

## Appendix A – NextGen Bus Plan Status Update

Through the implementation of the NextGen Bus Plan, largely completed 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 at Dec 2021**

Service Type	Peak Weekday	Midday Weekday	Evening	Weekend	Number of Lines
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

This appendix contains data that allows an assessment of the effectiveness of the NextGen Bus Plan, in terms of accessibility to and usability of this new network as implemented by December 2021.

### 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 (including populations in Equity Focus Communities (EFCs) or non-EFCs (as defined in 2019), zero or 1+ car households, based on residential location, with convenient 0.25 mile walk access to frequent service. Also assessed was convenient access to essential and non-essential low income workers. Frequent service was assessed based on two levels of convenience:

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

These assessments are presented in Tables 1 and 2 below.

**Table 2: 0.25 Mile Access to 10 Minute or Better Frequency**

Comparison of 0.25 Mile Access to 0-10 min Network	Midday Dec 2019	Midday Dec 2021	2021 vs 2019 Change	PM Peak Dec 2019	PM Peak Dec 2021	2021 vs 2019 Change
Total Households	124,155	886,488	614%	584,904	894,466	53%
Total Population	313,329	2,555,872	716%	1,656,417	2,572,188	55%
Population in EFCs	184,744	1,516,628	721%	1,017,812	1,515,866	49%
Population in non-EFCs	128,585	1,039,244	708%	638,606	1,056,321	65%
No Vehicle Households	26,823	138,087	415%	100,204	138,741	38%
1+ Vehicles Households	97,332	748,401	669%	484,700	755,725	56%
Essential Jobs (< \$1250 per month)	63,335	296,811	369%	212,849	298,946	40%
Non-Essential Jobs (> \$1250 per month)	264,705	1,194,292	351%	945,922	1,206,860	28%

**Table 3: 0.25 Mile Access to 15 Minute or Better Frequency**

<b>Comparison of 0.25 Mile Access to Frequent (15 min. or better) Network</b>	<b>Midday Dec 2019</b>	<b>Midday Dec 2021</b>	<b>2021 vs 2019 Change</b>	<b>PM Peak Dec 2019</b>	<b>PM Peak Dec 2021</b>	<b>2021 vs 2019 Change</b>
Total Households	781,162	1,241,143	59%	1,206,228	1,224,785	2%
Total Population	2,229,233	3,675,208	65%	3,554,138	3,618,480	2%
Population in EFCs	1,312,666	2,036,097	55%	1,950,258	2,022,040	4%
Population in non-EFCs	916,568	1,639,111	79%	1,603,880	1,596,440	0%
No Vehicle Households	122,008	172,818	42%	166,893	171,382	3%
1+ Vehicle Households	659,154	1,068,325	62%	1,039,335	1,053,403	1%
Essential Workers (< \$1250 per month)	271,957	408,761	50%	406,308	401,429	-1%
Non-Essential Workers (> \$1250 per month)	1,095,933	1,513,389	38%	1,480,110	1,493,916	1%

### Transit Competitiveness Comparisons

Research conducted as part of the NextGen Bus Study identified that trips were transit competitive, meaning transit was able to attract a higher mode share, if the transit travel time was less than 2.5 times the duration of auto travel time.

Data represented in Tables 4, 5, and 6 below are from analysis of all trips made, irrespective of travel mode. These were obtained from millions of Location Based Services (LBS) records (cell phone location data) and can be considered to represent the pool of “potential transit trips” that the NextGen Bus Plan can attract to transit usage. All of these millions of trip records were assessed for travel time on transit and travel in a car.

Overall travel was captured using LOCUS data from 2019 Q3 and Q4, which involved translating terabytes of location-based services data collected from millions of smartphone devices from across the nation into carefully calibrated and extensively validated estimates of travel in the region. Transit estimates for 2019 were generated using the 2017 expanded TAP Card data (applied for NextGen Bus Study) adjusted based on Metro’s 2019 Automatic Passenger Counter (APC) data and 2019 ridership data from the larger LA County municipal operators. All transit data (TAP Card, APC, and ridership data) came from a four month period (July-Oct) of their respective years.

The comparison of travel times for these two trip modes was used to assess the competitiveness of transit for use for each trip, with trips with transit travel time 2.5 or less times auto travel time considered competitive. Table 4 summarized all trips while Table 5 looked at trips by residents of EFCs and Table 6 looked at trips by residents of non-EFCs.

