



CALTRAIN UPDATE



Caltrain owns
(SF to SJ)



- 77 Miles,
32 Stations
- 92 Weekday
Trains
- Tenants
(Altamont
Corridor Express,
Capitol Corridor,
Amtrak, Freight)

Union Pacific owns (SJ
to Gilroy)

Area	Project	Service
51 miles San Francisco to San Jose (Tamien Station)	Electrification: <ul style="list-style-type: none">• Overhead Wiring• Traction Power Facilities Electric Trains (EMUs) <ul style="list-style-type: none">• 19 seven-car trainsets (133 cars)	Up to 79 mph Service Increase <ul style="list-style-type: none">• 6 trains / hour / direction• More station stops / reduced travel time• Restore weekday Atherton & Broadway service Mixed-fleet service (interim period) Continue tenant service <ul style="list-style-type: none">• Altamont Corridor Express, Capitol Corridor, Amtrak, Freight

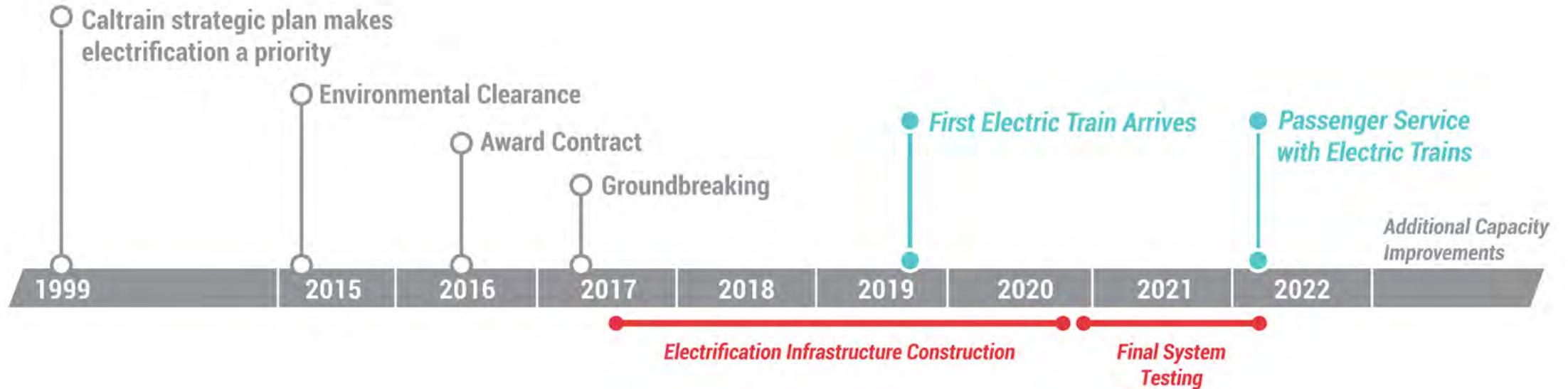
CalMod CONSTRUCTION / BUILDING ELECTRIC TRAINS



Over 600+ foundations, 300+ poles installed; 8 train cars at the new Utah facility



MILESTONES



*Please keep in mind that testing and construction will overlap as each Segment will be tested individually, prior to final system testing.

