Caltrain Electrification

PROPOSED SERVICE PLAN FOR FALL 2024

Citizens Advisory Committee

September 20, 2023

Agenda Item 10

Caltrain

Agenda

Today's Meeting

1. Electrification Update
2. Service Planning Process
3. Market Analysis Summary
4. Proposed Electrified Service Plan
5. Next Steps

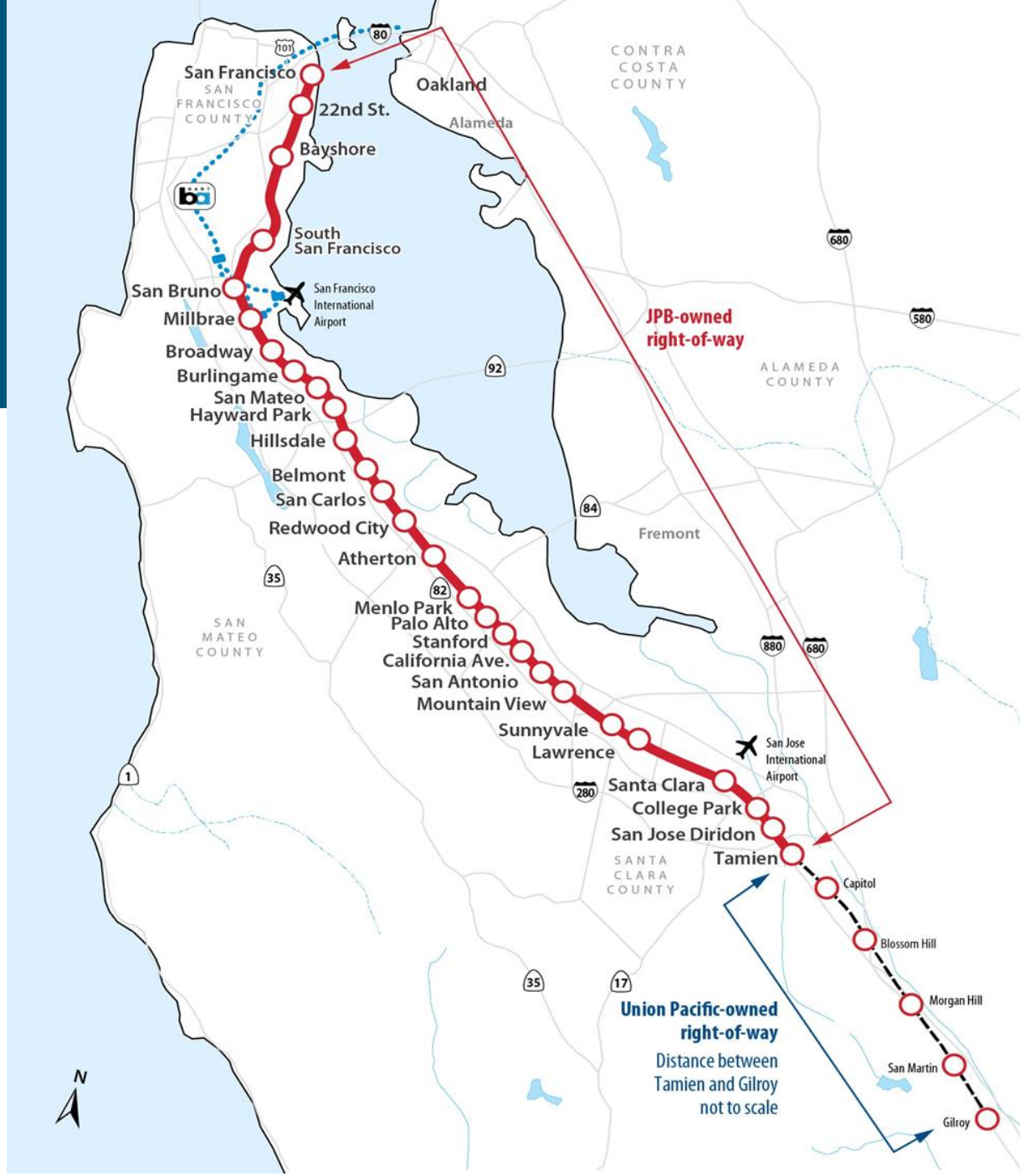
Electrification Update

Electrification Project Update

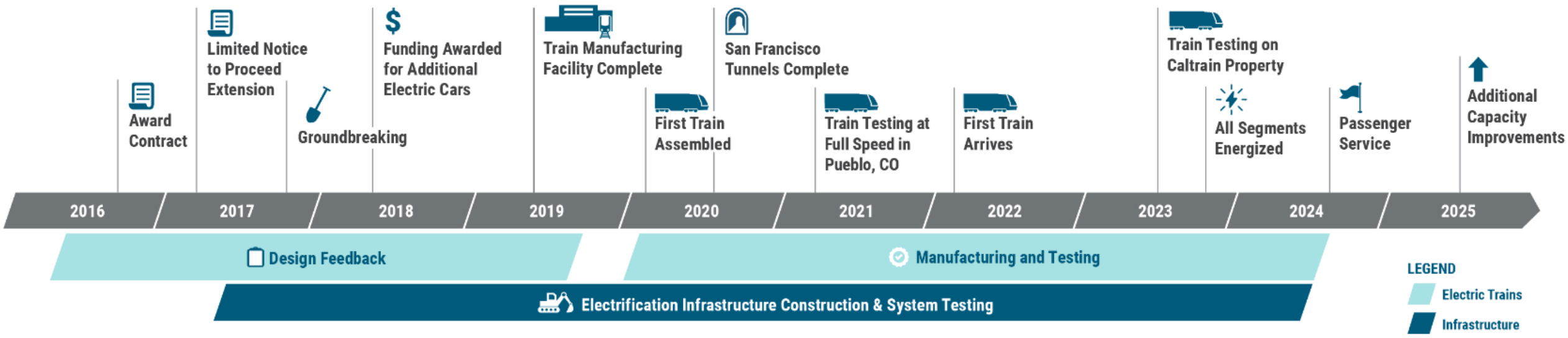
- Caltrain has been working diligently with its partners and the local communities to complete the Electrification Project.
- First new electric trains have arrived & testing is underway through the next year
- **Caltrain's new electrified service will launch in September 2024 with a completely new schedule!**

About Electrification

- 51 miles from San Francisco to San Jose (Tamien Station) along JPB-owned right-of-way
- Electrification has three components:
  - Overhead contact system
  - Traction power facilities
  - Electric trains (19 trainsets by end of 2024; 23 trainsets by 2027)



Construction Timeline



How Does Electrification Improve Rail Service?

Faster Trains

Electric trains can accelerate/decelerate much faster than diesel trains

Passenger boarding will take less time with more doors available on each train

Improved Frequency

Stations can receive more frequent service throughout the day and express trains during peaks while maintaining competitive travel times

Enhanced Comfort

Smoother, quieter, modern, new electric trains

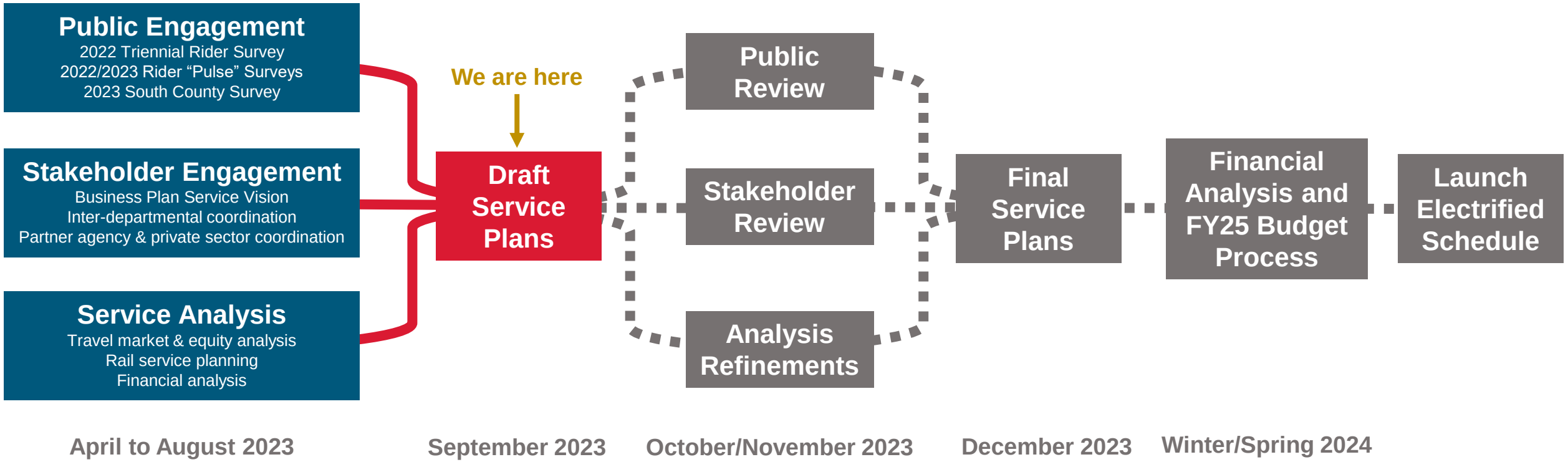
Sustainability

Reduced greenhouse gas emissions and improved air quality

Electrified Service Planning Process

Electrified Service Planning Process

Caltrain launched its electrified service planning process earlier this year, building upon recent and ongoing engagement, policy, and planning efforts.



