


CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

DATE: June 8, 2021

TO: Honorable City Council
c/o City Clerk, Room 395, City Hall
Attention: Honorable Mike Bonin, Chair, Transportation Committee

FROM: Seleta J. Reynolds 
General Manager, Department of Transportation

SUBJECT: **FOLLOW UP REPORT: TRAFFIC SIGNAL PRIORITY FOR METRO EXPOSITION "E" LIGHT RAIL LINE (CF 19-1236)**

SUMMARY

This report provides an update on the Los Angeles Department of Transportation's (LADOT) effort to maximize traffic signal priority for the Exposition "E" Line where it operates in street-running mode to improve reliability and reduce end to end travel time.

RECOMMENDATIONS

That the City Council RECEIVE and FILE this report.

BACKGROUND

LADOT prioritizes transit along City and provides transit priority at all signalized intersections where trains operate in street-running mode. Transit priority provides an early or extended green to help trains move through the corridor with minimal delay. The transit priority system tracks arriving trains and passes information ahead to upcoming traffic signals to help trains proceed through intersections without stopping or with minimal delay. If a train does not arrive within the programmed progression window, and transit priority cannot adjust the window enough, trains must wait until the next signal cycle, which averages about 70 seconds.

In October 2019, Council directed LADOT to maximize signal priority for the Expo Line where it operates in street-running mode, and to report steps needed to reduce end-to-end travel times and to improve travel time reliability.

In February 2020, LADOT reported its findings on transit delay along the Expo Line and its proposed changes to improve signal timing and enhance service. LADOT's assessment showed that high ridership exceeded expectations on the expanded Exposition "E" Line (Expo Line) to Santa Monica. With more passengers boarding and alighting, trains often require additional time at stations, which has delayed trains arriving at traffic signals within the programmed window of time.

DISCUSSION

As presented in our February 5, 2020 report, LADOT improved the efficiency of the E-Line along Exposition Boulevard in both directions with a new application of transit priority that allows the traffic

signal controller to reach into future signal cycles and borrow time to hold the green signal for an approaching train. This reduced the average delay at Normandie Avenue by between 17 to 27 seconds and allowed an average of 79 percent of trains to travel through the traffic signal without stopping.

Based on the positive results of this initial study, LADOT expanded the enhanced transit priority tested at Exposition Boulevard and Normandie Avenue throughout the rest of the street-running section of the Expo Line. LADOT applied this strategy along Flower Street, specifically targeting Adams Boulevard, which is a critical mid-point between two stations. This has further reduced travel time and increased reliability as highlighted below.

Average Travel Times per Trip

- Exposition Boulevard westbound reduced by 14 seconds; eastbound reduced by 40 seconds.
- Flower Street southbound reduced by 15 seconds; northbound reduced by 24 seconds.
- End to end westbound travel time reduced by 29 seconds; end to end eastbound travel time reduced by one minute and four seconds.

Attachment A provides a summary table and detailed charts showing both travel directions for Exposition Boulevard and Flower Street.

Next Steps

As transit demand and train frequency returns, LADOT will continue to monitor street-running train performance and coordinate with our partners at Metro to ensure efficient operation with the collective goal of reducing end-to-end travel times and achieving near 90% travel time reliability.

FISCAL IMPACT STATEMENT

There is no impact to the General Fund as a result of the recommended actions.

SJR:DM:bs:bc

Attachments

ATTACHMENT A

Exposition Boulevard & Flower Street Evaluation Methodology

To assess the effectiveness of the improvements, LADOT recorded the percentage of trains that clear Western Avenue, Normandie Avenue and Vermont Avenue along Exposition Boulevard, and Adams Boulevard and Jefferson Boulevard along Flower Street. Travel times were logged as well. The study period was from March 2020 to February 2021.

Findings

The vertical bars represent the throughput at critical intersections along each respective corridor, while the orange graph line represents overall travel time. A travel time summary is included at the end.