Caltrain Business Plan

Project Update
July 2018 through Spring 2019



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



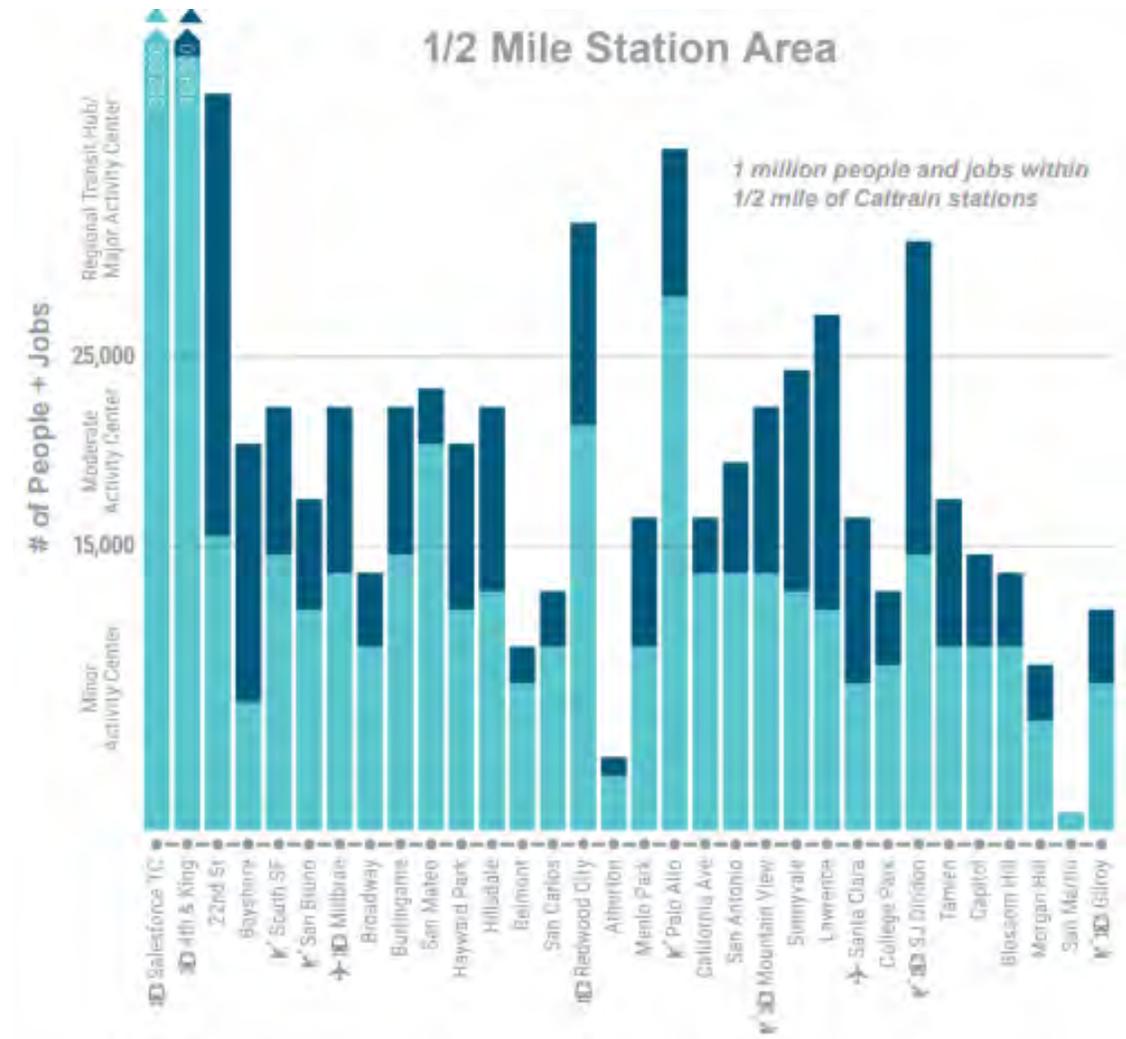
2040 Demand

The Caltrain corridor is growing

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

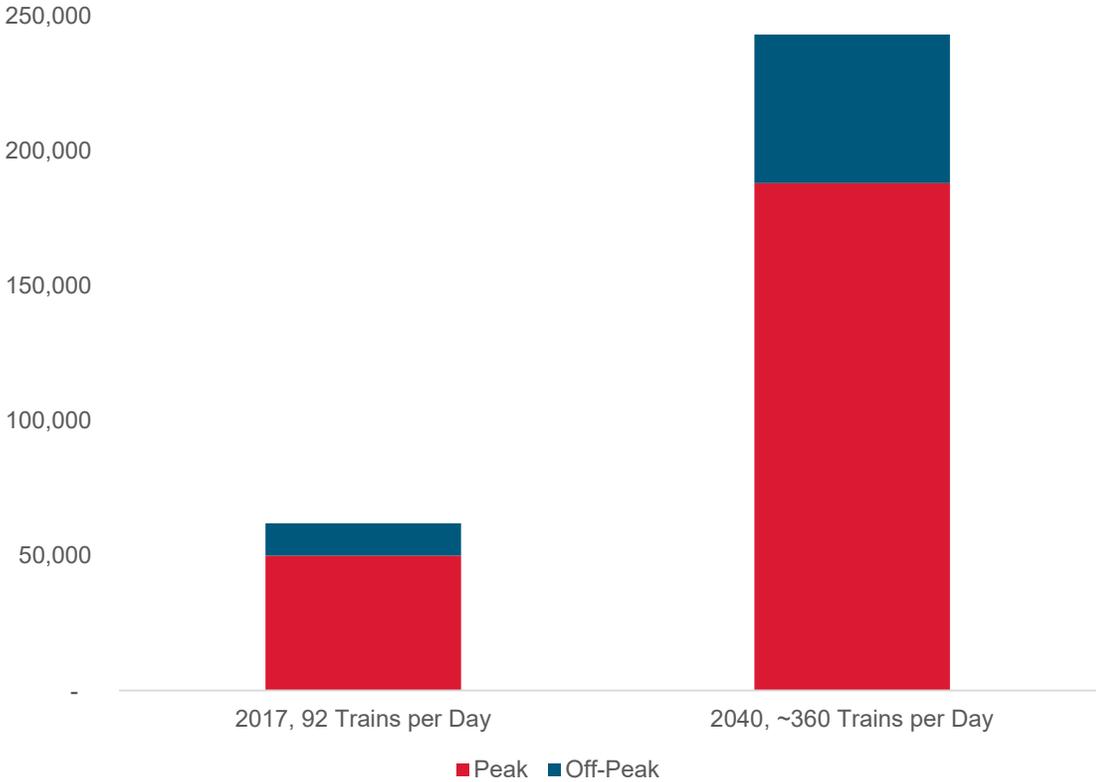
Major transit investments are opening new travel markets to Caltrain

- 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

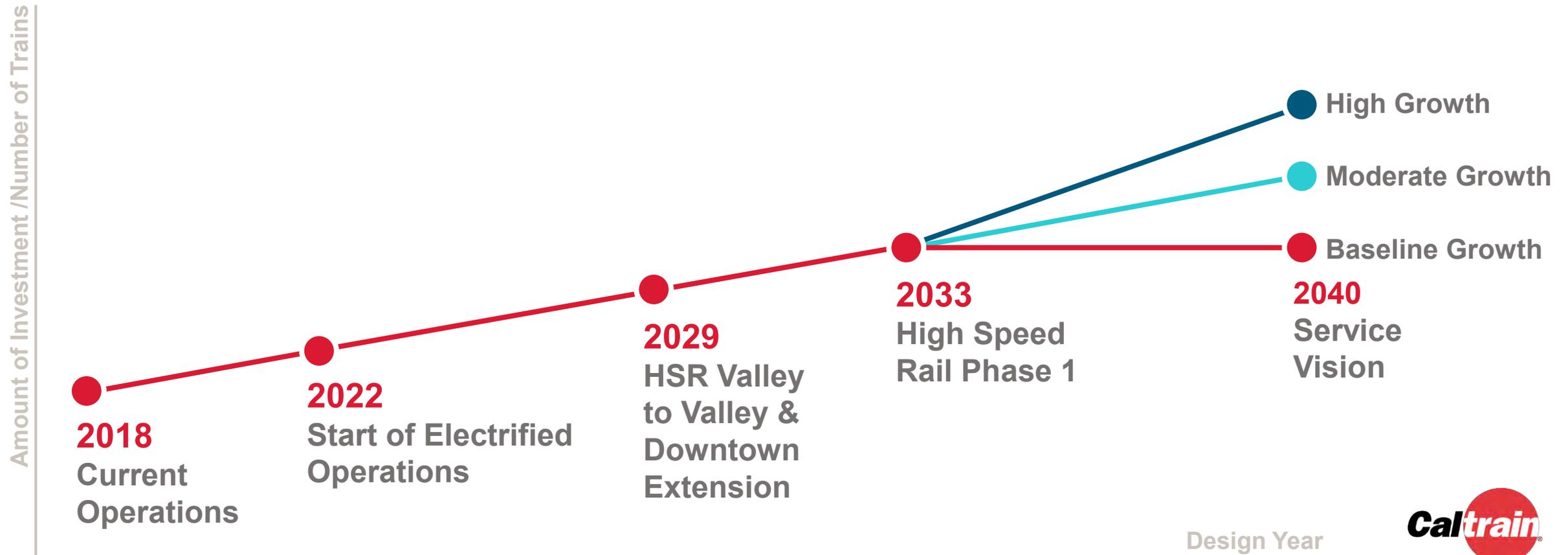
Using Plan Bay Area numbers for projected growth in jobs and housing, an unconstrained model run of high frequency, all-day BART-like service in the Caltrain corridor suggests that by 2040 there could be underlying demand for approximately 240,000 daily trips on the system



