Expediting Light Rail and BRT Signal Preemption in Los Angeles

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Transit signal preemption and priority tools can play a critical role in improving transit commute times in Los Angeles. The following memo summarizes, to the best of the Streets For All transit advocates' knowledge, the current state of signal preemption efforts in Los Angeles as well as recommended actions to expedite its implementation. This memo will focus on light rail and BRT, as these modes move the most amount of people in the least amount of time given a limited amount of space (per NATCO guidelines).

A Primer on Traffic Signal Technology

When multiple transportation modes meet at an intersection, a means of coordinating the intersection is needed. One of the major technological breakthroughs came in the late 1970s, when CalTrans and New York DOT collaborated to create the Type 170 standard, which introduced remote programming for traffic signal boxes. The Type 170 signal box, combined with the newly formed LADOT Automated Traffic Surveillance and Control system, formed the transportation backbone that was critical to the transportation success of Los Angeles' 1984 Olympics.

LADOT continued to build on the success of the Type 170 traffic controllers with the introduction of the 2070 controllers in the 1990s. These signal controllers are currently the backbone of LA's transportation system. For transit, 2070 controllers can provide signal **priority**, which extends the green or shortens the red as transit approaches to give it a better chance of not stopping. 2070 controllers are currently implemented on all street-running light rail in the city.

For buses, signal controllers can be paired with cloud-based traffic detection systems such as Iteris to improve transit signal priority. Metro and LADOT are currently installing such systems at 280 intersections in the city as part of the NextGen project.

The latest generation of signal control software, D4,[1] allows signal **preemption**, which always provides transit with a green light. Preemption is the technology that will best enable faster commute times on transit. This software is currently being installed as part of the LA Metro G-Line upgrades.[2]

(There is another technology that provides signal preemption: gated crossings, which are known as "full preemption", as opposed to "limited preemption" with software. Both solutions ensure that transit always gets a green light.)

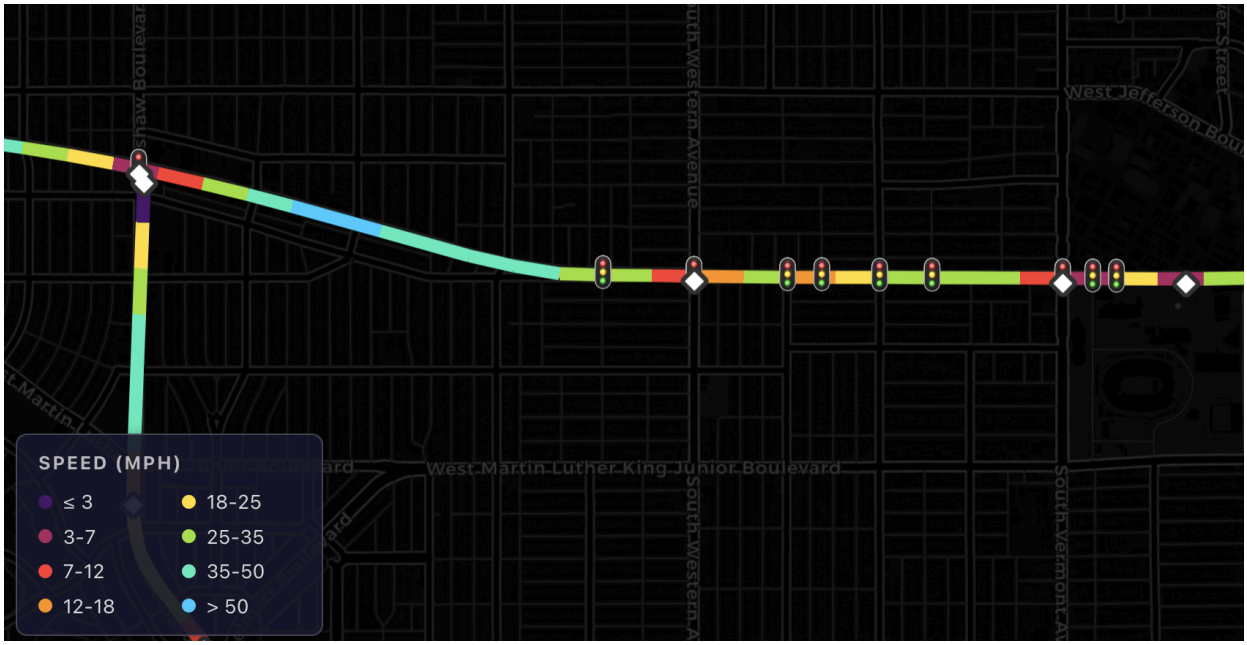
D4 software also allows **phase reservicing**, an intermediate step below preemption, where the signal controller changes the order of signal phases at the intersection when a train arrives, ensuring the train gets the green next. This would allow trains that just miss the green light to get another green without waiting for the full signal cycle to complete. Phase reservicing is most useful at intersections with dedicated left-turn signals where the phasing is more complex.