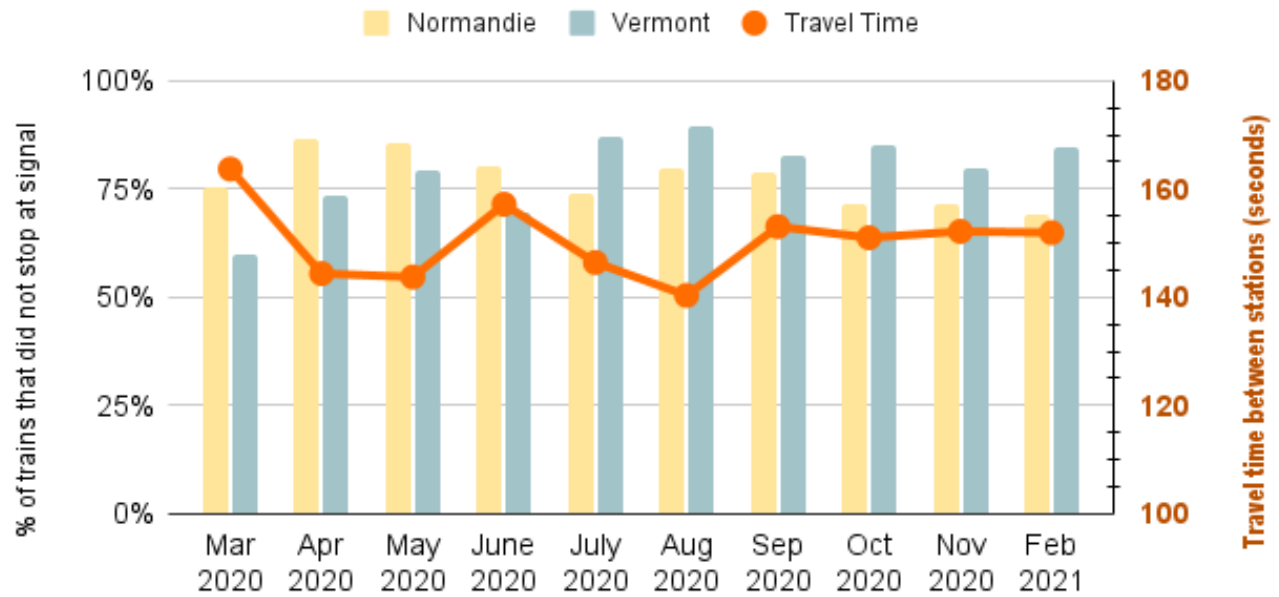
We have compiled the data and summarized the results as follows:

- (a) Exposition Boulevard E/B from Western Station to Vermont Station: the average throughput is approximately 80%. Individual daily average trips were reduced by 40 seconds.
- (b) Exposition Boulevard W/B from Vermont Station to Western Station: the average throughput is approximately 85%. Individual daily average trips were reduced by 14 seconds.
- (c) Flower Street N/B from Expo Park Station to LATTC Station: the average throughput is approximately 90%. Individual daily average trips were reduced by 24 seconds.
- (d) Flower Street S/B from LATTC Station to Expo Park Station: the average throughput is approximately 95%. Individual daily average trips were reduced by 15 seconds.
- (e) Overall travel times were reduced for the E-Line when compared to the operation prior to our study.

Note that a significant portion of delay was due to the high degree of variability of dwell times at stations, as well as operator driving behavior, which directly affects train travel times. To mitigate this, LADOT focused on reducing stops between stations, thereby minimizing the impact of these external factors.