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

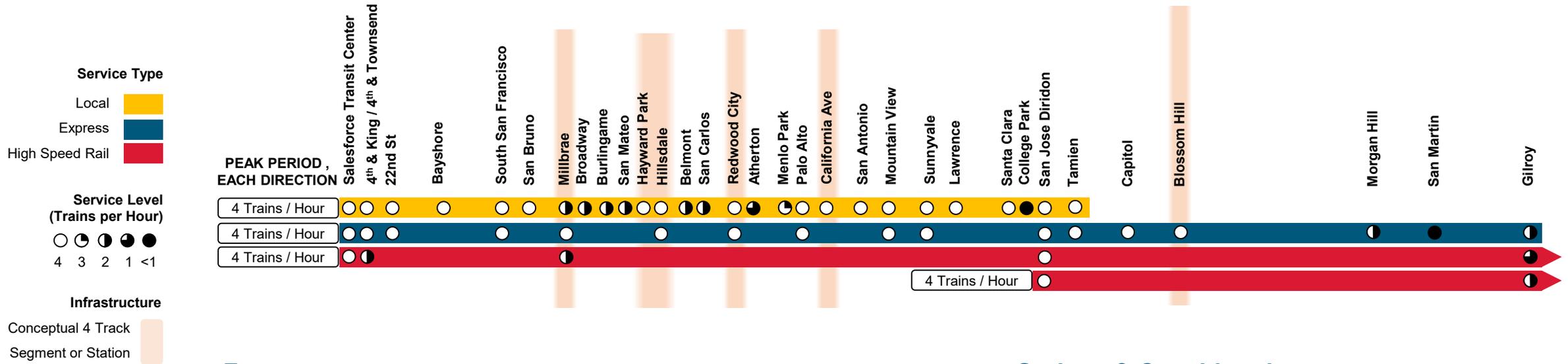
Passing Track Needs

- 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 line, 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

