Local Policy Maker Group (LPMG) Meeting

Thursday, August 22, 2019
5:30 p.m. – 7:30 p.m.
SamTrans Offices – Bacciocco Auditorium 2nd Floor
1250 San Carlos Ave., San Carlos

Members of the public are welcome to attend the teleconference location at:
2051 New Brunswick Dr. San Mateo, CA 94402

Agenda

1. Call to Order
2. Staff Report
3. Caltrain Electrification Project
4. Caltrain Business Plan
5. Public Comments
6. LPMG Member Comments/Requests
    a. Grade Separation Toolkit
7. Next Meeting
    a. Thursday September 26, 2019 at 5:30pm
8. Adjourn

All items on this agenda are subject to action

Memorandum

Date: August 22, 2019

To: CalMod Local Policy Maker Group (LPMG)

From: Sebastian Petty, Senior Advisor

Re: Caltrain Business Plan

PROJECT UPDATE

Attached is a memo accompanying the staff recommended long-term vision for the Caltrain Business Plan. Outreach is ongoing along the Caltrain corridor, including community meetings, online town halls, station popups and an onboard Q&A. e

SUMMARY OF DRAFT RECCOMENDATION FOR CALTRAIN'S LONG RANGE SERVICE VISION

The following memo supplements the PowerPoint presentation provided to the Peninsula Corridor Joint Powers Board at their August meeting. It provides a high level summary of the service planning and business case analysis completed as part of the Caltrain Business Plan to date and explains the importance of choosing a "Long Range Service Vision" at this stage in the planning process. More information can be found here, www.Caltrain2040.org/Long-Range-Service-Vision/.

The memo then describes staff's draft recommendation for the Long Range Service Vision and explains why staff has recommended this specific vision relative to other options considered. Finally, the memo includes a narrative description of the recommended Vision and a draft of the precise language that the Board would be asked to consider for adoption in October, pending revisions or changes based on input received from the Board and through outreach planned in August and September.

A LONG RANGE VISION FOR CALTRAIN SERVICE

The Caltrain Business Plan is an expansive planning process that has been ongoing for more than a year. A major focus of the plan has been to develop analysis of different long range service options for Caltrain and to weigh the costs, revenues, benefits and impacts of these options through a detailed "Business Case" analysis. At this stage of the Business Plan process, Caltrain staff has developed and evaluated three distinct "growth scenarios" that provide illustrative options for how the Caltrain Service could grow by 2040. Based on this analysis, staff has now developed a single, recommended "Long Range Service Vision" for consideration and potential adoption by the Board.

Choosing a "Long Range Service Vision" is an important milestone in the Business Plan process. Having a clearly articulated goal for the quantity and type of service that the railroad aspires to provide in the future will provide staff with the critical guidance needed to complete the Business Plan. Once adopted, the Long Range Service Vision will create a framework that allows staff to "work backwards" from 2040, developing analysis showing how the Vision can be phased, funded and implemented over time. This analysis will be conducted in the fall of 2019 with a goal of completing the Business Plan by early 2020.

A REGIONAL VISION BUILT ON REGIONAL INVESTMENTS

Selection of a Long Range Service Vision will also allow Caltrain staff to engage efficiently and constructively in the development of other long range plans and projects throughout the region. This is particularly important since the Caltrain corridor interfaces with many different local,

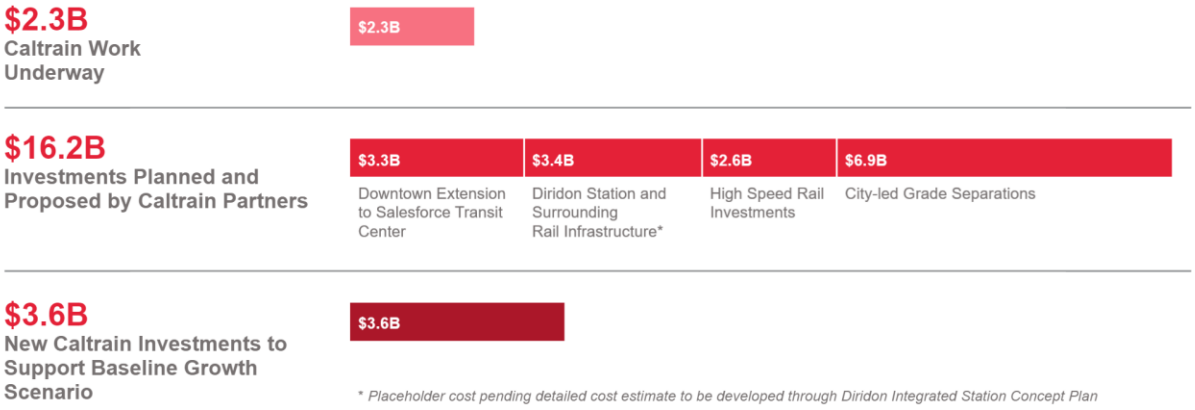
state and regional transportation systems and investments. While the Long Range Service Vision is fundamentally focused on Caltrain, the Vision must account for and integrate a vast array of transportation projects that have been planned by corridor cities and regional and state partner agencies. Key projects that directly influence Caltrain's corridor and long range service ambitions include;

- California's High Speed Rail System
- The Downtown Extension to the Salesforce Transit Center
- The rebuilding of Diridon Station in San Jose
- Multiple grade separation projects planned and contemplated by corridor cities

The Caltrain Business Plan and Caltrain's Long Range Vision have been deliberately developed to integrate and build on all of these projects. One of the goals of the 2040 Vision is to build a "big tent" that shows how all of the investments currently being planned in the corridor can fit together as part of a cohesive whole, with expanded Caltrain service further enhancing their value and importance.

It is important to note at the outset, that these regional and partner projects also drive a significant portion of the overall investment costs that are considered within the Long Range Service Vision. Figure 1 shows the total set of capital investments that have been included in the "baseline" growth scenario, broken down by major source.

Figure 1- Capital Investments Included in the "Baseline" 2040 Growth Scenario



All costs have been adjusted to 2018 dollars

The costs shown in Figure 1 total to $22.1 billion in 2018 dollars and are divided into three categories;

- **Caltrain Work Underway**: Including electrification and other major capital projects that are already in progress
- **Investments Planned and Proposed by Caltrain Partners:** Including major terminal projects like the Downtown Extension (DTX) and Diridon Project as well as High Speed

Rail Investments and those grade separations that are already actively being planned by local jurisdictions. While all of these projects are in active stages of planning, most are substantially unfunded.

- **New Caltrain Investments to Support the Baseline Growth Scenario:** This category includes the essential investments that the Caltrain believes will be needed by 2040 to support the baseline level of blended service. Examples include additional electrified rolling stock (to fully electrify the fleet and expand all consists to 8-car trains), level boarding, expanded storage and maintenance facilities and additional grade crossing improvements. These projects are not funded.

These costs have been used as the basis, or "baseline," for looking at the incremental investment that would then be required to achieve the higher levels of Caltrain service contemplated in the "moderate" and "high" growth scenarios.

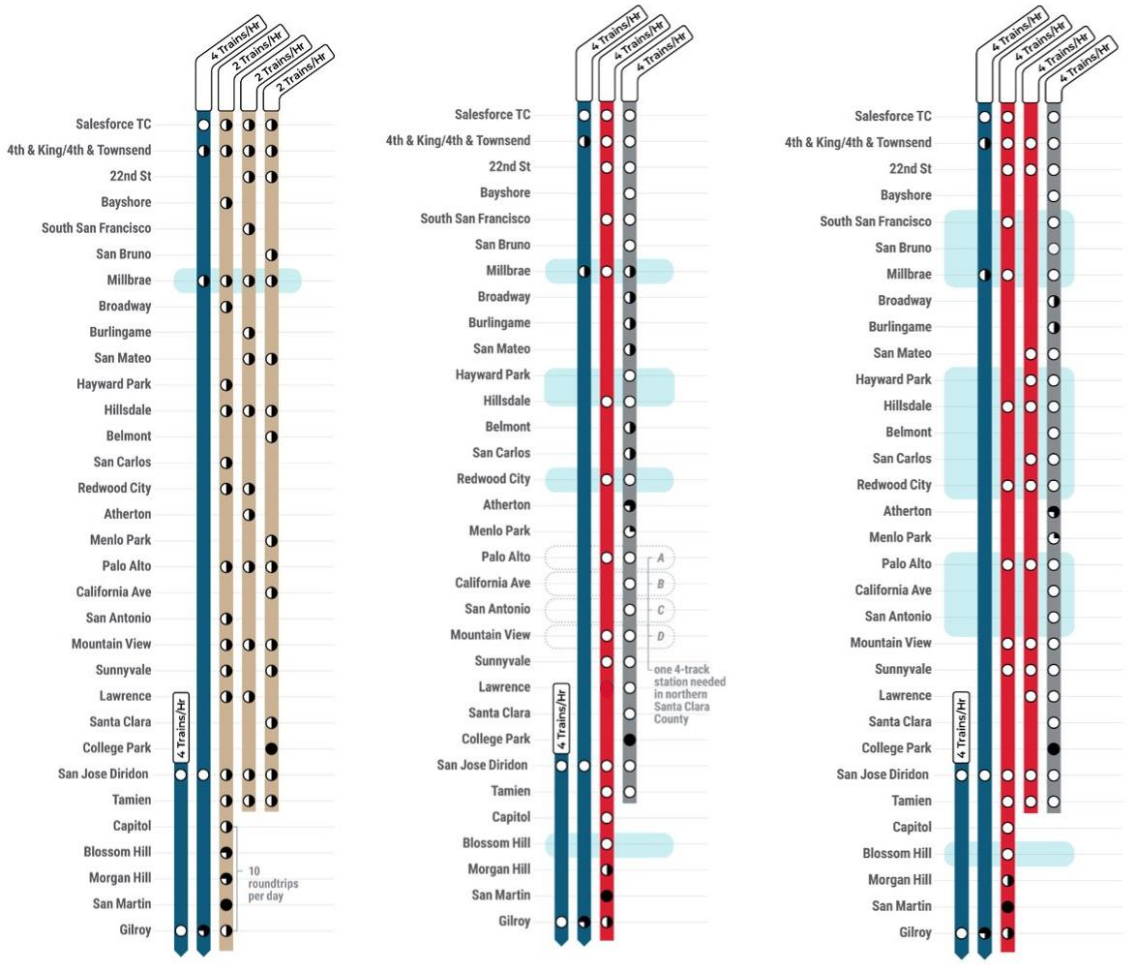
DEVELOPMENT OF "GROWTH SCENARIOS"

