



## STAFF REPORT

**Meeting Date:** March 1, 2016  
**To:** Honorable Mayor & City Council  
**From:** Aaron Kunz, Deputy Director of Transportation  
**Subject:** Olympic/Beverly/Beverwil Intersection  
**Attachment:** 1. Fehr & Peers Olympic Boulevard/Beverly Drive/Beverwil Drive Intersection Study Project Update

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### **INTRODUCTION**

Fehr & Peers, the City's on-call traffic engineering firm, has provided the attached *Olympic Boulevard/Beverly Drive/Beverwil Drive Intersection Study Project Update*. This report outlines staff's recommendations for next steps related to improvements for this intersection based on feedback provided through public outreach conducted by the Traffic & Parking Commission, City Council/Traffic & Parking Commission Liaison Committee review and subsequent analysis conducted by Fehr & Peers.

The Olympic Boulevard/Beverly Drive/Beverwil Drive intersection carries about 74,000 vehicles per day. With Beverly Drive splitting into two streets (Beverly Drive and Beverwil Drive) just north of Olympic Boulevard, two streets cross Olympic Boulevard very close to each other, resulting in a relatively complex intersection configuration.

Based on review of accident data, the average collision rate is equal to the state-wide average for comparable intersections. No geometric and signal timing deficiency of the intersection was the cause for any of the collisions. The design of the intersection continues to appear reasonable and consistent with best engineering practices.

In response to concerns regarding the Olympic Boulevard/Beverly Drive/Beverwil Drive intersection, the City has replaced and added signage, restriped the intersection, and modified the intersection signal timing. The City Council has approved red light photo enforcement cameras at the eastbound and westbound approaches of the Beverly Drive intersection as part of the Police Department's agreement with Xerox Corporation. These cameras are scheduled for installation on the east and westbound approaches on March 21, 2016.

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For potential long term solutions to the intersection, staff commissioned *Fehr & Peers* to prepare an assessment of improvement options. A project to redesign and simplify the Olympic Boulevard/Beverly Drive/Beverwil Drive intersection is planned for FY 2017-2018 in the *FY 2015-16 5-year Capital Improvement Program*.

## **DISCUSSION**

At the October 20, 2015 City Council Study Session, a presentation by staff and Fehr & Peers included four scenarios to improve the intersection as outlined below:

- Scenario A: Eliminate left-turn movement from northbound Beverly Drive to westbound Olympic Boulevard.
- Scenario B: Prohibit left-turn movement from westbound Olympic Boulevard to southbound Beverwil Drive.
- Scenario C: Upgrade traffic signal controllers along Olympic Boulevard and implement additional left-turn phases (e.g., arrows).
- Scenario D: Implement scenarios A, B, and C and close northbound Beverwil Drive through movements. This includes median reconstruction and removal of the traffic signal at Beverly Drive and Beverwil Drive.

Previous studies/evaluations of the intersection dating back to the 1980s raised the possibility of Scenario D to improve the overall operations of the intersection. The City has not pursued this option due to concerns of spillover traffic into residential neighborhoods and/or concerns of changes in travel patterns by businesses on South Beverly Drive. Similarly, the City has not pursued additional left-turn phases due to concerns of increased vehicular delays in the intersection.

At the October 20, 2015 meeting, staff recommended implementing Scenarios A and B as a pilot project. The City Council asked for additional analysis of a “modified” Scenario D, where a protected left-turn would be placed from northbound Beverly Drive to westbound Olympic Boulevard rather than eliminating this movement altogether as provided under Scenario D. The City Council referred the item to the Traffic & Parking Commission to conduct public outreach on the suggested modifications.

The Traffic & Parking Commission held a special evening meeting on November 16, 2015. Staff and Fehr & Peers presented all four scenarios presented to City Council plus the modified Scenario D. Of the eleven speakers at the meeting, all opposed the scenarios that eliminated turn movements due to concerns of additional traffic in residential areas. Particular concern was raised with respect to the Scenario D alternatives. The only option the speakers were amenable to was Scenario C. The Traffic & Parking Commission synthesized public comment, but did not make a recommendation. They did, however, ask staff to consider a modified Scenario C, which would add a left turn phase for northbound Beverly Drive to westbound Olympic Boulevard to Scenario C. The video of this meeting is at: [www.beverlyhills.org/obb](http://www.beverlyhills.org/obb)

