



# City of Palo Alto

## City Council Staff Report

(ID # 10335)

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**Report Type: Study Session**

**Meeting Date: 5/13/2019**

**Council Priority: Transportation and Traffic**

**Summary Title: Caltrain Business Plan Review and Discussion**

**Title: Presentation and Discussion With the Peninsula Corridor Joint Powers Board (Caltrain) Staff Regarding the 2040 Caltrain Business Plan**

**From: City Manager**

**Lead Department: Transportation**

### **Recommendation**

Staff recommends that City Council receive a presentation and discuss the 2040 Caltrain Business Plan with the Peninsula Corridor Joint Powers Board (Caltrain).

### **Discussion**

In 2018, Caltrain began the Caltrain Business Plan discussions with initial workshops involving key local, regional, and state stakeholders. Development of the Business Plan is a joint effort with agency partners and communities along the corridor to plan for changes in housing and jobs in San Francisco, San Mateo, and Santa Clara counties. The intent of the business plan is to understand and plan for future transportation needs in the region. The Business Plan accounts for Caltrain electrification that provides for increased train service.

The City Council requested this presentation.

Recent Documents Related to the Business Plan:

- The May Quarterly Board Update PowerPoint (also available online at: [https://www.caltrain2040.org/wp-content/uploads/CBP\\_Quarterly\\_Board\\_Update\\_May2019.pdf](https://www.caltrain2040.org/wp-content/uploads/CBP_Quarterly_Board_Update_May2019.pdf))
- The Caltrain Fact Sheet for Palo Alto (also available online at: [https://www.caltrain2040.org/wp-content/uploads/CBP\\_CIA\\_Factsheet\\_PaloAlto.pdf](https://www.caltrain2040.org/wp-content/uploads/CBP_CIA_Factsheet_PaloAlto.pdf))

At the City Council study session, Caltrain will discuss the following documents:

- Attachment A: Palo Alto Specific Information the Caltrain Business Plan

- Attachment B: The General Caltrain Business Plan Fact Sheet

**Attachments:**

- Attachment A: Palo Alto Specific Information the Caltrain Business Plan
- Attachment B: The General Caltrain Business Plan Fact Sheet

# Caltrain Business Plan

Palo Alto City Council

May 2019



# Overview

# 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



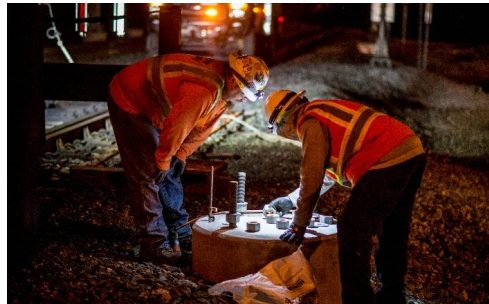
### Organization

- Organizational structure of Caltrain including governance and delivery approaches
- Funding mechanisms to support future service

# Where Are We in the Process?



# Electrification is the Foundation for Growth with Plans for More





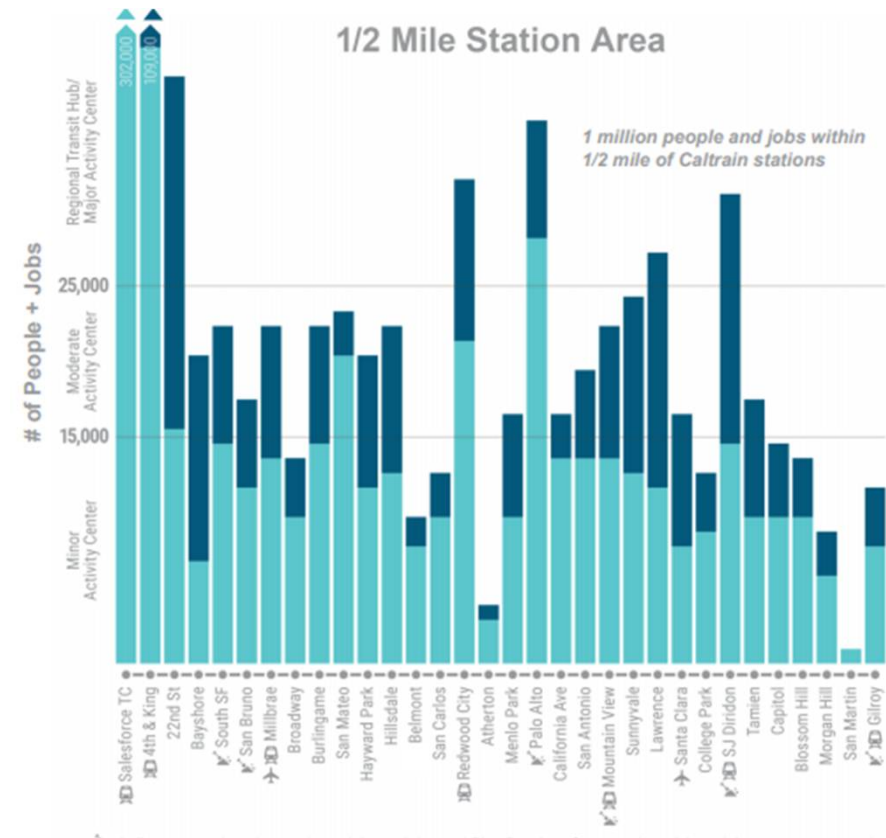
# 2040 Demand

## The Caltrain corridor is growing

- By 2040 the corridor expected to add 1.2 million people and jobs within 2 miles of Caltrain (+40%)<sup>1</sup>
- 80% growth expected in San Francisco and Santa Clara Counties