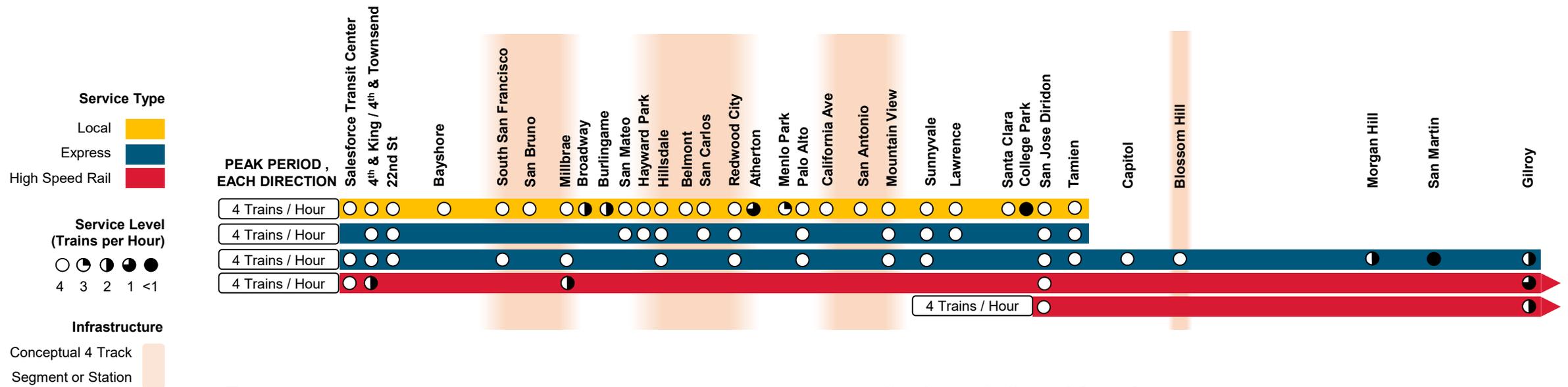
Passing Track Needs

- 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

San Francisco Terminal Area

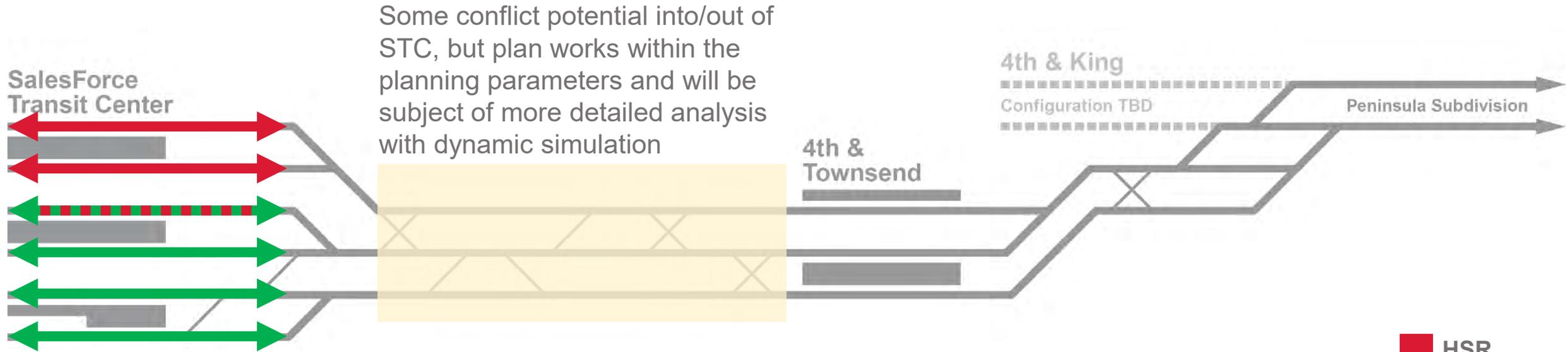


Source: TJPA Draft Preliminary Engineering Track Plans for Phase 2 Downtown Rail Extension (October 25, 2018)



DRAFT

SF Terminal: Baseline Growth



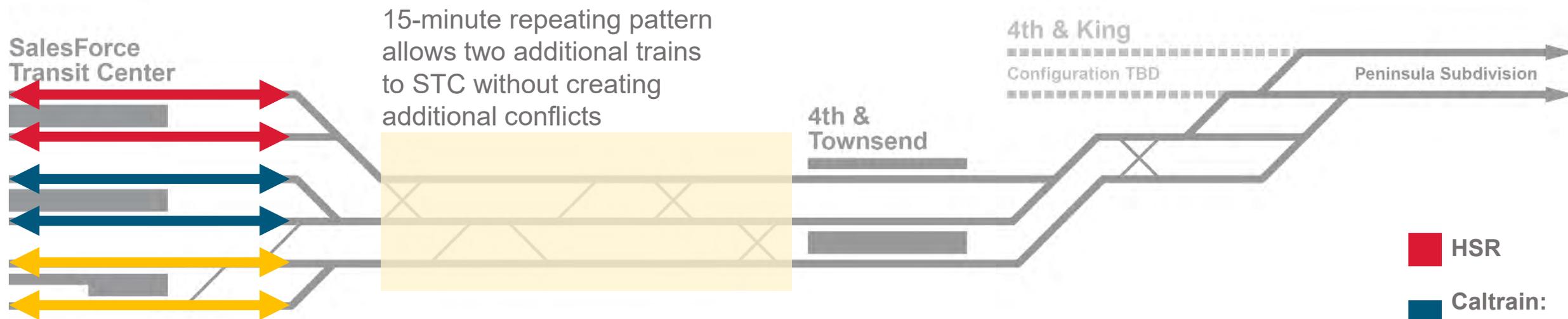
Some conflict potential into/out of STC, but plan works within the planning parameters and will be subject of more detailed analysis with dynamic simulation

Turn times at STC above minimum requirements are achievable with HSR assigned to two tracks and Caltrain assigned to four tracks. Three and three is also achievable with tighter turns for Caltrain

- HSR
- Caltrain: Skip Stop



SF Terminal: Moderate Growth



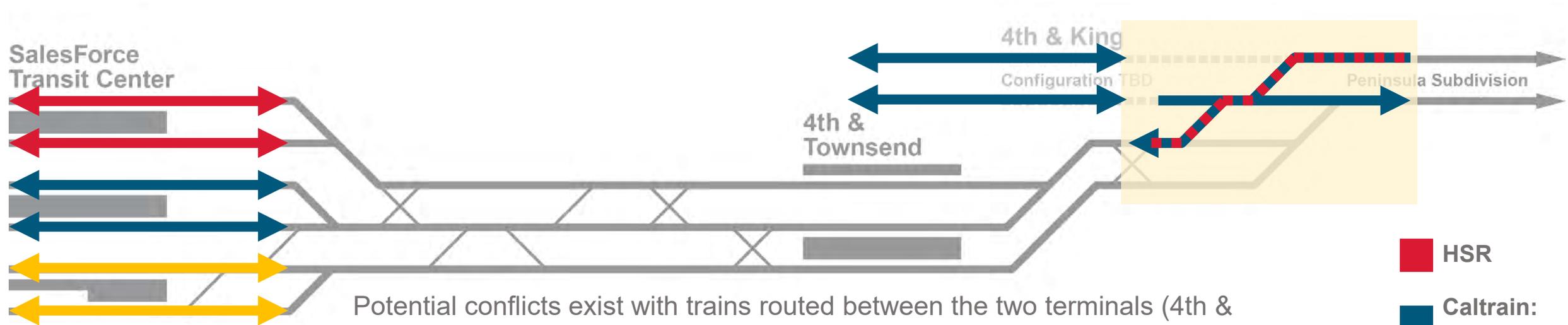
15-minute repeating pattern allows two additional trains to STC without creating additional conflicts

Turns at STC are tighter for both HSR and Caltrain compared to the Baseline, but are still within minimum parameters w/ two HSR and four Caltrain platforms faces for normal operations. Three and three in normal operation would result in unacceptably short turns for Caltrain

- HSR
- Caltrain: Express
- Caltrain: Local



SF Terminal: High Growth



Potential conflicts exist with trains routed between the two terminals (4th & King and STC). Conflicts could be resolved through adjustment to service patterns and/or construction of additional infrastructure including:

