2, 3, and 4 when compared to the 2040 Baseline conditions, with some locations improved in Alternative 4 because of spot capacity enhancements. In Alternative 5, the changes in traffic patterns improve the LOS at the two locations with LOS E or F in Alternatives 1-4.

The operational analysis (HCM), presented in **Table 7.3** indicates that the changing traffic patterns in Alternative 5 causes traffic conditions to deteriorate at a number of study intersections. In the AM peak hour, the intersection of PCH at Dover Drive drops from a LOS E to LOS F. In the PM peak hour two additional intersections operate at LOS E (PCH at Jamboree Road, PCH at Niguel Road/Ritz Carlton Drive). PCH intersections with Dover Drive and Del Obispo Street/Dana Point Harbor Drive continue to operate at LOS E during the PM peak hour under Alternative 5 conditions, and PCH/Marguerite Avenue improves from LOS F to LOS E.

Detailed ICU and HCM peak hour analysis worksheets for each alternative are presented in **Appendix J**.

Table 7.1: List of Improvements for Study Intersections (with identification of ICU and/or HCM Analysis)

ID	Intersection	Jurisdiction	Alternative 2: TSM/TDM	Alternative 3: Operational Improvements	Alternative 4: Spot Capital Improvements	Alternative 5: Major Corridor Improvements
1	PCH at Main Street	Seal Beach	none	Traffic Signal Synchronization /Optimization	Traffic Signal Synchronization /Optimization	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results - HCM	Analysis Results – same as Alt 3	Analysis Results – ICU and HCM
2	PCH at Seal Beach Boulevard	Seal Beach	none	Traffic Signal Synchronization /Optimization Replace SB/EB right-turn only lane on PCH (going on to Seal Beach Boulevard towards the beach), with a through bike lane	Traffic Signal Synchronization /Optimization Replace SB/EB right-turn only lane on PCH (going on to Seal Beach Boulevard towards the beach), with a through bike lane Add EB (SB) dual left turn from Pacific Coast Highway going towards Seal Beach (away from the coast)	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM	Analysis Results – ICU and HCM	Analysis Results – ICU and HCM
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	Traffic Signal Synchronization /Optimization	Traffic Signal Synchronization /Optimization Signal coordination with PCH/Warner	none	Anticipated change due to change in regional traffic
			Analysis Results - HCM	Analysis Results - HCM	Analysis Results – same as Alt 3	Analysis Results – ICU and HCM
4	PCH at Warner Avenue	Huntington Beach	Traffic Signal Synchronization /Optimization	Traffic Signal Synchronization /Optimization Signal coordination with PCH/19th Street/Admiralty Drive	Traffic Signal Synchronization /Optimization Signal coordination with PCH/19th Street/Admiralty Drive Add 3rd NBT lane	Anticipated change due to change in regional traffic
			Analysis Results - HCM	Analysis Results - HCM	Analysis Results–ICU and HCM	Analysis Results – ICU and HCM
5	PCH at Goldenwest Street	Huntington Beach	Traffic Signal Synchronization /Optimization	none	none	Anticipated change due to change in regional traffic Add one NBT lane to make NB configuration as 1, 3, 1 (L, T, R) to account for widening of PCH from Primary to Major between Goldenwest Street and Beach Boulevard
			Analysis Results - HCM	Analysis Results–same as Alt 2	Analysis Results–same as Alt 2	Analysis Results – ICU and HCM
6	PCH at 6th Street	Huntington Beach	Traffic Signal Synchronization /Optimization	Eliminate north cross walk	Eliminate north cross walk On the east leg (assuming 6th Street is east-west) remove on-street (one) parking, close off driveway closest to the intersection and stripe WB as 1, 1, 1 (L, T, R)	Anticipated change due to change in regional traffic
			Analysis Results - HCM	Analysis Results - HCM	Analysis Results–ICU and HCM	Analysis Results – ICU and HCM
7	PCH at Main Street	Huntington Beach	Traffic Signal Synchronization /Optimization	none	none	Anticipated change due to change in regional traffic
			Analysis Results - HCM	Analysis Results–same as Alt 2	Analysis Results–same as Alt 2	Analysis Results – ICU and HCM
8	PCH at 1st Street	Huntington Beach	Traffic Signal Synchronization /Optimization	none	none	Anticipated change due to change in regional traffic
			Analysis Results - HCM	Analysis Results–same as Alt 2	Analysis Results–same as Alt 2	Analysis Results – ICU and HCM
9	PCH at Beach Boulevard	Huntington Beach	Traffic Signal Synchronization /Optimization	none	none	Anticipated change due to change in regional traffic Add one NBT lane to make NB configuration as 1, 3, 1 (L, T, R) to account for widening of PCH from Primary to Major between Goldenwest Street and Beach Boulevard
			Analysis Results - HCM	Analysis Results–same as Alt 2	Analysis Results–same as Alt 2	Analysis Results – ICU and HCM
10	PCH at Brookhurst Street	Huntington Beach	Traffic Signal Synchronization /Optimization	none	none	Anticipated change due to change in regional traffic
			Analysis Results - HCM	Analysis Results–same as Alt 2	Analysis Results–same as Alt 2	Analysis Results – ICU and HCM

Table 7.1: List of Improvements for Study Intersections (with identification of ICU and/or HCM Analysis) – continued

ID	Intersection	Jurisdiction	Alternative 2: TSM/TDM	Alternative 3: Operational Improvements	Alternative 4: Spot Capital Improvements	Alternative 5: Major Corridor Improvements
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	none	none	none	Anticipated change due to change in regional traffic Add one WBR lane to make WB configuration as 1, 4, 1 (L, T, R) Add 2nd SBL lane (along Superior Avenue) to make SB configuration as 2, 2, 2 (L, T, R)
			Analysis Results–same as 2040 Baseline	Analysis Results - none	Analysis Results–none	Analysis Results – ICU and HCM
12	PCH at Newport Boulevard	Newport Beach	none	none	Add 3rd SBT lane (assuming PCH is north-south) Addition of median refuge on PCH	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results - none	Analysis Results–ICU and HCM	Analysis Results – ICU and HCM
13	PCH at Riverside Avenue	Newport Beach	none	none	Add WB left turn lane at Riverside (Riverside is assumed as east-west) Convert WBR to WB free right turn at Riverside (Riverside is assumed as east-west) Addition of median refuge on PCH	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–ICU and HCM	Analysis Results – ICU and HCM
14	PCH at Dover Drive	Newport Beach	none	none	Lengthen SB (PCH assumed as north-south) dual left turn storage. Carry 3rd NB(PCH assumed as north-south) lane through the intersection as far as possible.	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–HCM	Analysis Results – ICU and HCM
15	PCH at Bayside Drive	Newport Beach	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
16	PCH at Jamboree Road	Newport Beach	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
17	PCH at Newport Center Drive	Newport Beach	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
18	PCH at MacArthur Boulevard	Newport Beach	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
19	PCH at Goldenrod Avenue	Newport Beach	none	none	Addition of median refuge on PCH	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–HCM	Analysis Results – ICU and HCM
20	PCH at Marguerite Avenue	Newport Beach	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
21	PCH at Newport Coast Drive	Newport Beach	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM

Table 7.1: List of Improvements for Study Intersections (with identification of ICU and/or HCM Analysis) – continued

ID	Intersection	Jurisdiction	Alternative 2: TSM/TDM	Alternative 3: Operational Improvements	Alternative 4: Spot Capital Improvements	Alternative 5: Major Corridor Improvements
22	PCH at Broadway Street/Laguna Canyon Road	Laguna Beach	none	Traffic Signal Synchronization /Optimization	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results - HCM	Analysis Results–same as Alt 3	Analysis Results – ICU and HCM
23	PCH at Ocean Avenue	Laguna Beach	none	Traffic Signal Synchronization /Optimization	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results - HCM	Analysis Results–same as Alt 3	Analysis Results – ICU and HCM
24	PCH at Laguna Avenue	Laguna Beach	none	Traffic Signal Synchronization /Optimization	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results - HCM	Analysis Results–same as Alt 3	Analysis Results – ICU and HCM
25	PCH at Cress Street	Laguna Beach	none	Traffic Signal Synchronization /Optimization	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results - HCM	Analysis Results–same as Alt 3	Analysis Results – ICU and HCM
26	PCH at Wesley Drive	Laguna Beach	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
27	PCH at Crown Valley Parkway/Monarch Bay Drive	Dana Point	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
29	PCH at Selva Road	Dana Point	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
30	PCH at Street of the Golden Lantern	Dana Point	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
31	PCH at Del Obispo Street/Dana Point Harbor Drive	Dana Point	none	none	Add outside dedicated NB right turn (PCH is assumed to be north-south and existing outer through lane (NB) restripe to T/R	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–ICU and HCM	Analysis Results – ICU and HCM
32	PCH at Doheny Park Road	Dana Point	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
33	PCH at Camino Capistrano	San Clemente	none	none	none	Anticipated change due to change in regional traffic Improvements were assumed only for cost purposes since they were not developed to mitigate congestion issues, but was for bike/pedestrian safety
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
34	PCH at Avenida Estacion	San Clemente	none	none	none	Anticipated change due to change in regional traffic Improvements were assumed only for cost purposes since they were not developed to mitigate congestion issues, but was for bike/pedestrian safety
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM
35	PCH at Avenida Pico	San Clemente	none	none	none	Anticipated change due to change in regional traffic
			Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results–same as 2040 Baseline	Analysis Results – ICU and HCM

Table 7.2: 2040 Future Forecast Comparison of Peak Hour Intersection LOS (ICU method)

ID	Intersection	Jurisdiction	Existing				Alt 1: 2040 Baseline				Alt 2: 2040 TDM				Alt 3: 2040 Operational Improvements				Alt 4: 2040 Spot Capital Improvements				Alt 5: 2040 Major Corridor Improvements			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
1	PCH at Main Street	Seal Beach	0.59	A	0.75	C	0.68	B	0.81	D	0.68	B	0.81	D	0.68	B	0.81	D	0.68	B	0.81	D	0.73	C	0.83	D
2	PCH at Seal Beach Boulevard	Seal Beach	0.68	B	0.81	D	0.76	C	0.86	D	0.76	C	0.86	D	0.76	C	0.87	D	0.76	C	0.86	D	0.81	D	0.87	D
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	0.69	B	0.55	A	0.76	C	0.60	A	0.76	C	0.60	A	0.76	C	0.60	A	0.76	C	0.60	A	0.72	C	0.57	A
4	PCH at Warner Avenue *	Huntington Beach	0.78	C	0.79	C	0.84	D	0.86	D	0.84	D	0.86	D	0.84	D	0.86	D	0.76	C	0.73	C	0.75	C	0.71	C
5	PCH at Goldenwest Street	Huntington Beach	0.68	B	0.72	C	0.72	C	0.76	C	0.72	C	0.76	C	0.72	C	0.76	C	0.76	C	0.60	A	0.71	C	0.61	B
6	PCH at 6th Street	Huntington Beach	0.50	A	0.54	A	0.53	A	0.57	A	0.53	A	0.57	A	0.53	A	0.57	A	0.53	A	0.57	A	0.53	A	0.57	A
7	PCH at Main Street	Huntington Beach	0.46	A	0.42	A	0.49	A	0.44	A	0.49	A	0.44	A	0.49	A	0.44	A	0.49	A	0.44	A	0.49	A	0.44	A
8	PCH at 1st Street	Huntington Beach	0.48	A	0.52	A	0.51	A	0.56	A	0.51	A	0.56	A	0.51	A	0.56	A	0.51	A	0.56	A	0.51	A	0.62	B
9	PCH at Beach Boulevard *	Huntington Beach	0.58	A	0.62	B	0.62	B	0.66	B	0.62	B	0.66	B	0.62	B	0.66	B	0.62	B	0.66	B	0.61	B	0.51	A
10	PCH at Brookhurst Street	Huntington Beach	0.54	A	0.56	A	0.57	A	0.60	A	0.57	A	0.60	A	0.57	A	0.60	A	0.57	A	0.60	A	0.57	A	0.58	A
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	0.69	B	0.76	C	0.72	C	0.81	D	0.72	C	0.81	D	0.72	C	0.81	D	0.72	C	0.81	D	0.71	C	0.78	C
12	PCH at Newport Boulevard *	Newport Beach	0.82	D	0.72	C	0.86	D	0.85	D	0.86	D	0.85	D	0.86	D	0.85	D	0.64	B	0.85	D	0.72	C	0.83	D
13	PCH at Riverside Avenue	Newport Beach	0.72	C	0.95	**E**	0.77	C	1.01	**F**	0.77	C	1.01	**F**	0.77	C	1.01	**F**	0.73	C	0.94	**E**	0.83	D	0.80	D
14	PCH at Dover Drive	Newport Beach	0.75	C	0.77	C	0.82	D	0.83	D	0.82	D	0.83	D	0.82	D	0.83	D	0.82	D	0.83	D	0.87	D	0.89	D
15	PCH at Bayside Drive	Newport Beach	0.56	A	0.66	B	0.60	B	0.72	C	0.60	B	0.72	C	0.60	B	0.72	C	0.60	B	0.72	C	0.61	B	0.74	C
16	PCH at Jamboree Road	Newport Beach	0.62	B	0.71	C	0.67	B	0.77	C	0.67	B	0.77	C	0.67	B	0.77	C	0.67	B	0.77	C	0.80	C	0.84	D
17	PCH at Newport Center Drive	Newport Beach	0.42	A	0.51	A	0.49	A	0.56	A	0.49	A	0.56	A	0.49	A	0.56	A	0.49	A	0.56	A	0.51	A	0.59	A
18	PCH at MacArthur Boulevard *	Newport Beach	0.68	B	0.71	C	0.74	C	0.77	C	0.74	C	0.77	C	0.74	C	0.77	C	0.74	C	0.77	C	0.73	C	0.77	C
19	PCH at Goldenrod Avenue	Newport Beach	0.81	D	0.79	C	0.87	D	0.83	D	0.87	D	0.83	D	0.87	D	0.83	D	0.87	D	0.83	D	0.86	D	0.83	D
20	PCH at Marguerite Avenue	Newport Beach	0.73	C	0.89	D	0.81	D	1.00	**F**	0.81	D	1.00	**F**	0.81	D	1.00	**F**	0.81	D	1.00	**F**	0.77	C	0.95	**E**
21	PCH at Newport Coast Drive	Newport Beach	0.48	A	0.66	B	0.53	A	0.73	C	0.53	A	0.73	C	0.53	A	0.73	C	0.53	A	0.73	C	0.66	B	0.82	D
22	PCH at Broadway Street/Laguna Canyon Road *	Laguna Beach	0.78	C	0.64	B	0.77	C	0.67	B	0.77	C	0.67	B	0.77	C	0.67	B	0.77	C	0.67	B	0.79	C	0.69	B
23	PCH at Ocean Avenue	Laguna Beach	0.62	B	0.62	B	0.68	B	0.68	B	0.68	B	0.68	B	0.68	B	0.68	B	0.68	B	0.68	B	0.69	B	0.71	C
24	PCH at Laguna Avenue	Laguna Beach	0.61	B	0.64	B	0.68	B	0.72	C	0.68	B	0.72	C	0.68	B	0.72	C	0.68	B	0.72	C	0.69	B	0.74	C
25	PCH at Cress Street	Laguna Beach	0.67	B	0.63	B	0.72	C	0.67	B	0.72	C	0.67	B	0.72	C	0.67	B	0.72	C	0.67	B	0.72	C	0.67	B
26	PCH at Wesley Drive	Laguna Beach	0.68	B	0.60	B	0.75	C	0.67	B	0.75	C	0.67	B	0.75	C	0.67	B	0.75	C	0.67	B	0.76	C	0.67	B
27	PCH at Crown Valley Parkway/Monarch Bay Drive *	Dana Point	0.59	A	0.58	A	0.66	B	0.63	B	0.66	B	0.63	B	0.66	B	0.63	B	0.66	B	0.63	B	0.67	B	0.63	B
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	0.54	A	0.77	C	0.60	A	0.85	D	0.60	A	0.85	D	0.60	A	0.85	D	0.60	A	0.85	D	0.62	B	0.87	D
29	PCH at Selva Road	Dana Point	0.63	B	0.60	A	0.74	C	0.67	B	0.74	C	0.67	B	0.74	C	0.67	B	0.74	C	0.67	B	0.76	C	0.68	B
30	PCH at Street of the Golden Lantern *	Dana Point	0.44	A	0.49	A	0.63	B	0.72	C	0.63	B	0.72	C	0.63	B	0.72	C	0.63	B	0.72	C	0.64	B	0.73	C
31	PCH at Del Obispo Street/Dana Point Harbor Drive	Dana Point	0.54	A	0.64	B	0.67	B	0.69	B	0.67	B	0.69	B	0.67	B	0.69	B	0.61	B	0.69	B	0.61	B	0.68	B
32	PCH at Doheny Park Road	Dana Point	0.37	A	0.51	A	0.52	A	0.55	A	0.52	A	0.55	A	0.52	A	0.55	A	0.52	A	0.55	A	0.46	A	0.89	D
33	PCH at Camino Capistrano	San Clemente	0.43	A	0.62	B	0.66	B	0.71	C	0.66	B	0.71	C	0.66	B	0.71	C	0.66	B	0.71	C	0.61	B	0.71	C
34	PCH at Avenida Estacion	San Clemente	0.27	A	0.42	A	0.38	A	0.52	A	0.38	A	0.52	A	0.38	A	0.52	A	0.38	A	0.52	A	0.38	A	0.53	A
35	PCH at Avenida Pico	San Clemente	0.43	A	0.49	A	0.69	B	0.56	A	0.69	B	0.56	A	0.69	B	0.56	A	0.69	B	0.56	A	0.68	B	0.56	A

XX Deficient Intersection

Notes: Existing peak hour turning movement counts collected for the study and recent counts from jurisdiction
Output from OCTAM 2010 and 2035 model was used to develop 2040 forecasts

* CMP Locations – LOS E acceptable

Table 7.3: 2040 Future Forecast Comparison of Peak Hour Intersection LOS (HCM method)

