Ocean Boulevard Traffic Study
37th Place to 54th Place

City of Long Beach
Department of Public Works
Traffic Engineering Division

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Ocean Boulevard Traffic Study – From 37th Place to 54th Place

Introduction

Long Beach is known for many things, the most obvious being its beach. Long Beach's coastal regions are its greatest assets. The beach has attracted millions of visitors and residents to the city via trains, boats, and cars. To encourage the enjoyment of the coast, Ocean Boulevard was constructed to transport people along Long Beach's shoreline. The method in which Long Beach's visitors and residents travel to Belmont Shore has changed over time and Ocean Boulevard has also changed to meet those needs. The time for another change on Ocean Boulevard has come, as the City's Mobility Element identified in 2013 that Ocean Boulevard in Belmont Shore has an opportunity for a character change. This traffic study will identify the reasons for that character change and the type of change appropriate for the boulevard.

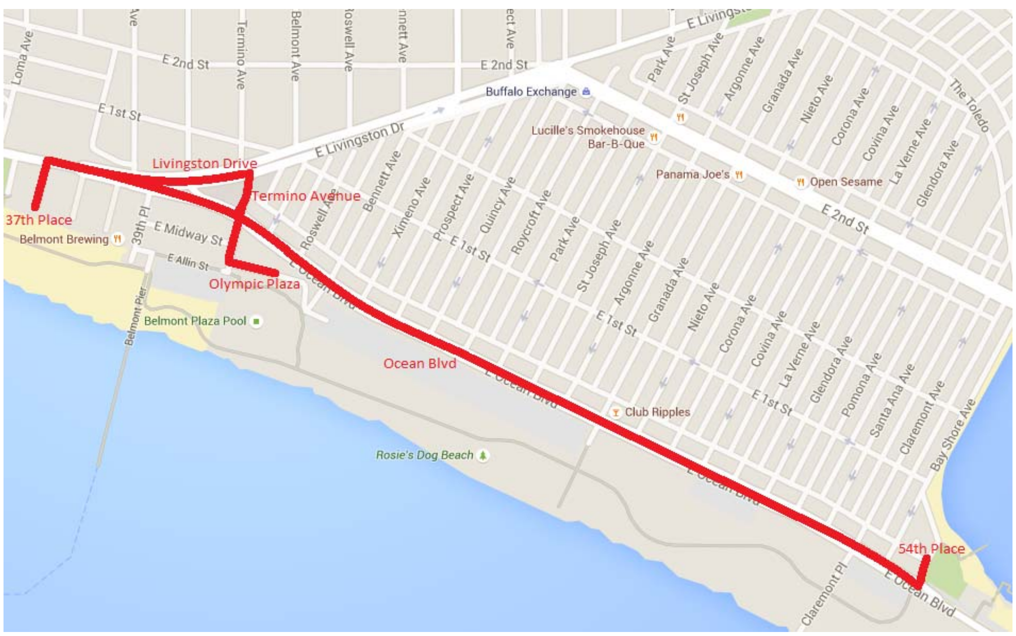


Figure 1. Study Area

