TRANSBAY SERVICE RECOVERY SUMMARY

Staff recently proposed a series of Service Recovery Priorities that left open the question of when Transbay service recovery would occur. Staff heard from the public and the Board that more clarity was needed around Transbay service given the critical role it plays in reducing congestion, particularly in the peak-hour.

The majority of the questions were specific to Line B, but the questions also apply to all Transbay service and where it ranks within the District's recovery priorities. Herein, staff will address the following key questions:

1) What factors led to the decision to resume the Transbay service chosen for August 2021 (Why those lines and not others)?
2) How will staff make decisions to resume service on local lines versus Transbay lines moving forward?
3) What is a reasonable timeline for increasing Transbay service and what factors are driving that decision?

AUGUST 2021 TRANSBAY RECOVERY

AC Transit suspended all Transbay service but the F, NL, and O (all-day, 7-day/week lines) in March 2020 given the collapse of the commuter market in response to the regional shelter-in-place order. Not knowing how long the pandemic would last, staff added back a modest amount of Transbay service on lines G, J, L, LA, NX, NX1, NX2, P, U, V, and W – 39 trips added in total. These lines were chosen to spread the Transbay service across several operating divisions to ensure operators have access to higher-paying Transbay runs and to provide some service to some communities (West Contra Costa, Macarthur corridor) where there was a higher concentration of essential workers. Some of the lines only had trips in the afternoon/evening as ridership pre-pandemic was much higher in the afternoon than in the morning. In addition, staff had the opportunity to add these trips without significant additional cost or resources since it was tied to existing afternoon operator work assignments. Ultimately, ridership on these lines remained very modest (under 10 passengers per hour) through June 2021 due to capacity restrictions on the buses and the ongoing pandemic.

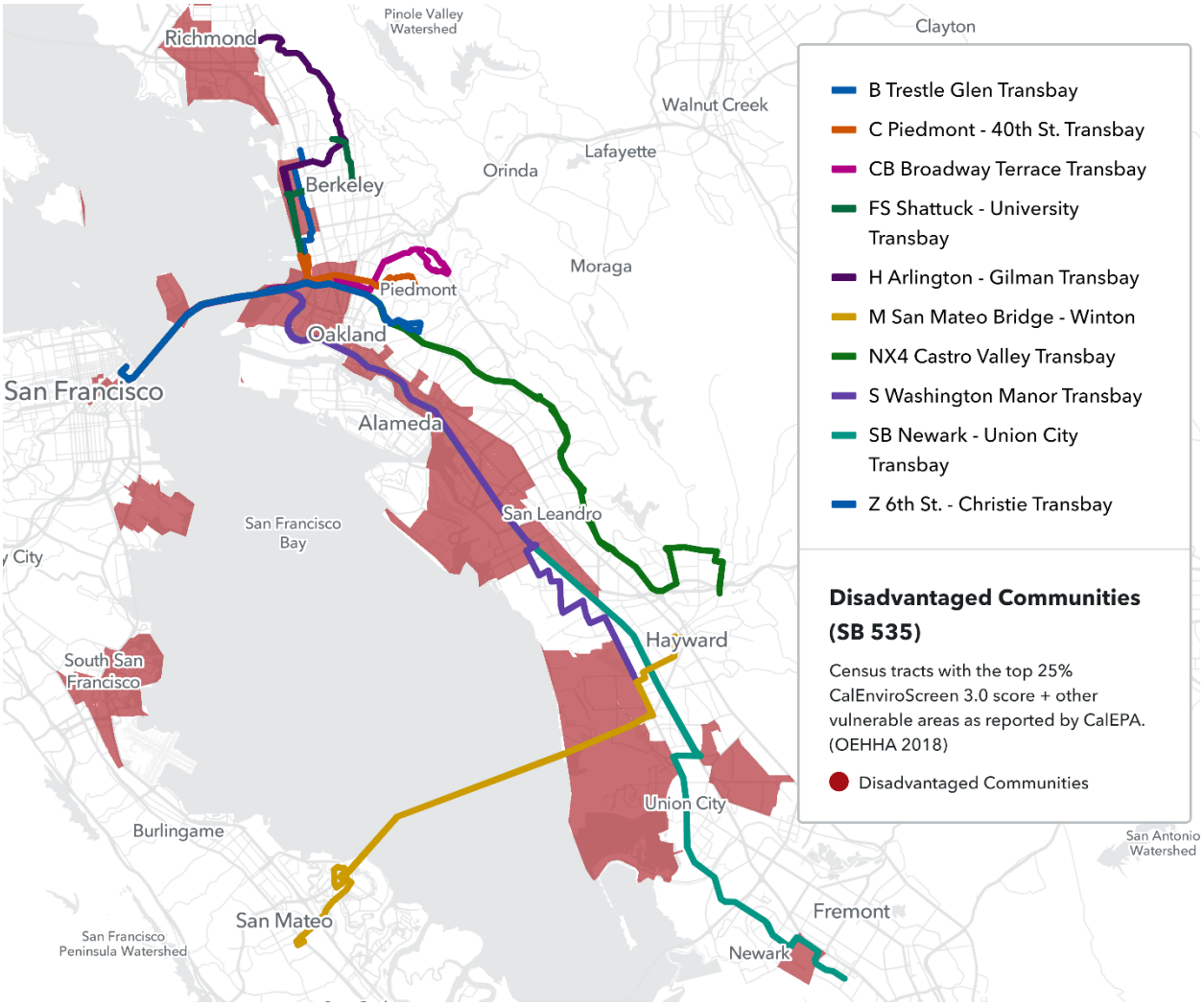
Looking to the start of the 2021/22 school year, staff needed to resume nearly all Supplementary Service, which required adding many vehicle assignments with one trip in the morning and one trip in the afternoon. Staff took this opportunity to stitch Transbay trips onto these Supplementary trips to capture customers who need to return to some measure of pre-pandemic commute patterns. These Supplementary assignments could only be identified after an initial vehicle schedule was built in the scheduling software platform (Hastus). For a typical sign-up, once a vehicle schedule is developed, no further changes can be made to any line schedules because they are the building blocks of the vehicle schedule and operator assignments. However, in this case, staff had a short window to be able to review the Supplementary assignments and attach Transbay trips so that some service could be recovered