**Table 4: Transit Competitiveness Comparison (All Trips) Dec 2021 vs Dec 2019**

Transit Competitiveness Ratio	Dec 2019 Transit System	Dec 2021 NextGen Transit System	% Dec 2019 Transit System	% Dec 2021 NextGen Transit System
0.0 - 1.0	162,760	171,872	0.7%	0.7%
1.0 - 1.5	612,744	709,145	2.6%	3.0%
1.5 - 2.0	1,697,031	1,911,198	7.1%	8.0%
2.0 - 2.5	2,786,781	3,052,534	11.7%	12.8%
2.5 - 3.0	3,379,811	3,543,726	14.2%	14.9%
3.0 - 3.5	3,225,281	3,261,400	13.5%	13.7%
3.5 - 4.0	2,739,788	2,691,209	11.5%	11.3%
4.0 - 4.5	2,125,311	2,016,779	8.9%	8.5%
4.5 - 5.0	1,586,936	1,478,176	6.7%	6.2%
5.0 +	5,504,315	5,002,162	23.1%	21.0%
<b>Grand Total</b>	<b>23,820,759</b>	<b>23,838,200</b>	<b>100%</b>	<b>100%</b>
Competitive Trips (TTR < 2.5)			5,259,317	5,844,748
% of Competitive Trips (TTR < 2.5)			22.1%	24.5%

**Table 5: Transit Competitiveness Comparison (All Trips) Dec 2021 vs Dec 2019  
Residents in Equity Focus Communities**

Transit Competitiveness Ratio	Dec 2019 Transit System	Dec 2021 NextGen Transit System	% Dec 2019 Transit System	% Dec 2021 NextGen Transit System
0.0 - 1.0	47,756	51,511	0.6%	0.7%
1.0 - 1.5	229,826	274,357	3.0%	3.6%
1.5 - 2.0	660,251	754,855	8.7%	9.9%
2.0 - 2.5	1,045,231	1,145,120	13.8%	15.1%
2.5 - 3.0	1,200,959	1,252,282	15.8%	16.5%
3.0 - 3.5	1,063,355	1,060,776	14.0%	14.0%
3.5 - 4.0	851,028	821,015	11.2%	10.8%
4.0 - 4.5	629,097	582,626	8.3%	7.7%
4.5 - 5.0	449,113	406,980	5.9%	5.4%
5.0 +	1,405,125	1,245,999	18.5%	16.4%
<b>Grand Total</b>	<b>7,581,741</b>	<b>7,595,521</b>	<b>100%</b>	<b>100%</b>
Competitive Trips (TTR < 2.5)			1,983,064	2,225,843
% of Competitive Trips (TTR < 2.5)			26.2%	29.3%

**Table 6: Transit Competitiveness Comparison (All Trips) Dec 2021 vs Dec 2019  
Residents in Non-Equity Focus Communities**

Transit Competitiveness Ratio	Dec 2019 Transit System	Dec 2021 NextGen Transit System	% Dec 2019 Transit System	% Dec 2021 NextGen Transit System
0.0 - 1.0	115,005	120,360	0.7%	0.7%
1.0 - 1.5	382,918	434,788	2.4%	2.7%
1.5 - 2.0	1,036,780	1,156,343	6.4%	7.1%
2.0 - 2.5	1,741,550	1,907,415	10.7%	11.7%
2.5 - 3.0	2,178,852	2,291,443	13.4%	14.1%
3.0 - 3.5	2,161,925	2,200,625	13.3%	13.5%
3.5 - 4.0	1,888,760	1,870,194	11.6%	11.5%
4.0 - 4.5	1,496,214	1,434,154	9.2%	8.8%
4.5 - 5.0	1,137,823	1,071,196	7.0%	6.6%
5.0 +	4,099,191	3,756,162	25.2%	23.1%
<b>Grand Total</b>	<b>16,239,018</b>	<b>16,242,679</b>	<b>100%</b>	<b>100%</b>
Competitive Trips (TTR < 2.5)			3,276,253	3,618,906
% of Competitive Trips (TTR < 2.5)			20.2%	22.3%

While Tables 4, 5, and 6 above looked at all trips, Tables 7, 8, and 9 below examined whether riding transit had become more competitive under the NextGen Bus Plan for those already riding transit. This assessment was based on transit rider TAP data. Again, Table 7 looked at all transit trips while Tables 8 and 9 looked at those trips of residents of EFCs and non-EFCs respectively.