ID	Intersection	Jurisdiction	Existing				Alt 1: 2040 Baseline				Alt 2: 2040 TDM				Alt 3: 2040 Operational Improvements				Alt 4: 2040 Spot Capital Improvements				Alt 5: 2040 Major Corridor Improvements			
			AM Peak		AM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS
1	PCH at Main Street	Seal Beach	21.4	C	23.2	C	23.5	C	26.4	C	23.5	C	26.4	C	23.3	C	26.3	C	23.3	C	26.3	C	24.6	C	28.6	C
2	PCH at Seal Beach Boulevard	Seal Beach	40.7	D	43.0	D	43.7	D	58.2	E	43.7	D	58.2	E	43.2	D	50.0	D	40.8	D	42.5	D	42.8	D	44.1	D
3	PCH at 19th Street/Admiralty Drive	Huntington Beach/Sunset Beach	2.6	A	4.8	A	3.2	A	5.0	A	3.2	A	5.0	A	3.0	A	4.0	A	3.0	A	4.0	A	2.9	A	5.0	A
4	PCH at Warner Avenue *	Huntington Beach	43.3	D	36.7	D	52.3	D	41.7	D	45.8	D	39.1	D	45.8	D	39.1	D	37.7	D	33.7	C	37.7	D	33.1	C
5	PCH at Goldenwest Street	Huntington Beach	19.5	B	20.8	C	20.8	C	22.4	C	20.6	C	22.1	C	20.6	C	22.1	C	20.6	C	22.1	C	19.6	B	19.8	B
6	PCH at 6th Street	Huntington Beach	7.2	A	22.8	C	7.4	A	24.7	C	7.4	A	15.4	B	7.5	A	18.0	B	7.5	A	13.3	B	7.5	A	13.3	B
7	PCH at Main Street	Huntington Beach	4.4	A	7.8	A	4.5	A	8.4	A	4.5	A	4.6	A	4.5	A	4.6	A	4.5	A	4.6	A	4.5	A	4.6	A
8	PCH at 1st Street	Huntington Beach	11.2	B	19.9	B	12.1	B	22.1	C	12.1	B	20.3	C	12.1	B	20.3	C	12.1	B	20.3	C	13.0	B	23.4	C
9	PCH at Beach Boulevard *	Huntington Beach	27.3	C	27.1	C	35.1	D	29.0	C	29.7	C	28.8	C	29.7	C	28.8	C	29.7	C	28.8	C	26.2	C	22.7	C
10	PCH at Brookhurst Street	Huntington Beach	20.7	C	22.6	C	21.8	C	24.6	C	21.6	C	24.3	C	21.6	C	24.3	C	21.6	C	24.3	C	21.5	C	23.3	C
11	PCH at Superior Avenue/Balboa Boulevard	Newport Beach	37.3	D	50.6	D	39.2	D	69.2	E	39.2	D	69.2	E	39.2	D	69.2	E	39.2	D	69.2	E	37.4	D	48.2	D
12	PCH at Newport Boulevard *	Newport Beach	16.4	B	32.3	C	17.8	B	56.4	E	17.8	B	56.4	E	17.8	B	56.4	E	14.3	B	57.5	E	22.1	C	41.6	D
13	PCH at Riverside Avenue	Newport Beach	16.4	B	48.7	D	17.9	B	74.1	E	17.9	B	74.1	E	17.9	B	74.1	E	15.1	B	45.6	D	15.2	B	18.0	B
14	PCH at Dover Drive	Newport Beach	64.4	E	50.3	D	77.9	E	72.9	E	77.9	E	72.9	E	77.9	E	72.9	E	77.9	E	72.9	E	83.5	F	67.6	E
15	PCH at Bayside Drive	Newport Beach	25.0	C	21.0	C	26.2	C	23.9	C	26.2	C	23.9	C	26.2	C	23.9	C	26.2	C	23.9	C	25.7	C	24.7	C
16	PCH at Jamboree Road	Newport Beach	37.6	D	39.7	D	39.8	D	43.4	D	39.8	D	43.4	D	39.8	D	43.4	D	39.8	D	43.4	D	49.6	D	56.5	E
17	PCH at Newport Center Drive	Newport Beach	6.7	A	13.0	B	6.7	A	14.0	B	6.7	A	14.0	B	6.7	A	14.0	B	6.7	A	14.0	B	6.8	A	14.4	B
18	PCH at MacArthur Boulevard *	Newport Beach	26.9	C	43.7	D	28.4	C	46.5	D	28.4	C	46.5	D	28.4	C	46.5	D	28.4	C	46.5	D	26.8	C	46.7	D
19	PCH at Goldenrod Avenue	Newport Beach	31.6	C	20.3	C	36.4	D	25.2	C	36.4	D	25.2	C	36.4	D	25.2	C	34.9	C	25.6	C	33.9	C	24.4	C
20	PCH at Marguerite Avenue	Newport Beach	29.6	C	41.7	D	36.8	D	84.6	F	36.8	D	84.6	F	36.8	D	84.6	F	36.8	D	84.6	F	32.0	C	62.9	E
21	PCH at Newport Coast Drive	Newport Beach	21.8	C	32.3	C	24.6	C	36.0	D	24.6	C	36.0	D	24.6	C	36.0	D	24.6	C	36.0	D	36.5	D	46.1	D
22	PCH at Broadway Street/Laguna Canyon Road *	Laguna Beach	26.4	C	26.6	C	24.4	C	25.6	C	24.4	C	25.6	C	24.2	C	25.0	C	24.2	C	25.0	C	25.2	C	24.6	C
23	PCH at Ocean Avenue	Laguna Beach	3.6	A	6.3	A	4.2	A	7.9	A	4.2	A	7.9	A	4.2	A	7.9	A	4.2	A	7.9	A	4.4	A	9.3	A
24	PCH at Laguna Avenue	Laguna Beach	5.5	A	5.9	A	7.2	A	8.4	A	7.2	A	8.4	A	7.2	A	8.4	A	7.2	A	8.4	A	7.9	A	9.0	A
25	PCH at Cress Street	Laguna Beach	5.5	A	9.0	A	6.0	A	9.9	A	6.0	A	9.9	A	6.0	A	9.9	A	6.0	A	9.9	A	6.2	A	10.0	B
26	PCH at Wesley Drive	Laguna Beach	10.6	B	11.4	B	12.7	B	12.9	B	12.7	B	12.9	B	12.7	B	12.9	B	12.7	B	12.9	B	12.8	B	12.9	B
27	PCH at Crown Valley Parkway/Monarch Bay Drive *	Dana Point	32.7	C	33.6	C	33.1	C	34.2	C	33.1	C	34.2	C	33.1	C	34.2	C	33.1	C	34.2	C	33.5	C	34.2	C
28	PCH at Niguel Road/Ritz Carlton Drive	Dana Point	26.9	C	44.6	D	27.4	C	54.9	D	27.4	C	54.9	D	27.4	C	54.9	D	27.4	C	54.9	D	27.5	C	57.2	E
29	PCH at Selva Road	Dana Point	21.4	C	17.2	B	24.4	C	18.9	B	24.4	C	18.9	B	24.4	C	18.9	B	24.4	C	18.9	B	24.5	C	18.8	B
30	PCH at Street of the Golden Lantern *	Dana Point	23.4	C	28.1	C	31.8	C	40.5	D	31.8	C	40.5	D	31.8	C	40.5	D	31.8	C	40.5	D	32.0	C	40.1	D
31	PCH at Del Obispo Street/Dana Point Harbor Drive	Dana Point	29.9	C	73.3	E	32.8	C	79.3	E	32.8	C	79.3	E	32.8	C	79.3	E	31.5	C	78.0	E	31.5	C	78.4	E
32	PCH at Doheny Park Road	Dana Point	12.4	B	13.8	B	13.0	B	14.4	B	13.0	B	14.4	B	13.0	B	14.4	B	13.0	B	14.4	B	12.7	B	17.0	B
33	PCH at Camino Capistrano	San Clemente	31.9	C	34.8	C	29.8	C	40.8	D	29.8	C	40.8	D	29.8	C	40.8	D	29.8	C	40.8	D	29.2	C	40.7	D
34	PCH at Avenida Estacion	San Clemente	8.0	A	8.9	A	6.6	A	9.7	A	6.6	A	9.7	A	6.6	A	9.7	A	6.6	A	9.7	A	7.0	A	10.0	B
35	PCH at Avenida Pico	San Clemente	35.4	D	32.7	C	37.1	D	35.4	D	37.1	D	35.4	D	37.1	D	35.4	D	37.1	D	35.4	D	36.6	D	35.3	D

XX Deficient Intersection

Notes: Existing peak hour turning movement counts collected for the study and recent counts from jurisdiction
Output from OCTAM 2010 and 2035 model was used to develop 2040 forecasts

* CMP Locations

Chapter 8 - Evaluation of Alternatives

Based on the evaluation methodology discussed in **Chapter 6**, each improvement option was evaluated and rated as 'good', 'fair' or 'poor' based on how well they addressed the following seven corridor objectives.

- Reducing potential for conflicts;
- Reducing congestion and delay;
- Improving continuity of traffic flow;
- Improving alternative modes of transportation;
- Addressing mobility needs during special events and incidents;
- Cost; and
- Feasibility of Implementation.

Traffic analyses presented in **Chapter 7** were included in the evaluation to indicate how much the improvements would contribute to reducing congestion and delay.

Each improvement was assigned an overall rating of good/fair/poor to signify the overall effectiveness in terms of addressing need, cost, and feasibility. The results of this evaluation are presented for each alternative in **Tables 8.1** through **Table 8.4**.

Table 8.1: Alternative 2 – Evaluation

Corridor-wide

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Various factors contribute to conflict between vehicles, bicycles, and pedestrians, increasing the risk to travelers' safety	Develop context based design exception review to ensure flexibility in corridor management. Apply greater flexibility in corridor design based on roadway context (village, transitional areas, and throughways)	☒			☒	☒	☐	(Note 4)				*X*		☒	■
		Develop toolkit of bike and pedestrian treatments (e.g. lower design speed, buffered bike lanes, raised median, parkway sidewalks etc.) and applicability for consideration along entire corridor, apply treatments as appropriate for the local context.	☒			☐	☒	☐	(Note 4)				*X*		☒	☒
2	Travel in and through the corridor is impeded in numerous areas by traffic congestion and heavy volumes of pedestrians crossing the highway, adding to travel time and delay for corridor users.	Improve existing transit connections and transfers (review OCTA bus schedules to ensure minimal wait time for transfers)	☐			☐	☒	☐	$100,000	■					■	■
		Conduct a study to identify potential funding sources for transit operations and maintenance costs to expand service	☐			☐	☒	☐	$100,000	■					■	■
3	The constrained ROW through most of the corridor limits improvement opportunities	Establish process to facilitate flexibility in design through Caltrans exception review *(covered under Corridor wide Need #1)*	☒			☐	☒	☐	(Note 1)	■			*X*		☒	■
4	Because of the corridor's coastal location, many visitors and recreational users are attracted to the area, resulting in travel patterns and peaking characteristics that are unique in relation to other parts of Orange County	Uniform way-finding signs to direct visitors to beach parking and other tourist destination areas as well as innovative parking strategies" (electronic way finding/monitoring, mobile apps , etc.	☒			☐	☐	☒	$37,000	■					■	☒
		Review M2 funding criteria to potentially allow project eligibility based on peak event conditions such as summer conditions.	☐			☐	☐	☐	$0	■		*X*			☐	☒
		Conduct a study to provide traffic management techniques to respond to summer peak conditions	☐			☒	☒	■	$100,000	■					■	■
5	Aesthetic treatment of improvements is sometimes inconsistent with the scenic character of the corridor.	Develop corridor wide studies the aesthetic wants/needs, possibly leading to a plan.	☐			☐	☐	☐	$100,000	■					■	☒
		Develop model General Plan Zoning language to protect and enhance scenic and aesthetic elements of the corridor	☐			☐	☐	☐	$50,000	■					■	☒
6	Due to limited parallel options, portions of the corridor are susceptible to interruption and closure due to events and incidents.															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Seal Beach, PCH/Main).															
2	Bicyclists and pedestrians using PCH (Anderson Street to Seal Beach Boulevard) face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities or sidewalks.	Provide on-street painted buffer between bike lane and traffic lane on PCH between Seal Beach Boulevard and Anderson Street (where roadway and lane width permit)	☒			☒	☒	☐	$18,000	■					■	■
3	Bicyclists using PCH (Seal Beach Boulevard to Main Street) face potential conflicts when traveling between parked cars/bus stops and moving vehicles within a narrow roadway cross-section.	Provide wayfinding signs to direct bicyclists to parallel bike facility (proposed Class II bike lanes and existing multi-use path in median) on Electric Avenue between Main Street and Ocean Avenue (include three projects):														
		5th Street/Marina Drive from PCH to Electric Ave – restripe 5th Street to accommodate on-street Class II bike lanes, use existing class II bike lanes on Marina	☐			☐	☒	☐	$2,000	■					■	☒
		Stripe Class III sharrows on Seal Beach Boulevard from PCH to Electric Avenue to supplement existing Class I bike path along south side of the street	☒			☐	☒	☐	$20,000	■					■	■
		Provide wayfinding signs to direct bicyclists to parallel bike facility on Ocean Avenue between Electric Avenue and 1st Street.	☐			☐	☒	☐	$12,000	■					■	☒
4	Bicyclists face conflicts between fast-moving cars and right-turn movements at PCH/ Seal Beach Boulevard	Provide northbound off-street bikeway (within Caltrans ROW) in advance of traffic signal for bicyclists to transition off roadway and guide cyclists to travel southerly along Seal Beach Boulevard Class I bikeway.	■			☐	■	☐	$200,000	■	*X*		*X*	*X*	☐	☒
	Intersection Analysis															
	1: PCH/Main Street															
	2: PCH/Seal Beach Boulevard															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Vehicle conflict points exist for moving traffic on PCH due to non-standard design of local streets and off-street parking (Sunset Beach)	Provide enhanced signage highlighting bicyclists the availability of low stress route along Pacific Avenue to Warner Avenue.	☐			☐	☒	☐	$5,000	■					■	☒
2	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Warner Avenue).															
3	Bicycles in close proximity to higher-speed moving vehicles (Warner Avenue to Goldenwest Street)															
4	Traffic backs up from city parking lots onto PCH (Seapoint Street to Goldenwest Street)															
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Goldenwest Street to 6th Street).	Use existing Class I bicycle path to the west of PCH (on the beach) for most cyclists. Install "Bikes May Use Full Lane" signs on PCH where no on-street bike lane is provided	☐			☐	☒	☐	$17,200	■			*X*		☒	☒
		Develop Class III bike route on parallel street (along Walnut Avenue or Olive Avenue (between Goldenwest Street to 1st Street) and Pacific View (1st Street and Beach Boulevard)	☒			☐	☒	☐	$66,800	■					■	☒
6	Pedestrian crossings of PCH at Sixth Street substantially reduce traffic capacity and limit mobility through the area (PCH/6th Street).															
7	Heavy pedestrian crossing volumes reduce capacity (Main Street to Huntington Street)															
8	Midblock pedestrian crossing volumes pose conflicts with traffic (Huntington Street to Beach Boulevard).															
9	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Huntington Street to Beach Boulevard)															
10	Bicycles in close proximity to higher-speed moving vehicles (Beach Boulevard to Brookhurst Street)															
11	Signal timing not optimized for continuous traffic flow	Retime signals between Warner and Beach	☒			■	☐	☐	*$3,250,000*	☒					■	☐

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (continued)

☐ Poor ☒ Fair ■ Good

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
Intersection Analysis																
	3: PCH/19th Street/Admiralty Drive	Traffic Signal Synchronization /Optimization *(part of Subarea 2, Need 11 - signal sync was not applied since intersection performs at LOS A for both peak hours under 2040 Baseline condition*							(Note 1)	☐						
	4: PCH/Warner Drive	Traffic Signal Synchronization /Optimization *(part of Subarea 2, Need 11)*		*543*	☒				(Note 1)	☐						
	5: PCH/Goldenwest Street	Traffic Signal Synchronization /Optimization *(part of Subarea 2, Need 11)*		*18*	☐				(Note 1)	☐						
	6: PCH/6th Street	Traffic Signal Synchronization /Optimization *(part of Subarea 2, Need 11)*		*518*	☒				(Note 1)	☐						
	7: PCH/Main Street	Traffic Signal Synchronization /Optimization *(part of Subarea 2, Need 11)*		*199*	☒				(Note 1)	☐						
	8: PCH/1st Street	Traffic Signal Synchronization /Optimization *(part of Subarea 2, Need 11)*		*101*	☒				(Note 1)	☐						
	9: PCH/Beach Boulevard	Traffic Signal Synchronization /Optimization *(part of Subarea 2, Need 11)*		*343*	☒				(Note 1)	☐						
	10: PCH/Brookhurst Street	Traffic Signal Synchronization /Optimization *(part of Subarea 2, Need 11)*		*21*	☐				(Note 1)	☐						

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Bicyclists using PCH in West Newport face potential conflicts when traveling between parked cars and moving vehicles (Santa Ana River to Superior Avenue).	Reduce conflict points through access management strategies including consolidating access points, radius driveways	☒			☒	☐	☐	(Note 2)		*X*		*X*		☐	☒
2	Heavy volumes of pedestrians, bicycles, and traffic aggravate conflict potential in West Newport (PCH/Superior Avenue, PCH/Orange Avenue, PCH/Prospect Street).															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
3	Recurring peak hour traffic congestion delays travelers and limits their mobility through the West Newport area (PCH/Superior Avenue).															
4	Heavy traffic volumes and high pedestrian crossing activity delay travelers along PCH and limit mobility through the Mariners Mile area (State Route 55 {SR-55} to Dover Drive, PCH/Riverside Drive, PCH/Dover Drive).	Implement access management strategies including consolidating access points, radius driveways	☒			☒	☐	☐	(Note 2)		*X*		*X*		☐	☒
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (SR-55 to Dover)															
6	Heavy volumes of pedestrian crossings in Mariners Mile pose conflicts with traffic (SR-55 to Dover Drive, PCH/Riverside Avenue)	Install signing/striping/lighting to reduce conflicts between pedestrians and motorists at intersection.	☒			☐	☒	☐	$60,000	■			*X*		☒	☒
7	The combination of significant traffic volumes, constrained capacity, substantial pedestrian activity, substantial bicycle activity, and on-street parking friction delays travelers along PCH and limits mobility through the Corona del Mar area (MacArthur Boulevard to Seaward Road, PCH/Marguerite Avenue).	Implement access management strategies including radius driveways, and improve signal timing on PCH in Corona del Mar.	☒			☒	☐	☐	(Note 2)		*X*		*X*		☐	☐
8	Heavy pedestrian crossing volumes pose conflicts with traffic (MacArthur Boulevard to Seaward Road)															
9	Bicycles traveling in traffic lane in close proximity to parked cars (MacArthur Boulevard to Seaward Road)	Extend shared lane markings (sharrows) on PCH between Poppy Avenue and Seaward Road	☐			☐	☒	☐	$5,200	■					■	☒
		Extend Class III shared lane markings (sharrows) treatment south of Poppy Avenue. *(same as the improvement above - hence cost was not included)*	☐			☐	☒	☐	(Note 1)	■					■	☒
10	Traffic along PCH from the Santa Ana River to Jamboree Road experience delays due to signal timing not being optimized for continuous traffic flow.	Signal sync and optimization on PCH between Santa Ana River to Jamboree Road	☐			☒	☐	☐	$45,000	■					■	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (continued)

☐ Poor ☒ Fair ■ Good

Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
										ROW	*Reg*	*Des*	*Env*		
Intersection Analysis															
11: PCH/Superior Avenue-Balboa Boulevard	Traffic Signal Synchronization /Optimization *(part of Subarea 3, Need 10)*		*0*	☒											
12: PCH/Newport Boulevard	Traffic Signal Synchronization /Optimization *(part of Subarea 3, Need 10)*		*0*	☒											
13: PCH/Riverside Avenue	Traffic Signal Synchronization /Optimization *(part of Subarea 3, Need 10)*		*0*	☒											
14: PCH/Dover Drive	Traffic Signal Synchronization /Optimization *(part of Subarea 3, Need 10)*		*0*	☒											
15: PCH/Bayside Drive	Traffic Signal Synchronization /Optimization *(part of Subarea 3, Need 10)*		*0*	☒											
16: PCH/Jamboree Road	Traffic Signal Synchronization /Optimization *(part of Subarea 3, Need 10)*		*0*	☒											
17: PCH/Newport Center Drive															
18: PCH/MacArthur Boulevard															
19: PCH/Goldenrod Avenue															
20: PCH/Maguerite Avenue															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 4: Newport Coast: Pelican Point Drive to North Laguna Beach City Limit

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Bicycles on PCH face conflict with traffic using right turn lanes on Newport Coast Drive.	Sign and restripe intersection to provide Class II bike lane through intersection.	☒			☐	☒	☐	$4,545	■			*X*		☒	■
2	Bicycles in close proximity to higher-speed moving vehicles (Newport Coast Drive to Laguna Beach City Limits)															
	Intersection Analysis															
	21: PCH/Newport Coast Drive															

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	The combination of significant traffic volumes, constrained traffic capacity, pedestrian activity, and on-street parking friction delays travelers along PCH and limits mobility through the area (Broadway Street to Cress Street).															
2	Heavy pedestrian volumes pose conflicts with traffic (Broadway Street to Mountain Road)	Implement pedestrian “scramble” crossing at locations identified through coordination with local City Council and community.	☒			☐	☒	☐	$900,000	☒			*X*		☒	☐
3	The constrained width of PCH and presence of on-street parking means that bicyclists using PCH are traveling in close proximity to moving and parked cars (most of subarea).															
4	Sections of PCH with narrow or missing sidewalks pose conflicts for pedestrians with moving traffic (South Laguna Beach).															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit (continued)

☐ Poor ☒ Fair ■ Good

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
Intersection Analysis																
	22: PCH/Broadway Street/Laguna Canyon Road															
	23: PCH/Ocean Avenue															
	24: PCH/Laguna Avenue															
	25: PCH/Cress Street															
	26: PCH/Wesley Drive															

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Anticipated increases in pedestrian activity, combined with the concentration of higher traffic volumes on PCH is expected to cause recurring delays for travelers and pedestrians along and across PCH, limiting mobility through the area (Blue Lantern to Copper Lantern)															
2	Bicyclists using southbound PCH face potential conflicts traveling adjacent to moving vehicles (Blue Lantern to Del Obispo).	Provide wayfinding signs on PCH directing bicyclists to parallel facility on Del Prado	☐			☐	☒	☐	$4,560	■					■	☒
		Encourage parallel alternatives to PCH by directing cyclists to use parallel alternative Del Prado, Golden, Dana Point Harbor, Park Lantern *(same as the improvement above - hence cost was not included)*	☐			☐	☒	☐	(Note 1)	■					■	☒
3	Bicyclists using PCH face potential conflicts traveling in a shared lane with moving and parked vehicles (Laguna Beach border to Blue Lantern, Copper Lantern to Del Obispo).															
4	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (Copper Lantern to Del Obispo) as use increases.															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
5	There is a lack of pedestrian facilities along portions of PCH.															
6	There is no northbound bicycle route on PCH/Coast Highway from Doheny Park Road to Del Obispo.	Provide wayfinding signs on PCH directing bicyclists to parallel Class I Bike Trail facility on south side of PCH between Doheny Park, through Doheny State Park (Park Lantern) to Del Obispo	☐			☐	☒	☐	$2,000	■					■	☒
7	Height of Coast Highway/ Park Lantern bridge over San Juan Creek is inadequate to withstand flood waters from 100-year storm.															
8	Limited travel modes to accommodate connectivity to destinations within community core areas															
9	Lighting treatment for bicyclists and pedestrians is inconsistent in various segments.															
10	Aesthetic treatment of improvements is inconsistent															
11	Bicyclists using PCH face potential conflicts traveling in shared lane with moving vehicles (Del Obispo to Doheny Park Road).	Install signage to better inform bicyclists of parallel route on Park Lantern between Dana Point Harbor Drive and Doheny Park Road *(same as improvement listed for Subarea 6, Need 6)*	☐			☐	☒	☐	(Note 1)	■					■	☒
	Intersection Analysis															
	27: PCH/Crown Valley Parkway/Monarch Drive															
	28: PCH/Niguel Road/Ritz Carlton Drive															
	29: PCH/Selva Road															
	30: PCH/Street of The Golden Lantern															
	31: PCH/Del Obispo Street/Dana Point Harbor Drive															
	32: PCH/Doheny Park Road															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.1: Alternative 2 – Evaluation (continued)

