Caltrain Business Plan

COVID RECOVERY PLANNING

UPDATE ON NEAR TERM SERVICE PLANNING

November 19, 2020
Ongoing Recovery Planning Efforts

Caltrain has pivoted its Business Plan effort to focus on COVID-19 Recovery planning. This work is spread across multiple streams as shown on the right.

Caltrain staff will engage regularly with the Board, stakeholders and the public as recovery planning proceeds over the next several months.
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- Equity, Connectivity, Recovery, & Growth Framework
- Near Term Service Planning
- Financial Analysis
- Scenario Planning
Context & Background
Multiple Phases of Crisis & Response

**Initial Triage**
March 2020 – May 2020
Initial crisis and immediate triage response by Caltrain

**Surviving the Pandemic**
May 2020 – 2021 (?)
Extended period where Pandemic is ongoing and Caltrain ridership and operations remain deeply impacted and in a state of dynamic flux. Railroad's financial position is precarious

**Preparing for the Next Reality**
2021 and Beyond
Long-term resolution of pandemic through vaccine or other permanent public health approaches. Caltrain adjusts to new Business Environment
The Pandemic

The U.S. and the world continue to experience waves of the COVID-19 pandemic.

Public health experts, like Dr. Fauci, have indicated that they expect a vaccine could be available for mass distribution around Q2 2021, while social distancing guidelines are likely to remain in effect through at least Q3 2021.

Source: NY Times
The Bay Area has been under a shelter-in-place order since March. Cases loads have generally remained lower than other regions in the country.

Many large companies have announced plans to continue remote work through at least July 2021. Some have announced permanent shifts toward remote work and hybrid work options.

Transmission Risk
Tiers as of 11/04

- Widespread
- Substantial
- Moderate
- Minimal

Source: California Department of Public Health
The Pandemic & Equity

The COVID-19 pandemic and economic effects have disproportionately affected low income communities and communities of color. These populations have been more likely to face exposure as essential workers or be adversely affected by the shelter-in-place order.

Caltrain’s Equity, Connectivity Recovery & Growth Framework (adopted at the September JPB meeting) provides guidance to Caltrain regarding ways it can make its services more useful and accessible to these communities.

California's COVID-19 Cases and Deaths by Race and Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percent CA Population</th>
<th>Percent Cases</th>
<th>Percent Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latinx</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: California Department of Public Health
Changes in Caltrain Service and Ridership

Average Weekday Ridership by Month

Weekday Trains by Month

March 17th: Shelter-in-Place Order Issued

5,000 Riders

70,000 Riders

N/A

Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep

100 Trains

40

70

100
Change in Weekday Service Levels

Pre-COVID Service Plan
92 Trains/Day
65,000 Daily Riders

Current Service Plan
70 Trains/Day
~3,500 Daily Riders
Since the start of the pandemic, Caltrain has aggressively implemented enhanced safety protocols with an emphasis on frequent cleaning, mask requirements for all employees and passengers, and physical distancing onboard trains. Caltrain has partnered with other Bay Area transit agencies to develop common commitments and expectations for employees and passengers – and the JPB adopted the Riding Together—Bay Area Healthy Transit Plan at its September meeting.
A Challenging Fiscal Outlook

Fiscal Year 2021 Budget
- The JPB has incrementally approved balanced quarterly operating budgets for Q1 and Q2
- A deficit of at least $18.5 million is projected for the remainder of the fiscal year
- Deficit could be higher if ridership recovery is slow or GoPass participation drops further
- Fiscal year 2022 will present additional financial challenges

Analyzing Options
- Caltrain is exploring a variety of deficit closure options related to both revenue generation and cost reduction
- Service plans shown here are being analyzed for cost implications

Caltrain Finances

Lacking a dedicated source of funding, Caltrain is highly dependent on fare revenue. With ridership devastated by the pandemic, Caltrain has had to rely heavily on CARES Act federal relief funding. The railroad has avoided devastating service cuts and has refrained from furloughs while using these funds.

