Caltrain Corridor Crossing Strategy Update

11.29.23

Caltrain Corridor Crossing Strategy

As an outcome of the **Caltrain Business Plan**, the Corridor Crossings Strategy is an effort to **define a systematic corridor-wide approach** to crossings.

The strategy aims to **align the ambitions of community partners into balance with an implementable program,** addressing:

- Program Delivery
- Organization
- Funding

Note: Active grade separation projects will continue in parallel

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Paths

Project Delivery Opportunities

Communicate roles, responsibilities, processes, and standards for **individual** projects.

Outcome: *Crossings Delivery Guide*

Program Strategy Development

Develop a shared, **corridor** vision with an incremental and implementable approach for regional benefits.

Balance vision with implementable action plan

Outcome: *Program Vision and Strategy*

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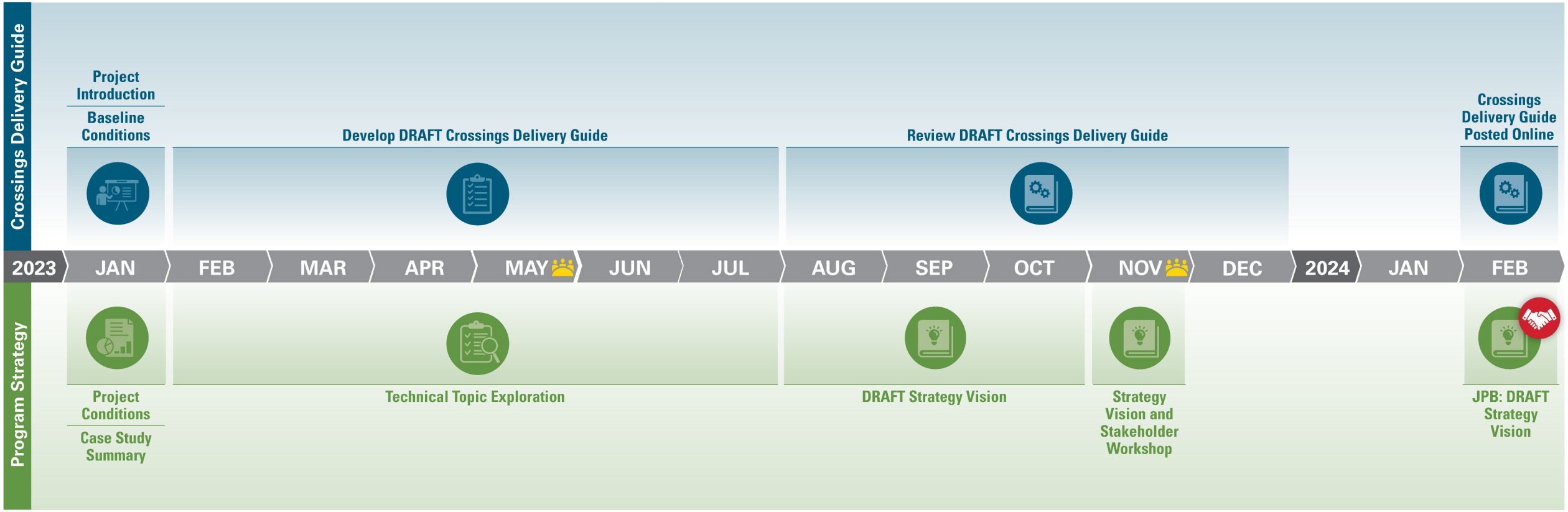
Project Schedule



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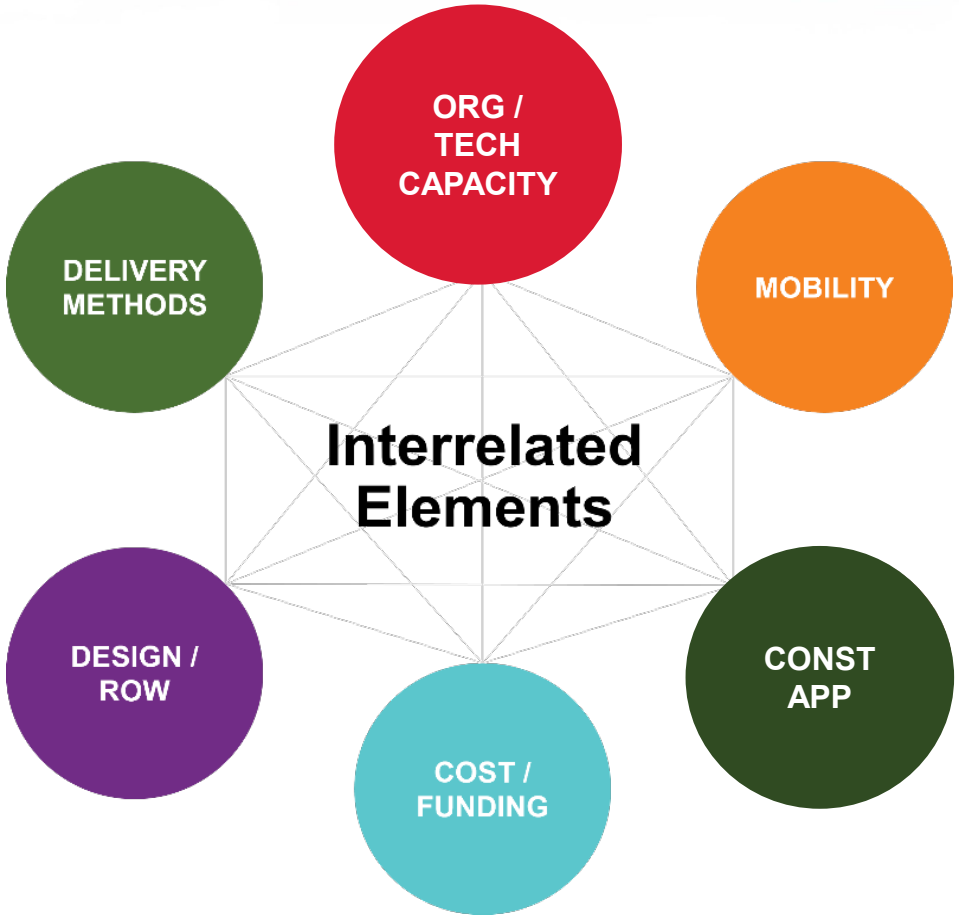
Recap of Technical Topic Exploration