Electrified Service: Goals & Outcomes

Vision

Long-Range Service Vision
(Caltrain Business Plan)

Goals

Equity

Connectivity

Recovery & Growth

Outcomes

More Frequent Service
Tailor station frequency to market demand and equity goals

Competitive Travel Times
Offer competitive travel times for major markets compared to autos

Enhanced Off-Peak Service
Build ridership markets outside of typical commute trips

Coordinated Transfers
Coordinate connections with BART and other transit operators

Simplicity & Legibility
Provide a schedule that is easy to understand

What Constraints Remain?

Infrastructure

Caltrain serves a mostly two track corridor with constrained terminal operations, which limits how it can provide service.

Fleet

Caltrain's mixed fleet of diesel and electric trains constrains what kinds of train service can be offered

Operating Budget

Caltrain's constrained operating budget and lower ridership/farebox revenue currently limit service expansion opportunities

Service Coordination

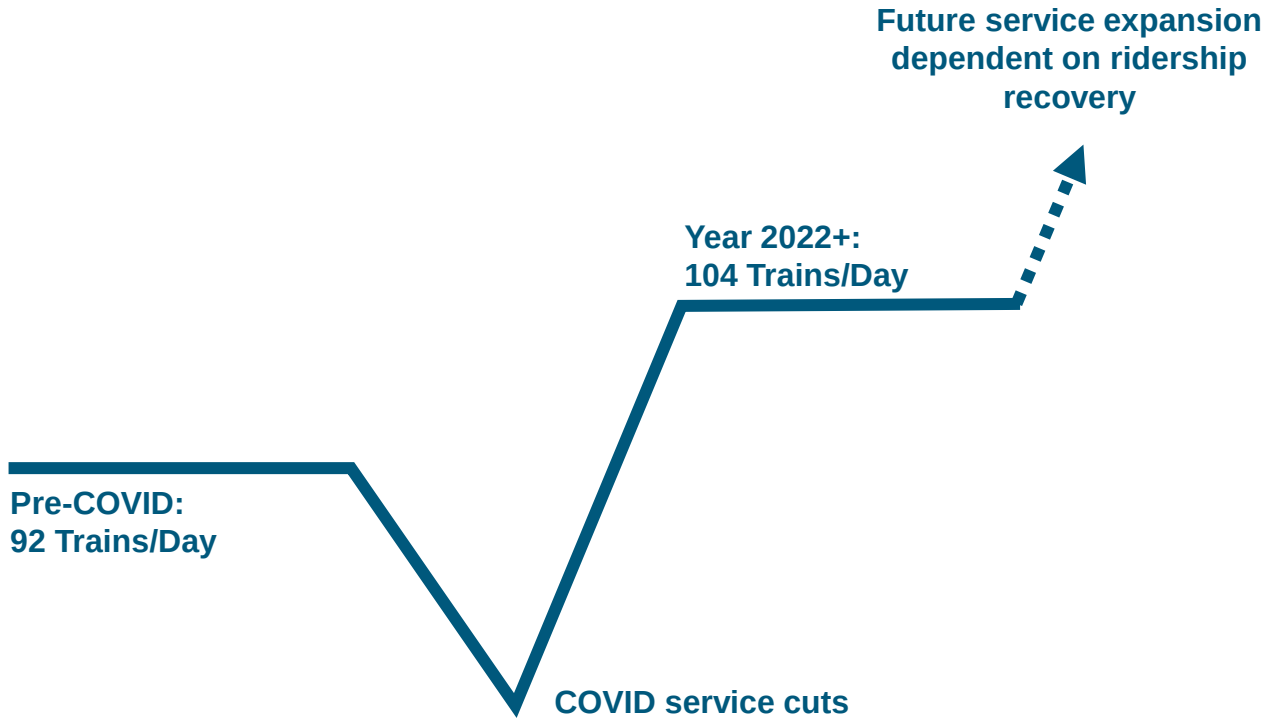
Reduced BART frequency (starting fall 2023) at Millbrae presents challenges for timing transfers

Weekday Electrification Service Levels

In fall 2024, Caltrain plans to continue providing 104 weekday trains per day and 4 trains per hour per direction during peak periods, consistent with the FY24-25 Budget.

With ridership still recovering from the effects of the pandemic, Caltrain is requesting a waiver from the Federal Transit Administration (FTA) to delay further service expansion until ridership returns. Discussions with FTA have been positive and Caltrain expects to receive the waiver in fall 2023.

Change in Weekday Service Levels over Time



Market Analysis Summary

Evaluating Station Service Levels

Market Analysis Approach

Ridership Analysis

Considers current and pre-COVID ridership patterns

Land Use Analysis

Total population and jobs near stations, including recently-completed or under construction projects*

Equity Analysis

Connections to low income and/or minority communities

Transit Connections

Presence of high frequency rail, bus, and shuttle connections

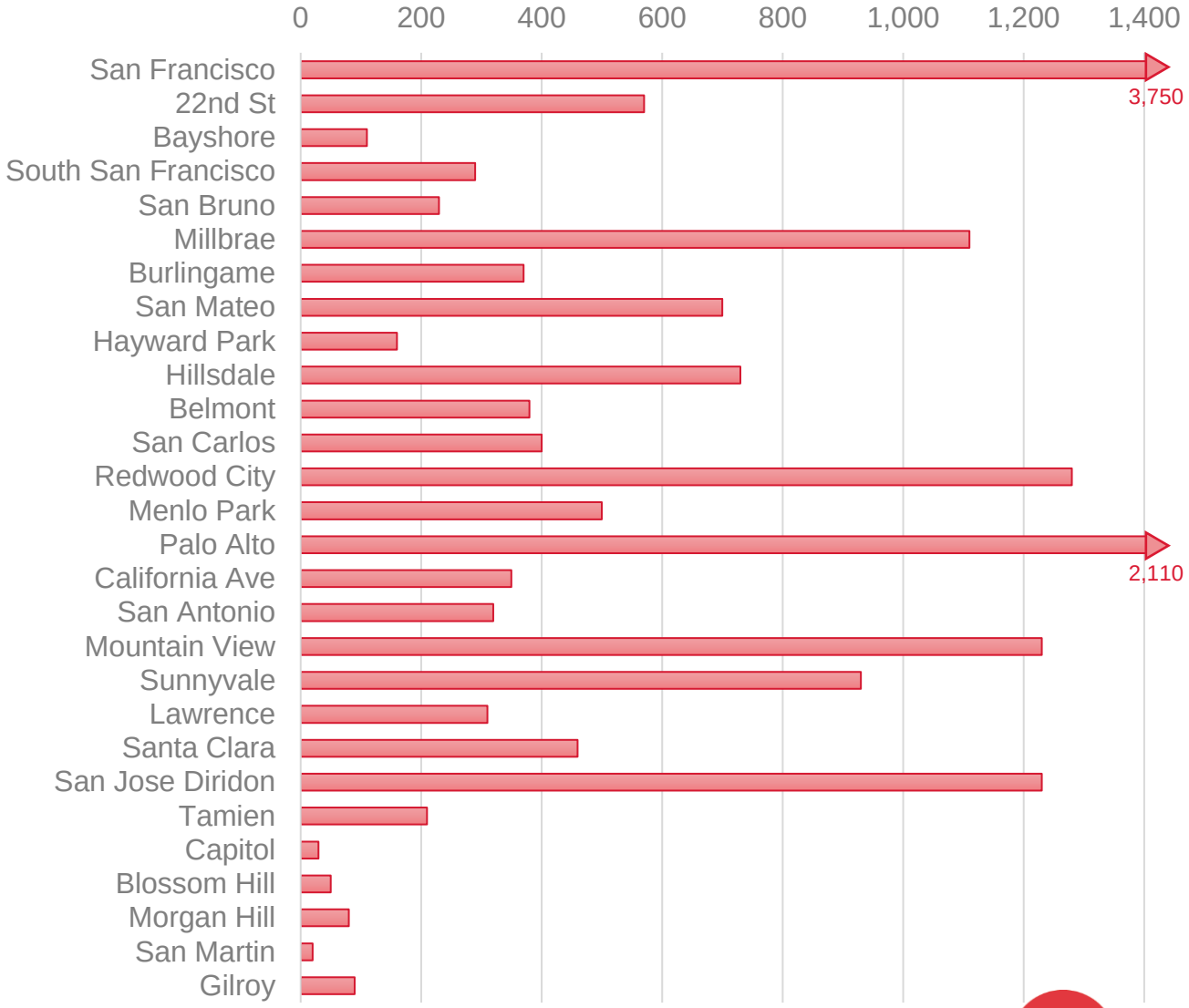
*Based on a review of projects listed on City planning websites in Spring 2023

Ridership Analysis

Caltrain's current ridership remains focused around key stations:

- San Francisco
- Millbrae
- Redwood City
- Palo Alto
- Mountain View
- Sunnyvale
- San Jose Diridon

Average Weekday Ridership by Station (2023)