without the need to add any operators (staff had a firm workforce cap that we did not exceed). Staff used the following methodology to rank the lines and add service:

- Balance Eastbound and Westbound service. Any line that operated in only one direction needs to have service in the opposite direction restored.
- Add service back according to schedule in place in Fall 2019. Trips will be added only if they existed before in that schedule (e.g. if the last westbound trip on a route was at 8:00 in Fall 2019, we're not going to add 8:15 or 8:30 trips).
- Consider restoration of service based on customer requests.
- Consider restoration of service based on pre-pandemic daily ridership and productivity measures.
- When an entire line is restored, service will be bi-directional.
- Reorganize routes for efficiency where possible. Example would be NX1 and NX2 consolidation.
- Minimum level of service is two westbound AM trips and two eastbound PM trips. Space trips so that arrivals/departures have a sufficient gap to accommodate passengers with varying work times.

Staff was able to add in another 58 trips to the existing Supplementary Service assignments without increasing the operator count. This service was added on lines E, G, J, L, LA, NX, NX3, OX, P, V, and W. The remaining lines with no service are lines B, C, CB, FS, H, M, NX4, S, SB, and Z. Staff estimates the need for at least 70 additional operators to bring the Transbay network back to pre-pandemic levels based on dividing the remaining 285 trips not in service by each assignment having at least four Transbay trips. Exhibit 1 below illustrates the lines that remain suspended as well as the State-designated Disadvantaged Communities (DACs) within the service area. It's critical to note these DACs differ from the MTC Communities of Concern in the methodology with which they're identified and cover a smaller geographic area than Communities of Concern. Staff elected to use DACs to be consistent with the methodology used for Clean Corridors and to ensure the equity component discussed later in this report had a more meaningful impact on route prioritization.

Exhibit 1 – Suspended Transbay Lines and Disadvantaged Communities



FUTURE TRANSBAY SERVICE RECOVERY

When making decisions about what lines to prioritize for recovery, it helps to make the tradeoffs more explicit. With respect to Transbay service, decisions about recovering service create tension between four competing goals:

1) Providing Equitable Service
2) Increasing Ridership
3) Reducing Congestion
4) Leveraging Alternatives

AC Transit has built a focus on equity into its Strategic Plan, with Equity named as a Core Value. There are many ways to try to quantify equity but for the purposes of service recovery, staff utilized the SB 535 Disadvantaged Communities (DACs) whose boundaries are defined by a combination of racial, socioeconomic, and environmental factors (i.e., race, income, proximity to known pollution sources, etc.). These are the same communities District staff used to prioritize the rollout of zero-emissions buses in the

Clean Corridors Plan. While not perfect, they are consistent state-wide and are regularly updated as new data become available, keeping them current. A secondary way of building equity into the service recovery plan is to ensure service is recovered as evenly as possible across the service area.

