



Information Item

Date: August 14, 2024

To: Mayor and City Council
From: Anuj K. Gupta, Director, Department of Transportation
Subject: Automated Bike Lane Monitoring Pilot Update

Introduction

In an ongoing effort to find ways to improve safety and the overall experience for residents and visitors who use our streets for active zero-emissions mobility, and as part of the staff response to direction provided by the City Council via approval of Agenda Item 16C at its November 13, 2023 meeting,¹ the Santa Monica Department of Transportation (DOT) recently partnered with the City's Police (SMPD) and Information Services (ISD) departments to complete a pilot using new technologies to monitor the City's network of bicycle lanes, identify vehicles illegally parked in those lanes, and provide data on how automated monitoring and enforcement could improve both the safety of bike lanes and the experience for those who use them.

Background

2023: Automated Bus Lane Enforcement Pilot

From May 15, 2023, through June 30, 2023, the DOT conducted a 45-day automated bus lane monitoring pilot by mounting forward-facing AI-supported cameras on two transit buses to gather data on illegal parking in bus-only lanes and bus stop zones as

¹ Request of Councilmember Zwick, Councilmember Torosis, and Mayor Davis to strengthen the City's Vision Zero commitment to eliminate all fatal and severe-injury crashes from Santa Monica's roads in light of the recent tragic fatal crash involving a cyclist on Idaho Avenue. Santa Monica has made great strides in advancing this ambitious goal, yet more work remains to fully realize the initiative. To that end, the City Council directs the City Manager to work with staff to implement the following initiatives to improve roadway safety through what are commonly referred to as the three E's of transportation safety: engineering, enforcement, and education.

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California's AB 917 authorizes public transit operators to install automated forward-facing cameras on transit vehicles to enforce parking violations in bus lanes and designated transit stops. The bus lane/bus stop pilot data found an average of 7.7 violations per bus per day and identified a potential means to improve safety, reliability, and on-time performance on the Big Blue Bus (BBB) system by procuring and implementing this technology.

As a result, DOT staff, in coordination with the Finance, Public Works, Police, City Attorney, and Information Services departments are currently working to procure, and implement automated bus lane enforcement (ABLE) technology and will bring a staff report recommending a contract award to the City Council early this fiscal year with the intention of launching the service before the end of the 2024 calendar year.

2024: Automated Bike Lane Monitoring Pilot

From May 6 through June 19, 2024, staff from DOT's Mobility Division worked with SMPD and outside vendor Hayden AI to conduct a pilot to automatically record parking violations involving bike lanes in the city. As described in the [Information Item](#) published on May 1, 2024, the pilot was intended to test prototype hardware and software per [AB 361](#), which allows local jurisdictions to monitor and enforce bicycle lanes using cameras mounted on parking enforcement vehicles. Two SMPD parking enforcement vehicles were equipped with the camera system.

Discussion

The two vehicles equipped with cameras operated on several streets in and near Downtown Santa Monica and along Ocean Park Boulevard. The cameras recorded 1,679 events during the 6-week pilot with most of the violations found along north-south oriented streets in Downtown Santa Monica. The violations were logged using pre-set business rules following the same criteria used by Parking Enforcement Officers to identify parking violations in the street. A heat map showing where most of the violations occurred is shown in Figure 1.

