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POLICY

Ensuring Equity in the LA Metro Transit System

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EXECUTIVE SUMMARY

The Los Angeles County Metropolitan Transportation Authority (LA Metro) should use a standard metric system to prioritize bus priority lane (BPL) implementation using ridership, bus frequency, delay time, equity, and air pollution parameters. The proposed Bus Lane Metric Tool (BLMT) would be applied to different locations where a BPL is already under consideration to determine which lane should have greater priority. This BLMT would ensure that BPLs not only lead to decreased travel time and greenhouse gas (GHG) emissions, but also benefit marginalized communities such as those with a high poverty rate or communities of color. LA Metro should employ this metric as they continue to expand their bus network as outlined in the NextGen Bus Plan and Vision 2028 Plan. The BLMT would ensure that all Los Angeles residents can benefit from efforts by LA Metro to improve the efficiency and quality of their public transit system while addressing pressing climate issues.

BACKGROUND

LA Metro has prioritized revitalizing their public transit system to meet sustainability goals as detailed in their Moving Beyond Sustainability Plan and Metro Vision 2028 Plan. For example, LA Metro aims to transition to a 100% electric bus fleet and reduce total GHG emissions from their fleet by 79% by 2030. These plans also report that a more dependable public transit system could increase ridership and, there-

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fore, reduce GHG emissions from single occupancy vehicles. To accomplish these goals, LA Metro has implemented numerous transit improvements, such as signal light priority and door modifications to decrease boarding time.

One of the most successful methods to increase transit efficiency is BPLs, which give priority right-of-way to buses over single-occupancy vehicles (SOVs). When installed in high-congestion areas, BPLs decrease transit time and reduce delays by allowing buses to circumvent traffic. For example, when LA Metro installed a BPL on Flower Street in downtown Los Angeles, transit time decreased by 15%. Furthermore, by providing a more dependable alternative mode of transportation, the Flower Street BPL also caused bus ridership to increase by 25%. BPLs also decrease congestion, which would reduce GHG emissions from buses idling in traffic. Because of BLPs' demonstrated success, LA Metro has allocated approximately 40% of the NextGen Bus Plan's 2023 Speed and Reliability budget to establish BPLs throughout Los Angeles County.

Currently, LA Metro establishes BPLs in high-congestion areas for routes with high ridership and bus frequency. This approach aims to impact the greatest number of riders, the majority of whom are people of color and/or from low-income households. Because of the demographics of typical bus riders, establishing BPLs on high-ridership routes has an innate equity consideration: higher ridership means more people from low-equity communities benefit from the bus system. However, equity is not explicitly considered when selecting where a BPL should be established.

LA Metro considers equity an essential component of all transit decisions. They developed an Equity Platform in 2018 and have discussed their commitment in numerous reports, including the 2020 Long Range Transportation Plan. To ensure equity in the transit system, LA Metro evaluates bus ridership numbers and demographics in Equity Focused Communities, which are defined as communities where 1) more than 40% of households are low income, and 2) either 80% of households are non-White *or* 10% have no access to a vehicle.

To provide a broader view of transit dependency, LA Metro also developed a Transit Equity Score (TES), which includes the Equity Focused Community parameters as well as the percent of school-age children, senior citizens, single mothers, and disabled persons in a community. Despite this more nuanced picture of transit inequities, neither the Equity Focused Community status nor the TES is explicitly considered when selecting a BPL location. However, equity should absolutely be considered when determining BPL locations. By explicitly considering such equity parameters, LA Metro would ensure equity in the implementation of BPLs, as well as transportation infrastructure more broadly.

RECOMMENDATIONS

LA Metro should use the proposed BLMT throughout their planning and decisionmaking process to prioritize BPL implementation based on ridership, bus frequency, delay time, equity, and air pollution parameters. The BLMT weighs 5 parameters and centers equity considerations to help LA Metro determine where BPLs should be built. The BLMT should be applied to locations where a BPL is under consideration to determine which lane should have greater priority. In addition to equity parameters, the BLMT also prioritizes routes with high ridership, bus frequency, and delays caused by congestion, which are the parameters LA Metro currently considers when determining where to implement BPLs.