CARES funding will be exhausted soon, and Caltrain must consider how to balance service costs, customer needs and available financial resources as it looks toward the coming year.
Winter Service Change: Context and Goals

Caltrain continues to navigate a period of extreme uncertainty relative to both the financial health of the system as well the trajectory of the pandemic and its impact on ridership recovery.

Context

- The COVID-19 Pandemic is ongoing and the path to recovery and resolution is uncertain. Reopening of the region has been slow and uneven.
- CARES Act funding will be exhausted in December timeframe. Overall financial state of railroad is highly uncertain.
- Hillsdale reopening, potential Atherton closure and ongoing major construction on corridor.

Goals

- Develop a consistent service framework that can be scaled up (and down) based on demand and funding availability while minimizing disruption and confusion for riders and connecting transit.
- Focus on serving the riders who need Caltrain most, with an emphasis on implementing key elements of the ECRG policy.
- Balance travel time and coverage goals while also maintaining capacity for social distancing.
Overall Service Approach
Who’s riding Caltrain during COVID-19?

- Share of riders that qualify for low income housing assistance: 13% vs. 28%.
- Share of riders that live in households earning less than $100k per year: 26% vs. 49%.
- Share of riders that did not have to a car: 48%.

Ridership has skewed toward essential workers, many of whom live in low- or middle-income households.
Caltrain ridership patterns have shifted during COVID-19, with ridership comprised of essential workers in healthcare, life sciences, government, and related fields.

**Rider Trip Purposes**

- **70%** of riders commuting to work
- **50%** of riders work in healthcare, life sciences, or government
- **10%** of riders traveling to medical appointments

**Ridership Concentration**

Ridership during COVID-19 has been more concentrated around stations with major medical centers like Palo Alto and Redwood City, with fewer riders commuting to offices due to COVID restrictions.

**Gilroy Extension**

Ridership on the Gilroy extension (50 riders per day) mirrors systemwide decline.

**September 2020 Weekday Ridership at Top Ridership Stations**  
(2019 Ridership for Comparison)

<table>
<thead>
<tr>
<th>Station</th>
<th>Ridership Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th &amp; King</td>
<td>590</td>
</tr>
<tr>
<td>Millbrae</td>
<td>270</td>
</tr>
<tr>
<td>Redwood City</td>
<td>310</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>620</td>
</tr>
<tr>
<td>Mountain View</td>
<td>180</td>
</tr>
<tr>
<td>San Jose Diridon</td>
<td>330</td>
</tr>
</tbody>
</table>
Social Distancing
Trains can handle about 33% of seated capacity (roughly 250 passengers) in order to maintain 6 feet of distance between passengers, or about 500 passengers to maintain 3 feet of distance.

Ample Space is Available
On a typical day, Caltrain served a max load of around 8% of seated capacity in September (about 60 passengers).
When are Riders Traveling on Weekdays?

Weekday ridership has experienced earlier peaks due to a higher proportion of healthcare workers.

Average Weekday Ridership vs. Social Distancing Capacity

Northbound

- 3 TPH
- 2 TPH
- 1 TPH

Southbound

- 3 TPH
- 2 TPH
- 1 TPH

Ample capacity for social distancing.

Based on September 2020 ridership and SF/SJ departure times.
Weekend Ridership Patterns

The share of weekend ridership (1,900 per day, 17% of all riders) is three times greater than pre-COVID-19. The resiliency of weekend ridership is likely due to continued use by essential workers and low-income riders.

Ridership on Local trains is about 20% higher than on Bullet trains as the market for leisure trips has declined.

Weekly Ridership, Pre-COVID and During COVID

<table>
<thead>
<tr>
<th>Service Type</th>
<th>2018 Riders per Train</th>
<th>Sept 2020 Riders per Train</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekend Local</td>
<td>575</td>
<td>95</td>
</tr>
<tr>
<td>Weekend Bullet</td>
<td>542</td>
<td>79</td>
</tr>
</tbody>
</table>

Based on September 2020 ridership, 2019 ridership counts, and 2019 Triennial Survey.
When are Riders Traveling on Weekends?