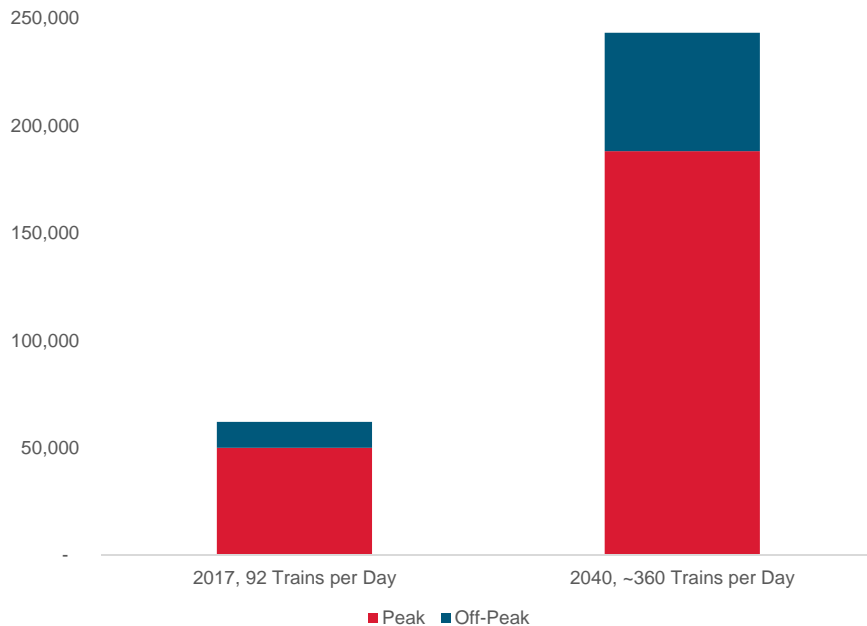
## Major transit investments are opening new travel markets to Caltrain

- Downtown Extension and Central Subway
- Dumbarton Rail, BART to San Jose, and improvements to Capitol Corridor and ACE
- HSR and Salinas rail



# Exploring the Potential Long Term Demand for Caltrain Service

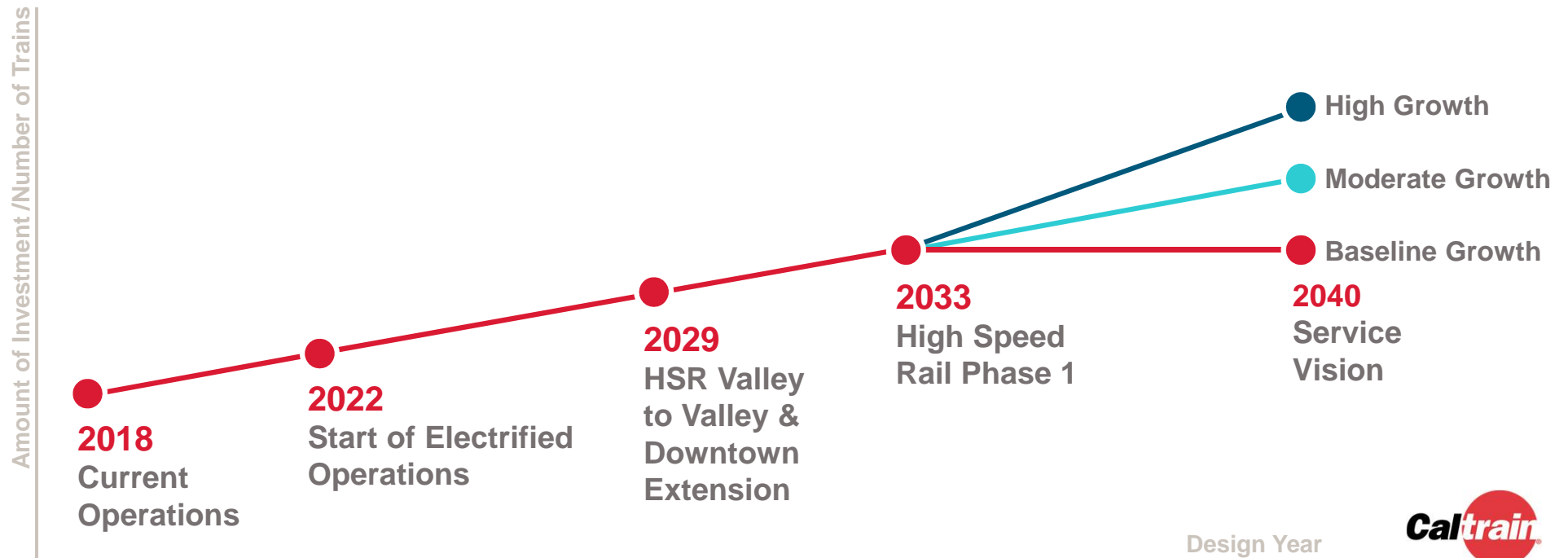
Using Plan Bay Area numbers for projected growth in jobs and housing, an unconstrained model run of high frequency, all-day BART-like service in the Caltrain corridor suggests that by 2040 there could be underlying demand for approximately 240,000 daily trips on the system



Description	2017: 92 Trains/Day	2040: ~360 Trains/Day
Daily	62,000	240,000
Peak	50,000	185,000
Off-Peak	12,000	55,000



# 2040 Service Scenarios: Different Ways to Grow



# 2040 Baseline Growth Scenario (6 Caltrain + 4 HSR)



## Features

- Blended service with up to 10 TPH north of Tamien (6 Caltrain + 4 HSR) and up to 10 TPH south of Tamien (2 Caltrain + 8 HSR)
- Three skip stop patterns with 2 TPH – most stations are served by 2 or 4 TPH, with a few receiving 6 TPH
- Some origin-destination pairs are not served at all

