NORTHERN CALIFORNIA REGION

Local Policy Maker Group

August 27, 2020

SAN FRANCISCO TO SAN JOSE PROJECT SECTION

PROJECT FEATURES

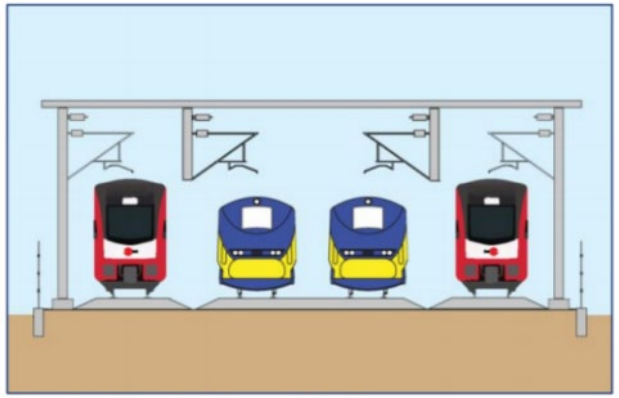
SAN FRANCISCO – SAN JOSE PROJECT ALTERNATIVES A AND B

SAN FRANCISCO TO SAN JOSE

Project Differentiators – Alternatives A & B

- **Light Maintenance Facility**
  - » Alternative A: East Brisbane
  - » Alternative B: West Brisbane

- **Passing Tracks**
  - » Alternative A: No new passing tracks
  - » Alternative B: 6-mile passing tracks from San Mateo to Redwood City
    - Relocation of San Carlos Station



Passing Tracks Cross-Section

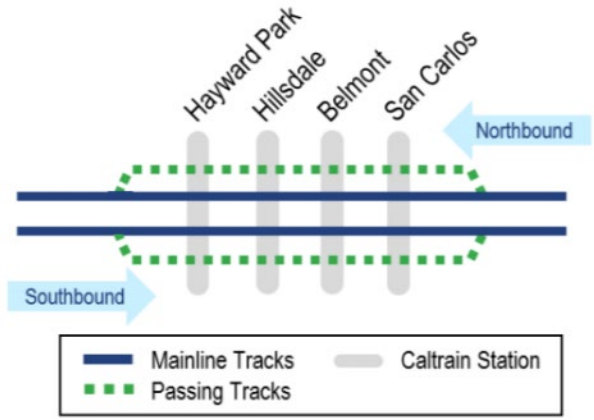


Diagram of New Passing Tracks in Alt. B

SAN FRANCISCO TO SAN JOSE

Common Project Elements – Alternatives A & B

- **High-Speed Rail stations[1]**
  - » San Francisco 4th and King
  - » Millbrae
  - » Diridon Station
- **Up to 110 mph speeds**
  - » Track modifications to support higher speeds
- **Peak operations**
  - » 4 High-Speed Rail trains and 6 Caltrain trains per hour/per direction

