

15 Third Bus Study



San Francisco County Transportation Authority
Neighborhood
program

Final Report: December 2020

Acknowledgments

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1. Introduction

In 2007, San Francisco began service on the new T Third Muni metro line, the first new light rail line in over half a century. Planned as part of a major expansion of transit service within San Francisco, the T Third route has long experienced delays, operational challenges, and poor reliability. While some improvements have been made to the current service and more are planned as part of the Central Subway, community members have expressed significant frustration with the current service and many have requested the return of the 15 Third bus service that the T Third replaced.

At the request of Commissioner Walton, the Transportation Authority conducted a study of returning the 15 Third bus to service, with a focus on improving travel times from the Bayview to Downtown. The study was funded by the Proposition K Neighborhood Transportation Improvement Program (NTIP) which was designed to address local transportation challenges that impact communities of concern.

This study focused on providing improved access to downtown, which has been raised as a significant concern in numerous transportation planning processes, including most recently in the Bayview Community Based Transportation Plan, adopted by the San Francisco Municipal Transportation Agency (SFMTA) Board in February 2020.

With the implementation of the T Third, the simple return of a bus service in parallel with the light rail may not be feasible. Increased traffic and reduced street space (now used by the T Third) would limit the effectiveness of a local bus route. However, alternate services, such as express or limited service, may provide an opportunity to provide faster, more efficient travel from the Bayview and Visitacion Valley to downtown.

During the course of this study, the COVID-19 pandemic began, leading to a shelter in place order and the cessation of much of San Francisco's transit service, including the replacement of the surface rail routes (like the T Third) with bus service. The analysis conducted for this study is based on the service as it was in the Fall of 2019.

The SFMTA is currently working towards the reopening of the rail system in winter 2021. Based on the findings of this study, the SFMTA intends to introduce a 15 Third Express bus service when the rail system resumes.

1.1 STUDY PROCESS

The study analyzed a proposed addition of a new 15 Third transit service. The steps of the study included:

- Reviewing current T Third service (as of Fall 2019) and former 15 Third service operations, ridership, and performance, using readily available data.

-
- Reviewing previous studies that summarized community concerns with the T Third service and the desire for reintroduction of the 15 Third, including past studies and records of public hearings conducted by the Human Rights Commission.
 - Summarizing existing and proposed changes in land use and development since the transition from the 15 Third to the T Third.
 - Conducting a transit and walking tour of the corridor.
 - Identifying potential options for a 15 Third bus service and reviewing with Commissioner Walton's office.
 - Estimating two model runs to evaluate the potential impact of a restored bus service.

This project was conceived as a technical analysis that would build on prior studies and public outreach. Within the scope of the study, limited stakeholder outreach was planned for March 2020 through presentations to community groups. Due to the onset of the COVID-19 pandemic and shelter in place orders, these meetings were canceled. However, the SFMTA has been conducting outreach as part of their work to implement a new 15 Third express bus service. That outreach included a working group made up of community leaders and a survey of resident of potential route options.¹

1.2 PROJECT GOALS

The 15 Third Bus Study was organized around a set of goals established in the project request:

- Improve transit access for Bayview and Visitacion Valley residents to downtown
- Identify improvement options that address current operational challenges of the T Third, while not introducing new challenges
- Identify service options that can be delivered timely and cost effectively

1.3 ORGANIZATION OF THE REPORT

The report is organized as follows:

Section 2 summarizes existing conditions, including travel time in the Third Street corridor, ridership on the current T and former 15, trip patterns in the area today, and the availability of transportation options.

¹ <https://www.sfmta.com/projects/bayview-hunters-point-express>

Section 3 presents several potential options to restore the 15 Third bus service, including identifying potential challenges for operating both the T and 15 services.

Section 4 presents the analysis of two options:

- » A Third Street Express bus (called the 15AX) that travels express on Third Street through Mission Bay and the Dog Patch with limited stops in the Bayview and Visitacion Valley.
- » A Hunters Point Express bus (called the 15BX) that travels express on Third Street through Mission Bay and the Dog Patch and makes a loop through Hunters Point and the Bayview.

Section 5 presents the conclusions of the study, including potential implementation opportunities for future consideration.

2. Existing Conditions

This chapter describes the existing conditions and performance of the T Third service and the prior 15 Third service, current accessibility issues and challenges, and land use changes in the corridor. In recent and previous outreach, the community has raised concerns about the schedule for improving the travel time and reliability of the current service and concerns regarding vehicles going out of service at the Muni Metro East facility (near 25th Street), which requires passengers to offboard and switch to a new train. This section reviews the current transit performance data in the corridor, as well as changes that have taken place in the corridor since the inception of the T Third.

2.1 TRANSIT PERFORMANCE IN THE THIRD STREET CORRIDOR

Users of the T Third have long expressed concerns about the service with recent calls for change by the Human Rights Commission and during the T Third platform relocation associated with the opening of Chase Arena. While signal improvements are planned as part of the Central Subway that will address some sources of the delay (in particular, the Third Street and King Street intersection where the T Third meets the N Judah), the continued delay in implementing this project has increased demands for the return of bus service.

This section describes transit performance in the Third Street corridor both currently and for the former 15 Third service, including:

- Travel time for both T Third and the prior 15 Third service
- Ridership for both the T Third and the prior 15 Third service
- Trip patterns for people who live in the corridor today
- Transit connectivity for people traveling from the corridor

Travel time

Compared to the 15 Third bus route that it replaced, the T Third line is a slower connection to and from Downtown. In the Fall of 2019, the T service took roughly an additional 9 minutes to traverse the corridor from Third Street and Palou Street in the Bayview to Kearny and Market streets downtown (Table 2-1), though the City has grown substantially in the intervening years.

The current T bus service being operated due to the pandemic is also provided for information. SFMTA has replaced the T Third with a temporary bus route on two occasions, during construction of a new platform at the Chase Center and recently during the coronavirus pandemic, when all Muni Metro lines have been shut down temporarily.

Table 2-1. Travel Time on T Third and 15 Third Services

	3RD ST & PALOU	3RD ST & 20TH ST	4TH ST & TOWNSEND/ KING	KEARNY & MARKET	TOTAL TIME
15 Third	8:30	8:40	8:46	8:57	27
T Third	8:29	8:40	8:50	9:05	36
Additional Time (minutes)		1	4	4	9
T Bus (COVID-19 service)	8:32	8:42	8:48	8:59	27

Stops for some locations are estimated based on stops on either side for comparability between the various services.
Source: SFMTA current and archived time tables

While there is a small difference along the corridor in Visitacion Valley and the Bayview, the most significant differences are in Mission Bay and along the Embarcadero, with about half the additional travel time for the T Third occurring in each. There are a number of factors driving these differences.

Shepherd’s hook along the Embarcadero. From the Fourth & King Station, the T Third travels to Downtown via a “shepherd’s hook” routing, turning the less than one-mile distance between that station and the Powell Street Station into a 2.5-mile route.

Rail switches and curves. The T has several turns with tight geometries that restrict the speed of the train (and limit simultaneous travel in both directions). At Cesar Chávez and 25th streets, rail switches serving the rail yard force trains to travel slowly. The curve at Third and Fourth streets also slow trains considerably.

Signal-induced delay. The T Third passes through nearly 60 intersections on its route. The accommodation of left turn movements across the tracks in several locations creates significant delay for the T Third.

Conflicts with left-turning vehicles. Tight geometries dictate that some signals must shift facing left turns off of Third Street to alternate phases to avoid collisions. These phases induce additional delay to transit operations. According to SFMTA data, there were over 21 left turn crashes with the T Third over the last five years.

Shared right-of-way. Along Third Street within the Bayview (from Kirkwood to Shafter avenues), the train shares its right of way with vehicles, leading to potential delays during times of heavy traffic.

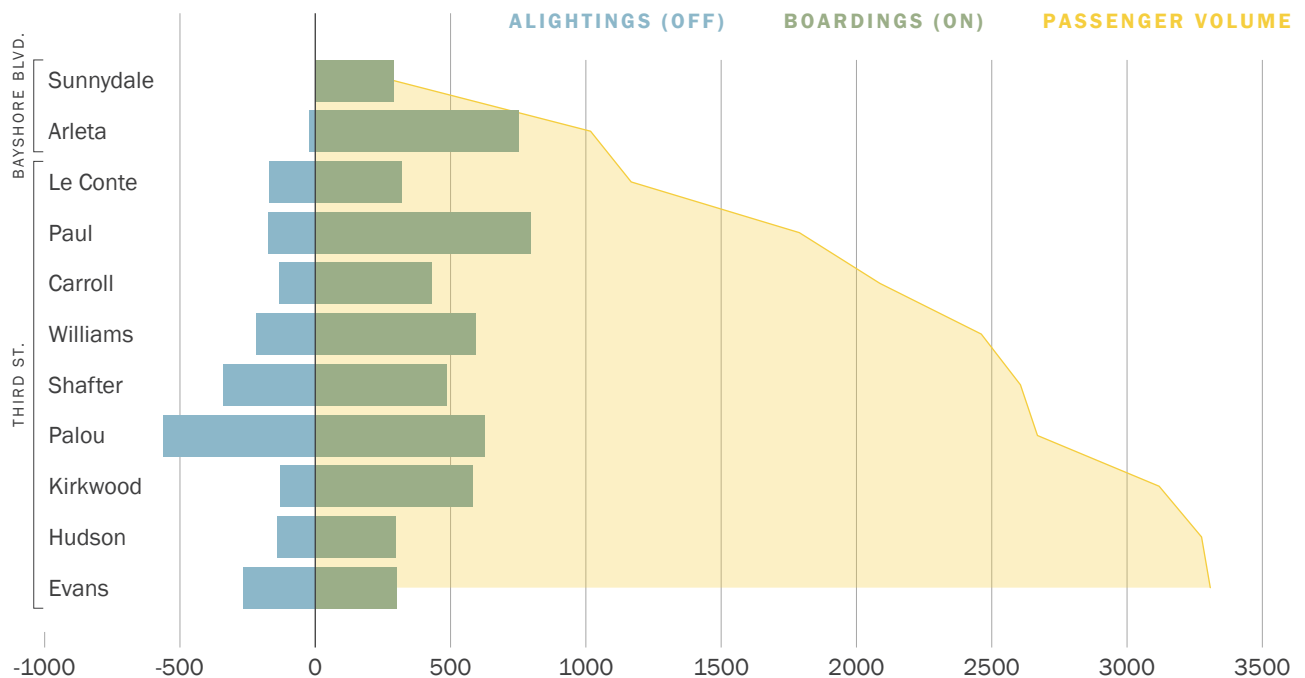
Pedestrian crossings. Several intersections along the T Third route feature significant pedestrian activity (e.g., Chase Center, Oracle Park, Oakdale) requiring additional signal time for crossing movements along the route.

An analysis of travel time shows that, while a slight majority of Northbound boardings take place in the southern section of the route, an average of about 60% of the travel time is spent along the northern half of the route (between the Marin and Embarcadero stations).