- Sending locals to 4th & King and Express to STC
- Other adjustments to 16 tph operating plan
- Construction of significant, vertically separated junction

16 trains to STC is not possible due to unrealistic turn times for all operators

■ HSR

■ Caltrain:
Express

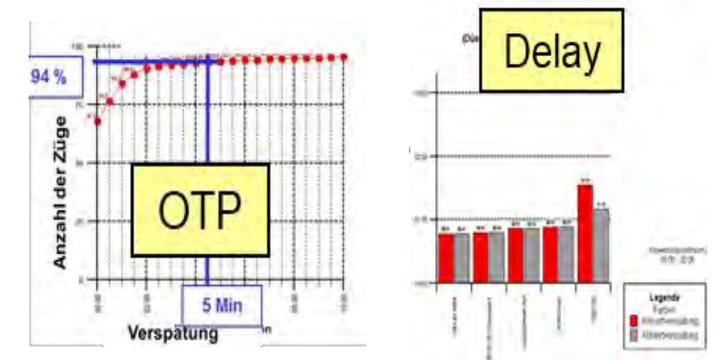
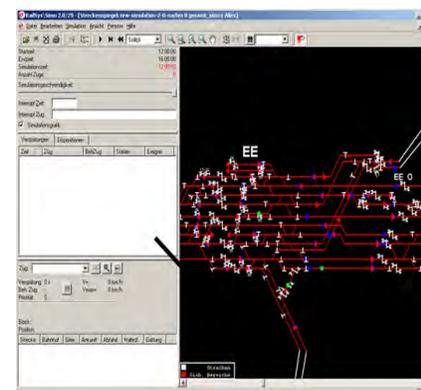
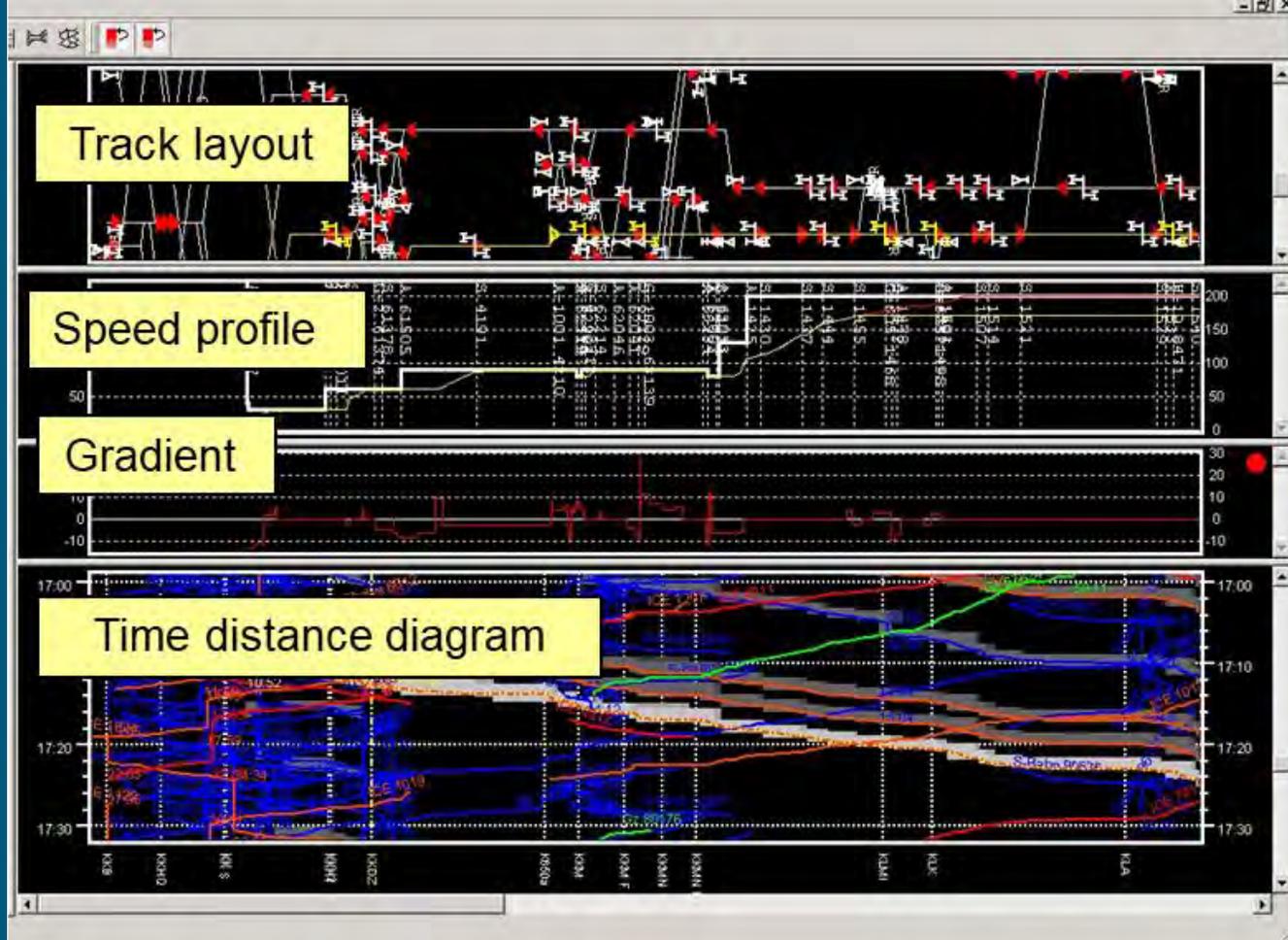
■ Caltrain:
Local