- Technical topic conclusions supported a coordinated program approach and the need to identify priority projects

- Key conclusions of the **technical topics** include:
  - **ORG / TECH CAPACITY:** Caltrain staff resources and capacity are constrained and additional resources would be needed to support deeper involvement in a grade separation program
  - **MOBILITY:** There is not corridor-wide consensus on a fully separated corridor; corridor communities want to focus on delivering priority projects
  - **CONSTRUCTION, DESIGN / ROW:** Consolidating crossing projects realizes numerous construction and delivery benefits, as well as potential efficiencies from coordinating project implementation
  - **COST / FUNDING:** Identifying priority projects helps region to identify complete funding for high-impact projects as quickly as possible

Partners Desire…

- A **consolidated and coordinated program to accelerate delivery** of grade separation projects and to strategically pursue funding
- A **proactive and consistent Caltrain role** in delivering grade separation projects and **leveraging institutional knowledge**
- A **consistent and transparent process** for grade separations
- An **active, integrated role for cities** to reflect community vision through delivery of the program project

Throughout the life of the CCS, we have presented at…

11	LPMG Meetings
11	CSCG Meetings
7	PPG Meetings
2	AMP/JPB Meetings
10+	Other (CAC, BATAC, etc)

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Building the Program

How We are Incorporating Community Partner Feedback

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Crossings Delivery Guide

Consolidated and coordinated program	Proactive & consistent role	Consistent and transparent process	Active, integrated role for Cities

BRIDGE

1. Caltrain requires vertical clearance from the top of the Caltrain tracks to the top of the underpass structure. For overhead crossings, Caltrain requires additional clearance requirements due to the presence of the OCS equipment and system. See Chapter 7 for the specific clearance requirements.
2. Retaining walls provide structural support to the facility

OCS SYSTEM

3. The OCS equipment influences the construction requirements for all crossing types, as well as the vertical clearance requirements for overhead crossings.

FENCING

4. **Protective Bridge Fencing:** A 10-foot tall protective solid barrier is required to ensure the safety of both the trains and the public. The barrier is intended to prevent pedestrians and bicyclists from touching or throwing items to the wires.

   Underpasses generally have fencing to separate public and private property, as well as to prevent intrusion into the Caltrain ROW.
5. **Access Control Fencing:** For passenger safety, fencing may need to be installed to separate passengers from vehicular traffic and the railroad. This includes fencing between the rails, as well as fencing to seperate stations from adjacent streets

PEDESTRIAN AND BIKE ACCESS

6/7. Stairway and universal access ramp to the tunnel are required in order to provide access for all ages and abilities. Bike grooves can be provided on stairways to allow cyclists an easier method to transport their bicycle through the facility.
8. Bike lockers offer a more secure form of bicycle storage at crossing facilities, especially ones with stations nearby.
9. Plaza areas around crossing entrances can activate the area and provide an inviting place for the community. Environments should be well-lit and well maintained.
10. Convex mirrors and CCTV cameras can contribute to better visibility in areas that are covered. Maintaining secure levels of visibility in an underpass facility is critical to user comfort.

LIGHTING

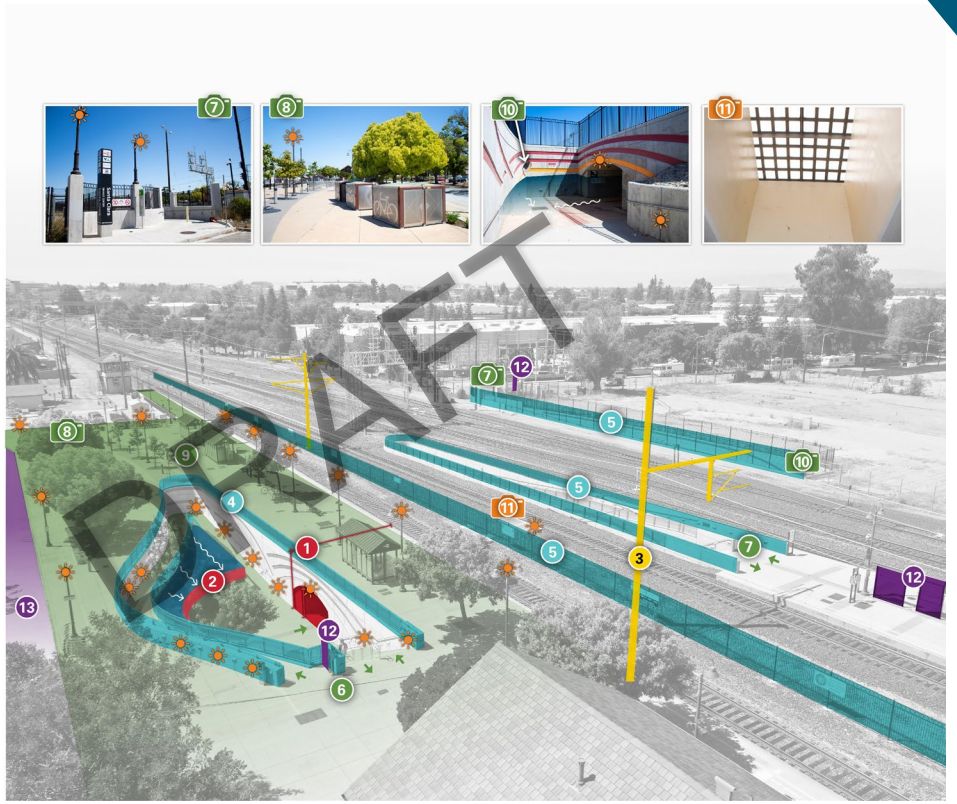
- Pedestrian-scale lighting should be implemented throughout the facility and its associated entrance and exit areas. Good visibility improves safety of the crossing and the sense of security of its users. Lighting is especially important for facilities that are not directly connected to stations, larger roadways, and other infrastructure.
11. Skylights can be used in underpass facilities to provide more natural light in the tunnel, leading to a more secure-feeling facility.