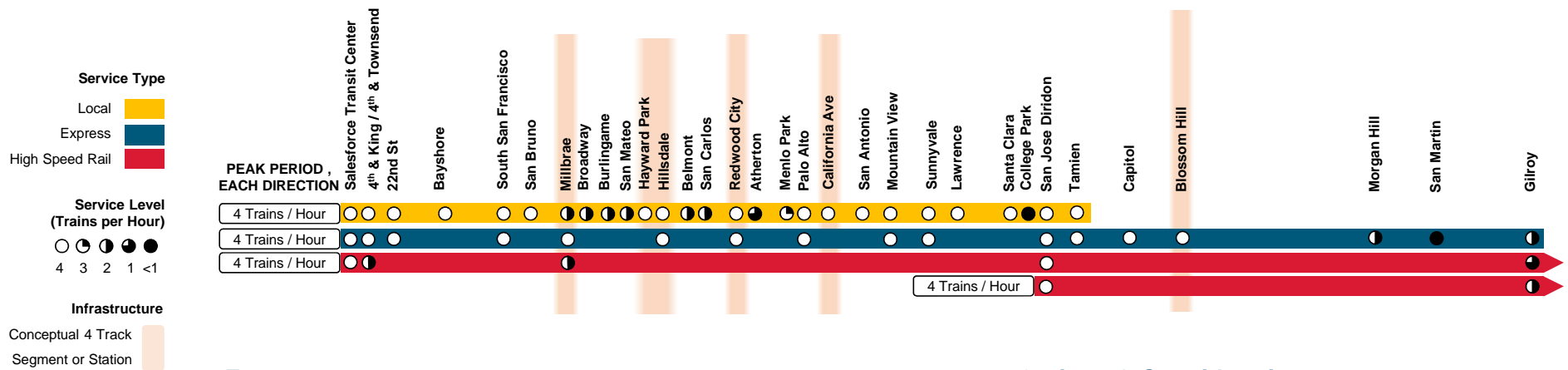
## Passing Track Needs

- Less than 1 mile of new passing tracks at Millbrae associated with HSR station plus use of existing passing tracks at Bayshore and Lawrence

## Options & Considerations

- Service approach is consistent with PCEP and HSR EIRs
- Opportunity to consider alternative service approaches later in Business Plan process

# Moderate Growth Scenario (8 Caltrain + 4 HSR)



## Features

- A majority of stations served by 4 TPH local stop pattern, but Mid-Peninsula stations are serviced with 2 TPH skip stop pattern
- Express line serving major markets – some stations receive 8 TPH
- Timed local/express transfer at Redwood City

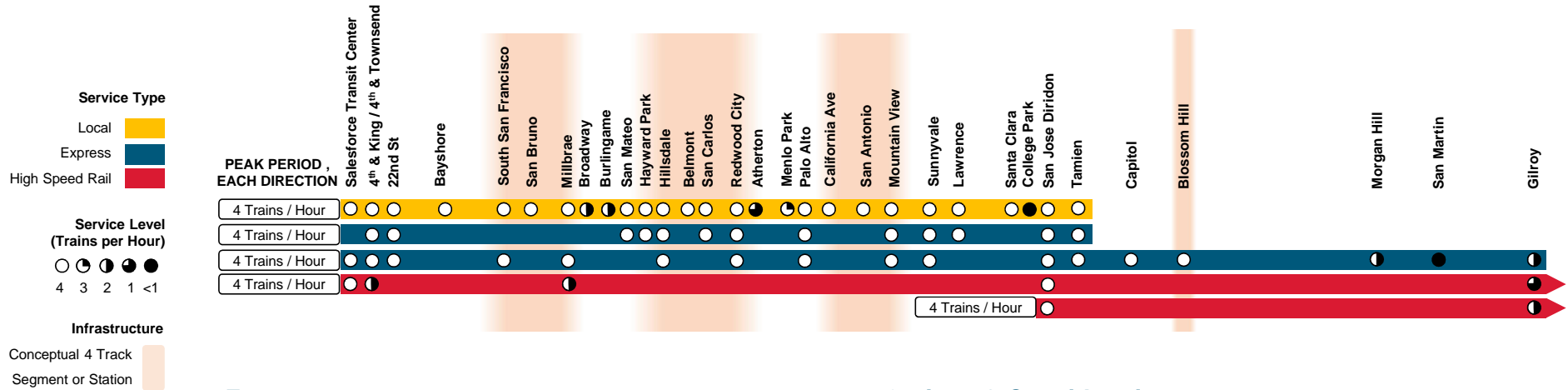
## Passing Track Needs

- Up to 4 miles of new 4-track segments and stations: Hayward Park to Hillsdale, at Redwood City, and a 4-track station in northern Santa Clara county (Palo Alto, California Ave, San Antonio or Mountain View. California Ave Shown)

## Options & Considerations

- To minimize passing track requirements, each local pattern can only stop twice between San Bruno and Hillsdale - in particular, San Mateo is underserved and lacks direct connection to Millbrae
- Each local pattern can only stop once between Hillsdale and Redwood City
- Atherton, College Park, and San Martin served on an hourly or exception basis

# High Growth Scenarios (12 Caltrain + 4 HSR)



## Features

- Nearly complete local stop service – almost all stations receiving at least 4 TPH
- Two express lines serving major markets – many stations receive 8 or 12 TPH