At the December 15, 2015 the City Council/Traffic & Parking Commission Liaison Committee (Mayor Gold, Councilmember Brien, Vice Chair Manaster and Commissioner Licht) discussed the outcome of the November 16 meeting, and concurred that Scenario D was not feasible. Staff also communicated the finding that the modified Scenario C developed during the Traffic & Parking Commission meeting would not be feasible given

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the excessive delay that would result with multiple protected turn phases in place. They asked staff and Fehr & Peers to return to City Council with a recommendation, including possible tests of Scenarios A & B and further analysis of a modified Scenario C, which includes only a left turn phase for northbound Beverly Drive to westbound Olympic Boulevard instead of left turn phases on Olympic Boulevard.

The Fehr & Peers report provides an analysis, including pros and cons of each scenario. Based on the additional analysis and public input received, staff recommends implementation of Scenarios B and C-Modified.

The primary benefit of Scenario B is that it improves overall operations on Olympic Boulevard, and reduces congestion within the short space on Olympic Boulevard between Beverwil Drive and Beverly Drive, thereby reducing the likelihood of vehicles stacking and spilling into Olympic Boulevard/Beverly Drive. Residents of Beverwil Drive and customers of the Union 76 gas station (approximately 2.5 vehicles per hour during peak under existing conditions) traveling westbound on Olympic Drive would need to seek alternative routes.

The primary benefit of Scenario C-Modified is to reduce the collision frequency for the northbound left-turn movement from Beverly Drive onto Olympic Boulevard by providing a protected left turn phase. The inclusion of a new protected turn phase would result in an increase in overall intersection delay, as the available green time would be shifted away from other approaches. While the analysis did not assume any traffic shifts associated with Scenario C-Modified, the added delay could result in some motorists seeking an alternate route.

Scenario C-Modified would require upgrading the existing traffic signal controllers at the Beverly Drive intersection at an estimated construction cost of \$50,000. As the traffic signal controllers on Olympic Boulevard are approximately 25 years old and scheduled for replacement, staff would recommend upgrading the controllers at all Olympic Boulevard intersections at a total estimated construction cost of \$120,000.

**FISCAL IMPACT**

Funding is available in the FY 2015-16 Capital Improvement Budget (CIP) # 367, *Install Traffic Signals and Intersection Improvements*. Estimated construction of Scenario B is \$10,000. Estimated design and development of signal timing plans for Scenario C-Modified is approximately \$45,000. Construction cost of Scenario C-Modified is between \$50,000 and \$120,000.

**RECOMMENDATION**

Staff recommends proceeding with Scenarios B and C-Modified

*ak for* Susan Healy Keene  
Community Development Director  
\_\_\_\_\_  
Approved By

# **Attachment 1**



## MEMORANDUM

Date: February 25, 2016

To: Aaron Kunz, City of Beverly Hills

From: Jaimee Bourgeois

**Subject: *Olympic Boulevard / Beverly Drive / Beverwil Drive Intersection Study Project Update***

*Ref: LA15-2772*

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### BACKGROUND

The intersection of Olympic Boulevard/Beverly Drive/Beverwil Drive presents several complexities due to its geometric layout and its accommodation of a large volume of traffic (74,000 vehicles per day). A review of collision records revealed an average collision rate equal to the state-wide average for comparable intersections. The portion of the intersection that experienced the majority of collisions during the study period was the connection of Olympic Boulevard and Beverly Drive at 66% of the total. The most frequent collision factor was not yielding the proper right-of-way (39% of total), followed by unsafe lane changing (28%). Although the collision rate does not exceed the statewide average, staff has proactively developed some options to simplify the geometrics of the intersection and/or change the signal phasing in an effort to improve overall safety and operations. As you know, some of the low cost solutions have already been implemented, and efforts are underway to install red light violation camera enforcement.

Fehr & Peers presented a range of improvements to the Liaison Committee in December 2014. Staff was directed at that time to conduct detailed analyses for the various options. To better understand existing vehicular traffic patterns and to gain insight into how traffic patterns would likely change under each scenario, "Big Data" analytics were used. Through this process, it was identified that additional intersections, specifically Pico Boulevard / Beverwil Drive and Pico Boulevard / Beverly Drive located within the City of Los Angeles, would likely be affected by the redistribution of traffic and were therefore included in the analyses. Resulting changes to traffic operations, transit service, and pedestrian and bicycle circulation were identified for the improvement scenarios. The findings were presented to the City Council in October 2015, the Traffic and Parking Commission in November 2015, and the Liaison Committee in December 2015. During these meetings, variations of the original options were developed for further consideration. In addition, some options have been eliminated due to infeasibilities associated with implementation.