Transit Riders

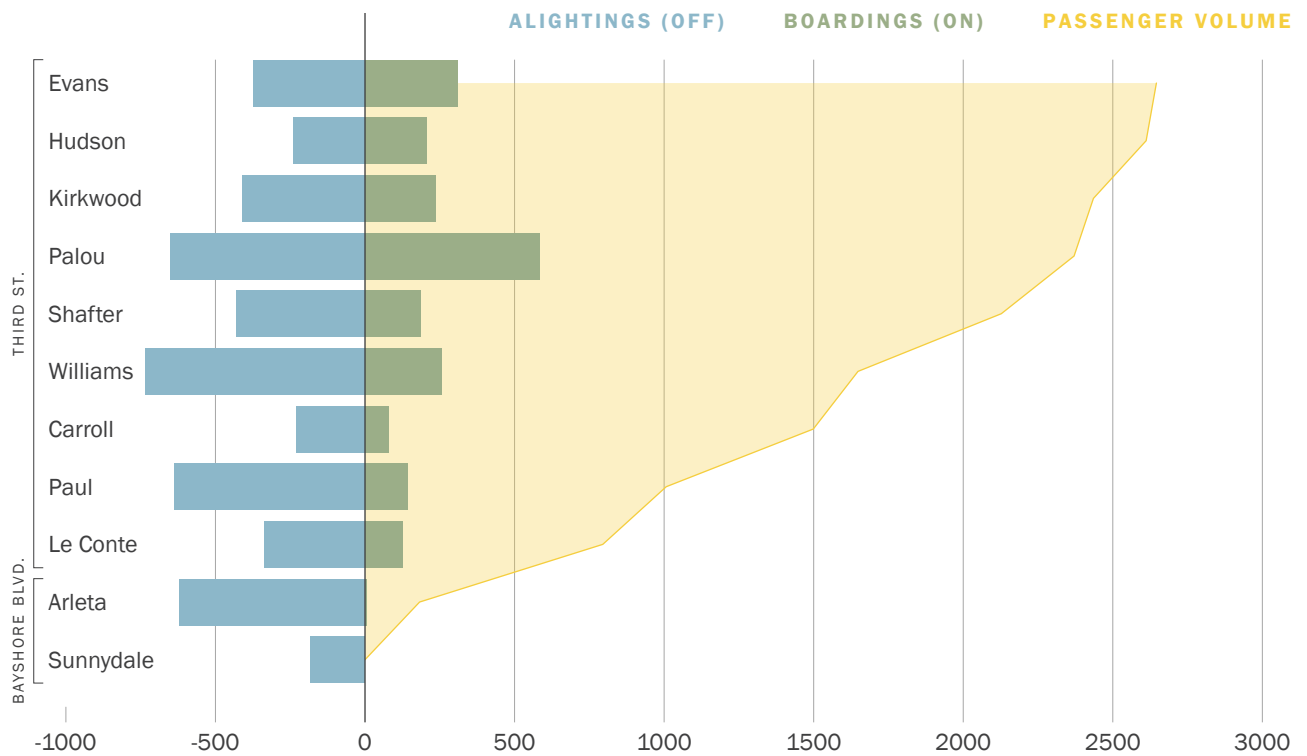
Inbound boardings on the T Third are spread relatively evenly across the stops in Visitacion Valley and the Bayview (Figure 2-1). The largest numbers of boardings for the T Third are at Arleta and Paul streets, with Palou and Williams streets not far behind. Over 500 people traveling inbound exit at Palou and 2,000 of the 5,500 people who board the inbound train along its route exit in the Bayview, indicating that it is used for local travel or for transfers from other routes, such as the 8AX/8BX and the 9R that travel the same route as the T Third in parts of Visitacion Valley. Outbound travel to the Bayview and Visitacion shows similar patterns (Figure 2-2).

Figure 2-1. T Third Boardings, Alightings and Passenger Volume Inbound from Visitacion Valley and the Bayview



Note: volume refers to the total volume of people on trains traveling inbound, while the dark green bars indicate the number boarding and the light blue bars indicate the number exiting the train at each stop
 Source: SFMTA Ridership Data

Figure 2-2. T Third Boardings, Alightings and Passenger Volume Outbound to the Bayview and Visitacion Valley



Note: volume refers to the total volume of people on trains traveling inbound, while the dark green bars indicate the number boarding and the light blue bars indicate the number exiting the train at each stop
 Source: SFMTA Ridership Data

Origin-Destination Trip Patterns

Trip patterns to and from the greater Bayshore community were examined using data from the Transportation Authority’s travel demand model, the San Francisco Chained Activity Modeling Process (SF-CHAMP). The greatest number of trips originating in the Bayshore area terminate within the same zone, with the broader Mission zone and the Downtown zone as the two other major destinations. Of the approximately 228,000 daily person trips originating in Bayshore, 28 percent end within that community, 10 percent involve travel to the Mission, 9 percent to Downtown, and 7 percent to the Outer Mission (Figure 2-3).

Figure 2-3. Total Daily Person Trips Originating in Bayshore

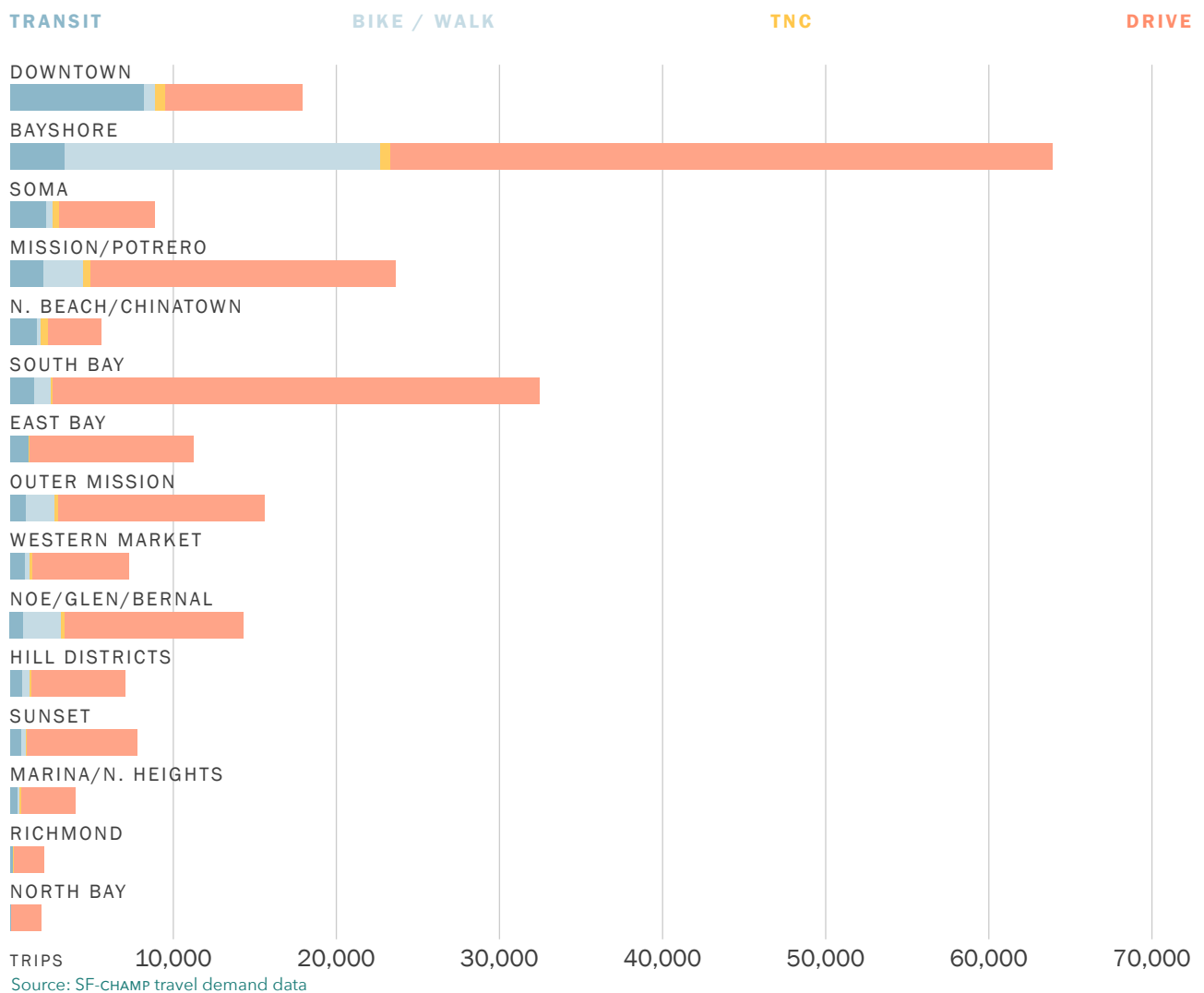


Source: SF-CHAMP travel demand data

Transit use for Bayshore origins is most significant for trips to downtown, with almost 40 percent of trips made by transit (Figure 2-4). Other significant destinations for transit trips include North Beach and SoMa (about 25 percent of trips by transit). Travel to other areas of the City generally had smaller levels of transit use and trips to Marin County and the Peninsula were especially low (4 to 6 percent).

The actual numbers of trips made by mode are depicted in Figure 2-4. While the Bayshore zone has a relatively small transit mode split, the total number of daily internal transit trips – over 3,000 – makes it the zone second most accessed by transit, after Downtown (with over 8,300 transit trips). The SoMa and Mission/Potrero zones are the only other zones to attract over 2,000 daily transit trips originating in the Bayshore zone.

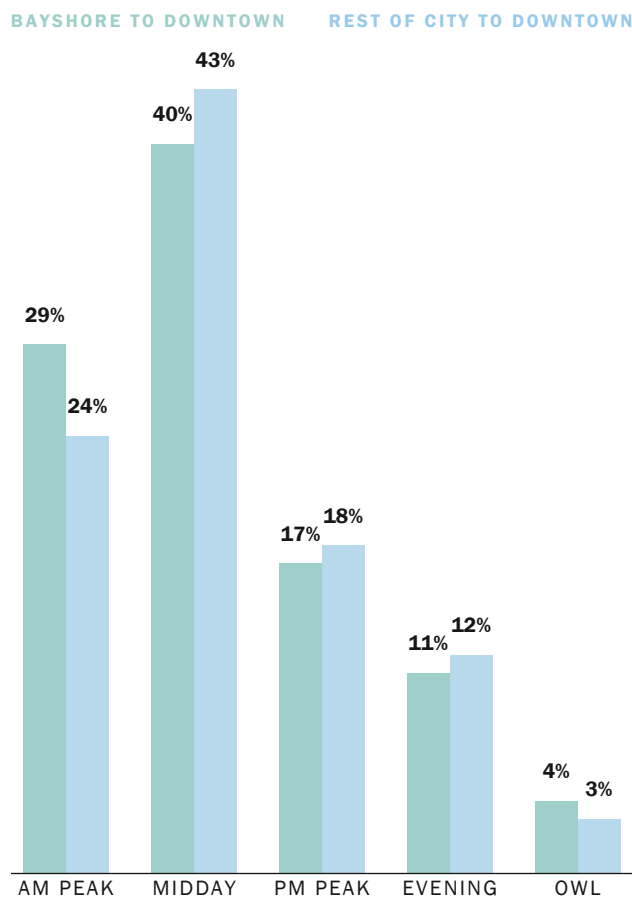
Figure 2-4. Daily Trips by Mode for Travel Originating in the Bayshore Zone



Travel by Time of Day

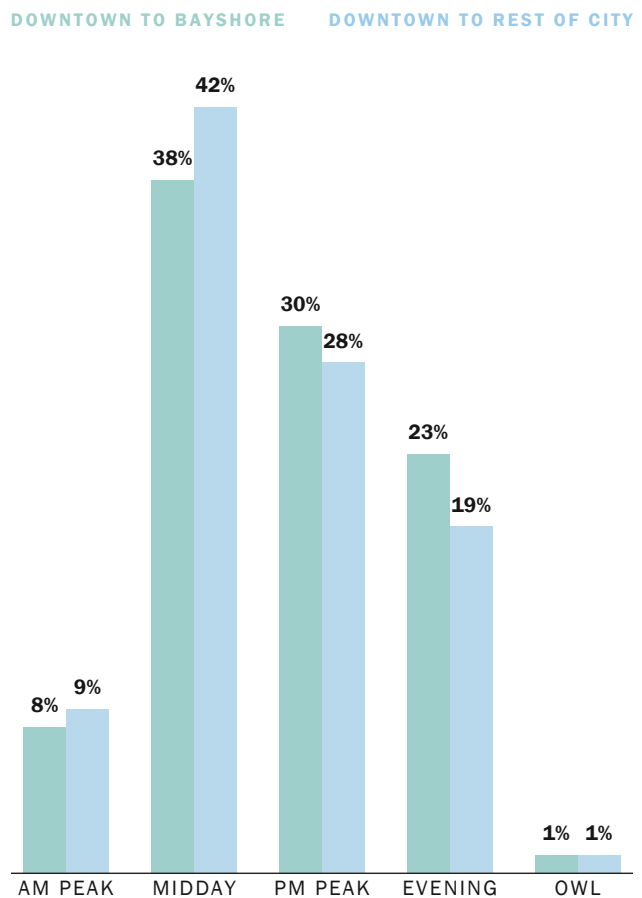
An important consideration for designing a service is to identify time of day of travel demand from the Bayview and Visitacion Valley to and from downtown. Current travel from the Bayshore district to downtown (Figure 2-5) and from downtown to the Bayshore district (Figure 2-6) is similar for the Bayshore district as for the rest of the City. This suggests that services serving the peak and mid-day may be appropriate for addressing the transportation needs being reviewed by this study.