Average Weekday Ridership vs. Social Distancing Capacity

Based on September 2020 ridership and SF/SJ departure times
Base Service Plan

Recommended Base Service Plan
68 Trains/Weekday

<table>
<thead>
<tr>
<th></th>
<th>AM Peak</th>
<th>Midday</th>
<th>PM Peak</th>
<th>Evening</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Trains</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

2 Trains per Hour, Per Direction – All Day
Caltrain would provide 2 trains per hour per direction in the peak- sufficient to meet demand. By expanding service to 2 trains through the midday period, Caltrain can better serve unmet needs of essential workers and lower income riders.

Hourly All-Day Weekend Service
Caltrain would increase weekend service to hourly frequencies to better serve weekend riders, especially essential workers and low-income riders.
Caltrain has focused on maintaining at least two trains per hour during as many time periods as possible. Running at least two trains per hour, per direction provides several key benefits:

- 30 min frequency at higher demand stations
- Reasonably competitive travel times
- Coverage to all stations
- Timed connections to every BART train at Millbrae
A Framework For Service

Ridership is not expected to fully recover in 2021. Depending on public health conditions and the railroad’s finances, Caltrain may need to make further service adjustments including scaling service levels up or down to meet changing needs.

An Expanded Service Plan could restore service back to 92 trains per day.

An Austerity Service Plan could reduce service to as little as 44 trains per day and suspend weekend service.
Framework for Equity, Connectivity, Recovery, and Growth

Purpose

- Policy document that builds on work completed in the Business Plan
- Provides guidance to help the railroad navigate implement needed changes and guide near- and mid-range planning
- Addresses pressing equity and connectivity concerns

Equity in the Caltrain Context

- Caltrain defines equity in terms of equal access to both benefits of the system as well as the fair distribution of impacts.
- Rail corridor has been active for over 150 years, and both historically and currently, race and class have played an outsized role in defining where harmful disparities in access and impacts are most concentrated - in poor, minority communities.
- Age, gender, disability, and English proficiency can also expand or constrain access opportunities.
- Framework builds on existing policies and efforts and outlines key steps toward reversing these disparities by focusing railroad resources and attention toward those most harmed by a lingering legacy of racism and discrimination
- Equity is consciously paired with policies related to connectivity, recovery and growth because equity principles need to be foundational and integrated into how the railroad evolves and achieves its Vision
Framework for Equity, Connectivity, Recovery, and Growth

Guiding Principle:
Caltrain shall make a priority of enhancing equity in its system, focusing on the diverse constituency of riders who depend on transit for essential travel and addressing the historical inequities that have caused the rail service to be disproportionately underutilized by lower income riders and people of color.

Equity in Context of Caltrain Service

A) Caltrain Shall undertake service changes and system improvements in a manner that enhances equity and access for historically disadvantaged and underserved groups and communities. This includes:

• Improving midday and off-peak service levels to serve and attract customers who need the system for non-work trips or whose work schedules do not conform to traditional peak commute hours.

• Considering social, racial and geographic equity as a significant factor in determining the restoration and expansion of service frequencies at individual stations.

• Engaging in research, community dialog and planning to understand how best to provide meaningful access and connections between the Caltrain system and historically underserved low-income and minority communities along the corridor.

• Prioritizing the planning and implementation of station projects and system enhancements that will expand and facilitate access for riders with disabilities.

• Undertaking planning to improve Caltrain station access facilities most heavily used by low-income riders, including bus stops, bicycle parking, pick-up/drop-off areas, and walkways.
### Midday, Late Evening, and Weekend Service Serve a Higher Share of Low-Income Riders

#### Household Income by Time Period

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Less than $25K</th>
<th>$25K-50K</th>
<th>$50K-100K</th>
<th>More than $100K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early AM</td>
<td>8%</td>
<td>19%</td>
<td>17%</td>
<td>11%</td>
</tr>
<tr>
<td>AM Peak</td>
<td>3%</td>
<td>4%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Midday</td>
<td>11%</td>
<td>18%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>PM Peak</td>
<td>8%</td>
<td>22%</td>
<td>26%</td>
<td>27%</td>
</tr>
<tr>
<td>Evening</td>
<td>6%</td>
<td>14%</td>
<td>27%</td>
<td>23%</td>
</tr>
<tr>
<td>Late Evening</td>
<td>3%</td>
<td>4%</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>Weekend</td>
<td>3%</td>
<td>4%</td>
<td>6%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Parallel Routes Proportionally Serve More Low-Income Riders and People of Color than Caltrain