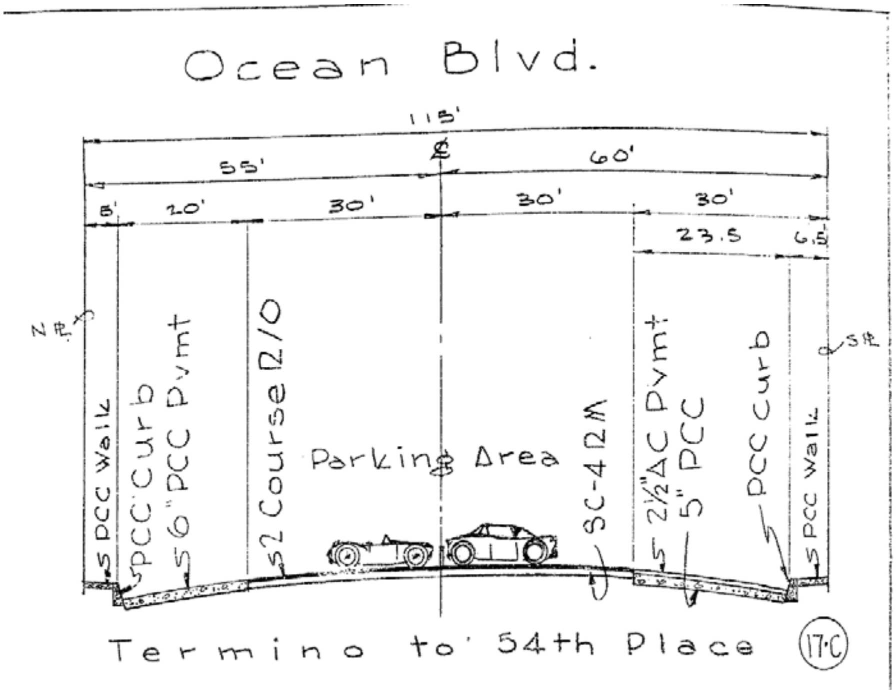
SECTION I. HISTORIC CONTEXT

Ocean Boulevard was originally designed as Long Beach's main coastal thoroughfare. In the early 20th century in Belmont Shore, Ocean Boulevard was a multimodal corridor with right-of-way designated for the Pacific Electric railroad in the center, a vehicle lane on either side of the tracks, and sidewalks. Traffic between Long Beach and Orange County could cross the Ocean Boulevard bridge over the San Gabriel River from Seal Beach and travel along the coast. With increased development in Alamitos Bay in the 1930s and 1940s, other roadways were created to facilitate inter-county travel. In the mid-20th century, the Ocean Boulevard bridge to Seal Beach was demolished, leaving Livingston Drive and 2nd Street (Westminster Blvd) as the major arterials in Belmont Shore.

Alamitos Bay, 1941. Bridges are shown connecting Long Beach to Orange County via Ocean Boulevard, Marina Drive, and Appian Way.

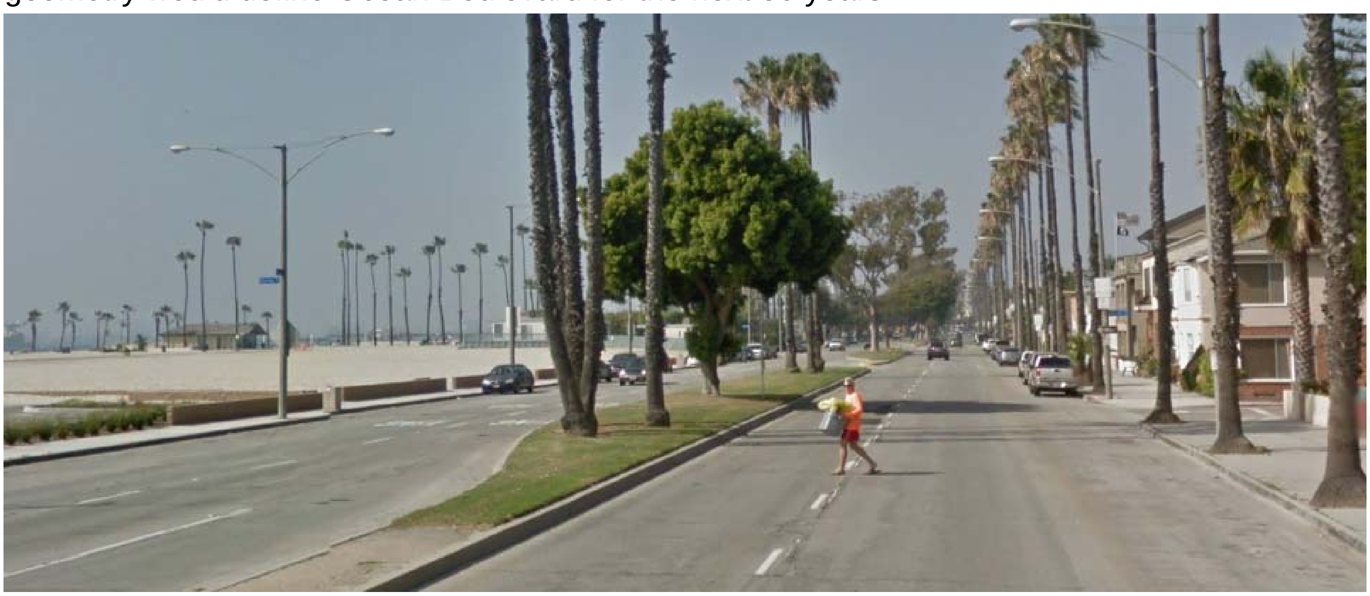
Belmont Shore, 1945. Aerial photograph shows Ocean Boulevard with old Pacific Electric right of way in the center and two separated one-way roadways.