Concerns about traffic, affordability, public safety and the environment prompted Los Angeles to declare a car-free/transit-first Olympics in 2028. This ambitious goal will require Los Angeles to give funding, direction, prioritization, and training to implement D4 traffic-signal control technology (or similar) at all at-grade intersections with light rail and BRT by the 2028 Olympics.

Impact of Lack of Transit Priority on Travel Times

On February 19th, 2026, in response to LA City council file 24-1222, LADOT submitted a report [3] that summarizes the department's current efforts to implement signal preemption and priority for the A, E, K and G lines at-grade intersections. Advocates were disappointed to see the report included no recommendations, signaling that LADOT seems to be awaiting further instruction from electeds on implementing technologies described in the report. Hundreds of citizens commented on this council file after the report was submitted, expressing a desire for faster trains. The groundswell of public support shows the significant public interest in this issue.

The Muni Speed Map [4] provides a visualization of the intersections which delay transit the most.

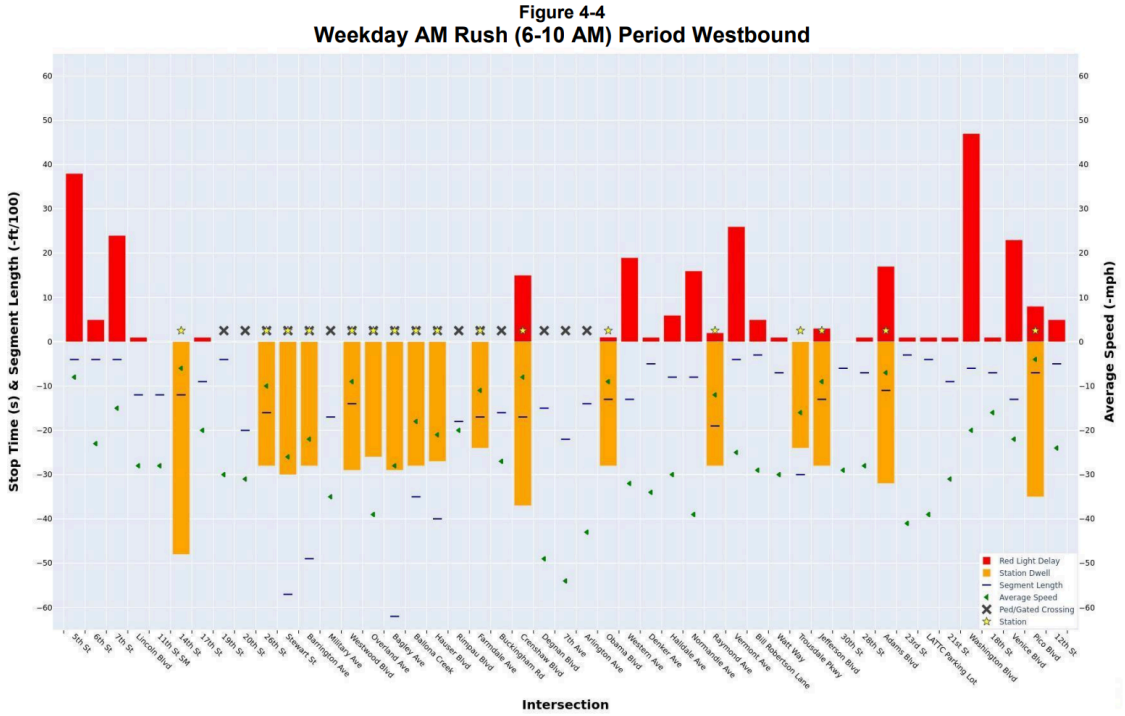


The image above shows average train speeds in the segment of the E Line between Expo/Crenshaw and Expo Park/USC. In the center is Expo/Western. Trains running between Crenshaw and Western only cross one traffic signal and average 40-50 mph, whereas trains running between Crenshaw and USC cross seven signals and average 15-30 mph.