ROADWAY FOOTPRINT

12. Wayfinding signs help users orient themselves spacially along the Caltrain corridor and can help them understand where the crossing ends on the other side of the tracks.
13. Transit integration, like this straight-curb bus pickup and dropoff zone, help facilitate connections to the rail crossings. Ease of connection to local bus and train routes is a key consideration for any bicycle and pedestrian facility.

DRAINAGE

- Implementation of permeable facilities and greenery relieves some pressure from the facility drainage system and makes the facility more attractive.
- Drainage systems are required to manage rainwater within facilities. In underpass facilities, pumping water from the facility typically requires an electrified pump station due to the lower elevation.



4 Funding and Grant Programs

This section discusses the importance of developing a detailed funding plan and provides an overview of the available funding sources for grade separation projects. Grade Separation projects can be expensive and may require the project sponsor to secure grants from multiple sources. Grade-separations have been recognized as a priority in California and there are several available funding programs for local agencies to support these types of projects. That said, while Caltrain can serve as a partner in obtaining funding, they are unable to help fund grade-separations specifically. The charter between SFMTA, SMCTA, and VTA, which serves as the basis for Caltrain operations, explicitly states that Caltrain funds may only be used for operations, which would not include grade-separations.

Project Sponsor

Local agencies are the project sponsors responsible for preparing and executing a funding plan to support all phases of a grade separation project in the Caltrain corridor. While Caltrain staff's expertise is necessary to support grade separation projects, using Caltrain funds to advance local jurisdiction projects is not allowed. Caltrain can only use public funds towards delivering cost-efficient rail services under the current regulation, which requires dedicating all Caltrain funding toward the management, operation, and maintenance of the commuter rail service.

Funding Plan

A detailed funding plan that aligns with an accurate and conservative cost estimate is crucial for advancing grade separation projects. The funding plan and project cost estimates should be developed as early as a project's initiation phase. Those funding commitments should be updated semiannually or yearly corresponding to the local jurisdiction's fiscal year. Cost estimates should also be updated regularly as the project progresses through phases of development and to represent current market conditions. Caltrain recommends that local entities frequently update the project costs. Soft costs should also be considered including Caltrain's management of the grade separation project. Soft costs also should include contingency which should vary depending on the phase of the project. As the project advances and there are fewer risks and unknowns, the contingency may be reduced. Refer to Table XX for Caltrain's contingency guidance for capital improvement projects. More details on project cost and funding for each phase can be seen in Figure XX. Complete funding for a project phase should be secured before a phase begins to facilitate projects advancing through phases in an efficient manner.

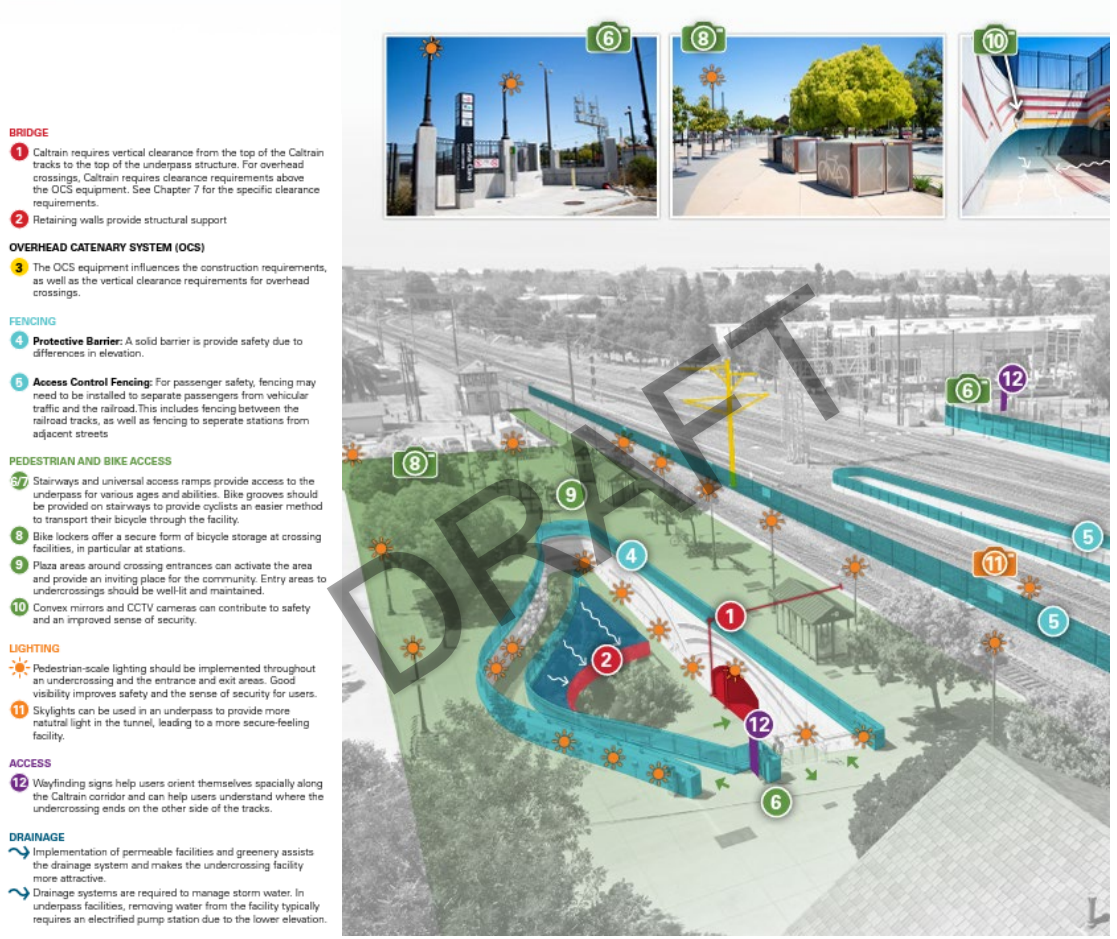
17 | Corridor Crossings Delivery Guide Manual