Much of the technical work of the Caltrain Business Plan over the past year has been focused on the development and refinement of three illustrative "Growth Scenarios," each representing a different option for the kind of service that Caltrain could provide in 2040 given different levels of supporting investment. The three scenarios include a "baseline" level of service (consistent with Caltrain's prior long range planning and the regional and partner projects discussed above) and two additional scenarios that consider what it might look like if Caltrain were to further expand service (the "moderate" and "high" growth scenarios).

Although illustrative, these growth scenarios where developed at a high level of detail through an extensive service planning process (diagramed in Figure 2). Details of each of these scenarios are shown in Figure 3 and can also been reviewed in the accompanying presentation and on the project website, www.caltrain2040.org.

Figure 2 – Growth Scenario Development Process

Figure 3 – Growth Scenario Detail



The process to develop the different growth scenarios evaluated in the Caltrain Business Plan was conducted in a highly transparent and collaborative manner. Throughout the development of the Growth Scenarios, Caltrain staff have met on a monthly basis to share information and discuss findings with a technical team of partner agency staff (the Project Partner Committee) as well as with corridor local jurisdiction staff (the City and County Staff Group) and corridor elected officials (the Local Policy Maker Group). Additionally, the project team has held quarterly stakeholder meetings with a Stakeholder Advisory Group representing over 90 different organizations and has held multiple rounds of one on one meetings with every city in the corridor. The team also developed customized "booklets" for each city, showing the impacts and benefits of different growth scenarios on their jurisdiction. All told, Caltrain staff have presented Business Plan materials at over 150 stakeholder meetings during the course of the last year.

WEIGHING CALTRAIN'S CHOICES

The detailed illustrative growth scenarios developed through the service planning process were used to model ridership, specify and estimate the costs of required capital investments, and to model detailed operating costs. These outputs were then used as the basis for developing a "Business Case" analysis of each scenario. The Business Case analysis is a structured framework that helps analyze and weigh the costs and benefits of the different options. The analysis examines five areas, each of which is presented in detail in the accompanying presentation and is discussed briefly in this memo.

Figure 4 – Areas of the Business Case Analysis

SERVICE COMPARISION

The service comparison section of the business case looks at the key service, and service-related qualities of the different scenarios and compares them on a head to head basis. The accompanying presentation provides a detailed analysis. In general, the quality of service across the options as measured by various metrics improves as the level of train service and investment increase. Conversely, however, the increased service included in the "high growth" scenario requires the construction of extensive 4-track segments in the corridor – complex infrastructure that has the potential to drive significant community impacts. A detailed service comparison is provided in the accompanying presentation and a summary table of key metrics is shown in Figure 5.

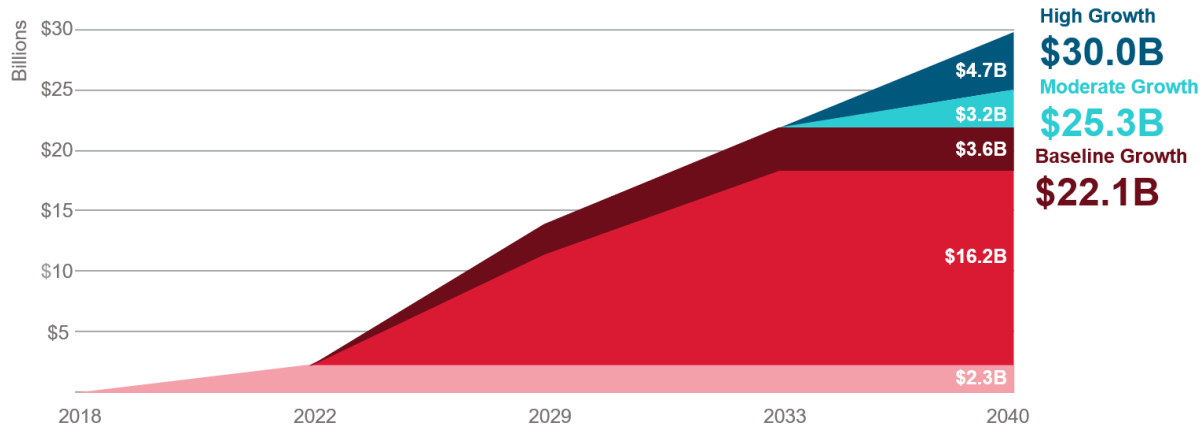
Figure 5 – Summary of Key Comparative Service Metrics

	Metric	Baseline Growth	Moderate Growth	High Growth
Frequency	Number of Stations Served by Frequent Service (>4 TPHPD)	13 Stations	21 Stations	24 Stations
	Longest Wait Times At Major Stations Served by All Trains	22 minutes	12 minutes	8 minutes
Connectivity	Percentage of Station Pairs Connected Without/(With) a Transfer	84% (91%)	96% (98%)	99% (99%)
	Number of Station Pairs Not Connected at All*	95	17	2
Network Integration	Timed Connections at Regular Intervals	No	Yes	Yes
Ridership	Daily Ridership (capacity constrained)	151,700 Riders	177,200 Riders	207,300 Riders
	Comfortable Peak Hour Train Loads?	No	Some Crowding	Yes
Travel Time	Travel Time, San Francisco (STC) to San Jose (Diridon)	69-73 Minutes	61 Minutes	60 Minutes
	Average Travel Time per Rider, All Origin-Destination Pairs	33 Minutes	32 Minutes	31 Minutes
Infrastructure	Passing Tracks Needed	<1 Mile	<5 Miles	15-20 Miles

FINANCIAL ANALYSIS

Detailed capital cost estimates for each scenario, building incrementally off of the "baseline" investments described previously were developed for the moderate and high growth scenarios. Figure 6 shows the baseline investment described previously, profiled over time, with the incremental additional investment required to achieve the "moderate" or "high" growth scenarios shown as an additional increment.

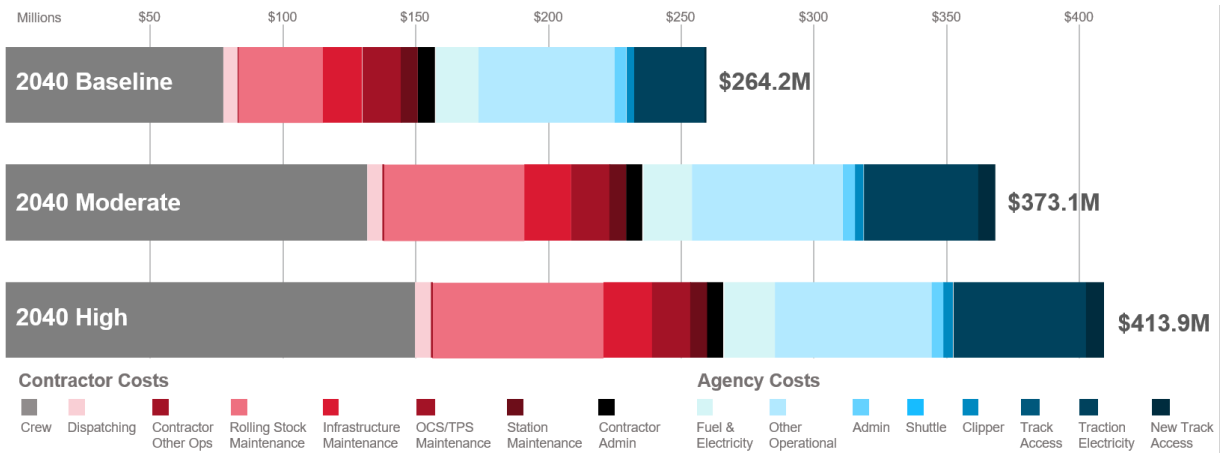
Figure 6 – Total Capital Investment by Scenario



All costs have been adjusted to 2018 dollars

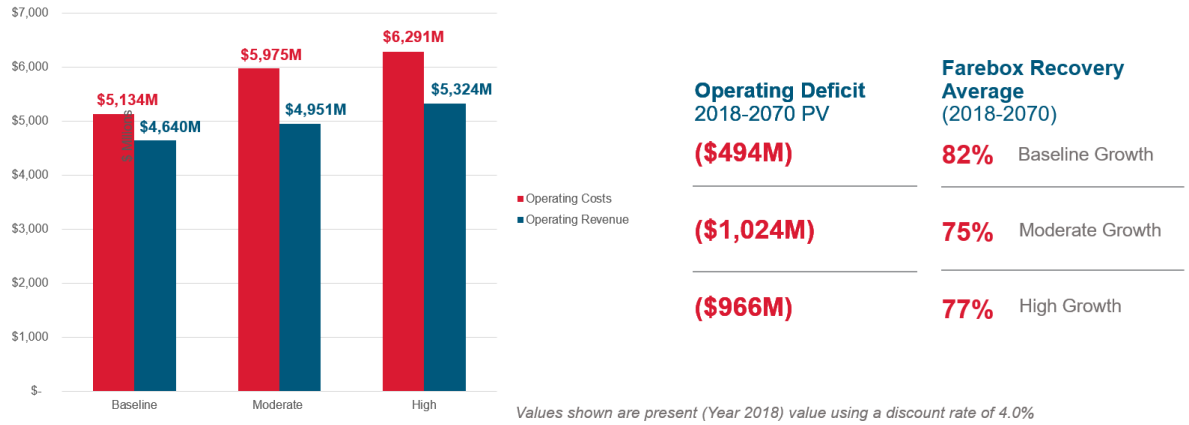
Figure 7 shows the projected 2040 annual operating and maintenance costs for each of the scenarios (in 2018 dollars).