Appendix A provides additional information for why LA Metro needs to look at parameters beyond transit ridership when prioritizing BPL implementation. By adding in additional parameters, the BLMT ensures that ongoing improvements to LA Metro public transit will equitably benefit all Los Angeles residents.

Bus Lane Metric Tool Parameters

The BLMT should include the weighted parameters outlined below: ridership, bus frequency, delay time, equity score, and air pollution. Some of the proposed parameter calculations are based on existing metrics used by LA Metro and StreetsLA to prioritize bus stop shelter locations, though they are further refined in this proposal to increase the impact of the BLMT.[1]

1. **Ridership (25% weight).** Ridership should be considered when selecting BPL locations because it prioritizes routes that would benefit the maximum number of people. This parameter also has an innate equity component because the majority of bus riders are from low-equity communities. Therefore, ridership should be one of the primary parameters in the BLMT, which is consistent with LA Metro's current approach to BPL implementation.[2] Ridership should be weighted at 25% in total to prioritize routes that affect the greatest number of people.

   As detailed in the BLMT Metric Instructions, ridership should be defined as the average number of riders who travel on the proposed BPL each week, and it can be calculated using LA Metro's ongoing ridership data collection. We recommend calculating ridership in a slightly different manner than the metric LA Metro currently uses to determine where to place bus shelters, to allow for a more detailed comparison of ridership at different BPL locations.

2. **Bus frequency (15% weight).** Bus frequency should be included in the BLMT to ensure that BPLs would be sufficiently utilized once implemented. Bus frequency should be counted as the number of buses that would use the proposed BPL each week. Similar to the ridership parameter, though bus frequency may increase after BPL implementation because of increased efficiency, existing frequency data should be used to reduce uncertainty. Bus frequency for each route was already calculated in the NextGen Bus Plan (both pre– and post–plan implementation), and existing GPS trackers on each bus would allow detailed, real–time data collection. As mentioned above, bus frequency should be weighted at 15% in total to prioritize routes that affect the greatest number of people.

   We recommend calculating bus frequency in a slightly different manner than how LA Metro current calculates where to place bus shelters, which looks only at whether the wait time is less than or greater than 30 minutes. Our BLMT bus frequency calculations capture more granular information on bus delays. More information can be found in our BLMT Metric Instructions.

3. **Delay time (20% weight).** Delay time should be included in the BLMT to prioritize BPL locations that would relieve more severe congestion points. BPLs allow buses to bypass these high–traffic areas and keep to the bus schedule, which minimizes delay times and improves the accuracy of arrival information for riders waiting at bus stops. Potential bus riders frequently cite lack of dependability as a primary reason for not taking public transit. Therefore, reducing delay times would be an effective way to increase ridership, and BPLs should be prioritized for delay–prone routes. We recommend a weight of 20% to improve transit efficiency on the most delayed routes.

   As described in greater detail in the BLMT Metric Instructions, delay time for the BLMT should be calculated as the average delay time on a bus route during peak weekday hours. Delay information can be collected using existing GPS data from LA Metro buses.

4. **Equity (25% weight).** The BLMT should use the existing Transit Equity Score as the equity parameter for BPL implementation. LA Metro often evaluates transit use in Equity Focused Communities when assessing equity in transit, including when the agency employs its bus shelter metric. However, the TES includes additional social factors that increase transit dependency, providing a wider view of where BPLs should be prioritized to improve transit equity. The TES calculation ranges from 1–5, with a score of 5 representing an area with high transit dependency. We recommend a weighting of 25% to retain special focus on maintaining equity in transit.

As discussed in greater detail in the BLMT Metric Instructions, the equity parameter should be calculated as the average TES of communities within a given radius of the proposed BPL.