The purpose of this memorandum is to provide an overview of all remaining options still under consideration.

### OVERVIEW OF OPTIONS

Appendix A contains Fact Sheets for each of the scenarios under consideration. A brief description is provided below.



**Scenario A** - Prohibit the left-turn movement from northbound Beverly Drive to westbound Olympic Boulevard by modifying existing roadway striping and signage.

**Scenario B** - Prohibit the left-turn movement from westbound Olympic Boulevard to southbound Beverwil Drive by modifying existing roadway striping and signage.

**Scenario C** – Upgrade the traffic signal controller to Type 2070 and implement protected left-turn phases for eastbound Olympic Boulevard to northbound Beverwil Drive and westbound Olympic Boulevard to both southbound Beverly Drive and southbound Beverwil Drive.

**Scenario C-Modified** - Upgrade the traffic signal controller to Type 2070 and implement a protected left-turn phase for northbound Beverly Drive to westbound Olympic Boulevard. The phasing changes would also provide for this left-turn movement to immediately receive a green light on westbound Olympic Boulevard through the Beverwil Drive intersection.

**Scenario D** - Implement Scenarios A, B and C, and close the northbound segment of Beverwil Drive between Beverly Drive and Olympic Boulevard.

**Scenario D-Modified** - Implement Scenarios B, C and C-Modified, and close the northbound segment of Beverwil Drive between Beverly Drive and Olympic Boulevard.

## COMPARISON OF OPTIONS

As described on the Fact Sheets, each scenario offers pros and cons with respect to operations and safety. While the primary goal is to improve safety by reducing the number of collisions, consideration must be given as to how the selected improvements will affect operations at the study intersection as well as other nearby intersections, and how the improvements might change travel patterns and result in additional traffic on Beverwil Drive and other residential streets.

To evaluate operational changes, the average intersection delay and corresponding level of service (LOS) was calculated for each scenario and compared to baseline (existing) conditions. Appendix B contains a table summarizing the LOS results.

To comparatively visualize the differences between the scenarios, Table 1 contains an evaluation of each of the scenarios against the following metrics:

### Opportunity to Reduce Collisions

- - Potential to eliminate 25% or more of intersection collisions
- ◐ - Potential to eliminate 10% or more of intersection collisions
- - Potential to eliminate less than 10% of intersection collisions

### Operational Improvements at Olympic/Beverly/Beverwil (OBB)

- - Improves LOS grade compared to baseline conditions
- ◐ - Does not change LOS grade compared to baseline conditions
- - Degrades LOS compared to baseline conditions



Operational Improvements at Adjacent Intersections (specifically, Pico Boulevard)

- - Improves LOS grade compared to baseline conditions
- - Does not change LOS grade compared to baseline conditions
- - Degrades LOS compared to baseline conditions

Minimized Neighborhood Intrusion

- - Results in less than 1,000 vehicles per day shifted to other routes
- - Results in 1,000-5,000 vehicles per day shifted to other routes
- - Results in more than 5,000 vehicles per day shifted to other routes

Option for Trial Period

- - Improvements can be temporarily tested and removed for less than \$50,000
- - Improvements can be temporarily tested and removed for less than \$100,000
- - Improvements cannot be temporarily tested and/or removed for less than \$100,000

Cost

- - Total construction cost is less than or equal to \$25,000
- - Total construction cost is less than or equal to \$100,000
- - Total construction cost is more than \$100,000

**NEXT STEPS**

Given the concerns communicated by the public about vehicle rerouting onto neighborhood streets, staff is not recommending Scenarios D or D-Modified at this time, as traffic rerouting would be substantial. Furthermore, Scenario C would result in level of service degradation at Olympic Boulevard/ Beverwil Drive and the added delay through the corridor could also result in vehicles choosing alternate routes. Scenario A would also have some traffic rerouting due to the northbound left-turn lane closure. As such, staff is recommending implementation of Scenarios B and C-Modified. By implementing these two scenarios, there is potential to address 20% of the intersection collisions with minimal traffic rerouting to alternate streets. By removing the left-turn lane on westbound Olympic Boulevard, demand for the limited space between the two intersections would be reduced, and this removal would also open up opportunity in the future to utilize this space for an eastbound left-turn pocket onto Beverly Drive.