Figure 7 – Total Operating Costs by Scenario



Finally, Figure 8 shows the net present value of total operating costs and projected revenues projected over the 2018-2070 period (the lifecycle timeframe of key investments included in each of the scenarios) along with the average fare box recovery rate across that same period. Additional financial analysis and metrics are reported in the accompanying presentation.

Figure 8 – Net Present Value of Total Operating Costs and Revenues by Scenario, 2018-2070



CALTRAIN ECONOMIC ANALYSIS

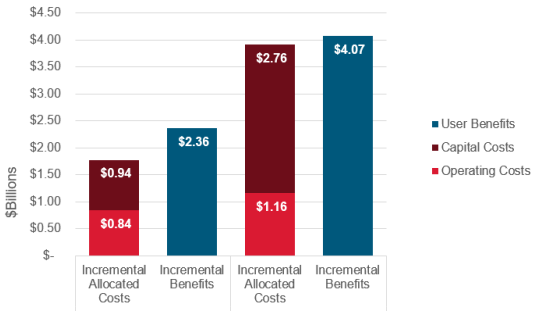
The Business Plan team also developed a series of analyses examining the economic impact of the different growth scenarios on Caltrain riders. This analysis considers the various ways that improved Caltrain service could directly benefit riders, monetizes these benefits and compares them to costs. This analysis is done on a marginal basis against the baseline scenario meaning that calculations are based on the incremental costs and benefits of the "moderate" or "high" growth scenarios relative to the baseline. Costs included in the analysis have also been "allocated" meaning that the overall costs of shared investments (eg projects that serve multiple purposes or benefit multiple users beyond just Caltrain) have been proportioned so as to fairly weigh Caltrain "costs" against Caltrain "benefits." Calculations are performed for the period between 2040 and 2070, when each growth scenario is assumed to be fully operational. Figure 9 shows directly calculated benefits while Figure 10 shows the net present value of monetized benefits weighed against the value of incremental, allocated costs.

Figure 9 –Estimated Incremental Economic Benefits to Caltrain Users Relative to Baseline, 2040-2070

		Moderate Growth		High Growth	
Benefit	**Unit**	**Total***	**Per Year Average**	**Total***	**Per Year Average**
Existing Transit User Travel Time Savings	*hours*	12.9M	0.43M	20.9M	0.70M
New Transit User Travel Time Savings	*hours*	27.7M	0.92M	40.4M	1.35M
VMT Savings from New Transit Users (Avoided Auto Trips)	*vehicle miles*	9,000M	300M	16,100M	540M
Roadway Network Safety Improvements	*reduced fatal/injury accidents*	7,300	240	13,000	430
Public Health Benefits (from Active Transportation Mode Access)	*lives saved*	70	2	150	5
	reduced absent days at work	30,000	1,000	67,000	2,200

Values rounded for presentation purposes

Figure 10 – Net Present Value and Benefit / Cost Ratio of Caltrain User Benefits Weighed Against Allocated Costs, 2040-2070



Net Present Value 2018-2070 PV	Benefit Cost Ratio 2018-2070	
$0.58B	1.33	Moderate Growth
$0.15B	1.04	High Growth

REGIONAL ANALYSIS

The Business Plan team also developed analysis and qualitative discussion of a number of "regional" benefits that would result based on different levels of investment in the Caltrain system. These benefits accrue to a general population and not just users of the system. These regional benefits are described in detail in the accompanying presentation and are summarized in Figure 11 below

Figure 11 – Summary of Regional Benefits

	Metric	Baseline Growth	Moderate Growth	High Growth
Freeway Throughput	Additional Freeway Lanes	+4 lanes	+5.5 lanes	+8.5 lanes
Regional Rail Integration	Accommodation of Large-Scale Corridor-Sharing Beyond HSR	could be scaled to accommodate	could be scaled to accommodate	can accommodate
Environmental Benefits	GHG (MTCO2e)	1,108,045	1,898,330	3,006,028
Land Value Benefits	Property Value Premiums Generated by 2040 Service Growth within 1 Mile of a Station	$10B	$10 - $22B	$22B
Economic Productivity	Economic Output	$32.8B	$40.8B	$47.7B
	Full and Part-time Jobs	44K job-years	51K job-years	69K job-years

FLEXIBILITY AND UNCERTAINTY

Finally, the Business Plan team considered the degree of flexibility and uncertainty inherent in the growth scenarios examined. The detailed service plans developed in each scenario are "illustrative," not definitive and much work remains both within and beyond the Business Plan process to examine specific service patterns and service levels at individual stations.

Additionally, all of the 2040 growth scenarios have been developed in a way that includes and integrates regional projects like High Speed Rail, the Downtown Extension and the rebuilding of Diridon Station. These projects are in various stages of planning and design but all currently lack the funding. There is a great deal of potential uncertainty regarding the timeframe in which they will be delivered and the final form they may ultimately take. Similarly, while larger regional visions for a greatly expanded, integrated rail network are ongoing there is a tremendous amount of uncertainty around how and when these concepts may ultimately manifest.

The issues of service flexibility and uncertainty around regional projects are particularly relevant in the context of understanding where overtake infrastructure may be required. The location and extent of required overtake infrastructure is highly sensitive to what service is being accommodated. This especially true in the "High growth" scenario where the large volume of blended train traffic creates a need for long overtakes used by multiple different operators. The

"moderate" growth scenario has over take infrastructure needs that are more modest and can be planned for more discretely.

Finally, this section of the presentation also discusses a number a series of initial financial sensitivity tests to understand how key business metrics associated with the different growth scenarios may vary in response to changing conditions.

RECCOMENDED LONG RANGE SERVICE VISION

SUMMARY AND BASIS FOR RECCOMENDATION

Caltrain staff has developed a draft recommendation for the Long Range Service Vision. This recommended Vision is described in detail below, but, as it relates to the options studied, the recommendation is that Caltrain adopt and pursue a Vision compatible with the "moderate" growth scenario while also taking a series of steps to plan for and not preclude the potential realization of the "high growth" scenario.

The extensive analysis conducted during the Business Plan process has shown that there a strong demand for expanded Caltrain service and the business case analysis conducted as part of the plan has shown that there is a clear case, based in economic and regional benefits, for pursuing a Vision that goes beyond the baseline levels of service previously contemplated. While the high growth option generates the greatest ridership and expanded regional benefits, it also comes at a higher cost and carries significantly higher levels of uncertainty and potential for community impacts. Therefore, based on the assembled evidence, staff has developed a recommendation that would direct Caltrain to pursue a service vision consistent with the "moderate" scenario while retaining the ability to expand to a level consistent with the "high growth" scenario at such time as demand warrants or the region has made the policy and funding commitments to pursue a larger, integrated rail system.

DESCRIBING THE VISION

The Long-Range Service Vision for Caltrain provides a world class service that is tailored to the future needs of our local communities, the region and the state. It responds to and integrates the committed and planned investments in the Caltrain corridor to deliver the greatest value to the public and region, while maintaining the flexibility to respond as local and regional needs develop.

The Key Features of the Service Vision Include:

- Fast and frequent all day (every day) service
    - Total peak hour frequencies of 8 Caltrain trains per direction

    - Faster, all day baby bullet service with express service every 15 minutes
    - Significantly increased off-peak and weekend service levels
    - User friendly, show up and go service with easy to understand schedules
- Increased Capacity
    - Provides the capacity to triple today's ridership, serving nearly 180,000 people a day
    - Adding more than 5 freeway lanes worth of regional capacity
- Regional Connectivity
    - End to end service- connecting Gilroy to downtown San Francisco (all day, both ways)
    - Comprehensive local service providing coverage to every community
    - Regular service making transfers and connections easier and more predictable

Major Additional Benefits

The Vision will bring huge benefits beyond direct improvements to service. Once complete, the Vision will deliver;

- 1.3 million hours of travel time savings for existing and new Caltrain riders every year as compared to the baseline scenario
- 300 million vehicle miles not traveled every year as compared to the baseline scenario
- $40.8 billion in regional economic output created by ongoing capital and operating investments
- By 2040 Caltrain service will add between $25 and $37 billion in property value premiums to residential and office properties within 1 mile of stations. (This analysis is conservative and excludes San Francisco as well as commercial, non-office properties for which estimates could not be reliably developed)
- The Vision will result in a reduction of nearly 2 million metric tons of CO2 as well as other air quality improvements

Ready to Grow with the Region

- The Vision has been designed to integrate and add value to the many local, regional and state investments that are being planning in the Caltrain corridor. These include projects like grade separations, major improvements to terminal infrastructure and stations in San Francisco and San Jose, and the integration of the state's high speed rail system.
- The vision also anticipates the ongoing role of Caltrain in a regional rail network that in addition to high speed rail could include a new rail service in the Dumbarton corridor, a second transbay crossing, service to the Monterey peninsula and ongoing improvements to service on Capital Corridor and ACE.
- As part of the Business Plan process, staff evaluated how the service and infrastructure contemplated in the recommended Vision could scale up to an even "higher" level of growth that would allow for up to 16 trains per hour per direction and even greater regional integration and further expansion of rail. At this time, there is still a great deal

of uncertainty around the future of regional rail and Caltrain does not feel that we can independently recommend moving forward with a maximum growth approach given the high costs and potential for extensive community impacts.