5. **Air pollution (15% weight).** The BLMT should include an air pollution parameter because decreasing congestion by installing BPLs would improve air quality along roadways with high congestion. The US Environmental Protection Agency has shown that vehicle emissions are significantly higher near major roadways, leading to adverse health effects for the surrounding communities. Because these communities usually have a large minority population and/or number of low-income households, prioritizing BPLs in high-pollution areas would also prioritize the health of these at-risk communities. We propose a weight of 15% in order to prioritize BPLs in communities where disparate pollution levels and health impacts need to be addressed.

   The air pollution parameters should be calculated using data from the air quality index and particulate matter with a width ≤2.5 microns, which can be collected from EJ Screen and CalEnviroScreen. See the BLMT Metric Instructions for more detail.

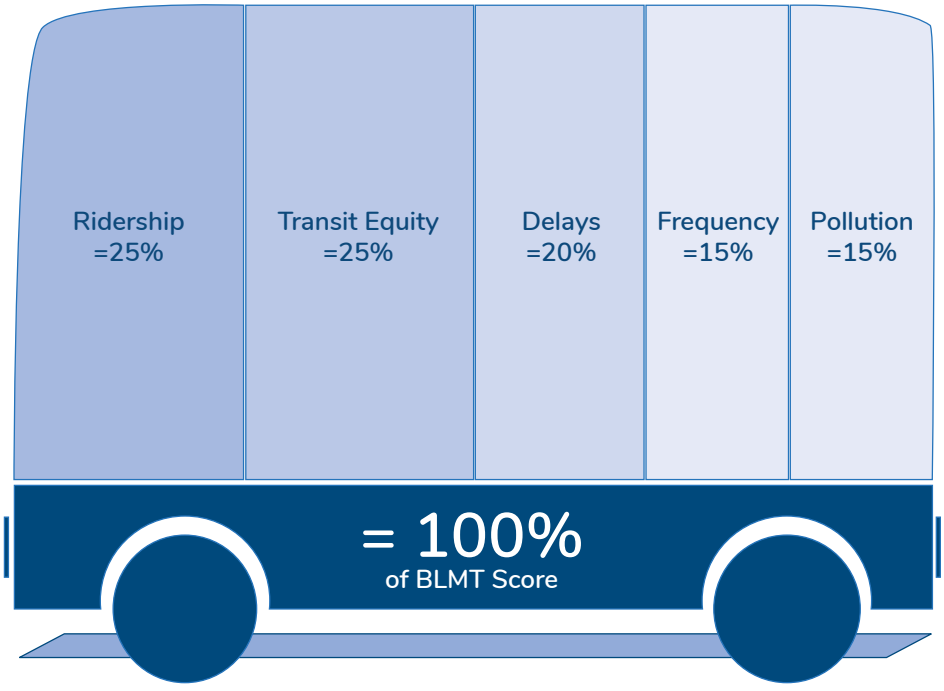

Figure 1
Summary of Bus Lane Metric Tool Score

UTILIZATION OF THE BUS LANE METRIC TOOL

LA Metro staff should apply the BLMT to previously identified locations where a BPL has been proposed. Because of the numerous factors that must be considered when selecting where to establish a BPL, the BLMT should not be used to identify possible BPL locations but to determine priority between two potential sites. These known congestion spots should have been already identified based on congestion and traffic studies and judged as logistically, politically, and financially feasible. The final BLMT score should be calculated for each location, with a higher score reflecting higher priority.

Once a location has been identified as a priority, LA Metro should move forward with an advocacy plan and community outreach to advance the BLP implementation.

LA Metro should implement a pilot program to evaluate the impact of the BLMT when prioritizing BPL implementation. LA Metro staff should evaluate the success of the BLMT a year after implementation by analyzing the impact of the established BPLs, i.e., whether and how they have promoted transit equity, increased ridership, reduced delay times, and improved air quality. More information on how LA Metro could implement the BLMT can be found in the operational plan.