Figure 2-5. Trips from Bayshore to Downtown by Time of Day



Source: SF-CHAMP travel demand model estimates

Figure 2-6. Trips to Bayshore from Downtown by Time of Day

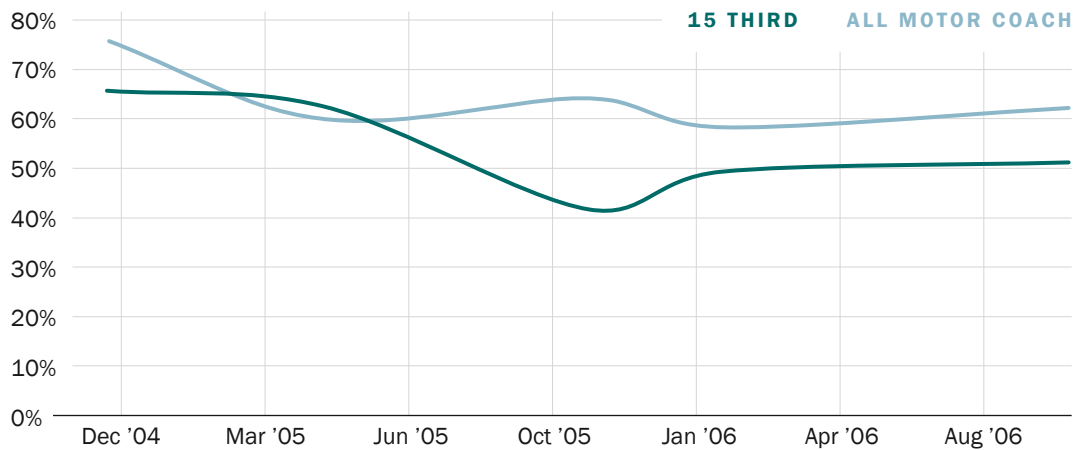


Source: SF-CHAMP travel demand model estimates

15 Third Performance

For the purposes of understanding the potential for a reinstated 15 service, the performance of the prior 15 service was reviewed from past SFMTA records. Figure 2-7 summarizes schedule performance – how frequently the bus met its expected headway. In the two years leading up to the implementation of the T Third, performance on the 15 Third declined from 65% to around 50%. This decline mirrored a general decline in schedule performance for all bus routes.

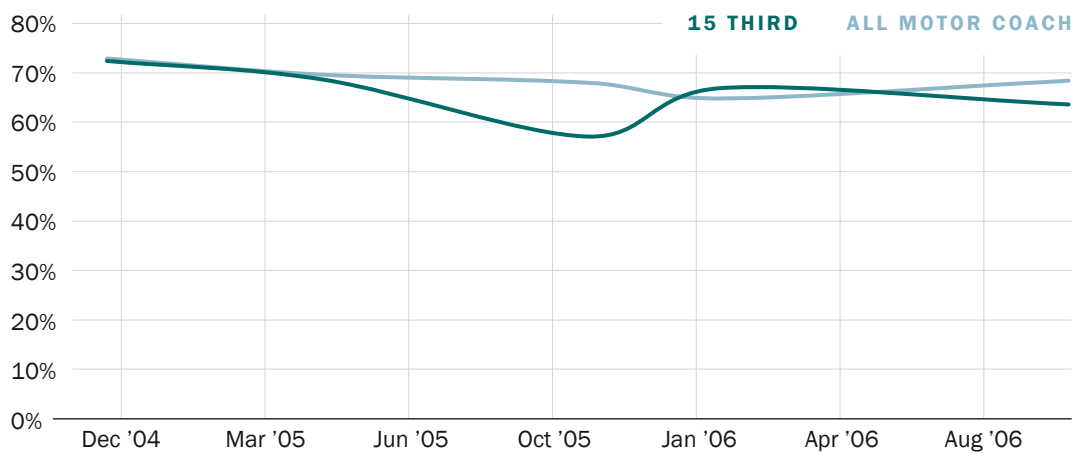
Figure 2-7. Schedule Performance of 15 Third, 2004 - 2006



Source: SFMTA Proposition E performance reports

On time performance for the 15 Third was generally consistent with that of other bus routes (declining from just over 70 percent to just above 60 percent from 2004 to 2006 (Figure 2-8).

Figure 2-8. On Time Performance of 15 Third, 2004 - 2006



Source: SFMTA Proposition E performance reports

2.2 LAND USE CHANGES IN THE AREA

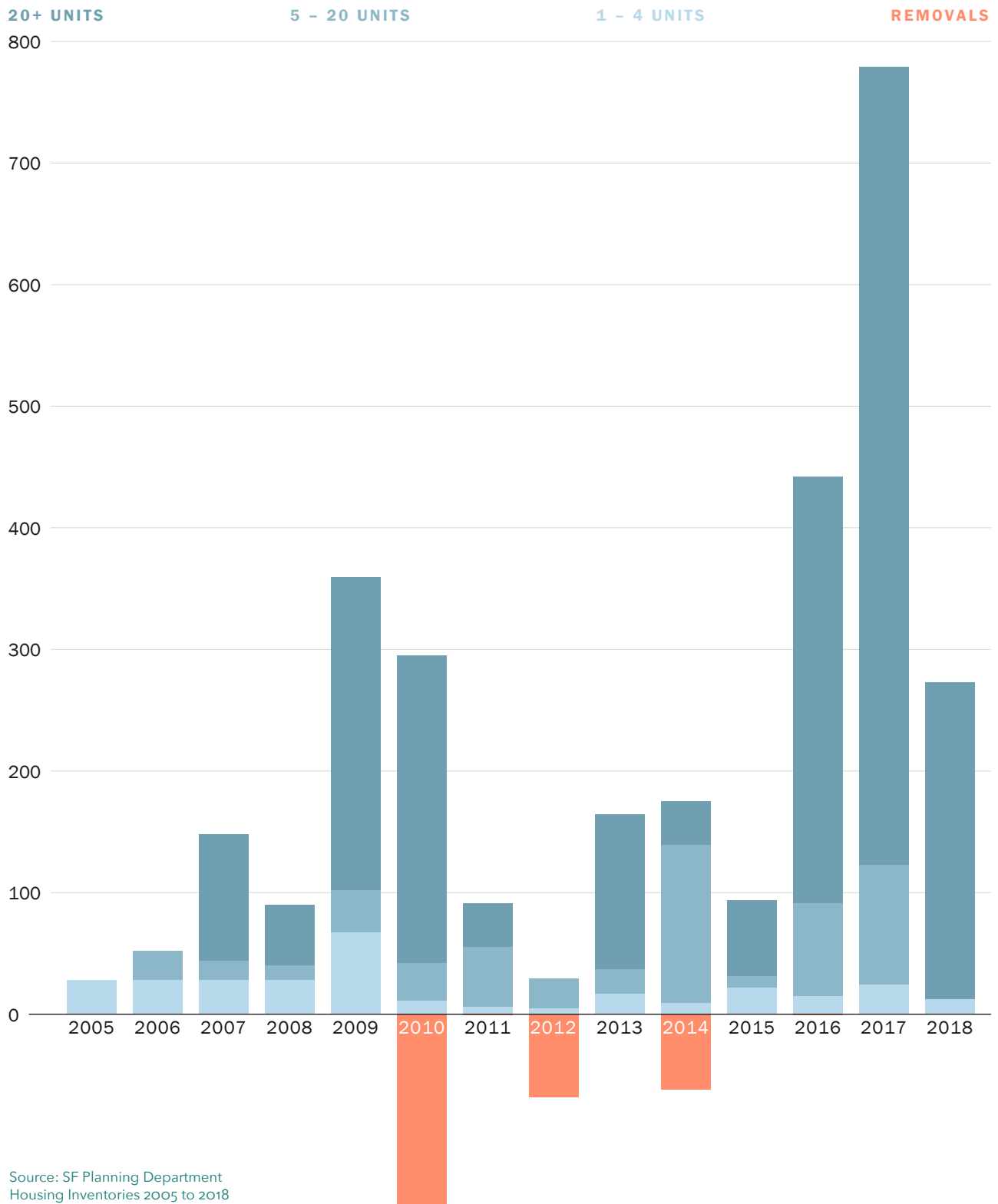
Since the initiation of the T Third service in 2007, there have been substantial changes to the land use along the corridor. Among the most significant set of changes has been the significant development taking place in the Mission Bay neighborhood by the University of California San Francisco, the Golden State Warriors and others.

Additional major developments are approved or planned in the area, including:

- The Potrero Power Plant development recently received approval and is moving forward with development
- Pier 70, currently in development
- Mission Rock, currently in development
- Hunters Point, currently in planning, though delayed for the need to remediate hazardous materials
- Candlestick Point, currently in development
- India Basin, nearing development
- Baylands development in Brisbane, centered around the Bayshore Caltrain station but with potential access to the T Third route.

The Bayview community has also experienced substantial changes along Third Street and in other areas since the initiation of the T service. Figure 2-9 identifies the number of housing units developed (and removed) from 2005 to 2018 (the most recent year of available data) by number of units per structure. There has been a net increase of approximately 2,400 units in the Bayview and Hunters Point neighborhood between 2007 and 2018, with a significant increase in housing development taking place between 2016 and 2018. Notably, over 400 units were constructed along Third Street in the Bayview from 2008 to 2010 and another 130 units in 2014.

Figure 2-9. Housing Unit Development in the Bayview and Hunters Point, 2005 - 2018

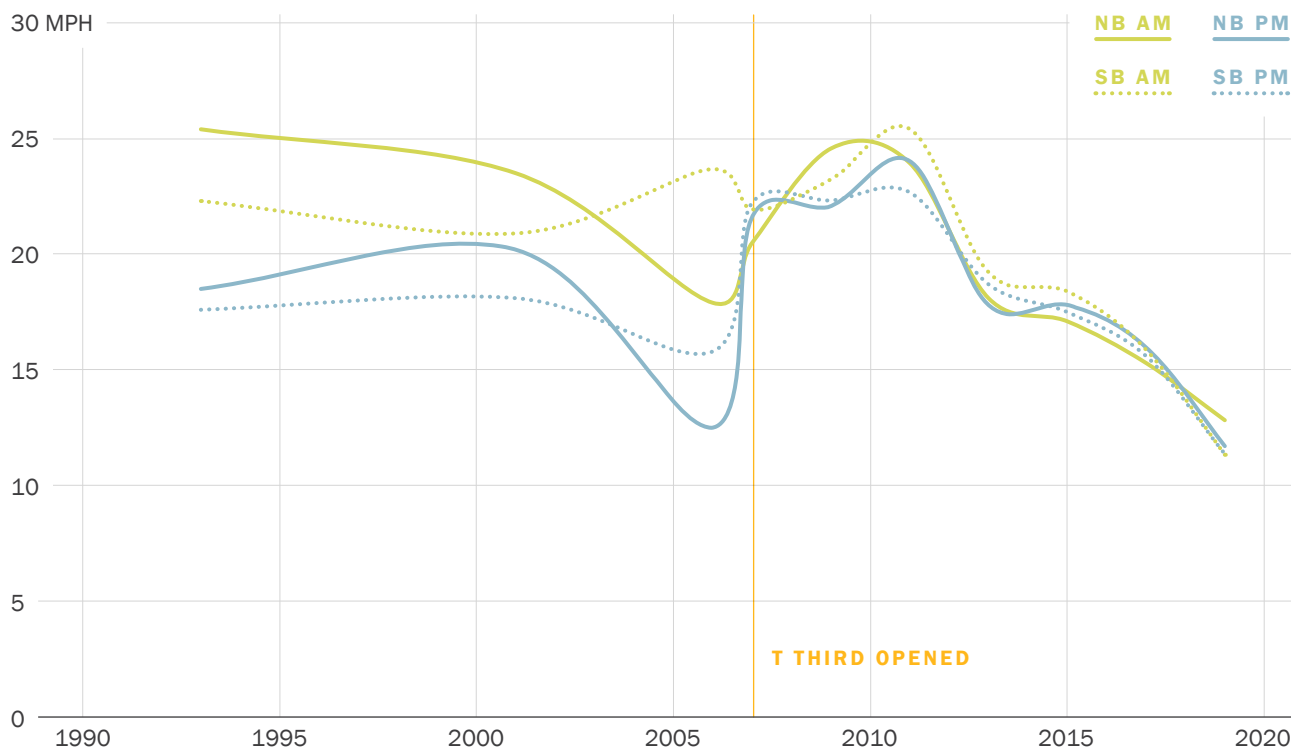


2.3 OTHER TRANSPORTATION CHANGES

Land use change in the Bayview along with the significant growth in the local economy has led to significant changes in travel from the Bayview. Traffic speeds on Third Street declined from 1993 to 2007 when the T Third opened, then increased substantially in 2007 and 2008 as a result of the economic recession (Figure 2-10). As the economy rebounded and with continued growth in the corridor, speeds have continued to decline to the lowest level in 2019 since data collection began.

Since the COVID-19 pandemic, peak period speeds have increased on Third Street to between 15 to 18 miles per hour depending on time of day and direction.