Land Use Analysis

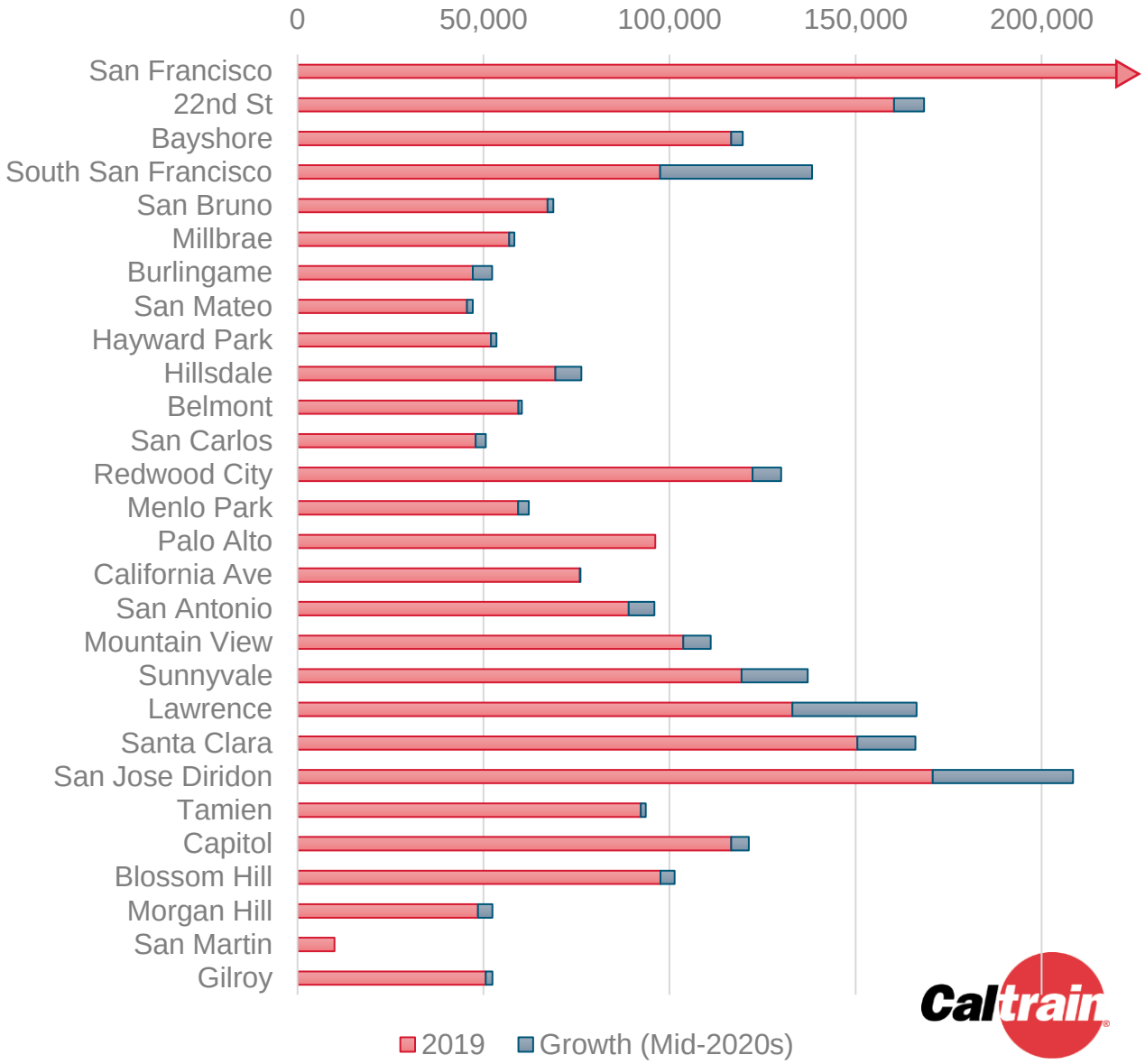
Proximity to population and jobs is an indicator of potential latent demand for Caltrain.

Some Caltrain station areas are experiencing substantial growth, particularly:

- South San Francisco
- Sunnyvale
- Lawrence
- Santa Clara
- San Jose Diridon

Growth based on inventory of projects under construction or completed since 2019

Population and Jobs within 2 Miles of Caltrain Stations: Mid-2020s Estimate

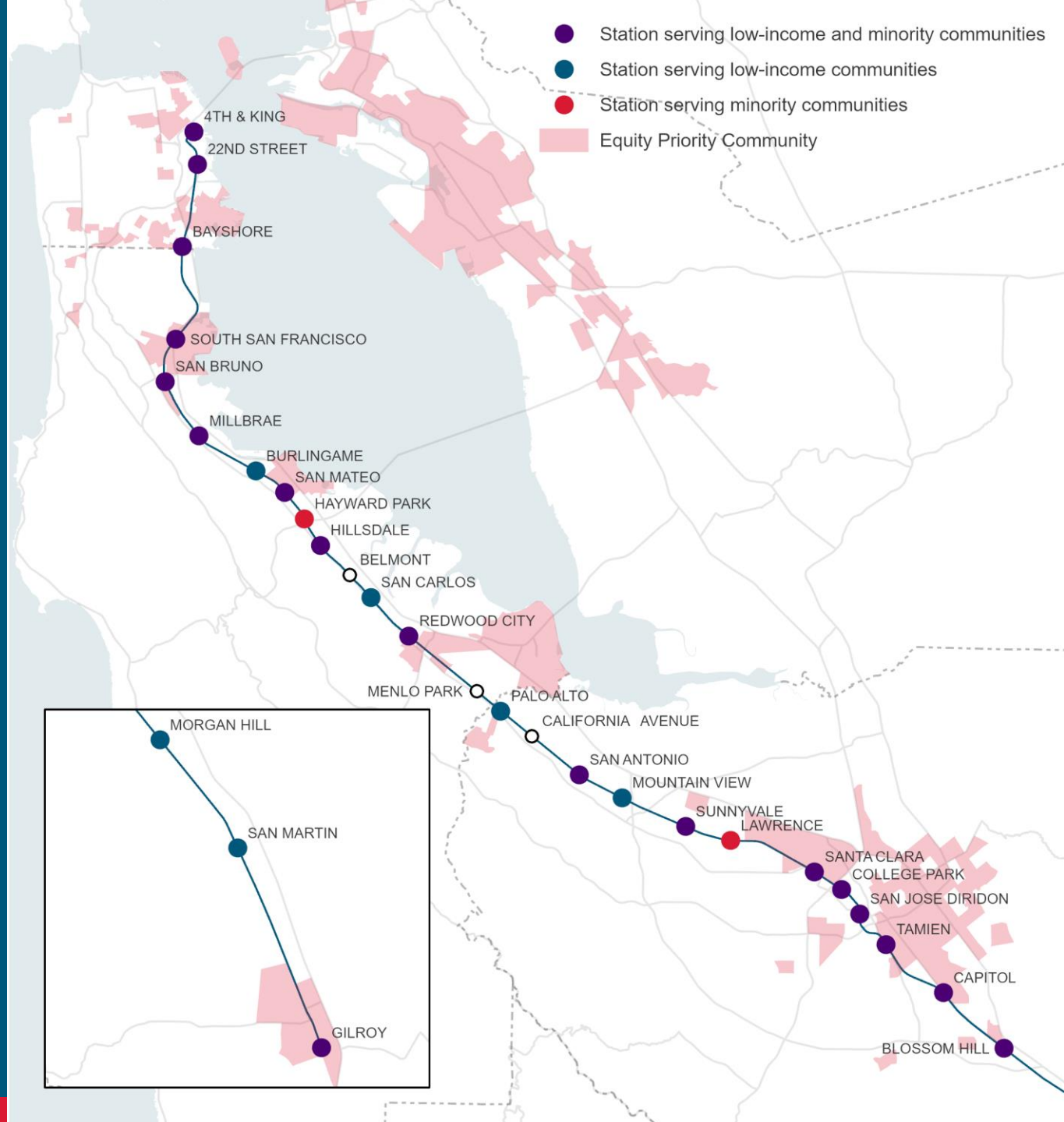


Equity Need

The Metropolitan Transportation Commission designates Equity Priority Communities across the region. Caltrain also identifies specific stations that serve minority or low-income riders for Title VI purposes.

Caltrain has historically underserved the following stations that serve equity priority populations:

- Bayshore
- South San Francisco
- San Bruno
- San Mateo
- Menlo Park
- Sunnyvale
- Lawrence
- Santa Clara
- Tamien
- Capitol
- Blossom Hill
- Gilroy



Transit Connections

Most Caltrain stations include connections to other transit operators that serve communities along the Caltrain corridor, including but not limited to:

- ACE
- BART
- Capitol Corridor
- Commute.org
- SamTrans
- SFMTA
- VTA

Caltrain Station	Connecting Transit Operator(s)	Other Transit Operators' Peak Hour Trips per Direction
San Francisco	SFMTA	28
22nd Street	SFMTA	7
Bayshore	Commute.org	3
South San Francisco	SamTrans, Commute.org, City Shuttle	17
San Bruno	SamTrans	2
Millbrae	BART, SamTrans, Commute.org	17
Burlingame	SamTrans	2
San Mateo	SamTrans	4
Hayward Park	Commute.org	1
Hillsdale	SamTrans, Commute.org	13
Belmont	SamTrans	6
San Carlos	SamTrans	6
Redwood City	SamTrans, Commute.org	22
Menlo Park	SamTrans, City Shuttle	10
Palo Alto	VTA, SamTrans, Stanford, Dumbarton	68
California Ave	VTA	1
San Antonio	VTA	2
Mountain View	VTA , MVGO Shuttle	36
Sunnyvale	VTA	13
Lawrence	-	-
Santa Clara	VTA, ACE, Capitol Corridor	24
San Jose Diridon	VTA , ACE, Capitol Corridor, Highway 17 Express	27
Tamien	VTA	9
Capitol	VTA	7
Blossom Hill	VTA	2
Morgan Hill	VTA	7
San Martin	VTA	6
Gilroy	VTA, County Express	11

Gray = Caltrain stations with greater than 10 peak hour trips from connecting transit operators

Candidate Stations for Service Expansion

All stations north of San Jose* will receive a base service level of half-hourly service.