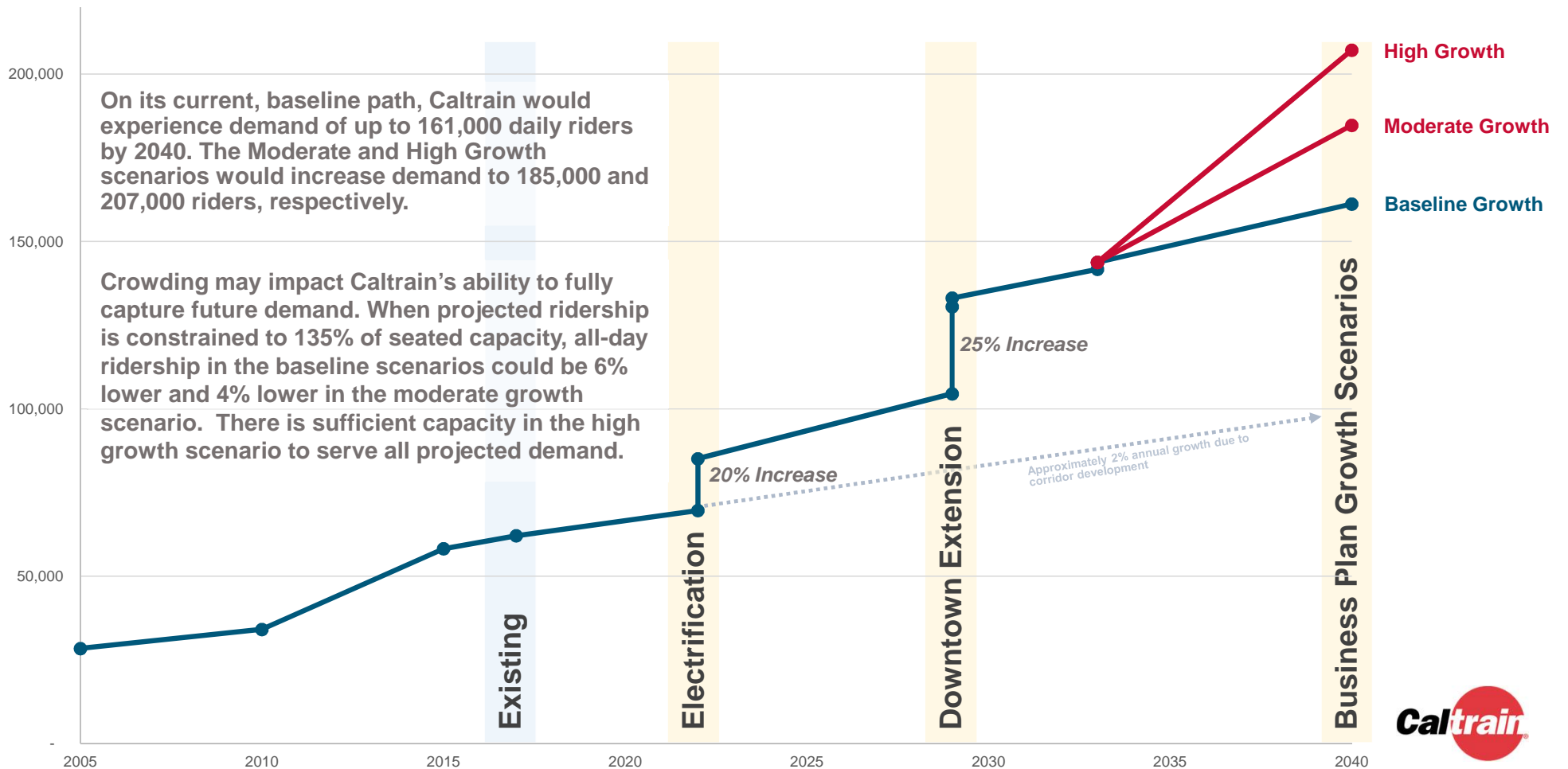
## Passing Track Needs

- Requires up to 15 miles of new 4 track segments: South San Francisco to Millbrae, Hayward Park to Redwood City, and northern Santa Clara County between Palo Alto and Mountain View stations (shown: California Avenue to north of Mountain View)

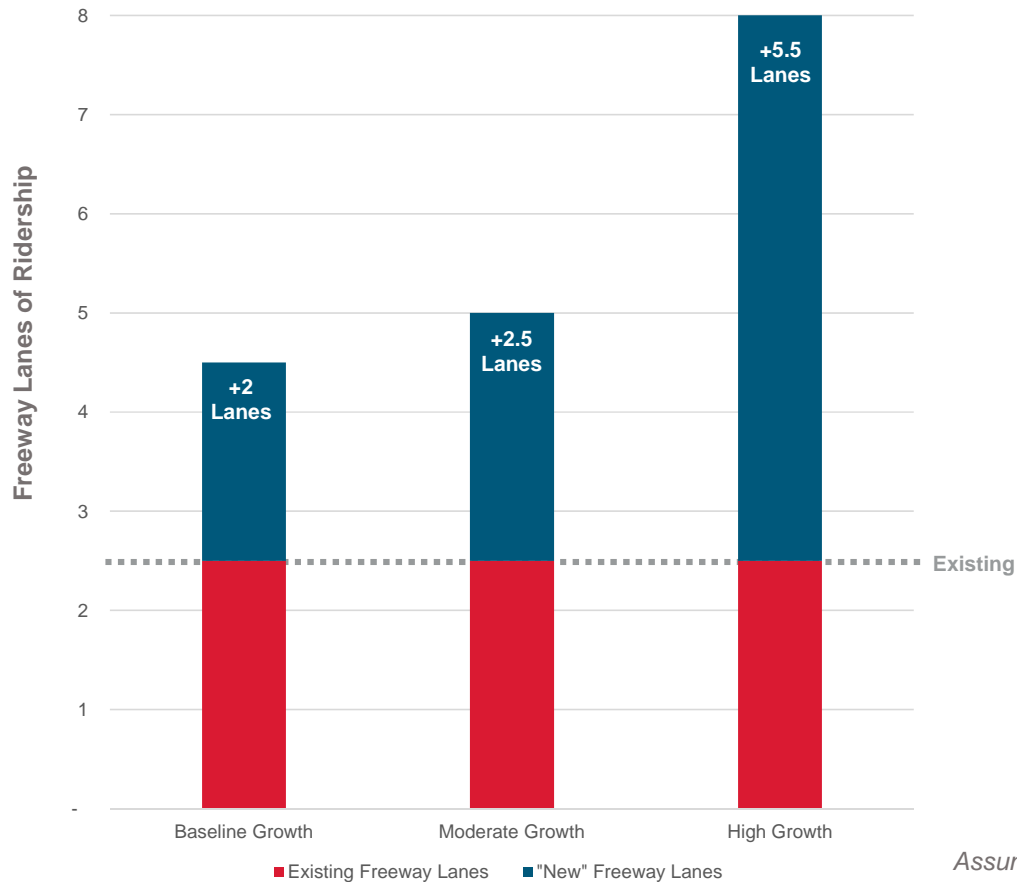
## Options & Considerations

- SSF-Millbrae passing track enables second express line; this line cannot stop north of Burlingame
- Tradeoff between infrastructure and service along Mid-Peninsula - some flexibility in length of passing tracks versus number and location of stops
- Flexible 5 mile passing track segment somewhere between Palo Alto and Mountain View
- Atherton, College Park, and San Martin served on an hourly or exception basis