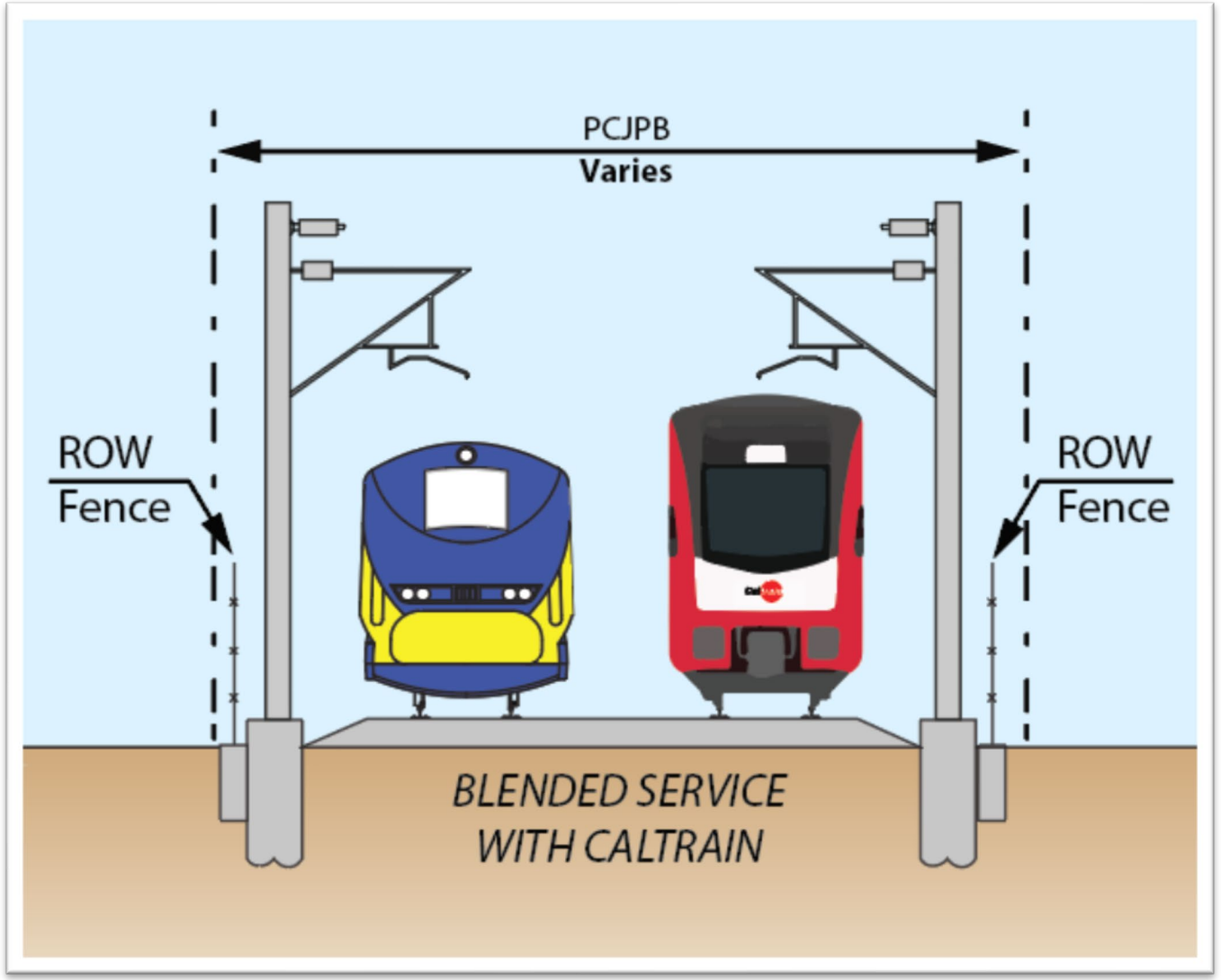
[1] ***Salesforce Transit Center*** *has been environmentally cleared by Transbay Joint Powers Authority and is not part of the California High-Speed Rail Authority's environmental analysis.*

San Jose Diridon Station *is being evaluated as part of the San Jose to Merced Project Section but is included in both project sections' environmental analysis.*