Figure 2-10. Average Peak Period Auto Speeds on Third Street, 1993 - 2019



Source: SFCTA Congestion Monitoring Program, 1993 - 2019

3. Route 15 Alternatives

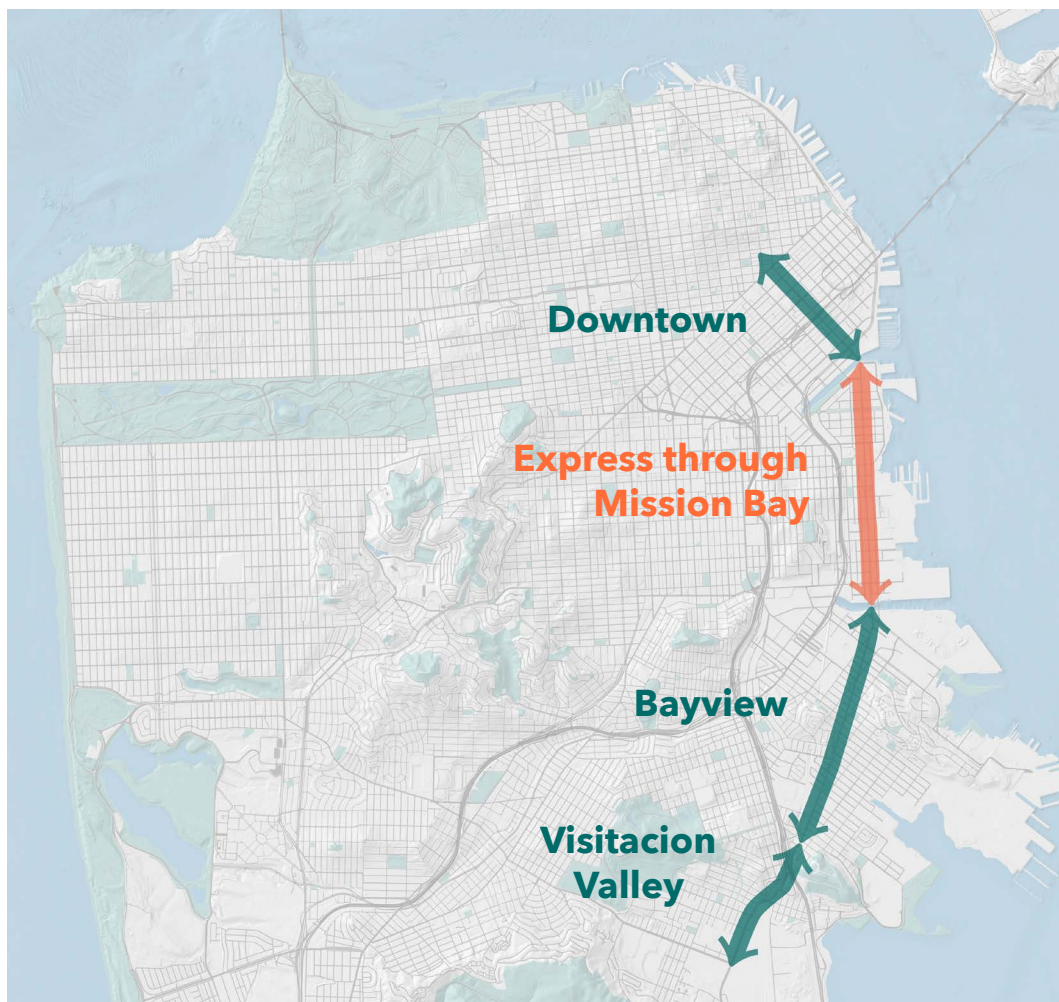
3.1 ROUTING OPTIONS

Based on the information gathered and discussions with Commissioner Walton's office, potential options were identified for a new 15 Third bus route that included:

- Surface options serving the Bayview, Hunters Point, and Visitacion Valley
- Connections between these markets and downtown using either surface or freeway alignments
- Surface street alignments in Downtown

Figure 3-1 identifies the key components, which are described in more detail below.

Figure 3-1. Components of Route Alternatives



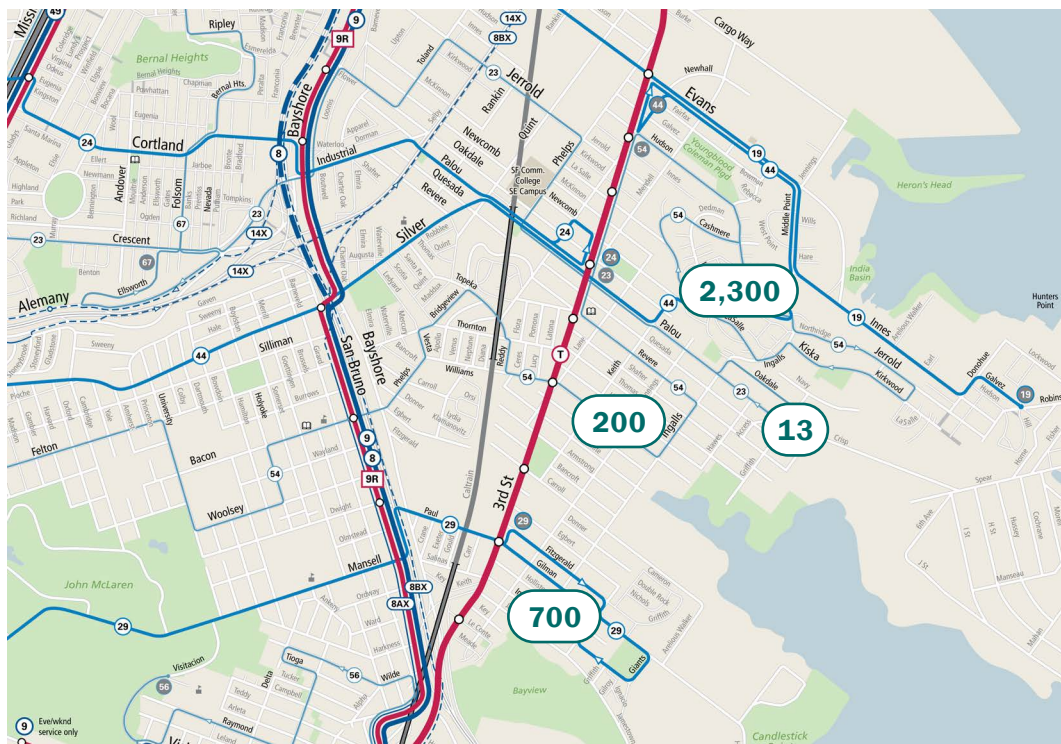
Within Bayview

Within the Bayview community, the choice of routing was divided into two areas of exploration:

Third Street is the main north/south artery through the Bayview community. The T Third light rail operates in the median of Third Street throughout the entire community and any restored 15 Third would be expected to serve at least some major points along Third Street.

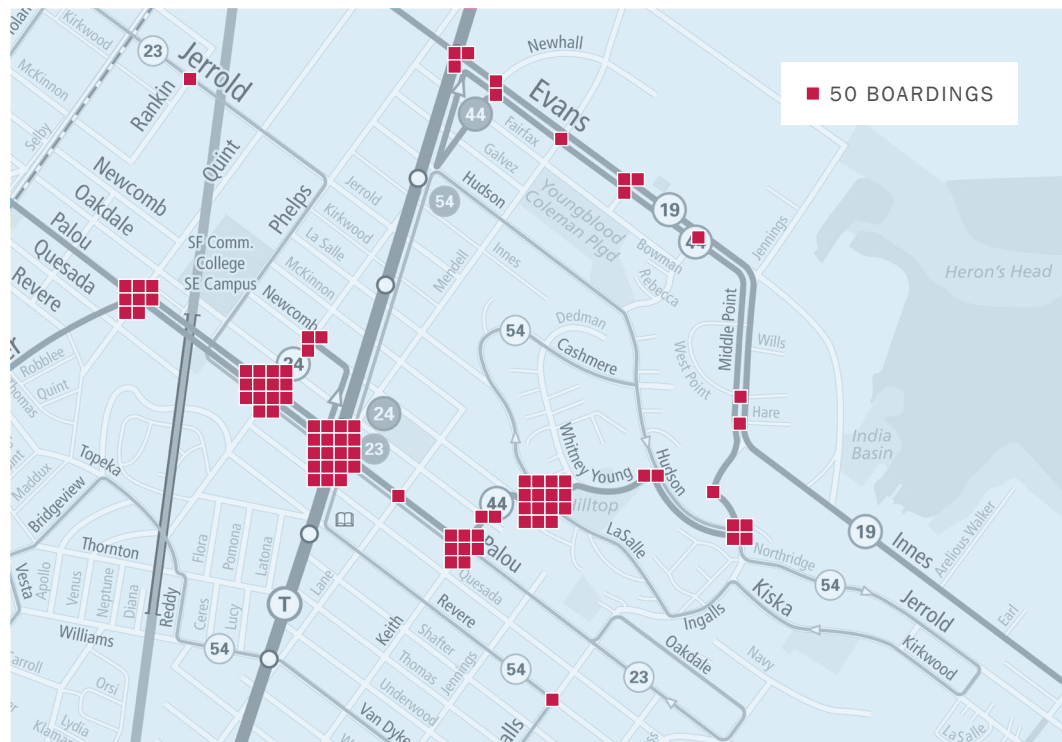
East of Third Street has significant transit ridership in the Bayview and Hunters Point (Figure 3-2). The largest number of passengers board in the area between LaSalle and Evans streets, with a third fewer boardings surrounding Gilman Avenue. These boarding stops coincide with transfer stops. Direct service to Hunters Point may generate a large number of transit boardings given the current need to transfer to access downtown (Figure 3-3).

Figure 3-2. Weekday Transit Boardings East of Third Street (by Area)



Source: Urban Visioning summary of SFMTA Ridership Data

Figure 3-3. Bus Weekday Boardings in Bayview by Stop



Source: Urban Visioning Analysis of SFMTA Boarding Data

Visitacion Valley

The 15 Third line that existed before the T Third connected south to Visitacion Valley and then east to Balboa Park and San Francisco City College. While replicating the original 15 Third route was not the intent of this study, the Transportation Authority did explore options to connect from the Bayview to Visitacion Valley, including:

- Continuing across U.S. 101 into Little Hollywood, paralleling the T Third light rail line and terminating along Bayshore.
- Serving select destinations within Visitacion Valley.
- Terminating at the Bayshore Caltrain station.

Residents of Little Hollywood and Visitacion Valley have access to other express and rapid bus services, in particular the 8, 8AX, 8BX, and the 9R (Figure 3-4). These services provide faster connections to downtown than would be possible for a route traveling along Third Street on a restored 15 Third bus, though select destinations (such as the Fourth and King Caltrain station) would be more accessible for routes traveling along Third Street.

The Bayshore Caltrain station may someday be an important destination, but currently receives limited Caltrain service and has very low ridership, in part due the lack of development in the immediate vicinity of the Caltrain station.

Figure 3-4. Transit Routes Serving Visitacion Valley



Source: SFMTA Muni Map from January 2019

Connecting to Downtown

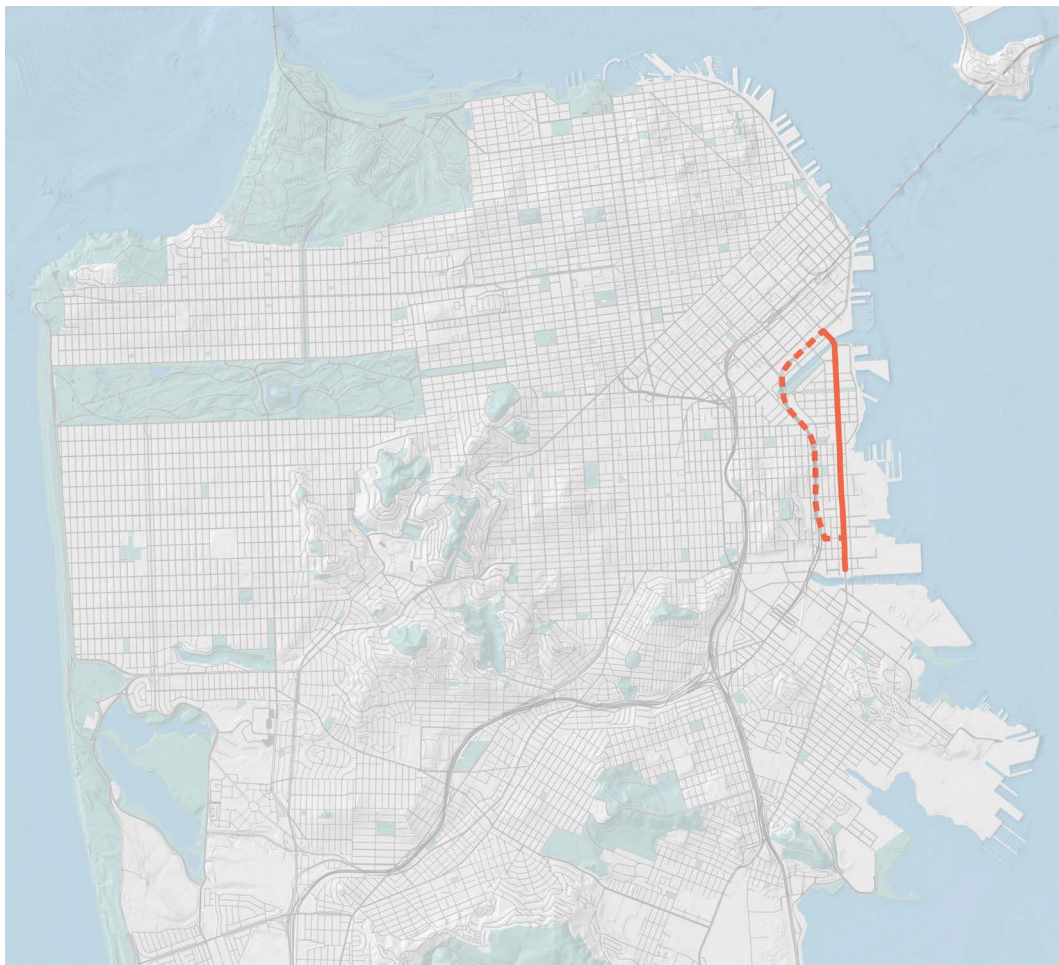
Four potential options were considered for the link between the Bayview and Downtown.