Key Chapter Takeaways:

- **Grade-separations recognized as a priority in California** — *Several funding programs available for local agencies*
- **Caltrain cannot direct funds** *toward grade-separation projects but can serve as a partner in obtaining funds*
- **Funding sources:** *Federal, Statewide, County, Local, and Private*
- **Minimizing project delays** *with detailed funding plan that correlates with a frequently updated project cost*
- **Local agency responsible for preparing, identifing, and executing funding requirements** *set by the grant program and communicate the requirements with Caltrain staff early in the process.*

Crossings Delivery Guide: Next Steps

- Internal review draft + revisions in process (now)
- Review draft with jurisdictions (December 2023)
- Receive comments and incorporate revisions (January 2024)
- Post publicly with periodic updates as new/updated guidance is available (February 2024)



BRIDGE

1. Caltrain requires vertical clearance from the top of the Caltrain tracks to the top of the underpass structure. For overhead crossings, Caltrain requires clearance requirements above the OCS equipment. See Chapter 7 for the specific clearance requirements.
2. Retaining walls provide structural support

OVERHEAD CATENARY SYSTEM (OCS)

3. The OCS equipment influences the construction requirements, as well as the vertical clearance requirements for overhead crossings.

FENCING

4. **Protective Barrier:** A solid barrier is provide safety due to differences in elevation.
5. **Access Control Fencing:** For passenger safety, fencing may need to be installed to separate passengers from vehicular traffic and the railroad. This includes fencing between the railroad tracks, as well as fencing to seperate stations from adjacent streets

PEDESTRIAN AND BIKE ACCESS

6/7. Stairways and universal access ramps provide access to the underpass for various ages and abilities. Bike grooves should be provided on stairways to provide cyclists an easier method to transport their bicycle through the facility.
8. Bike lockers offer a secure form of bicycle storage at crossing facilities, in particular at stations.
9. Plaza areas around crossing entrances can activate the area and provide an inviting place for the community. Entry areas to undercrossings should be well-lit and maintained.
10. Convex mirrors and CCTV cameras can contribute to safety and an improved sense of security.

LIGHTING

Pedestrian-scale lighting should be implemented throughout an undercrossing and the entrance and exit areas. Good visibility improves safety and the sense of security for users.
11. Skylights can be used in an underpass to provide more natural light in the tunnel, leading to a more secure-feeling facility.

ACCESS

12. Wayfinding signs help users orient themselves spacially along the Caltrain corridor and can help users understand where the undercrossing ends on the other side of the tracks.

DRAINAGE

Implementation of permeable facilities and greenery assists the drainage system and makes the undercrossing facility more attractive.
Drainage systems are required to manage storm water. In underpass facilities, removing water from the facility typically requires an electrified pump station due to the lower elevation.

