Rounding out the 2040 Vision
What is the Caltrain Business Plan?

**What**  Addresses the future potential of the railroad over the next 20-30 years. It will assess the benefits, impacts, and costs of different service visions, building the case for investment and a plan for implementation.

**Why**  Allows the community and stakeholders to engage in developing a more certain, achievable, financially feasible future for the railroad based on local, regional, and statewide needs.
What Will the Business Plan Cover?

Technical Tracks

Service
- Number of trains
- Frequency of service
- Number of people riding the trains
- Infrastructure needs to support different service levels

Business Case
- Value from investments (past, present, and future)
- Infrastructure and operating costs
- Potential sources of revenue

Community Interface
- Benefits and impacts to surrounding communities
- Corridor management strategies and consensus building
- Equity considerations

Organization
- Organizational structure of Caltrain including governance and delivery approaches
- Funding mechanisms to support future service
Recap of Last Month
Planning within Constraints

Recap from Last Month

The Caltrain corridor is not a blank slate. Over the past decade, the JPB and its partners have made major policy decisions that inform and bound how the railroad will grow and evolve in the future.

- **2008**: CHSRA specifies its alignment
- **2011-2013**: “Blended System” introduced
- **2013-2017**: CHSRA Business Plan confirms Blended System
  - Senate Bills 1029 and 557 provide Prop 1A funds and codify 2-track blended system
  - Peninsula Corridor Electrification Program environmentally cleared
  - Receipt of Federal Full Funding Grant Agreement
  - Full Notice to Proceed issued
Decisions and commitments that have already been made on the corridor bring three fundamental service planning questions into tension with one another:

1. **Service Differentiation**
   How can local, regional and high speed services be blended and balanced on the corridor to best serve multiple markets?

2. **Peak Service Volume**
   How much growth in peak train traffic volume can the corridor support and what kinds of growth may be required to meet long term demand?

3. **Service Investments**
   What types of investments into operations, systems and infrastructure will be required to achieve the desired types and volumes of service?
Planning for a long range Service Vision also requires a specific focus on the interface between the rail corridor and the communities it serves. This means thinking about what changes or strategies can be employed in the corridor to maximize the opportunities and benefits of the railroad provides while addressing challenges and mitigating impacts.

### Recap from Last Month

**Planning within the Corridor-Community Interface**

- **Analysis**
  - Document interface between the railroad and its surroundings
  - Understand how the interface could change as the railroad and its surrounding communities grow
  - Describe how the corridor-community interface is “managed” today including decision-making, project delivery and funding
  - Compare with approaches used by national and international peer rail corridors

- **Outcomes**
  - Work with the communities to identify opportunities for how the corridor, not just individual projects, could be better managed to achieve both community and railroad goals
  - This includes considering both the appetite and need for a corridor-wide approach to address at-grade crossings
SHARING SESSION

Do you have any questions related to the key Service and Community Interface issues we discussed last month?
Focus on Service
Service Practices and Priorities

Exploring the Market for Service
Planning for the Service We Want

**Best Practices**
Goals to strive for as we plan the 2040 Service Vision

**Balancing Priorities**
Considerations that will shape the 2040 Service Vision
The Caltrain service is part of a statewide, regional and local transportation network.

To get the most out of this network, individual operators must plan, coordinate and administer their services in a way that enhances connectivity and achieves a seamless experience for the customer.
Timed, well-coordinated transfers increase the useability of the rail system and help provide high quality service to a larger range of travel markets. Well coordinated transfers are one tool that can help the system balance the competing goals of coverage vs. travel time and service to high demand markets.
With clock-face scheduling, trains arrive and depart at consistent intervals, like every 10 minutes. This simplicity makes it easy for customers to remember train schedules, which cuts down on travel planning complexity.

This practice is commonplace in many countries with high-quality transit systems.
Best Practice

Better All-Day Service

Train Service and Ridership by Time of Day
Combined Weekday Northbound and Southbound

Expanded all-day service makes the system more useful to a range of different customers and helps build new markets.
Thoughtful long range service planning ensures that capacity, frequency, and connectivity all improve over time.

- Today
- Introduction of Electrified Service
- Introduction of Blended Service
- 2040 Service Vision
Balancing Frequency & Travel Time

Working within Pre-Established System Constraints, We Can Blend…

- Frequent Service to Many Stations with slower travel time due to many stops
- Fast Travel Time to Fewer Stations with longer wait times at skipped stations
- A Balance of Travel Time and Frequency with transfers required
Balancing Market & Coverage Service

Priorities

Market-Focused Service

Coverage-Focused Service

Stations

Ridership

Number of Trains
Decisions and commitments that have already been made on the corridor bring three fundamental service planning questions into tension with one another:

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3. **Service Investments**
   What types of investments into operations, systems and infrastructure will be required to achieve the desired types and volumes of service?
Which service “Best Practices” are most important to your jurisdiction? Are there any best practices that we are missing?