Zooming out on the map highlights the key corridors of concern: The Washington and Flower corridors are major contributors to A & E Line light rail delays, and the E Line faces further

delays on Exposition between Western and Vermont. These findings are confirmed by three Metro traffic analyses [5][6][7], in addition to Metro Board report 2020-0887.[8]

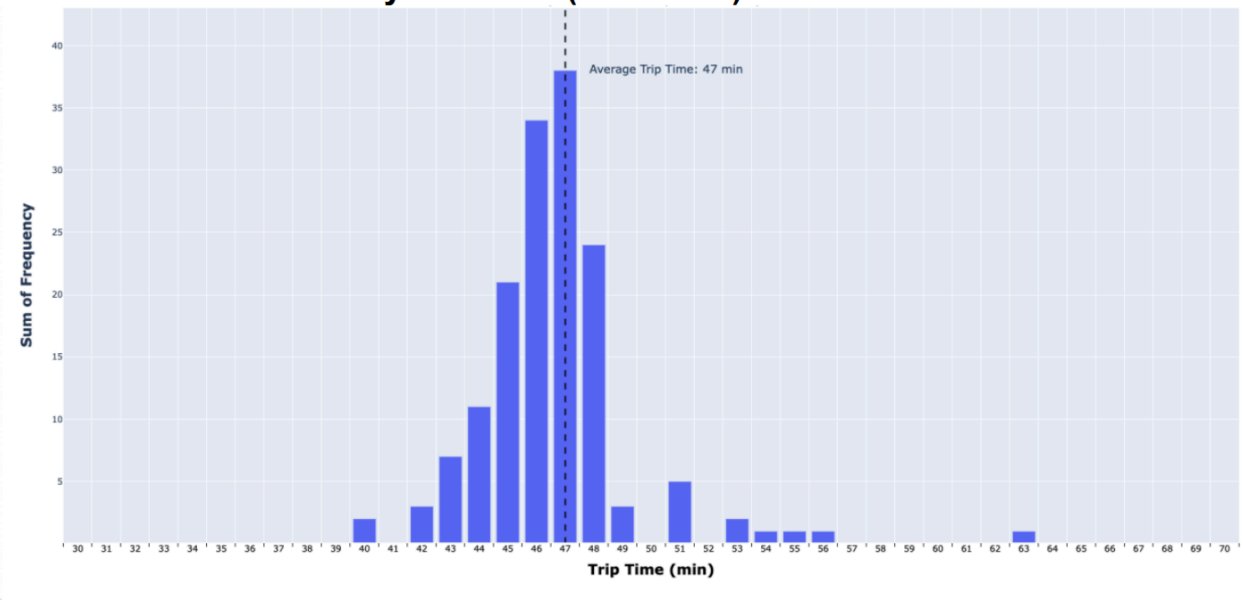
One metro report graphed the delays faced by the westbound E line during the weekday AM rush, graphed at every intersection from Santa Monica to DTLA. The red bars are time stopped at red lights, and the orange bars are time stopped at stations. Note the difference in red bars between the western half of the line, where the intersections are mostly gated or grade separated, and the eastern half, where they are not.



Morning rush hour delays at red lights for westbound E Line trains. The average total delay at red lights for the AM Rush period WB is 4 min 29 s. [5]

This chart also reveals a unique issue at Exposition/Crenshaw and at Flower/Adams (LATTC), which have both red and orange bars. This indicates that trains stop at the station (the orange bar), proceed a few feet forward, and then often immediately get a red light at the intersection (the red bar). Coordinating signals with train departures at just these two intersections could reduce total E Line delays by 12%.

Figure 5-4
Weekday AM Rush (6 – 10 AM) Period Westbound



Distribution of trip times for westbound weekday trips from DTLA to Santa Monica during morning rush hour. The average trip time is 47 minutes.[5]

As can be seen above, the lack of signal preemption/priority creates great unpredictability in travel times: Commuting west on the E line during rush hour from DTLA to Santa Monica can be as fast as 40 minutes to as slow as an hour. Reduction in these sources of delay can more closely push the consistent commute time of this trip to <40 minutes. Upgrading and/or reprogramming intersection traffic control technology for preemption is one powerful tool for doing so, especially if it can be implemented before LA28.