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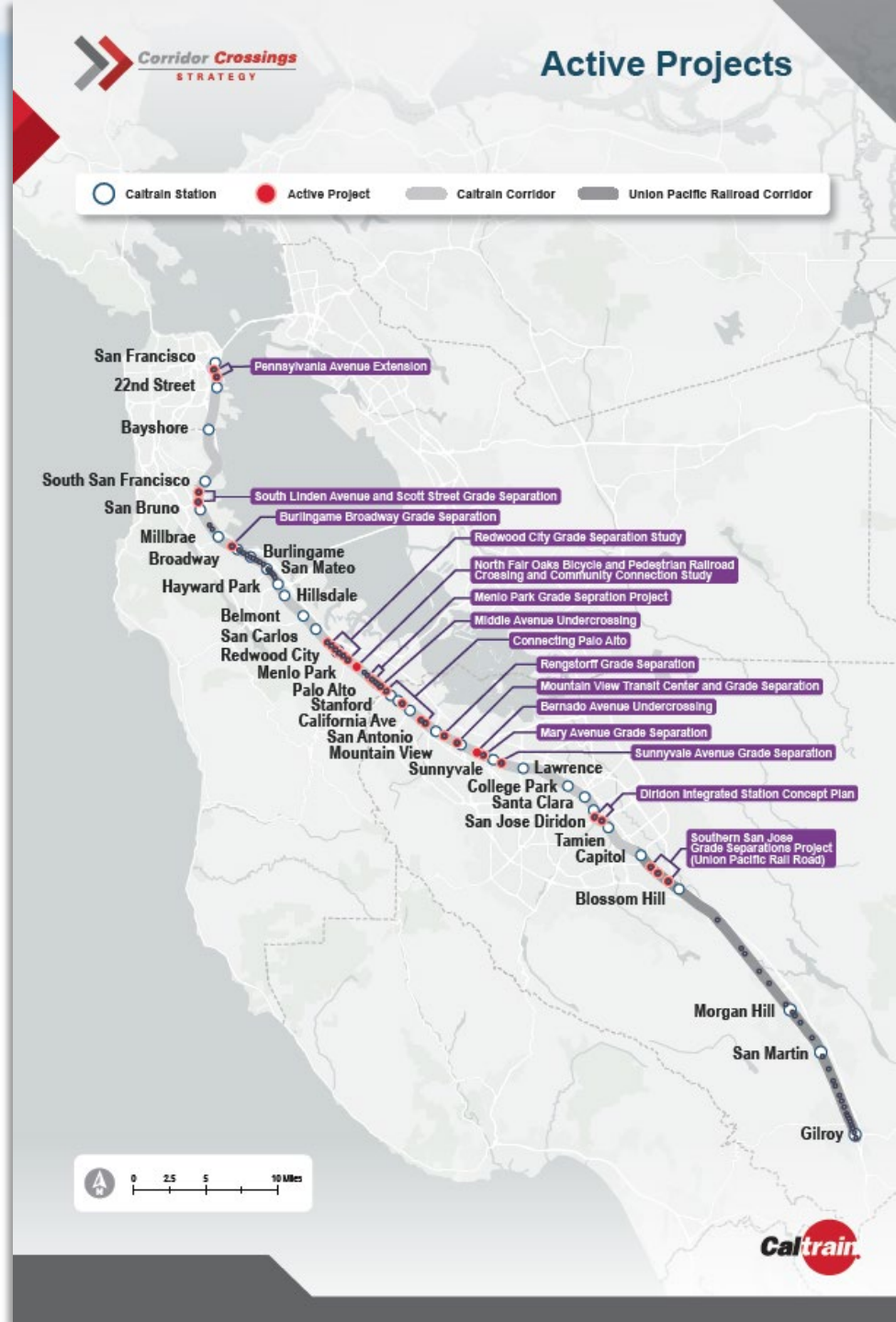
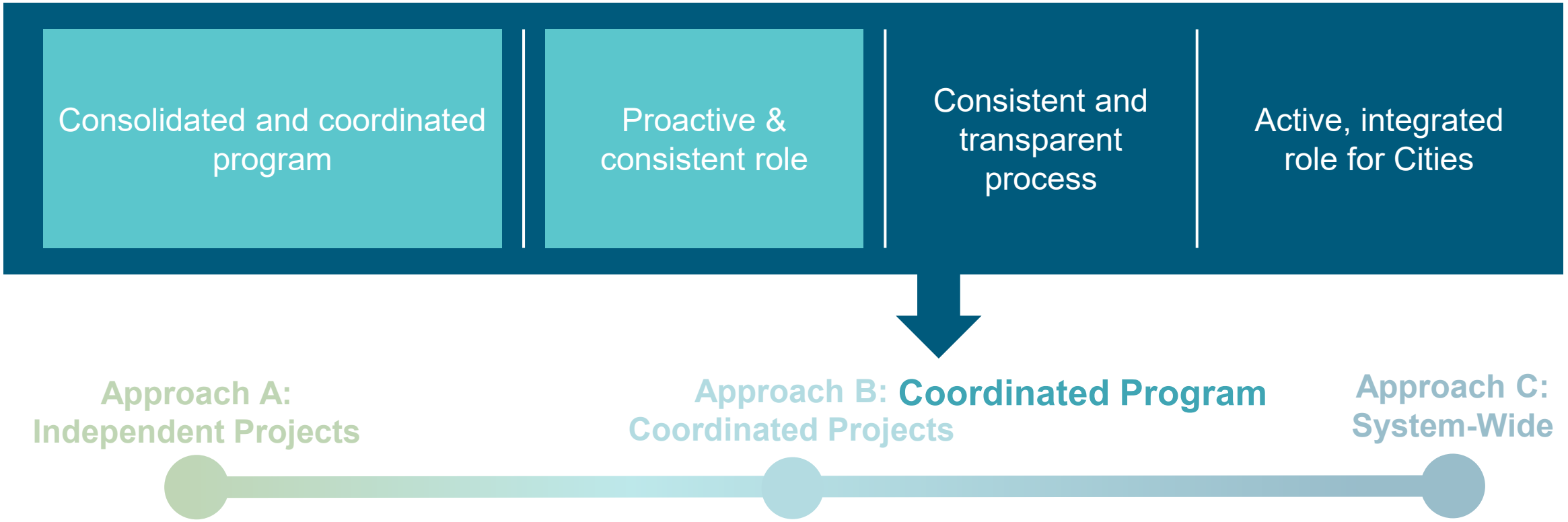
Caltrain Corridor Status

- 12 Active Projects involving **28 crossings** on an electrified corridor
- Critical time for leveraging efficiencies in seeking funding, design, and construction packaging
- **$1.1B* in committed funding** to active projects
- **$2.1B* funding gap** for active projects

**Figures inclusive of projects on the Caltrain-owned corridor, exclusive of Pennsylvania Avenue Extension and Diridon Area*