# Ridership Projections



# Peak Hour Throughput as Freeway Lanes



Caltrain's peak load point occurs around the mid-Peninsula. Today, Caltrain serves about 3,900 riders per direction during its busiest hour at this peak load point. This is equivalent to 2.5 lanes of freeway traffic.

The **Baseline Growth Scenario** increases peak hour ridership to about 6,400 riders at the peak load point – equivalent to widening US-101 by 2 lanes. Peak hour demand exceeds capacity by about 40%.

The **Moderate Growth Scenario** increases peak hour ridership to about 7,500 riders at the peak load point – equivalent to widening US-101 by 2.5 lanes. Peak hour demand exceeds effective capacity by about 35% due to higher demand for express trains.

The **High Growth Scenario** increases peak hour ridership to over 11,000 at the peak load point – equivalent to widening US-101 by 5.5 lanes. All ridership demand is served.

*Assumes capacity constrained to a 135% max occupancy load*





# How do we Choose a Service Vision?

Choosing a long range “Service Vision” is not just about picking which service pattern looks the best- it requires evaluating which package of service and investments will deliver the best value to the corridor and the region

## Service



This update describes different **illustrative** 2040 service concepts that underlie each Growth Scenario. The different concepts shown are not proposals or recommendations. They represent an indicative **range of options** for how Caltrain service could grow given different levels of investment in the corridor

## Business Case



During the spring of 2019 the Business Plan team will develop a detailed “Business Case” analysis for each of the different growth scenarios. The Business Case will quantify the financial implications and wider costs and benefits of each growth scenario

# The Interface Between the Railroad and its Surrounding Communities Creates both Opportunities and Challenges

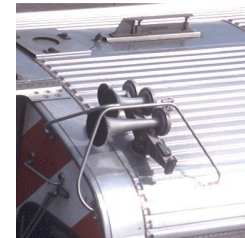
Local/Regional Mobility



Place-Making



Noise/Vibration



Physical Structures



Land Use Opportunities



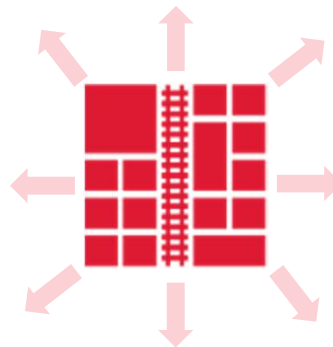
Economic Development



Visual Impact



Traffic/Safety



# Grade Separations are a Critical Investment

- 42 at-grade crossings on the corridor Caltrain owns between San Francisco and San Jose
- 28 additional at-grade crossings on the UP-owned corridor south of Tamien

## At-Grade Crossing by County in Caltrain Territory

- San Francisco: 2 at-grade crossings
- San Mateo: 30 at-grade crossings
- Santa Clara: 10 at grade crossings  
(with 28 additional crossings on the UP-owned corridor)

Today, during a typical weekday, Caltrain's at-grade crossings are traversed by approximately 400,000 cars. This is equivalent to the combined traffic volumes on the Bay Bridge and San Mateo Bridge



# Grade Separations are a Critical Investment

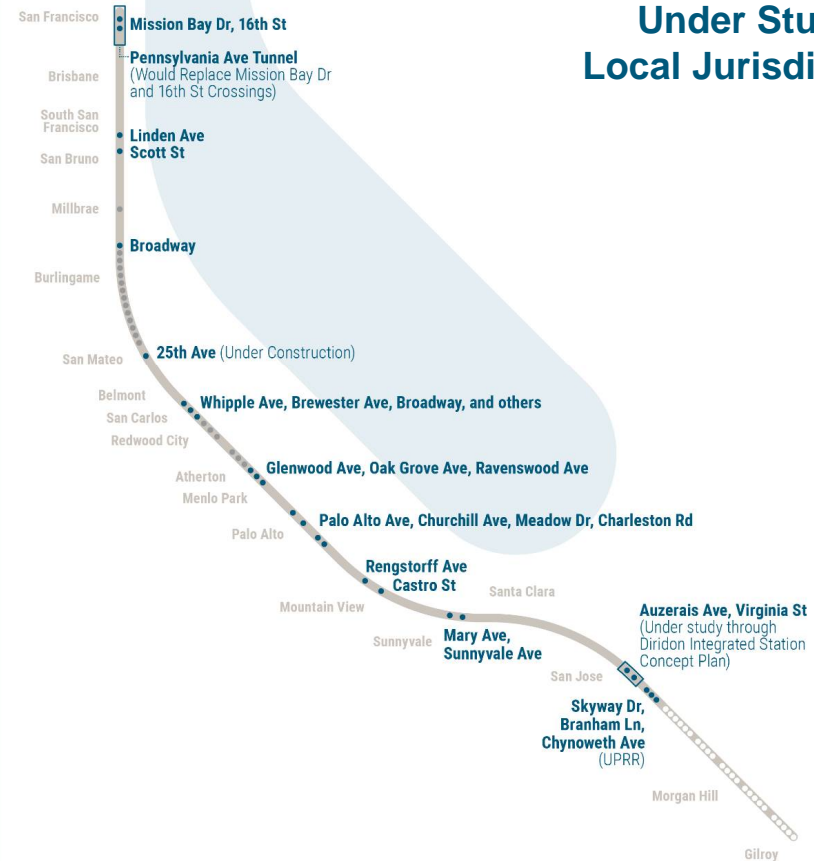
## Calculating the Need

- Across the corridor, cities are undertaking studies and projects to look at grade separation
- Caltrain has accounted for all of these projects in our analysis of the potential need for grade separation in the corridor as well as additional investments
- In total, the Business Plan team estimates that the total need for investment in grade separations could be between **\$8.5 and \$11 Billion dollars**

