



Board Report

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OPERATIONS, SAFETY, AND CUSTOMER EXPERIENCE COMMITTEE
NOVEMBER 17, 2022

SUBJECT: NEXTGEN BUS PLAN EFFECTIVENESS ASSESSMENT

ACTION: RECEIVE AND FILE

RECOMMENDATION

RECEIVE AND FILE the NextGen Bus Plan Effectiveness Assessment.

ISSUE

In October 2020, the Board adopted the NextGen Bus Plan for the implementation of a fast, frequent, and reliable bus network for riders. Phased implementation of network restructuring began in December 2020, with additional phases implemented in June 2021 and September/December 2021.

This report assesses the potential effectiveness of the NextGen Bus Plan in comparison to the previous service in place in December 2019. A separate report is provided periodically for Motion 22.1 entitled NextGen Bus Speed Engineering Working Group to report on key milestones of progress in the implementation of the NextGen speed and reliability improvements.

BACKGROUND

The NextGen Bus Plan, the first comprehensive review of the Metro bus network in a generation, focused on establishing a fast, frequent, and reliable network that was easy to understand and competitive in the overall market for travel in LA County. This new network would be capable of supporting growth in overall ridership for the bus system through addressing opportunities to be more competitive at off peak-times and for shorter distance trips.

The implementation of the NextGen Bus Plan, with its associated bus line restructuring and the establishment of a set of service frequency tiers, was largely completed in December 2021.

Through the three-phase implementation of the NextGen Bus Plan, as of December 2021, Metro’s 119 bus lines had service schedules within the following frequency tiers as shown in Table 1 below:

Table 1: NextGen Frequency Tiers - as of Dec 2021

Service Type	Peak Weekday	Midday Weekday	Evening	Weekend	Number of Lines
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Core Network (Tier 1)	5-10	5-10	10- 15	7.5-15	31
Convenience Network (Tier 2)	12-15	12-15	20- 30	15 - 30	23
Connectivity Network (Tier 3)	20 - 30	20-30	30 - 60	30 - 60	26
Community Network (Tier 4)	40 - 60	40-60	60	60	39

DISCUSSION

The NextGen Bus Plan established a hierarchy of service frequencies as a key part of the roll out of a frequent, fast and reliable network. This report assesses the effectiveness of the NextGen Bus Plan compared with the December 2019 (pre-NextGen) network in serving actual overall trips (irrespective of travel mode) and transit trips recorded for an average weekday in 2019 (pre-COVID) using Location Based Services (cell phone location) data.

The assessment is based on the following NextGen objectives:

- Convenient Access to High Frequency Service (NextGen Frequent Network)
- Transit Service Competitiveness
- Travel Time Improvements
- Convenient Access to Key Destinations

Convenient Access to High Frequency Service (NextGen Frequent Network):

Access to the NextGen network was reviewed based on assessing the change in access to frequent service for various groups. These included:

- The number and percentage of households, population
- The number of zero or 1+ car households
- The number of essential and non-essential low-income workers.

The assessment was based on residential location, (including populations in Equity Focus Communities (EFCs) or non-EFCs (as defined in 2019). Convenient access was defined by 0.25 mile walk access to frequent service, and frequent service was assessed based on two levels of convenience available at each bus stop by PM peak and off peak:

- Access to 10 minute or better weekday service frequencies (NextGen Tier 1), or
- Access to 15 minute or better weekday service frequencies (NextGen Tier 1 and 2)

A summary of the findings is provided below. More details can be found in Appendix A of this report.

- The most notable result was a 716% increase in total population, and 614% increase in households, with access to the frequent network of 10 minute or better lines in the weekday midday period between December 2019 (pre-NextGen) and December 2021 (with NextGen). Population in EFCs gained slightly more (721%) than in non-EFCs (708%). Zero car households saw a 415% increase. Frequent service to essential jobs and non-essential jobs increased by 369% and 351% respectively.
- Convenient access to the 10 minute or better network during the PM peak period also showed significant gains, up between 28% (non-essential jobs) and 65% for non-EFC population

(EFC population increased by 49%). These results support the objective of allocating more service frequencies of 10 minute or better during the weekday midday time period in the NextGen Bus Plan.