Parallel Transit Has More Frequent All-Day Service & Serves More Midday Riders

**Frequency**

- **Caltrain (5AM-12AM)**
- **SFMTA -T-Third (5AM-12AM)**
- **SamTrans - ECR (4AM-2AM)**
- **VTA - 522 (5AM-12AM)**

**Ridership**

- **Parallel Transit**
- **Caltrain**
Equity Implications

The Base (and Expanded) service plans expands service in a manner that supports the observed travel patterns of low-income riders who rely on Caltrain and enacts key service components of the Equity, Connectivity Recovery & Growth framework.

- Service frequency would double during midday periods and passengers will no longer need to rely solely on local trains
- On weekends, service would increase to hourly (a 50% increase in frequencies)
- Service span is maintained

Significant increases in service proposed during midday and on weekends would benefit lower income riders
Equity Implications

The Austerity Service Plan represents a minimum viable level of service for the railroad. It would not provide equity benefits and cuts would impact low income riders.

- Suspending early morning, late evening, and weekend services would substantially impact lower income riders
- Midday service would not be improved

The Austerity Plan is not recommended.

A potential intermediate level of service reduction (between the Austerity and Base plan) could look at initially cutting either weekday or weekend service.
Shutdown Considerations

While the Austerity plan is not recommended and would have significant equity impacts, it remains a strongly preferred option relative to shutting down the railroad.

The map at the right shows how far a person could travel by transit during a weekday peak-hour starting at the Palo Alto Caltrain station (currently the busiest station in the system).

This map assumes the 2 train per hour peak service included in both the Base Caltrain plan and austerity plan.
Shutdown Considerations

The map at the right shows how transit access for Palo Alto Station would change if Caltrain were shut down and passengers only had access to bus and connecting services. The table below quantifies the loss of access to bay area residents within a 60-minute travel shed.

<table>
<thead>
<tr>
<th>People Served</th>
<th>Proposed Base Service Pattern</th>
<th>Service Shut Down</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>1,390,000</td>
<td>488,200</td>
<td>-65%</td>
</tr>
<tr>
<td>Jobs</td>
<td>955,100</td>
<td>294,000</td>
<td>-69%</td>
</tr>
<tr>
<td>Low-Income</td>
<td>280,500</td>
<td>84,400</td>
<td>-70%</td>
</tr>
<tr>
<td>Non-White</td>
<td>878,300</td>
<td>282,800</td>
<td>-68%</td>
</tr>
<tr>
<td>Car-Free</td>
<td>100,300</td>
<td>31,000</td>
<td>-69%</td>
</tr>
</tbody>
</table>

Demographic data from 2018 American Community Survey
Service Details
Service Options

Operating two trains per hour per direction, Caltrain has two basic service options that fit the corridor:

Local/Express Pattern

• One express train and one local train per hour
• 9 stations receive two stops per hour, but headways vary between 10 and 50 mins

Limited Pattern

• Two limited stop trains running at similar travel times in a skip-stop manner
• 9 stations receive two stops per hour at even 30-minute headways

Stopping patterns shown are preliminary recommendations and subject to change
Ridership south of Tamien is currently at roughly 50 passengers per day. Proportionally, this mirrors the ridership decline for the system as a whole.

Overall recommendation is to provide two roundtrips per day south of Tamien – this maintains the current level of service.

South county service would be increased as ridership recovers - up to an eventual 4 roundtrips per day.