Prior to implementation of any of the improvement scenarios contained in this report, environmental clearance is required, which includes the preparation of an appropriate environmental document that identifies environmental exemptions or impacts, if any, as required by the California Environmental Quality Act (CEQA). It is anticipated that a categorical exemption can be applied for the recommended Scenarios B and C-Modified, thereby resulting in a short timeframe (less than 3 months) for preparation of the required environmental document. This timeframe could be extended by as much as 9 months if the City proceeds with a different scenario(s). Following completion of the environmental document, the project would be scheduled for implementation as part of the City's Capital Improvement Program. Design and



development of corridor signal timing plans is expected to take 6 months, followed by bidding and construction over a 6 month period.



**TABLE 1**  
**COMPARISON OF OPTIONS**

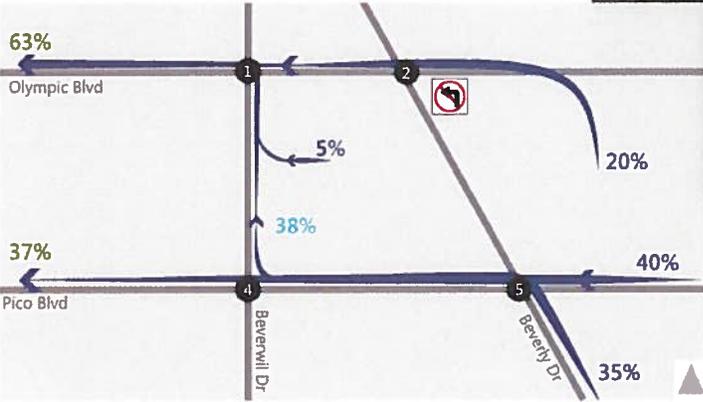
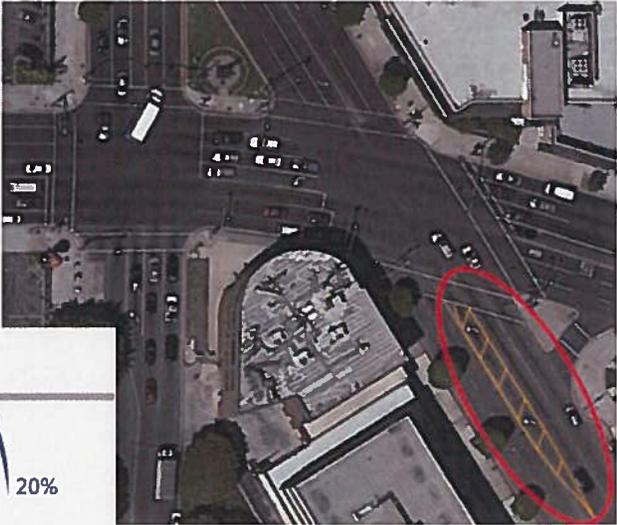
Scenario	Brief Description	Opportunity to Reduce Collisions	Operational Improvements at OBB	Operational Improvements at Adjacent Intersections	Minimized Neighborhood Intrusion	Option for Trial Period	Cost
A	No left turn from NB Beverly to WB Olympic	●	●	○	●	●	●
B	No left turn from WB Olympic to SB Beverwil	○	●	○	●	●	●
C	Upgrade controller; protected lefts on Olympic	●	○	●	●	○	●
C-Mod	Upgrade controller; protected left from NB Beverly to WB Olympic	●	●	●	●	●	●
D	A + B + C + closure of NB Beverwil north of Olympic	●	●	○	○	○	○
D-Mod	B + C + C-Mod + closure of NB Beverwil north of Olympic	●	●	○	○	○	○

Source: Fehr & Peers, 2016.

**APPENDIX A**  
**SCENARIO FACT SHEETS**

# Scenario A

Prohibit the left-turn movement from northbound Beverly Drive to westbound Olympic Boulevard by modifying existing roadway striping and signage. Approximately 1,500 vehicles per day (133 during the morning peak hour and 120 during the evening peak hour) would be shifted to another route.