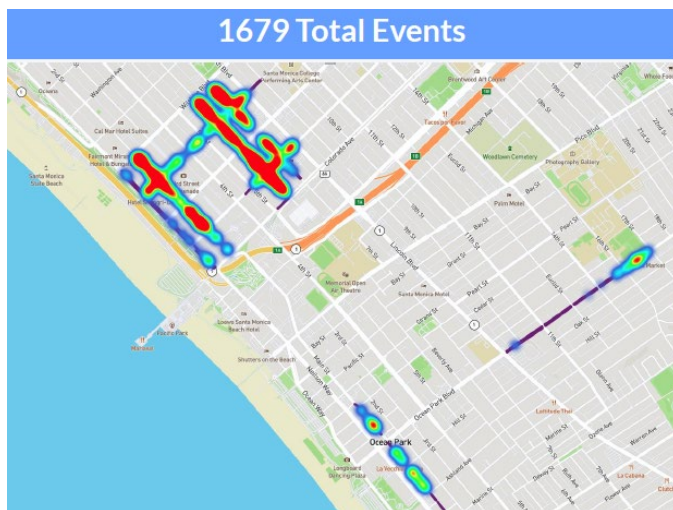


Figure 1 - Heat map showing frequency of bike lane violations

After reviewing the initial findings, the vendor was asked to flag the most egregious violations (such as vehicles significantly or fully blocking the lanes), and they responded by categorizing more serious events as “red” and “yellow” incidents. Figure 2 shows an example of a red-flagged violation (a vehicle blocking 50% or more of the bike lane).

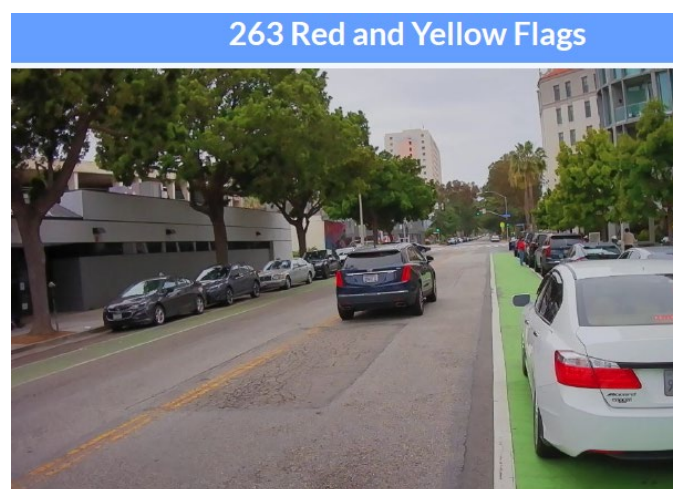


Figure 2 - Red flagged bike lane incident

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A yellow-flagged violation occurred when two wheels appeared to be over the white line of the bike lane, but the vehicle was blocking less than 50% of the bike lane, as seen in the image at Figure 3.



Figure 3 Yellow flagged bike lane incident

The remaining violations that were not flagged red or yellow would occur if two of the vehicle's wheels were on the white line of the bike lane. Sixteen percent (263 of the 1,679 total) of all violations recorded by the system were flagged red or yellow and could be seen as causing greater risk to road users, especially bicyclists who might have to leave the bike lane and move into vehicular traffic to avoid illegally parked vehicles in the bike lane. In Figure 4, below, the incident on the left would be yellow flagged, and the one on the right would be red flagged using the definitions in the previous paragraph.



Figure 4 - Yellow flagged incident (left) and red flagged incident (right)

In addition, the cameras recorded cyclists present in the bike lane a total of 62 times over the pilot period. Two examples are shown in Figure 5. As can be seen in the image on the right, the double-parked delivery truck was entirely blocking the bike lane, requiring the bike rider to have to move into traffic to avoid it.

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Figure 5 - Bicyclists impacted by cars parked in bike lanes

Most of the incidents were caused by unique drivers, with 1,428 total unique violators and 160 repeat offenders as shown in Figure 6.