**Table 7: Transit Competitiveness Comparison (Transit Trips) Dec 2021 vs Dec 2019**

Transit Competitiveness Ratio	Dec 2019 Transit System	Dec 2021 NextGen Transit System	% Dec 2019 Transit System	% Dec 2021 NextGen Transit System
0.0 – 1.0	5,114	6,009	0.5%	0.6%
1.0 – 1.5	54,456	67,588	5.7%	7.1%
1.5 – 2.0	150,064	169,751	15.7%	17.7%
2.0 – 2.5	197,944	209,428	20.7%	21.9%
2.5 – 3.0	179,291	176,625	18.7%	18.5%
3.0 – 3.5	128,202	120,088	13.4%	12.5%
3.5 – 4.0	83,534	75,100	8.7%	7.8%
4.0 – 4.5	52,062	45,025	5.4%	4.7%
4.5 - 5.0	32,572	27,421	3.4%	2.9%
5.0 +	73,039	60,177	7.6%	6.3%
<b>Grand Total</b>	<b>956,277</b>	<b>957,211</b>	<b>100%</b>	<b>100%</b>
Competitive Trips (TTR < 2.5)			407,578	452,776
% of Competitive Trips (TTR < 2.5)			42.6%	47.3%

**Table 8: Transit Competitiveness Comparison (Transit Trips) Dec 2021 vs Dec 2019  
Residents in Equity Focus Communities**

Transit Competitiveness Ratio	Dec 2019 Transit System	Dec 2021 NextGen Transit System	% Dec 2019 Transit System	% Dec 2021 NextGen Transit System
0.0 - 1.0	2,690	3,271	0.5%	0.6%
1.0 - 1.5	31,933	40,683	5.6%	7.1%
1.5 - 2.0	92,358	105,446	16.2%	18.5%
2.0 - 2.5	123,497	130,264	21.7%	22.9%
2.5 - 3.0	109,987	106,814	19.3%	18.8%
3.0 - 3.5	76,161	70,019	13.4%	12.3%
3.5 - 4.0	47,595	42,129	8.4%	7.4%
4.0 - 4.5	28,999	24,877	5.1%	4.4%
4.5 - 5.0	17,844	14,844	3.1%	2.6%
5.0 +	38,022	31,249	6.7%	5.5%
<b>Grand Total</b>	<b>569,086</b>	<b>569,595</b>	<b>100%</b>	<b>100%</b>
Competitive Trips (TTR < 2.5)			250,478	279,664
% of Competitive Trips (TTR < 2.5)			44.0%	49.1%

**Table 9: Transit Competitiveness Comparison (Transit Trips) Dec 2021 vs Dec 2019  
Residents in Non-Equity Focus Communities**

Transit Competitiveness Ratio	Dec 2019 Transit System	Dec 2021 NextGen Transit System	% Dec 2019 Transit System	% Dec 2021 NextGen Transit System
0.0 - 1.0	2,424	2,739	0.6%	0.7%
1.0 - 1.5	22,523	26,904	5.8%	6.9%
1.5 - 2.0	57,706	64,305	14.9%	16.6%
2.0 - 2.5	74,447	79,164	19.2%	20.4%
2.5 - 3.0	69,304	69,812	17.9%	18.0%
3.0 - 3.5	52,042	50,070	13.4%	12.9%
3.5 - 4.0	35,939	32,970	9.3%	8.5%
4.0 - 4.5	23,062	20,148	6.0%	5.2%
4.5 - 5.0	14,728	12,578	3.8%	3.2%
5.0 +	35,017	28,928	9.0%	7.5%
<b>Grand Total</b>	<b>387,193</b>	<b>387,617</b>	<b>100%</b>	<b>100%</b>
Competitive Trips (TTR < 2.5)			157,100	173,112
% of Competitive Trips (TTR < 2.5)			40.6%	44.7%

## Travel Time Comparison:

An additional review was made to show travel time comparisons of all trips (Table 10) and transit trips (Table 11) using the NextGen Bus Plan as at December 2021 compared to travel times with the pre-NextGen December 2019 bus services.

**Table 10: Travel Time Comparison (All Trips) Dec 2021 vs 2019**

Transit Travel Times	Dec 2019 Transit System	Dec 2021 NextGen Transit System	Change	% Change
0 - 15 mins	2,214,181	2,347,665	133,484	6%
15 - 30 mins	5,391,656	5,764,411	372,755	7%
30 - 45 mins	5,450,224	5,529,225	79,001	1%
45 - 60 mins	4,008,422	3,857,123	-151,299	-4%
60 - 90 mins	4,576,419	4,324,622	-251,798	-6%
90 + mins	2,179,857	2,015,154	-164,703	-8%
<b>Grand Total</b>	<b>23,820,759</b>	<b>23,838,200</b>	<b>17,441</b>	<b>0%</b>