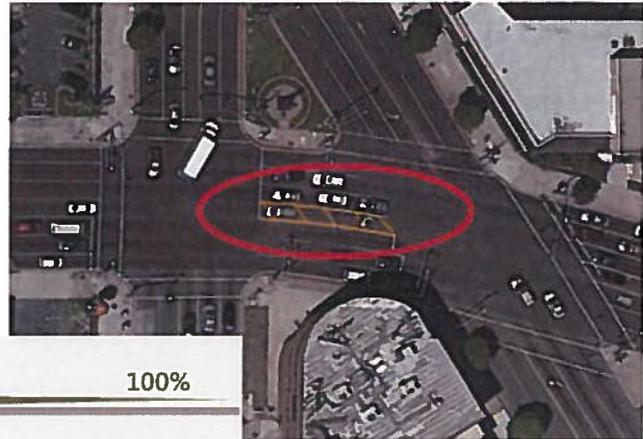
## Highlights

- Reduces the total number of collisions; eliminates an unprotected turn movement that is involved in approximately 15% of the collisions
- Improved operational performance at the Olympic Boulevard / Beverly Drive / Beverwil Drive intersection with some increase in delay at the Pico Boulevard intersections.
- Vehicles less likely to block the Olympic Boulevard / Beverly Drive intersection.
- Some motorists may choose to use Pico Boulevard instead of Olympic Boulevard thus reducing traffic levels on Beverly Hills streets.
- While this scenario would result in additional traffic on Beverwil Drive initially, volumes could be reduced if combined with Scenarios D or E (presented below).
- To accommodate a shift in traffic to northbound Beverwil Drive, striping modifications should be implemented to lengthen the left-turn pocket and additional green time should be provided for this movement.
- No changes to the bicycle or pedestrian network.

**Construction Cost:** The construction is estimated to be approximately \$10,000.

# Scenario B

Prohibit the left-turn movement from westbound Olympic Boulevard to southbound Beverwil Drive by modifying existing roadway striping and signage. Approximately 500 vehicles per day would be rerouted (26 during the morning peak hour and 57 during the evening peak hour).



## Highlights

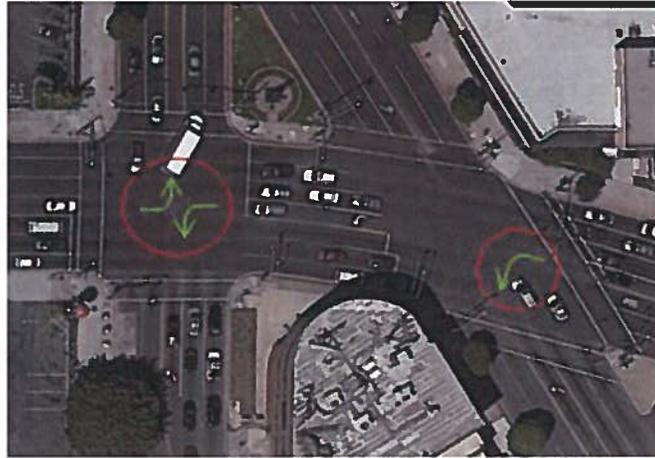
- Reduces the vehicle demand within the short space of Olympic Boulevard between Beverwil Drive and Beverly Drive and reduces the likelihood of vehicles spilling into and blocking the Olympic Boulevard / Beverly Drive intersection.
- Requires that local Beverwil Drive traffic and patrons of the 76 gas station arriving from the east find an alternate route. A traffic count was conducted, and it was identified that currently about 2.5 vehicles per hour during the AM and PM peak periods utilize this left turn to access the gas station. With a proposed conversion of the service area to an expanded market, this could increase to 3.5 vehicles per hour during the peak periods. This represents less than 5% of the total gas station patronage.
- Does not significantly change the delay at the Pico Boulevard intersections and results in slightly decreased delay at the Olympic Boulevard / Beverly Drive / Beverwil Drive intersection since the total volume would be reduced.
- Eliminates the conflict point between unprotected left turning vehicles and a very high volume of oncoming eastbound through traffic, a condition which often results in motorists choosing shorter than desired gaps in oncoming traffic to complete a turn.
- Reduces the volume on Beverwil Drive thus improving the residential character of the roadway.
- No changes to the bicycle, pedestrian or transit networks.

**Construction Cost:** The construction is estimated to be approximately \$10,000.

# Scenario C

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Upgrade the traffic signal controller to Type 2070 and implement protected left-turn phases for eastbound Olympic Boulevard to northbound Beverwil Drive and westbound Olympic Boulevard to southbound Beverly Drive and southbound Beverwil Drive. No vehicles would be rerouted.