- Third Street, duplicating the T Third light rail path
- I-280, between 25th Street and either 6th Street or King Street
- U.S. 101, accessed either by Cesar Chavez or Jerrold Avenue
- Potrero Avenue, serving San Francisco General Hospital and duplicating the 9R Rapid Bus

The routes on U.S. 101 and Potrero Avenue would add significant travel time to the proposed route. While past planning efforts and community engagement have identified the need and desire for an improved transit connection between the Bayview and the Mission, attempting to address both of these needs (downtown access and Bayview-Mission connectivity) in one service would not provide high quality service to address either need.

Both Third Street and I-280 (Figure 3-5) appear viable options. For the purposes of this analysis, a Third Street route is recommended for evaluation. Congestion at the I-280 off ramps to 5th and King streets may create potential reliability issues. The Transportation Authority is evaluating improvements at this off ramp as part of the U.S. 101/I-280 Express Lanes and Bus project that could potentially provide bus priority at the 5th and King exit from I-280. This could remove a bottleneck that may make the I-280 route preferable. In the short-term horizon of this planning study, there did not appear to be meaningful travel time gains from a route on I-280.

Figure 3-5. Potential Express Routing on I-280



Downtown

Within SOMA and the Financial District, there are a range of considerations for routing a restored 15 Third.

- Avoiding the “shepherd’s hook” that the current T Third light rail uses to access the Market Street subway along the Embarcadero. This travel path adds significant travel time to the T Third and would undoubtedly add travel time to a 15 Third bus, while also creating more complex operations due to the overlap of the two services.
- Serving Caltrain Station at Fourth and King. While an express route through Mission Bay was identified as a preferred option, the Caltrain station is a major transfer point that should be considered.
- Serving SoMa and downtown using the Third/Fourth couplet to reach Market Street and Downtown destinations more directly than the current T Third service does, consistent with the Central Subway improvements currently under construction.
- Using a street parallel to Market Street, such as Mission Street, to serve downtown from the west, terminating by either the Transbay Terminal or the Embarcadero station.

For purposes of evaluation, a route that used the Third/Fourth couplet would be identified as the preferred routing for all alternatives. This would provide relatively speedy access to Powell Station, including stops at the Fourth and King Caltrain station, in SoMa, at Market, and north of Market.

3.2 SELECTED OPTIONS FOR EVALUATION

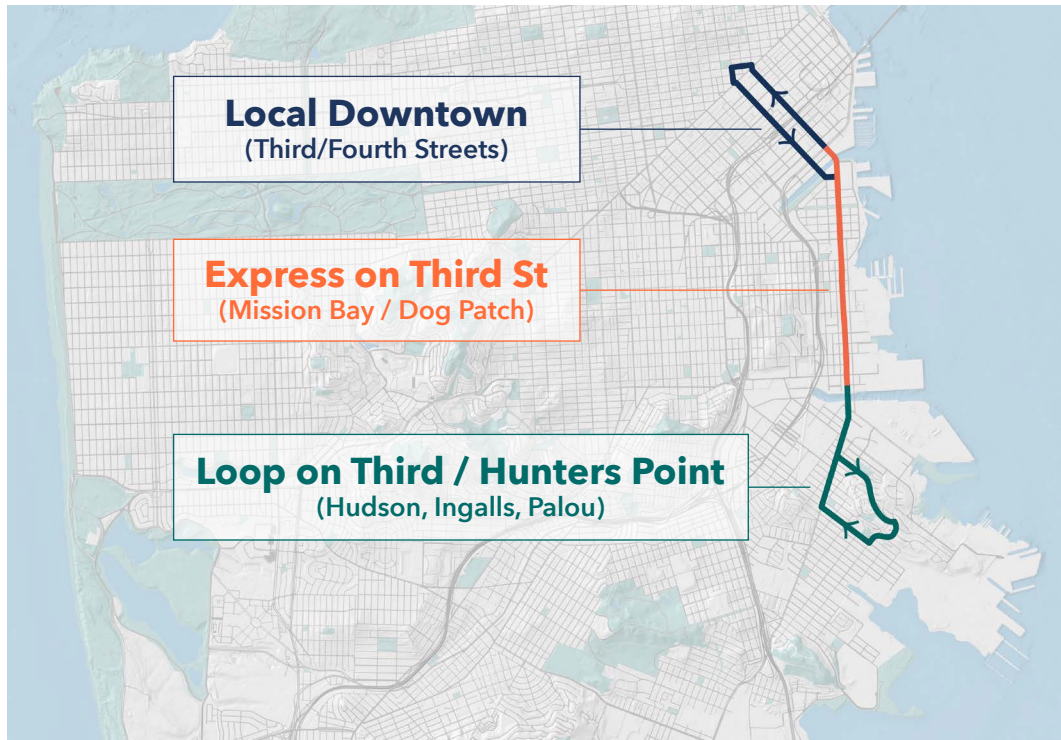
Based on the set of options identified above for each segment, including evaluating existing ridership and available transit services, two options were advanced for further evaluation.

1. **Third Street Limited/Express**, providing limited stop service from Bayshore Boulevard and Arleta Avenue through the Bayview, then express service (non-stop) to downtown (Figure 3-6). This option has been labeled the 15AX.
2. **Hunters Point Express**, providing a circulator service that follows some portions of the 44 and 54 routes on Bayview Hill, to Oakdale and Palou avenues, then express service (non-stop) to downtown (Figure 3-7). This option has been labeled the 15BX.

Figure 3-6. Option 1 – 15X Proposed Routing for Service Evaluation



Figure 3-7. Option 2 – 15AX Proposed Routing for Service Evaluation



Because this is a planning study, the focus is on overall route demand and impact on other transit services in the community, not on specific stop placement, which would be developed by SFMTA if a specific route or set of routes were further developed for implementation. The planning analysis conducted here assumed numbers of stops that are typical of express routes currently operated by SFMTA.

Scheduled Frequency

The proposed express routes were modeled using route frequencies that were consistent with other express services in operation in 2019 (Table 3-1). The 15AX and 15BX services were evaluated with headways of 8 minutes in the AM peak, 10 minutes in the mid-day, and 10 minutes in the PM peak.

Table 3-1. Express Bus Headways of Existing MUNI Express Buses in San Francisco in 2019

ROUTE	AM PEAK (6 AM – 9 AM)	MID-DAY (9 AM – 3:30 PM)	PM PEAK (3:30 PM – 6:30 PM)	EVENING (6:30 PM – 3 AM)	OWL/EARLY AM (3 AM – 6 AM)
38AX	10	-	15	-	-
38BX	10	10	15	-	-
8AX	6	6	6	-	-
8BX	7	7	7	-	-
NX	8	-	10	-	-
14X	8	-	9	-	-
1AX	10	-	15	-	-
1BX	7	-	15	-	-
7X	8	8	10	-	-
30X	6	-	10	-	-

4. Analysis of Options

The analysis of the proposed 15 Third bus service was based on a set of metrics organized around the project goals (Table 4-1). A summary of findings is provided immediately after the table, with detailed information about each goal and metric following.

Table 4-1. Evaluation Criteria

GOAL	PERFORMANCE MEASURE
Transit Access	<ul style="list-style-type: none"> • Travel time to downtown • Transit ridership on the new service • Net transit ridership • Accessibility to employment
Coordination with the T Third	<ul style="list-style-type: none"> • Overlap of routes
Cost effectiveness	<ul style="list-style-type: none"> • Order of magnitude operating cost • Operating cost per passenger

4.1 TRANSIT ACCESS TO DOWNTOWN

Three measures were used to assess transit access to downtown.

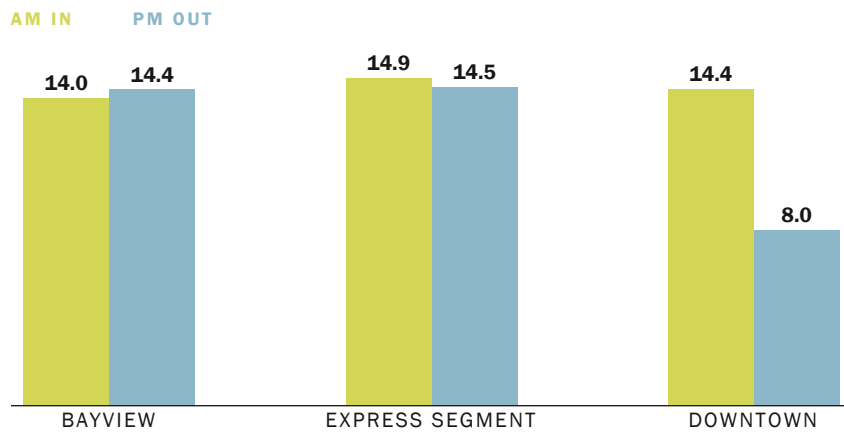
- Travel time to downtown
- Transit ridership on the new service
- Net transit ridership

Travel Time to Downtown

Travel speeds for the proposed 15AX are generally around 14 miles per hour during the peak period and travel direction, with the exception of an 8 mile per hour average speed traveling outbound from downtown (Figure 4-1). The 15BX travels the same Third Street express segment and downtown route. The Hunters Point/Bayview segment is estimated also to have speeds around 14 miles per hour.

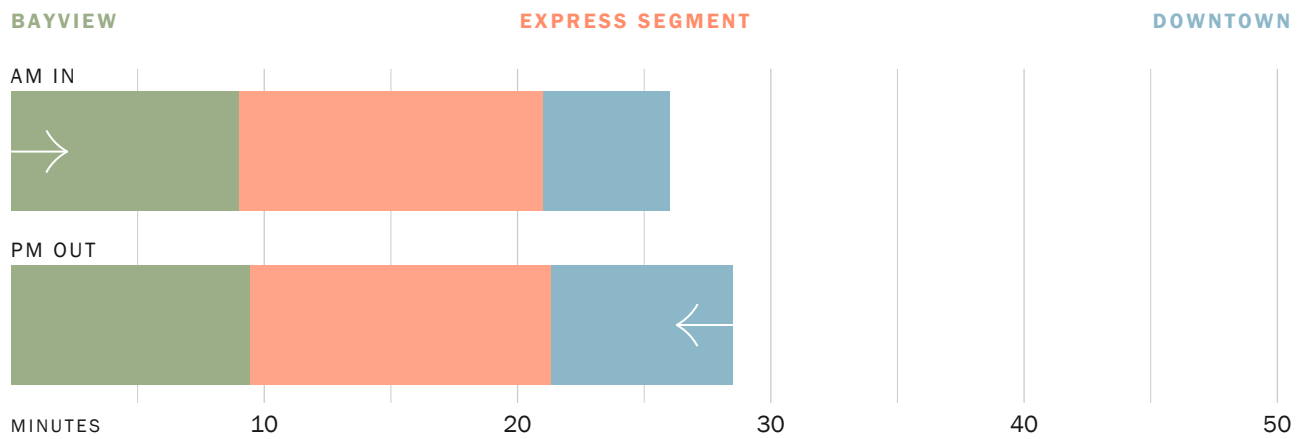
Travel times for the two express services would offer an improvement over the 36-minute journey from Palou to Market and Powell streets. Travel time for the 15AX is expected to be around 26 minutes in the AM peak inbound and around 28 minutes in the PM peak outbound direction (Figure 4-2) or a total of around 54 minutes roundtrip, depending on the time of day. Travel time for the 15BX loop is anticipated to be around 45 minutes in the AM and 48 minutes in the PM (Figure 4-3). Because the 15BX is operated as a loop through Hunters Point, it is not possible to separate out peak period and direction.