- Instead, we are recommending a "do not preclude" approach that would allow for this future growth to proceed once key regional decisions and funding commitments are in place. In practice, this would mean limiting the sale or encumbrance of certain JPB land, accounting for the possibility of more trains when we do terminal and facility planning, and considering the potential need for 4 tracks as certain grade separations are designed. At the same time, Caltrain will actively participate in evolving regional conversations and will help the region and the state evaluate the feasibility and benefits of an expanded and integrated rail network. If the region is truly prepared to move forward with a full regional rail expansion Caltrain will be ready.

Capital Costs

- Achieving the Vision will also be costly- the total range of all projects contemplated to achieve the Vision from Gilroy to San Jose include up to $25 billion (this includes roughly $2.5 billion of Caltrain investments already paid for and underway).
    - The significant majority of this cost is driven by projects that are being planned by corridor partners (DTX in San Francisco, grade separations all along the corridor, the potential cost of the Diridon Station project, and HSR improvements- collectively account for more than $16 billion of the total).
    - The goal of the Vision is to help knit these projects together and to add value to all of them by providing greatly improved Caltrain service. Direct Caltrain investments contemplated (beyond the existing projects already underway) total to roughly $6.5 billion)
- New sources of funding will clearly be required to address this level of need- including to even come close to achieving the baseline. The $22 million a year contributed by member agencies to the capital budget is not going to be sufficient to do any of this.

Operating Costs

- Projected 2040 operating annual costs for the Vision are $373.1 million a year in current dollars (compared to about $135 million in 2018). By way of comparison, achieving a "baseline" level of growth would cost about $265 million a year in 2040
- Financial projections show that the efficiency of the system will remain high- we are projecting an average farebox recovery ratio of 75% (holding today's fare levels constant with inflation). Nonetheless, the need for subsidy will grow as the size of the system increases. Caltrain may need as much as $90 million a year in operating subsidy (compared to the roughly $36 million in subsidy it receives today- $30 million of which come from local member agencies). As the business plan continues we will be exploring ways to further increase system efficiency and generate additional revenues that would offset the need for direct subsidy. Nonetheless, new funding is clearly needed.

Incremental Improvements

- The Vision is not one project- it can be implemented incrementally over time with improvements to service and capacity delivered along the way. During the remainder of the Business Plan Caltrain will work to identify key incremental steps that can be delivered in the near- and medium term timeframes.
- We don't need to wait until 2040- the first major improvement in service is coming soon. Electrification, in 2022 is the first step and will mark a substantial step forward towards the realization of this vision with significant service improvements throughout the corridor.

CALTRAIN'S LONG RANGE SERVICE VISION – DRAFT LANGUAGE

The following is the specific, draft "Service Vision" language that the JPB would be asked to consider for adoption in October. This language will be reviewed and revised based on input from the Board and comments received through stakeholder and public outreach.

1) Caltrain's Long Range Service Vision directs the railroad to plan for a substantially expanded rail service that will address the local and regional mobility needs of the corridor while supporting local economic development activities. When fully realized, this service will provide;

A. A mixture of express and local Caltrain services operated in an evenly spaced, bi-directional pattern

B. Minimum peak hour frequencies of;
- 8 trains per hour per direction on the JPB-owned corridor between Tamien Station in San Jose and San Francisco, extended to Salesforce Transit Center at such time as the Downtown Extension is completed
- 4 trains per hour per direction between Blossom Hill and Tamien Stations, subject to the securing of necessary operating rights
- 2 trains per hour per direction between and Gilroy and Blossom Hill Stations, subject to the securing of necessary operating rights

C. Off-peak and weekend frequencies of between 2 and 6 trains per hour per direction north of Blossom Hill and hourly between Gilroy and Blossom Hill, with future refinements to be based on realized demand

D. Accommodation of California High Speed Rail trains, in accordance with the terms of existing and future blended system agreements between the JPB and the California High Speed Rail Authority

E. Delivery of these services will occur through the incremental development of corridor projects and infrastructure to be further defined through individual planning process, feasibility studies and community engagement. At this time, such infrastructure is conceptually understood to include;

i. Investments in rail systems including a new, high performance signal system
ii. Station modifications including platform lengthening, level boarding, and investments in station access facilities and amenities to support growing ridership and improve customer experience
iii. New and modified maintenance and storage facilities in the vicinity of both terminals as well as the expansion of the electrified Caltrain fleet
iv. A series of short, 4-track stations and overtakes at various points throughout the corridor
v. Completion of key regional and state partner projects including
    1. The Downtown Extension to the Salesforce Transit Center
    2. The reconstruction of Diridon Station and surrounding rail infrastructure
    3. The reconstruction and electrification of the rail corridor south of Control Point Lick to the Gilroy Station
    4. Additional improvements to allow for the operation of High Speed Rail service between Gilroy and San Francisco
    5. The substantial grade separation of the corridor as well as safety upgrades to any remaining at-grade crossings, undertaken in a coordinated strategic manner driven by the desires of individual local jurisdictions as well as legal requirements associated with any proposed 4-track segments.

2) Caltrain's Long Range Service Vision further directs the railroad to continue its consideration of a potential "higher" growth level of service in the context of major regional and state rail planning. Specifically, the Long Range Service Vision directs the railroad to;

A. Work with regional and state partners to study and evaluate both the feasibility and desirability of higher levels of service in the context of major regional and state rail initiatives including planning related to the Dumbarton Rail Corridor, the 2nd Transbay Crossing, the potential for expanded ACE and Capitol Corridor services, and ongoing planning for the California High Speed Rail system.

B. To take certain actions to consider and, where feasible, not preclude such higher levels of service as they specifically relate to;

i. The planning of rail terminals and related facilities
ii. The sale or permanent encumbrance of JPB land
iii. The design of grade separations in areas where 4-track segments may be required
iv. The sizing of future maintenance facilities and storage yards

C. To return to the board with a recommendation regarding any formal expansion of the Long Range Service Vision at such a time as clear regional and state policy and funding commitments are in place and the feasibility of such an option on the corridor has been confirmed

3) Finally, Caltrain's Long Range Service Vision directs the railroad to periodically reaffirm the Vision to ensure that it continues to provide relevant and useful guidance to the railroad. Such reaffirmations should occur;

A. At a regular intervals of no less than 5 years

B. In response to significant changes to JPB or partner projects that materially influence the substance of the Long Range Service Vision

Choosing a Long Range Vision

Caltrain Business Plan

Summer 2019

Caltrain

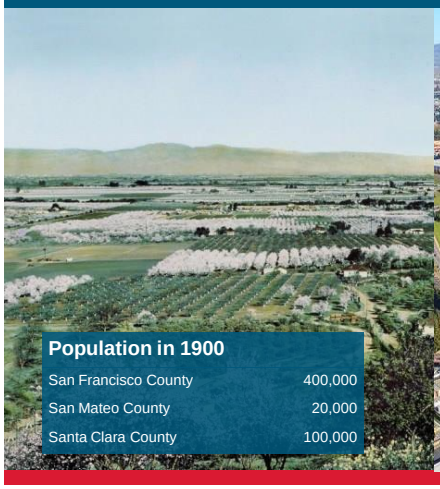
What is the Caltrain Business Plan?

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.

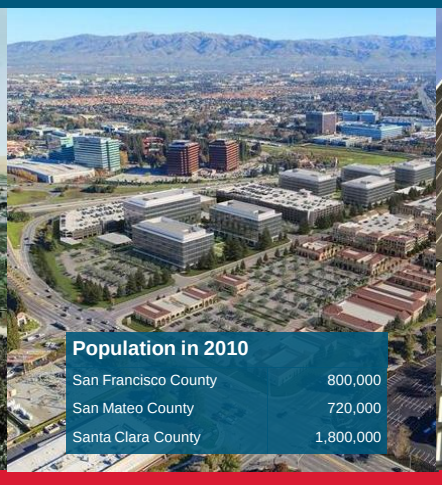
Why Allows the community and stakeholders to engage in developing a more certain, achievable, financially feasible future for the railroad based on local, regional, and statewide needs.