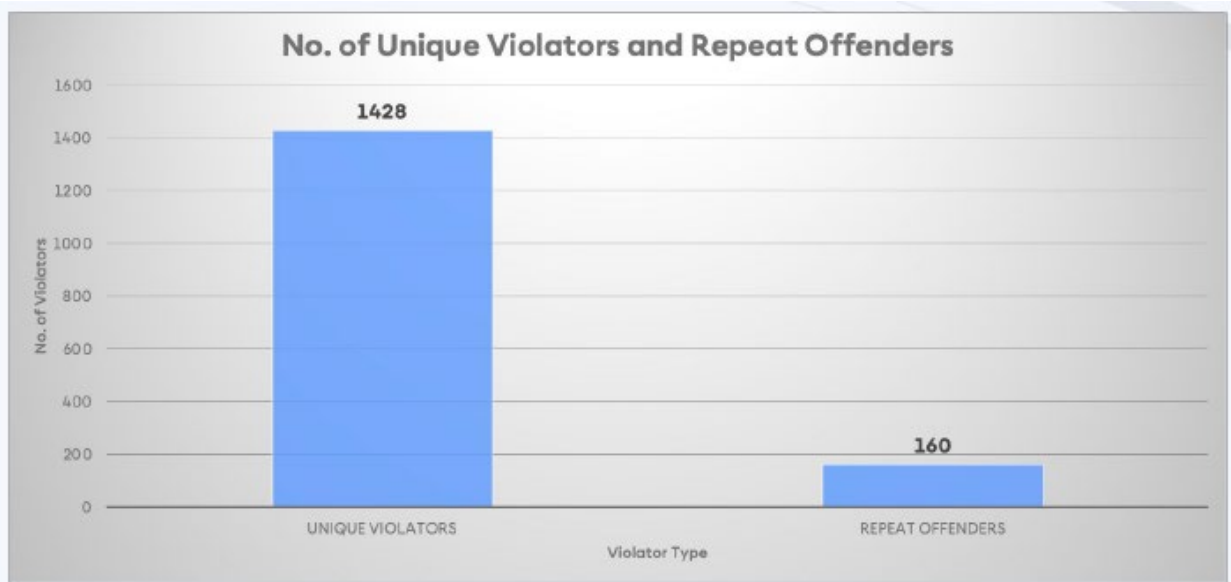


Figure 6 - Unique versus repeat violators

Of the 160 repeat offenders, 104 drivers were responsible for two events, 42 drivers produced 3 events, and 14 drivers produced 4 or more events, with one vehicle (a food truck) observed 13 times by the system. The most frequent repeat offender in terms of yellow- or red-flagged violations (sometimes entirely blocking the bike lane) was a freight delivery truck as seen in Figure 7.

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Figure 7 - Freight truck with 4 red- or yellow-flagged events

During the pilot, the two parking enforcement vehicles each detected an average of 5.04 incidents per vehicle-hour, of which an average of 0.79 events per vehicle-hour could be classified as yellow- or red-flagged (more severe) violations.

The top five locations where violations were recorded (from the entire set of 1,679) can be seen at Figure 8, accounting for 29.4% of all violations observed.

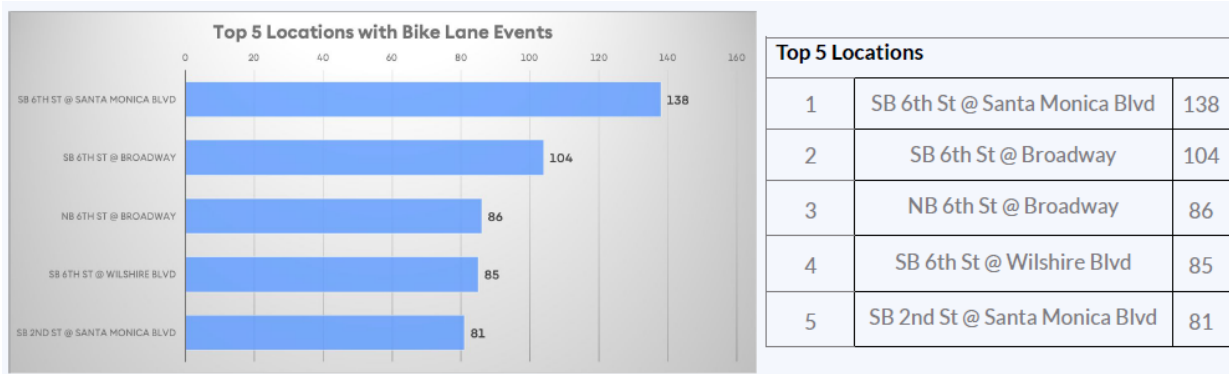


Figure 8 - Top 5 locations – all events recorded

When focusing only on red- and yellow-tagged violations, the top five locations accounted for 38.4 percent of all flagged (more severe) violations as shown in Figure 9.