CONCLUSION

The proposed BLMT is a nuanced method to determine where a BPL should be implemented based on ridership, bus frequency, delay time, equity, and air quality factors. By incorporating a wider view of transit equity in the decisionmaking process, including recognizing the burden of increased pollution in underserved neighborhoods, the BLMT would ensure that BPLs equally address the transit needs of all communities. Therefore, LA Metro should apply the BLMT as it continues to expand the public transit network to benefit all residents of Los Angeles.

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Appendix A: Why create a metric that includes parameters beyond ridership?

Transit ridership is one of the most obvious parameters for urban planners when deciding where to place a BPL. However, using transit ridership as the only parameter to prioritize BPL implementation ignores other critical considerations such as air quality and whether neighborhoods have a high percentage of communities of color.

Figure 2 shows a map of bus ridership in Los Angeles based on the average number of hourly trips. Based solely on ridership data, there is only one obvious location for a BPL: downtown Los Angeles.

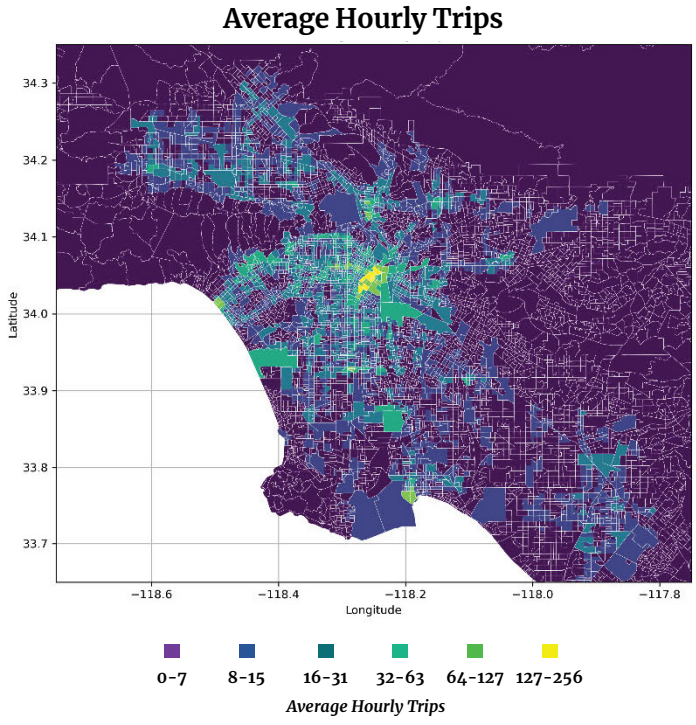

Figure 2

The average number of hourly bus trips in Los Angeles. Data has been sourced from the TransitCenter Equity Dashboard.

Once transit ridership data is converted to a percentile rather than a raw number, we see that almost half of Los Angeles may benefit from a BPL. By converting these data into a percentile, you are instead looking at how that neighborhood compares to other neighborhoods. For example, a neighborhood in Los Angeles in the 50th percentile for transit ridership has more transit riders than half of all neighborhoods. By looking at transit ridership in percentiles, as seen in Figure 3, BPLs could be built in almost half of Los Angeles.