## Highlights

- A controller upgrade is needed to implement protected left-turn phasing (i.e., left arrow indications). The same upgrade would be advised for all controllers along the Olympic Boulevard corridor within Beverly Hills because they operate in coordination.
- Reduce the number of collisions associated with right-of-way violations; collisions involving these turn movements account for almost 25% of all collisions at the intersection.
- Results in moderate delay increases at the study intersection due to the inherent inefficiencies associated with protected left-turn phasing.
- While no vehicles were assumed to be rerouted as part of the level of service calculation, the added delay could cause some motorists to choose an alternate route.
- No changes to the bicycle or transit networks.
- All existing crosswalks would remain, but pedestrians would incur delay because they would no longer be able to cross concurrent with the left-turn movement. This would, however, reduce the number of conflict points between vehicles and pedestrians and consequently improve safety for pedestrians.

**Construction Cost:** The construction is estimated to be approximately \$100,000 or \$170,000 if all signal controllers along the Olympic Boulevard corridor are upgraded.

# Scenario C-Modified

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Upgrade the traffic signal controller to Type 2070 and implement a protected left-turn phase for northbound Beverly Drive to westbound Olympic Boulevard. No vehicles would be rerouted.

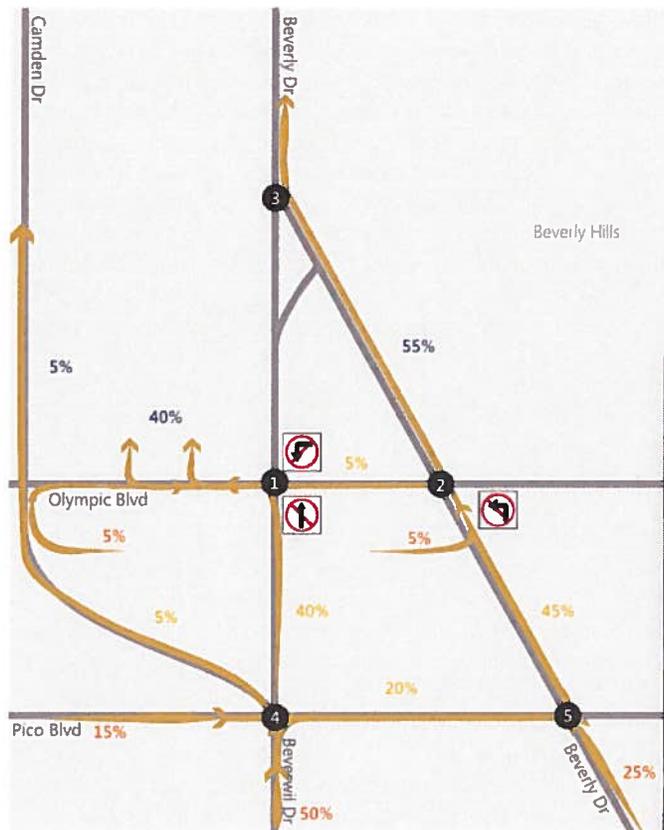


## Highlights

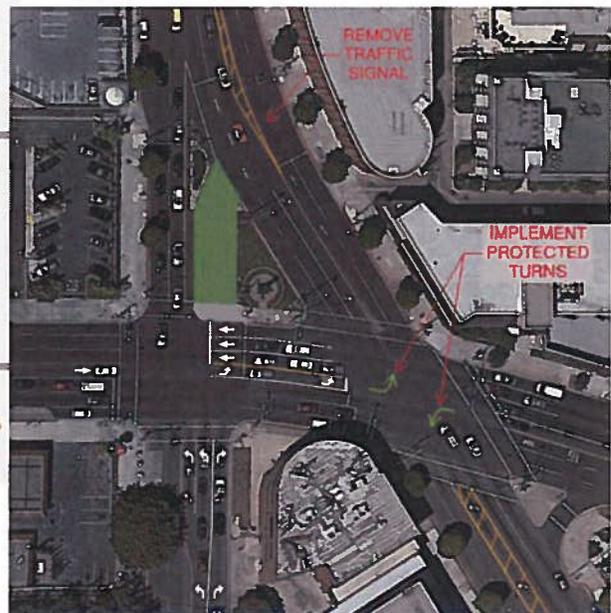
- A controller upgrade is needed to implement protected left-turn phasing (i.e., left arrow indications). The same upgrade would be advised for all controllers along the Olympic Boulevard corridor within Beverly Hills because they operate in coordination.
- Reduce the number of collisions associated with right-of-way violations; collisions involving this turn movement account for 15% of all collisions at the intersection.
- Results in modest delay increases at the study intersection due to the inherent inefficiencies associated with protected left-turn phasing.
- While no vehicles were assumed to be rerouted as part of the level of service calculation, the added delay could cause some motorists to choose an alternate route.
- No changes to the bicycle or transit networks.