- Through the NextGen Bus Plan, over 2.2 million more people have convenient access to 10 minute or better service midday weekdays, with 1.3 million of these people residing in EFCs. Over 1.1 million more jobs were also accessible through the 10 minute or better service under the NextGen Bus Plan.
- The NextGen Bus Plan also increased peak period weekday access to 10 minute or better service, with over 900,000 more people overall having convenient access to this network, with just under 500,000 more people in EFCs gaining this access.
- The same assessment for access to 15 minute or better service saw smaller gains, with midday weekday gains ranging from 38% to 69%, and peak period gains ranging from zero to a high of 4% for the population in EFCs.
- These results reflect the reality that a greater proportion of lines had 15 minute or better service pre-NextGen, especially during peak periods, though NextGen Bus Plan still provides improved access to the frequent (15 minute or better) network, especially in the midday period.
- Through the NextGen Bus Plan, over 1.4 million more people have convenient access to 15 minute or better service midday weekdays, with 720,000 of these people residing in EFCs. Over 550,000 million more jobs were also accessible through the 15 minute or better service under the NextGen Bus Plan.

Overall population with access to 15 minute or better peak hour service under the NextGen Bus Plan grew by 65,000 more and almost 72,000 more people in EFCs gaining this access, and 9,000 more jobs being accessible to this frequent network. These smaller numbers reflect the pre-NextGen network having many lines with 15-minute or better peak frequency.

For more data for these groups, please see Tables 2 and 3 in Appendix A.

Transit Service Competitiveness

A key measure of the potential for success in attracting new ridership was the Transit Competitiveness Ratio. Trips were considered competitive if the transit travel time was less than 2.5 times the duration of auto travel time.

Based on (LBS) data, or cell phone location data, for all trips (including transit), the number of trips with transit competitive travel times < 2.5 times the private auto increased by 2.4% (from 22.1% to 24.5% of all trips) under the NextGen Service Plan. The analysis was also completed for the trips of residents of EFCs where transit competitive trips increased by + 3.3% (from 26.2% to 29.3% of all trips).

This equates to over 580,000 extra trips that were transit competitive using the NextGen Bus Plan network, with 240,000 of these trips being for residents of EFCs. More details can be seen in Tables

4, 5, and 6 in Appendix A.

A similar analysis was conducted for transit trips based on TAP card data, comparing transit competitiveness between the pre pre and post NextGen Bus Plan networks.

The results of this analysis showed the NextGen network had 4.7% more transit competitive trips (47.3% versus 42.6%, or +45,000 trips), suggesting the NextGen network should retain more existing riders as well as generate more rides than the pre-NextGen network could have.

The percent of competitive transit trips grew for residents of EFCs by (5.1% (from 44.0% to 49.1% or + over 29,000 trips), greater than for trips of residents in non-EFCs which grew by 4.1% (40.6% to 44.7%, or + over 16,000 trips). For more details, please see Tables 7, 8, and 9 in Appendix A.

The data on transit competitiveness clearly shows the NextGen Bus Plan as capable of generating over 45,000 more competitive trips than the pre-NextGen network, with 29,000 of these for residents of EFCs.

Travel Time Comparison:

A travel time comparison was also conducted in terms of transit travel times in intervals of 15 minutes for all trips and for transit trips between the December 2019 service plan and the NextGen Bus Plan. Results show a 13% gain (+ over 500,000 trips) for all trips irrespective of travel mode and a 20% gain (+ over 27,000 trips) for transit trips now taking 30 minutes or less. These results show the ability of the NextGen network to allow more trips to be completed in these shorter (30 minute or less) travel times, which is particularly important for the NextGen network to be competitive for shorter distance travel. As a result, the number of trips taking longer (45 to 120 min. range) diminished under the NextGen Bus Plan.

The travel time comparison also looked at the percentage of all trips and transit trips for residents in EFCs versus residents in non-EFCs. Comparable gains are shown for both groups for both all trips and transit trips, but the percent gain for trips moving to the 30 minute or less travel time is much larger for transit trips (20%) compared to all trips (12-13%). For more details on these travel time comparisons, please see Tables 10, 11, 12, and 13 in Appendix A.

The travel time comparisons provided show the NextGen Bus Plan having over 500,000 extra trips with shorter (30 minute or less) travel times compared to the pre-NextGen network. Over 27,000 extra transit trips were also 30 minutes or less with the NextGen Bus Plan, helping this new network compete more successfully for new ridership, especially for shorter distance trips noted as a potential growth market for transit.