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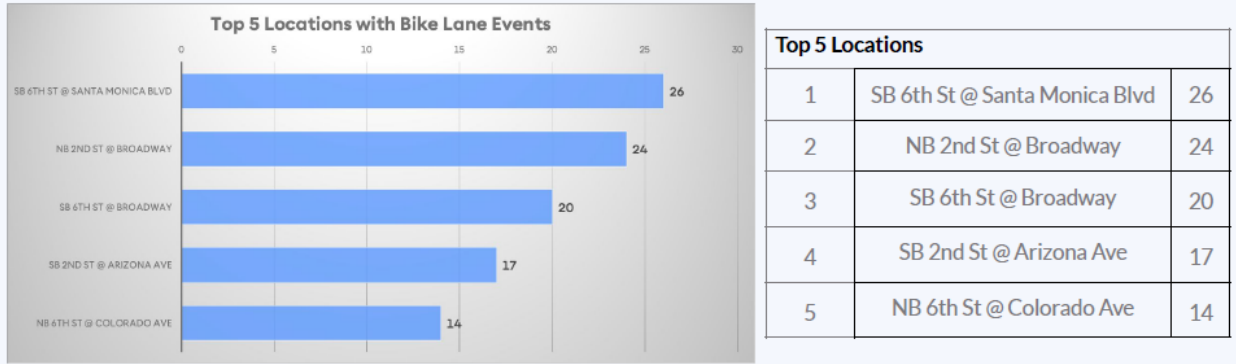


Figure 9 - Top 5 locations - red or yellow tagged events

During the six-week pilot, the day of the week with the most events was Tuesday, with 432 events (26% of all incidents), followed by Sunday, in which 276 events (16.4% of all incidents) were recorded.