**Table 11: Travel Time Comparison (Transit Trips) Dec 2021 vs 2019**

Transit Travel Times	Dec 2019 Transit System	Dec 2021 NextGen Transit System	Change	% Change
0 - 15 mins	56,460	62,289	5,830	10%
15 - 30 mins	218,174	239,500	21,326	10%
30 - 45 mins	211,881	217,107	5,226	2%
45 - 60 mins	178,126	174,596	-3,529	-2%
60 - 90 mins	219,214	201,311	-17,903	-8%
90 + mins	72,425	62,407	-10,016	-14%
<b>Grand Total</b>	<b>956,279</b>	<b>957,212</b>	<b>933</b>	<b>0%</b>

Tables 12 and 13 compare changes in percentage of trips in each travel time and for all trips (Table 12) and transit trips (Table 13), with each table broken up by residents in EFCs versus residents in non-EFCs.

**Table 12: Travel Time Comparison (All Trips) Dec 2021 vs 2019 EFC Resident Trips**

Transit Travel Times	Residents in EFCs	Residents in Non-EFCs
0 - 15 mins	7%	5%
15 - 30 mins	6%	7%
30 - 45 mins	0%	2%
45 - 60 mins	-4%	-4%
60 - 90 mins	-6%	-5%
90 + mins	-10%	-7%

**Table 13: Travel Time Comparison (Transit Trips) Dec 2021 vs 2019 Non-EFC Resident Trips**

Transit Travel Times	Residents in EFCs	Residents in Non-EFCs
0 - 15 mins	11%	9%
15 - 30 mins	9%	11%
30 - 45 mins	2%	4%
45 - 60 mins	-3%	0%
60 - 90 mins	-9%	-7%
90 + mins	-15%	-13%

### Destinations on High Frequency Network

This section analyzes the number of 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 15-minute or better (Table 14) and 10-minute or better (Table 15) NextGen networks.

**Table 14: 0.25 Mile Access to Frequent (15 min. or better) Network**

Destination Category	Midday	Midday	2021 vs 2019	PM Peak	PM Peak	2021 vs 2019
	Dec-19	Dec-21	Change	Dec-19	Dec-21	Change
Education	102	138	35%	128	132	3%
Grocery Store	1,466	2,169	48%	2,015	2,148	7%
Health Care	147	208	41%	199	207	4%
Parks	270	467	73%	433	465	7%
Total	1,985	2,982	50%	2,775	2,952	6%

**Table 15: 0.25 Mile Access to Frequent (10 min. or better) Network**

Destination Category	Midday	Midday	2021 vs 2019	PM Peak	PM Peak	2021 vs 2019
	Dec-19	Dec-21	Change	Dec-19	Dec-21	Change
Education	48	116	142%	100	116	16%
Grocery Store	459	1,771	286%	1,498	1,788	19%
Health Care	71	177	149%	163	179	10%
Parks	73	359	392%	296	367	24%
Total	651	2,423	272%	2,057	2,450	19%

### Usage of High Frequency Network

Table 16 on the next page summarizes actual ridership activity (boardings + alightings) on the high frequency NextGen network implemented in December 2021 with 10 minute or better and 15 minute or better service frequencies, as a percentage of total ridership for weekdays. With full build out of NextGen Bus Plan the goal is to increase ridership on the 10 minute or better network to 80% of all ridership.

**Table 16 – Ridership Activity (Boardings + Alightings) on High Frequency Network**

<b>Service Day</b>	<b>% Activity 10 Minute or Better Service Frequency</b>	<b>% Activity 15 Minute or Better Service Frequency</b>
December 2021 Weekday Service Levels	60.6%	82.8%

TransitCenter Equity Analysis:

TransitCenter, a foundation working to improve public transit in cities across the U.S. conducted an equity analysis of transit systems including that of the LA area. The analysis looked at such items as jobs accessible within a 45-minute transit trip and average travel time to essential destinations, including hospitals and grocery stores. The analysis looked at such access for different races, single mothers, essential workers, and those living in poverty.

The TransitCenter analysis was based on all potential trip origin-destination pairs that could be made across all areas of LA County (not just Metro service area), regardless of whether such trips would actually be made. By comparison, Metro’s own analysis presented here is more realistic as it considered how actual trips observed in 2019 could be made on the NextGen network compared to the pre-NextGen network. The Metro analysis also gave more significance to trips of residents in Equity Focus Communities where characteristics of the population were more supportive of the need to use transit and that showed the greatest actual usage of transit.

The TransitCenter analysis was conducted for the period from February 2020 and September 2021. The analysis showed many metrics improving, compared to just before the pandemic and as recovery from the pandemic was occurring, but even before the NextGen Bus Plan was fully implemented in December 2021.

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