Destinations on High Frequency Network

This section analyzes the number of key facilities in various groups such as higher education institutions, health care, grocery stores, and parks. These are examined for access (within 0.25 miles) to both the 10-minute or better and 15-minute or better NextGen networks. Gains are substantial for the 10-minute network for midday service, ranging from +142% (Education) to +392% (Parks). Gain for the midday 15-minute network were between 35% (Education) and 73% (Parks). PM peak gains were less, between +10% (Health Care) to +24% (Parks) under the 10-minute or better network, with gains of between 3% (Education) and 7% (Grocery Stores and Parks) for the 15-minute network.

This analysis shows the benefit of the NextGen Bus Plan for access to key destinations, especially by the 10 minute or better NextGen network during midday, which is exactly what the NextGen Bus Plan was intended to achieve through significant investment in off peak service.

For more details, please see Tables 14 and 15 in Appendix A.

Ridership Benefitting from the High Frequency Network

A review of the percentage of transit trips in the 2019 transit trips data set that would use the 10 minute or better or 15-minute or better networks was completed.

This data shows significant gains for usage of the NextGen Bus Plan frequent network (60.6% for 10 minute or better service, 82.8% for 15-minute or better service), compared to around 48% of riders for the pre-NextGen network having access to 10-minute or better service.

Implementation:

In implementing the NextGen Bus Plan, key public comments included riders concerned with the need to make more transfers to complete their trips, as well as some concerns about reduction in bus stops (balance between service speed and access).

As a result of feedback from the public, there have been a small number of stops added back to assist groups such as seniors and those with disabilities in having easier access to the system, or where network simplicity was achieved at the expense of convenience (such as Oliver View Medical Center Lines 224 and 690).

This process of review and refinement will continue to ensure the NextGen Bus Plan achieves the maximum possible ridership benefits.

Conclusion

In summary, the results of this analysis suggest the NextGen Bus Plan as designed has delivered a more accessible and competitive service compared with the pre-NextGen network.

Additional speed improvements and associated service frequencies together with the full delivery of planned service with more bus operators hired by 2023, should continue to improve these metrics. This will allow NextGen Bus Plan to maximize the increase in bus system ridership as intended.

DETERMINATION OF SAFETY IMPACT

This item has no direct impact on safety.

FINANCIAL IMPACT

There are no financial impacts to the receipt of this item.

EQUITY PLATFORM

The NextGen Bus Plan was developed with an equity lens, placing service in Equity Focus Communities where transit was more likely to provide a key mobility option for residents. The above analysis shows solid gains in transit competitiveness through improved transit travel times. This is for EFC residents, for all trips and even more so for trips made on transit. This report suggests the gains from NextGen have flowed primarily to EFC residents who rely most on transit. These gains should continue to improve as bus speed and reliability improvements will increase the competitiveness of the NextGen Bus Plan.

IMPLEMENTATION OF STRATEGIC PLAN GOALS

The results presented here demonstrate support of strategic plan goals 1-4 as follows:

- **Goal #1:** Provide high quality mobility options that enable people to spend less time traveling. Improving the speed and reliability of the bus network will reduce transit travel times, as well as improve competitiveness with other transportation options.
- **Goal #2:** Deliver outstanding trip experiences for all users of the transportation system. These initiatives help to move more people within the same street capacity, where currently transit users suffer service delays and reliability issues because of single occupant drivers.
- **Goal #3:** Enhance communities and lives through mobility and access to opportunity. With faster transit service and improved reliability, residents have increased access to education and employment, with greater confidence that they will reach their destination on time.
- **Goal #4:** Transform Los Angeles County through regional collaboration and national leadership. Because Metro does not have jurisdiction over local streets and arterials, collaboration with other partner agencies such as LADOT, Caltrans, City and County of Los Angeles are necessary to ensure these speed and reliability improvements are successfully implemented.

NEXT STEPS

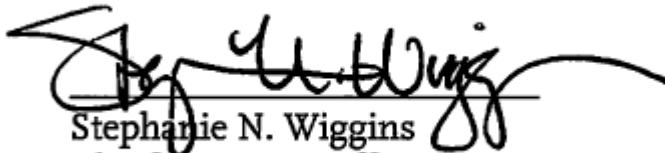
The full restoration and reliable delivery of the NextGen Bus Plan's 7 million revenue service hours included in FY23 Budget remains the highest priority for the agency, together with delivering the NextGen Bus Speed and Reliability initiatives to complete the implementation of NextGen Bus Plan and deliver its intended benefits to existing and potential future riders.

ATTACHMENTS

Appendix A NextGen Bus Plan Effectiveness Details

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