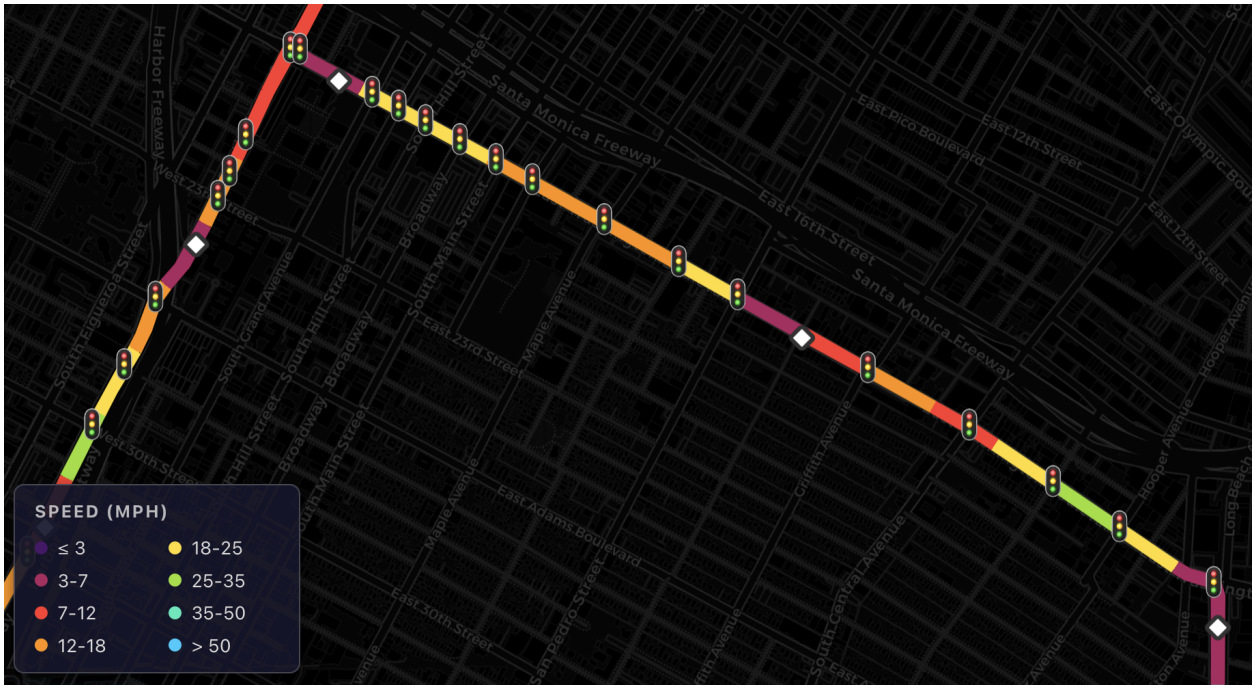
LA 28 x 28 Light Rail Speed and Reliability Project - Washington and Flower

LA Metro has also listed Light Rail Speed & Reliability project in its LA 28 x 28 planning document (project #23) [9]:

Washington/Flower project includes operational improvements for the Metro A and E Lines by reducing red-light delay and increasing person throughput at intersections in this corridor, specifically providing longer green times at the traffic signal along Washington Boulevard and Flower Street.

The above wording suggests that signal **priority** (moderate preference to transit at intersections from signal timing tweaks) is being implemented, not signal **preemption** (greatest preference to transit at intersections by giving it the right of way immediately). LADOT has expressed concern that the high frequency of trains traveling on Flower St. north of the wye with Washington Blvd. (both A and E Lines) makes preemption less feasible because pedestrians and drivers on intersecting streets would not be given enough time to cross between trains. While preemption may be a tricky issue to solve where both A and E Lines run together, Washington and Flower

are excellent candidates for preemption south of the wye given the significant delays both lines face there (see image below).



Since the Washington/Flower project appears to still be in the design phase, there is likely an opportunity to implement better transit signal control techniques than priority along Washington and Flower to improve transit speeds.

Summary of Recommended Actions

All of this background leads us to recommend the following action be given by LA City:

Direct LADOT, in coordination with LA Metro, to reduce light rail/BRT red light delays by 50% by January 1st, 2028. Strategies to evaluate should include transit signal priority (including exploring substantially longer green extensions and red truncations), phase reservicing, limited preemption, and full preemption.

Further Reading:

[1] https://fourthdimensiontraffic.com/about/about.html

[2] https://media.metro.net/board/Items/2026/02_February/20260205M&Citem3.pdf

[3] https://cityclerk.lacity.org/onlinedocs/2024/24-1222_rpt_dot_02-19-26.pdf

[4] https://muni-speed-map.vercel.app/?city=LA

[5] LA Metro E Line GPS Speed & Delay Analysis Report

[6] Metro Blue/Expo Line Improvement Project City of Los Angeles Study Area Traffic Analysis Report

[7] Metro Blue Line Travel Time Runs between Washington Station & Pico Station for the Metro Blue/EXPO Lines Improvements Project provide additional information

[8] https://metro.legistar.com/ViewReport.ashx?M=R&N=TextL5&GID=557&ID=7329&GUID=LATEST&Title=Board+Report

[9] https://metro.legistar1.com/metro/attachments/56423c50-be68-47d4-aa9e-9882ed55d10a.pdf