Caltrain

Caltrain is part of a dynamic corridor



Population in 1900	
San Francisco County	400,000
San Mateo County	20,000
Santa Clara County	100,000



Population in 2010	
San Francisco County	800,000
San Mateo County	720,000
Santa Clara County	1,800,000

Population in 2040	
San Francisco County	1,170,000
San Mateo County	920,000
Santa Clara County	2,530,000

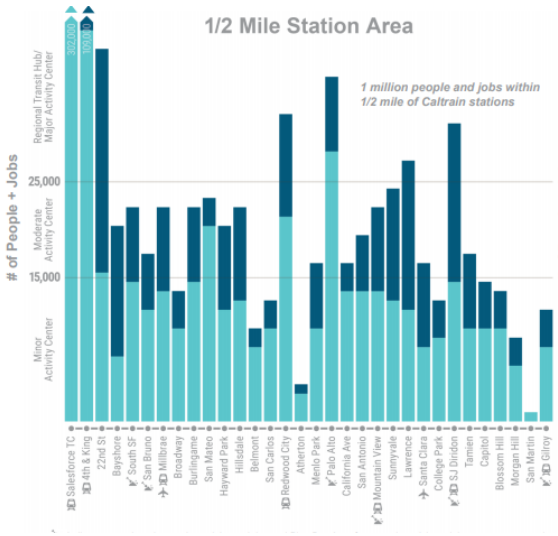
2040 Demand

The Caltrain corridor is growing

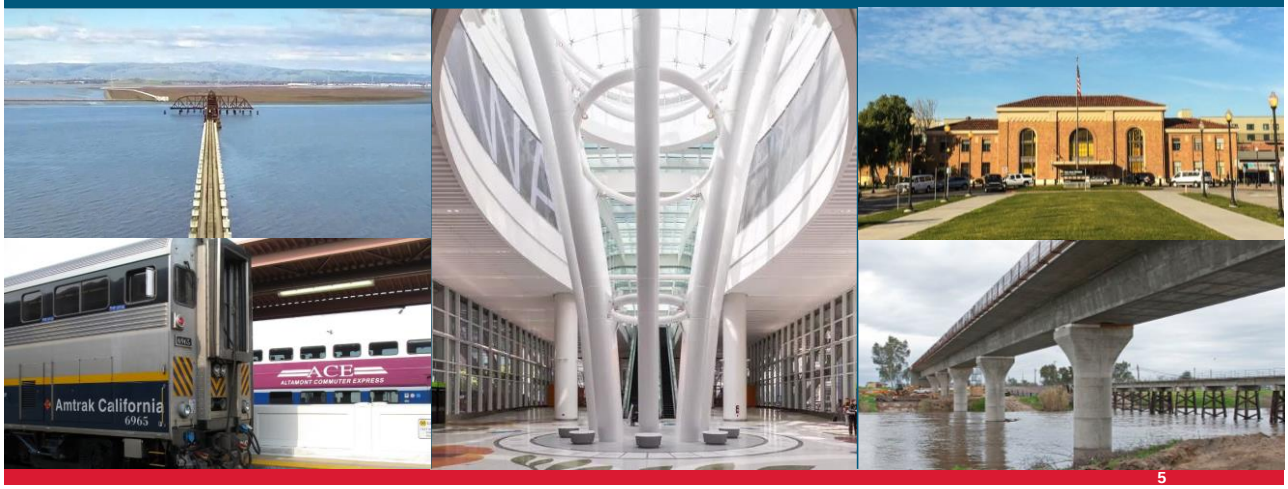
- By 2040 the corridor expected to add 1.2 million people and jobs within 2 miles of Caltrain (+40%)[1]
- 80% growth expected in San Francisco and Santa Clara Counties

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



The future of rail in the Bay Area is still coming together, with many different plans and projects underway.



Caltrain will be the first, modern electrified railroad in California. The Vision we choose will shape the future of rail in the region and the state.

What does it mean for Caltrain to Choose a Long Range Vision?

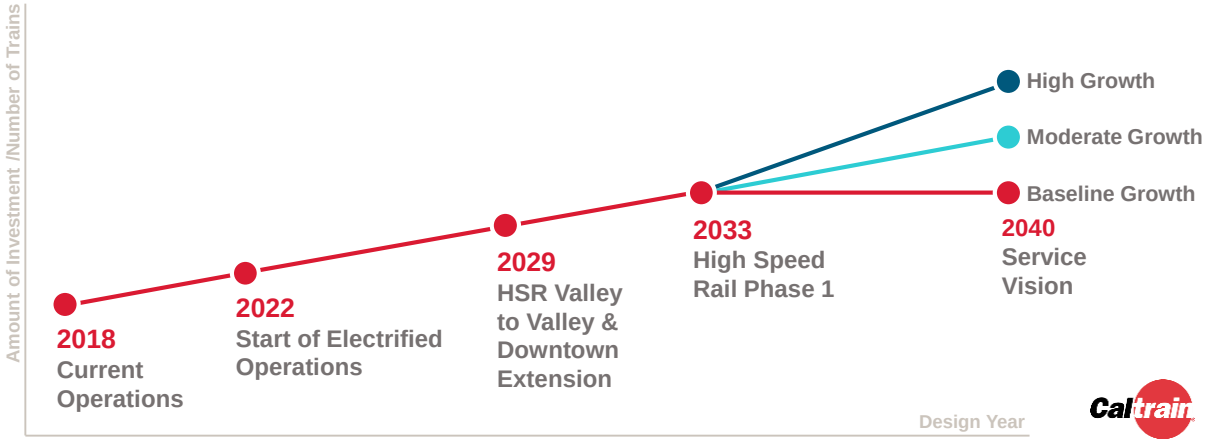
Caltrain's 2040 Service Vision needs to be a "Big Tent"

- The Caltrain corridor is a key regional transportation asset and many of our partner cities and agencies have major commitments or planned investments (Projects) in the corridor. The vast majority of these are substantially unfunded.
- The "Baseline Vision" incorporates these investments, as well as the basic improvements that Caltrain will need by 2040 to operate a fully modernized blended system at "baseline" levels of frequency.
- Building from this "baseline," Caltrain has assessed options for incremental expansion of service

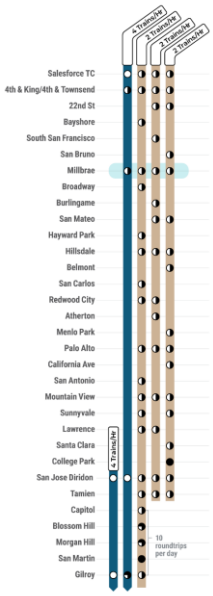
Caltrain's core question as it considers a Long Range Service Vision:

How Much Service Should We Provide?

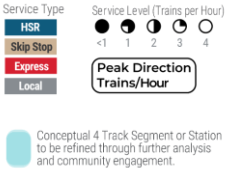
2040 Service Scenarios: Different Ways to Grow



2040 Baseline Growth Scenario

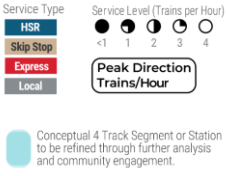


Trains per Hour, per Direction	Peak: 6 Caltrain + 4 HSR Off-Peak: 3 Caltrain + 3 HSR
Stopping Pattern	Skip stop
Travel Time, STC-Diridon	69-73 Min
New Passing Tracks	Millbrae
Service Plan Description	• Bunched service results in irregular Caltrain headways; each pattern arrives over span of 10 minutes, then a 20-minute gap between trains • Three half-hourly skip stop patterns each with similar travel times • South of Tamien, peak-direction skip stop service with 10 round trips per day



Moderate Growth Scenario

Trains per Hour, per Direction	Peak: 8 Caltrain + 4 HSR Off-Peak: 6 Caltrain + 3 HSR
Stopping Pattern	Local / Express with timed transfer at Redwood City
Travel Time, STC-Diridon	61 Min (Express) 85 Min (Local)
New Passing Tracks	Millbrae, Hayward Park-Hillsdale, Redwood City, Northern Santa Clara County, Blossom Hill
Service Plan Description	• Local and Express trains each operating at 15-minute frequencies with timed cross-platform transfer at Redwood City • Skip stop pattern for some mid-Peninsula stations; some origin-destination pairs not served at all • Trains serve Capitol and Blossom Hill every 15 minutes and Morgan Hill and Gilroy every 30 minutes



2040 High Growth Scenario

Trains per Hour, per Direction	Peak: 12 Caltrain + 4 HSR Off-Peak: 6 Caltrain + 3 HSR
Stopping Pattern	Local / Express A / Express B with timed transfer at Redwood City
Travel Time, STC-Diridon	61 Min (Express A) 82 Min (Local)
New Passing Tracks	South San Francisco-Millbrae, Hayward Park-Redwood City, northern Santa Clara County, Blossom Hill
Service Plan Description	• Local and Express A trains each operating at 15-minute frequencies with timed cross-platform transfer at Redwood City • Express B trains operate every 15 minutes between 4th & King and Tamien • Local trains make nearly all stops • Trains serve Capitol and Blossom Hill every 15 minutes and Morgan Hill and Gilroy every 30 mins

Weighing Caltrain's Choices

Components of the Business Case Analysis

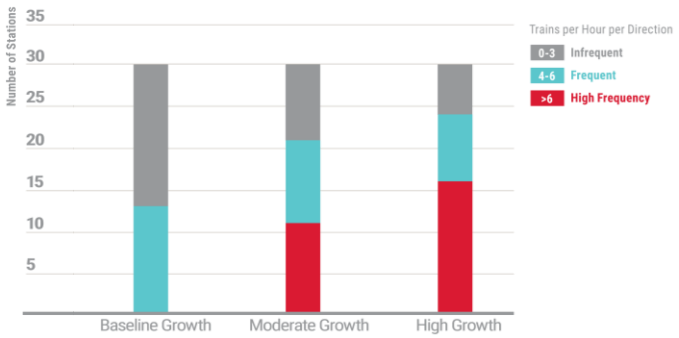
We have adapted a traditional Business Case Analysis to the specific, and complicated circumstances of the Caltrain corridor.