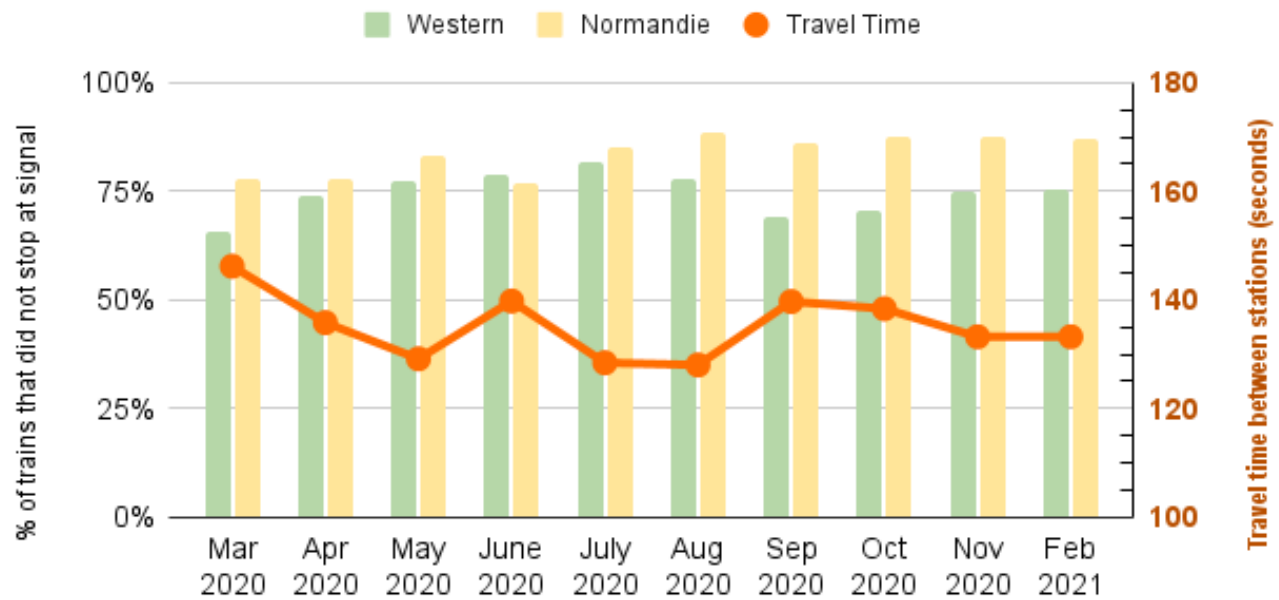
Exposition Segment – Eastbound Trains

Western Station to Vermont Station



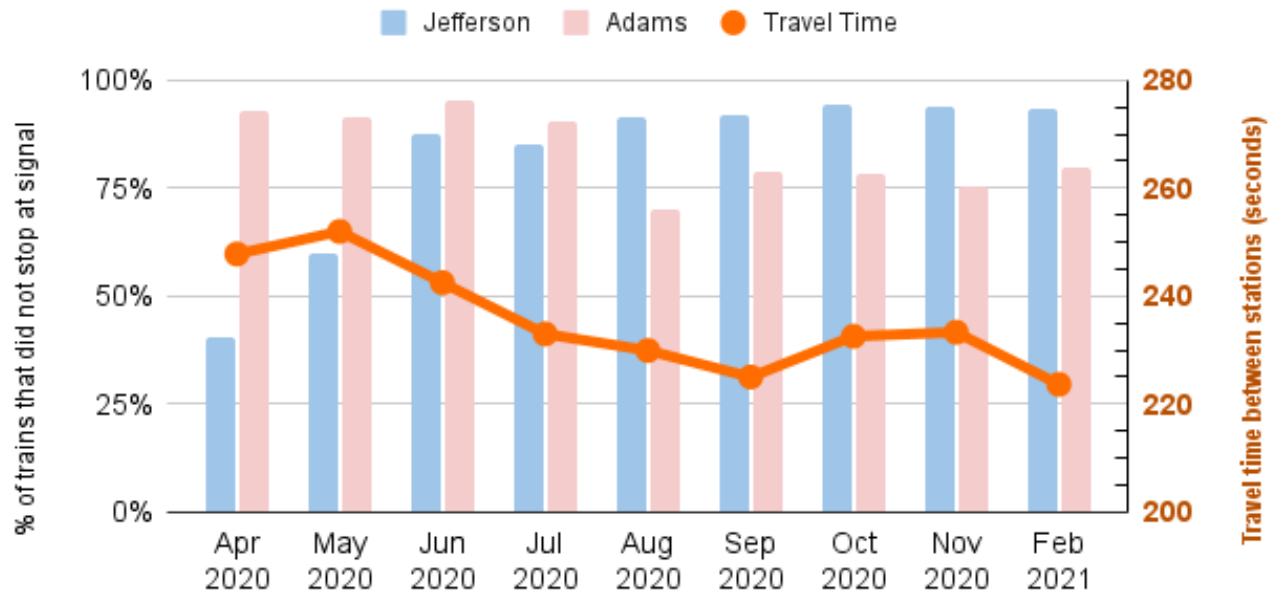
Exposition Segment – Westbound Trains

Vermont Station to Western Station



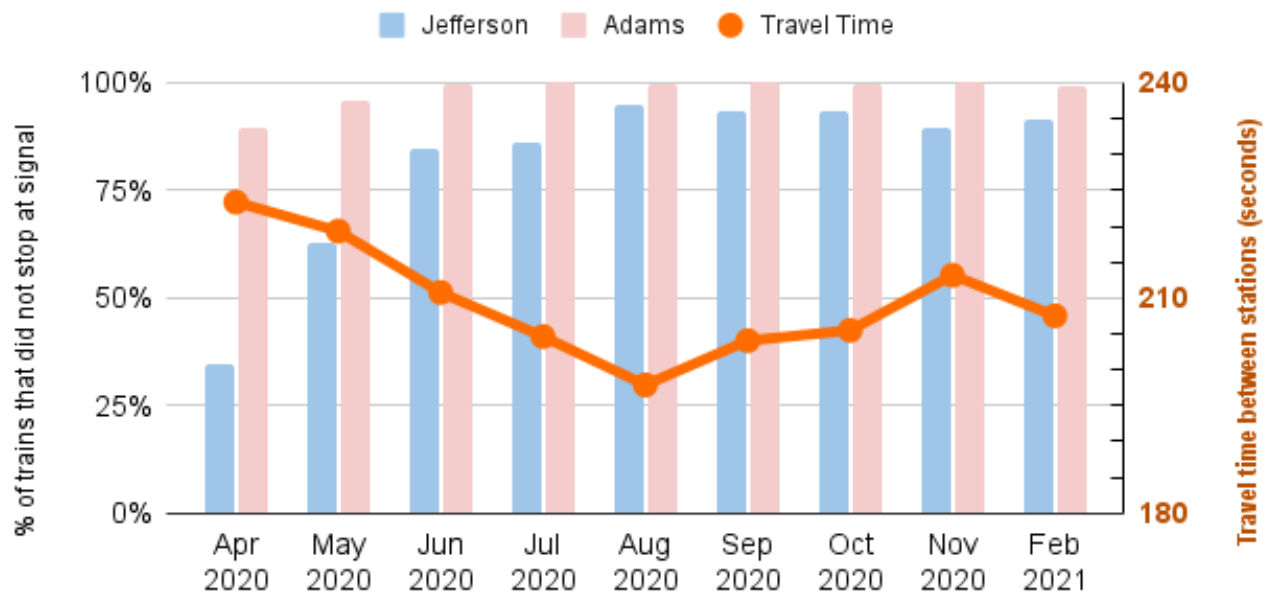
Flower Segment – Northbound Trains

Expo Park Station to LATTC Station



Flower Segment – Southbound Trains

LATTC Station to Expo Park Station



Travel Time Summary

					Average travel times – E/B (to DTLA)								Average travel times – W/B to (Santa Monica)							
<u>Segment</u>					Before ¹		Current		Net Change		Before ¹		Current		Net Change					
Western Av to Vermont Av					359 sec		319 sec		-40 sec		325 sec		311 sec		-14 sec					
Flower St					248 sec		224 sec		-24 sec		223 sec		208 sec		-15 sec					
Western Station to Vermont Station					164 sec	23 MPH	152 sec	24 MPH	-12 sec	2 MPH	146 sec	25 MPH	133 sec	27 MPH	-13 sec	2 MPH				
Expo Park/USC to Jefferson Station					289 sec	9 MPH	275 sec	10 MPH	-14 sec	0 MPH	169 sec	15 MPH	144 sec	17 MPH	-25 sec	3 MPH				
Jefferson Station to LATTC/Adams					129 sec	18 MPH	98 sec	23 MPH	-32 sec	6 MPH	99 sec	16 MPH	81 sec	20 MPH	-18 sec	4 MPH				
Total Time Saved per day =					314 hours ²					Total Time Saved per day =					142 hours ²					

¹ Exposition Bl segment "Before" condition based on Jan 2020 initial study and signal improvements resulting in average weekday train delay reductions of 11 sec for E/B and 10 sec for W/B

² Based on Metro's estimated Metro E-Line ridership of 17,641 riders on weekdays during Feb 2021