Subarea 7: South Dana Point / San Clemente: Doheny Park Road to Avenida Pico

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost (2015$)		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1a	Bicyclists using Coast Highway face potential conflicts when traveling between parked cars and moving vehicles (Doheny Park to Palisades).	New Class III bike route along PCH between Doheny Park Road and Palisades Drive	☐			☐	☒	☐	$16,000	■					■	☒
1b	Missing pedestrian facilities (Doheny Park to Palisades).															
2	The constrained width of the separated path (Palisades to Camino Capistrano) means that bicyclists and pedestrians face potential conflicts when multiple users must pass each other.	Launch an educational campaign for users to slow down and share the path	☐			☐	☐	☐	$50,000	■					■	☐
3	Northbound bicyclists using Coast Highway face potential conflicts with vehicles when crossing from the bike lane south of Camino Capistrano to the separated path north of Camino Capistrano.															
4	Pedestrians and bicyclists face potential conflicts at the intersections of Coast Highway (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.															
	Intersection Analysis															
	33: PCH/Camino Capistrano															
	34: PCH/Avenida Estacion															
	35: PCH/Avenida Pico															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief
Note 4: Cost to be determined when projects are defined

Table 8.2: Alternative 3 – Evaluation

Corridor-wide

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Various factors contribute to conflict between vehicles, bicycles, and pedestrians, increasing the risk to travelers' safety	Coordinate signal operation and timing to balance pedestrian and vehicle movement	☐			☒	☐	☐	$92,120	■					■	☒
		Implement design features and optimize signal timing to manage traffic operations based on the context of the roadway	☒			☒	☐	☐	$3,932,160	☒			*X*		☒	☒
		Coordinate signal operation and timing to give priority to pedestrian crossing needs where appropriate for local context *(included as different signal projects in the subareas)*	☒			☐	☒	☐	(Note 1)	☐					■	☒
2	Travel in and through the corridor is impeded in numerous areas by traffic congestion and heavy volumes of pedestrians crossing the highway, adding to travel time and delay for corridor users.	Optimize signal timing to prioritize movement of vehicle throughput for select segments along the PCH Corridor where appropriate for local context *(included as different signal projects in the subareas)*	☐			☒	☐	☒	(Note 1)	☐					■	☒
3	The constrained ROW through most of the corridor limits improvement opportunities	Establish process to facilitate flexibility in design through Caltrans exception review	☒			☐	☒	☐	$0	■			*X*		☒	☒
4	Because of the corridor's coastal location, many visitors and recreational users are attracted to the area, resulting in travel patterns and peaking characteristics that are unique in relation to other parts of Orange County															
5	Aesthetic treatment of improvements is sometimes inconsistent with the scenic character of the corridor.															
6	Due to limited parallel options, portions of the corridor are susceptible to interruption and closure due to events and incidents.	Identify by-pass and detour routes in advance and have detour plans ready in case of emergency issues	☐			☐	☐	☒	$100,000	■					■	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Seal Beach, PCH/Main).	Traffic signal synchronization through congested areas to smooth operations and manage traveler expectations	☐			☒	☐	☐	$11,250	■			*X*		☒	☒
2	Bicyclists and pedestrians using PCH (Anderson Street to Seal Beach Boulevard) face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities or sidewalks.	Reduce or combine access points where feasible, especially in areas north of Piedmont	☒			☒	☐	☐	(Note 2)		*X*		*X*		☐	☐
		Remove northbound right-turn only lane at north of PCH/Mariner Dr. Remove southbound right-turn only lane at PCH/Phillips Street.	☒			☐	☐	☐	$8,000	■			*X*		☒	☒
3	Bicyclists using PCH (Seal Beach Boulevard to Main Street) face potential conflicts when traveling between parked cars/bus stops and moving vehicles within a narrow roadway cross-section.	Restripe 5th Street to accommodate on-street Class II bike lanes to direct cyclists to Marina Drive to Electric Avenue to Seal Beach Boulevard.	☒			☐	☒	☐	$18,939	■					■	☒
4	Bicyclists face conflicts between fast-moving cars and right-turn movements at PCH/ Seal Beach Boulevard	Remove SB/EB right-only lane and replace with bike lane (on PCH)	☒			☐	☒	☐	$28,409	■			*X*		☒	■
	Intersection Analysis															
	1: PCH/Main Street	Traffic Signal Synchronization /Optimization *(included in Subarea 1, Need 1)*		***12***	☐				(Note 1)	■						
	2: PCH/Seal Beach Boulevard	Traffic Signal Synchronization /Optimization *(included in Subarea 1, Need 1)* Replace SB/EB right-turn only lane on PCH (going on to Seal Beach Boulevard towards the beach), with a through bike lane *(included in Subarea 1, Need 4)*		***645***	☒				(Note 1)	■						

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Vehicle conflict points exist for moving traffic on PCH due to non-standard design of local streets and off-street parking (Sunset Beach)	Stripe Class III on Anderson Street sharrows between PCH and Pacific Avenue	☐			☐	☒	☐	$17,045	■					■	☒
2	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Warner Avenue).	Modify signal coordination on PCH between 19th/Admiralty and Warner	☐			☒	☐	☐	$15,000	■			*X*		☒	☒
3	Bicycles in close proximity to higher-speed moving vehicles (Warner Avenue to Goldenwest Street)	Install Class II bike lanes (on both sides of PCH) and add a 2-foot buffer (8'0" bike lane inclusive of 2'0 buffer) on PCH between Warner 'Avenue and Goldenwest Street – adjust vehicular lane widths/median as needed	■			☐	■	☐	$463,360	☒			*X*		☒	■
		Add 2 stage left turn bike boxes for bicyclists at Warner Avenue	☒			☐	☒	☐	$2,000	■			*X*		☒	☒
		Reduce lane widths on PCH to slow down traffic (part of improvement 1)	☐			☐	☒	☐	$168,960	■			*X*		☒	☒
		Remove temporary K-rails and replace 500 feet of metal beam guardrail between Seapoint Street and Warner Avenue	☐			☐	☐	☐	$24,000	■					■	☐
4	Traffic backs up from city parking lots onto PCH (Seapoint Street to Goldenwest Street)															
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Goldenwest Street to 6th Street).	Restripe to narrow travel lane to slow vehicular traffic	☐			☐	☒	☐	$46,464	■			*X*		☒	☒
		Paint sharrows in lane adjacent to parking.	☐			☐	☒	☐	$44,000	■			*X*		☒	☒
6	Pedestrian crossings of PCH at Sixth Street substantially reduce traffic capacity and limit mobility through the area (PCH/6th Street).	Eliminate one pedestrian crosswalk at PCH/6th Street and prohibit pedestrian crossing (traffic signal modification, signing/striping, removal of crosswalk etc.)	☒			☒	☐	☐	$250,000	■			*X*	*X*	☒	☒
7	Heavy pedestrian crossing volumes reduce capacity (Main Street to Huntington Street)															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
8	Midblock pedestrian crossing volumes pose conflicts with traffic (Huntington Street to Beach Boulevard).	Add median barrier or fence	■			☐	☐	☐	$135,000	■			*X*		☒	■
9	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Huntington Street to Beach Boulevard)	Stripe Class II bicycle lanes on PCH from 1st Street to Beach Boulevard between parking and adjacent travel lane, where Class II bike lanes are missing (on the beach side of PCH between 1st Street and Beach Boulevard; on the inland side of PCH between Huntington Street and Beach Boulevard)	■			☐	☒	☐	$69,129	■			*X*		☒	■
		Paint shared lane markings (sharrows) in lane adjacent to parking and incorporate speed reduction mechanism	☐			☐	☒	☐	$27,652	■			*X*		☒	☒
		Provide 2 stage left turn boxes for bicyclists at PCH/Beach Boulevard	☒			☐	☒	☐	$2,000	■			*X*		☒	☒
		Develop Class III bike route on Pacific View Avenue and Class II bike lanes on Atlanta Avenue.	☒			☐	☒	☐	$27,652	■			*X*		☒	☒
		Restripe Pacific View Avenue to provide one travel lane and Class II bike lanes between 1st Street and Beach Boulevard.	☒			☐	☒	☐	$71,970	■					■	☒
10	Bicycles in close proximity to higher-speed moving vehicles (Beach Boulevard to Brookhurst Street)	Convert existing shoulder to Class II bike lanes with a 2 foot buffer (between Beach Boulevard and the Santa Ana River)	☒			☐	■	☐	$33,264	■			*X*		☒	☒
		Add 2 stage left turn boxes for bicyclists at Beach Boulevard, Newland Street, Magnolia Street, and Brookhurst Street	☒			☐	☒	☐	$8,000	■			*X*		☒	☒
		Reduce lane widths on PCH to slow down traffic	☐			☐	☒	☐	$107,712	■		*X*	*X*		☐	☐
11	Signal timing not optimized for continuous traffic flow	Optimize signal timing to give priority to continuous traffic flow with provisions to accommodate pedestrian/bike safety and transit flow as needed	☐			☒	☐	☐	$75,000	■					■	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (continued)

☐ Poor ☒ Fair ■ Good

Intersection Analysis

Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
										ROW	*Reg*	*Des*	*Env*		
3: PCH/19th Street/Admiralty Drive	Signal coordination with PCH/Warner *(Alt 2 improvements carried over) (included in Subarea 2, Need 2)*		*56*	☐				(Note 1)	■						
4: PCH/Warner Drive	Signal coordination with PCH/19th Street/Admiralty Drive *(Alt 2 improvements carried over) (included in Subarea 2, Need 2)*		*543*	☒				(Note 1)	■						
5: PCH/Goldenwest Street	*(Alt 2 improvements carried over)*		*18*	☐											
6: PCH/6th Street	Eliminate north cross walk *(Alt 2 improvements carried over)*		*-5*	☐											
7: PCH/Main Street	*(Alt 2 improvements carried over)*		*199*	☒											
8: PCH/1st Street	*(Alt 2 improvements carried over)*		*101*	☒											
9: PCH/Beach Boulevard	*(Alt 2 improvements carried over)*		*343*	☒											
10: PCH/Brookhurst Street	*(Alt 2 improvements carried over)*		*21*	☐											

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

1	Bicyclists using PCH in West Newport face potential conflicts when traveling between parked cars and moving vehicles (Santa Ana River to Superior Avenue).	PCH between Santa Ana River and Newport Boulevard: maintain existing southbound Class II bike lanes and restripe sections with 8 foot shoulder to provide Class II bike lanes with a 2 foot buffer	☒			☒	■	☐	$28,512	■			*X*		☒	☒
		Stripe class II bike lane along northbound PCH between Highland Street and 61st Street, wherever road and lane width permits	☒			☐	☒	☐	$20,833	■			*X*		☒	☒
2	Heavy volumes of pedestrians, bicycles, and traffic aggravate conflict potential in West Newport (PCH/Superior Avenue, PCH/Orange Street, PCH/Prospect Street).	Optimize traffic signal timing at Orange and Prospect intersections, with provision to incorporate bike/ped safety	☐			☒	☐	☐	$7,500	■					■	■
3	Recurring peak hour traffic congestion delays travelers and limits their mobility through the West Newport area (PCH/Superior Avenue).															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
4	Heavy traffic volumes and high pedestrian crossing activity delay travelers along PCH and limit mobility through the Mariners Mile area (State Route 55 {SR-55} to Dover Drive, PCH/Riverside Drive, PCH/Dover Drive).															
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (SR-55 to Dover)	Stripe Class II bike lanes across the Back Bay Bridge between Dover and Bayside	☒			☐	☒	☐	$37,879	■			*X*		☒	☒
		Improve bicycle/pedestrian access to beach from Riverside Avenue using sidewalk on ocean side of Coast Highway to access Balboa Peninsula	☒			☐	☒	☐	$7,000	■					■	☒
6	Heavy volumes of pedestrian crossings in Mariners Mile pose conflicts with traffic (SR-55 to Dover Drive, PCH/Riverside Avenue)															
7	The combination of significant traffic volumes, constrained capacity, substantial pedestrian activity, substantial bicycle activity, and on-street parking friction delays travelers along PCH and limits mobility through the Corona del Mar area (MacArthur Boulevard to Seaward Road, PCH/Marguerite Avenue).															
8	Heavy pedestrian crossing volumes pose conflicts with traffic (MacArthur Boulevard to Seaward Road)															
9	Bicycles traveling in traffic lane in close proximity to parked cars (MacArthur Boulevard to Seaward Road)	Provide intersection treatments to reduce bike/vehicular conflicts at intersections.	☒			☐	☒	☐	$2,000	■			*X*		☒	☒
10	Traffic along PCH from the Santa Ana River to Jamboree Road experience delays due to signal timing not being optimized for continuous traffic flow.															
	Intersection Analysis															
	11: PCH/Superior Avenue-Balboa Boulevard	*(Alt 2 improvements carried over)*		*0*	☒											
	12: PCH/Newport Boulevard	*(Alt 2 improvements carried over)*		*0*	☒											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
	13: PCH/Riverside Avenue	*(Alt 2 improvements carried over)*		*0*	☒											
	14: PCH/Dover Drive	*(Alt 2 improvements carried over)*		*0*	☒											
	15: PCH/Bayside Drive	*(Alt 2 improvements carried over)*		*0*	☒											
	16: PCH/Jamboree Road	*(Alt 2 improvements carried over)*		*0*	☒											
	17: PCH/Newport Center Drive			*0*												
	18: PCH/MacArthur Boulevard			*0*												
	19: PCH/Goldenrod Avenue															
	20: PCH/Maguerite Avenue															

Subarea 4: Newport Coast: Pelican Point Drive to North Laguna Beach City Limit

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Bicycles on PCH face conflict with traffic turning on/off PCH.	PCH (Seaward Road – Newport Beach City Limit): maintain existing Class II bike lanes and restripe sections with 8 foot shoulder to provide Class II lanes with a 2 foot buffer Add/designate on-street Class II bike lanes where gaps in system within identified limits.	■			☐	☒	☐	$36,432	■			*X*		☒	■
		Extend Class I bikeway through Crystal Cove Park to El Moro State Park Signal.	■			☐	■	☐	$165,000	■	*X*				☐	☒
2	Bicycles in close proximity to higher-speed moving vehicles (Newport Coast Drive to Laguna Beach City Limits)															
	Intersection Analysis															
	21: PCH/Newport Coast Drive															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	The combination of significant traffic volumes, constrained traffic capacity, pedestrian activity, and on-street parking friction delays travelers along PCH and limits mobility through the area (Broadway Street to Cress Street).	Synchronize signals to prioritize pedestrian/ bicycle safety and transit flow	☐			☐	☒	☐	$30,000	■					■	☒
2	Heavy pedestrian volumes pose conflicts with traffic (Broadway Street to Mountain Road)	Striping and ADA improvements near Mountain Road	☒			☐	☐	☐	$32,000	■					■	☒
		Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area.	☐			☒	☐	☐	$2,000,000	☒					■	☒
		Install illuminated pedestrian crossings with advanced warning systems when used at additional locations	☒			☐	☒	☐	$160,000	■					■	☒
3	The constrained width of PCH and presence of on-street parking means that bicyclists using PCH are traveling in close proximity to moving and parked cars (most of subarea).	Install painted shared lane markings (sharrows) along with corresponding "Bicycles May Use Full Lane" signs	☐			☐	☒	☐	$303,600	☒			*X*		☒	☒
		Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways	☒			☐	☒	☐	$46,313	■			*X*		☒	☒
4	Sections of PCH with narrow or missing sidewalks pose conflicts for pedestrians with moving traffic (South Laguna Beach).															
	Intersection Analysis															
	22: PCH/Broadway Street/Laguna Canyon Road	Traffic Signal Synchronization /Optimization *(part of Subarea 5, Need 2)*		***37***	☐				(Note 1)	☐						
	23: PCH/Ocean Avenue	Traffic Signal Synchronization /Optimization *(part of Subarea 5, Need 2 - signal sync not applied since intersection operates at LOS A for both peak hour under 2040 Baseline)*							(Note 1)	☐						

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
	24: PCH/Laguna Avenue	Traffic Signal Synchronization /Optimization *(part of Subarea 5, Need 2 - signal sync not applied since intersection operates at LOS A for both peak hour under 2040 Baseline)*							(Note 1)	☐						
	25: PCH/Cress Street	Traffic Signal Synchronization /Optimization *(part of Subarea 5, Need 2 - signal sync not applied since intersection operates at LOS A for both peak hour under 2040 Baseline)*							(Note 1)	☐						
	26: PCH/Wesley Drive															

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Anticipated increases in pedestrian activity, combined with the concentration of higher traffic volumes on PCH is expected to cause recurring delays for travelers and pedestrians along and across PCH, limiting mobility through the area (Blue Lantern to Copper Lantern)															
2	Bicyclists using southbound PCH face potential conflicts traveling adjacent to moving vehicles (Blue Lantern to Del Obispo).															
3	Bicyclists using PCH face potential conflicts traveling in a shared lane with moving and parked vehicles (Laguna Beach border to Blue Lantern, Copper Lantern to Del Obispo).	Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways	☒			☐	☒	☐	$15,438	■					■	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
4	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (Copper Lantern to Del Obispo) as use increases.	Retime traffic signals after proposed intersection and roadway improvements to facilitate the traffic flows, accommodating pedestrian/bicycle safety and transit flow	☐			☒	☐	☐	$750,000	☒					■	☒
5	There is a lack of pedestrian facilities along portions of PCH.															
6	There is no northbound bicycle route on PCH/Coast Highway from Doheny Park Road to Del Obispo.	Provide bike/vehicle conflict zone treatment leading to intersections (Coast Highway/Doheny Park Road at Park Lantern)	☒			☐	☒	☐	$1,500	■					■	☒
7	Height of Coast Highway/ Park Lantern bridge over San Juan Creek is inadequate to withstand flood waters from 100-year storm.															
8	Limited travel modes to accommodate connectivity to destinations within community core areas															
9	Lighting treatment for bicyclists and pedestrians is inconsistent in various segments.															
10	Aesthetic treatment of improvements is inconsistent															
11	Bicyclists using PCH face potential conflicts traveling in shared lane with moving vehicles (Del Obispo to Doheny Park Road).	Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways. Provide on-street buffer where excess ROW exists between travel lanes and on-street parking	☒			☐	☒	☐	$9,988	■			*X*		☒	☒
		Provide Class III bikeway signage/striping on PCH between Del Obispo and Doheny Park Road/Coast Highway	☒			☐	☒	☐	$21,212	■					■	☒
		New Class III bike route along PCH between Del Obispo and San Juan Creek	☒			☐	☒	☐	$9,848	■					■	☒
	Intersection Analysis															
	27: PCH/Crown Valley Parkway/Monarch Drive															
	28: PCH/Niguel Road/Ritz Carlton Drive															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
	29: PCH/Selva Road															
	30: PCH/Street of The Golden Lantern															
	31: PCH/Del Obispo Street/Dana Point Harbor Drive															
	32: PCH/Doheny Park Road															

Subarea 7: **South Dana Point / San Clemente:** Doheny Park Road to Avenida Pico

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1a	Bicyclists using Coast Highway face potential conflicts when traveling between parked cars and moving vehicles (Doheny Park to Palisades).															
1b	Missing pedestrian facilities (Doheny Park to Palisades).															
2	The constrained width of the separated path (Palisades to Camino Capistrano) means that bicyclists and pedestrians face potential conflicts when multiple users must pass each other.															
3	Northbound bicyclists using Coast Highway face potential conflicts with vehicles when crossing from the bike lane south of Camino Capistrano to the separated path north of Camino Capistrano.	Provide 2 stage left turn bike box for north-bound bicycles at Camino Capistrano or add left-turn bicycle signal to provide for transition from bike lanes to bike path	☒			☐	☒	☐	$1,500	■					■	☒
4	Pedestrians and bicyclists face potential conflicts at the intersections of Coast Highway (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.2: Alternative 3 – Evaluation (continued)

Subarea 7: **South Dana Point / San Clemente:** Doheny Park Road to Avenida Pico(continued)

☐ Poor ☒ Fair ■ Good

Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
										ROW	*Reg*	*Des*	*Env*		
Intersection Analysis															
33: PCH/Camino Capistrano															
34: PCH/Avenida Estacion															
35: PCH/Avenida Pico															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation

Corridor-wide

☐ Poor ☒ Fair ■ Good

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Various factors contribute to conflict between vehicles, bicycles, and pedestrians, increasing the risk to travelers' safety	Install median refuge island to shorten crossing distance and pedestrian signal timing. (cost included below)	☒			☒	☒	☐	(Note 1)	☐			*X*		☒	☒
		At selected and high priority locations, implement pedestrian safety engineering projects such as signing and striping, lighting, median refuges, traffic controls and timing, and other measures	☒			☒	☒	☐	$1,260,000	☒			*X*		☒	☒
		Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways (where applicable)	☒			☐	☒	☐	$120,000	■			*X*		☒	☒
2	Travel in and through the corridor is impeded in numerous areas by traffic congestion and heavy volumes of pedestrians crossing the highway, adding to travel time and delay for corridor users.	Locate transportation/parking hubs at key points throughout the corridor. Transit hubs should include parking and accommodate transit service from Route #1, local shuttles, bike sharing. Include establishing a process to facilitate flexibility in parking management tools though Coastal Commission review.	☐			☐	☒	☒	$50,000,000	☐	*X*				☐	☒
		Implement techniques to improve transit travel speed (Options include queue jumps, far-side bus stops, and bulb outs).	☐			☐	☒	☐	$9,000,000	☐			*X*		☒	☐
		Install bus pullouts at high ridership stops and route timepoints to enable buses to stop without impeding traffic flow	☒			☒	☐	☐	$18,600,000	☐	*X*				☐	☒
		Encourage destination specific shuttle/loop service within village areas	☐			☐	☒	☒	$2,100,000 buses	☐		*X*			☐	☒
		Identify specific chokepoints in the corridor and improve to alleviate congestion	☒			■	☐	☐	Assume included in subarea improvements	☐	*X*	*X*	*X*	*X*	☐	☒
3	The constrained ROW through most of the corridor limits improvement opportunities															
4	Because of the corridor's coastal location, many visitors and recreational users are attracted to the area, resulting in travel patterns and peaking characteristics that are	City sponsored event-driven transit services	☐			☐	☒	■	$1,500,000 buses $115,000/yr ops	☐		*X*			☐	☒
		City sponsored summer surf-rider transit service connecting San Clemente Metrolink station to beach areas.	☐			☐	☒	☒	$1,200,000 buses $155,000/yr ops	☐		*X*			☐	☒
		Provide remote visitor parking and shuttle services. same as event-drive services above	☐			☐	☒	■	(Note 1)	☐	*X*	*X*			☐	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Corridor-wide (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors* ROW	Reg	Des	Env	Feasibility	Overall Rating
5	Aesthetic treatment of improvements is sometimes inconsistent with the scenic character of the corridor.															
6	Due to limited parallel options, portions of the corridor are susceptible to interruption and closure due to events and incidents.	Modernize signal system for synchronization and event management.	☐			■	☐	■	Assume included in subarea improvements	☐					■	■

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors* ROW	Reg	Des	Env	Feasibility	Overall Rating
1	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Seal Beach, PCH/Main).	Intersection improvements at PCH/Main Street (Restripe SB (WB) Bolsa to provide dual right turns (RT, Thru/RT, LT))	☒			☒	☐	☐	$50,150	■					■	☒
		Intersection improvements at PCH/Seal Beach Boulevard (Add EB (SB) dual left turn from PCH going towards Seal Beach (away from the coast))	☒			☒	☐	☐	$1,276,500	☒			*X*		☒	☒
2	Bicyclists and pedestrians using PCH (Anderson Street to Seal Beach Boulevard) face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities or sidewalks.	Add sidewalks in developed areas where it is currently missing (about 1,000 feet on the inland side of PCH, and about 2,000 ft. on the ocean side of PCH)	☒			☐	☒	☐	$480,000	☒			*X*		☒	☒
		Eliminate or relocate poles and other fixed objects at grade near driveways in sections north of Piedmont	☒			☒	☐	☐	$1,500,000	☒			*X*		☒	☒
3	Bicyclists using PCH (Seal Beach Boulevard to Main Street) face potential conflicts when traveling between parked cars/bus stops and moving vehicles within a narrow roadway cross-section.															
4	Bicyclists face conflicts between fast-moving cars and right-turn movements at PCH/ Seal Beach Boulevard	Widen intersection approach (or narrow/remove raised median)and provide a through bike lane on PCH (between the through and right-turn vehicle lanes)	☒			☒	☒	☐	$1,753,788	☒			*X*		☒	☒
	Intersection Analysis															
	1: PCH/Main Street	(Alt 3 improvements carried over)		***12***	☐											
	2: PCH/Seal Beach Boulevard	Replace SB/EB right-turn only lane on PCH (going on to Seal Beach Boulevard towards the beach), with a through bike lane Add EB (SB) dual left turn from Pacific Coast Highway going towards Seal Beach (away from the coast) (Alt 3 improvements carried over)		***1,234***	■											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Vehicle conflict points exist for moving traffic on PCH due to non-standard design of local streets and off-street parking (Sunset Beach)	Bus turnouts at high ridership stops and route timepoints	☒			☒	☐	☐	$2,000,000	☒	*X*				☐	☒
2	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Warner Avenue).	Intersection capacity improvement at PCH/Warner Avenue (jug handle treatment)	☐			☒	☒	☐	$10,000,000	☐	*X*	*X*	*X*	*x*	☐	☒
3	Bicycles in close proximity to higher-speed moving vehicles (Warner Avenue to Goldenwest Street)	Install through bike lanes on PCH/Warner by narrowing median	☒			☒	☒	☐	$438,439	☒	*X*		*X*		☐	☒
		Stripe through bike lanes at right-turn pockets and install green conflict striping in merge areas prior to and at access driveways (if bikes lanes are developed on this segment)	☒			☐	☒	☐	$16,500	■			*X*		☒	☒
		Landscape existing median or construct a raised center median to visually narrow and provide aesthetic enhancements	☐			☐	☐	☐	$8,976,000	☐					■	☐
4	Traffic backs up from city parking lots onto PCH (Seapoint Street to Goldenwest Street)	Add storage lane on PCH approaching parking entry driveways	☒			☒	☐	☐	$976,300	☒		*X*			☐	☒
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Goldenwest Street to 6th Street).															
6	Pedestrian crossings of PCH at Sixth Street substantially reduce traffic capacity and limit mobility through the area (PCH/6th Street).	Explore options to reduce pedestrian crossing time by installing curb extenders on parking lane only	☐			☐	☐	☐	$46,000	■	*X*		*X*		☐	☐
7	Heavy pedestrian crossing volumes reduce capacity (Main Street to Huntington Street)															
8	Midblock pedestrian crossing volumes pose conflicts with traffic (Huntington Street to Beach Boulevard).	Add sidewalks on both sides of PCH (Beach to Newland) and add curbside barriers	■			☐	☒	☐	$3,402,000	☒			*X*		☒	☒
9	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Huntington Street to Beach Boulevard)															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
10	Bicycles in close proximity to higher-speed moving vehicles (Beach Boulevard to Brookhurst Street)	Capacity improvement at PCH/Brookhurst Street in order to carry bike lanes through the intersection	☒			☒	☒	☐	$3,080,682	☒	*X*	*X*		*x*	☐	☒
11	Signal timing not optimized for continuous traffic flow															
	Intersection Analysis															
	3: PCH/19th Street/Admiralty Drive	(Alt 2 and 3 improvements carried over)		*56*	☐											
	4: PCH/Warner Drive	Jug handle treatment (Alt 2 and 3 improvements carried over)		*1,219*	■											
	5: PCH/Goldenwest Street	(Alt 2 improvements carried over)		*18*	☐											
	6: PCH/6th Street	On the east leg (assuming 6th Street is east-west) remove on-street (one) parking, close off driveway closest to the intersection and stripe WB as 1, 1, 1 (L, T, R) (Alt 3 improvements carried over)		*-5*	☐											
	7: PCH/Main Street	(Alt 2 improvements carried over)		*199*	☒											
	8: PCH/1st Street	(Alt 2 improvements carried over)		*101*	☒											
	9: PCH/Beach Boulevard	(Alt 2 improvements carried over)		*343*	☒											
	10: PCH/Brookhurst Street	(Alt 2 improvements carried over)		*21*	☐											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Bicyclists using PCH in West Newport face potential conflicts when traveling between parked cars and moving vehicles (Santa Ana River to Superior Avenue).															
2	Heavy volumes of pedestrians, bicycles, and traffic aggravate conflict potential in West Newport (PCH/Superior Avenue, PCH/Orange Avenue, PCH/Prospect Street).	Bus turnout at high ridership stops / route timepoints and relocation/reduction of on-street parking on PCH between Santa Ana River and Superior Avenue to benefit operations and reduce disruption of traffic flow	☒			☒	☐	☐	$4,650,000	☒	*X*				☐	☒
3	Recurring peak hour traffic congestion delays travelers and limits their mobility through the West Newport area (PCH/Superior Avenue).															
4	Heavy traffic volumes and high pedestrian crossing activity delay travelers along PCH and limit mobility through the Mariners Mile area (State Route 55 {SR-55} to Dover Drive, PCH/Riverside Drive, PCH/Dover Drive).	Add second southbound left turn lane on PCH at Riverside. (improvement should be consistent with intersection #13 improvements below)	☒			☒	☐	☐	$1,980,600	☒	*X*	*X*	*X*		☐	☒
		Eliminate traffic signal at Tustin Avenue	☐			☒	☐	☐	$525,000	☒				*X*	☒	☒
		Reduce lane widths and stripe Class II bike lanes between on-street parking and outside traffic lanes	☒			☐	☒	☐	$140,000	■			*x*		☒	☒
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (SR-55 to Dover)	Additional through lane, turning pocket, and Class II bike lane at Old Newport Boulevard	☒			☒	☒	☐	$59,445	■			*x*		☒	☒
6	Heavy volumes of pedestrian crossings in Mariners Mile pose conflicts with traffic (SR-55 to Dover Drive, PCH/Riverside Avenue)	Reduce traffic lane width / widen median / install curb extension (only on parking lanes) to shorten pedestrian crossing times	☒			☒	☒	☐	$690,600	☒			*x*		☒	☒
		Install median refuge island to shorten crossing distance and pedestrian signal timing	☒			☒	☒	☐	$3,696,000	☒			*x*		☒	☒
7	The combination of significant traffic volumes, constrained capacity, substantial pedestrian activity, substantial bicycle activity, and on-street parking friction delays travelers along PCH and limits mobility through the Corona del Mar area (MacArthur Boulevard to Seaward Road, PCH/Marguerite Avenue).	Provide advance changeable message signs to encourage through traffic on Coast Highway to use Newport Coast Drive, San Joaquin Hills Road, Jamboree and MacArthur as alternate route.	☐			☒	☐	■	$750,000	☒			*x*		☒	☒
		Remove / relocate parking to construct bus pull-outs at high ridership stop or route timepoints.	☒			☒	☐	☐	$3,100,000	☒	*X*	*X*			☐	☒
8	Heavy pedestrian crossing volumes pose conflicts with traffic (MacArthur Boulevard to Seaward Road)	Explore options to reduce pedestrian crossing time by installing curb extenders on parking lane only	☒			☒	☒	☐	$690,000	☒					■	☒
9	Bicycles traveling in traffic lane in close proximity to parked cars (MacArthur Boulevard to Seaward Road)															
10	Traffic along PCH from the Santa Ana River to Jamboree Road experience delays due to signal timing not being optimized for continuous traffic flow.															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (continued)

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Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
										ROW	*Reg*	*Des*	*Env*		
Intersection Analysis															
11: PCH/Superior Avenue-Balboa Boulevard															
12: PCH/Newport Boulevard	Add 3rd SBT lane (assuming PCH is north-south) Addition of median refuge on PCH (Alt 2 improvements carried over)		*-101*	☐											
13: PCH/Riverside Avenue	Add second SB left turn lane on Pacific Coast Highway turning onto Riverside. Convert WBR on Riverside to WB free right turn (Riverside is assumed as east-west) Addition of median refuge on PCH (Alt 2 improvements carried over)		*2,797*	■											
14: PCH/Dover Drive	Lengthen SB (PCH assumed as north-south) dual left turn storage. Carry 3rd NB (PCH assumed as north-south) lane through the intersection as far as possible. (Alt 2 improvements carried over)		*0*	☐											
15: PCH/Bayside Drive	(Alt 2 improvements carried over)			☒											
16: PCH/Jamboree Road	(Alt 2 improvements carried over)			☒											
17: PCH/Newport Center Drive															
18: PCH/MacArthur Boulevard															
19: PCH/Goldenrod Avenue	Addition of median refuge on PCH		*-27*	☐											
20: PCH/Maguerite Avenue															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Subarea 4: Newport Coast: Pelican Point Drive to North Laguna Beach City Limit

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Bicycles on PCH face conflict with traffic using right turn lanes on Newport Coast Drive.	Construction of a raised median at the shopping center entrance near Crystal Heights Drive would reduce existing conflicts and potential accidents. Drivers currently make the illegal turns over the striped median.	☒			☐	☐	☐	$1,000,000	☒					■	☒
2	Bicycles in close proximity to higher-speed moving vehicles (Newport Coast Drive to Laguna Beach City Limits)	Develop Class I path or Class IV cycle track to provide a low stress bike facility for bicyclists	■			☐	■	☐	$1,375,000	☒	*X*		*X*		☐	☒
	Intersection Analysis															
	21: PCH/Newport Coast Drive															

Subarea 5:Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	The combination of significant traffic volumes, constrained traffic capacity, pedestrian activity, and on-street parking friction delays travelers along PCH and limits mobility through the area (Broadway Street to Cress Street).	Facilitate Traffic Signal equipment upgrade and signal synchronization programs with adaptive signal control capabilities	☐			■	☐	■	$5,750,000	☐					■	■
		Provide bus turnouts along PCH at high ridership stops and route timepoints.	☒			☒	☐	☐	$5,810,000	☐	*X*	*X*			☐	☒
2	Heavy pedestrian volumes pose conflicts with traffic (Broadway Street to Mountain Road)															
3	The constrained width of PCH and presence of on-street parking means that bicyclists using PCH are traveling in close proximity to moving and parked cars (most of subarea).	Reconfigure Glenneyre (Caliope to Mermaid) from 4 to 2 travel lanes to accommodate Class II bike lanes with wayfinding signs.	☐			☐	☒	☐	$109,697	■				*X*	☒	☒
		Install a bike boulevard on Cliff Drive (N Coast Hwy to S Coast Hwy) to make bicycle through travel more convenient.	☒			☐	☒	☐	$39,000	■	*X*	*X*			☐	☒
4	Sections of PCH with narrow or missing sidewalks pose conflicts for pedestrians with moving traffic (South Laguna Beach).	Add sidewalks where current width is sufficient to accommodate.	☒			☐	■	☐	$2,592,000	☒			*X*		☒	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Subarea 5:Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors* ROW	*Feasibility Factors* Reg	*Feasibility Factors* Des	*Feasibility Factors* Env	Feasibility	Overall Rating
	Intersection Analysis															
	22: PCH/Broadway Street/Laguna Canyon Road	(Alt 3 improvements carried over)		*37*	☐											
	23: PCH/Ocean Avenue	(Alt 3 improvements carried over)														
	24: PCH/Laguna Avenue	(Alt 3 improvements carried over)														
	25: PCH/Cress Street	(Alt 3 improvements carried over)														
	26: PCH/Wesley Drive															

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors* ROW	*Feasibility Factors* Reg	*Feasibility Factors* Des	*Feasibility Factors* Env	Feasibility	Overall Rating
1	Anticipated increases in pedestrian activity, combined with the concentration of higher traffic volumes on PCH is expected to cause recurring delays for travelers and pedestrians along and across PCH, limiting mobility through the area (Blue Lantern to Copper Lantern)	Widening of sidewalks for pedestrians on PCH (inland side from Blue Lantern to Copper Lantern)	☒			☐	☒	☐	$168,960	■			*X*		☒	☒
		Addition of bus turnouts from Blue Lantern to Copper Lantern, as redevelopment occurs	☒			☒	☐	☐	$50,000	■	*X*	*X*			☐	☒
		Add 2 lanes at intersection of Street of the Golden Lantern at PCH	☐			☒	☐	☐	$1,261,200	☒	*X*		*X*		☐	☒
		Development of remote summer parking facility (use of Dana Hills High School parking lot)	☐			☒	☒	■	$3,000 (cap) $25,000 (O&M)	■					■	☒
2	Bicyclists using southbound PCH face potential conflicts traveling adjacent to moving vehicles (Blue Lantern to Del Obispo).															
3	Bicyclists using PCH face potential conflicts traveling in a shared lane with moving and parked vehicles (Laguna Beach border to Blue Lantern, Copper Lantern to Del Obispo).															
4	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (Copper Lantern to Del Obispo) as use increases.	Widen intersection of PCH/Del Obispo (would be done as a developer improvement)	☒			☒	☐	☐	(Note 2)		*X*		*X*		☐	☒
		Develop remote parking facility (included in the improvements for Subarea #6, Need #1)	☐			☒	☒	■	(Note 1)	■					■	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
5	There is a lack of pedestrian facilities along portions of PCH.	Add sidewalks on both sides of PCH where none exist between Laguna border and Selva where right-of-way permits (corridor-wide)	☒			☐	☒	☐	$2,000,000	☒	*X*		*X*		☐	☒
		Widen current sidewalk widths between Blue Lantern and Copper Lantern. (included in the improvements above)	☒			☐	☒	☐	(Note 1)	☐	*X*		*X*		☐	☒
		Improve crossings in high pedestrian areas (assume pedestrian signal)	■			☐	☒	☐	$120,000	■					■	☒
		Add retaining walls on inland side of PCH between Niguel to Selva and construct 5 ft sidewalk (minimum)	☐			☐	☒	☐	$250,000	■	*X*				☐	☒
6	There is no northbound bicycle route on PCH/Coast Highway from Doheny Park Road to Del Obispo.	Improve bicycle/pedestrian crossing under LOSSAN Railroad tracks and at Coast Highway/Doheny Park Road intersection to guide bicyclists and pedestrians to Coast Highway-Park Lantern access. Consider installation of separated/buffered cycletrack to encourage two-way bicycling and walking under railroad.	■			☒	■	☐	$1,000,000	☒	*X*				☐	☒
7	Height of Coast Highway/ Park Lantern bridge over San Juan Creek is inadequate to withstand flood waters from 100-year storm.															
8	Limited travel modes to accommodate connectivity to destinations within community core areas															
9	Lighting treatment for bicyclists and pedestrians is inconsistent in various segments.															
10	Aesthetic treatment of improvements is inconsistent															
11	Bicyclists using PCH face potential conflicts traveling in shared lane with moving vehicles (Del Obispo to Doheny Park Road).	Install Class I bicycle facility between Double Tree hotel and Doheny Park Road to allow cyclist/pedestrians to cross San Juan Creek. Widen sidewalk on ocean side just before Doheny Park Road.	■			☒	■	☐	$750,000	☒	*X*				☐	☒
	Intersection Analysis															
	27: PCH/Crown Valley Parkway/Monarch Drive															
	28: PCH/Niguel Road/Ritz Carlton Drive															
	29: PCH/Selva Road															
	30: PCH/Street of The Golden Lantern	Check with improvements on 1c														
	31: PCH/Del Obispo Street/Dana Point Harbor Drive	Add outside dedicated NB right turn (PCH is assumed to be north-south and existing outer through lane (NB) restripe to shared through/right		111	☒											
	32: PCH/Doheny Park Road															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.3: Alternative 4 – Evaluation (continued)

Subarea 7: South Dana Point / San Clemente: Doheny Park Road to Avenida Pico

☐ Poor ☒ Fair ■ Good

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1a	Bicyclists using Coast Highway face potential conflicts when traveling between parked cars and moving vehicles (Doheny Park to Palisades).	Widen existing sidewalk and create multi-use path	☒			☐	☒	☐	$1,000,000	☒			*X*		☒	☒
1b	Missing pedestrian facilities (Doheny Park to Palisades).	Complete sidewalk on inland side of street (per developer dedication)	☒			☐	☒	☐	(Note 2)				*X*		☒	☒
		Remove pedestrian bridge across Coast Highway between Dana Point Harbor and Palisades Drive to replace with traffic controlled pedestrian crossing	☐			☐	☐	☐	$870,000	☒		*X*	*X*		☐	☐
2	The constrained width of the separated path (Palisades to Camino Capistrano) means that bicyclists and pedestrians face potential conflicts when multiple users must pass each other.	Remove separated path and install Class II bike lanes on each side of Coast Highway	☐			☐	☐	☐	$109,684	■		*X*	*X*		☐	☐
3	Northbound bicyclists using Coast Highway face potential conflicts with vehicles when crossing from the bike lane south of Camino Capistrano to the separated path north of Camino Capistrano.	Evaluate feasible intersection improvements including a modern roundabout at intersection of Camino Capistrano. Implement the preferred alternative from the feasibility analysis.	☒			☒	☒	☐	$1,000,000	☒			*X*	*X*	☒	☒
4	Pedestrians and bicyclists face potential conflicts at the intersections of Coast Highway (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.	Evaluate and implement feasible intersection improvements (options may include roundabout, if feasible) at following intersections of to reduce the potential for conflicts between bicycles, pedestrians, and vehicles: Camino Capistrano Camino San Clemente Avenida Estacion	☒			☒	☒	☐	$2,000,000	☒			*X*	*X*	☒	☒
		Bridge rehabilitation at Prima Deshecha Canada/PCH	☐			☐	☒	☐	$500,000	☒				*X*	☒	☒
	Intersection Analysis															
	33: PCH/Camino Capistrano	Convert intersection into a roundabout or add dual WB left (Camino Capistrano being east-west) (included in Subarea 7, Need 4)		0	(note 3)											
	34: PCH/Avenida Estacion	Convert intersection into a roundabout or add improvements to the intersection to mitigate bike/ped/vehicular conflict (included in Subarea 7, Need 4)		0	(note 3)											
	35: PCH/Avenida Pico	Convert intersection into a roundabout or add improvements to the intersection to mitigate bike/ped/vehicular conflict (included in Subarea 7, Need 4)		0	(note 3)											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation

Corridor-wide

☐ Poor ☒ Fair ■ Good

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Various factors contribute to conflict between vehicles, bicycles, and pedestrians, increasing the risk to travelers' safety	Eliminate on-street parking where possible and relocate where needed for coastal access.	■			☒	■	☐	Cost included in subareas	☐	*X*	*X*			☐	☒
		Develop stress free bikeway along or adjacent to PCH (cost is for improvements needed in addition to other Alt. 5 projects needed to accomplish this, such as parking relocation and bike lane striping).	■			☐	■	☐	$8,017,120	☐	*X*	*X*	*X*		☐	☒
		Develop process to streamline consideration of innovative bicycle facility treatments in high conflict areas	■			☐	■	☐	Policy	■			*X*		☒	■
		Establish target speeds along corridor to guide roadway modifications based on context.	☒			☐	☒	☐	Policy	■			*X*		☒	☒
2	Travel in and through the corridor is impeded in numerous areas by traffic congestion and heavy volumes of pedestrians crossing the highway, adding to travel time and delay for corridor users.	Consider increased number of pedestrian crossings (over/under) roadway. (Costs included in subareas)	☒			☒	☒	☐	(Note 1)	☐			*X*		☒	☒
		Promote ridership on existing transit services in corridor. Could include free rides during peak season	☐			☐	☒	☐	$3.4 million/yr	☐					■	☐
		Consider implementation of limited stop bus service, and/or destination specific shuttle/loop service within village areas along PCH.	☐			☐	☒	☒	$2,100,000 buses $575,000/yr ops	☐			*X*		☒	☐
		Modernize the traffic signal system through the corridor and connect corridor signal to Caltrans and city traffic management centers	☐			■	☐	■	$19,960,000	☐					■	☒
		Explore additional university/school transit service similar to UCI shuttle.	☐			☐	☒	☒	$4,800,000 buses $1,200,000/yr ops	☐			*X*		☒	☒
3	The constrained ROW through most of the corridor limits improvement opportunities	Secure ROW where opportunities exist (at choke points), as future development occurs or through property purchase in order to facilitate improvements (costs included in subarea costs or part of future development)	■			■	☐	☐	(Note 1)		*X*	*X*	*X*		☐	☒
4	Because of the corridor's coastal location, many visitors and recreational users are attracted to the area, resulting in travel patterns and peaking characteristics that are unique in relation to other parts of Orange County															

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Corridor-wide (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors* ROW	Reg	Des	Env	Feasibility	Overall Rating
5	Aesthetic treatment of improvements is sometimes inconsistent with the scenic character of the corridor.	Aesthetic treatment should be considered as part of project concept and design, including median landscaping projects, structural features, retaining walls, bridges, street furnishings, decorative paving. (aesthetic costs are part of project costs)	☐			☐	☐	☐	(Note 1)						■	☐
6	Due to limited parallel options, portions of the corridor are susceptible to interruption and closure due to events and incidents.	Install intelligent transportation system (such as changeable message/ traffic information / traveler advisory system etc.)	☒			☒	☐	■	$1,572,000	☒					■	☒

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors* ROW	Reg	Des	Env	Feasibility	Overall Rating
1	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Seal Beach, PCH/Main).	Upgrade TS equipment and Improve peak hour traffic signal coordination	☐			■	☐	☒	$500,000	☒					■	☒
		Extend Edinger Avenue to PCH (included under Subarea 2, Need 2)	☐			☒	☐	☐	(Note 1)		*X*	*X*	*X*	*X*	☐	☐
2	Bicyclists and pedestrians using PCH (Anderson Street to Seal Beach Boulevard) face potential conflicts with higher-speed moving vehicles in areas that have no designated bicycle facilities or sidewalks.	Provide a two-way Class IV Cycle-Track with buffer on the southwest side of PCH and supplement with a northbound bike lane (OC Loop Gap L proposed alignment)	■			☒	■	☐	$3,607,500	☒	*X*			*x*	☐	☒
3	Bicyclists using PCH (Seal Beach Boulevard to Main Street) face potential conflicts when traveling between parked cars/bus stops and moving vehicles within a narrow roadway cross-section.	Remove/relocate on street parking and install bike lanes	■			☒	■	☐	$9,278,552	☐	*X*	*X*			☐	☒
		Minor street widening and travel lane width reduction to accommodate class II bike lanes between on-street parking and travel lanes	☒			☐	☒	☐	$5,587,360	☐	*X*		*X*		☐	☒
4	Bicyclists face conflicts between fast-moving cars and right-turn movements at PCH/ Seal Beach Boulevard															
	Intersection Analysis															
	1: PCH/Main Street	Changes in future forecast volume due to change in regional traffic (Alt 3 improvements carried over)		***-155***	☐											
	2: PCH/Seal Beach Boulevard	Changes in future forecast volume due to change in regional traffic (Alt 3 and 4 improvements carried over)		***1,139***	■											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Vehicle conflict points exist for moving traffic on PCH due to non-standard design of local streets and off-street parking (Sunset Beach)	Upgrade roadway to "full standard design" and install missing sidewalks (example Admiralty and Broadway), providing restripes to accommodate vehicles, bikes and parking as needed	☒			☒	☒	☐	$1,432,000	☒	*X*		*X*		☐	☒
2	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (PCH/Warner Avenue).	Extend Edinger Avenue to PCH (included under Subarea 2, Need 1)	☐			■	☐	☐	$141,715,200	☐	*X*	*X*	*X*	*X*	☐	☐
3	Bicycles in close proximity to higher-speed moving vehicles (Warner Avenue to Goldenwest Street)															
4	Traffic backs up from city parking lots onto PCH (Seapoint Street to Goldenwest Street)	Install intelligent parking management system to direct visitors away from full lots to available parking	■			☐	☐	☒	$64,000	■					■	■
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Goldenwest Street to 6th Street).	PCH between Beach and Goldenwest: MPAH buildout from Primary to Major arterial	☒			☒	☐	☐	$7,977,600	☐	*x*		*x*	*x*	☐	☐
		Remove/Relocate on-street parking, shift street centerline inland, install two-way Class IV Cycle track on coast side of roadway per concepts developed for the City of Huntington Beach Bicycle Master Plan.	☒			☒	■	☐	$12,633,970	☐		*x*	*x*		☐	☒
6	Pedestrian crossings of PCH at Sixth Street substantially reduce traffic capacity and limit mobility through the area (PCH/6th Street).	Pedestrian grade separation (preferably on the north crosswalk) and limit all at-grade pedestrian crossing	■			☐	☐	☐	*$3,000,000*	☒	*x*	*x*	*x*	*x*	☐	☒
		Widen driveway to beach side parking lot to allow for separate turn movements and reducing effect of pedestrian conflicts.	☒			☒	☐	☐	$729,000	☒		*x*	*x*		☐	☒
7	Heavy pedestrian crossing volumes reduce capacity (Main Street to Huntington Street)	Viaduct for PCH traffic through downtown; park/pedestrian plaza underneath connecting downtown with the beach	■			☒	☐	☐	$31,680,000	☐	*x*	*x*	*x*	*x*	☐	☒
8	Midblock pedestrian crossing volumes pose conflicts with traffic (Huntington Street to Beach Boulevard).	Add curbside barriers between 1st and Beach	■			☐	☐	☐	$126,600	■			*x*		☒	☒
		Additional overcrossings and tunnels	■			☐	☐	☐	$6,000,000	☐	*x*	*x*	*x*	*x*	☐	☒
9	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (Huntington Street to Beach Boulevard)	Remove/relocate parking, shift street centerline inland, install two-way bike track (Class IV) on coast side of roadway.	☒			☒	■	☐	$6,275,500	☐	*x*	*x*	*x*	*x*	☐	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
10	Bicycles in close proximity to higher-speed moving vehicles (Beach Boulevard to Brookhurst Street)															
11	Signal timing not optimized for continuous traffic flow	Upgrade Traffic Signal equipment and communication on PCH with traffic signal timing coordination update.	☐			■	☐	■	$3,500,000	☒					■	☒
	Intersection Analysis															
	3: PCH/19th Street/Admiralty Drive	Changes in future forecast volume due to change in regional traffic (Alt 2 and 3 improvements carried over)		*17*	☐											
	4: PCH/Warner Drive	Changes in future forecast volume due to change in regional traffic (Alt 2, 3 and 4 improvements carried over)		*1,192*	■											
	5: PCH/Goldenwest Street	Changes in future forecast volume due to change in regional traffic Add one NBT lane to make NB configuration as 1, 3, 1 (L, T, R) to account for widening of PCH from Primary to Major between Goldenwest Street and Beach Boulevard (Alt 2 improvements carried over)		*160*	☒											
	6: PCH/6th Street	Changes in future forecast volume due to change in regional traffic (Alt 2, 3 and 4 improvements carried over)		*-5*	☐											
	7: PCH/Main Street	Changes in future forecast volume due to change in regional traffic (Alt 2 improvements carried over)		*199*	☒											
	8: PCH/1st Street	Changes in future forecast volume due to change in regional traffic (Alt 2 improvements carried over)		*-76*	☐											
	9: PCH/Beach Boulevard	Changes in future forecast volume due to change in regional traffic Add one NBT lane to make NB configuration as 1, 3, 1 (L, T, R) to account for widening of PCH from Primary to Major between Goldenwest Street and Beach Boulevard (Alt 2 improvements carried over)		*545*	☒											
	10: PCH/Brookhurst Street	Changes in future forecast volume due to change in regional traffic (Alt 2 improvements carried over)		*88*	☐											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive

☐ Poor ☒ Fair ■ Good

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Bicyclists using PCH in West Newport face potential conflicts when traveling between parked cars and moving vehicles (Santa Ana River to Superior Avenue).	Remove/relocate on street parking and install Class II bike lanes	☒			☒	☒	☐	$35,228,428	☐	X	X			☐	☒
		Provide new Class I trail near Sunset Ridge Park linking to future Banning Ranch development for parallel routing between Superior and Santa Ana River Trail.	☒			☐	☒	☐	$220,000	■	X	X			☐	☒
		Extend east bank Class I bikeway on Santa Ana River Trail under Coast Highway and link to Seashore Drive	☒			☐	■	☐	$165,000	■	X	X		X	☐	☒
2	Heavy volumes of pedestrians, bicycles, and traffic aggravate conflict potential in West Newport (PCH/Superior Avenue, PCH/Orange Avenue, PCH/Prospect Street).															
		Pedestrian and bicycle grade separated crossing at PCH/ Superior Avenue.	■			☒	☒	☐	$6,000,000	☐	x	x	x	x	☐	☒
		Develop mobility hub with Park and Ride parking spaces, transit center, bike and pedestrian amenities at PCH/Superior, PCH/Orange integrated with ITS, parking management signs.	☐			☐	☒	☒	$10,000,000	☐	x	x	x		☐	☒
		Provide bicycle/pedestrian trail linking to Santa Ana River Trail east bank to provide access to community of homes and businesses north of Coast Highway.	☒			☐	☒	☐	$55,000	■				X	☒	☒
3	Recurring peak hour traffic congestion delays travelers and limits their mobility through the West Newport area (PCH/Superior Avenue).	Widen intersection of PCH/Superior Avenue Add one WBR lane to make WB configuration as 1, 4, 1 (L, T, R) Add 2nd SBL lane (along Superior Avenue) to make SB configuration as 2, 2, 2 (L, T, R)	☐			☒	☐	☐	$4,392,000	☒	X	X	X	X	☐	☒
		Grade separate pedestrian and bicycle crossing and remove at-grade pedestrian crosswalks and re-time traffic signal accordingly	☒			☒	☐	☐	$6,000,000	☐	X	X	X	X	☐	☒
4	Heavy traffic volumes and high pedestrian crossing activity delay travelers along PCH and limit mobility through the Mariners Mile area (State Route 55 {SR-55} to Dover Drive, PCH/Riverside Drive, PCH/Dover Drive).	Park and ride lot between SR-55 and Old Newport Boulevard	☐			☐	■	☐	$16,120,000	☐	X			X	☐	☒
		Park and ride lot off of Avon Street. (included with the project above)	☐			☐	■	☐	(Note 1)		X			X	☐	☒
		Widen/restripe to provide three travel lanes in each direction with a center two way left turn median and Class II bike lanes with removal of on-street parking between Newport Boulevard and Dover Drive	■			■	☒	☐	$23,741,200	☐	X	X	X	X	☐	☒
		MPAH build-out from Secondary to a Major Arterial (included with the project above)	■			■	☐	☐	(Note 1)		X	X	x	x	☐	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors* ROW	*Reg*	*Des*	*Env*	Feasibility	Overall Rating
5	Bicyclists using PCH face potential conflicts when traveling between parked cars and moving vehicles (SR-55 to Dover)	Widen/restripe to provide three travel lanes in each direction with a center two way left turn median and Class II bike lanes with removal of on-street parking between Newport Boulevard and Dover Drive (same project as one listed under Subarea 3, Need 4)	■			■	☐	☐	(Note 1)		X	X	X	X	☐	☒
		Widen or add to bridge over Back Bay to provide Class I bikeway between Bayside Drive and Dover Drive.	☒			☐	■	☐	$1,875,000	☒	X	X	X	X	☐	☒
		Construct new Class I bike trail at end of Avon Street linking to Old Newport Boulevard and directing bicyclists to the loop leading to southbound Newport Boulevard to access Balboa Peninsula.	☒			☐	☒	☐	$154,000	■	X	X	X	X	☐	☒
6	Heavy volumes of pedestrian crossings in Mariners Mile pose conflicts with traffic (SR-55 to Dover Drive, PCH/Riverside Avenue)	PCH (Mariner's Mile) Pedestrian overcrossing between Tustin Avenue and Dover Drive – preferred at PCH/Riverside	☒			☐	☐	☐	$3,000,000		*X*	*X*	*X*	*X*	☐	☐
7	The combination of significant traffic volumes, constrained capacity, substantial pedestrian activity, substantial bicycle activity, and on-street parking friction delays travelers along PCH and limits mobility through the Corona del Mar area (MacArthur Boulevard to Seaward Road, PCH/Marguerite Avenue).	Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area.	☐			☒	☐	☒	$500,000	☒					■	☒
		Eliminate or reduce tolls on SR-73 to encourage drivers to use Newport Coast Drive to relieve traffic congestion in Corona del Mar	☐			☒	☐	☐	$231,303,800	☐		X		X	☐	☐
		Removal/relocation of on street parking and stripe Class II bike lanes	■			☒	☒	☐	$29,305,064	☐	X	X	X		☐	☒
8	Heavy pedestrian crossing volumes pose conflicts with traffic (MacArthur Boulevard to Seaward Road)	Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area.	☐			■	☐	■	$1,250,000	☒					■	☒
9	Bicycles traveling in traffic lane in close proximity to parked cars (MacArthur Boulevard to Seaward Road)	Remove/relocate parking (convert residential lots adjacent to commercial areas to replace on-street parking) and stripe Class II bike lanes (same as improvement above in Need 7)	■			☒	☒	☐	(Note 1)	☐	X	X			☐	☒
		Implement two bike boulevards in Corona Del Mar; northerly (Fifth to Orchid), and southerly (Avocado to Second to Goldenrod to Seaview to Poppy) or Bayside to Marguerite to Poppy.	☒			☒	■	☐	$33,200	■			X	X	☒	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
10	Traffic along PCH from the Santa Ana River to Jamboree Road experience delays due to signal timing not being optimized for continuous traffic flow.	Upgrade Traffic Signal Equipment (infrastructure upgrades including installation of fiber optic cable between Santa Ana River and MacArthur) and communication on PCH (included as part of the improvements listed below)	☐			■	☐	■	(Note 1)	☐					■	☒
		Upgrade Traffic Signal equipment and time signals to prioritize movement of vehicle platoons through the area.	☐			■	☐	■	$4,000,000	☒					■	☒
		Install CCTV cameras at key intersections between Santa Ana River and Jamboree Road and link to the City Traffic Management Center.	☐			☒	☐	☒	$108,000	■					■	☒
	Intersection Analysis															
	11: PCH/Superior Avenue-Balboa Boulevard	Changes in future forecast volume due to change in regional traffic. Add one WBR lane to make WB configuration as 1, 4, 1 (L, T, R). Add 2nd SBL lane (along Superior Avenue) to make SB configuration as 2, 2, 2 (L, T, R)		*2,170*	■											
	12: PCH/Newport Boulevard	Changes in future forecast volume due to change in regional traffic (Alt 4 improvements carried over)		*-324*	☐											
	13: PCH/Riverside Avenue	Changes in future forecast volume due to change in regional traffic (Alt 4 improvements carried over)		*4,939*	■											
	14: PCH/Dover Drive	Changes in future forecast volume due to change in regional traffic (Alt 4 improvements carried over)		*-579*	☐											
	15: PCH/Bayside Drive	Changes in future forecast volume due to change in regional traffic (Alt 2 improvements carried over)		*-77*	☐											
	16: PCH/Jamboree Road	Changes in future forecast volume due to change in regional traffic (Alt 2 improvements carried over)		*-1,642*	☐											
	17: PCH/Newport Center Drive	Changes in future forecast volume due to change in regional traffic		*-30*	☐											
	18: PCH/MacArthur Boulevard	Changes in future forecast volume due to change in regional traffic		*-18*	☐											
	19: PCH/Goldenrod Avenue	Changes in future forecast volume due to change in regional traffic (Alt 4 improvements carried over)		*187*	☒											
	20: PCH/Marguerite Avenue	Changes in future forecast volume due to change in regional traffic		*1,668*	■											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 4: Newport Coast: Pelican Point Drive to North Laguna Beach City Limit

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Bicycles on PCH face conflict with traffic using right turn lanes on Newport Coast Drive.															
2	Bicycles in close proximity to higher-speed moving vehicles (Newport Coast Drive to Laguna Beach City Limits)															
	Intersection Analysis															
	21: PCH/Newport Coast Drive	21: PCH/Newport Coast Drive		*-920*	☐											

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	The combination of significant traffic volumes, constrained traffic capacity, pedestrian activity, and on-street parking friction delays travelers along PCH and limits mobility through the area (Broadway Street to Cress Street).															
2	Heavy pedestrian volumes pose conflicts with traffic (Broadway Street to Mountain Road)	Upgrade Traffic Signal equipment	☐			■	☐	■	$2,000,000	☒					■	☒
3	The constrained width of PCH and presence of on-street parking means that bicyclists using PCH are traveling in close proximity to moving and parked cars (most of subarea).	Remove/relocate on-street parking an stripe Class II bike lanes	■			☐	☒	☐	$73,114,000	☐	*X*	*X*			☐	☐
		Remove center two-way left turn lane where appropriate, manage/consolidate turning movements to accommodate Class II bike lanes on PCH (Ruby to Nyes)	☒			☐	☒	☐	$40,245	■	*X*	*X*	*X*		☐	☒
4	Sections of PCH with narrow or missing sidewalks pose conflicts for pedestrians with moving traffic (South Laguna Beach).	Relocate on-street parking and add sidewalks where current width is not sufficient	■			☐	☒	☐	$19,278,400	☐	*X*	*X*	*X*		☐	☒
		Acquire right-of-way to add sidewalks where the current width is not sufficient. (included as part of improvements listed above)	■			☐	☒	☐	(Note 1)	☐	*X*	*X*	*X*	*X*	☐	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit (continued)

☐ Poor ☒ Fair ■ Good

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
Intersection Analysis																
	22: PCH/Broadway Street/Laguna Canyon Road	Changes in future forecast volume due to change in regional traffic (Alt 3 improvements carried over)		*-49*	☐											
	23: PCH/Ocean Avenue	Changes in future forecast volume due to change in regional traffic (Alt 3 improvements carried over)		*-81*	☐											
	24. PCH/Laguna Avenue	Changes in future forecast volume due to change in regional traffic (Alt 3 improvements carried over)		*-38*	☐											
	25. PCH/Cress Street	Changes in future forecast volume due to change in regional traffic (Alt 3 improvements carried over)		*-10*	☐											
	26. PCH/Wesley Drive	Changes in future forecast volume due to change in regional traffic		*-5*	☐											

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1	Anticipated increases in pedestrian activity, combined with the concentration of higher traffic volumes on PCH is expected to cause recurring delays for travelers and pedestrians along and across PCH, limiting mobility through the area (Blue Lantern to Copper Lantern)	Pedestrian overcrossing on PCH at Golden Lantern for cross traffic	☒			☐	☐	☐	$3,000,000	☒	*X*	*X*	*X*	*X*	☐	☐
		Peak season daily PCH trolley/transit from remote parking to downtown/harbor	☐			☐	■	☒	$900,000 buses $125,000/yr ops	☐					■	☒
2	Bicyclists using southbound PCH face potential conflicts traveling adjacent to moving vehicles (Blue Lantern to Del Obispo).	Widen PCH to provide Class I, II or III bike facility 14 foot Class I bike trail on the ocean side of PCH between Golden Lantern and Del Obispo	☒			☐	■	☐	$10,378,368	☐	*x*	*x*	*x*	*x*	☐	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (continued)