Collectively, this analysis helps provide guidance as to whether we should remain on the "baseline" course or if there is value in choosing a Long Range Service Vision for Caltrain that aims higher.

The following slides present and weigh analyses in each of the following areas.

Peak Period Frequency

The **number of stations** receiving frequent or high frequency service increases substantially in the Moderate and High Growth Scenarios due to higher train volumes in the peak period.

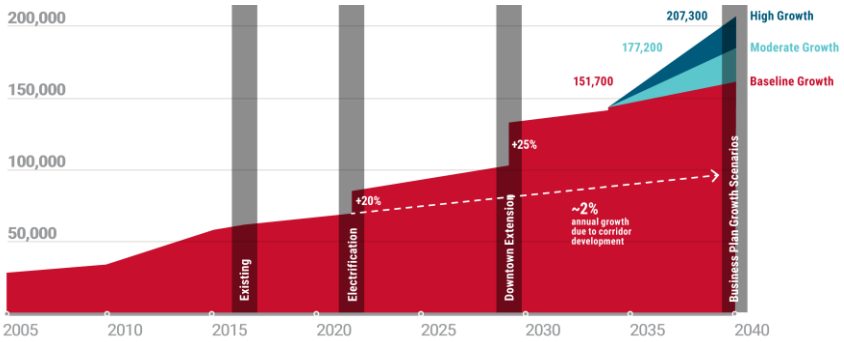


	Metric	Baseline Growth	Moderate Growth	High Growth
Frequency	Number of Stations Served by Frequent Service (>4 TPHPD)	13 Stations	21 Stations	24 Stations
	Longest wait times at major stations served by all trains	22 minutes	12 minutes	8 minutes

Ridership

On its current **Baseline** path, Caltrain would experience a *demand* of 161,000 daily riders by 2040.

The **Moderate and High Growth** scenarios would increase *demand* to 185,000 and 207,000 riders, respectively, leading to ridership and VMT saving increases.



	Metric	Baseline Growth	Moderate Growth	High Growth
Ridership	Daily Ridership*	151,700 Riders	177,200 Riders	207,300 Riders
	Comfortable Peak Hour Train Loads?*	No	Crowding on some trains	Yes

**Crowd Constrained Ridership (135%)*

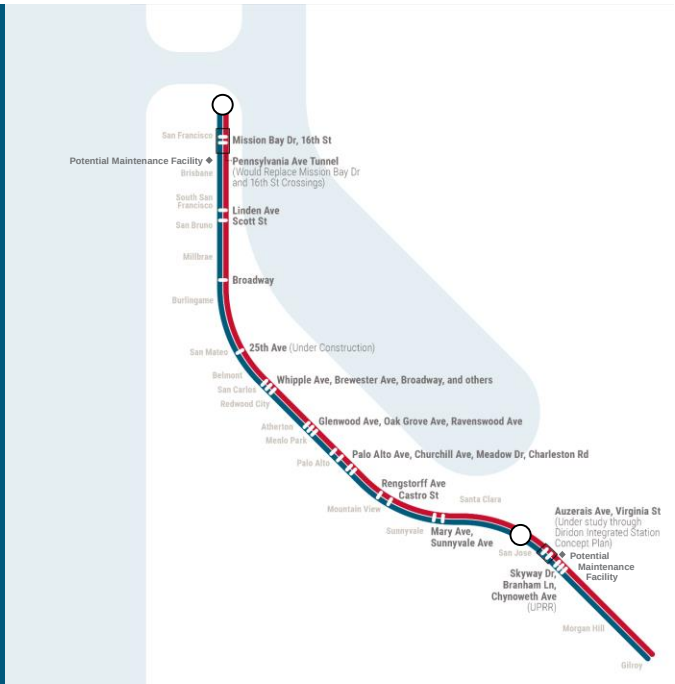
Baseline Investments

While the "Baseline" for the 2040 Service Vision contemplates only modest increases in Caltrain service beyond electrification, there are many other investments planned for the Caltrain corridor before 2040.

Some of these projects are directly required to enable the baseline level of service while others reflect the goals and commitments of Caltrain's local, regional and state partners.

Baseline investments include:

1. Caltrain projects already underway
2. Local, Regional & State partner projects that directly influence Caltrain
3. Additional Caltrain investments needed to fill out the baseline and support blended operations



The Baseline Costs $22.1 Billion

$2.3B
Caltrain Work Underway

$2.3B

$16.2B
Investments Planned and Proposed by Caltrain Partners

$3.3B	$3.4B	$2.6B	$6.9B
Downtown Extension to Salesforce Transit Center	Diridon Station and Surrounding Rail Infrastructure*	High Speed Rail Investments	City-led Grade Separations

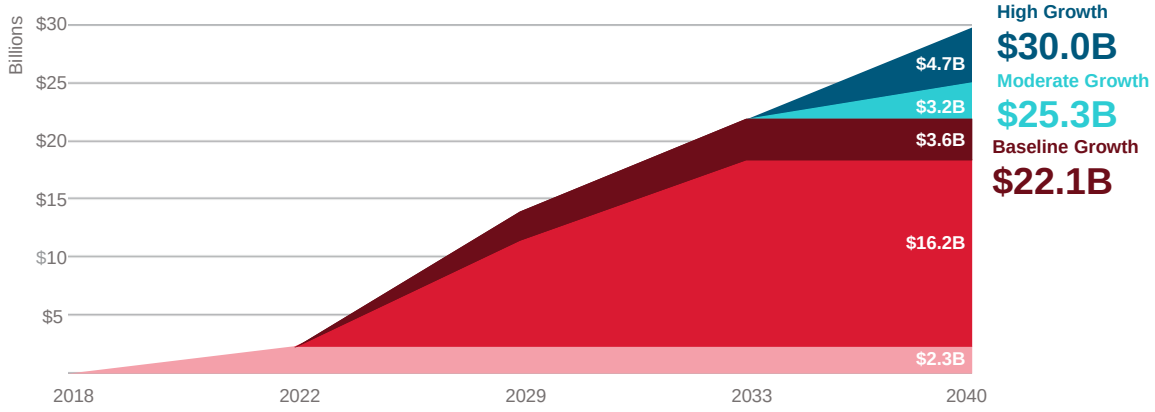
$3.6B
New Caltrain Investments to Support Baseline Growth Scenario

$3.6B

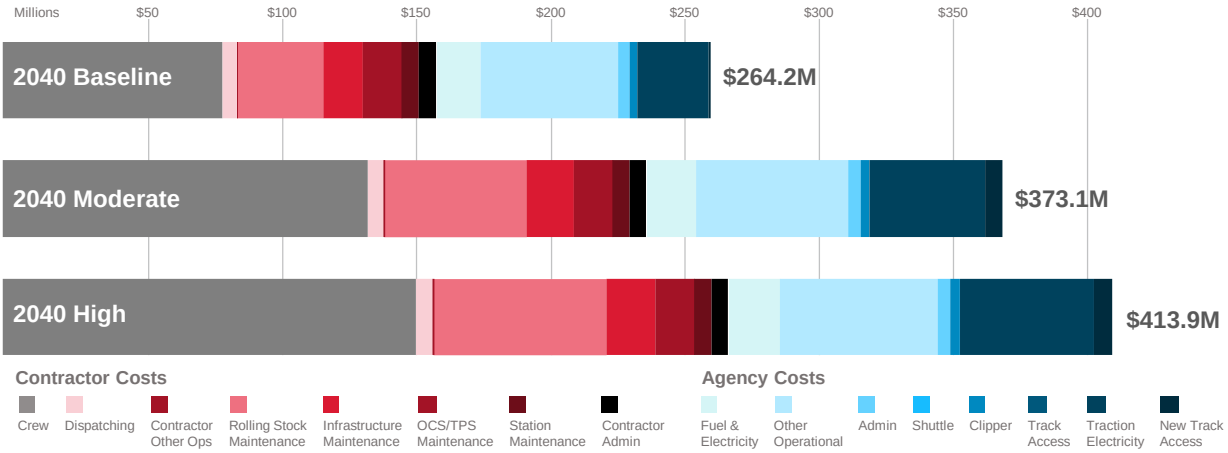
** Placeholder cost pending detailed cost estimate to be developed through Diridon Integrated Station Concept Plan*

Investing for Growth

Total Corridor Investment Over Time by Growth Scenario



Year 2040 Operating Costs



Caltrain User Benefits over Baseline

Total Benefits 2018 to 2070, Average Annual Benefits 2040 to 2070

Benefit	Unit	Moderate Growth Total*	Moderate Growth Per Year Average	High Growth Total*	High Growth Per Year Average
Existing Transit User Travel Time Savings	*hours*	12.9M	0.43M	20.9M	0.70M
New Transit User Travel Time Savings	*hours*	27.7M	0.92M	40.4M	1.35M
Avoided Auto Trips (VMT Savings from New Transit Users)	*vehicle miles*	9,000M	300M	16,100M	540M
Roadway Network Safety Improvements	*reduced fatal/injury accidents*	7,300	240	13,000	430
Public Health Benefits (from Active Transportation Mode Access)	*lives saved*	70	2	150	5
	reduced absent days at work	30,000	1,000	67,000	2,200

**Values rounded for presentation purposes*

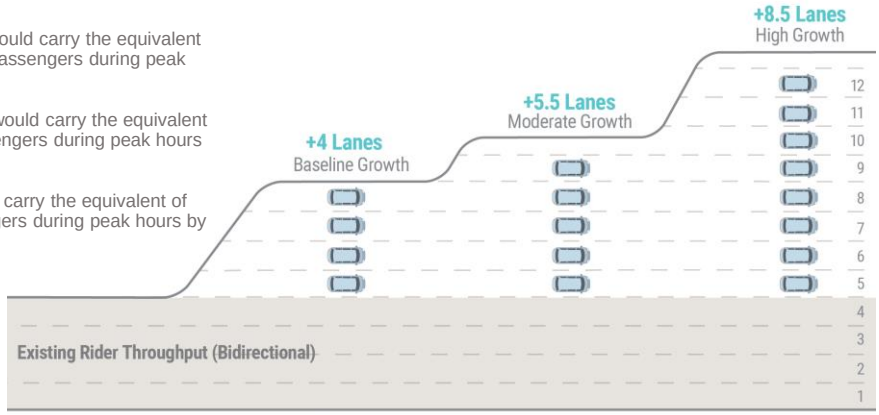
Freeway Throughput

Today, Caltrain carries 4 freeway lanes worth of people during peak hours. By 2040, the proposed growth scenarios will carry an additional 4 to 8.5 freeway lanes worth of passengers.