Based on market analysis, the following stations demonstrate the strongest need for additional service frequency:

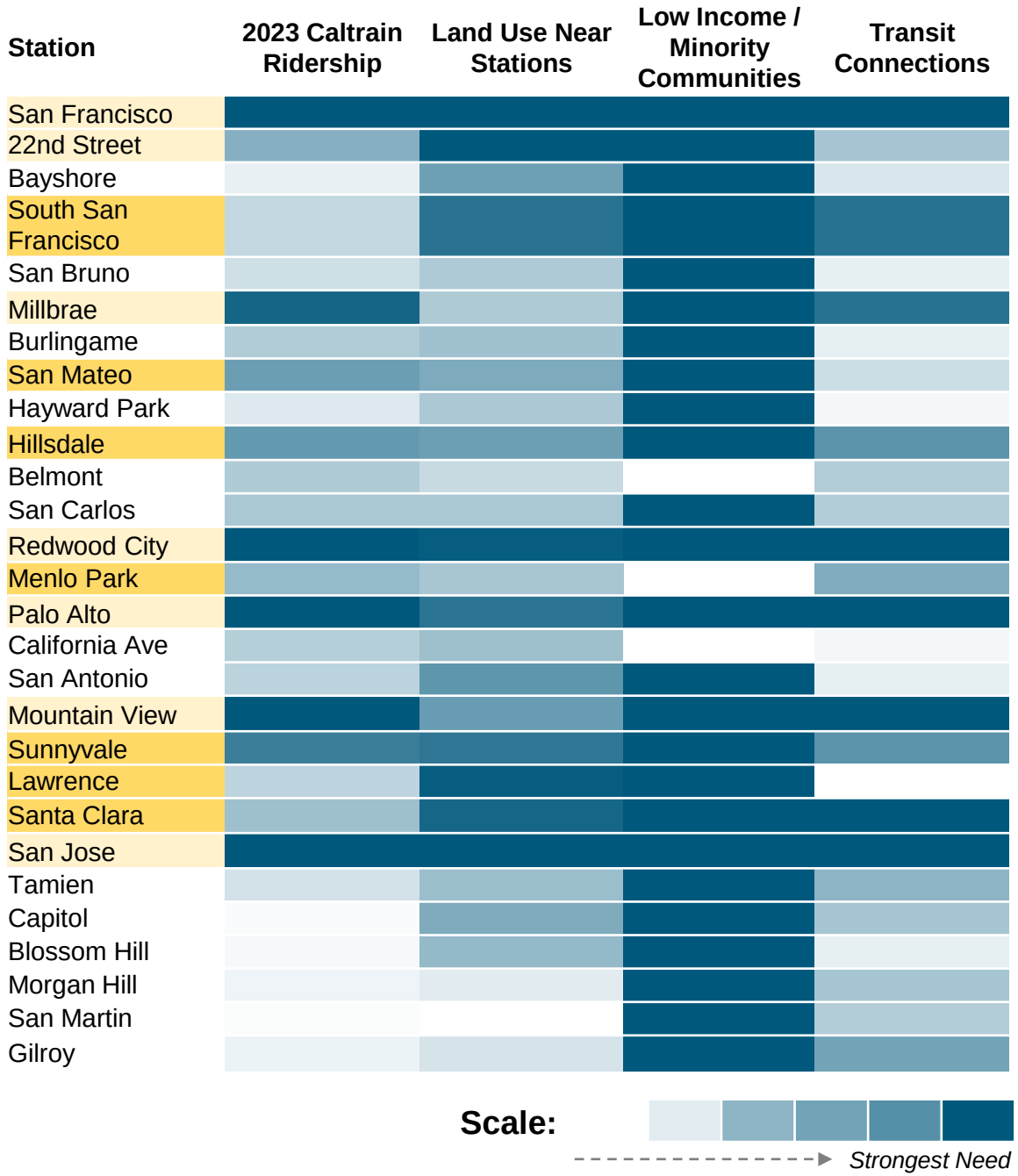
- South San Francisco
- San Mateo
- Hillsdale
- Menlo Park
- Sunnyvale
- Lawrence
- Santa Clara

The results of this analysis were incorporated into the service planning process alongside operational considerations.

*South of San Jose (Tamien – Gilroy), on UP-owned territory, Caltrain will provide 4 roundtrips per day.

Stations already at maximum service level (4 TPHPD)

Stations demonstrating the strongest need for increased frequency



Proposed Electrified Service Plan

Proposed Weekday Peak Period Service Concept

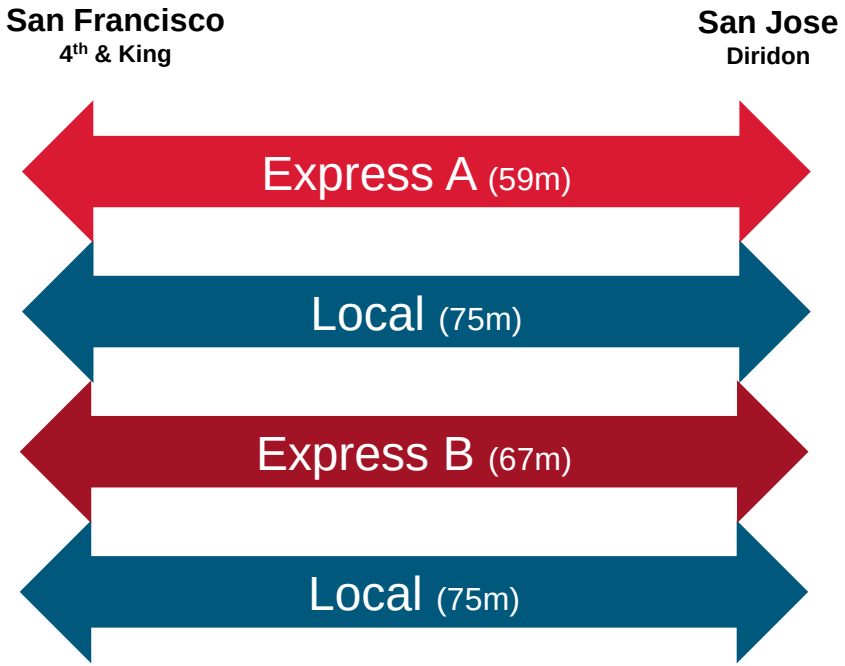
(San Francisco to San Jose)

Faster service *and* more stops with all-electric trains

- 4 trains per hour per direction
- Alternating express and local trains
- SF-SJ travel times of 59 to 75 minutes*
- 20% increase in stops at stations

Weekday Peak

Approximately 6:30am-9:30am and 3pm-7pm



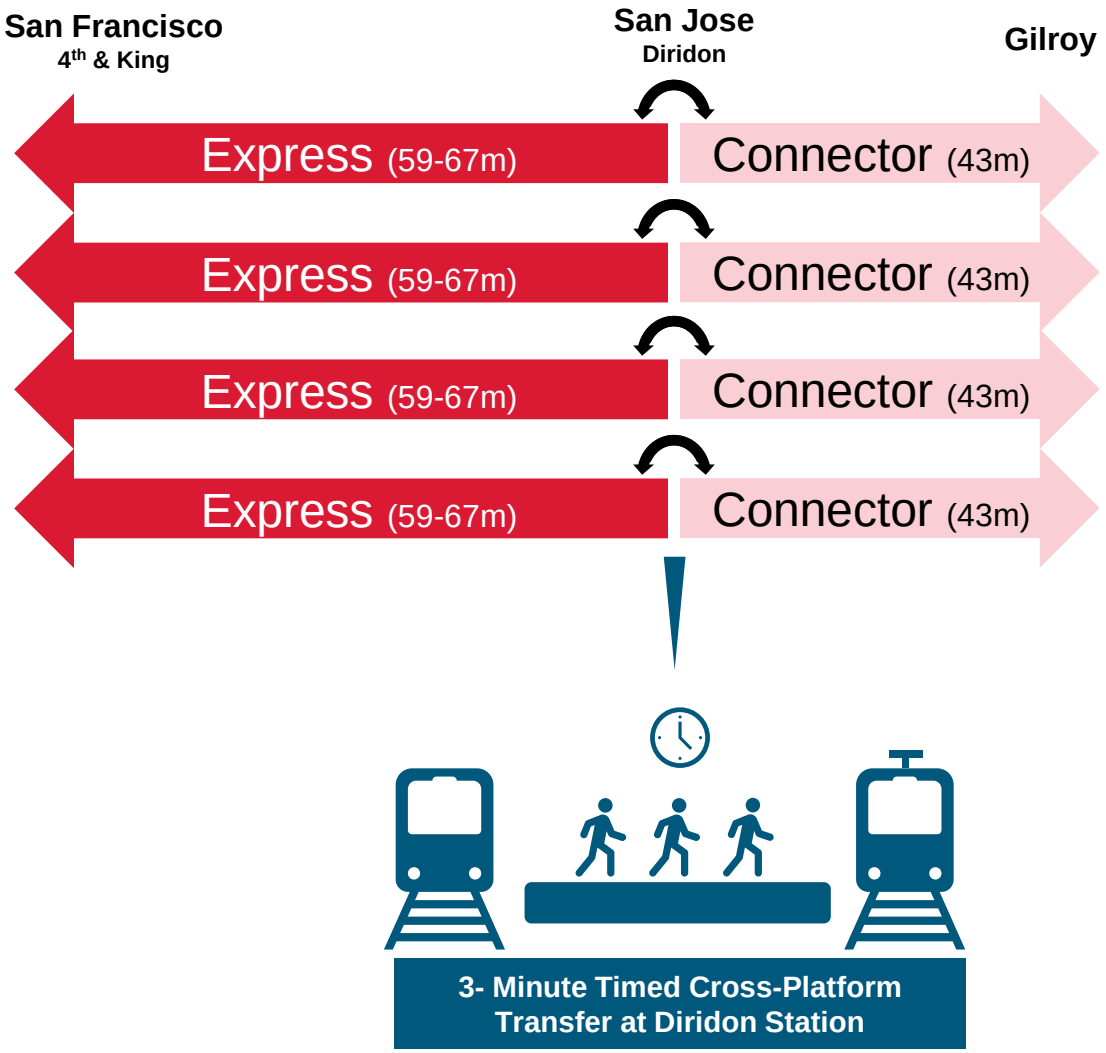
*Travel times subject to change pending further testing as new electric trains arrive and are prepared for revenue service.