Convergence on a Corridor Approach



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Coordinated Program Approach

Based on technical topics and community partner feedback a **coordinated program approach** brings the following benefits:

- ✓ *Allows for a holistic methodology in implementing corridor crossings improvements*
- ✓ *Considers the unique characteristics along the corridor, and allows for implementation that considers geography, jurisdictions, and service*
- ✓ *Leverages the advantages of integrated planning, design, and delivery of projects within the corridor*

*** Not a "one-size-fits-all" solution for the whole corridor ****
*** Cannot currently be accommodated with existing staff resources ****

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Program Opportunities

Caltrain as a **DELIVERY PARTNER**

Operations and Construction Coordination

Project Packaging/ Staging/Approvals

Administrative/ Funding

Delivery Partner

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Examples of Leveraging Efficiencies

Operations and Construction Coordination

Repeated Construction Methods

- Shoofly Savings, Knowledge Transfer between Projects (e.g., Castro Street)

Corridor/Segment Work Windows

- Targeted construction work windows to clear the corridor for critical improvement
- Time, Flagging, and Construction Cost savings

Project Packaging and Staging

Economies of Scale

- Packaging projects to provide program benefits

Coordinated Improvements

- Utilize proximity of projects to maximize single-track or other operational techniques
- Improve windows for contractors/communities

A Shared Corridor Workplan

Administrative/Funding

Coordinated funding packaging

- Program/segments vs. projects

Coordinated grant funding pursuits

- State and Federal appropriators and agencies

Consolidated project oversight and management

- Organized by segment/county

Delivery Partner

Develop **cyclical process to establish a corridor workplan** and **set priorities**.

Formulating the Strategy with Corridor Communities

- LPMG In-Person Workshop in will confirm and advance the proposed cyclical workplan and priority setting process.
- Goal is to reach corridor buy-in on next step for implementation.
- This will be the building blocks of the draft vision.

WHEN: November 30th 4:00 PM – 6:00 PM

WHERE: Mountain View City Council Chambers

Open to the Public

November CSCG small group discussion

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4-Track Analysis

What We Have Learned so Far

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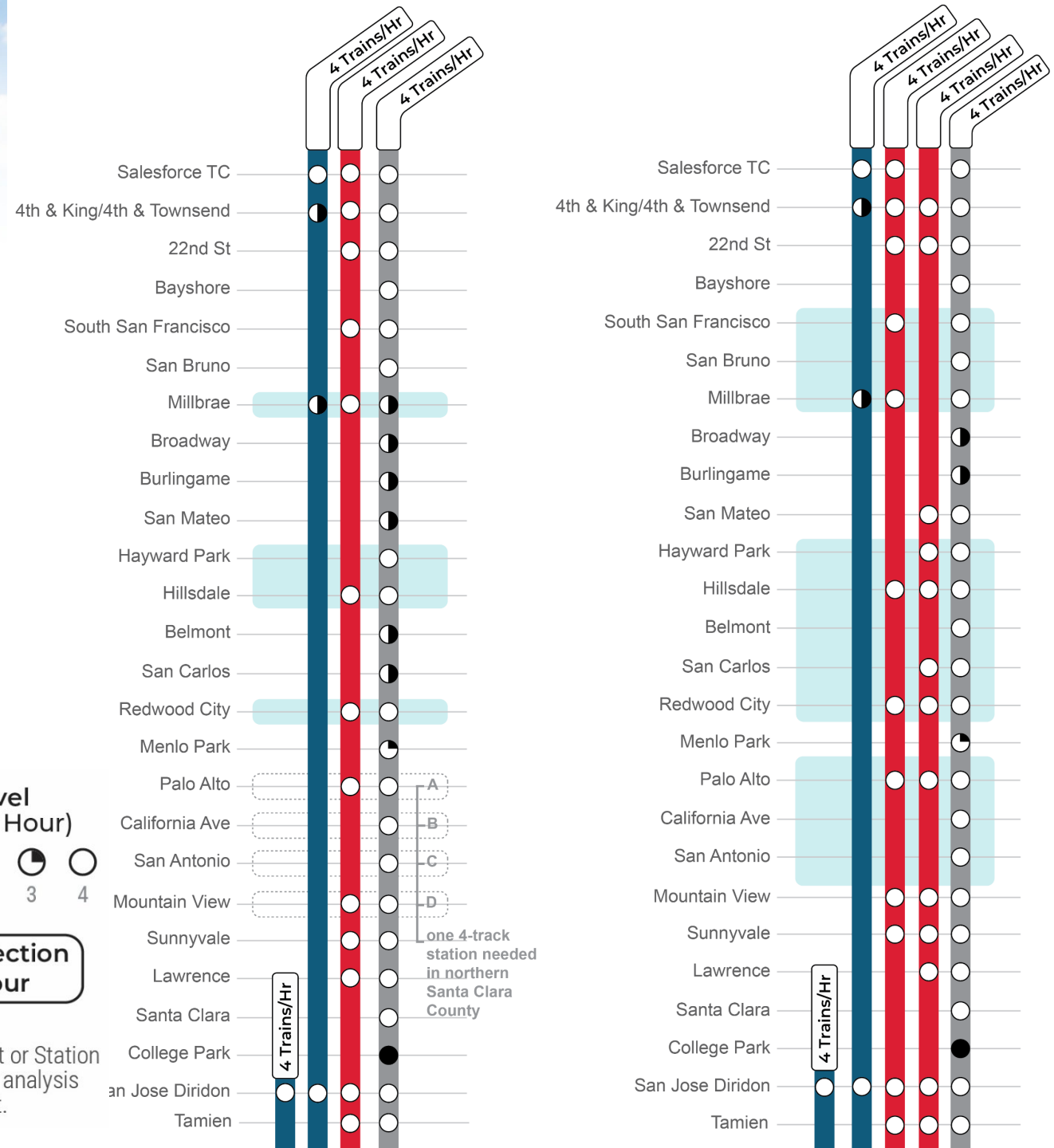
Business Plan: Growth Scenarios Recap

