Citizens Advisory Committee

September 20, 2023

Agenda Item 10

Caltrain Electrification

PROPOSED SERVICE PLAN FOR FALL 2024
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)
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
Caltrain launched its electrified service planning process earlier this year, building upon recent and ongoing engagement, policy, and planning efforts.

**Public Engagement**
- 2022 Triennial Rider Survey
- 2022/2023 Rider “Pulse” Surveys
- 2023 South County Survey

**Stakeholder Engagement**
- Business Plan Service Vision
- Inter-departmental coordination
- Partner agency & private sector coordination

**Service Analysis**
- Travel market & equity analysis
- Rail service planning
- Financial analysis

**Electrified Service Planning Process**

We are here

- Draft Service Plans
- Public Review
- Stakeholder Review
- Analysis Refinements
- Final Service Plans
- Financial Analysis and FY25 Budget Process
- Launch Electrified Schedule

**Timeline**
- April to August 2023
- September 2023
- October/November 2023
- December 2023
- Winter/Spring 2024
Electrified Service: Goals & Outcomes

**Vision**

**Long-Range Service Vision**
*(Caltrain Business Plan)*

**Equity**

**Connectivity**

**Recovery & Growth**

**Goals**

**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.
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
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
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

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

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
- Sunnyvale
- San Mateo
- Lawrence
- Hillsdale
- Menlo Park
- San 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.
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

*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
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

San Francisco
4th & King

Local (75m)

San Jose
Diridon

Local (75m)

*Travel times subject to change pending further testing as new electric trains arrive and are prepared for revenue service.
Proposed Weekday Peak Period Station Service Levels

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

**Train Type**
- **Express A (59m)**
- **Local (75m)**
- **Express B (67m)**
- **Local (75m)**

**Trains per Hour per Direction**

**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

Train Type (SF-SJ Travel Time)

Local (75m*)

Local (75m*)

LEGEND

- Stop (one per hour per direction)
- 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.
## Benefits of the Proposed Weekday Peak Period Service

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>Existing Service</th>
<th>Proposed Fall 2024 Service</th>
<th>Explanation of Key Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Stops per Hour (All Stations)</td>
<td>34 stops</td>
<td>44 stops</td>
<td>Increased frequency, as more stations receive more stops per hour per direction</td>
</tr>
<tr>
<td>San Francisco – San Jose Travel Times (Minutes)</td>
<td>100 minutes</td>
<td>75 minutes</td>
<td>Substantially quicker travel times, with time savings up to 25 minutes</td>
</tr>
</tbody>
</table>
### Benefits of the Proposed South County Connector Service

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

#### Existing Service vs. Proposed Fall 2024 Service

<table>
<thead>
<tr>
<th>Topic</th>
<th>Existing Service</th>
<th>Proposed Fall 2024 Service</th>
<th>Explanations of Key Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weekday Roundtrips</strong></td>
<td>3 roundtrips</td>
<td>4 roundtrips</td>
<td>One additional weekday trip in each direction</td>
</tr>
<tr>
<td><strong>Travel Time</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gilroy – San Jose</td>
<td>49-52 minutes</td>
<td>43 minutes</td>
<td>Travel time savings between 6-9 minutes</td>
</tr>
<tr>
<td>Gilroy – Palo Alto</td>
<td>76-86 minutes</td>
<td>66-72 minutes</td>
<td>Travel time savings between 4-20 minutes</td>
</tr>
<tr>
<td>Gilroy – SF</td>
<td>126-133 minutes</td>
<td>105-113</td>
<td>Travel time savings between 20-28 minutes</td>
</tr>
</tbody>
</table>
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 MTCO₂ per year
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.

<table>
<thead>
<tr>
<th>Train Connection</th>
<th>Transfer Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Express A - BART</td>
<td>8 Minutes</td>
</tr>
<tr>
<td>Local - BART</td>
<td>8 Minutes</td>
</tr>
<tr>
<td>Express B - BART</td>
<td>18 Minutes</td>
</tr>
<tr>
<td>Local - BART</td>
<td>18 Minutes</td>
</tr>
</tbody>
</table>
New Electric Trains Provide Enhanced Amenities for Riders

- Storage Under Seats
- Plentiful Power Sources
- Baby-Changing Station
- Onboard Electronic Displays w/ Trip Information & Pre-Recorded Announcements
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

Weekday Stop Frequency by Station (Draft Service Plan vs. Existing Service Today)

Compared to today, total weekday stops increase from 6 to 8 at Gilroy, San Martin, Morgan Hill, Blossom Hill, and Capitol (increasing from 3 to 4 round trips per day)

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

Current Trains per Day vs. Draft Service Plan Trains per Day
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

Draft Service Plan Off Peak Trains per Hour

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

= Current Off-Peak Trains per Hour
= Off-Peak Trains per Hour in Draft Service Plan
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

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Earlier AM service</th>
<th>Later AM service</th>
<th>Earlier PM service</th>
<th>Later PM service</th>
<th>Shorter trip time</th>
<th>One seat ride</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capitol</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Blossom Hill</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Morgan Hill</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>7</td>
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<tr>
<td>San Martin</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Gilroy</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

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

Projects Under Construction or Completed Since 2019

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