Alamitos Bay, 1956. Aerial photography shows the construction of the Davies Bridge (2nd Street) and access to Seal Beach via Marina Drive. The Ocean Boulevard Bridge has been demolished.



Construction Drawing, 1950s. Pacific Electric Right-of-Way is vacated and converted to parking.

The Pacific Electric right-of-way was turned over to the City of Long Beach, and that extra thirty-six feet of roadway was converted to parking spaces. During this time, Ocean Boulevard was dedicating nearly all of its space to the motor vehicle. Later, the construction of the Belmont Pier parking lot and additional lots at La Verne Avenue and Claremont Avenue lessened the demand for parking spaces within Ocean Boulevard's right-of-way. By the end of the 1960s, the parking in the center of the road was removed and the space was used to construct median islands and a second travel lane in each direction, facilitating higher vehicle speeds. This geometry would define Ocean Boulevard for the next 50 years.



Ocean Boulevard, 2015. The wide roadway creates long crossing distances for pedestrians attempting to access the beach. By 2016, bike lanes were added adjacent to the outside lanes.

SECTION II. TRAFFIC ANALYSIS

A. Roadway Characteristics

Ocean Boulevard is a four-lane roadway with parallel parking. The posted speed limit is 30 miles per hour. Intersecting streets are typically one-way roads, with the exceptions of Granada Avenue and 54th Place. Both Granada Avenue and 54th Place are controlled by four-way stop signs. All of the southbound one-way streets are stop-controlled at Ocean Boulevard. A three-way stop exists at Bennett Avenue, where the Belmont Plaza Pool parking lot is located. At the northwestern end of the study area, Ocean Boulevard angles away from Livingston Drive at 39th Place, forming a triangular road network with Termino Avenue near the Belmont Veterans Memorial Pier. The intersections with Termino Avenue and Livingston Drive are signalized.

The roadway is 110 feet wide, including a five foot sidewalk to the south and a fifteen foot sidewalk to the north. The central median islands are eighteen feet wide. In each direction, eight feet is provided for a parking lane, six feet for a bike lane, and two travel lanes of eleven feet.

To the north, adjacent land uses are single-family and multi-family homes in Belmont Shore. Residential density in Belmont Shore has not significantly increased since the community was built out in the 1950s. However, the likelihood of a household owning multiple cars has increased, resulting in demand for on-street parking which is over the streets' capacity. To the south, there are three parking lots which serve the beach. Trip generators on the beach in addition to the sand and surf include volleyball courts, periodic special events, a jogging and cycling path, a windsurfing/kiteboarding facility, and public pool. At the end of the study area, Ocean Boulevard also serves as the only access point for the Peninsula community to the southeast.

During spring break and the summer months, coastal trips increase and the number of vehicles on the roadway increase. Bayshore Avenue, an intersecting two-way street, is closed from 9am to 5pm during the week of Easter and the duration of the summer, from June 15th to September 15th annually. This closure causes changes in traffic circulation on Ocean Boulevard, including increased u-turns at Pomona Avenue.

B. Traffic Volumes

In order to capture typical traffic volumes for this study, counting devices were placed on Ocean Boulevard. Counts were collected for a 24-hour period on a Thursday to analyze weekday commutes. Data were also collected during a 24-hour period on a Sunday to capture recreational trips in the oceanfront area. To account for variances in traffic patterns during the Bayshore Avenue closure, traffic counts were conducted in two periods. The first period occurred in early June on a Thursday and Sunday in order to collect volumes in the normalized roadway network. The second period occurred in late July on a Thursday and Sunday in order to collect volumes while the Bayshore Avenue closure was in effect.

The data show that Ocean Boulevard experiences traffic similar to a neighborhood connector. Residents leave their homes in Belmont Shore and travel primarily northwest on Ocean Boulevard toward downtown Long Beach. The traffic volume on Ocean Boulevard increases steadily from the southeast to the northwest. The daily traffic measured at the east end of the study area was the lowest – 6,500 vehicles per day at 54th Place. The daily traffic measured at the west end was the highest – 15,000 vehicles per day at Termino Avenue.

C. Collision History

Collision statistics were gathered for the study area over a ten-year period. With that information, a map was produced using a list of reported collisions from the year 2004 to 2013 on Ocean Boulevard between 37th Place and 54th Place. Each pin represented a reported collision. **Figure 2** shows the finished map of the study area.