Moderate Growth (Adopted Service Vision)
- 8 Caltrain trains + 4 HSR trains phpd

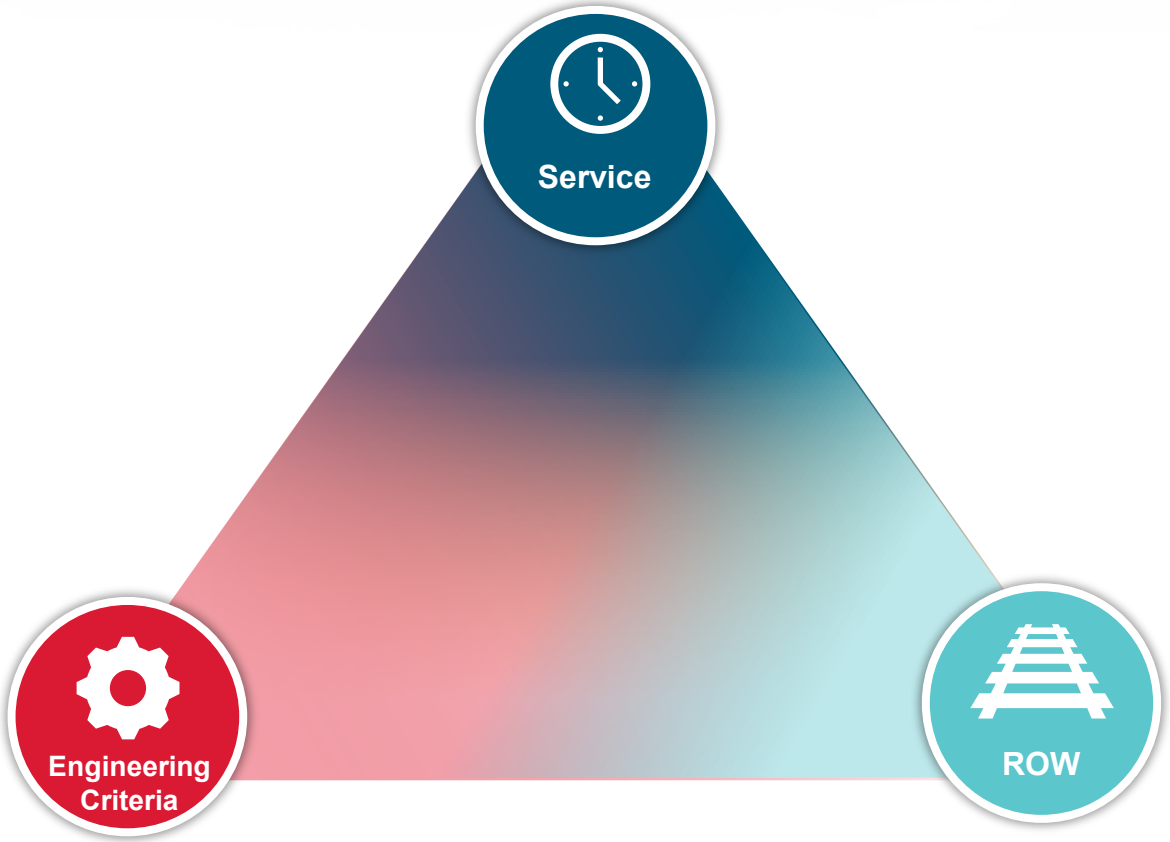
High Growth (Higher Growth Service)
- 12 Caltrain trains + 4 HSR trains phpd

*PCJPB agrees that it **shall not take action** … that PCJPB knows or reasonably should have known at the time of the action **would effectively preclude or make materially more complicated or expensive CHSRA's future operation** in the Peninsula Rail Corridor…*
– PFMA Section 5.3.1



Planning Approach

- **Tested** 4-track layouts using Caltrain, HSR, and other relevant engineering criteria
- **Evaluated** and simulated service parameters of 4-track layouts
- **Refined** and validated 4-track limits through service operations and engineering analysis