How do you think we should approach balancing competing service needs?
Exploring the Market for Service
1. **Ridership is highly concentrated at a few stations**
   - The busiest 8 stations account for nearly ¾ of all ridership and nearly all ridership growth over the past 20 years
   - The least busy 8 mainline stations and the San Jose – Gilroy stations have lost ridership over the last 20 years
   - One in four Caltrain riders do not use the station closest to their origin or destination due to differences in service levels and accessibility

2. **Caltrain serves multiple markets in both directions**
   - Existing riders primarily commute to four major employment centers (San Francisco, Redwood City, Palo Alto, and Mountain View) plus several mid-sized hubs
   - AM peak period ridership exhibits a 64%-36% northbound-southbound split

3. **Today caltrain captures a small, but significant percentage of the overall travel market along the peninsula**
   - Caltrain captures roughly 8-10% of regional peak hour travel markets along the Peninsula
   - There appears to be significant market growth opportunities, both overall and for off-peak and Gilroy markets
Understanding the Market for Caltrain Today

Existing Ridership

Caltrain Average Weekday Ridership (Thousands)
1997 – 2017

- 2001 Dot Com Bust
- 2004 Baby Bullets
- 2008 Great Recession
- 2010 Tech Boom
Today, Ridership is Highly Concentrated at a Few Stations

Change in Ridership (Thousands)
1998 – 2017

- Top 8 Stations
  - 4th & King, Millbrae, Hillsdale, Redwood City, Palo Alto, Mountain View, Sunnyvale, San Jose Diridon

- Middle 8 Stations
  - 22nd Street, Burlingame, San Mateo, San Carlos, Menlo Park, California Ave, Santa Clara, Tamien

- Bottom 8 Stations
  - Bayshore, South San Francisco, San Bruno, Hayward Park, Belmont, San Antonio, Lawrence, College Park

- Gilroy Service
  - Capitol, Blossom Hill, Morgan Hill, San Martin, Gilroy

Source: 1998-2017 Passenger Counts

+30,000 Riders
+5,000 Riders
-400 Riders
-500 Riders
There is a Relationship Between Service Levels and Ridership

Ridership is highly concentrated at stations with high service levels. Under existing conditions, Caltrain stations may be grouped into four tiers: the Top 8 (Baby Bullet), Middle 8, Bottom 8, and Gilroy stations. The Top 8 have accounted for 87% of ridership growth over the past 20 years, while the Bottom 8 and Gilroy stations have lost ridership over the same time period.

<table>
<thead>
<tr>
<th>Station Tier</th>
<th>Peak Period Trains</th>
<th>Ridership</th>
<th>% of Ridership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 8</td>
<td>&gt;45</td>
<td>36,600</td>
<td>73%</td>
</tr>
<tr>
<td>Middle 8</td>
<td>30-45</td>
<td>9,800</td>
<td>19%</td>
</tr>
<tr>
<td>Bottom 8</td>
<td>&lt;30</td>
<td>3,280</td>
<td>7%</td>
</tr>
<tr>
<td>Gilroy</td>
<td>3</td>
<td>580</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: 2017 Passenger Counts

Caltrain
Not All Riders Use the Station Closest to Them

If riders used the stations closest to their actual trip origin/destination, existing ridership demand would be more spread out across stations.
Caltrain Serves Multiple Markets in Both Directions…

Weekday Morning Ridership by Direction

- **Boardings**
- **Alightings**

Southbound demand is primarily driven by trips between San Francisco/BART and Silicon Valley, especially Palo Alto and Mountain View.

Emerging employment hubs in northern San Mateo County have relatively low activity due to low service levels and access constraints.

Northbound demand primarily driven by trips to Palo Alto, Redwood City, and San Francisco/BART.

Limited travel within Santa Clara County besides Palo Alto. Diridon Station primarily serves as park-and-ride for areas farther south.

Source: 2017 Passenger Count
…But Demand is Still Highly Concentrated Within Top Markets

### Passenger Destinations
- Bottom 8 Stations
- Middle 8 Stations
- Top 8 Stations

### Passenger Origins
- Top 8 Stations
- Middle 8 Stations
- Bottom 8 Stations
- Gilroy Stations

### Destinations

<table>
<thead>
<tr>
<th></th>
<th>Top 8</th>
<th>Middle 8</th>
<th>Bottom 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gilroy</td>
<td>1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Bottom 8</td>
<td>6%</td>
<td>1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Middle 8</td>
<td>20%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Top 8</td>
<td>54%</td>
<td>8%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Source: 2014 On-Board Survey updated with 2017 Passenger Counts by Station
Today, Caltrain Captures a Modest Percentage of the Regional Travel Market

Average Hourly Person-Trips Crossing San Mateo-San Francisco County Line

Peak Period Caltrain Mode Share: 8%
Off-Peak Caltrain Mode Share: 2%

Source: 2017 BART and Caltrain Passenger Counts and 2017 Vehicle Counts (Adjusted for Passenger Occupancy)
Today, Caltrain Captures a Modest Percentage of the Regional Travel Market

Average Hourly Person-Trips Traveling Mid-Peninsula (at Burlingame / Millbrae Border)

Peak Period Caltrain Mode Share: 9%
Off-Peak Caltrain Mode Share: 2%

Source: 2017 Caltrain Passenger Counts and 2017 Vehicle Counts (Adjusted for Passenger Occupancy)
Today, Caltrain Captures a Modest Percentage of the Regional Travel Market.