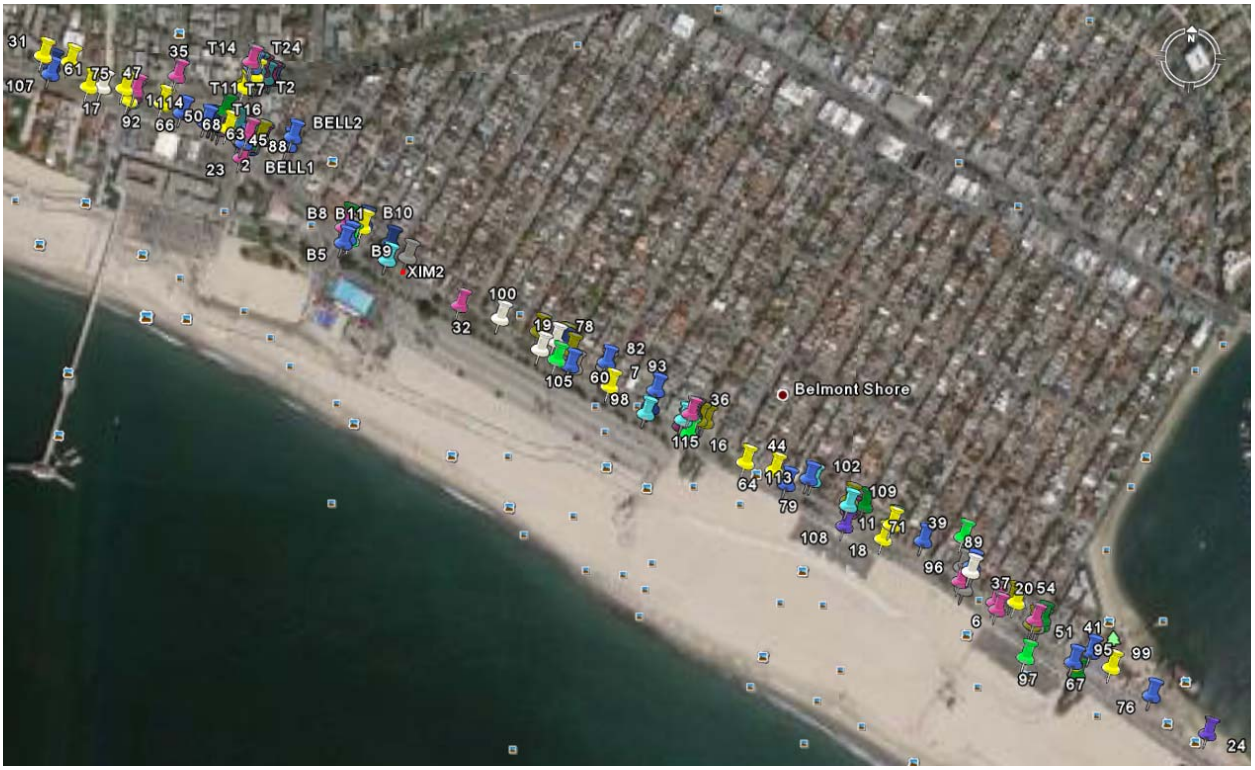


FIGURE 2. MAP OF OCEAN BLVD WITH PINS
(FROM EUCLID AVE TO 54TH STREET)

There were 136 collisions along Ocean Boulevard and 25 collisions one intersection north of Termino Avenue and Ocean Boulevard (at the intersection of Termino Avenue and Livingston Drive). The pins were color coordinated (corresponding to **Table 1** below). Of these collisions, there were 42 reported injuries and 1 casualty.

Total Collisions in Study Area	
Collision Type	**Number of Collisions**
Broadside	45
Rear-End	38
Sideswipe	35
Fixed Object	15
Pedestrian-Involved	9
Head-On	2
Other	17

Table 1. Number and Type of Collisions in Study Area

The three most common collision types in the study area are broadside, rear-end, and sideswipe collisions. The relatively frequent reports of rear-end and sideswipe collisions highlight the parking issues along Ocean Boulevard. Three out of every four reported collisions did not involve an injury, meaning the vast majority of the reports involve property damage only. This can be attributed to motorists struggling to park their vehicles into tight spaces and causing minor damage to adjacent vehicles – dinging bumpers, clipping mirrors. To prevent these property-damage collisions, changes to Ocean Boulevard which increase the availability of on-street parking should be favored.