The **Baseline Growth** scenario would carry the equivalent of 4 new freeway lanes worth of passengers during peak hours by 2040.

The **Moderate Growth** scenario would carry the equivalent of 5.5 new freeway lanes of passengers during peak hours by 2040.

The **High Growth** scenario would carry the equivalent of 8.5 new freeway lanes of passengers during peak hours by 2040.



*Assumes vehicle occupancy of 1.1 persons/vehicle and lane capacity of 1,500 vehicles/hour.

Regional Rail Integration

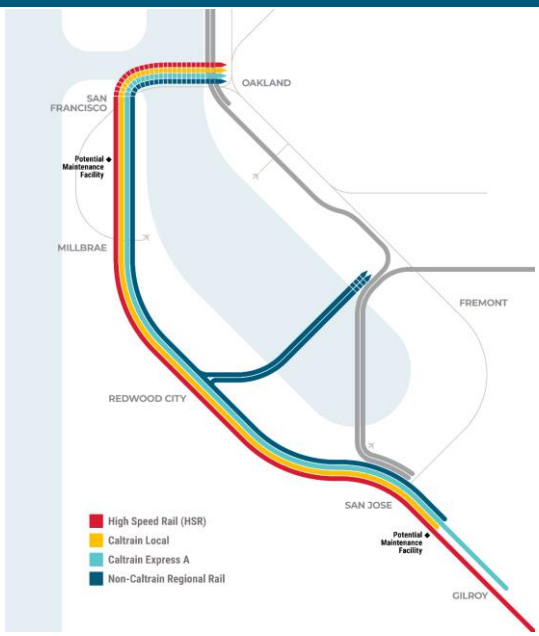
All service scenarios are compatible with regional rail needs.

High Growth anticipates large-scale corridor sharing, or "interlining" through investments in 4-track segments.

Baseline & Moderate Growth preserve the ability to scale up to large-scale corridor sharing but hold off on proactive investments until regional needs are better defined.

Examples of active studies and plans ongoing in the region that could advance the potential need for significant interlining onto Caltrain's corridor include:

- A standard gauge transbay crossing connecting San Francisco and the East Bay
- The reactivation of the Dumbarton rail bridge
- The development of expanded, "visionary" levels of service by ACE or Capital Corridor into San Jose



Summary

Service

	Metric	Baseline Growth	Moderate Growth	High Growth
Frequency	Number of Stations Served by Frequent Service (>4 TPHPD)	13 Stations	21 Stations	24 Stations
	Longest Wait Times At Major Stations Served by All Trains	22 minutes	12 minutes	8 minutes
Connectivity	Percentage of Station Pairs Connected Without/(With) a Transfer	84% (91%)	96% (98%)	99% (99%)
	Number of Station Pairs Not Connected at All	95	17	2
Network Integration	Timed Connections at Regular Intervals	No	Yes	Yes
Ridership	Daily Ridership (capacity constrained)	151,700 Riders	177,200 Riders	207,300 Riders
	Comfortable Peak Hour Train Loads?	No	Some Crowding	Yes
Travel Time	Travel Time, San Francisco (STC) to San Jose (Diridon)	69-73 Minutes	61 Minutes	60 Minutes
	Average Travel Time per Rider, All Origin-Destination Pairs	33 Minutes	32 Minutes	31 Minutes
Infrastructure	Passing Tracks Needed	<1 Mile	<5 Miles	15-20 Miles

Summary

Financial Analysis

Caltrain Economic Case

	Metric	Baseline Growth	Moderate Growth	High Growth
Financial Metrics	Total Capital Costs	($22.1B)	($25.3B)	($30.0B)
	Caltrain Allocated Capital Costs	($6.6B)	($7.6B)	($9.4B)
	Total Operating Costs	($5.1B)	($6.0B)	($6.3B)
	Year 2040 Operating Costs	($0.26B)	($0.37B)	($0.41B)
	Farebox Recovery Ratio	82%	75%	77%
	Net Investment	($7.1B)	($8.6B)	($10.3B)
Caltrain Economic Metrics	Net Present Value	-	$0.58B	$0.15B
	Benefit Cost Ratio	-	1.33	1.04

Except for Total Capital Costs, values are shown as a present (Year 2018) value using a discount rate of 4.0% and cover the period from 2018-2070.

Summary

Regional Analysis

	Metric	Baseline Growth	Moderate Growth	High Growth
Freeway Throughput	Additional Freeway Lanes	+4 lanes	+5.5 lanes	+8.5 lanes
Regional Rail Integration	Accommodation of Large-Scale Corridor-Sharing Beyond HSR	could be scaled to accommodate	could be scaled to accommodate	can accommodate
Environmental Benefits	GHG (MTCO2e)	1,108,045	1,898,330	3,006,028
Land Value Benefits	Property Value Premiums Generated by 2040 Service Growth within 1 Mile of a Station	$10B	$10 - $22B	$22B
Economic Productivity	Economic Output	$32.8B	$40.8B	$47.7B
	Full and Part-time Jobs	44K job-years	51K job-years	69K job-years

Summary

Flexibility and Uncertainty

Uncertainties to consider in selecting a Service Vision for Caltrain include:

- Ultimate design and timing of key regional projects impacting the corridor is still in flux and may change
- All scenarios have a degree of flexibility; detailed service and infrastructure planning will be an ongoing process
- Scale and location of passing tracks needed are sensitive to state and regional rail plans, particularly in the high growth scenario
- Key business metrics may shift as fundamental assumptions change

The Moderate Growth Scenario:

- Does not directly accommodate large-scale corridor sharing but has the potential to scale up
- Has a high level of confidence that the Benefit-Cost Ratio to Caltrain is over 1.0 even if key assumptions change

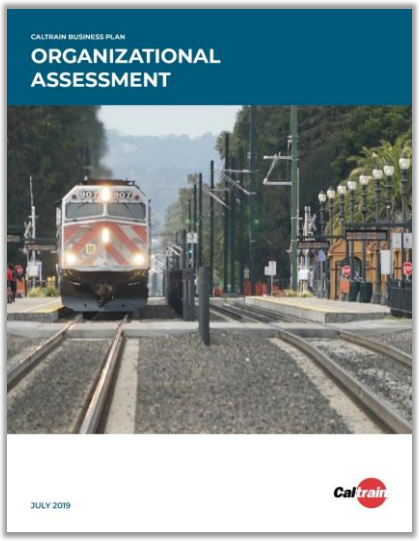
The High Growth Scenario:

- Most directly accommodates large-scale corridor sharing and interlining but infrastructure is sensitive to changes in regional and state assumptions
- Has less certainty that Benefit-Cost Ratio to Caltrain is solidly over 1.0 should key assumptions change

Organizational Assessment Report

The Organizational Assessment was developed by Howard Permut of Permut Consulting LLC and former President of Metro-North.

Key areas of Howard's work have been supported by the Stanford Global Projects Center and a team of outside experts



Read the full report at www.caltrain2040.org

Staff Recommendation

Caltrain Long Range Service Vision: Staff Recommendation

Website where full draft staff recommendation can be reviewed:

https://www.caltrain2040.org/long-range-service-vision/

Summary and Basis for Recommendation

Caltrain staff have developed a draft recommendation for the Long Range Service Vision. This recommended Vision is:

Caltrain adopt and pursue a Vision compatible with the "moderate growth" scenario while also taking a series of steps to plan for and not preclude the potential realization of the "high growth" scenario

The extensive analysis conducted during the Business Plan process has shown that there is a strong demand for expanded Caltrain service. Additionally, the business case analysis conducted as part of the plan has shown that there is a clear case, based on economic and regional benefits, for pursuing a Vision that goes beyond the baseline levels of service previously contemplated.

While the high growth option generates the greatest ridership and expanded regional benefits, it also comes at a higher cost and carries significantly higher levels of uncertainty and potential for community impacts. Therefore, based on the assembled evidence, staff has developed a recommendation that would direct Caltrain to pursue a service vision consistent with the "moderate growth" scenario while retaining the ability to expand to a level consistent with the "high growth" scenario at such time as demand warrants or the region has made the policy and funding commitments to pursue a larger, integrated rail system.