☐ Poor ☒ Fair ■ Good

	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors* ROW	*Feasibility Factors* Reg	*Feasibility Factors* Des	*Feasibility Factors* Env	Feasibility	Overall Rating
3	Bicyclists using PCH face potential conflicts traveling in a shared lane with moving and parked vehicles (Laguna Beach border to Blue Lantern, Copper Lantern to Del Obispo).	Widen PCH to accommodate Class I, II or III bicycle lane	☒			☐	■	☐	(Note 1)	☐	X	X	X	X	☐	☒
		Widen the sidewalk on the ocean side to accommodate Class I bike trail	■			☐	■	☐	$2,323,200	☒	x	x	x	X	☐	☒
		14 foot Class I bike trail on the ocean side of PCH between northerly city limits and Blue Lantern (part of improvement listed above, Subarea 6, Need 2)	☒			☐	■	☐	(Note 1)	☐	X	X	X	X	☐	☒
		Install one way Class I Bike/Ped Trial on both sides of PCH between Laguna City Limit and Blue Lantern (part of improvement listed above, Subarea 6, Need 2)	☒			☐	■	☐	(Note 1)	☐	X	X	X	X	☐	☒
4	Recurring peak hour traffic congestion delays travelers and limits their mobility through the area (Copper Lantern to Del Obispo) as use increases.	Peak season daily PCH trolley/transit from remote parking to downtown harbor (same improvement option as listed in Subarea 6, Need 1)	☐			☐	■	☒	(Note 1)	☐					■	☒
5	There is a lack of pedestrian facilities along portions of PCH.	Widening sidewalk on ocean side of PCH between Laguna border and Selva to 14 feet and convert to shared use Class I trail (includes retaining walls) (part of improvement listed above, Subarea 6, Need 2)	☒			☐	☒	☐	(Note 1)	☐	X	X	X	X	☐	☒
		Install one way Class I Bike/Ped Trial on both sides of PCH between Laguna City Limit and Blue Lantern (part of improvement listed above, Subarea 6, Need 2)	☒			☐	☒	☐	(Note 1)	☐	X	X	X	X	☐	☒
6	There is no northbound bicycle route on PCH/Coast Highway from Doheny Park Road to Del Obispo.	Widen northbound #3 lane on PCH between Del Obispo Street and San Juan Creek Bridge to add Class II bike lanes on both sides of PCH. Includes demolition and reconstruction of pedestrian bridge	☒			☐	☒	☐	$4,342,400	☒	X	X	X	X	☐	☒
7	Height of Coast Highway/ Park Lantern bridge over San Juan Creek is inadequate to withstand flood waters from 100-year storm.	Construct new wider/taller bridge and incorporate stress free bicycling and walking facility for north/south active transportation travel over San Juan Creek.	■			☐	☒	☐	$10,000,000	☐	*X*	*X*	*X*	*X*	☐	☒
8	Limited travel modes to accommodate connectivity to destinations within community core areas	Shuttle service throughout the summer and weekends throughout the year	☒			☒	■	☒	$900,000 buses $230,000/yr ops	☐					☒	☒
9	Lighting treatment for bicyclists and pedestrians is inconsistent in various segments.	Improve street lighting (Review and include consistent lighting for bicyclists and pedestrians along PCH within each segment during project upgrades)	☒			☐	☒	☐	$750,000	☒			*X*		☒	☒

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (continued)

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	Need	Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
10	Aesthetic treatment of improvements is inconsistent	PCH (Niguel Rd. to Dana Point northern city limit, Blue Lantern to Copper Lantern) landscape beautification and safety improvements (as part of major capital improvements)	☐			☐	☐	☐	Aesthetics part of project cost	☒			X		☒	☐
		Copper Lantern to Del Obispo – Landscape beautification and safety enhancement	☐			☐	☐	☐	Aesthetics part of project cost	☒			X		☒	☐
11	Bicyclists using PCH face potential conflicts traveling in shared lane with moving vehicles (Del Obispo to Doheny Park Road).	Widen northbound #3 lane on PCH between Del Obispo Street and San Juan Creek Bridge to add Class II bike lanes on both sides of PCH. Includes demolition and reconstruction of pedestrian bridge (included in the "Widening of bridge sidewalk at San Juan Creek Bridge" project, listed below)	☒			☐	☒	☐	(Note 1)	☐	X	X	X	X	☐	☒
		Widen roadway/bridge to provide 14 Class I bike trail on the ocean side of Park Lantern between Del Obispo and Doheny Park Road	☒			☐	☒	☐	(Note 1)	☐	X	X	X	X	☐	☒
		Widen southbound PCH between Del Obispo Street and Coast Highway link to Doheny Park Road to add Class II bike lanes or Class IV cycle track.	☒			☐	☒	☐	$9,956,800	☐	X	X	X	X	☐	☒
		Widening of bridge sidewalk at San Juan Creek Bridge	☒			☐	☒	☐	$1,212,500	☒	X			X	☐	☒
	Intersection Analysis															
	27: PCH/Crown Valley Parkway/Monarch Drive	Changes in future forecast volume due to change in regional traffic		-24	☐											
	28: PCH/Niguel Road/Ritz Carlton Drive	Changes in future forecast volume due to change in regional traffic		-153	☐											
	29: PCH/Selva Road	Changes in future forecast volume due to change in regional traffic		-5	☐											
	30: PCH/Street of The Golden Lantern	Changes in future forecast volume due to change in regional traffic		-10	☐											
	31: PCH/Del Obispo Street/Dana Point Harbor Drive	Changes in future forecast volume due to change in regional traffic (Alt 4 improvements carried over)		96	☐											
	32: PCH/Doheny Park Road	Changes in future forecast volume due to change in regional traffic		-101	☐											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Table 8.4: Alternative 5 – Evaluation (continued)

Subarea 7: South Dana Point / San Clemente: Doheny Park Road to Avenida Pico

☐ Poor ☒ Fair ■ Good

Need		Improvements	Conflict Reduction	*Max Delay Reduction (minutes)*	Delay Reduction	Traffic Flow Improvement	Improve Alternative Modes	Address Events and Incidents	Cost		*Feasibility Factors*				Feasibility	Overall Rating
											ROW	*Reg*	*Des*	*Env*		
1a	Bicyclists using Coast Highway face potential conflicts when traveling between parked cars and moving vehicles (Doheny Park to Palisades).	Remove/relocate on street parking and install Class II bike lanes	■			☐	☒	☐	$5,669,480	☐	X	X	X	X	☐	☒
		Restripe the street segment to provide for 2 vehicular lanes (one in each direction) and Class II bicycle lanes	■			☐	☒	☐	$13,020	■					■	■
		Widen sidewalk to provide two-way Class I bike/ped facility on the ocean side														
		Remove/relocate on street parking and install Class IV cycle track with buffer protection between vehicles and pedestrians/bicyclists.	■			☐	☒	☐	$4,411,120	☒	X	X	X	X	☐	☒
1b	Missing pedestrian facilities (Doheny Park to Palisades).															
2	The constrained width of the separated path (Palisades to Camino Capistrano) means that bicyclists and pedestrians face potential conflicts when multiple users must pass each other.	Widen protected Class I bike lane along PCH between Palisades Drive and Camino Capistrano	■			☐	■	☐	$20,241,000	☐	X	X		X	☐	☒
		Widen the street segment to provide for 2 vehicular lanes (one in each direction) and Class II bicycle lanes	☒			☐	☒	☐	$764,544	☒				X	☒	☒
3	Northbound bicyclists using Coast Highway face potential conflicts with vehicles when crossing from the bike lane south of Camino Capistrano to the separated path north of Camino Capistrano.	Install Class I bike facility on the coastal side of Coast Highway between Camino Capistrano and Avenida Estacion	■			☐	■	☐	$900,000	☒					■	■
		Widen the street segment to provide for 2 vehicular lanes (one in each direction), Class I and Class II bicycle lanes (Palisades to Camino Capistrano)	☒			☐	■	☐	$361,364	☒				X	☒	☒
4	Pedestrians and bicyclists face potential conflicts at the intersections of Coast Highway (El Camino Real) with Camino Capistrano, Camino San Clemente, and Avenida Estacion.															
	Intersection Analysis															
	33: PCH/Camino Capistrano	Changes in future forecast volume due to change in regional traffic (Alt 4 improvements carried over)		16	☐											
	34: PCH/Avenida Estacion	Changes in future forecast volume due to change in regional traffic (Alt 4 improvements carried over)		-11	☐											
	35: PCH/Avenida Pico	Changes in future forecast volume due to change in regional traffic		19	☐											

Note 1: Project cost shown elsewhere
Note 2: Implemented through future development
Note 3: Delay calculations not conducted since the need is not for congestion relief

Chapter 9 - Recommended Alternatives

The analysis in **Chapter 8** provided the basis for identifying four "recommended" alternatives, including; a Baseline alternative, a TSM/TDM alternative; and two "build" alternatives. The recommended alternatives were comprised of improvements which represented plausible strategies for improving the corridor in relation to the needs identified in the consensus-based P&N Statement. Improvements were labeled as "recommended" if screening results indicated that they: (1) would provide either a "Good" or "Fair" benefit in terms of addressing identified corridor needs; (2) have an estimated cost that was reasonable in light of the relative level of expected benefit; (3) did not face insurmountable barriers to implementation in the form of substantial property acquisitions or unachievable legal or regulatory requirements; and (4) were generally consistent with local agency plans and policies.

Committed improvements that have been environmentally cleared, and/or are fully funded, as well as recently-completed improvements were included in the Baseline (No Build) alternative. The TSM/TDM alternative was comprised of projects that included "low-cost" operational or minor capital improvements with minimal or no ROW takes and no regulatory issues. The two "build" alternatives were comprised of improvements involving higher levels of capital investments. In general, the lower-cost/easier-to-implement improvements were assigned to the Low Capital Alternative (LCA), and the higher-cost, more complex, longer-term projects were assigned to the High Capital Alternative (HCA).

Improvements considered in the screening analysis that did not specifically address the P&N were included in the recommended alternatives if they satisfied the four screening criteria described above and provided benefit in achieving any of the corridor objectives.

Improvements identified in the corridor-wide category were envisioned as being implemented on a corridor-wide basis through some type of cooperative effort among corridor stakeholders. In this regard, traffic signal improvements (involving equipment upgrades, system enhancements, etc.) have been removed from individual subareas and were consolidated in the corridor-wide section as a Corridor Signal Improvement Program.

Table 9.1 presents the four recommended alternatives, with improvements shown adjacent to the identified corridor needs that they were proposed to address. In some cases, it was beneficial for multiple strategies to be implemented together or in a phased manner, while in other cases application of all strategies was incompatible and therefore, the implementing agency will need to undertake additional analysis in to determine the most appropriate option.

Figures 9.1 though **Figure 9.7** graphically represent recommended improvements for all alternatives for each subarea.

Table 9.1: Recommended Alternatives

Corridor-wide (no Baseline improvements identified)

Transportation System Management / Transportation Demand Management (TSM/TDM)	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Develop a corridor-wide consistent signage program to demarcate Class III bike routes and to guide recreational bikes to parallel bike facilities. The locations of the Class III bike facilities would be included in the educational programs or Traffic Management Programs (see below).	Provide bus turnouts for layover areas, route timepoints, and heavy boarding/alighting stops to remove buses from travel lanes at locations with longer dwell times.	Work with Coastal Commission on how parking space replacement could be traded for improved safety (eliminating conflicts) and accommodation of non-motorized activities such as walking and biking. These types of improvements would be in lieu of parking replacement when eliminating parking to accommodate a corridor wide Class II bike program or sidewalks
Develop a PCH Educational and Informational Bicycle and Pedestrian program for on-line and printed distributions. (Similar Bicycle programs referenced in the "5-E" - Encouragement, Education, Enforcement, Evaluations and Engineering discussions in both the District1/District 2 and District 5 Bikeways Strategies.)	Modernize traffic signal system including: - Traffic signal synchronization and optimization - Upgrade Traffic Signal equipment and provide fiber interconnect - Install Closed Circuit Television (CCTV) - Connect to Caltrans and City Traffic Management Centers - Develop corridor emergency response and re-route strategies	Develop transit hubs connected by city specific and/or shared shuttle services (example how the Laguna Beach shuttle connects with Dana Point). Some signal priority should be considered for transit, if warranted. Could include tracking for real-time schedule updates, publishing or display of information relating to parking, and events served could potentially be part of a Transportation Management Program (see Corridor-wide TSM/TDM alternative).
Adopt a Context Sensitive Design approach to implement improvements in the corridor. Improvements could include appropriate techniques or components to provide “comfortable and safe” accommodations of vehicles, pedestrians, transit, and bicycles.	Consistent with recommendation in OCTA D1-2 Bike Strategic Plan, Cities to collaborate with OCTA on Context Sensitive Solution approach to achieving MPAH buildout on a case-by-case basis.	Using a Shared Fiber Optic system, incorporate Connected Vehicle elements and other technical features to help in overall safe operation of the corridor. This could include Pedestrian and Bike Apps and alerts for special events.
Recommend improvements that avoid the need for significant right-of-way acquisition while recognizing the needs of all corridor users and modes.	Build on Basic Transportation Management Program and sharing the traffic signal fiber optics communication system, incorporate electronic features such as parking management, changeable message signs (matching the aesthetics of the scenic corridor), advisory APP info and other potential features that might be connected to real-time traffic notices with Google and other guidance programs on phones and vehicles.	
Traffic Management Program - Beach Travel APP corridor-wide information and media outreach to provide info such as updates on events, alternate routes, parking/transit options, schedules. Should be tailored to have information for all modes (vehicles, bicycle, pedestrian, transit). Can include City/Agency coordination of their annual schedules of events. Initial effort can include Phone APP and existing media sources.	Encourage PCH corridor cities to incorporate aesthetic enhancements in future corridor projects and programs.	
PCH Cities should pursue joint agency projects and submit multi-agency grant applications where this approach is supported to achieve mutually desired improvement objectives.		

Subarea 1: Seal Beach: Los Angeles County Line to Huntington Beach City Limit (refer **Figure 9.1**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Los Angeles County Line to Main Street				
PCH at Main Street			• Intersection improvements at PCH/Main Street (Restripe WB (Main Street/ Bolsa Avenue) to provide dual right turns (RT, Thru/RT, LT))	
Main Street to Seal Beach Boulevard		• Provide wayfinding signs to guide bicyclists to parallel bike facility (proposed Class II bike lanes and existing multi-use path in median) on Electric Avenue between Main Street and Ocean Avenue.	• Minor street widening and travel lane width reduction to accommodate Class II bike lanes between on-street parking and travel lanes on PCH.	• Remove/relocate on street parking and install bike lanes
PCH at Seal Beach Boulevard		• Remove SB right-only lane on PCH at Seal Beach Boulevard and replace with bike lane.	• Provide northbound off-street bikeway (within Caltrans ROW) in advance of intersection to transition bicyclists off roadway and guide them to travel southerly along Seal Beach Boulevard Class I bikeway.	• Intersection improvements at PCH/Seal Beach Boulevard (Add SB dual left turn from PCH (away from the coast)) • Widen intersection approach (or narrow / remove median) and provide a through bike lane on PCH (between the through and right-turn vehicle lanes) on the inland side.
Seal Beach Boulevard to Huntington Beach City Limits		• Provide on-street painted buffer between bike lane and traffic lane on PCH between Seal Beach Boulevard and Anderson Street (where roadway and lane width permit) • Remove northbound right-turn only lane at driveway north of PCH/Mariner Dr. and replace with bike lanes. Remove southbound right-turn only lane at PCH/Phillips Street and replace with bike lanes.	• Add sidewalks in developed areas where they are currently missing (about 1,000 ft on the inland side of PCH, and about 2,000 ft. on the ocean side of PCH)	• Reduce or combine access points where feasible, especially in areas north of Piedmont Circle, as part of redevelopment. • Eliminate or relocate poles and other fixed objects at grade near driveways in sections north of Piedmont Circle. • Provide a two-way Class IV Cycle-Track with buffer on the southwest side of PCH and supplement with a northbound bike lane (OC Loop Gap L proposed alignment)

Table 9.1: Recommended Alternatives (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (refer **Figure 9.2**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Seal Beach City Limits to Warner Avenue	• Stripe Class III sharrows on Pacific from Anderson Street to Warner Avenue	• Stripe Class III sharrows on Anderson Street between PCH and Pacific Avenue • Provide enhanced signage highlighting for bicyclists the availability of low stress route along Pacific Avenue from Anderson Street to Warner Avenue.		• Redesign minor road accesses, road geometrics, remove on-street parking to improve visibility and sight angles as redevelopment occurs.
PCH at Warner Avenue	• Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Warner Avenue	• Provide treatments to reduce bike/vehicular conflicts at intersection (e.g. two stage left turn boxes, turn box protected by physical buffer or parking lane etc,) for bicyclists on PCH at Warner Avenue	• Install through bike lanes on PCH at Warner by narrowing median	• Intersection capacity improvement at PCH/Warner Avenue with design to avoid impact on adjacent sensitive area •
Warner Avenue to Goldenwest Street	• Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Goldenwest		• Install Class II bike lanes (on both sides of PCH) and add a 2-foot buffer (8'0" bike lane inclusive of 2'0 buffer) on PCH through Bolsa Chica – adjust vehicular lane widths/median as needed • Stripe through bike lanes at right-turn pockets and install green conflict striping in merge areas prior to and at beach access driveways (if bike lanes are developed on this segment of PCH) • Modify access to driveways and circulation within parking lots to provide multiple entry (access redesign) • Install intelligent parking management system to direct visitors away from full lots to available parking.	• Landscape existing median or construct a raised center median to visually narrow and provide aesthetic enhancements
Goldenwest Street to 6th Street		• Install sharrows on PCH in traffic lane next to on-street parking where no on-street bike lane is provided • Develop parallel Class III bike route along Walnut Avenue or Olive Avenue between Goldenwest Street and 1st Street.		
PCH at 6th Street		• Eliminate one pedestrian crosswalk at PCH/6th Street and prohibit pedestrian crossing across that leg of intersection in order to eliminate auto/pedestrian conflicts on one leg of the intersection and increase available green time for turning vehicles (improvement will include traffic signal modification, signing/striping, removal of crosswalk etc.)		• Widen exit driveway from beach side parking lot to allow for separate turn movements (may entail relocation of parking)
6th Street to Beach Boulevard		• Stripe Class II bicycle lanes on PCH from 1st Street to Beach Boulevard between parking and adjacent travel lane, where Class II bike lanes are missing and where roadway and lane width permit. • Paint shared lane markings (sharrows) in lane adjacent to parking and incorporate speed reduction mechanism • Develop Class III bike route on Pacific View Avenue and Class II bike lanes on Atlanta Avenue. • Restripe Pacific View Avenue to provide one travel lane and one Class II bike lane each way between 1st Street and Beach Boulevard.	• Add median barrier or fence (Huntington Street to Beach Boulevard)	• Remove/relocate parking, install Class II bike lanes (Huntington Street to Beach Boulevard)

Table 9.1: Recommended Alternatives (continued)

Subarea 2: Huntington Beach: Seal Beach City Limit to Santa Ana River (refer **Figure 9.2**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
PCH at Beach Boulevard	• Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Beach Boulevard	• Provide treatments to reduce bike/vehicular conflicts at intersection (e.g.,two stage left turn boxes, turn box protected by physical buffer or parking lane etc,) for bicyclists at PCH/Beach Boulevard		
Beach Boulevard to Santa Ana River	• Coordinate traffic signal upgrades on PCH with planned/funded M2 projects on Magnolia Street	• Provide treatments to reduce bike/vehicular conflicts at intersections (e.g., two stage left turn boxes, turn box protected by physical buffer or parking lane etc,) for bicyclists at Beach Boulevard, Newland Street, Magnolia Street, and Brookhurst Street	• Convert existing shoulder to Class II bike lanes with a 2 foot buffer (between Beach Boulevard and the Santa Ana River). This improvement may also include reduction of lane-width to accommodate Class II bike lanes within existing pavement.	• Add sidewalks on both sides of PCH (Beach to Newland)
PCH at Brookhurst Street			• Intersection improvement at PCH/Brookhurst Street in order to carry bike lanes through the intersection	

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (refer **Figure 9.3**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Santa Ana River to Superior Avenue		• Stripe class II bike lane along northbound PCH between Highland Street and 61st Street, wherever road and lane width permit.	• Provide bicycle/pedestrian trail linking to Santa Ana River Trail east bank to provide access to community of homes and businesses north of Coast Highway • PCH between Santa Ana River and Newport Boulevard: maintain existing southbound Class II bike lanes and restripe sections with shoulder to provide Class II bike lanes with a 2 foot buffer, where ROW permits	• Extend east bank Class I bikeway on Santa Ana River Trail under Coast Highway and link to Seashore Drive • Provide new Class I trail near Sunset Ridge Park linking to future Banning Ranch development for parallel routing between Superior and Santa Ana River Trail. • Remove/relocate on street parking and install Class II bike lanes • Reduce conflict points through access management strategies including consolidating access points and radius driveways, as redevelopment occurs. • Relocation/reduction of on-street parking on PCH between Santa Ana River and Superior Avenue to benefit operations and reduce disruption of traffic flow
PCH at Superior Avenue				• Develop mobility hub with Park and Ride parking spaces, transit center, bike and pedestrian amenities near PCH/Superior (at the northeast corner of Coast Highway at Superior) integrated with ITS and parking management signs. • Widen intersection of PCH/Superior Avenue to reduce peak period congestion and delay, possibly by adding a second turn lane on the westbound (Coast Highway) approach. • Grade separated pedestrian and bicycle crossing bridge and remove at-grade pedestrian crosswalks and re-time signal accordingly.