Figure 4-1. 15AX Average Speed by Segment



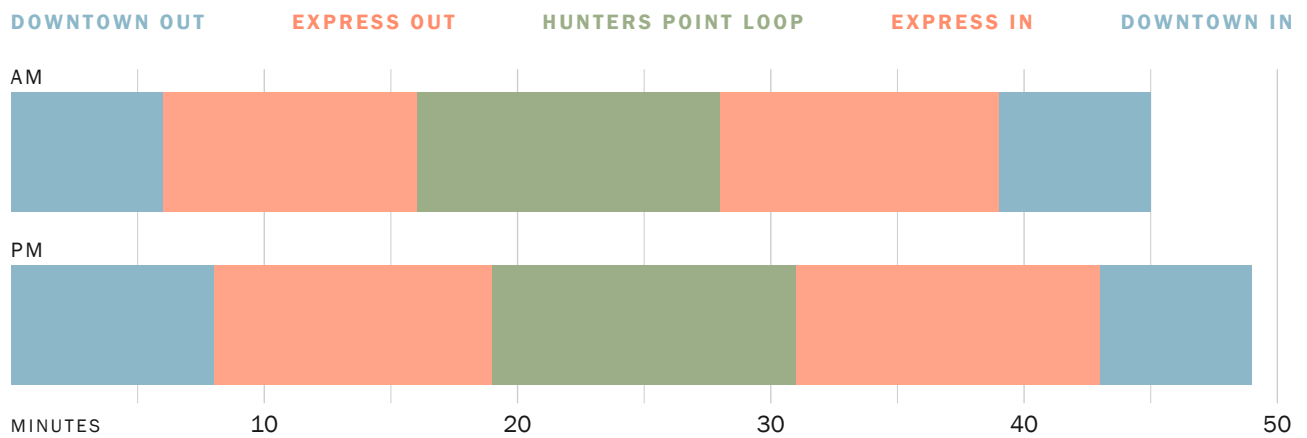
Source: SF-CHAMP travel demand model estimates

Figure 4-2. 15AX Travel Time by Segment (Minutes)



Source: SF-CHAMP travel demand model estimates

Figure 4-3. 15BX Travel Time by Segment (Minutes)

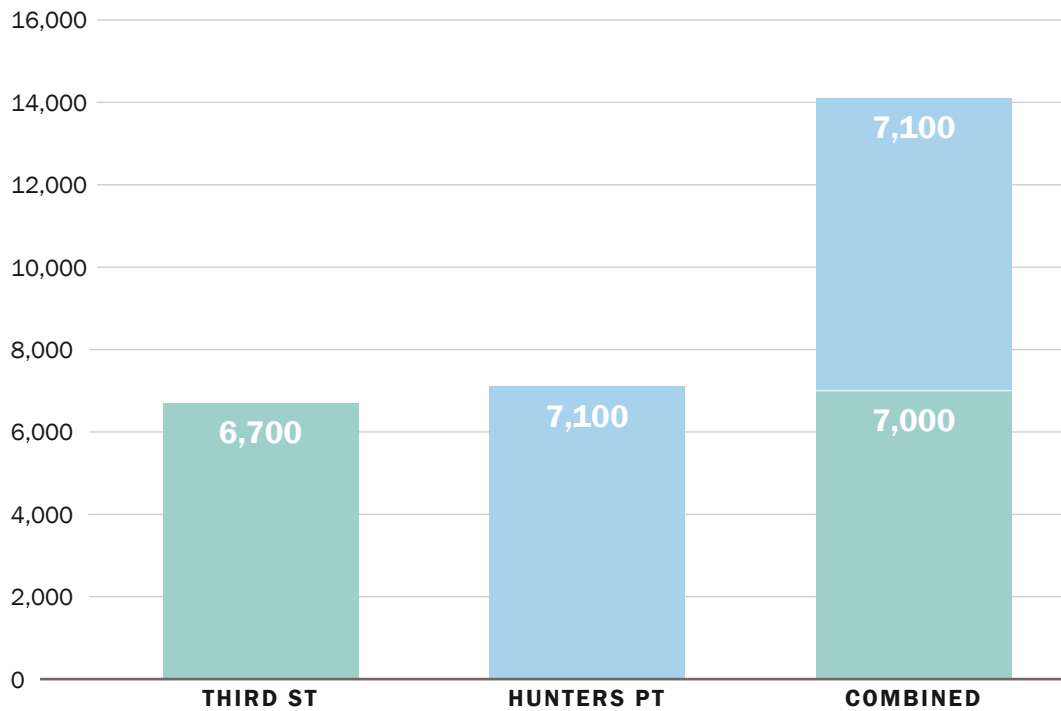


Source: SF-CHAMP travel demand model estimates

Transit Ridership on the 15 Third Routes

Between 6,700 and 7,100 riders are anticipated to use each of the proposed express routes each day, with ridership split relatively equally across the two proposed services (Figure 4-4). The 15AX service alone produced 6,700 riders, with 2,900 traveling inbound and 3,800 traveling outbound.

Figure 4-4. Total Riders Boarding Proposed 15 Express Routes



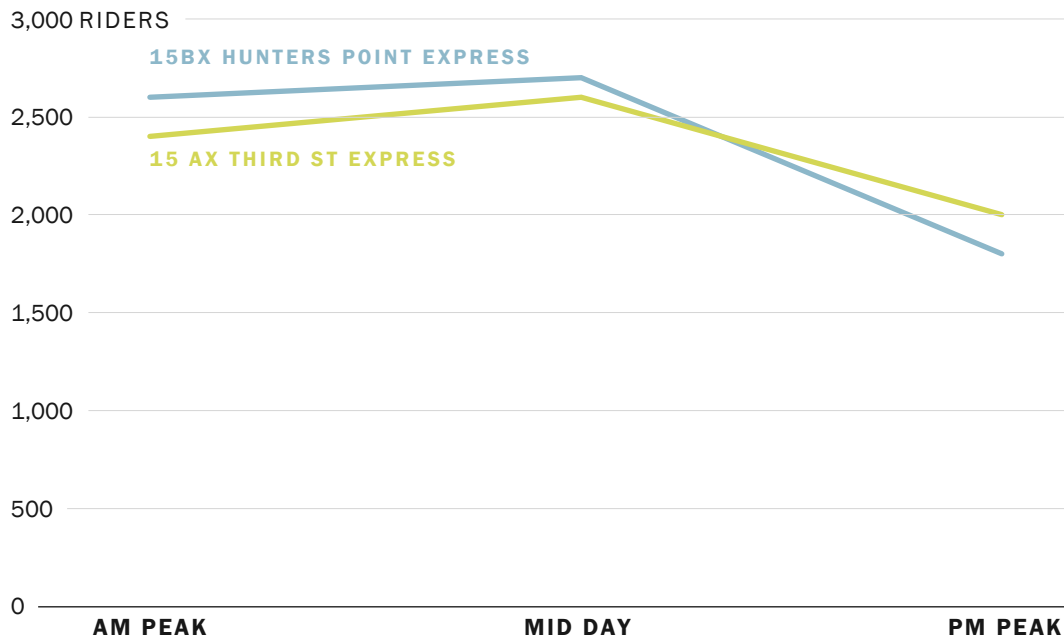
Source: SF-CHAMP travel demand model estimates

There are slightly more riders on the Hunters Point Express (15BX) than the Third Street Express (15AX) but providing both services is expected to increase ridership on the 15AX. While this may be somewhat surprising, that difference is entirely due to the increase in bus frequency on Third and Fourth Streets in SoMa, where the 15AX and 15BX would partially duplicate the 30 service. About 40 percent of riders on the 15AX service exit at Fourth and King.

Ridership by Time of Day

Both services see significant ridership throughout the day, with similar numbers of riders in AM, PM, and mid-day time periods (Figure 4-5). Both AM and PM have higher per hour ridership than the mid-day. AM and PM peak periods are around 800 riders per hour, while the mid-day ridership is closer to 400 riders per hour.

Figure 4-5. Total 15 Express Riders by Time of Day



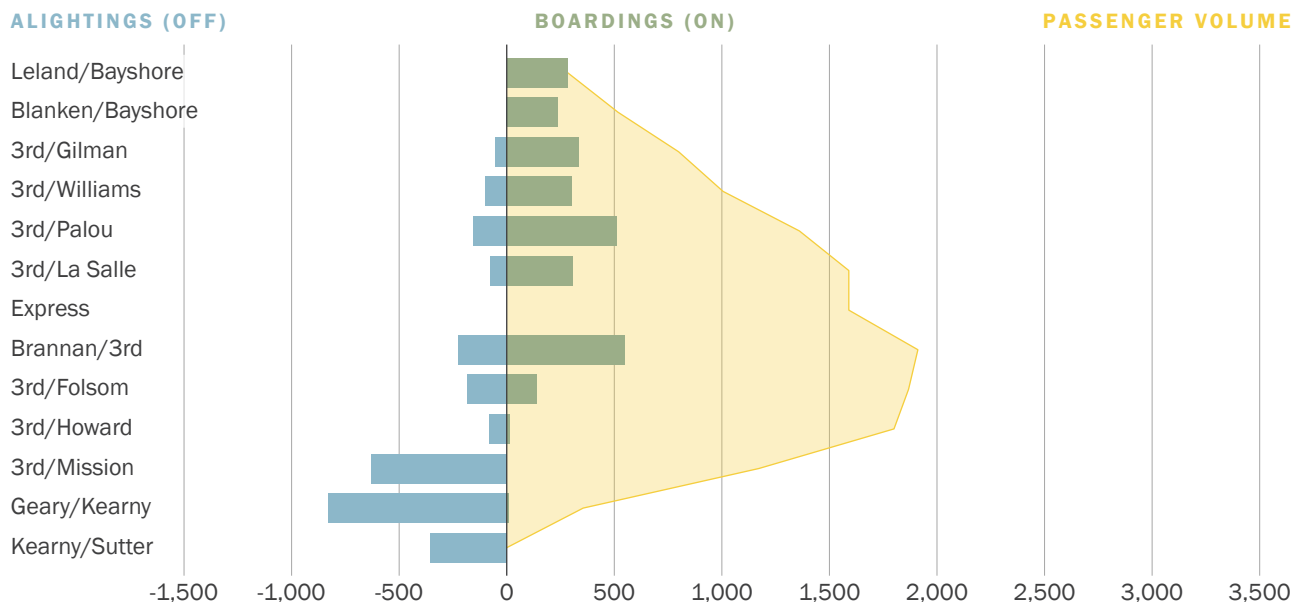
Source: SF-CHAMP travel demand model estimates

Ridership by Stop – Third Street Express

The proposed services have clear patterns of travel. Riders board across the route, but the greatest volume of boardings in the Bayview is at Palou Avenue (Figure 4-6). There are also substantial boardings at Brannan and Third streets where the route overlaps with the existing 30 Stockton route. The inbound 15AX picks up 91 percent of riders south of the express segment and drops off 88 percent of riders after the express segment. In the outbound direction, 90 percent of riders board in Downtown and SoMa and 83 percent exit after the express segment. Overall, this pattern validates the demand expressed by the community for a faster connection to Market and Powell as was provided by the prior 15 service.

Those exiting downtown are mostly getting off at Caltrain (over 450 riders are expected to exit at this stop). The new services substantially increase the frequency of service along Third and Fourth streets between Market and the Caltrain Station. This increase makes transit more competitive in the corridor and demand is spread across the two routes (15 and 30).