Caltrain Long Range Service Vision: Staff Recommendation

Website where full draft staff recommendation can be reviewed:

https://www.caltrain2040.org/long-range-service-vision/

The features of the Service Vision include:

Fast and frequent all day (every day) service

- Total peak hour frequencies of 8 Caltrain trains per direction
- Faster, all day baby bullet service with express service every 15 minutes
- Significantly increased off-peak and weekend service levels
- User friendly, show up and go service with easy to understand schedules

Increased Capacity

- Provides the capacity to triple today's ridership, serving nearly 180,000 people a day
- Adding more than 5 freeway lanes worth of regional capacity

Regional Connectivity

- End to end service - connecting Gilroy to downtown San Francisco (all day, both ways)
- Comprehensive local service providing coverage to every community
- Regular service making transfers and connections easier and more predictable

Caltrain Long Range Service Vision: Staff Recommendation

Website where full draft staff recommendation can be reviewed:

https://www.caltrain2040.org/long-range-service-vision/

Major Additional Benefits

The Vision will bring huge benefits beyond direct improvements to service. Once complete, the Vision will deliver;

- **Reduced Travel Time** - 1.3 million hours of travel time savings for existing and new Caltrain riders every year as compared to the baseline scenario
- **Reduced Auto Travel** - 300 million vehicle miles not traveled every year as compared to the baseline scenario
- **Economic Productivity** - $40.8 billion in regional economic output created by ongoing capital and operating investments
- **Land Value Benefits** - By 2040 Caltrain service will add between $25 and $37 billion in property value premiums to residential and office properties within 1 mile of stations. (This analysis is conservative and excludes San Francisco as well as commercial, non-office properties for which estimates could not be reliably developed)
- **Environmental Benefits** - The Vision will result in a reduction of nearly 2 million metric tons of CO2 as well as other air quality improvements

Where are We in the Process

July 2018 – July 2019
Development and Evaluation of Growth Scenarios

August 2019
Staff Recommendation for Long Range Service Vision

October 2019
Refinement and Proposed Adoption of Long Range Service Vision

Early 2020
Completion of Business Plan

Outreach Activities to Date

July 2018 – July 2019 by the Numbers

Stakeholders Engaged

21
Jurisdictions

26
Public Agencies

93
Organizations in Stakeholder Advisory Group

156
Stakeholder Meetings

Public Outreach

51
Public Meetings and Presentations

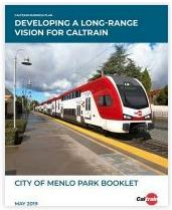
1,000+
Survey Responses

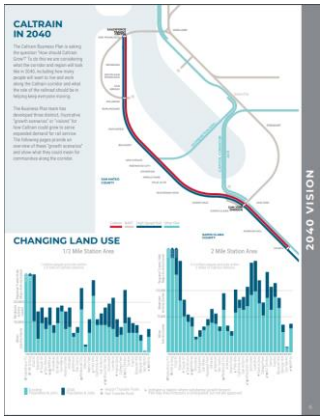
14,300+
Website Views

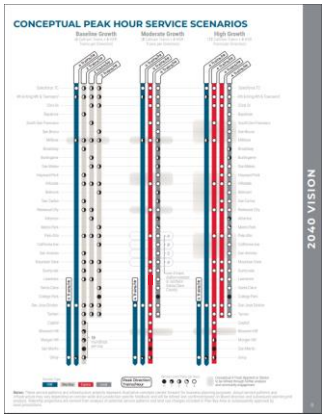
258,200+
Social Media Engagements

Individual Jurisdiction Outreach

City Booklets







View the booklets at: www.caltrain2040.org

How to Get Involved

- **Visit our website:**

  www.Caltrain2040.org

- **Watch the staff recommendation presentation:**

  https://www.youtube.com/watch?v=BCc3tlkEMYA&feature=youtu.be

- **Attend an in-person meeting (over 20 meetings planned before potential Board action):**

  https://www.caltrain2040.org/get-involved/

- **Send us a note via email or phone:**
  - Email: BusinessPlan@Caltrain.com
  - Phone: 650-508-6499

FOR MORE INFORMATION

WWW.CALTRAIN2040.ORG

BUSINESSPLAN@CALTRAIN.COM

650-508-6499

Memorandum

Date: August 22, 2019

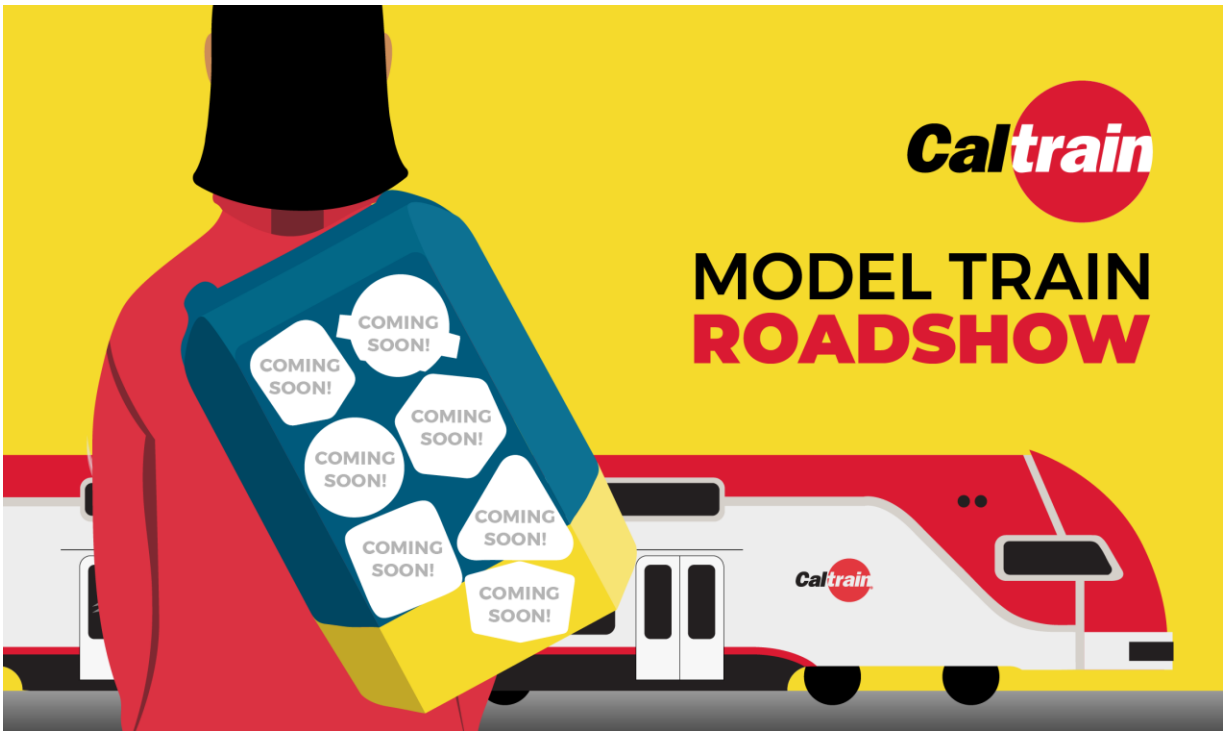
To: CalMod Local Policy Maker Group (LPMG)

From: John Funghi, CalMod Chief Officer; Casey Fromson, Gov. Affairs Director

Re: Caltrain Electrification Project E-Update

CALTRAIN IS HITTING THE ROAD

Our Model Train Roadshow is kicking off this month! From the end of August through early December, we'll be taking a miniature model, 1/50 size, of our new electric train to stations, events, and other locations all over the Peninsula. Visit the roadshow stops to get up close to the model train, learn more about the train amenities, and win swag.



Check us out on social media to find out where the roadshow is stopping next!

CONSTRUCTION UPDATE

Construction to make Caltrain a modern, electric commuter rail system continues! This month, upgrades will start on the agency's Central Equipment & Maintenance Facility (CEMOF) in San Jose. Originally completed in 2007, CEMOF accommodates inspections, maintenance, repairs, train washing, storage and serves as the "nerve center" of Caltrain.

In advance of Caltrain electrification, we are upgrading the facility to meet the maintenance needs of our new and improved electric trains. The enhanced CEMOF will include an extended service and inspection pit to allow brake inspections to be conducted without having to move the train, fall protection for workers, an electronic parts storage and repair room, and an in-building rolling maintenance platform allowing maintenance of the trains' overhead electric contact system. Construction is expected to take approximately 6 months.

To sign up for weekly construction updates or for more construction information, visit CalMod.org/Construction.

ELECTRIC VEHICLE UPDATE

In August, electric train manufacturing continued with installation of components like passenger side doors, propulsion gearboxes, and truck bogies. Three trainsets are now being assembled in Salt Lake City.

View more electric train images, such as the above photo of a passenger side door test endurance rig, at www.CalMod.org/Gallery.

PUBLIC MEETINGS

JPB Meeting – August 1, 2019 at 10:00 a.m.
LPMG Meeting – August 22, 2019 at 5:30 p.m.
Mini Model Train Roadshow San Francisco Station Popup – August 27 at 7:00 a.m.
Mini Model Train Roadshow Redwood City Station Popup – September 6 at 7:00 a.m.
Mini Model Train Roadshow San Jose Diridon Station Popup – September 20 at 7:00 a.m.

For more details, and a full list of upcoming meetings, please visit CalMod.org/Events.

DETAILED PROGRESS REPORT

- June 2019 Monthly Progress Report presented to Caltrain Board on May 2, 2019