Next Steps: Simulation

Process

- The primary objective for the simulation analysis is to determine whether the simulation model indicates a stable rush-hour operation absent any major disruptions (e.g. track outages or disabled trains) for the three growth scenarios subject to analysis
- Of particular concern is the extent to which the variability of dwells at intermediate stations will affect the ability to deliver the proposed timetables within reasonable on-time performance parameters



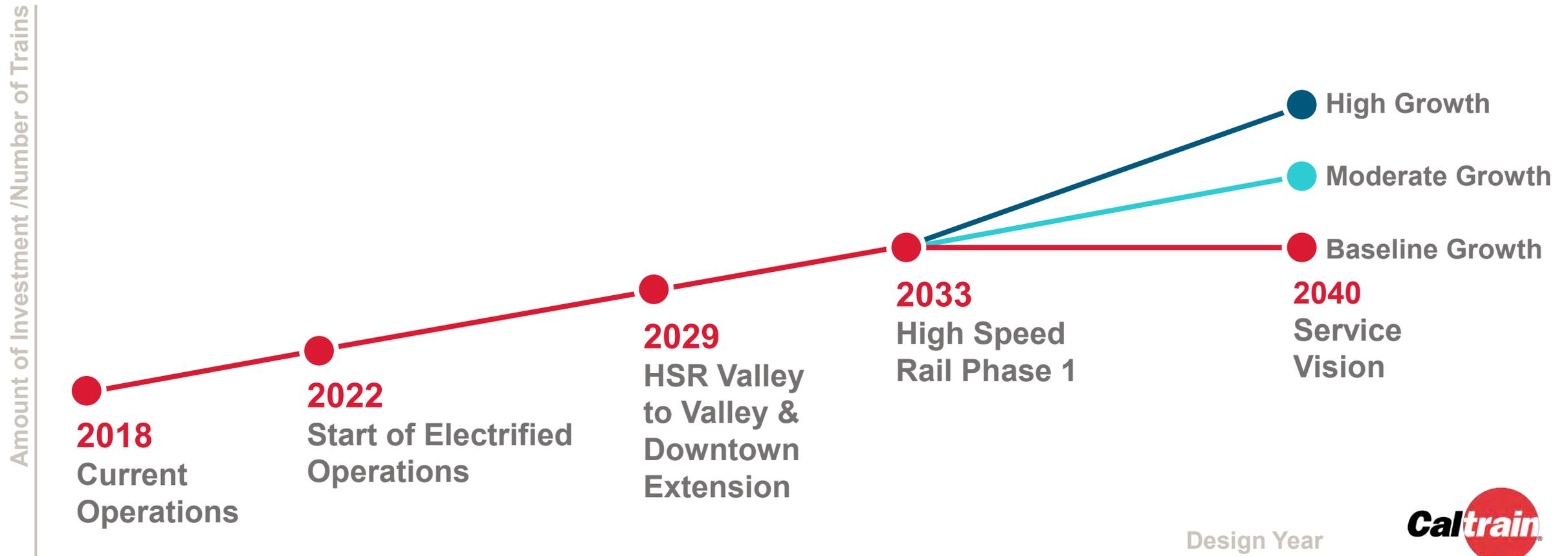
Next Steps: Storage & Maintenance Analysis

Process

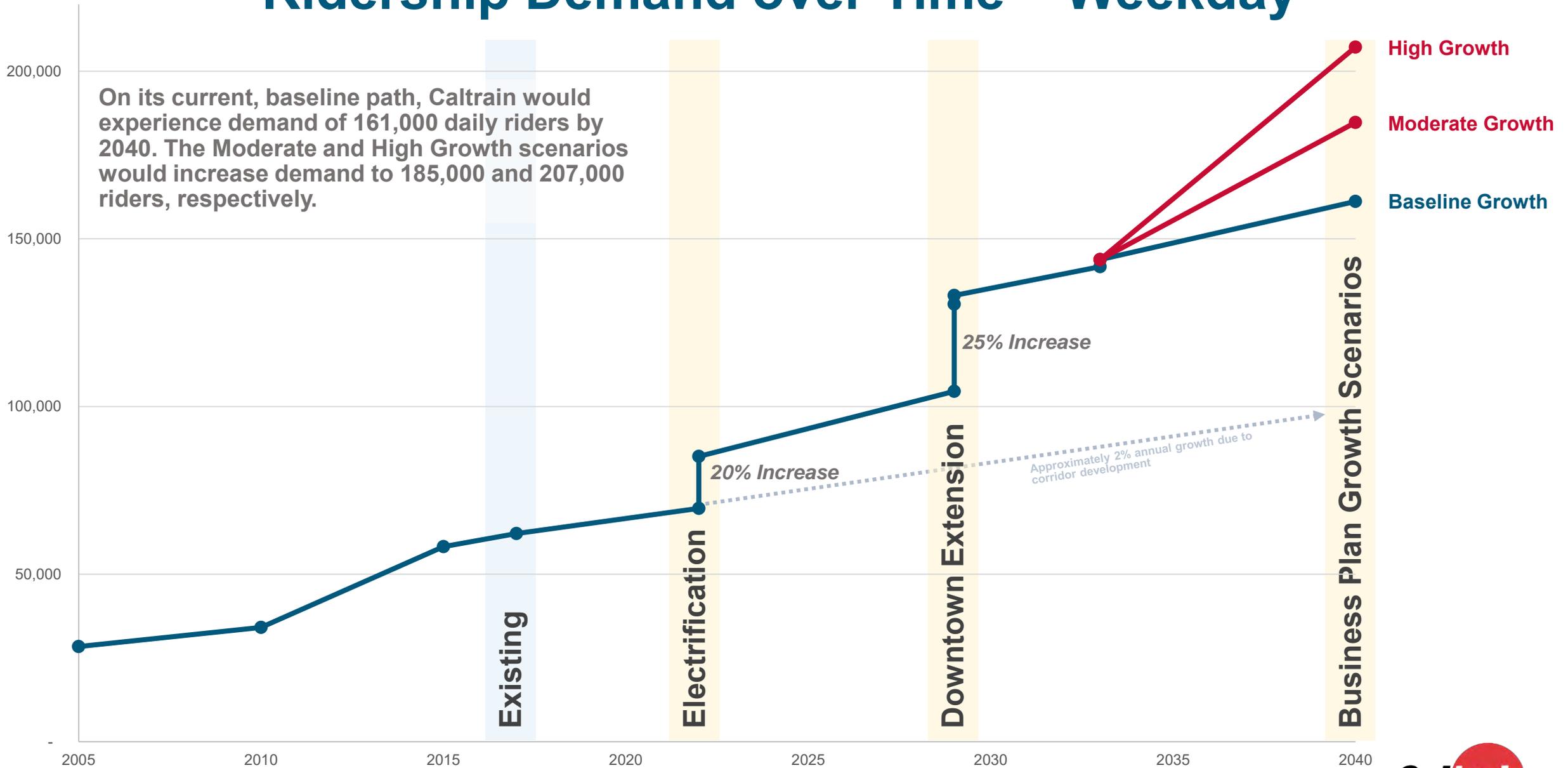
- Analyze fleet, storage and maintenance needs associated with the fleet requirements for each of the growth scenarios considered
- Understand when and where new investments in storage and maintenance facilities may be required and analyze how these may impact or benefit overall system operations