**Local/Express Pattern**
- 2 roundtrips to Gilroy per day
- Local service (most riders are traveling within Santa Clara County)

**Limited Pattern**
- 2 roundtrips to Gilroy per day (one on each pattern)
Recommended stopping patterns were developed based on a number of factors including, historic ridership patterns, observed use of the system during the pandemic, and ECRG policy goals related to enhancing equity and connectivity.
Travel Markets & Equity

Stations with 2 Trains per Hour

Top 8 Ridership

Top 8 Low Income Riders

Community of Concern

Hospital or Life Science Jobs

Major Transfer Station

Stopping patterns shown are preliminary recommendations and subject to change
# Service Characteristics: Comparison

## Similarities

<table>
<thead>
<tr>
<th>Markets &amp; Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both provide 2 trains per hour throughout the day at stations serving high ridership volumes – especially those serving low income riders and essential workers.</td>
</tr>
<tr>
<td>Both provide hourly service at all other stations and on weekends.</td>
</tr>
<tr>
<td>Both provide 2 daily roundtrips to Gilroy.</td>
</tr>
</tbody>
</table>

## Differences

### Intermodal Connectivity

| Both provide timed transfers to BART at Millbrae Station. |
| Both provide standardized, repeating schedules. |
| Limited provides even headways and better opportunities for coordinated transfers at more stations. |
| Local/Express connects all station pairs. Limited does not. |

### Balancing Loads

| Limited helps avoid crowding and enables social distancing by maintaining consistent 30-minute headways and balanced loads. |
| Local/Express may result in imbalanced loads and bunched headways of up to 50 minutes. |

### Competitive Travel Times

| Limited provides moderately competitive travel times between stations. |
| Local/Express provides fast travel times between major stations and slow travel times everywhere else. |
Prior to COVID-19, Caltrain connected approximately 98% of station pairs, while 3% were not connected.

With the Limited service, 18% of station pairs would not be connected. However, these station pairs account for less than 3% of pre-pandemic ridership.

Local/Express would serve 100% of riders and station pairs.
Local/Express would be faster for trips between major stations, but stations with only local service would have slow travel times.

Limited trains would be faster for all other trips, including trips between minor stations and between minor and major stations.

Travel Times by Station Pair: Local/Express vs. Limited

- Travel Time Comparison

- Trip time difference (minutes)
## Sample Travel Times

<table>
<thead>
<tr>
<th>Example Station Pair</th>
<th>Local/Express</th>
<th>Limited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diridon-4&lt;sup&gt;th&lt;/sup&gt; &amp; King</td>
<td>65 or 91</td>
<td>79</td>
</tr>
<tr>
<td>Palo Alto-San Mateo</td>
<td>17 or 25</td>
<td>21</td>
</tr>
<tr>
<td>Diridon-Palo Alto</td>
<td>23 or 32</td>
<td>27</td>
</tr>
<tr>
<td>Menlo Park-Millbrae</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>Lawrence-Millbrae</td>
<td>53</td>
<td>45</td>
</tr>
<tr>
<td>San Carlos-4&lt;sup&gt;th&lt;/sup&gt; &amp; King</td>
<td>45</td>
<td>38</td>
</tr>
<tr>
<td>Palo Alto-4&lt;sup&gt;th&lt;/sup&gt; &amp; King</td>
<td>41 or 58</td>
<td>50</td>
</tr>
<tr>
<td>Lawrence-4&lt;sup&gt;th&lt;/sup&gt; &amp; King</td>
<td>79</td>
<td>68</td>
</tr>
</tbody>
</table>

*Travel times shown are preliminary and subject to change.*
While both patterns provide two trains per hour, they differ in headways and potential for connectivity.

Both provide timed connections to BART, which will continue to operate every 30 minutes at Millbrae.

The Limited pattern provides 30 minute regular headways at all other stations receiving two trains per hour, enabling more easily coordinated transfers with other frequent transit services.

Local/Express provides variable headways of up to 50 minutes, which makes coordinating transfers more challenging.
Balancing Passenger Loads & Social Distancing

With Local/Express, bunched headways and differentiated travel times increase the likelihood of imbalanced passenger loads, which could make social distancing more challenging as ridership returns.