AC Transit exists to provide mobility to its customers. The District has a limited amount of funding, a fixed number of buses, and a workforce well below its pre-pandemic peak. With workforce being the primary constraint to recovery, staff need to make sure that every new operator put into service can carry as many riders as possible. Forecasting future ridership on a line – especially after emerging from a pandemic – can be challenging and staff have so far relied on ridership data from fall of 2019 as the most recent full pre-pandemic sign-up. More often than not, investment in local service will yield more riders than investment in Transbay service. This is exacerbated by the increasing trend in remote working for the type of employees that Transbay service typically carries.

There are a few key terms to understand when staff discusses ridership and productivity:

1) Trip: A single, in-service one-way travel between the beginning and end of the line (terminals).
2) Revenue Hour or Mile: The time or distance that a bus is in-service plus layover. A trip that is 45 minutes long equates to .75 revenue hours. You add up all the in-service trips plus layover a bus/operator/line does in a given day and you have the daily revenue hours.
3) Platform Hour or Mile: This is the measure of all the time or distance a bus is outside of the garage and in the field, regardless of whether it is in service. This means revenue service plus time spent traveling to/from the in-service route (i.e., deadhead). It is the actual time the bus/operator resources are being consumed.
4) Passengers/Revenue Hour: This is the most common measure of productivity. Trips are different lengths and all lines have different numbers of buses assigned to them so it allows you to compare the effectiveness of two different lines even though one might have 16 buses assigned (1T - TEMPO) and another might only have 7 (Line 18). Staff can divide the number of passengers carried each day by the number of revenue hours spent carrying those riders to see which was a better use of the scarce resources available to the District and then make a decision about where to put future resources. In the case of the example above, 1T carried 30.9 passengers per hour of service while Line 18 carried 12.2 during the sign-up that ended in March 2021.
5) Passengers per Trip: The number of passengers carried in an individual trip. This allows for staff to evaluate service on a trip-by-trip level within a single line or between lines of a similar service type. It can be useful when making decisions about bringing back a trip at one time versus another (i.e., a line may carry 30 passengers on a trip at 8:00 a.m. but only 25 at 8:30 a.m.). It is extremely useful for Transbay service because unlike local lines where a bus comes out of the garage and goes back and forth on that same line until its assignment is over, Transbay service is built using trips at specific times on specific lines so knowing the per-trip ridership on each line allows for better decision-making.

The District plays a critical congestion mitigation role in the region. While both local and Transbay service ease congestion, Transbay service into San Francisco helps address the greatest bottleneck in the region, along with BART, SF Bay Ferry, WestCAT, casual carpool, and other strategies. With only limited Transbay

service on the road, former customers or those looking not to drive may have no choice but to drive or find some other mode to get into San Francisco as the region recovers. This Transbay service is also one of the District's most high-profile services. It helps generate regional funding and its customers form a vocal constituency of voters that is capable of advocating for its needs.

Finally, with limited resources and excess capacity on many AC Transit Lines as well as other services such as BART and the San Francisco Bay Ferry, it's critical the District take into account whether other options are available.

It's helpful at this point to translate these four competing goals into some examples using the index of Transbay service recovery priorities (Exhibit 2). The table is sorted by passengers per trip to allow for the reader to see which lines would theoretically carry the most passengers for every trip staff recovers on that line. A quick note about some Transbay quirks; lines F, NL, and O run all-day, seven days a week and play a local service role in addition to crossing the bridge; lines M and U cross the San Mateo and Dumbarton bridges, respectively; Line Z is built using deadhead trips form other Transbay service and serves a reverse-commute role (i.e., it goes from San Francisco to Emeryville/Berkeley/Albany in the morning and vice versa in the evening); and Line NX serves as a combination of Line NX1 and NX2 in the morning. Lines highlighted in yellow currently have service.