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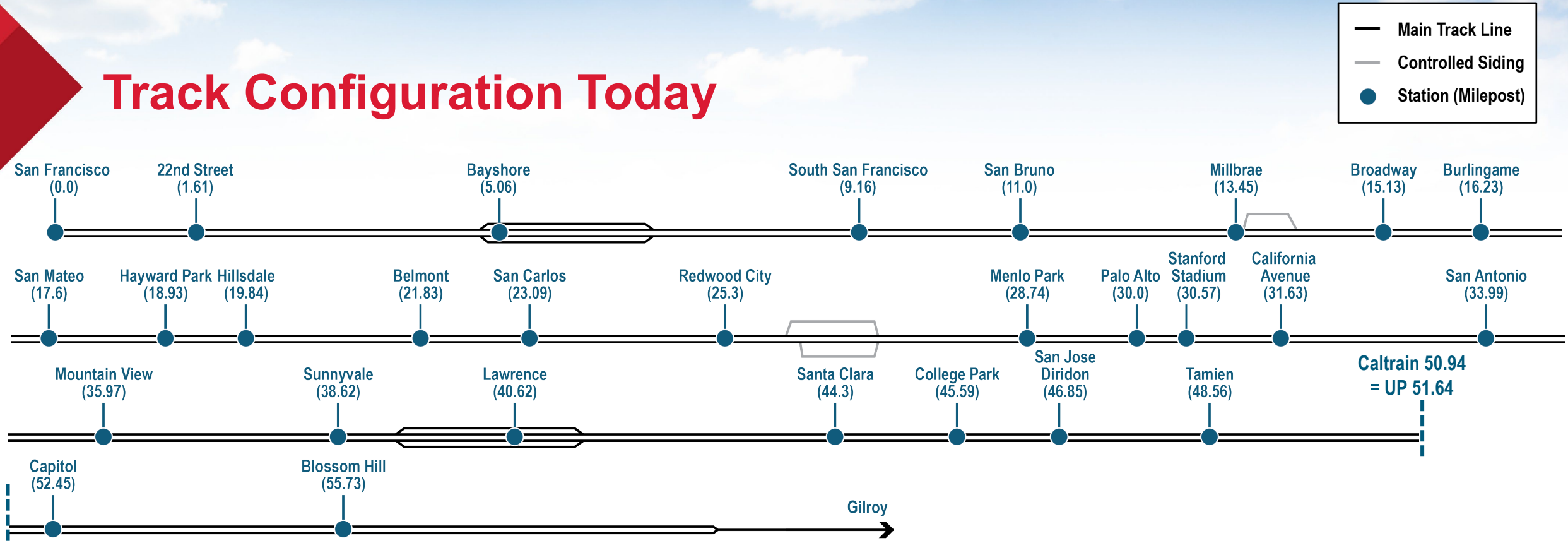
Track Configuration Today



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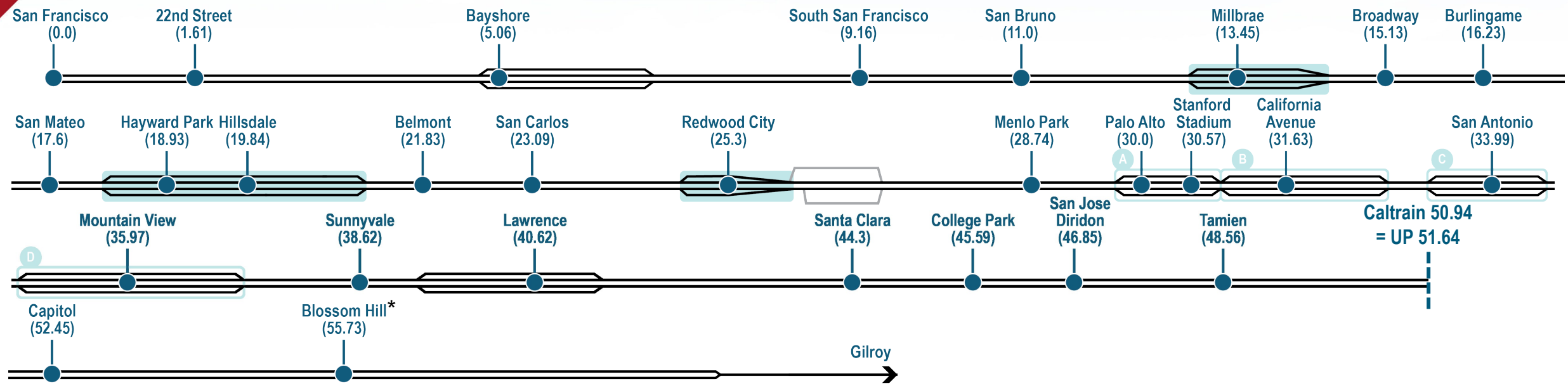
Adopted Service Vision 4-Track Segments



Notes:
* Identified in Business Plan

The Mountain View Transit Center was identified as a potential 4-track segment for the adopted Service Vision. The segment was removed prior to the 4-track refinement process due to:

- 4-track capacity further north better supports blended service patterns
- Not operationally preferred in the adopted Service Vision for a 4-track capacity because it would not support service patterns developed under the Service Plan

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Summary of 4-Track Analysis Findings

Adopted Service Vision
(Moderate Growth Scenario: **8** Caltrain Trains + **4** HSR Trains)

Refined 4-track segments at **Millbrae, Hayward-Hillsdale, Redwood City, and northern Santa Clara County** with length and mile post limits.

- Analyses validated the passing track locations to enable the future blended service pattern for both Caltrain and HSR and fulfills Caltrain's obligations to HSR for a blended service system
- Segments **located at stations** to allow for passing trains and increased operational flexibility between trains.
- Past and current planning efforts have shown that Millbrae, Hayward-Hillsdale, and Redwood City can accommodate future 4-track.

North Santa Clara County 4-Track Segment

- 4-Track segments at Palo Alto, California Avenue, and San Antonio stations were analyzed as part of this work
- Flexibility in service operations, impacts to existing community assets and infrastructure, available right-of-way, and engineering criteria were reviewed to evaluate the trade-offs with each options
- Caltrain will continue to coordinate with the city to not preclude future 4-track, as the city develops their Connecting Palo Alto alternatives

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Next Steps

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Next Steps

End of 2023

- Draft Crossings Delivery Guide ready for jurisdictions' review
  - Adopted Service Vision 4-track segments incorporated
- 4-Track Analysis Report posted on the website
- Ongoing communication & coordination with corridor cities on the 4-track analysis

Early 2024

- Crossings Delivery Guide posted on the website
- Draft Strategy Vision ready for community partners review and discussion
- Present Draft Strategy Vision update to JPB

2024-Forward

- Continue collaboration with community partners and website updates as the program progresses