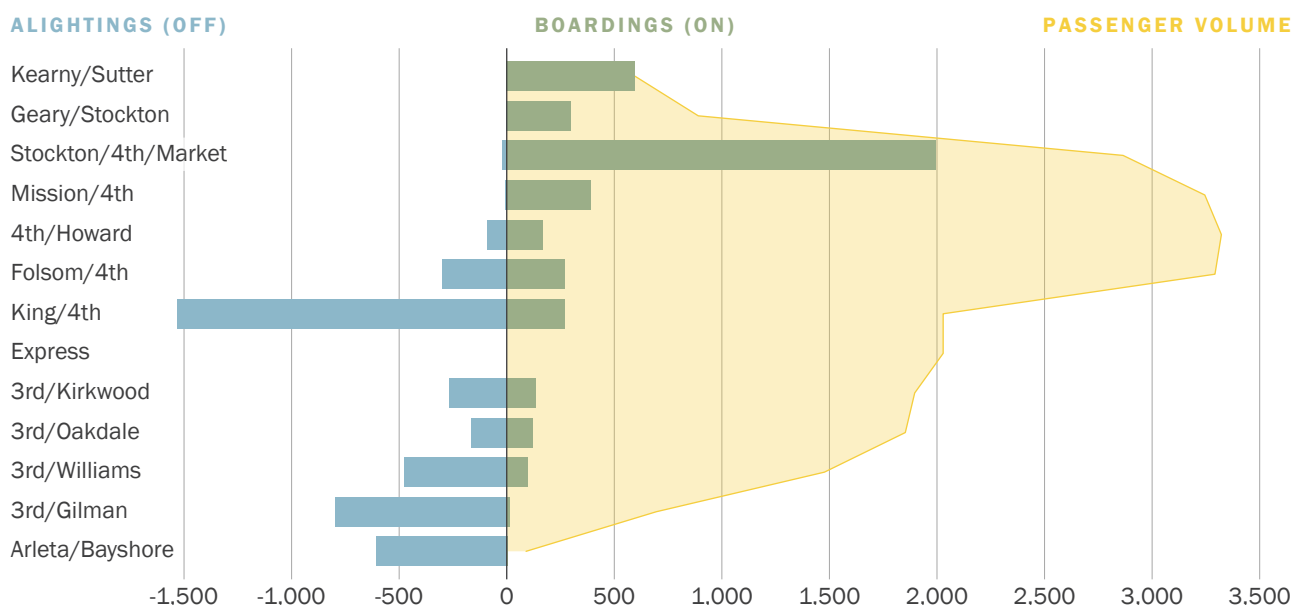
Figure 4-6. 15AX Inbound Boardings, Alightings and Volume by Stop (to Downtown)



Source: SF-CHAMP travel demand model estimates

The outbound service for the proposed Third Street Express follows a similar pattern, with most boardings around Market Street and traveling to either the Caltrain station or to a set of stops in the Bayview (Figure 4-7). In this case, Williams and Gilman avenues appear to be more common stops for alighting than Oakdale Avenue, potentially indicating minor variations in travel patterns.

Figure 4-7. 15AX Outbound Boardings, Alightings and Volume by Stop (to Bayview)

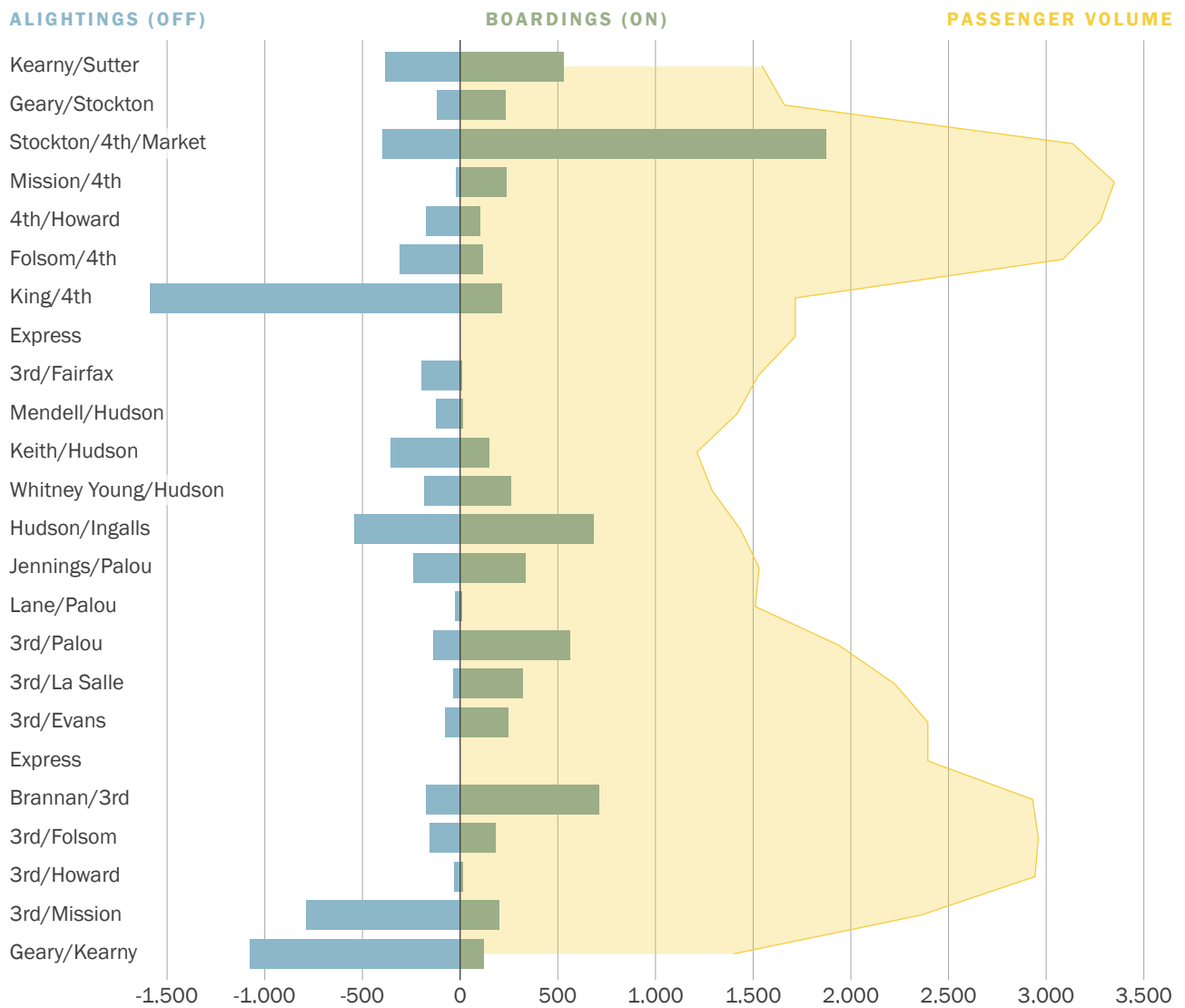


Source: SF-CHAMP travel demand model estimates

Ridership by Stop – Hunters Point Express

The Hunters Point Express route is designed as a loop route, traveling one-way through Hunters Point, primarily on Hudson Avenue, Ingalls Street and Palou Avenue. If this route were to advance, more specific routing would be determined by SFTMA in coordination with the community. As with the Third Street express, riders from downtown board primarily around Market Street and exit either at the Fourth and King Caltrain Station or at several locations in Hunters Point, including Hudson Avenue and Ingalls Street and Jennings Street and Palou Avenue (Figure 4-8). By the time the route returns to Third Street and Palou Avenue it heads Downtown again and picks up additional riders with most exiting at either Mission or Geary streets.

Figure 4-8. 15BX Boardings, Alightings and Volume by Stop



Source: SF-CHAMP travel demand model estimates

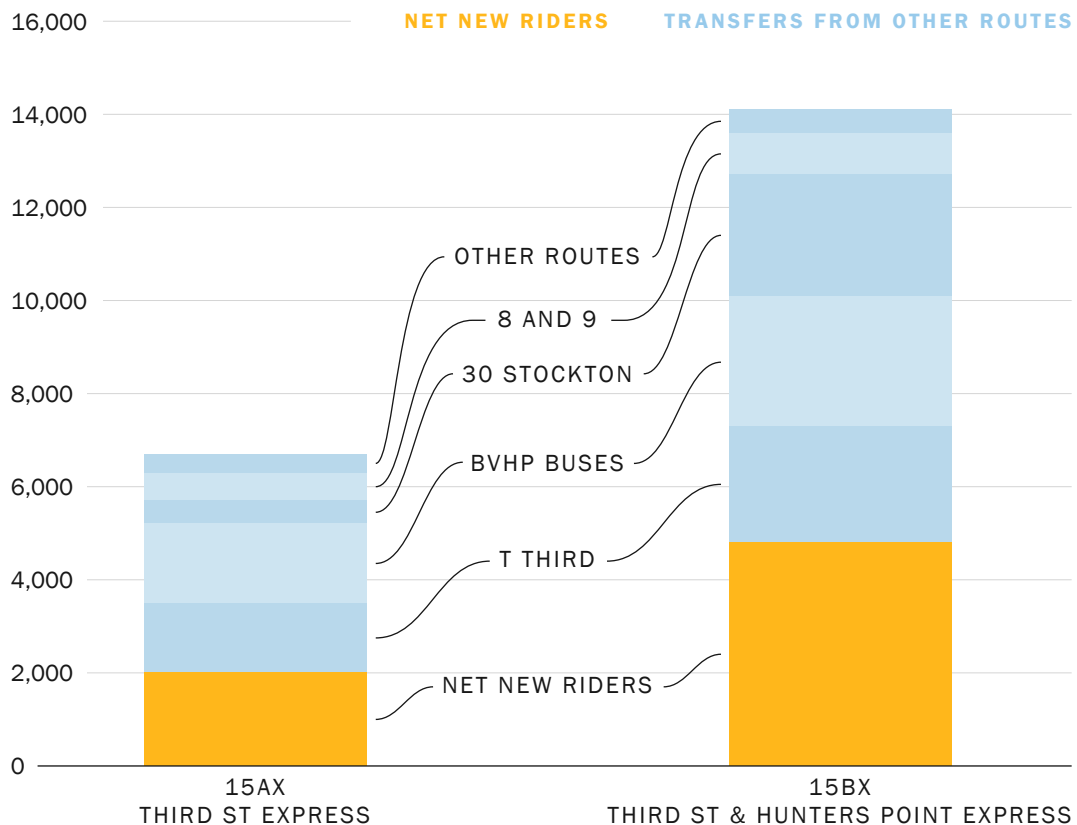
Net Transit Ridership

While the proposed routes have high expected numbers of riders, it is also important to evaluate whether these are net new riders or if they shift from other services. Those who transfer from other routes may suggest potential opportunities for interlining or other potential route combinations.

Of the nearly 7,000 riders expected to use the Third Street express, 2,000 are net new riders, while 5,000 are using the 15 Third Express instead of another route. Of the additional 7,100 riders expected to use the Hunters Point express, 2,800 are net new riders, while the remaining 4,300 are using this route instead of another service.

For both routes, riders are primarily switching from the T Third, several Bay View/Hunters Point bus routes (24, 29, 44, 54), the 30 Stockton (which overlaps substantially with the proposed route along Third and Fourth Streets in SoMa), and the 8 Bayshore Express and 9R San Bruno Rapid bus routes (Figure 4-9). Table 4-2 presents the route-by-route changes. In percentage terms, the 54 Felton (16 percent) and the 44 O’Shaughnessy (10 percent) lose the largest share of their riders to the proposed Hunters Point Express, potentially pointing to an opportunity to reconfigure the routes that serve Hunters Point today.