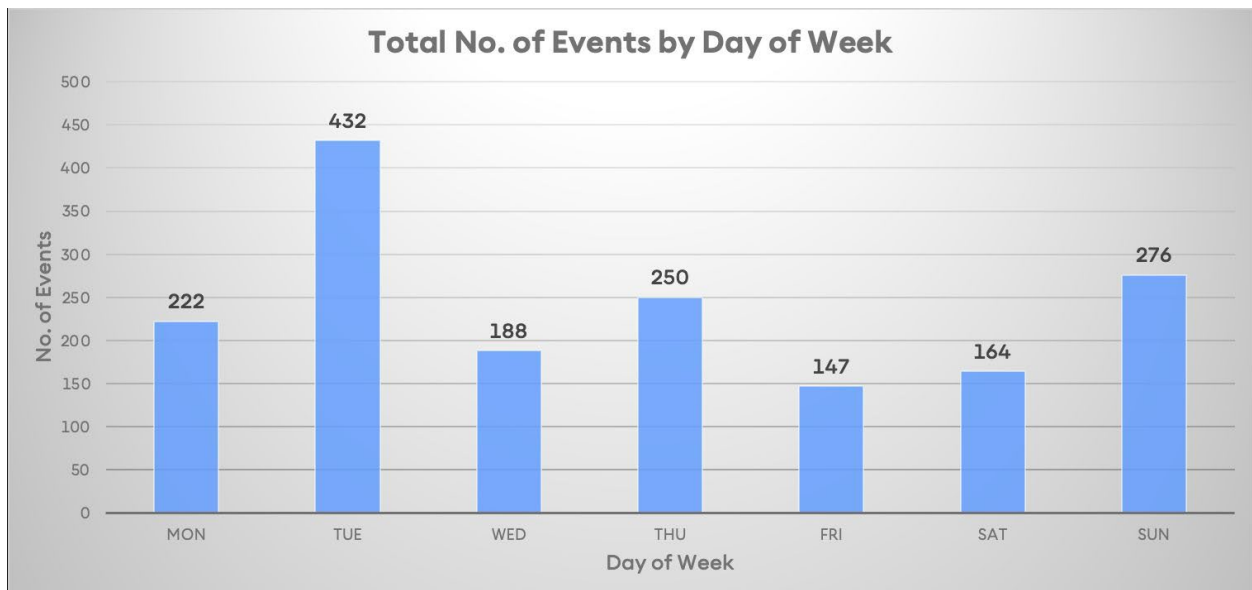


Figure 10 - Events by day of the week - all events

When looking at only red- and yellow-flagged incidents, the most events were recorded on Thursday, with 55 events (21% of all red- and yellow-flagged incidents) logged occurring on that day of the week.

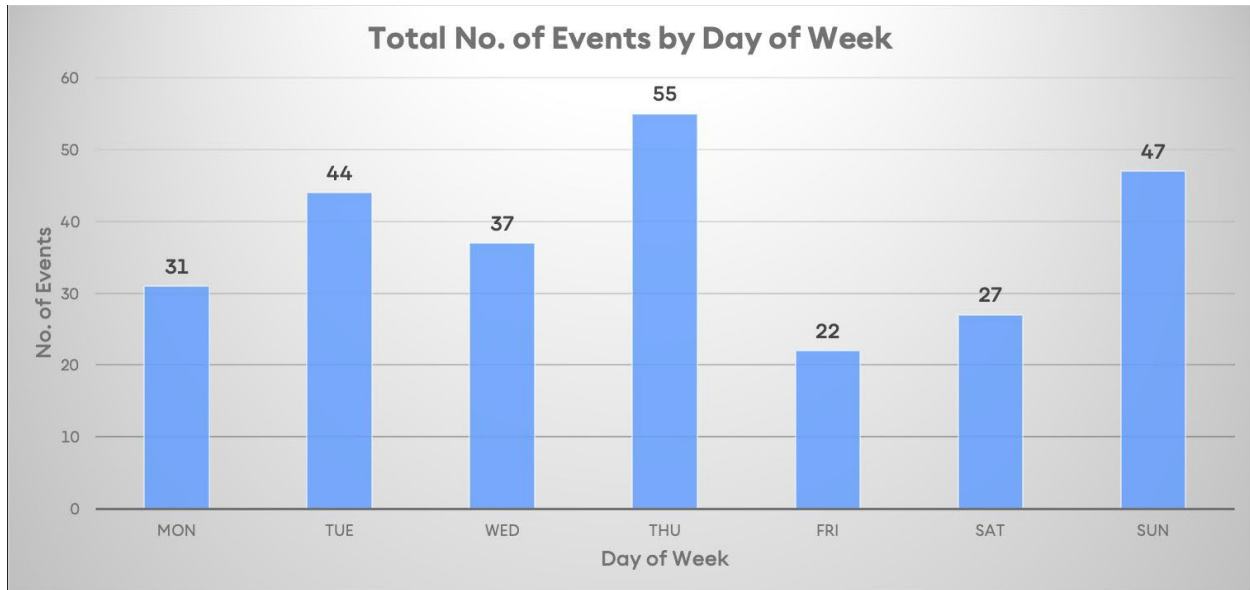


Figure 11 - Events by day of the week – red- and yellow flagged

No warnings or citations were issued during this pilot program. Should the city proceed with a broader implementation of the technology including issuing citations, no citations would be issued until after the completion of a 60-day warning period, per the requirements of AB 361.

Conclusion and Next Steps

The data and observations from the pilot support the conclusion that vehicles stopping and parking in the City's bike lanes are a recurring issue of concern, which warrants further exploration and mitigation measures to improve safety on our streets for all users. Based on the data provided by this small-scale pilot, an expanded AB 361 implementation including automated warnings and enforcement has the potential to provide a faster, safer experience for bike lane users in our city. Accordingly, staff will work to identify potential funding sources, collaborate with the Finance Department and SMPD to initiate a procurement process, and will bring recommendations to the City Council.

Prepared By: Barbara E. Andres, Customer Experience & Innovation Administrator, DOT