**Construction Cost:** The construction is estimated to be approximately \$50,000 or \$120,000 if all signal controllers along the Olympic Boulevard corridor are upgraded.

# Scenario D



Implement Scenarios A, B and C, and close the northbound segment of Beverwil Drive between Beverly Drive and Olympic Boulevard. Approximately 11,000 vehicles per day would be rerouted. Specifically for the northbound Beverwil Drive through movement across Olympic Boulevard, a total of 445 and 239 vehicles would be rerouted during the AM and PM peak hours, respectively.



## Highlights

- This scenario would result in the same changes as stated above under Scenarios A, B and C.
- Motorists seeking to travel north are anticipated to divert to Beverly Drive, Camden Drive, or other smaller residential streets to reach their destinations. Additionally, the eastbound left-turn movement would primarily be shifted from Beverwil Drive to Beverly Drive.
- The northbound through movement on Beverwil Drive across Olympic Boulevard would be converted into a left-turn lane, resulting in two left-turn lanes for vehicles traveling from Beverwil Drive to westbound Olympic Boulevard.
- Traffic signal control could be completely removed at Beverly Drive / Beverwil Drive and the number of turn movements at Olympic Boulevard / Beverwil Drive would be reduced, thereby reducing the complexity and potential number of conflict points at the intersection.
- Results in significant decreases in delay and queuing at the Olympic Boulevard / Beverly Drive / Beverwil Drive intersection but with the implication of increased delay along Pico Boulevard.
- No changes to the bicycle and pedestrian networks under this scenario.

**Construction Cost:** The construction is estimated to be about \$400,000.

# Scenario D-Modified

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Implement Scenarios B, C and C-Modified, and close the northbound segment of Beverwil Drive between Beverly Drive and Olympic Boulevard. Approximately 9,500 vehicles per day would be rerouted.



## Highlights

- This scenario would result in the same changes as under Scenarios B, C and C-Modified.
- Volumes on Beverwil Drive would be further reduced with retention of the northbound left-turn movement on Beverly Drive.
- Overall delay and queuing at the Olympic Boulevard / Beverly Drive / Beverwil Drive intersection would be slightly greater than under Scenario D but still significant reduced compared to existing conditions but with the implication of increased delay along Pico Boulevard.
- No changes to the bicycle and pedestrian networks under this scenario.

**Construction Cost:** The construction is estimated to be about \$440,000.

**APPENDIX B**  
**LEVEL OF SERVICE COMPARISON**

**LEVEL OF SERVICE (LOS) COMPARISON<sup>1,2</sup>**

Intersection	Baseline AM/PM Peak Hour LOS	Proposed Scenario					
		A AM/PM Peak Hour LOS	B AM/PM Peak Hour LOS	C AM/PM Peak Hour LOS	C-Mod AM/PM Peak Hour LOS	D AM/PM Peak Hour LOS	D-Mod AM/PM Peak Hour LOS
Olympic & Beverwil	D/E	D/E	D/E	E/F	D/E	C/C	C/E
Olympic & Beverly	D/C	D/C	D/C	D/C	D/C	C/C	D/C
Beverly & Beverwil	B/B	B/B	B/B	B/B	B/B	N/A <sup>3</sup>	N/A <sup>3</sup>
Pico & Beverwil	C/E	D/F	D/F	C/E	C/E	D/F	C/F
Pico & Beverly	C/D	D/D	C/D	C/D	C/D	E/D	E/C <sup>4</sup>

Notes:

1. Results generated from SimTraffic micro-simulation.
2. Comparison of LOS to baseline (existing) conditions:  
Green = Improvement in LOS  
Black = No LOS Change  
Red = Degradation in LOS
3. N/A = LOS not applicable, since intersection would be removed under this scenario.
4. Although the LOS during the PM peak hour improves from LOS D under baseline conditions to LOS C, the actual improvement in delay is minimal (less than 3 seconds).

Source: Fehr & Peers, 2016