Figure 4-9. Net Ridership for Proposed Third Street and Hunters Point Express Routes



Source: SF-CHAMP travel demand model estimates

Table 4-2. Change in Other Routes

ROUTE	THIRD STREET EXPRESS		THIRD STREET & HUNTERS POINT EXPRESS	
	THIRD STREET EXPRESS	% CHANGE	THIRD STREET & HUNTERS POINT EXPRESS	% CHANGE
T Third	-1,500	-3%	-2,500	-5%
19 Polk	-100	-1%	-200	-3%
24 Divisadero	-500	-3%	-400	-3%
29 Sunset	-400	-2%	-300	-2%
44 O'Shaughnessy	-400	-3%	-1,500	-10%
54 Felton	-300	-13%	-400	-16%
30 Stockton	-500	-1%	-2,600	-6%
8/8AX/8BX Bayshore Express	-400	-1%	-300	-1%
9R San Bruno	-200	-1%	-600	-2%
Other	-500		-700	

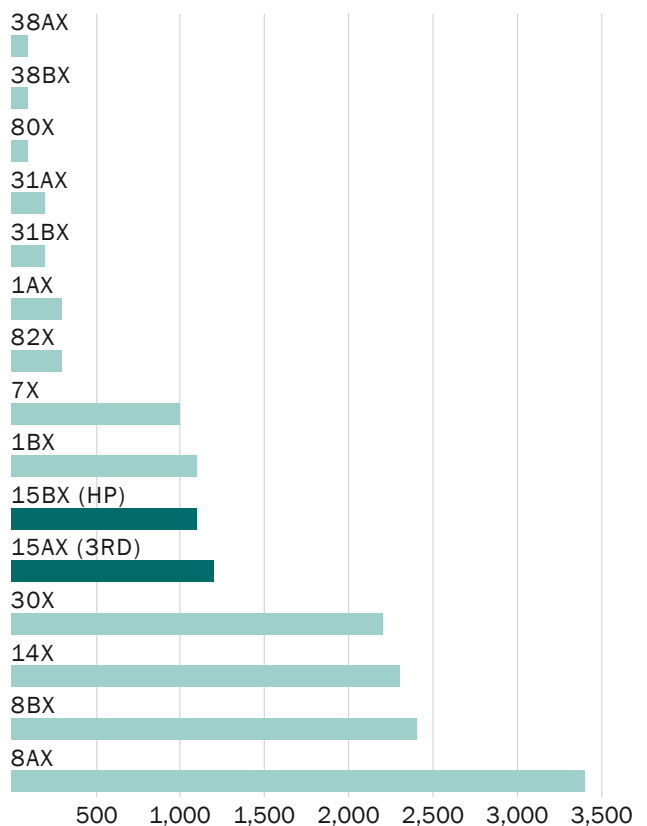
Source: SF-CHAMP travel demand model estimates

Comparison to Other Express Services in San Francisco

Existing SFMTA express routes range from a few hundred riders to 3,000 riders per day at the high end. Express routes typically operate only in the peak period and direction (e.g., AM inbound and PM outbound), though some do operate more frequently and in both directions. The proposed 15 express routes were evaluated in AM, PM, and mid-day time periods to ensure a more comprehensive evaluation of potential services. For the purposes of comparing to other express services, comparisons here are made only in the peak period and direction (inbound to Downtown in the AM, outbound to the relevant neighborhood in the PM).

The ridership levels identified in the analysis for the 15 Third bus service is consistent with the express services operated by SFMTA today (Figure 4-10). Only four services – the 30X, 14X, 8AX, and 8BX – have more riders than the two proposed services. The 15AX and 15BX are most similar to the 1BX California Express and the 7X Noriega Express that serve parts of the Richmond and Sunset districts of the City.

Figure 4-10. Comparison of Peak AM Inbound Ridership for Muni Express Routes



Note: ridership numbers are rounded to hundreds
Source: SF-CHAMP travel demand model estimates

4.2 COORDINATION WITH THE T THIRD

One of the significant concerns that SFMTA has raised previously about operating a renewed bus in the Third Street corridor is the need to coordinate different boarding circumstances for the bus and light rail vehicles. The light rail platforms in the center of Third Street are raised, while the bus platforms are at sidewalk level. SFMTA has expressed concerns that riders may seek to quickly cross against traffic and may jump between the platform and the street, creating potential safety concerns.

The situation of concern exists in few locations in San Francisco today, but does include the current boarding location at Oakdale Avenue, where the 24 Divisadero boards adjacent to T Third light rail line (Figure 4-11). A similar situation exists along 19th Avenue where the 28 and 28R board on the curb side, while the M Oceanside boards at raised center platforms. Notably, in both of these cases, the bus and the light rail serve different destinations, so there are likely relatively few trips where a rider might consider taking either the bus or the light rail, depending on which arrives first.

Figure 4-11. T Third and 24 Divisadero Stops at Third and Oakdale



Source: Google Street View

For the purposes of this study, concerns about this potential conflict were addressed primarily by proposing a limited number of stops along Third Street, thus reducing the number of potential conflict points for the proposed 15X Third Street route. The 15BX Hunters Point route would have only one or two potential conflict points, but like the 24 Divisadero, these are critical connection points in the heart of the Bayview.

At other locations, SFMTA could explore stop placement to potentially reduce conflicts between services, but that would reduce the convenience of the service as well. Addressing potential safety concerns of a proposed express bus should be carried forward into any future design of bus services in the Third Street corridor.

4.3 COST EFFECTIVENESS

Total operating cost for each route was estimated using data from SFMTA on bus operating costs. In Fiscal Year 2018/2019, SFMTA estimated that motor coach buses cost \$206 per revenue hour.¹ Costs for operating the service depend on the level of service provided, with the slightly higher cost for the 15AX due to the slightly longer round-trip travel time for that route compared to the 15BX. If the 15AX runs all day, it is estimated to cost approximately \$3.4 million to operate, while the 15BX would cost just under \$3 million (Table 4-3). Running an express service that only operates in the peak period and direction would cost between \$1.3 and \$1.4 million, depending on the route, or just over \$2.7 million for both.

Table 4-3. Estimated Operating Cost

PROPOSED ROUTE	ALL DAY	AM & PM ONLY	EXPRESS ONLY (PEAK PERIOD & DIRECTION)
15AX	\$3,390,000	\$1,940,000	\$1,450,000
15BX	\$2,970,000	\$1,700,000	\$1,270,000
Both	\$6,360,000	\$3,640,000	\$2,730,000

Cost effectiveness was estimated by dividing expected operating cost by the number of trips. The cost per trip is \$1.90 for the 15BX Hunters Point Express and \$1.70 for the 15AX third Street Express (Table 4-4). In Fiscal Year 2017/2018, SFMTA reported an average cost per trip of \$3.73 per unlinked trip with a target of \$3.68, for all types of service (bus, trolley bus, rail).² Data submitted by SFMTA to the National Transit Database show the cost per unlinked passenger bus trip at \$3.05.

Table 4-4. Cost Per Unlinked Passenger Trip

PROPOSED ROUTE	AM	MID DAY	PM	TOTAL
15AX	\$1.70	\$2.20	\$1.80	\$1.90
15BX	\$1.40	\$1.90	\$1.70	\$1.70

Overall, the proposed services performed favorably when compared to all types of bus services operated by SFMTA prior to the pandemic. The set of routes that the 15AX and 15BX are compared to include both high frequency, high demand routes and local serving, low usage routes. With a cost per trip of 30 to 45 percent less than the average, these two express services appear worthy of further consideration.

¹ <https://www.sfmta.com/reports/muni-cost-revenue-hour>

² <https://www.sfmta.com/reports/muni-cost-unlinked-trip>

5. Conclusions

The proposed Third Street and Hunters Point express services appear to have significant demand to warrant further exploration by SFMTA for near-term implementation. Residents of both the Bayview and Hunters Point experience long transit travel times to downtown, even with the investment in the T Third. While some improvements are expected on that line within the next two years, the long delay in realizing the benefits of that service warrant addressing these needs in the short term.

5.1 IMPLEMENTATION

The SFMTA has been pursuing implementation of a Bayview/Hunters Point Express in response to the analysis of this study, previous community feedback, and ongoing work to reinstate the metro rail system. As SFMTA works to restart metro rail service in Winter 2021, T Third service will return at a similar frequency as was provided on the former KT service and the T bus service that is operating while the muni metro light rail service is not in operation.

SFMTA has been conducting outreach to support implementation of a single 15 Third express route serving the Bayview and Hunters Point. This route would be focused on addressing short term considerations for social distancing and travel for essential workers, as well as providing a quicker trip to downtown from the Bayview. SFMTA staff has held a series of meetings with a stakeholder working group drawn from organizations and community leaders in the corridor. In November 2020, SFMTA released a public survey with three proposed route options that were identified in collaboration with the community working group.

The SFMTA will monitor route ridership and performance and use this information to assess the potential for a permanent express route for the neighborhood and the new developments along the southeastern waterfront.

5.2 TRANSIT INTEGRATION

As part of implementing a 15 express route, SFMTA may seek to address overlaps between the proposed services identified in this report and other existing transit routes. Two specific overlaps for consideration include:

- The 30 Stockton service, which overlaps on Third and Fourth streets in SoMa.
- Bus routes serving Hunters Point, including the 19 Polk, 44 O'Shaughnessy and, 54 Felton.

Optional Integration of 30 and 15 Routes

The proposed 15 express and 30 Stockton bus services overlap completely on Third and Fourth streets in SoMa. One option may be to extend the 30 Stockton along one

of the two express routes or to make a timed connection between the two routes and reduce some of the route redundancy (Figure 5-1). This latter option would likely not be desirable because a transfer would retain some of the current transit delays experienced by residents of the Bayview and Hunters Point.

Figure 5-1.T Potential Integration of the 30 Stockton and 15 Express Service



Source: Urban Visioning

Integration with Existing Hunters Point Bus Services

Three bus routes currently serve Hunters Point, including:

The 19 Polk, which travels along Innes and Evans avenues before traveling over Potrero Hill and then along 7th Street to Market and eventually north along Polk Street to Fort Mason. Pre-COVID, this route had approximately 8,000 riders per day.

The 44 O'Shaughnessy makes a loop along Evans and Palou avenues that is similar to the Hunters Point loop evaluated as the 15BX, then travels west along Silver Avenue to Glen Park BART station. Pre-COVID, this route had approximately 15,000 riders per day.

The 54 Felton is a local bus service that travels through Hunters Point and the Bayview, connecting west to Balboa Park and Glen Park BART stations. Pre-COVID, this route had approximately 2,100 riders per day.

The proposed 15BX drew away nearly 16 percent of the 54 Felton's total ridership. This route already primarily serves areas around Balboa Park BART station. Fewer than 100 riders daily boarded the 54 in Hunters Point pre-COVID-19 pandemic. This route appears to present a significant opportunity for consolidation or reconfiguration if a 15BX Hunters Point Express is established.

5.3 FOR FURTHER EXPLORATION

This study focused on travel from the Bayview and Hunters Point to downtown. This study and prior studies have identified other travel patterns that may warrant further exploration. This section describes potential additional areas of analysis identified in the existing conditions analysis.

Bayview-Mission Connection

Connection between the Bayview and the Mission was identified as need as part of both the SFMTA Southeast Muni Expansion study and the Bayview Community Based Transportation Plan (CBTP). During the course of this study, several pieces of information emerged that recommend further evaluation of options.

The Bayshore-Mission travel market is one of the major travel patterns identified in the existing conditions study. The origin/destination analysis from Section 2.1 identified that more trips are made between Bayshore and the Mission than between Bayshore and any other zone excepting internal (Bayshore to Bayshore) trips.

During the course of the alternatives evaluation, an option was considered to route a 15 express bus east-west along Oakdale and Palou avenues and north-south to downtown along Potrero Avenue. This option would essentially be an alternate routing for the 9R San Bruno rapid, which connects downtown to Visitacion Valley. A major

advantage of this route would be a direct connection between the Bayview and San Francisco General Hospital, which is a significant source of travel demand. SFMTA could consider a route similar to the 9R that serves the Bayview and Hunters Point.

This route would be expected to reduce transit travel time between Third Street at Palou and San Francisco General Hospital by 11 to 19 minutes in the northbound direction and 13 to 16 minutes in the southbound direction. For travel to downtown, this option would shave about 11 minutes off the northbound commute to the Civic Center station, but only 5 minutes for the southbound direction and may increase travel time at certain times of day when traffic volumes are lower and the longer routing would not have the benefit of dedicated bus lanes.





While this proposed connection would link the Bayview and Hunters Point to San Francisco General Hospital, it would not provide a strong connection to the Mission. SFMTA is currently seeking grant funding for a community shuttle identified in the Bayview CBTP that would include stops in both the Bayview and the Mission.

Bayview-Peninsula Connection

Another market that has poor transit connectivity but sees significant volumes of trips is the Bayshore to Peninsula market. Currently, there are few transit services that make this connection. Opportunities to address these challenges include:

- An improved connection between the T Third route and the Bayshore Caltrain station. This connection has been studied previously as part of the Bi-County Transportation Study and the Bayshore Intermodal Station Access Study led by the Transportation Authority. Potential options include an extension of the T Third or improved pedestrian connections between the two services. It may also include connection to future Geneva-Harney bus rapid transit service planned as Candlestick Point, the Baylands, and other developments are constructed in the coming years. Improved station access is dependent on future development at the Brisbane Baylands site, which is currently under environmental review.
- Constructing a new Caltrain station in the Bayview. This station could either be a relocated 22nd Street station (currently under study) or an additional station. The Transportation Authority's Oakdale Station study has identified the opportunity to construct a new station at Oakdale along the current Caltrain tracks. This is under study as part of the San Francisco Planning Department 22nd Street Station Relocation Study and the ConnectSF Transit Corridor Study, which will help determine the number and location of rail stations along the Caltrain corridor.

- Improving local or regional bus service connections from the Bayview to the Peninsula. This may include rerouting existing lines, increasing frequency, or establishing new routes that provide connections from the Bayview and Visitacion Valley to major employment centers on the Peninsula, such as SFO, Oyster Point in South San Francisco, and others.

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