## Taking the Next Step

- Incorporate grade separation investments into Business Plan financial and funding analysis
- Develop corridor wide grade separation strategy addressing topics like;
  - Risk assessment and prioritization factors
  - Construction standards and methods
  - Project coordination and sequencing
  - Community resourcing and organizing
  - Funding analysis and strategy

## Crossings With Grade Separations or Closures Planned or Under Study by Local Jurisdictions



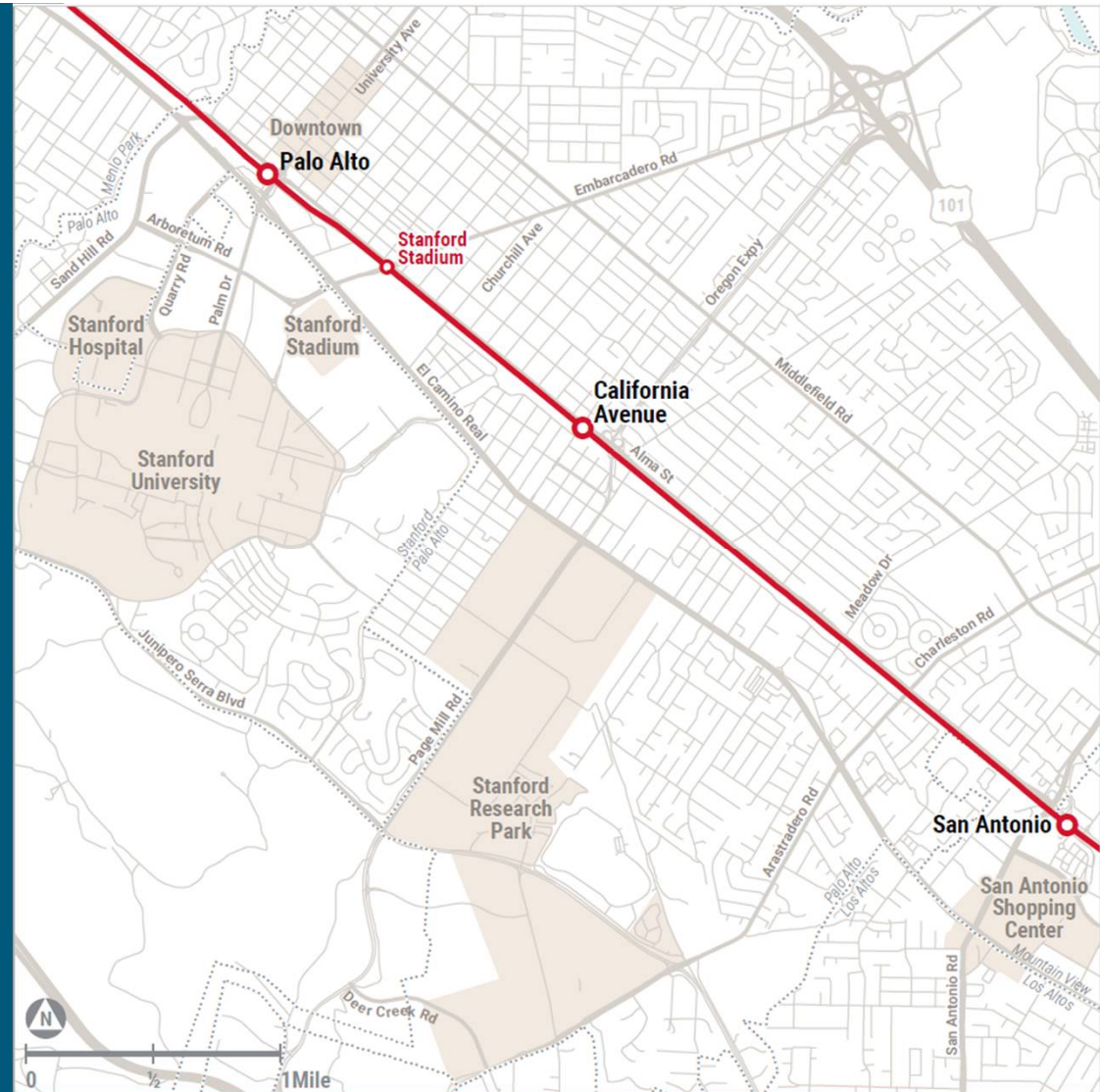
# Focus on Palo Alto



# Palo Alto Corridor

Conceptual Overtakes and Passing Tracks Required to support service “concepts”:

- **Baseline-** None
- **Moderate-** A single 4-track “passing station” would be required somewhere in northern Santa Clara County. This station could be Palo Alto, California Ave, San Antonio, or Mountain View
- **High-** A longer 4-track section would be required in northern Santa Clara County. This segment would generally fall within the area of the corridor between Palo Alto Station and just north of Mountain View Station



# Palo Alto (University) Station

## Potential Service Levels and Projected Ridership

Scenario	Total Weekday Stops	Peak Stops/Hour/Direction	Off-Peak Stops/Hour/Direction	Weekday Ridership
Existing (2017)	86	4-5	1	7,410
Baseline (2040)	174	6	3	14,950
Moderate (2040)	268	8	6	15,720
High (2040)	348	12	6	18,020



# California Ave Station

## Potential Service Levels and Projected Ridership

Scenario	Total Weekday Stops	Peak Stops/Hour/Direction	Off-Peak Stops/Hour/Direction	Weekday Ridership
Existing (2017)	57	1-2	1	1,670
Baseline (2040)	58	2	1	3,720
Moderate (2040)	116	4	2	4,840
High (2040)	116	4	2	4,220