Proposed Weekday Peak Period Concept for South County Connector

Service Tailored to Community Needs

- 4 daily roundtrips (schedules tailored to survey feedback from South County residents in June 2023)
- Timed cross-platform transfer to Express Trains (3-minute connection) at Diridon Station
- SF-Gilroy travel times of 102-110 minutes, a reduction of up to 28 minutes compared to existing service
- Maximizes flexibility within constraints imposed by agreement with Union Pacific

4 Daily Roundtrips with Timed Cross-Platform Connection



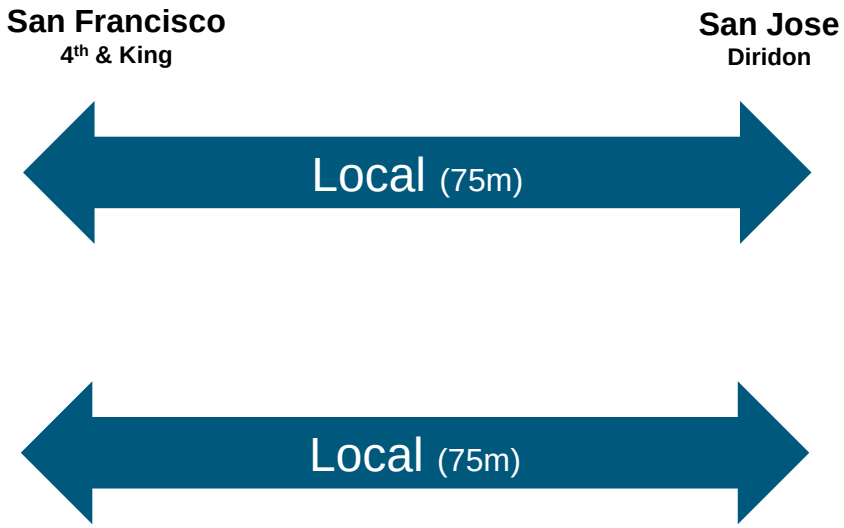
Proposed Weekday Off-Peak Service Concept

(San Francisco to San Jose)

Half-Hourly Off-Peak Service at All Stations

- All stations receive half-hourly local service throughout the day
- SF-SJ travel times of 75 minutes
- Fully electrified service – all electric trains

Weekday
Off Peak
Approximately 5-6:30am, 9:30am-3pm, and 7pm-1am



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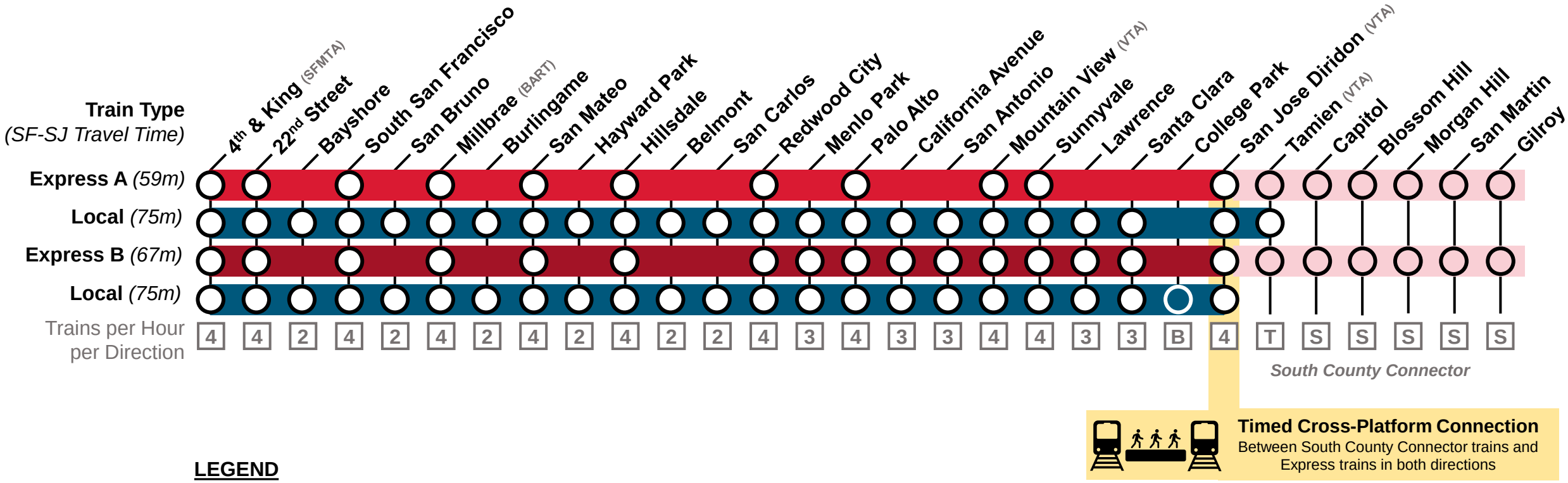
Proposed Weekday Peak Period Station Service Levels

Peak periods vary by station, generally covering 6:30am-9:30am and 3-7pm on weekdays



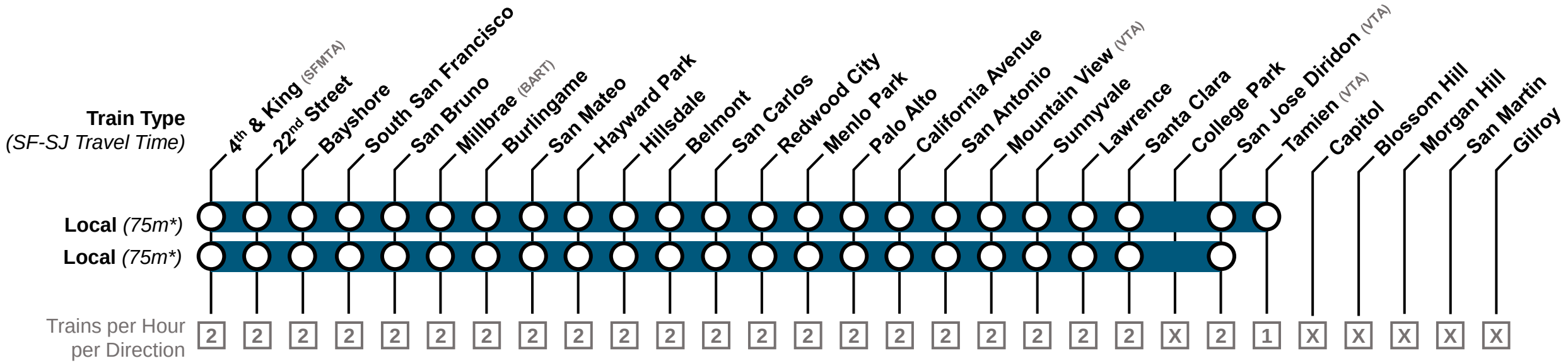
LEGEND

- ○ Stop (one per hour per direction)
- # Stops per hour per direction
- T Tamien Service
  2 to 3 stops per hour in peak direction, 1 stop per hour in reverse-peak direction
- B Bellarmine Service
  2 stops per day per direction
- S South County Connector Service
  4 stops per day per direction with 1-2 trains per hour in the peak direction

*Travel times subject to change pending further testing as new electric trains arrive and are prepared for revenue service.

Proposed Weekday Off-Peak Station Service Levels

Off-peak periods generally 5am-6:30am, 9:30am-3pm, and 7pm-1am



LEGEND

- ○ Stop (one per hour per direction)
- X No Service — Peak Period service only
- # Stops per hour per direction

*Travel times subject to change pending further testing as new electric trains arrive and are prepared for revenue service.