Average Hourly Person-Trips Traveling North of Morgan Hill

Source: 2017 Caltrain Passenger Counts and 2017 Vehicle Counts (Adjusted for Passenger Occupancy)
• Today, Caltrain ridership during off-peak and weekend periods is 70-80% lower than during peak periods
• In contrast, total volume of regional travel is only 10-20% less, while BART travel in San Mateo County is 50-60% less
• There is likely an underserved market for off-peak Caltrain service

<table>
<thead>
<tr>
<th>Facility</th>
<th>As % of Peak Hour Volume</th>
<th>As % of Weekday Daily Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Midday Hour</td>
<td>Evening Hour</td>
</tr>
<tr>
<td>BART</td>
<td>45%</td>
<td>36%</td>
</tr>
<tr>
<td>Caltrain</td>
<td>15%</td>
<td>23%</td>
</tr>
<tr>
<td>101 and 280 Freeways</td>
<td>97%</td>
<td>70%</td>
</tr>
</tbody>
</table>
What is the Potential, Long-Term Demand for Caltrain Service?

Exploring the Market for Caltrain Service

**Purpose**
- Understand the underlying long range, order-of-magnitude demand for rail service in the Caltrain corridor.
- Establishes a rough, quantified benchmark that informs how a long range service vision can be calibrated and scaled.

**Methodology**
- Use VTA – C/CAG Model updated with latest Plan Bay Area land use forecasts.
- Develop a sensitivity test using an imaginary, high frequency, unconstrained service plan that includes:
  - Realistic train times (60-80 minutes SF-SJ)
  - High level of sustained all-day service (8 to 16 trains per hour per direction. These frequencies are comparable to many sections of the BART system)
Exploring the Potential Long Term Demand for Caltrain Service

This sensitivity test suggests that providing BART-like frequencies on the Caltrain Corridor has the potential to yield BART-like ridership. Today, Caltrain serves approximately 1,300 daily passengers per mile between San Francisco and Tamien Stations, while BART serves approximately 5,200 passengers per mile along its Richmond-Daly City and Fremont-Daly City trunk lines. The sensitivity test suggests Caltrain has a long term (2040) unconstrained demand of about 4,600 passengers per mile, comparable to BART’s core service in San Francisco and the inner East Bay. However, demand per mile south of Tamien is approximately 1/10th demand north of Tamien.
Remember….Planning within Constraints

Decisions and commitments that have already been made on the corridor bring three fundamental service planning questions into tension with one another:

1. Service Differentiation
How can local, regional and high speed services be blended and balanced on the corridor to best serve multiple markets?

2. Peak Service Volume
How much growth in peak train traffic volume can the corridor support and what kinds of growth may be required to meet long term demand?

3. Service Investments
What types of investments into operations, systems and infrastructure will be required to achieve the desired types and volumes of service?
What is your reaction to the analysis of Caltrain’s existing and potential market demand?

What additional kinds of data about Caltrain ridership and markets would you like to see?

To what extent do you think this information should inform the development of a Service Vision?
Focus on the Business Case
Why Do We Need A Business Case?

A Business Case for The Service Vision
The project team will develop at least two “growth scenarios” or versions of a long range “Service Vision.” Each version of the potential service vision will have a business case that lays out the cumulative costs and benefits associated with it.

A Framework for Decision-making
The business case helps the JPB Board select a 2040 Service Vision with a fully informed understanding of what their choice means for the long-term costs and benefits of the system. Once the Board has selected a long range Service Vision the business case can then be further optimized and detailed.
Building an Integrated Business Model (IBM)

The IBM evaluates changes to the Caltrain System by integrating a broad range of data inputs and analysis. It is a tool that supports the active and informed management of Caltrain’s business.

Major Inputs to the IBM Include

- Railroad Network
- Fleet
- Current and Future Operations
- Ridership and Travel Demand
- Finances
- Policy Assumptions
- Infrastructure Investments
Example Outputs
Example outputs extracted from Metrolinx RER Business Case (Toronto)

Capital Expenditure Estimates
Supporting Different Service Levels

Analysis of Operating Costs and Cost Drivers
Example Outputs

Example outputs extracted from Metrolinx RER Business Case (Toronto)

Detailed Analysis and Breakdown of System Costs and Benefits
Wider Economic Benefits of Caltrain and Communities

Outside of the IBM, User Benefits and Regional Economic Benefits will be Calculated for the Following Major Categories:

- Direct & Indirect Jobs
  - Economic impact model captures effects on regional employment

- User Benefits
  - Benefits from travel time/cost savings as well as safety improvements

- Societal Benefits
  - Societal benefits including public health and environmental benefits

- Land Value
  - Influence of increased rail service on the value of land arounds stations
What kinds of costs and benefits are most meaningful to your community?

Are there any other specific types of costs or benefits you think Caltrain should try to analyze and quantify?