Exhibit 2 – Transbay Service Recovery Priorities

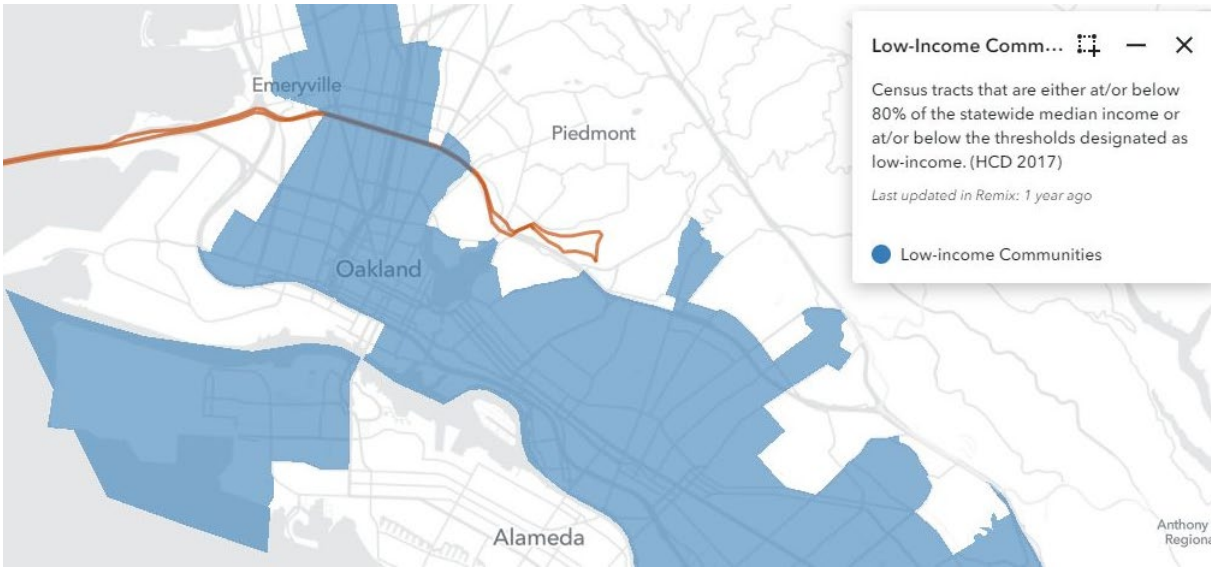
Line	Ward	Vehicles for Full Service	Operators for Full Service	Estimated Avg Daily Pass	Pass per Trip	Below Pre-COVID Levels	DAC?	Coverage Route?	Priority Group
J	1+2	4	9	1,284	55.8	Yes	Yes	No	Transbay
FS	1+2	4	9	826	55.1	Yes	No	No	Transbay
E	2	3	7	489	44.5	Yes	No	No	Transbay
P	2	7	17	1,143	42.3	Yes	No	No	Transbay
G	1+2	3	7	533	41.0	Yes	No	No	Transbay
H	1+2	6	14	719	39.9	Yes	No	No	Transbay
CB	2	3	7	349	38.8	Yes	No	No	Transbay
C	2	5	12	517	36.9	Yes	Yes	No	Transbay
NX	2+3	4	9	399	36.3	Yes	Yes	No	Transbay
V	2	6	14	913	35.1	Yes	No	No	Transbay
NL	2+3	0	0	3,787	33.2	No	Yes	No	Full Service
LA	1	5	12	759	33.0	Yes	Yes	No	Transbay
OX	3	7	17	673	32.0	Yes	No	No	Transbay
U	5	1	2	348	31.6	Yes	Yes	No	Transbay
NX2	3	4	9	309	30.9	Yes	Yes	No	Transbay
W	3	2	5	648	30.9	Yes	No	No	Transbay
NX1	2+3	3	7	212	30.3	Yes	Yes	No	Transbay
NX3	3+4	6	14	392	30.2	Yes	Yes	No	Transbay
NX4	3+4	8	19	419	29.9	Yes	Yes	No	Transbay
F	2	0	0	2,356	29.8	No	Yes	No	Full Service
O	3	8	19	2,027	29.8	Yes	Yes	No	Transbay
SB	5	8	19	456	28.5	Yes	Yes	No	Transbay
L	1	6	14	610	26.5	Yes	Yes	No	Transbay
B	2	3	7	318	24.5	Yes	No	No	Transbay
S	4	4	9	206	18.7	Yes	Yes	No	Transbay
Z	2	0	0	73	18.3	Yes	Yes	No	Transbay
M	4+5	3	7	269	12.2	Yes	Yes	Yes	Transbay

There has been significant interest in Line B so it will be useful to walk through the process of determining where it should fall in the service recovery priorities. Let's start with equity two ways – with respect to DACs and with respect to geography as measured by lines restored by Ward.