The most frequent type of collision in the corridor is the broadside collision. Most of the broadside collisions occurred at intersections which currently are controlled by either a signal or a 4-way stop condition. These may be caused by vehicles rolling through the stop sign because they are used to passing the intersection without encountering cross traffic. Analysis of these intersections shows that volumes along Ocean Boulevard are significantly higher than the volumes of the cross traffic at Bennett Avenue and Granada Avenue. To prevent future broadside collisions, the intersections of Bennett Avenue and Granada Avenue could be modified to roundabouts. Roundabouts would have the added benefit of increasing the capacity of the intersection over the existing capacity limited by stop controls.

All but one of the pedestrian-involved collisions occurred at intersections with marked crosswalks. This may be due to multiple factors. Pedestrians may be emboldened by the marked crosswalk and enter the roadway under conditions that may normally cause them to remain out of the lane. Vehicles in the inner lane may not be able to see the pedestrian when another vehicle is in the outer lane and continue through the intersection. Drivers may also be inattentive while driving on an empty street where they are used to rare occurrences of cross traffic. In the final two cases, the width of the roadway leads to difficult pedestrian crossings. To prevent pedestrian collisions at intersections, improvements to Ocean Boulevard that shorten pedestrian crossing distances are recommended.

D. Synchro Analysis

The Synchro program was used to create computer models of Ocean Boulevard and calculate the Intersection Capacity Utilization (ICU) percentage and diagnose the Level of Service (LOS) at intersections in the study area that have four legs. These models projected the periods of highest traffic demand at the intersections. The results of the simulations showed that the existing roadway operates at LOS A along the entire corridor. This level of service is evidence that the roadway is over-engineered for the existing traffic demand. Roadways of a LOS A condition frequently exhibit symptoms of speeding and uncomfortable pedestrian environments.

Intersection	Two Vehicle Lanes (Existing)			
	AM Peak		PM Peak	
	ICU LOS	% Utilized	ICU LOS	% Utilized
Termino	A	34.8	A	41.8
Bennett	A	38.6	A	43.6
Granada	A	38.8	A	39.6
LaVerne	A	32.6	A	36.9
Claremont	A	34.8	A	34
54th	A	40.7	A	38.3

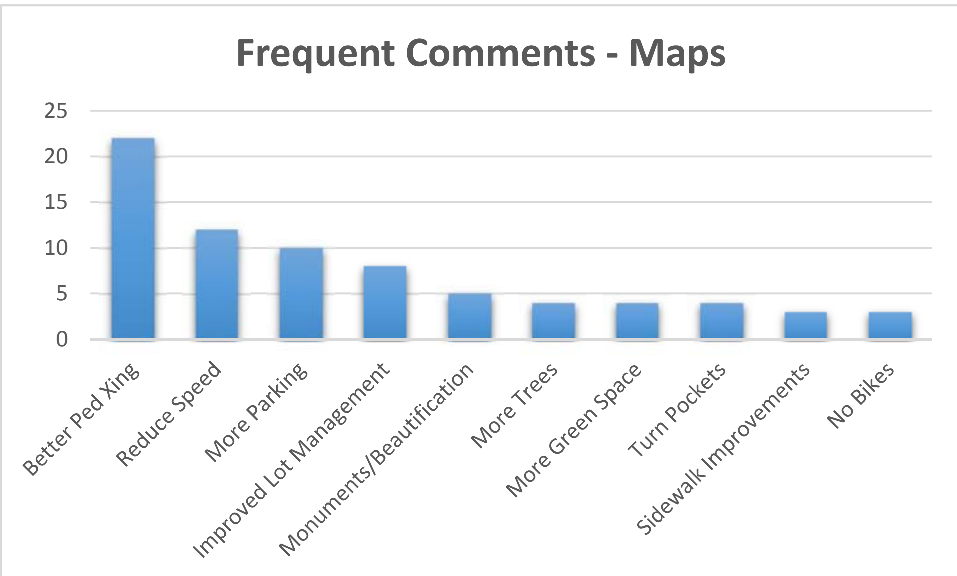
To determine the feasibility of achieving the desired LOS of C for this segment of Ocean Boulevard, Synchro models were conducted for the corridor under the proposed condition of one vehicle lane in each direction. The table below shows that even after removing a vehicle lane, half of the intersections still operate at LOS A.