Table 9.1: Recommended Alternatives (continued)

Subarea 3: Newport Beach: Santa Ana River to Pelican Point Drive (refer **Figure 9.3**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Superior Avenue to Dover Drive		• Improve bicycle/pedestrian access to beach from Riverside Avenue using sidewalk on ocean side of Coast Highway to access Balboa Peninsula (SR-55 to Dover) • Enhance signing/striping/lighting to better alert motorists to pedestrian crossing at intersections (SR-55 to Dover).	• Improve northbound PCH through interchange with SR-55. including additional through lane, turning pocket, and Class II bike lane at Old Newport Boulevard • Park and ride lot between SR-55 and Old Newport Boulevard (vacant paved lot on the northwest quadrant of the intersection of Old Newport Boulevard and PCH) • Install median refuge island to shorten crossing distance and pedestrian signal timing (SR-55 to Dover Drive) • Implement access management strategies (including consolidating access points, radius driveways) as redevelopment occurs.	• Widen/restripe to provide three travel lanes in each direction with a center two way left turn median and Class II bike lanes with removal of on-street parking between Newport Boulevard and Dover Drive • Construct new Class I bike trail at end of Avon Street linking to Old Newport Boulevard and directing bicyclists to the loop leading to southbound Newport Boulevard to access Balboa Peninsula.
PCH at Riverside Avenue			• Add second southbound left turn lane on PCH at Riverside • Eliminate or relocate traffic signal at Tustin Avenue	• Develop pedestrian overcrossing in the core area of Mariner's Mile (near Riverside Avenue or Tustin Avenue)
Dover Drive to Bayside Drive		• Stripe Class II bike lanes across the Back Bay Bridge between Dover and Bayside		• Widen or add to bridge over Back Bay to provide Class I bikeway between Bayside Drive and Dover Drive.
Bayside Drive to MacArthur Boulevard				
MacArthur Boulevard to Pelican Point Drive		• Provide intersection treatments to reduce bike/vehicular conflicts at intersections • Extend shared lane markings (sharrows) on PCH south of Poppy Avenue	• Install curb extension (only on parking lanes) to shorten pedestrian crossing times (MacArthur Boulevard to Seaward Road) • Implement strategies to encourage drivers to use Newport Coast Drive, to remove traffic from PCH in Corona del Mar.	• Removal/relocation of on street parking and stripe Class II bike lanes • Implement access management strategies including radius driveways as redevelopment occurs. • Implement two bike boulevards in Corona Del Mar; northerly (Fifth to Orchid), and southerly (Avocado to Second to Goldenrod to Seaview to Poppy or Bayside to Marguerite to Poppy).

Subarea 4: Newport Coast: Pelican Point Drive to North Laguna Beach City Limit (refer **Figure ES.5**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
PCH at Newport Coast Drive		• Sign and restripe intersection to provide Class II bike lane through intersection.		
Pelican Point Drive to North Laguna Beach City Limit			• PCH (Seaward Road – Newport Beach City Limit): maintain existing Class II bike lanes and restripe sections with 8 foot shoulder to provide Class II lanes with a 2 foot buffer Add/designate on-street Class II bike lanes where gaps in system within identified limits. • Construct a raised median at the shopping center entrance near Crystal Heights Drive to preclude illegal turns across the striped median • Extend Class I bikeway through Crystal Cove Park to El Moro State Park signal.	• Develop Class I path or Class IV cycle track to provide a low stress bike facility for bicyclists from Newport Coast to Laguna Beach

Table 9.1: Recommended Alternatives (continued)

Subarea 5: Laguna Beach: North Laguna Beach City Limit to Dana Point City Limit (refer **Figure 9.5**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Ledroit Street to Boat Canyon Drive			• On SR-1 from Ledroit Street to Boat Canyon Drive, Upgrade Sidewalk & pedestrian facilities to ADA standards	
Broadway Street to Mountain Road	• Expansion of summer seasonal festival trolley service and new off-season trolley service (began in March, 2015, between Broadway Street and Cress Street) • Provide Class III bike routes on parallel streets (along Cliff Drive, Cypress Drive and Glenneyre Street) with wayfinding signs from PCH • Widen east side of northbound PCH to provide a dedicated right turn lane onto eastbound Broadway	• Implement pedestrian "scramble" crossing at locations identified through coordination with City Council and community. • Striping and ADA improvements near Mountain Road	• Reconfigure Glenneyre (Caliope to Mermaid) from 4 to 2 travel lanes to accommodate Class II bike lanes with wayfinding signs. • Install illuminated pedestrian crossings with advanced warning systems at additional locations. Locations for this strategy can be obtained through detailed pedestrian activity study.	
Mountain Road to Dana Point City Limit			• On PCH from 7th Avenue to Moss Street update existing ADA curb ramps, widen sections of existing sidewalk to meet minimum clear width standards and add APS systems	• Remove center two-way left turn lane where appropriate, manage/consolidate turning movements to accommodate Class II bike lanes on PCH (Ruby to Nyes). • Add sidewalks where there is sufficient room to accommodate - includes acquisition of ROW
North Laguna Beach City Limit to Dana Point City Limit		• Install painted shared lane markings (sharrows) along with corresponding "Bicycles May Use Full Lane" signs • Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveways		• Remove/relocate on street parking and stripe Class II bike lanes

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (refer **Figure ES.7**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Laguna Beach City Limit to Crown Valley Parkway	• PCH (Crown Valley Parkway to Dana Point northern city limit) Landscape beautification within medians (as part of major capital improvements).			
Crown Valley Parkway to Blue Lantern Street		• Stripe through bike lanes at right turn pockets and install green conflict striping in merge areas prior to and at access driveway (Laguna Beach City Limit to Blue Lantern, Copper Lantern to Del Obispo).	• Provide Class I bike trail on the ocean side of PCH (Laguna Beach to Blue Lantern) • Install one way Class I Bike/Ped Trail on both sides of PCH between Laguna Beach City Limit and Blue Lantern. • Add sidewalks on both sides of PCH where none exist between Laguna Beach border and Selva where right-of-way permits. • Add retaining walls on inland side of PCH between Niguel to Selva and construct 5 ft sidewalk (minimum). • Review and include consistent lighting for bicyclists and pedestrians along PCH within each segment during project upgrades	

Table 9.1: Recommended Alternatives (continued)

Subarea 6: Dana Point: Laguna Beach City Limit to Doheny Park Road (refer **Figure 9.6**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Blue Lantern Street to Del Obispo Street	• PCH from Copper Lantern to Blue Lantern, change circulation on PCH and Del Prado to two-way traffic [Implemented September 2014]. • Third SB lane added between Copper Lantern and Crystal Lantern as part of one-way couplet removal • PCH from Copper Lantern to Blue Lantern: Streetscape improvements, road reconfiguration and curb adjustments to create a more pedestrian friendly business district. • Provide wayfinding signs on PCH encouraging bicyclists to use parallel alternative routes to PCH by directing them to facilities on Del Prado, Golden Lantern, Dana Point Harbor Drive and Park Lantern. • Summer weekend trolley services running on PCH, connecting area resorts through downtown. • Development of remote parking facility (use of Dana Hills High School parking lot) – already initiated. • Shuttle service throughout the summer and weekends throughout the year (augment current summer weekend service)		• PCH (Niguel Rd. to Dana Point northern city limit, Blue Lantern to Copper Lantern) landscape beautification and safety improvements (as part of major capital improvements) • Widening of sidewalks for pedestrians on PCH (inland side from Blue Lantern to Copper Lantern). • Widen PCH and add Class II bike lanes between Crystal Lantern and Del Obispo.	• Addition of bus turnouts from Blue Lantern to Copper Lantern, as redevelopment occurs. • Copper Lantern to Del Obispo – Landscape beautification and safety enhancement (as part of major capital improvement, as redevelopment occurs)
PCH at Golden Lantern Street				• Overcrossing on PCH at Golden Lantern for pedestrians crossing PCH, with prohibition of at-grade crossings.
PCH at Copper Lantern Street; Del Prado Avenue				• Improve PCH/Copper Lantern/Del Prado Intersection to enhance traffic flow (possibly with a roundabout)
PCH at Del Obispo Street				• Widen intersection of PCH/Del Obispo to provide congestion relief through the intersection.
Del Obispo Street to San Clemente		• Provide bike/vehicle conflict zone treatment leading to intersections (Coast Highway at Park Lantern).	• Widen existing sidewalk under railroad to Improve bicycle/pedestrian crossing under LOSSAN Railroad tracks near Coast Highway/Doheny Park Road.	• Construct Class I bike and pedestrian trail between Doheny Park Road and Del Obispo through Doheny State Park, using Park Lantern • Construct new wider/taller bridge and incorporate stress free bicycling and walking facility for north/south active transportation travel over San Juan Creek - includes widening of bridge sidewalk. • Install cycle track to encourage two-way bicycling and walking under railroad.

Table 9.1: Recommended Alternatives (continued)

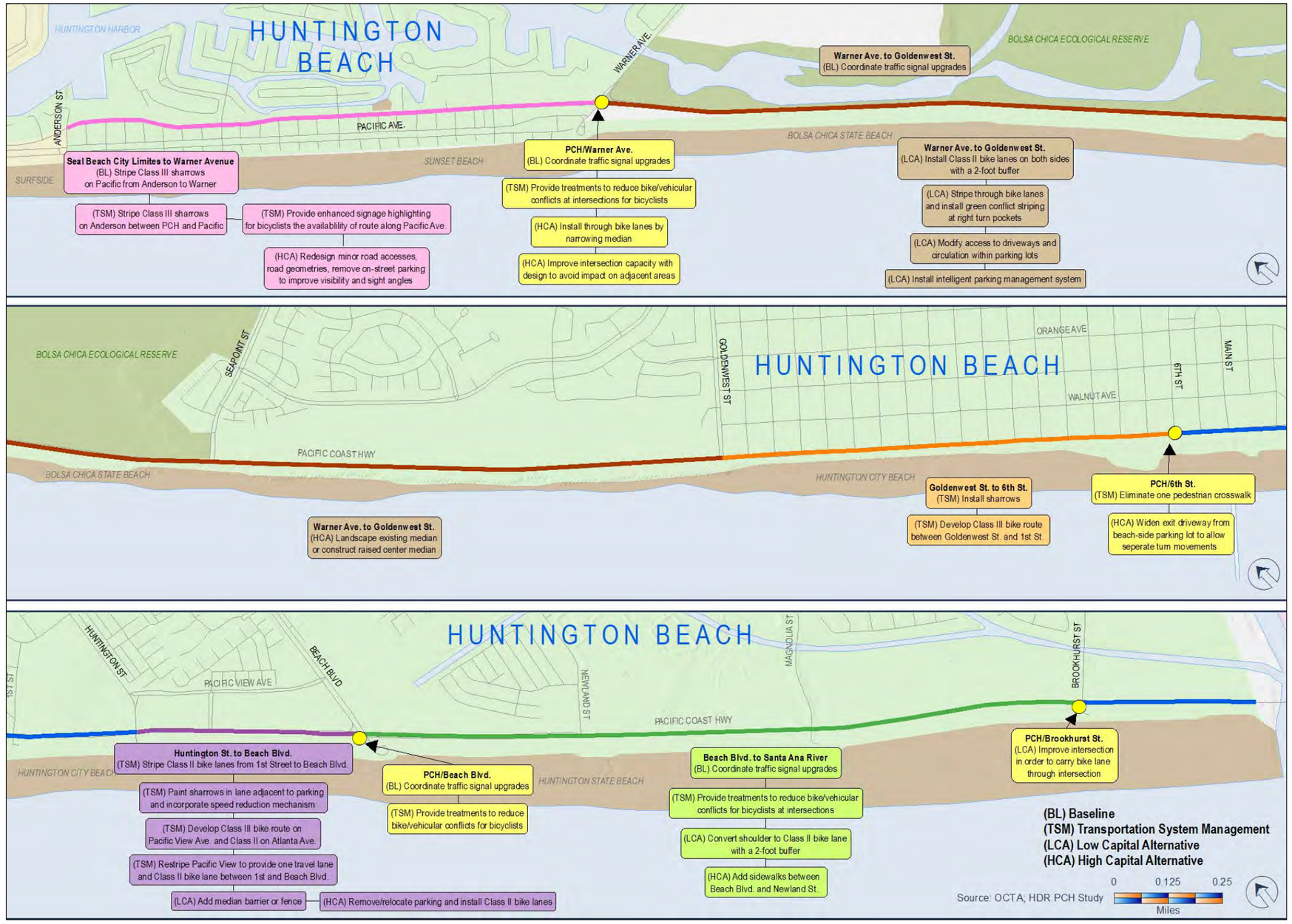
Subarea 7: South Dana Point / San Clemente: Doheny Park Road to Avenida Pico (refer **Figure 9.7**)

Pacific Coast Highway Limits	Baseline	TSM/TDM	Low Capital Alternative (LCA)	High Capital Alternative (HCA)
Doheny Park Road to Palisades Drive	• Remove pedestrian bridge across Coast Highway (only the span across Coast Highway) between Dana Point Harbor and Palisades Drive to replace with traffic controlled pedestrian crossing to provide access to bikers and handicapped users. • Complete sidewalk on inland side of street as condition of redevelopment (Palisades to existing pedestrian bridge)	• New Class III bike route along Coast Highway between Doheny Park Road and Palisades Drive, on both sides of Coast Highway	• Restripe the street segment to provide for 2 vehicular lanes (one in each direction) and Class II bicycle lanes and maintain 2 northbound through lanes at intersection at Doheny Park and Coast Highway. Improvement would require MPAH amendment. • Widen existing sidewalk and create multi-use path on the ocean side (provide two-way Class I bike/ped facility (Doheny Park to Palisades Drive)). • Complete sidewalk on inland side of street (Doheny Park to Palisades)	• Remove/relocate on street parking and install Class II bike lanes (Doheny Park to Palisades Drive) • Remove/relocate on street parking and install Class IV cycle track with buffer protection between vehicles and pedestrians/bicyclists (Doheny Park to Palisades Drive). • Rebuild pedestrian bridge across railroad tracks between Dana Point Harbor and Palisades Drive.
Palisades Drive to Camino Capistrano		• Launch an educational campaign for users to slow down and share the path		• Widen protected Class I bike facility along PCH between Palisades Drive and Camino Capistrano.
PCH at Camino Capistrano		• Provide treatments to reduce bike/vehicular conflicts at intersection (e.g.two stage left turn boxes, turn box protected by physical buffer or parking lane etc,) for south-bound and westbound bicycles at Coast Highway/ Camino Capistrano intersection or add left-turn bicycle signal to provide for transition from bike lanes to bike path.		• Evaluate and implement feasible intersection improvements (options may include roundabout, if feasible) at intersections to reduce the potential for conflicts between bicycles, pedestrians, and vehicles.
Camino Capistrano to Avenida Pico	• Install Class I (and maintain existing Class II) bike facility on the coastal side of Coast Highway between Camino Capistrano and Avenida Estacion.			• Evaluate and implement feasible intersection improvements (options may include roundabout, if feasible) at following intersections to reduce the potential for conflicts between bicycles, pedestrians, and vehicles: Coast Highway @ Camino San Clemente Coast Highway @ Avenida Estacion