EQUITY

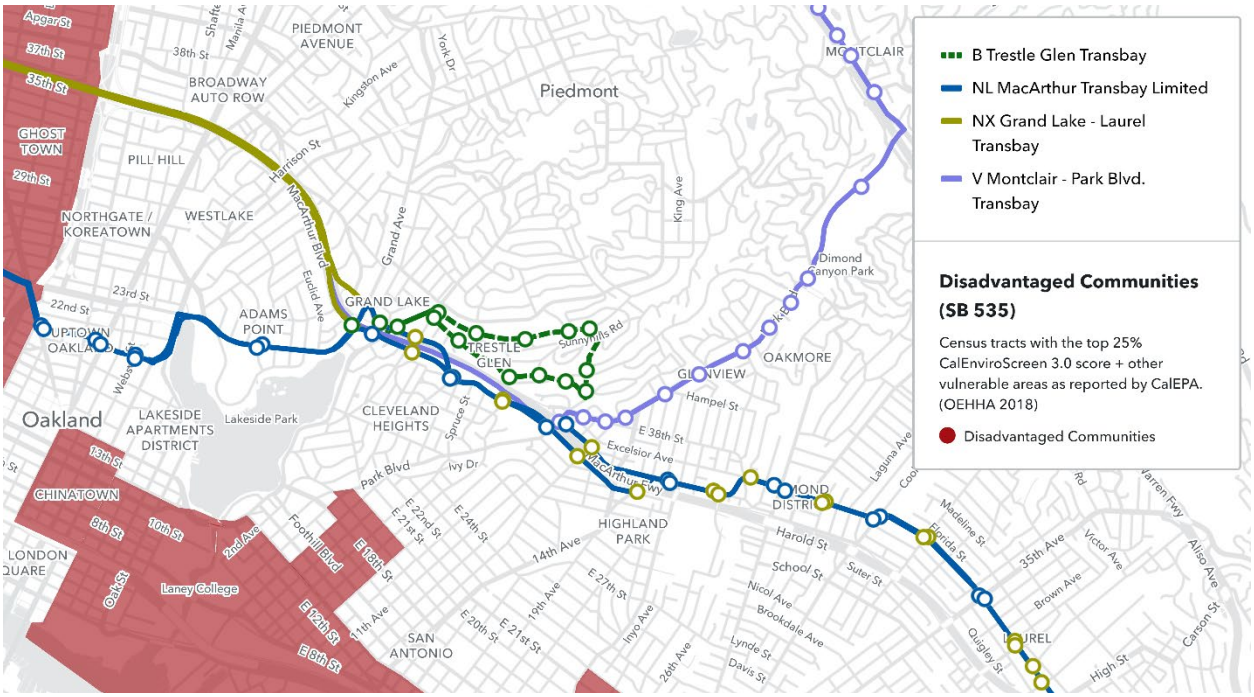
The simple way staff evaluated racial/socio-economic equity within the index was whether a given line served a DAC. Looking at the index, several lines have been restored that do not serve DACs, which isn't unusual for Transbay service, there is a premium fare and the average household income for Transbay customers is well over $100,000 per year versus under $50,000 per year for local customers. The lines serve wealthier, often single-family communities for a short distance before getting on the freeway then providing direct service to the greater San Francisco Financial District. Line B is among the lines that do not serve a DAC that hasn't been activated, but several DAC-serving lines remain inactive, including the C, M, NX4, S, and SB.

Exhibit 3 – Line B Status as Low-income



While not a specific goal within service recovery, geographic equity is a consideration. The vast majority of Transbay service is operated in Wards 1, 2, and 3 and Line B lies within Ward 2. Several other Lines in Ward 2 are also inactive, including the C, CB, FS, H, and Z. A key tradeoff to activating Line B would be not activating service on one of these lines or one of the lines serving DACs that remains inactive. To make this tradeoff explicit, activating Line B would mean disadvantaged customers in another ward or even within Ward 2 would continue to have inactive service while Line B, which has service nearby on Lines NL, NXs, and V would have another new option in Line B.