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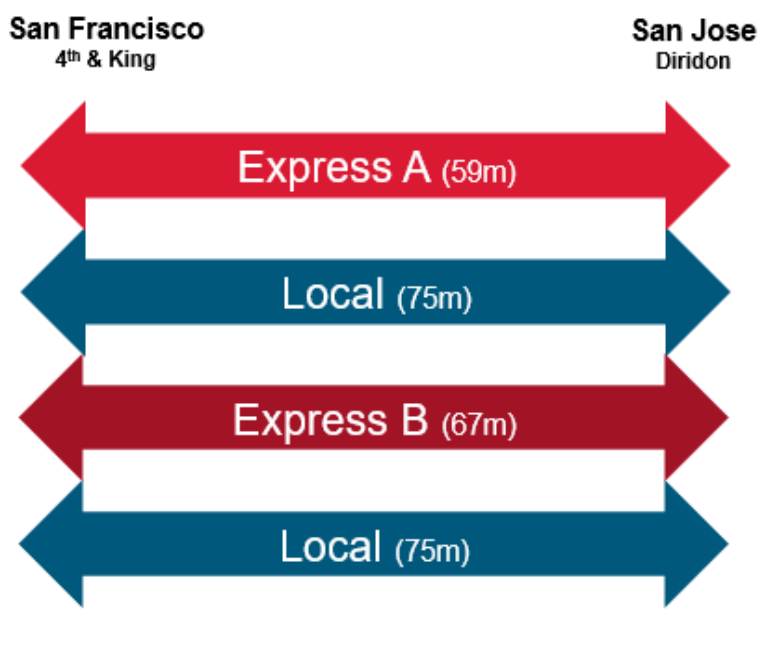
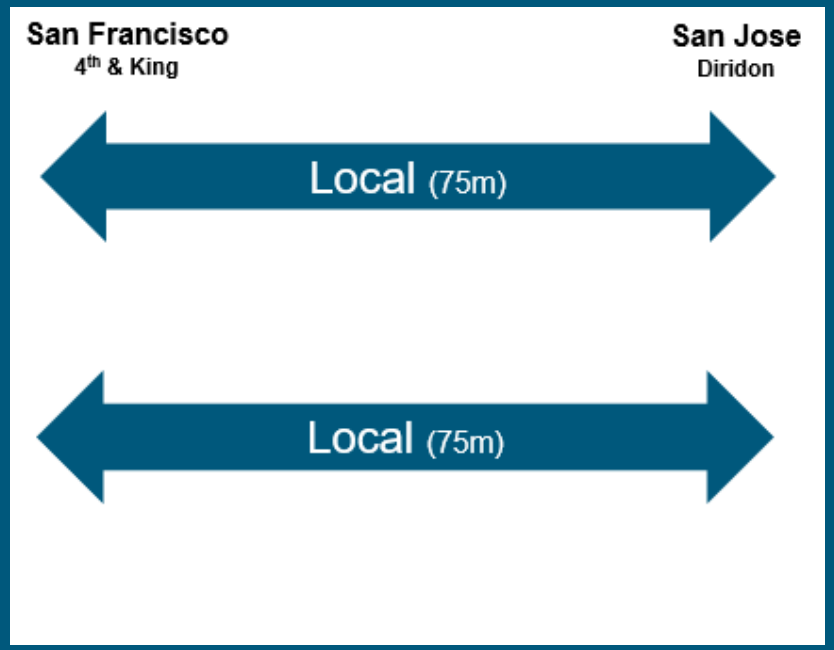
Benefits of the Proposed Weekday Peak Period Service



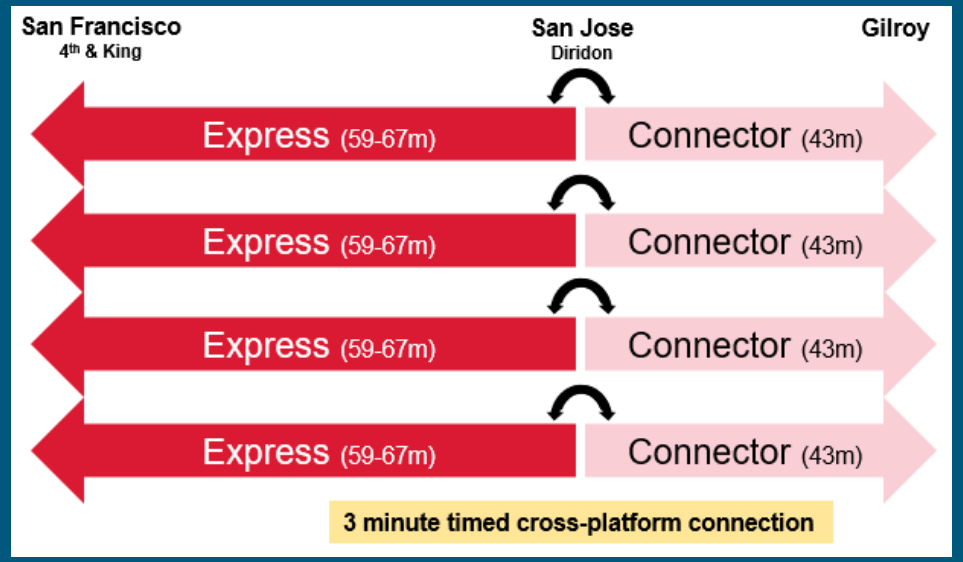
Metric		Existing Service	Proposed Fall 2024 Service	Explanation of Key Benefits
Total Stops per Hour (All Stations)		66 stops	79 stops	Increased number of station stops across corridor
Number of Stations with 3 or 4 Stops per Hour per Direction		9 stations	16 stations	Increased frequency, as more stations receive 3 or 4 train stops per hour per direction
San Francisco – San Jose Travel Time	Express Trains	65 to 81 minutes	59 and 67 minutes	Substantially quicker travel times, with time savings between 6-25 minutes
	Local Trains	100 minutes	75 minutes	

Benefits of Proposed Weekday Off Peak Service



Topic	Existing Service	Proposed Fall 2024 Service	Explanation of Key Benefits
Total Stops per Hour (All Stations)	34 stops	44 stops	Increased frequency, as more stations receive more stops per hour per direction
San Francisco – San Jose Travel Times (Minutes)	100 minutes	75 minutes	Substantially quicker travel times, with time savings up to 25 minutes

Benefits of the Proposed South County Connector Service



Topic		Existing Service	Proposed Fall 2024 Service	Explanation of Key Benefits
Weekday Roundtrips		3 roundtrips	4 roundtrips	One additional weekday trip in each direction
Travel Time	Gilroy – San Jose	49-52 minutes	43 minutes	Travel time savings between 6-9 minutes
	Gilroy – Palo Alto	76-86 minutes	66-72 minutes	Travel time savings between 4-20 minutes
	Gilroy – SF	126-133 minutes	105-113	Travel time savings between 20-28 minutes

*Departure and arrival times are estimates and are subject to change

Benefits of Proposed Service Plan

With this Proposed Electrified Service Plan, Caltrain will deliver improved service to *all riders*:

Faster Trips

Provides faster travel times for *all* Caltrain riders

Largest savings in southern Santa Clara County due to new Connector service

On average, passengers would experience 13% faster travel times (about 5 minutes of savings)

Increased Frequency at Stations

20% increase in total stops

27% at stations serving Equity Priority Communities

23% increase at stations serving minority riders

16% increase at stations serving low-income riders

Half-hourly all-day service at all stations

Improved Connections

Consistent 30 minute frequencies for coordinated bus and rail connections

15 minute peak period frequencies at major mid-corridor stations

Fully Electrified Service north of San Jose

Maximizes use of quieter, cleaner, more comfortable electrified fleet north of Tamien Station

Reduces Caltrain's greenhouse gas emissions by 250K $MTCO_2$ per year

Millbrae BART Connection Times

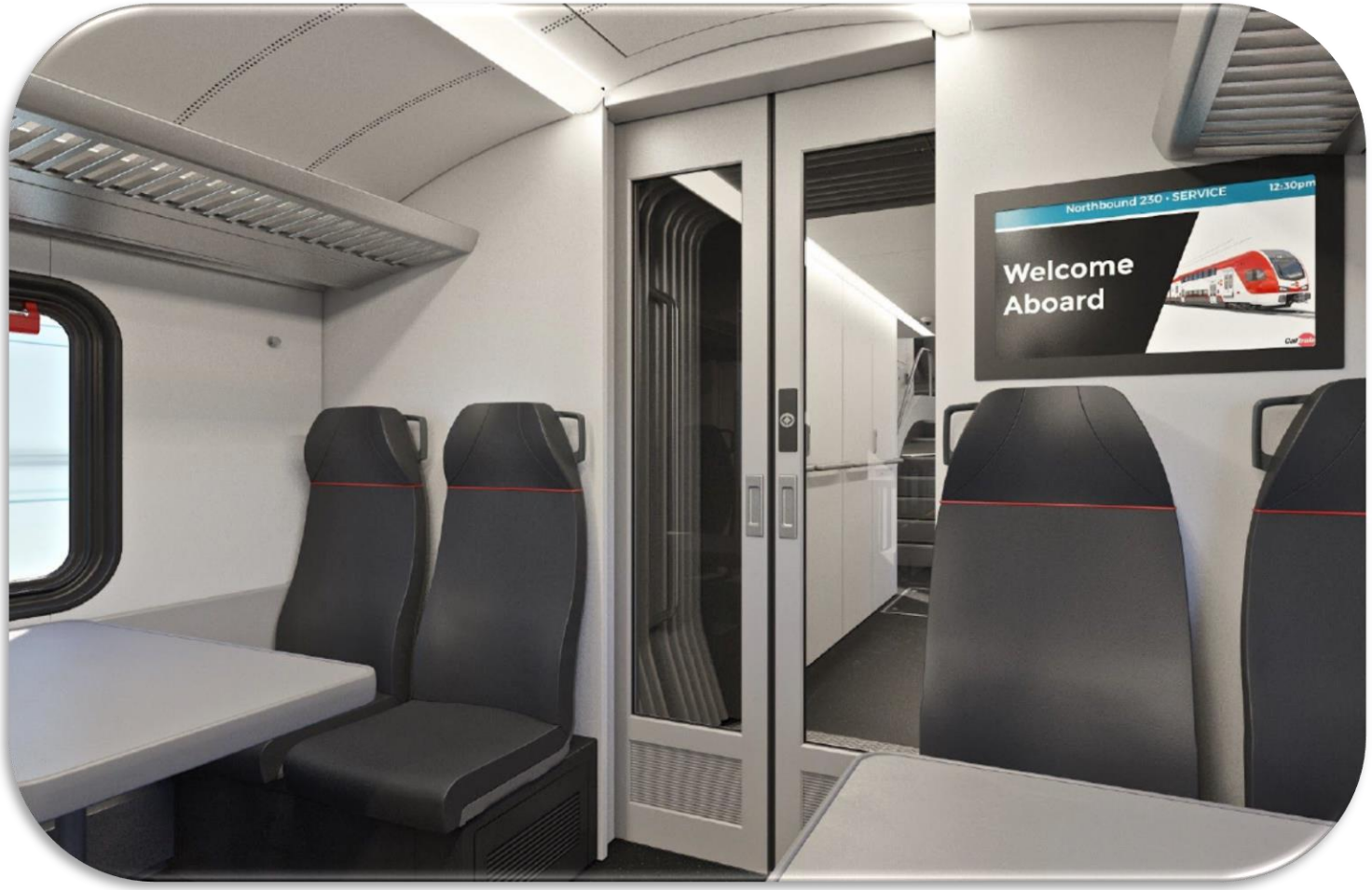
Connections at Millbrae are important to many riders. Caltrain will provide 4 stops per direction in peak period (104 trains per weekday).