# Potential Gate Down Times

The table on the right shows how bad gate downtimes could be if nothing were done

- Gate downtimes shown are indicative projections based on extrapolating existing crossing gate performance
- Projected downtimes do not increase linearly with number of trains - primarily due to increasingly large numbers of overlapping gate activations at higher levels of train service

## Potential Gate Downtimes by Scenario (AM Peak Hour)

At-Grade Crossing	Existing (minutes / peak hour)	Baseline (2040)	Moderate (2040)	High (2040)
Palo Alto Avenue (Alma St.)	8:00	13:00	15:00	22:00
Churchill Avenue	6:00	11:00	15:00	19:00
W. Meadow Drive	7:00	13:00	14:00	19:00
W. Charleston Road	7:00	13:00	16:00	19:00

# Grade Separation

## Grade Separation Projects:

The Caltrain Business Plan is incorporating the cost of a major investment in grade separations and crossing improvements throughout the corridor – including those under consideration in Palo Alto;

- Key projects include potential grade separation projects at Churchill, East Meadow Drive and Charleston Road as well as a potential future project at Palo Alto Ave

The plan is currently carrying placeholder costs that fall within the range of cost estimates being considered by the City. These costs can be updated as Palo Alto advances its study process



# Next Steps, Outreach & Engagement

# Next Steps

Over the next two months the Business Plan team is working to complete a full set of draft materials to support Board consideration and adoption of a 2040 Service Vision

## Ongoing Analysis

- Service simulation and integration analysis
- Capital costing and Operations and Maintenance Analysis
- Economic analysis and benefits calculations
- Organizational assessment
- Community Interface documentation and peer case studies

## Upcoming Milestones

- Major Board Workshop targeted for July to review expanded set of materials and discuss recommended “Service Vision”
- Subsequent adoption of Service Vision in August timeframe pending Board discussion and stakeholder feedback

# Next Steps

Following Board designation of a long range “Service Vision” staff will work to complete a full Business Plan document by the end of 2019

## Work to be Undertaken following Board Adoption of a “Service Vision”

- Near- and mid-term service planning
- First- and last mile analysis
- Additional organizational analysis
- Funding analysis including;
  - Commercial revenue strategies
  - Potential new sources of funding

# Outreach Activities to Date

July 2018 – March 2019 Timeline

	2018						2019		
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Local Policy Maker Group	●	●	●		●	●		●	●
City/County Staff Coordinating Group	●	●	●		●	●		●	●
Project Partner Committee	●	●	●	●	●	●	●	●	●
Community Jurisdiction Meetings (One Per Jurisdiction)			●	●	●				●
Stakeholder Advisory Group				●			●		
Partner General Manager				●			●		
Website & Survey Launch					●				
Community Meetings (SPUR SJ & SF, Friends of Caltrain, Reddit TownHall)					●		●	●	●
Sister Agency Presentations					●	●	●	●	●