Exhibit 4 – Line B Proximity to Other Transbay Service



RIDERSHIP

Ridership and productivity are more straightforward factors. For the purposes of recovery, staff is placing the most weight on passengers per trip because Transbay service is built trip-by-trip to fill out commute hours. Looking back at Exhibit 2, there are six lines that are still inactive but have higher per-trip (and overall daily, for that matter) ridership: C, CB, FS, H, NX4, and SB. Three of these lines – C, NX4, and SB – also serve DACs. Many of these lines – C, CB, FS, H – also serve Ward 2. Which of these lines should staff not recover to make resources available for Line B? How many potential riders will AC Transit not carry to ensure Line B has service? These are the difficult questions staff has been working through when choosing which lines to bring back.

CONGESTION REDUCTION

The amount of congestion reduced by a given Transbay trip can be difficult to measure but generally congestion is comprised of the number of cars on the road and the distance those cars are traveling. The closest metric to helping AC Transit quantify congestion reduction is Passenger Miles Traveled. This metric is determined by multiplying the number of passengers on a given line/trip/system by the average length of a customer trip. It can tell you how many miles your customers traveled on the bus, and in this case will tell us how many miles were **NOT** traveled in a car because the customer was or could be on the bus. While we don't have trip length by line, average trip length for a Transbay trip is 12.9 miles system wide. To estimate the number of passenger-miles a given Transbay line will reduce for each trip we activate, we can multiply the Transbay average trip length by the passengers per trip for that line. Exhibit 5 shows the number of passenger-miles traveled that would be theoretically reduced for each trip recovered on the lines that will still be inactive as of August 9, 2021. Every trip on Line FS – also in Ward 2 – would reduce

road mileage by more than twice as much as Line B when using the overall Transbay average passenger trip length and pre-pandemic per-trip ridership. Line B also benefits by using the overall system-wide average trip length as it serves an area very close to I-580 and the Bay Bridge versus some other lines like the H which serves the Berkeley/El Cerrito Hills or Line SB, which needs to travel all the way from Fremont.

Exhibit 5 – Congestion Reduction Estimates

Line	Ward	Estimated Avg Daily Pass	Pass per Trip	Passenger Miles Traveled Per Trip
FS	1+2	826	55.1	710
H	1+2	719	39.9	515
CB	2	349	38.8	500
C	2	517	36.9	476
NX4	3+4	419	29.9	386
SB	5	456	28.5	368
B	2	318	24.5	316
S	4	206	18.7	242
Z	2	73	18.3	235
M	4+5	269	12.2	158

AVAILABLE ALTERNATIVES

At a more macro level, available transit capacity plays a role in reducing congestion along the Bay Bridge corridor and a key effort to reduce congestion will be to fill available seats on all Transbay service, including BART trains which have significant available capacity. In the case of Line FS, it runs along streets served by Line 51B – one of the most frequent lines in the system – and also serves downtown Berkeley, where riders also have access to BART. Similarly, Line B serves an area that – while hilly like most Transbay lines – is within 3/4 mile of local Lines 12, 29, and 57 that can connect riders to BART and Transbay Lines NL, NX, and V, which all go to Salesforce Transit Center. It is crucial the District leverage these other available services when prioritizing which lines to recover with limited resources.

Based on this analysis, staff will continue to apply the recovery principles used to identify the service coming in August 2021, which would mean additional operators would potentially be focused on lines C, FS, H, NX4, and SB given some serve DACs and their ridership relative to other lines not operating currently.

TRANSBAY RECOVERY TIMELINE

The Transbay service was broken out into a separate priority category in Staff Report 21-311 because much of the service would have fallen into Priorities 2 or 3 and staff was aware that would mean it wouldn't be restored within the next 12 months at the current rates the District is hiring new operators. This would not be palatable to the Board or customers who will soon begin returning to their offices.

Current projections show no additional operators will be available for service expansion in December 2021 but as many as 10 may be available for March 2022. Staff recommends devoting some of those resources to Transbay service compared to local recovery. There may be room for further recovery in June 2022.

Staff has begun public engagement on a system-wide service plan that will include a full analysis of Transbay service and will help shape what the future of the Transbay network. Staff is working to conduct an onboard customer survey this Fall, with an online component that will allow us to reach customers who have yet to return to transit or would like to but can't because their line is suspended. More opportunities for public engagement will follow the survey, and the Board and the public will have several opportunities to see plan recommendations and provide comments. One key positive development is staff's expectation that Regional Measure 3 funding will be unlocked which will allow for service expansion beyond pre-pandemic levels once the workforce to do so is available.