Caltrain has minimized connection times at Millbrae to the extent feasible. Passengers would have 8 minute or 18-minute connections to/from BART.

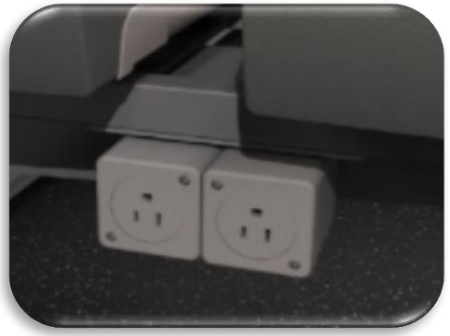
BART's service reduction (fall 2023) from 4 to 3 trains per hour limits Caltrain's ability to provide efficient connections for all trains.

Train Connection	Transfer Time
Express A - BART	8 Minutes
Local - BART	8 Minutes
Express B - BART	18 Minutes
Local - BART	18 Minutes

New Electric Trains Provide Enhanced Amenities for Riders



Onboard Electronic Displays w/ Trip Information & Pre-Recorded Announcements



Plentiful Power Sources

Baby-Changing Station

Next Steps

Next Steps

2023

September	Proposed Service Plan shared with stakeholder groups. Community tabling events to share Draft Service Plan.
October	Proposed Service Plan shared with Caltrain Board. More community tabling events to share Draft Service Plan. Feedback used to revise service ideas for Final Service Plan.
November	Final Service Plan shared with the public.
December	Final Service Plan shared with Caltrain Board.

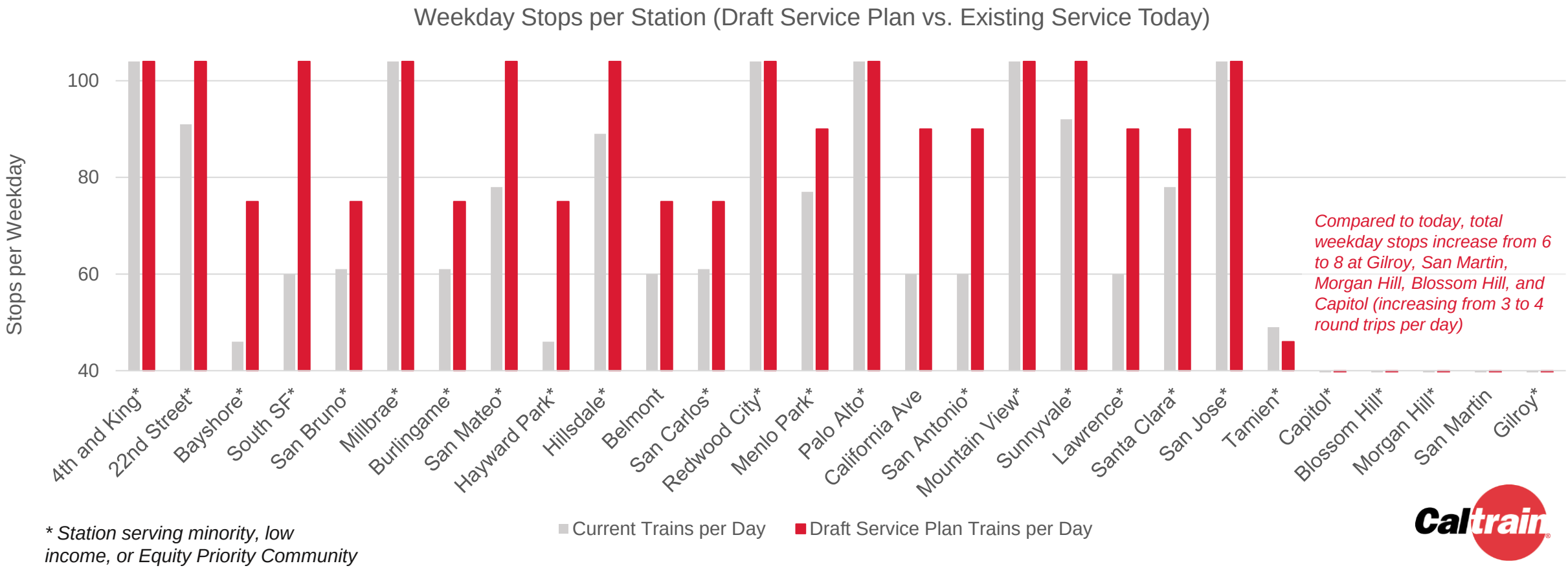
2024

Spring	Corridor fully electrified, electric train testing.
Summer	Service plan testing, more electric trains arrive.
Fall	Electrified service open for riders, using new Final Service Plan!

Appendix

Weekday Stop Frequency by Station

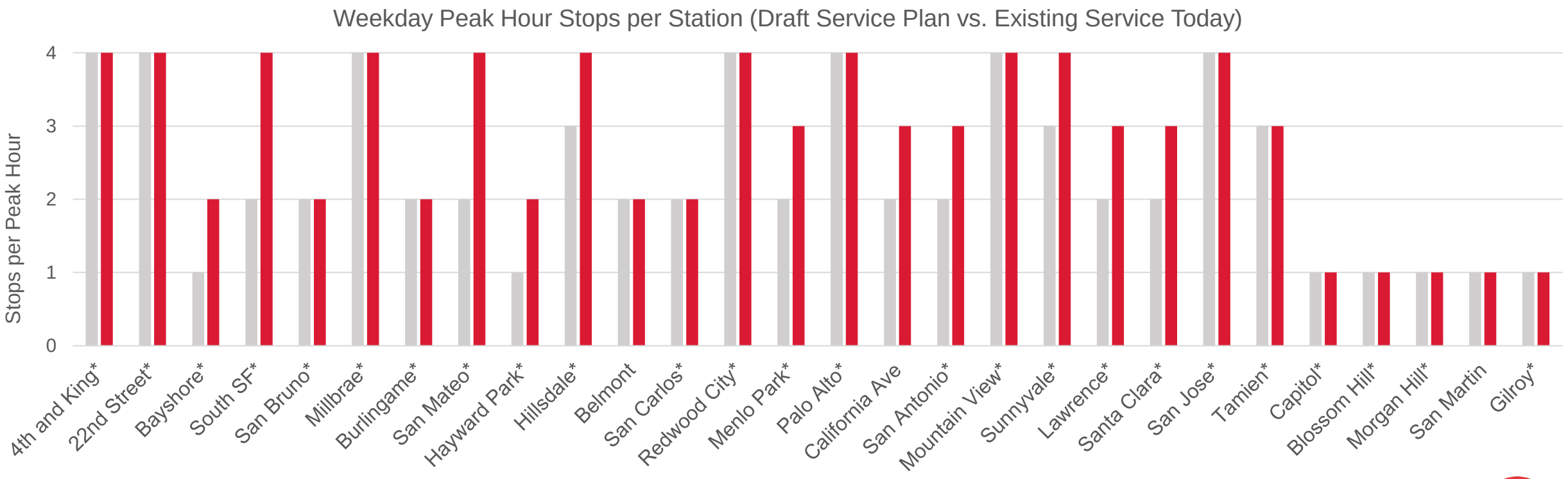
Total weekday stops increase by 20% corridor-wide