Intersection	One Vehicle Lane (Proposed)			
	AM Peak		PM Peak	
	ICU LOS	% Utilized	ICU LOS	% Utilized
Termino	A	45.5	B	57.2
Bennett	A	52.7	C	66.4
Granada	A	49.8	B	58.7
LaVerne	A	40.7	A	53.9
Claremont	A	42	A	54.4
54th	A	50	A	52.3

SECTION III: COMMUNITY OUTREACH

An estimated 50 attendees were present at the Ocean Boulevard Traffic Study Workshop, held at the 3rd District Field Office on Saturday, August 29th. Attendees were primarily residents of Belmont Shore and the Peninsula. The 3rd District Field Deputy were in attendance, as well as the Assistant City Engineer, a Traffic Engineering Associate, and Transportation Programs Intern on behalf of the Public Works Department.

A presentation with details on the study's purpose and scope was given, and after a brief question and answer period, the large audience was encouraged to break into smaller groups. The smaller, informal groups were asked to provide comments on maps of the project area. Easels with potential roadway concepts were also provided, and participants could also leave notes on those easels.



Participant comments agreed that the lane reduction makes sense, will slow down traffic, and improve safety. No outright objections to a lane reduction were received during the workshop, but there were some comments in favor of the reduction that urged continued emergency access and safe evacuation routes. A lane reduction would allow future projects to address nearly all of the topics listed in the bar chart above.

More contentious than the lane reduction was the topic of angled parking. Many residents commented that more parking is badly needed in the study area. Suggestions ranged from diagonal parking to opening the public lots for overnight residential parking. There were multiple concerned comments that felt angled parking would be unsafe and unpopular, as that condition had previously existed on Ocean Boulevard but had been removed.

The workshop took place soon after a major event on the beach, which had filled the parking lots and significantly impacted traffic on Ocean Boulevard. Many residents commented that future events should be required to post a policeman at Granada Avenue to facilitate entry and exit for the parking lot and to meter pedestrian crossings at the intersection.

Proposed Design Concepts	
Qualities that Generated Positive Comments	Qualities that Generated Negative Comments
Visibility around parked vehicles	Increased likelihood of Jaywalking
Median with Path	Backing into Traffic
Art	Reduction of Parking
Shorter Pedestrian Crossings	

On the easel boards presented to the attendees, design concepts from existing roads had varying types of qualities. There was some overlap in qualities - a few concepts had medians with winding pedestrian paths and benches, others incorporated angled parking, and multiple concepts shifted vehicles away from driveways and sidewalks. The comments for each concept were reviewed, and responses were broken down by the qualities that were addressed in each comment. The table above shows which qualities generated the most positive comments and which generated the most negative comments.

Overall, the residents in attendance appeared to be comfortable with a road diet on the boulevard; how the road diet is implemented will require additional outreach. Concepts that employ the favorable qualities of shorter pedestrian crossings, a pedestrian area, and clear lines of sight will be emphasized.

Additional input was also received from businesses along the corridor. Common themes in their comments were the scarcity of parking and a lack of pedestrian amenities like green space and street furniture.

SECTION IV: OPPORTUNITIES FOR CHANGE

After conducting the quantitative analysis of traffic modeling and accomplishing qualitative outreach with the community, it is clear that Ocean Boulevard is currently overly accommodating to motor vehicle traffic. The roadway has dedicated an excessive amount of right-of-way to the movement of cars. A cross section similar to the construction drawing on page five would sufficiently meet current traffic demands. The city is in the same position it faced over fifty years ago – What shall be done with excess right-of-way where the Pacific Electric Railway tracks once ran down Ocean Boulevard? The removal of one vehicle lane would result in desirable traffic movement, the next step is the determination of how to use that extra space. Improvements to Ocean Boulevard should utilize the central thirty feet of the roadway to accomplish one, or all of the following:

- Shorten pedestrian crossing distances
- Increase available on-street parking
- Introduce roundabouts to Bennett Avenue and Granada Avenue intersections

While the recent addition of bike lanes have started to diversify the transportation modes assigned to Ocean Boulevard, the street is currently dedicating a disproportionate amount of its right-of-way to the motor vehicle. Future improvements to the street should focus on improving beach access to all visitors and residents of Long Beach by accommodating vehicle parking, providing bicycle infrastructure, and improving the pedestrian environment.

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