2040 Service Scenarios: Demand & Crowding



Ridership Demand over Time – Weekday



Crowding

How crowded will trains be? Will they still be a competitive choice? Will they be able to serve their full potential market demand?

- The underlying ridership model projects demand based on land use and service levels- it does not take comfort and crowding into account
- If Caltrain is highly crowded and uncomfortable will it still be a competitive mode? Is there a portion of future demand that we may not capture if the trains are uncomfortably full?

For the purposes of Business Planning, Caltrain is assuming that it can competitively serve passenger loads of up to 135% of seated capacity during regular service. At higher levels of crowding the service may not be competitive for choice riders and Caltrain may not be able to fully capture potential demand



System Forecasts- Constrained for Crowding

Systemwide Boardings: Weekday Ridership				
<i>Model Year</i>	<i>Service Plan</i>	<i>Demand</i>	<i>Capacity Constrained</i>	<i>Notes</i>
2017	5 TPH	62,100	62,100	
2022	5 TPH	69,700	69,700	Electrification increases service and capacity. Combined with the Central Subway, significant latent demand is unlocked within the system. After the completion of DTX, peak Caltrain ridership demand would exceed capacity. Ridership continues to grow during shoulder peak and off-peak periods.
	6 TPH	85,000	85,000	
2029	6 TPH	103,100	103,100	
	6 TPH (+ DTX)	130,600	124,900	
	6 TPH (+ DTX and 2 HSR)	132,900	128,900	
2033	6 TPH (+ 2 HSR)	141,700	135,700	
	6 TPH (+ 4 HSR)	143,800	137,600	
2040	Baseline 6 TPH (+ 4 HSR)	161,200	151,700	
2040	Moderate 8 TPH (+ 4 HSR)	184,800	177,200	Demand for express trains would exceed a comfortable crowding level. While local trains could serve some excess capacity, some riders would choose other modes in lieu of a longer local travel time.
2040	High 12 TPH (+ 4 HSR)	207,300	207,300	Sufficient peak capacity and more connected local service serving off-peak and weekend demand.

Key Findings

1. Ridership demand could exceed 200,000 riders by 2040

- i. Under the Baseline Growth condition, Caltrain would attract 161,000 riders by 2040
- ii. Increasing to 8 TPH would increase ridership to 185,000 for the Moderate Growth scenario
- iii. Increasing to 12 TPH would increase ridership to 207,000 for the High Growth scenario

2. PCEP will provide near-term crowding relief, but growing demand will lead to overcrowded conditions during peak hours upon completion of DTX around 2029

- i. Caltrain could reach 100,000 riders over the next decade with electrification and land use growth alone
- ii. The completion of DTX is projected to increase Caltrain ridership demand by about 25 percent (27,000 riders)
- iii. While new trains will enable better standing conditions for passengers, the level of crowding expected will be uncomfortable and may not be a competitive option for choice riders

3. By 2040 the Baseline and Moderate Growth scenarios face crowding challenges, while the High Growth does not.

- i. By 2040 the Baseline and Moderate Growth scenarios exceed a comfortable crowding condition by about 30 to 40 percent for peak hour, peak direction travel.

DTX & Intra-San Francisco Ridership

1. STC Surcharge

- i. Assumed average surcharge of \$2.50 (or \$3 in 2029 dollars) per trip, roughly equivalent to a separate fare zone
- ii. STC would serve about 25,000 daily Caltrain boardings, but some potential riders may shift to other modes
- iii. Ultimate surcharge amount and mechanism will influence ridership outcomes at STC

2. Location of 22nd Street Station

- i. Ridership forecasts suggest 6,000-10,000 daily station boardings by 2040, but may be higher or lower depending on potential station relocation

3. Intra-SF Ridership

- i. With opening of DTX Caltrain could offer substantial time savings for intra-SF trips and as connection to BART, Transbay buses, and ferries
- ii. Ridership forecasts suggest 4,000-7,000 trips, but could be 20,000-30,000 if similar to BART

Origin-Destination Pair	Estimated Travel Time (& Frequency by Growth Scenario)	
	<i>Muni</i>	<i>Caltrain</i>
4 th & King – STC/Montgomery Station	15 minutes (6 trains per hour)	4 minutes (6-8 trains per hour)
22 nd Street – STC/Montgomery Station	25 minutes (6 trains per hour)	8 minutes (4-8 trains per hour)
Bayshore – STC/Montgomery Station	37 minutes (8 buses per hour)	13 minutes (2-4 trains per hour)