Figure 9.1: Recommended Alternatives for Subarea 1 – Seal Beach

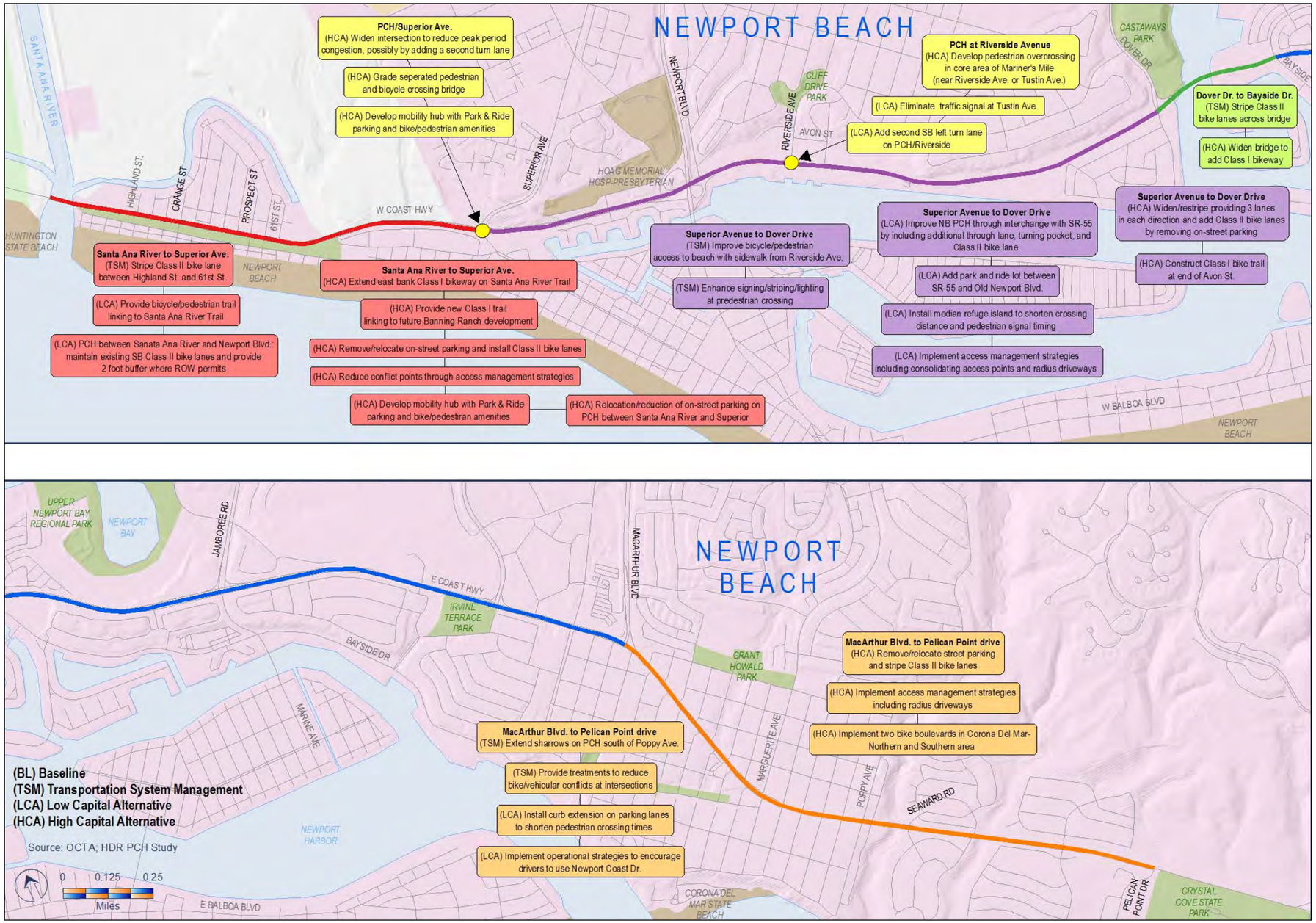
Source: HDR / OCTA

Figure 9.2: Recommended Alternatives for Subarea 2 – Huntington Beach



Source: HDR/OCTA

Figure 9.3: Recommended Alternatives for Subarea 3 – Newport Beach

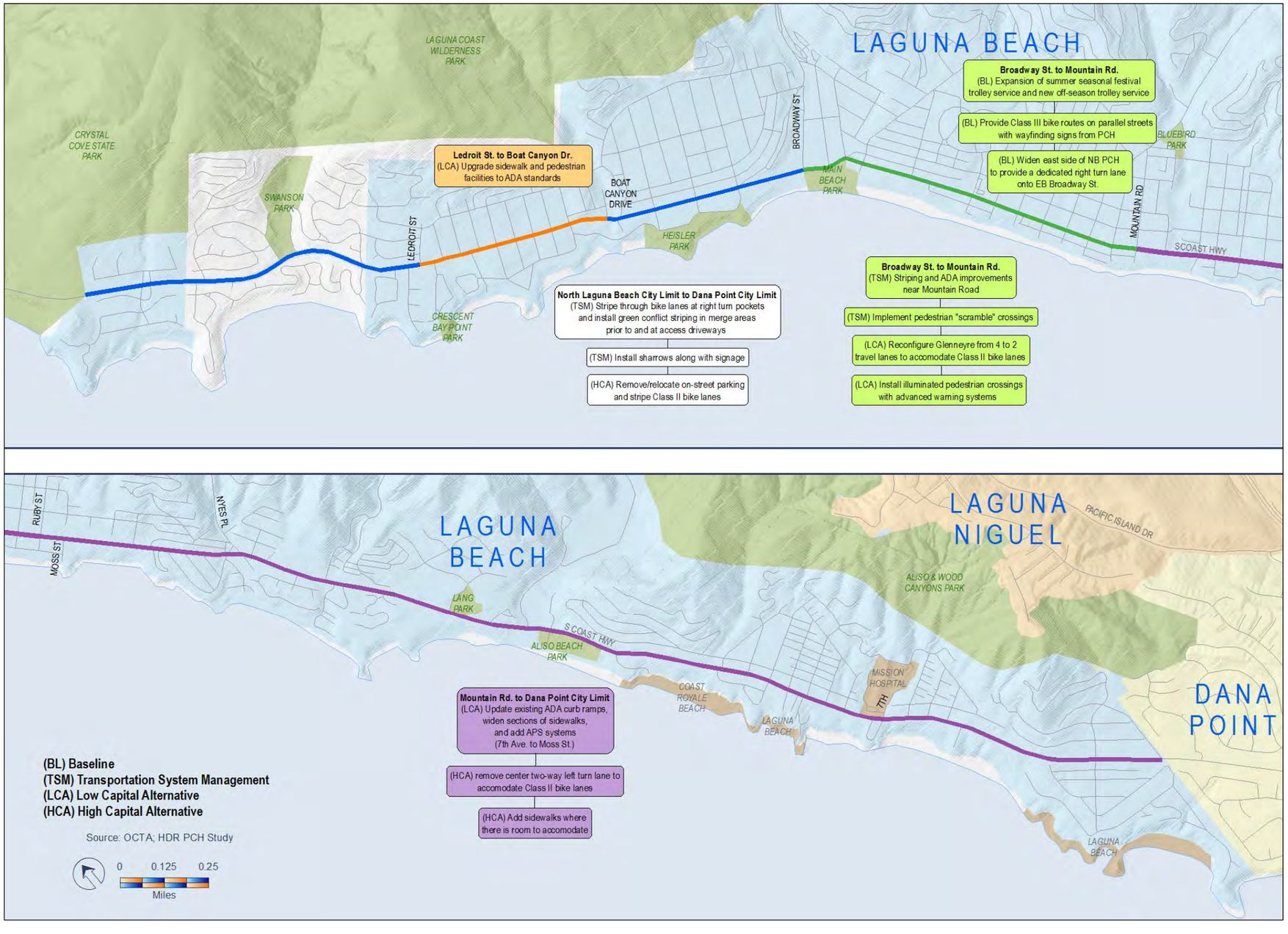


Source: HDR/OCTA

Figure 9.4: Recommended Alternatives for Subarea 4 – Newport Coast

Source: HDR/OCTA

Figure 9.5: Recommended Alternatives for Subarea 5 – Laguna Beach

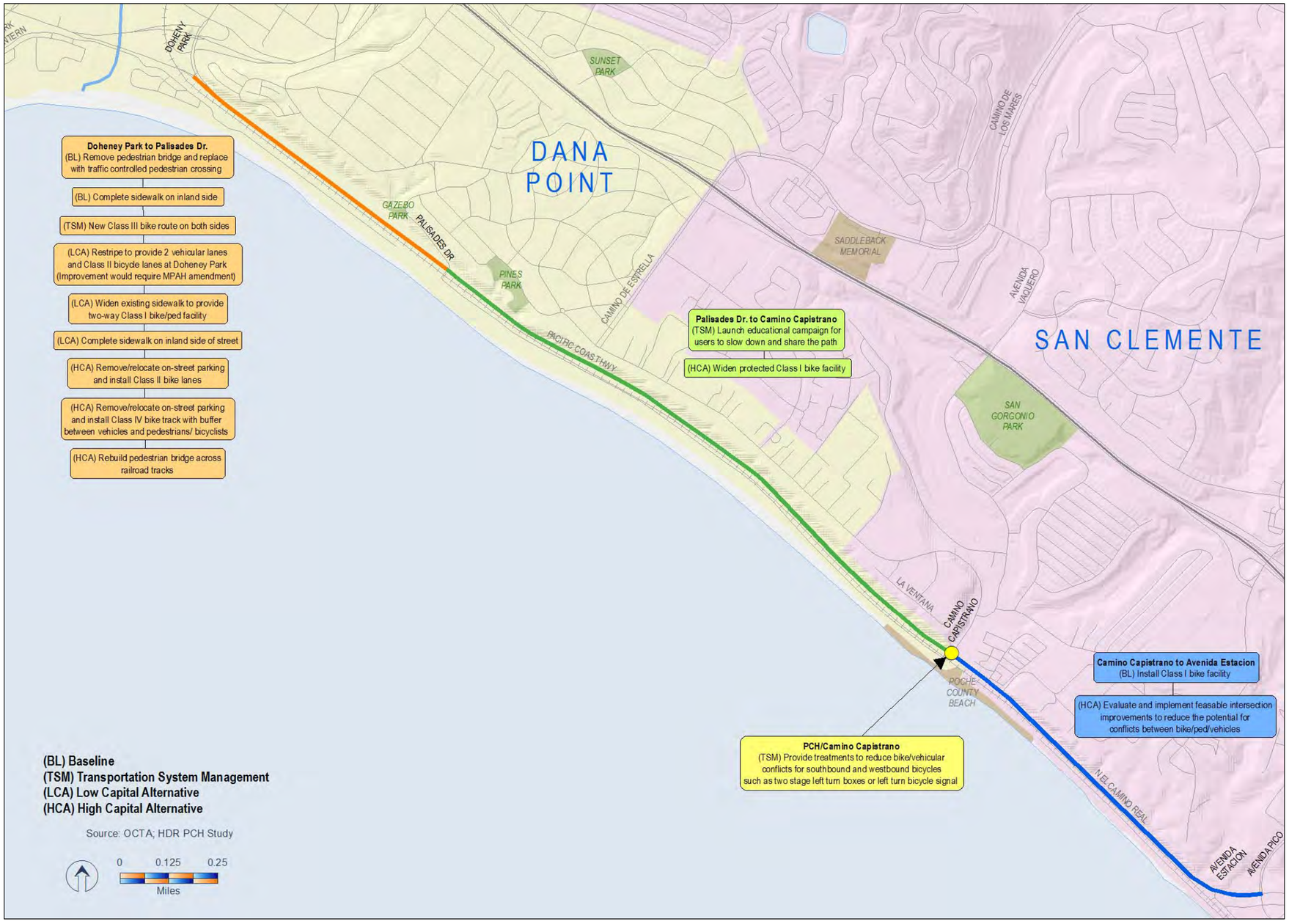


Source: HDR/OCTA

Figure 9.6: Recommended Alternatives for Subarea 6 – Dana Point

Source: HDR/OCTA

Figure 9.7: Recommended Alternatives for Subarea 7 – South Dana Point / San Clemente



Source: HDR / OCTA

Chapter 10 - Implementation and Next Steps

As described in **Chapter 1**, the objective of this study was to identify multimodal transportation improvements to help address the Corridor's long-term safety and mobility needs; both from a corridor-wide perspective and for individual subareas (as described previously). The Corridor Study's evaluation of long-term improvement options resulted in identification of four recommended alternatives comprised of numerous multimodal improvement strategies. The Study's technical findings (discussed in previous chapters) document the process that was used to develop and refine the list of recommended improvement strategies.

These strategies are not intended to provide a comprehensive coordinated strategy to address all corridor-wide and subarea needs. Rather, they are comprised of plausible improvement strategies that could help address identified needs, whether corridor-wide or in a particular subarea. Some of the recommended strategies involve different (and sometimes incompatible) approaches to address the same need, and some strategies may compete or conflict with other recommended strategies in the same geographic area addressing a different need. This array of recommended improvement strategies is intended to provide implementing agencies with options for actions they can take to address the Corridor's long-term needs. The Study does not recommend a final locally preferred strategy. It leaves this up to implementing agencies, so they can implement future improvement strategies in the context and timing; which they deem most appropriate to address local needs.

As such, this final chapter presents important considerations and issues related to future project implementation, including agency roles and responsibilities, key issues affecting implementation, potential sources of funding for various types of improvement strategies, and next steps for implementing agencies, should they desire further advancement of any of (or components of) the recommended improvement strategies.

10.1 Roles and Responsibilities

Responsibility for making physical improvements, as well as for operation and maintenance of the highway, belongs to the jurisdiction that owns the highway and ROW. In more than two-thirds of the corridor – including all of Seal Beach, Huntington Beach, and Laguna Beach, and all of Newport Beach and Newport Coast (except for Corona del Mar) – the State of California owns the highway; therefore Caltrans is the responsible agency in those areas. As noted previously, The City of Newport Beach owns PCH through Corona del Mar. The City of Dana Point owns PCH from the Laguna Beach city limit to Camino Capistrano in San Clemente (Note: The State owns the piece of PCH which is State Route 1 between San Juan Creek and Interstate 5.) The City of San Clemente owns Coast Highway from Camino Capistrano to Avenida Pico.

In the city-owned segments of PCH, the local jurisdiction is responsible for the project development process (including planning, designing, funding, environmental clearance, and construction of improvements) according to their own requirements, design standards, and specifications. They are also responsible for ongoing operations and maintenance, once improvements are in place and complete.

In the state-owned segments, if the local jurisdiction decides to sponsor an improvement project, it is required to enter into a Cooperative (Co-op) Agreement with Caltrans. A Co-op is a legally binding contract that defines the project scope and assigns roles and responsibilities, funding commitments, schedule and other important arrangements. A Co-op should be initiated during the planning phase of project development. Further, any improvements within the State ROW are subject to Caltrans' requirements, design standards, and specifications.

A local jurisdiction may assume responsibility for maintaining an area or a specific element of the Caltrans ROW by entering into a maintenance agreement with Caltrans. An element could include, for example, a segment of roadway, a sidewalk, or a crosswalk. So if a local agency desired to use special materials to construct a busy pedestrian area, a maintenance agreement could be a mechanism for overcoming Caltrans' preference for standard, low-maintenance materials, Maintenance Agreements describe specific locations of work, funding sources, the responsibilities of the entities that will perform specific activities, and the standard of maintenance that is required.

A local agency may also assume full responsibility for the highway by taking ownership of all or a portion of the highway and its ROW through the Caltrans relinquishment process. A relinquishment is a conveyance of all rights, title and interests of a State highway, or portion thereof, to a county or city. The relinquishment of facilities, such as the roadway, sidewalks, or both, allows local agencies to assume the administration, planning, design, construction, maintenance and operation of the facility so they could make improvements to PCH through their own project development processes and applying their local design standards, rather than needing to enter into Co-Op Agreements with Caltrans and implementing improvements through Caltrans' project development process. Relinquishment of a State highway requires approval of the California Transportation Commission; the (CTC) process is summarized as follows, and is described in detail in Chapter 25 of the Caltrans Project Development Manual.

- Caltrans or the local agency requests relinquishment
- Caltrans performs a transportation system analysis to determine if relinquishment is in the best interests of the State
- State legislation is enacted to relinquish the highway
- The local Caltrans district negotiates terms of relinquishment with the local jurisdiction
- Caltrans and the local agency execute the agreement
- Project funding is programmed (if applicable)
- CTC approves relinquishment

Corridor-wide programs, as well as cross-jurisdictional improvements, will require multi-agency cooperative efforts, whether through informal collaboration or through a formal legal mechanism involving multiple cities and/or the state – like a cooperative agreement or (in the case of a major corridor-wide improvement program) formation of a joint powers authority. Because of the connected nature of the corridor and the improved opportunities for funding and implementation of coordinated multi-agency efforts, even when a local agency is going to develop a project within its own boundaries it should proactively consult with its neighboring jurisdictions about the proposed project and whether there are opportunities for collaboration that may yield better funding possibilities and result in greater corridor benefits. As the countywide transportation planning and programming agency, OCTA may be able to support and facilitate these efforts through its ongoing processes including administration of the County's MPAH and Comprehensive Transportation Funding Programs CTFP and its committee structure for technical coordination and oversight.

10.2 Key Issues Affecting Implementation

Throughout the Corridor Study, it became apparent that the following two outstanding issues (which remain unresolved) will likely continue to have significant influence over which recommended improvement strategies are ultimately implemented.

10.2.1 Context-Sensitive Design

One of the key conclusions from this study is that the PCH ROW is highly constrained in many parts of the corridor, and acquisition of additional ROW for major capital improvements would in many cases affect adjacent businesses, homes, or coastal recreation areas. Many of the study's recommended improvements could be implemented with little or no ROW acquisition if exceptions to the Caltrans' full-standard design criteria were accommodated. To achieve this result, the local agencies will need to work with Caltrans through its process to review and approve design exceptions, and Caltrans will need to review and approve design proposals with the objective of achieving an "optimal allocation of space within the street right of way" based on "site specifics, community goals and user needs" as stated in the Caltrans policy document "Main Street, California".

10.2.2 Coastal Access and On-Street Parking

The CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Development activities, which are broadly defined by the Coastal Act to include (among others) construction of buildings, divisions of land, and activities that change the intensity of use of land or public access

to coastal waters, generally require a coastal permit from the CCC (or from the local government under a CCC-certified local coastal program). In past permit actions, the CCC has consistently found that public access includes not only pedestrian access but the ability to drive into the coastal zone from an inland community and park in order to access and view the shoreline. The CCC has historically identified vehicular parking as a public access issue and protected public parking supplies adjacent to beaches and coastal resources, and has required that alternative parking for the public must be provided in order to mitigate the loss of on-street parking spaces (see, for example, City of Long Beach LCP Amendment Request No. 1-13 (LCP-5-LOB-13-0229-1).

A key corridor improvement need is the reduction of potential conflicts when bicycles travel between parked cars and moving vehicles in an immediately-adjacent travel lane. There are a number of areas in the Corridor with on-street parking, and virtually all of these areas have constrained ROW, so widening the road to add a bike lane between the parked cars and the travel lane would involve acquisition of expensive ROW and affect adjacent uses. Removal of on-street parking would be an effective way to substantially reduce conflict potential, but relocation of parking nearby would be very difficult and costly to implement because in almost all cases adjacent areas are either fully developed or they are public beaches; at best, relocation would have to be accomplished over a long period of time by incrementally acquiring nearby properties suitable for off-street parking when they come on the market.

If this issue is only approached from the narrow perspective of needing to relocate on-street parking, the challenge of potential conflicts between bicycles and parked and moving cars will remain in the future. However, if overall access to the coast is considered in terms of accommodating users of all modes, replacement of on-street parking with bike lanes could actually enable more people to use alternate modes for coastal access by removing the deterrent of having to ride in a narrow space between parked cars and moving cars. Replacement of on-street parking with bike lanes can potentially improve the safety and comfort of bicyclists and pedestrians and thereby attract greater numbers of coastal visitors. The coastal cities, Caltrans, and OCTA should work with the CCC to develop an approach to on-street parking removal that results in improved safety for bicyclists and improved overall coastal access for users of all modes.

10.3 Funding

The following matrix (**Table 10.1**) presents funding programs at the Federal, State, and regional/local levels that are potentially eligible to be used for the various project improvements identified through the Corridor study. **Appendix K** provides additional information about these funding sources. In many cases, eligibility requirements for the funding programs can only be met when a given improvement is undertaken as part of a larger project. For example, the construction of new on-street bicycle facilities (such as a Class II bike lane) can only be funded through Measure M2's Regional Capacity Program (Project O) in conjunction with a roadway expansion project that is consistent with Orange County's MPAH.

Other conditions of eligibility are also noted in the matrix. The State Highway Operation and Protection Program (SHOPP) restricts the use of funds to the rehabilitation of existing facilities rather than new or capacity-enhancing facilities. The Recreational Trails Program will only fund off-road recreational trails not located within the public ROW.

Some of the programs are formula-based (i.e. local gas tax subvention and the Measure M2 Fair Share Program), but must vie with other modes for limited dollars and may already be committed to other projects, depending on the programming priorities of local jurisdictions. Other programs are discretionary and require a significant level of effort in the preparation of grant applications (Transportation Investment Generating Economic Recovery [TIGER] Program, Active Transportation Program [ATP]).

In pursuing meaningful improvements to the PCH Corridor, project sponsors are encouraged to take an integrated, holistic approach to defining their project(s), so as to incorporate multiple improvements and qualify for the broadest possible range of funding programs.

Table 10.1: Potential Funding Sources for PCH Improvements

	Eligibility	Project Types							
		Arterials	Bicycle Facilities	Bridges	ITS	Parking Facilities	Pedestrian Facilities	Programs (Safety/ Encouragement)	Transit Capital
Federal									
Recreational Trails Program (RTP)	N, R		X	X		X	X		
TIGER Discretionary Grant	N, R	X	X	X	X		X		X
Highway Safety Improvement Program (HSIP)	N, R	X	X	X			X	X	
State									
Active Transportation Program	N		X	X[1]	X[7]		X	X	
Cap and Trade: Affordable Housing & Sustainable Communities Program	N		X[2]				X[2]	X[2]	X
Cap and Trade: Low Carbon Transit Operations Program	N		X[4]				X[4]	X[5]	X
Regional Improvement Program (STIP)	N		X	X		X[4]	X		
State Highway Operations Protection Program (SHOPP)	R[6]	X		X	X				
Regional & Local									
Bicycle Improvement Program Call for Projects [10]	N		X	X[1]	X[7]		X[8]	X	
CTFP Measure M2 - Local Fair Share Program (Project Q)	N, R	X	X	X		X		X	X
CTFP Measure M2 - Regional Capacity Program (Project O)	N	X	X[3]	X[3]	X		X		
CTFP Measure M2 - Community Based Transit/Circulators (Project V)	N				X[9]	X[9]	X		X
CTFP Measure M2 - Signal Synchronization (Project P)	N, R	X	X	X	X	X	X	X	X
Parking Revenue District	N	X	X	X	X	X	X		X
Development Impact Fees	N, R	X	X	X			X		X
Local Gas Tax Subvention	N	X	X	X	X	X	X		X
Enhanced Infrastructure Financing District	N		X	X[2]	X[7]		X[8]	X	
City General or Other Discretionary Funds	N. R	X	X	X	X	X	X	X	X

N=new facilities R=reconstruction of existing facilities

CTFP Comprehensive Transportation Funding Program administered by OCTA
[1] expansion or reconstruction of existing bridge to accommodate *new* cyclist and/or pedestrian use allowable
[2] typically funded in conjunction with new or rehabilitated affordable housing served by the infrastructure improvements
[3] only if undertaken as part of a capacity-enhancing roadway project (see CTFP Guidelines, 7-6 Ineligible Expenditures)
[4] only if undertaken as part of a transit station access project or program proven to reduce VMT/GHG emissions
[5] supports free or reduced fare programs for transit service
[6] non-capacity enhancing projects only
[7] for bicycle detection only
[8] only if included as a multimodal element in a bicycle mobility project
[9] only if undertaken as part of a transit capital improvement project
[10] federally funded by the CMAQ program

Source: HDR

Please note that this list is not exhaustive and each funding source has its own unique set of requirements and/or approvals in order for projects to qualify and potentially compete for funding. Furthermore, final FAST Act distributions have yet to be determined.

10.4 Next Steps

Next steps in the PCH corridor improvement process will involve further development of individual projects and/or project components identified in the recommended alternatives matrix **Table 9.1.** In general project specific next steps would proceed along a path similar to the bulleted list below.

- Completion of more detailed feasibility studies (further planning/preliminary engineering);
- Completion of a Project Initiation Document (PID) or PID equivalent (further detailed engineering);
- Completion of an environmental evaluation. Requirements could potentially be based upon the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), or both, depending upon the type of funding source being applied for. It is during this process where project alternative would be selected and approved by the implementing agency (assessment of project alternatives and selection a preferred alternative);
- Plans, Permits, Specifications and Right of Way (final design and ROW acquisition);
- Prepare and advertise project (Initiate contractor selection); and
- Initiate construction (break ground).

Ultimately, the next steps identified above will depend on the nature and status of each individual project, and the specific project development processes the project will need to follow (i.e. local, Caltrans, CCC, or funding agency requirements). Although it was outside the scope of this study, the planning and development of PCH multi-modal transportation improvements should include consideration of Caltrans' Climate Change policies including future Sea Level Rising (SLR) guidelines that might be adopted for this coastal area.

This study's recommendations should be incorporated into State, Regional and Local transportation planning programs to ensure that they are part of a continuing planning process for implementation along with future development. These plans could include Caltrans' District Transportation Concept Report (DTCR), SCAG's Regional Transportation Plan (RTP), Orange County MPAH, and City General Plans. The benefits of identifying projects in adopted planning programs include:

- A common vision for the future of the route.
- Identifying, prioritizing, and addressing the greatest needs within the route.
- Protecting infrastructure.
- Logical sequencing of projects.
- Efficient use of available funding.

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