# Outreach Activities to Date

July 2018 – March 2019 by the Numbers

## Stakeholders Engaged

21

Jurisdictions

26

Public Agencies

88

Stakeholder Meetings

93

Organizations in Stakeholder Advisory Group

## Public Outreach

26

Public Meetings and Presentations

1000+

Survey Responses

7,900

Website Hits

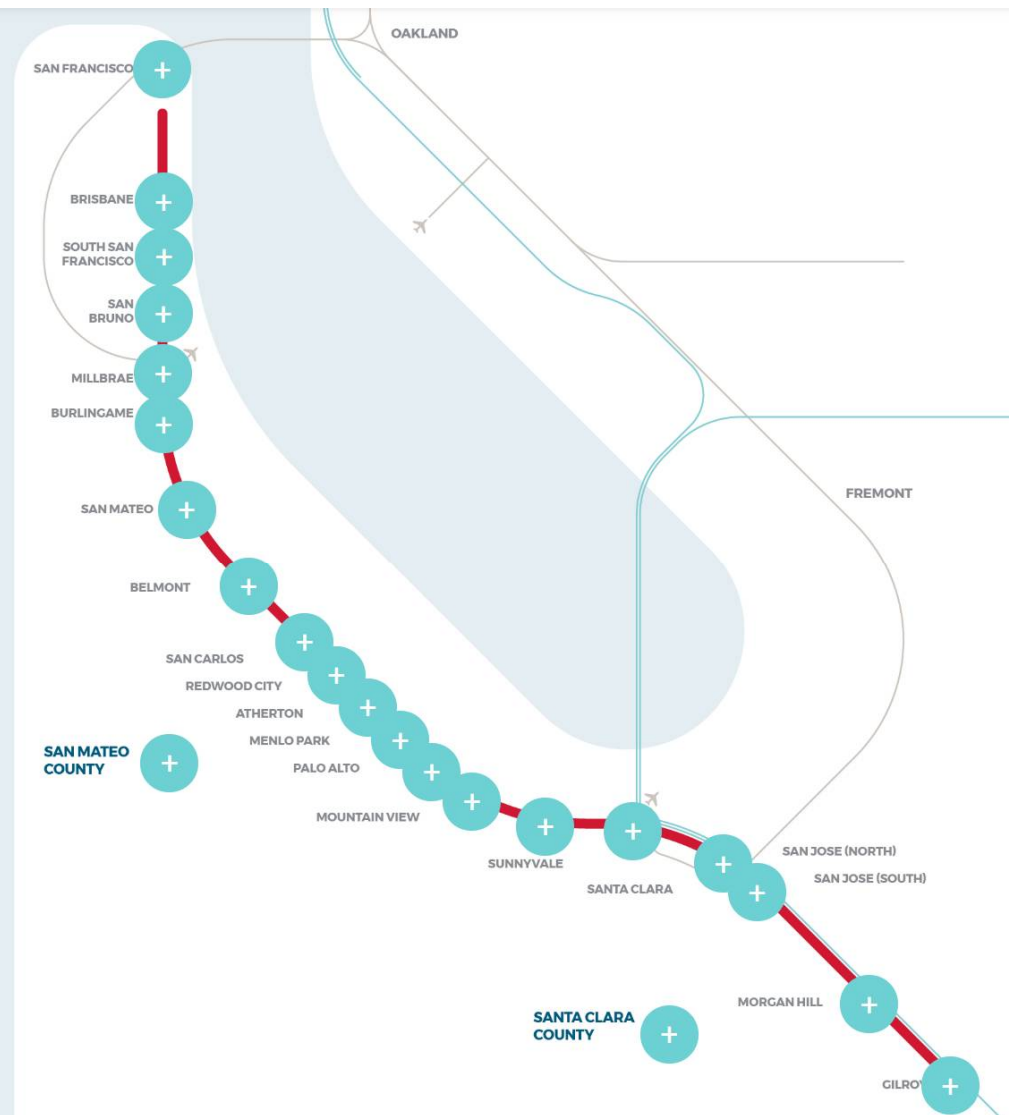
27,000

Social Media Engagements

# Business Plan Website is Up!

- Project timeline
- Project summary
- Corridor-wide factsheet
- Jurisdiction-specific factsheets
- Monthly presentations
- Glossary of key terms
- FAQs

[www.caltrain2040.org](http://www.caltrain2040.org)





FOR MORE INFORMATION  
[WWW.CALTRAIN.COM](http://WWW.CALTRAIN.COM)



# CALTRAIN BUSINESS PLAN

## A 2040 VISION FOR THE CORRIDOR



Daily Riders  
**62,000**

Local Jurisdictions  
**21**

**Caltrain is one of the busiest commuter rail systems in the country and demand for our service is growing.**

The Caltrain Business Plan is a joint effort with agency partners and communities along the corridor to plan for this growth. The Business Plan will help us develop a better understanding of the region's future transportation needs and will identify opportunities and strategies for how the Caltrain system can help.

### WHY THINK ABOUT THE FUTURE OF THE CORRIDOR?

The Bay Area population and economy have continued to grow, leading to:



Traffic congestion and longer, unreliable commutes



Over-crowded trains



Increased cost of transportation and housing

**Caltrain provides a cost effective, convenient alternative to driving and connects jobs and housing, but the system will need to grow to meet current and future demand.**



Electrification of the Caltrain corridor is already underway and will allow Caltrain to run faster, more frequent service while reducing noise and emissions.



Electrification also creates the potential for expanded Caltrain service that will meet the current and future needs of our region. The Business Plan will identify the best strategies for maximizing this potential by developing a long-term service vision for the corridor, defining the infrastructure needed to support that service vision, and identifying opportunities to fund the implementation of these improvements.

### WHAT IS THE CALTRAIN BUSINESS PLAN?

The Caltrain Business Plan includes four major focus areas that address key questions shaping the future of the railroad:



#### SERVICE

What is the best service Caltrain can provide to meet the needs of our customers and the communities we serve? How many trains should we run? How do we best match service to riders' needs? What infrastructure improvements will be needed to provide the service? How can Caltrain effectively connect to other transit services?



#### COMMUNITY INTERFACE

What are the benefits and impacts of increasing service on the corridor to each community? How can we work together to grow the railroad in a way that balances the needs of all communities along the corridor with the need to expand service and operate a safe and efficient railroad? How can we ensure this planning process and the outcomes are equitable?



#### BUSINESS CASE

Why should we choose one service vision over another? How can we maximize the value of current and future investments in the Caltrain corridor? How much will the service cost to operate? How will we fund it?



#### ORGANIZATION

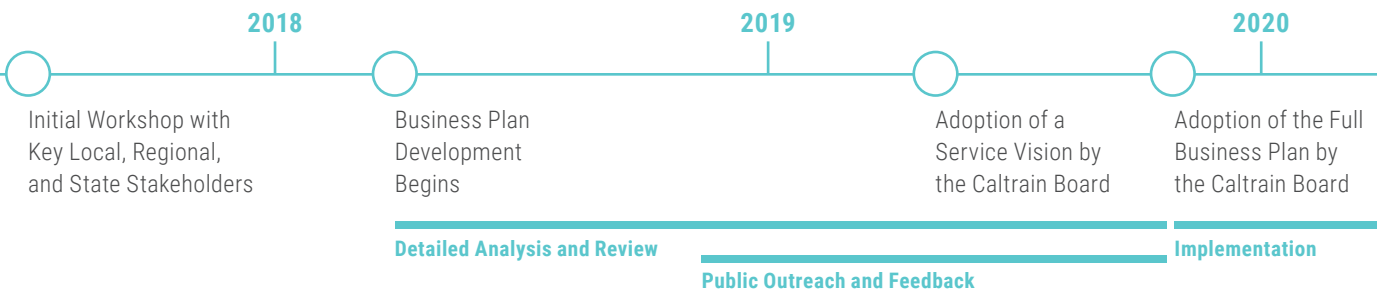
What is the best organizational structure for overseeing and growing Caltrain service in the future?



## WHO IS INVOLVED?

The Caltrain Business Plan is a collaborative effort led by Caltrain with funding and participation from Stanford University and other organizations. We understand that each of the local jurisdictions we serve has a unique set of priorities, projects, and plans for growth. We are working closely with policymakers, stakeholders, Caltrain riders, and community members to make sure the Caltrain Business Plan considers everyone's needs.

## WHEN IS IT HAPPENING?



## FOR MORE INFORMATION

We recognize that Caltrain is woven into the diverse communities we serve and want to hear from you about your needs and what you'd like Caltrain service to look like in the future.

Check the project website for ways to get involved, regular project updates, and a calendar of events.



[Caltrain2040.org](http://Caltrain2040.org)



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