San Francisco Terminal

Key Points and Findings

- In the Baseline and Moderate Scenarios preliminary analysis suggests that all train service can utilize Sales Force Transit Center. In the High Growth Scenario the additional 4 trains would terminate at 4th & King.
- Some platform availability preserved at 4th & King in all scenarios to account for event, disruption, and/or regular revenue service
- Direct sharing of platforms between Caltrain and HSR as part of scheduled revenue service provides no direct capacity benefits in any of the scenarios studied at either terminal. The importance of platform interoperability to system reliability is under study through ongoing analysis
- All findings will be further tested and evaluated through simulation analysis



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

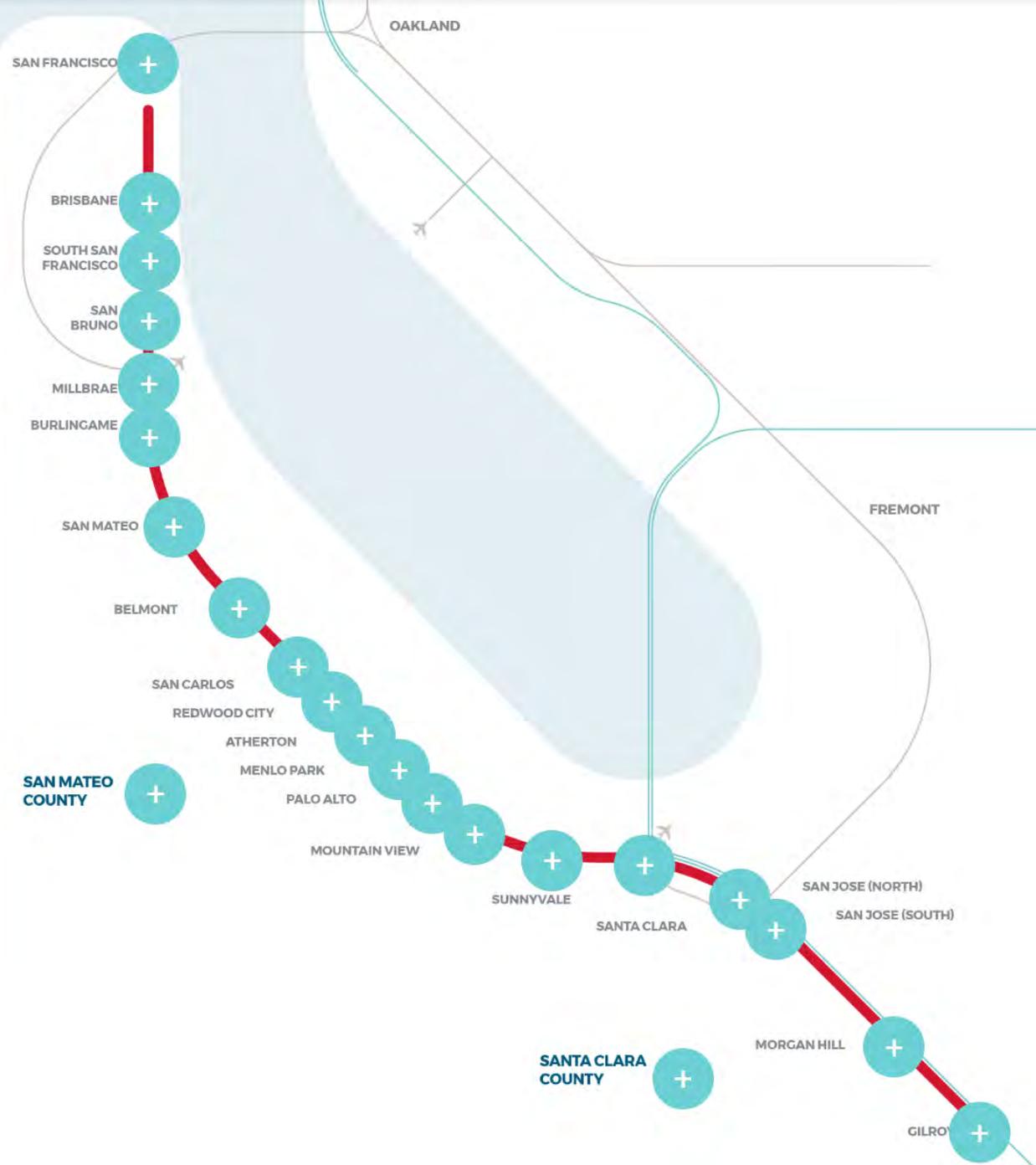


During the spring of 2019 the Business Plan team will develop a detailed “Business Case” analysis for each of the different growth scenarios. The Business Case will quantify the financial implications and wider costs and benefits of each growth scenario

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



Outreach Activities to Date

July – December Timeline

	July	August	September	October	November	December
Local Policy Maker Group	●	●	●		●	●
City/County Staff Coordinating Group	●	●	●		●	●
Project Partner Committee	●	●	●	●	●	●
Community Interface Meetings (One Per Jurisdiction)			●	●	●	
Stakeholder Advisory Group				●		
Partner General Manager				●		
Website & Survey Launch					●	
Community Meetings (One Per County)					●	
Sister Agency Presentations					●	●

Outreach Activities to Date

July – December by the Numbers

Stakeholders Engaged

21

Jurisdictions

26

Public Agencies

39

Stakeholder
Group Meetings

93

Organizations in Stakeholder
Advisory Group

Public Outreach

18

Public Meetings
and Presentations

1000+

Survey Responses

2,600

Website Hits

27,000

Social Media Engagements

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FOR MORE INFORMATION

WWW.CALTRAIN.COM