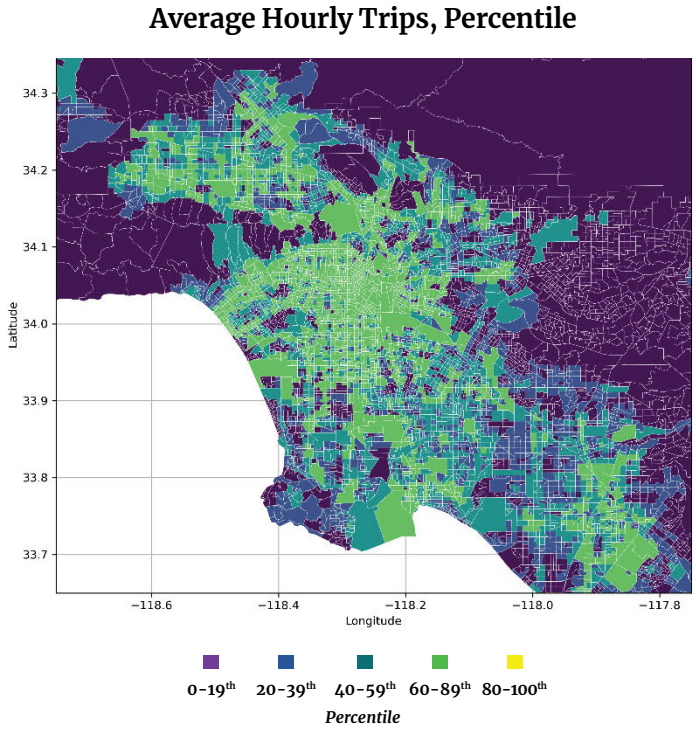

Figure 3

The average number of hourly bus trips in Los Angeles in percentiles. Data has been sourced from the TransitCenter Equity Dashboard.

Lastly, Figure 4 shows where BPLs should be prioritized when considering additional factors such as traffic, air pollution, and non-White population percentiles. This figure shows an approximation of what the proposed BLMT would produce using publicly available data. Using this approximation, it is clear that there are corridors in need of a BPL in areas such as San Fernando, West Covina, and Santa Ana. These areas are generally communities of color next to major highways with substantial, traffic-based pollution.

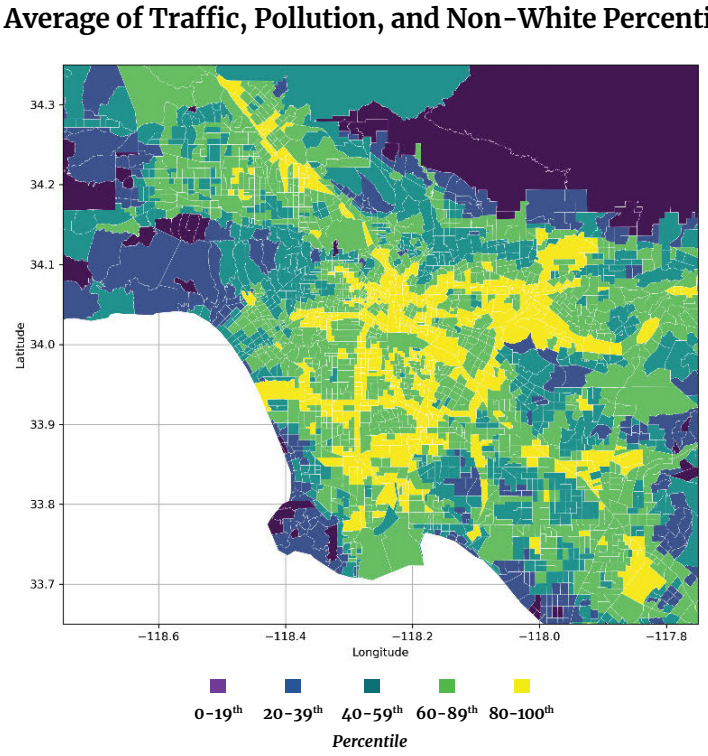

Figure 4

BPL priority based on traffic, pollution, and non-White population parameters. The map shows an approximation of a BLMT analysis, with traffic representing the delay time parameter, pollution representing the air quality parameter, and the non-White population representing the TES parameter. Data is in percentiles, with a greater value representing a higher priority. Data has been sourced from the TransitCenter Equity Dashboard.

ENDNOTES

1 Audrey Netsawang and Lance Oishi from StreetsLA, conversations with authors, July 19, 2022.

2 Joseph Forgiarini and Stephen Tu from LA Metro, conversations with authors, July 21, 2022.