** Station serving minority, low income, or Equity Priority Community*

Weekday Peak Hour Stop Frequency

Total peak hour stops increase by 20% corridor-wide

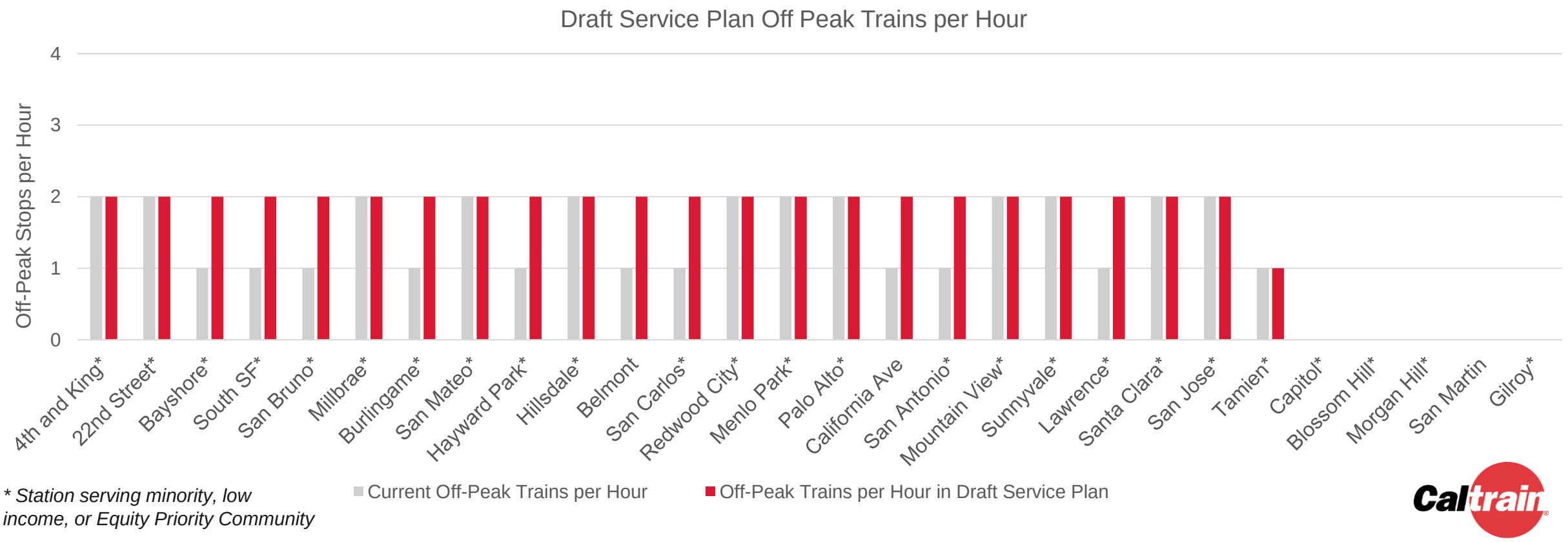


** Station serving minority, low income, or Equity Priority Community*

*22nd St: 4 TPH peak direction, 2 TPH reverse-peak direction. Tamien: 2-3 TPH peak direction, 1 TPH reverse-peak direction.

Off-Peak Stop Frequency

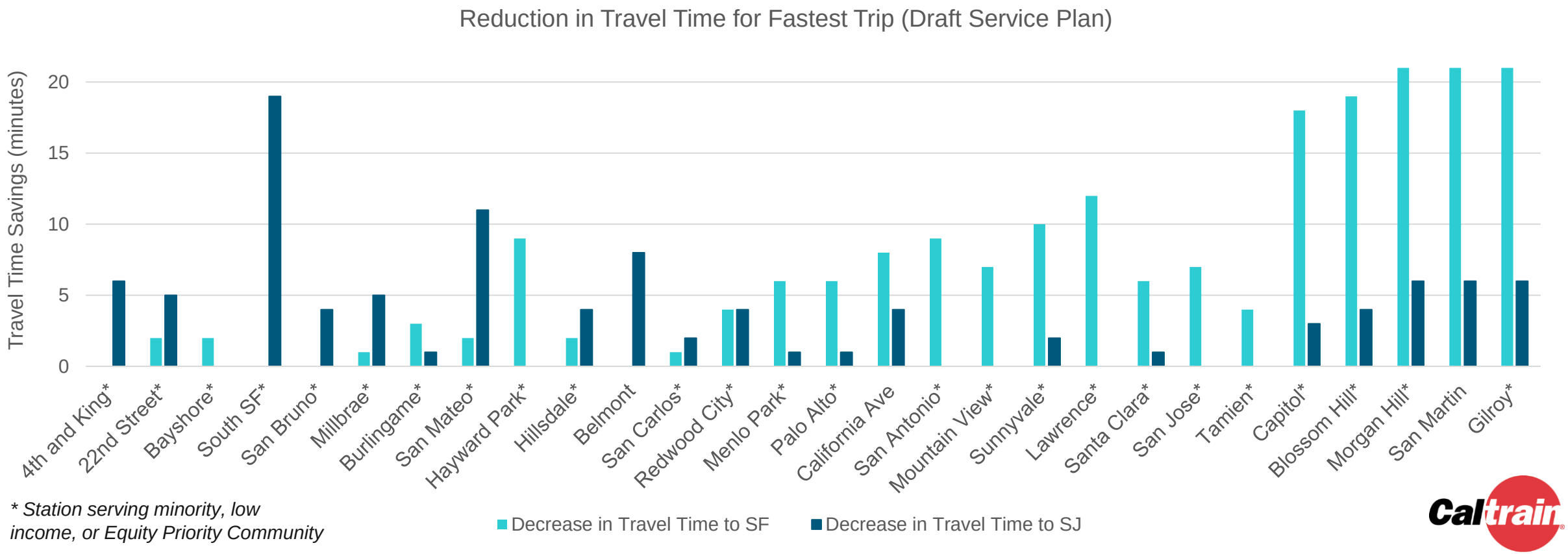
Total off-peak stops per hour increase by 30% corridor-wide



** Station serving minority, low income, or Equity Priority Community*

Travel Time Savings to SF & SJ

Most stations will see 3 to 5 minutes of savings to San Francisco or San Jose (comparing the fastest trains)



** Station serving minority, low income, or Equity Priority Community*

Southern Santa Clara County Corridor Survey: Priorities

- Online survey for South County was conducted in June 2023 and targeted residents in those communities; 1,552 responses received
- Respondents ranked frequency, later morning service, and shorter travel time as top priorities
- 85% of passengers traveled within Santa Clara County or southern San Mateo County (<10% traveled to San Francisco)*

*Data from 2022 Triennial Survey

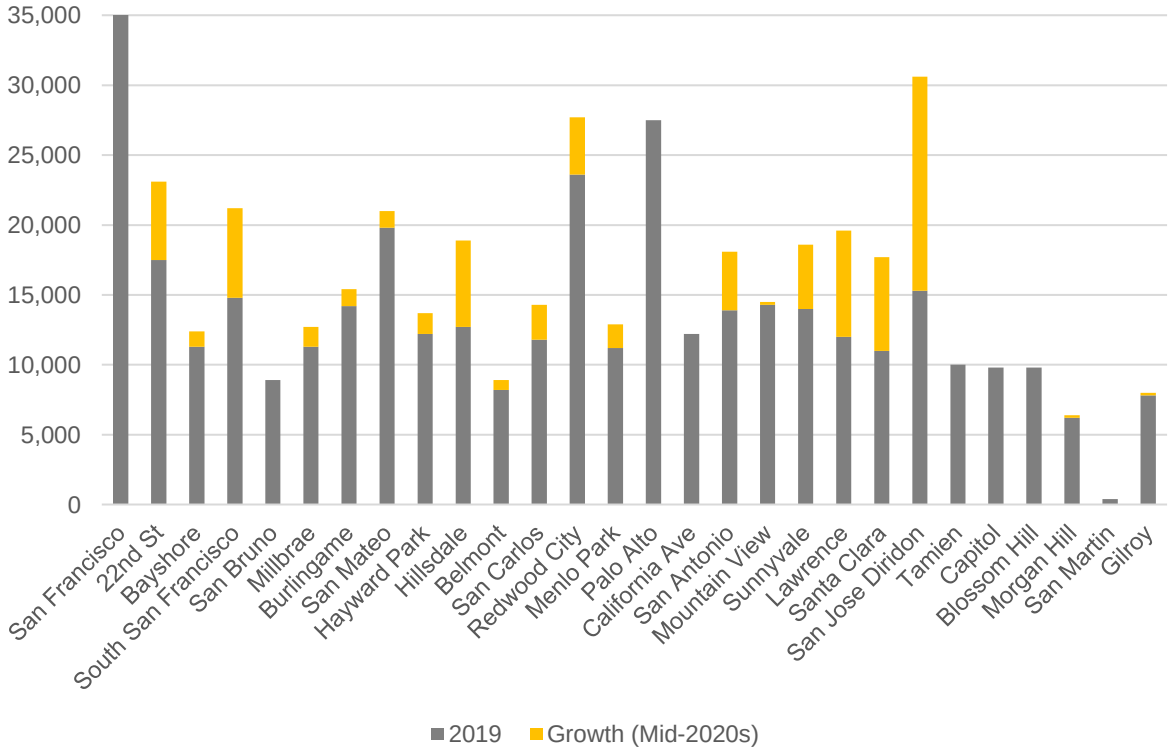
Service Improvement Preferences in Ranking Order

	Frequency	Earlier AM service	Later AM service	Earlier PM service	Later PM service	Shorter trip time	One seat ride
Capitol	1	4	3	6	7	2	5
Blossom Hill	1	5	2	4	7	3	6
Morgan Hill	1	5	2	6	4	3	7
San Martin	1	5	2	4	6	3	7
Gilroy	1	4	2	5	6	3	7

Ranking Order: 1=most requested improvement; 7=least requested improvement

Corridor Development Inventory

Population and Jobs within ½ Mile of Caltrain Stations: Mid-2020s Estimate



Growth based on inventory of projects under construction or completed since 2019

Projects Under Construction or Completed Since 2019