Skip Stop balances passenger loads by maintaining even headways and similar travel times.
Rider Perspectives

Rider feedback suggest space for social distancing and service frequency are higher priorities than providing faster service at this time.

This feedback suggests a Limited service would better meet the needs of riders.

What is the single most important thing Caltrain can do to help you at this time?

- Prioritize Service Frequency (36%)
- Prioritize Social Distancing & Cleaning (39%)
- Prioritize Fast Trains / Bullet Service (15%)
- Other (10%)

Source: July 2020 Caltrain Rider Survey
Operate the Base Service Plan at 68 trains per day with 2 TPH throughout the day

- Serves peak ridership demand
- Responds to midday needs of low-income riders and essential workers by significantly improving midday service
- Provides framework for scaling up or down based on finances and demand

Operate two Limited patterns per hour

- Balances passenger loads to promote social distancing
- Provides regular headways and enables coordinated transfers
- Provides good travel times for all stations
- Provides two daily roundtrips to Gilroy (one trip on each pattern)

Weekday Recommendation
Provide Hourly Local Service to provide 28-32 trains per day (+4 trains over today)

- Better serves ridership demand and promotes social distancing
- Responds to needs of low-income riders and essential workers by increasing service frequency by 50%
- Regular hourly service better enables coordinated transfers with other transit providers
- Maintains construction windows

Suspend Weekend Bullet Service

- Weekend bullet service is scheduled around leisure trips, a market that has been weak during the pandemic. Observed ridership on weekend bullets has been substantially similar to local trains.
- Standardized hourly service benefits weekend riders who are traveling to work or medical appointments
The Austerity service plan would not further equitable outcomes

Cutting service during off-peak periods, shortening peaks and service span, and suspending weekend service would have a disproportionate effect on low-income riders.

Rebuilding ridership would be difficult

There is presently not a clear peak period to plan around - Caltrain may need to choose between serving earlier peaks for medical workers or later peaks for office workers.

Austerity Plan is not recommended – and remains conceptual only at this time.
Scaling Up:

There are several options for how Caltrain could scale up service as finances allow and demand returns

Caltrain could double frequency on the two Limited patterns

• All stations would be served at least every 30 minutes during peak periods, with major stations served every 15 minutes
• Travel times would remain similar between patterns
• Maintains coordinated transfers
• Minimal disruption to schedules

Example – Adding service by doubling recommended Base Service Pattern

Clockface service every 15 minutes at major stations

Clockface service every 30 minutes at minor stations

Travel times similar between trains

Coordinated transfers

Balanced passenger loads
Alternatively, Caltrain could reduce travel times by providing fewer stops and more variation in train types—either on added trains or within the service plan as a whole:

- Stations could be served by one to four trains per hour at variable headways.
- Travel times could decrease, especially between major stations.
- Change would involve more significant disruption to schedules and would make aspects of coordination with other service providers more challenging.

### Scaling Up:

There are several options for how Caltrain could scale up service as finances allow and demand returns:

- Some major stations receive 4 trains per hour, but at variable headways.
- Service may remain hourly at some stations.
- Travel times different between trains.
- Transfers may be more difficult to coordinate.
- Potential for imbalanced passenger loads.

**Example – Adding Service in a more customized pattern:**
Next Steps
Next Steps: Implementation & Monitoring

The outlined service approach is a staff recommendation based on available data and evidence.

The pandemic has created a highly difficult and dynamic business environment for transit – further changes and adjustments will inevitably be needed.

Monitoring rider reaction to the new service will be essential to determine what aspects are working well and what may need to change.

Implementation

• Continue refinement of schedule and stopping patterns
• Complete financial analysis related to crewing and equipment utilization
• Coordinate with connecting and partner operators (BART, CCJPA, ACE, SFMTA, SamTrans and VTA)
• Solicit feedback from JPB, CAC and other stakeholder groups
• Confirm date for implementation (targeting mid-December)

Monitoring

• Develop pre- and post-implementation counts and surveys
• Identify external measures that can be used to calibrate and contextualize ridership outcomes
Appendix: Stringline Charts

Local/Express

Limited