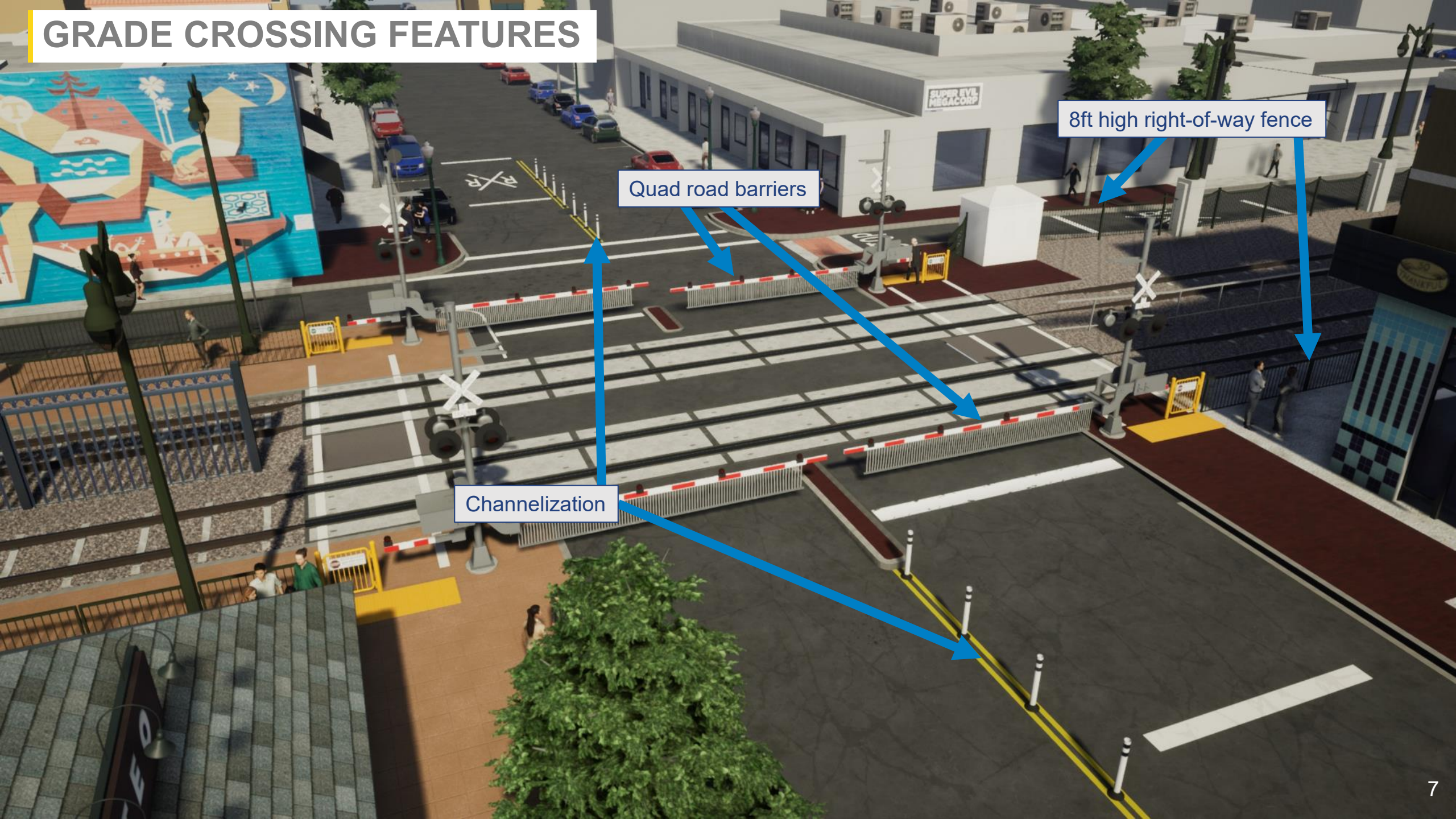
SAN FRANCISCO TO SAN JOSE

Common Project Elements – Alternatives A & B

- **Blended At-Grade**
  - » Uses Caltrain electrification infrastructure and tracks
  - » Predominantly within the existing railroad right-of-way
  - » At-grade tracks with quad gates at each road crossing



GRADE CROSSING FEATURES



SAN FRANCISCO TO SAN JOSE

Common Project Elements – Alternatives A & B

- Safety modifications at Caltrain-only stations
- Remove hold-out rule at Broadway and Atherton Caltrain Stations
- Utility relocations
- Roadway modifications
- Temporary construction areas

SAN FRANCISCO TO SAN JOSE

Common Project Elements – Alternatives A & B

- **Corridor fencing**
- **Train control and communication facilities**
  - » Standalone radio towers enable communications between train to operator
  - » Mast height: 100’ above top-of-rail
  - » Spaced every 2.5 miles
  - » Co-located with traction power equipment when possible
  - » Mitigation Measure AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Non-Station Structures
- **Impact Avoidance and Minimization Features (IAMF)**
  - » e.g. AVQ-IAMF#1: Aesthetic Options
  - » e.g. AVQ-IAMF#2: Aesthetic Review Process

SAN FRANCISCO TO SAN JOSE PROJECT SECTION

DRAFT EIR/EIS

SAN FRANCISCO TO SAN JOSE
DRAFT ENVIRONMENTAL DOCUMENT: AVAILABLE NOW!

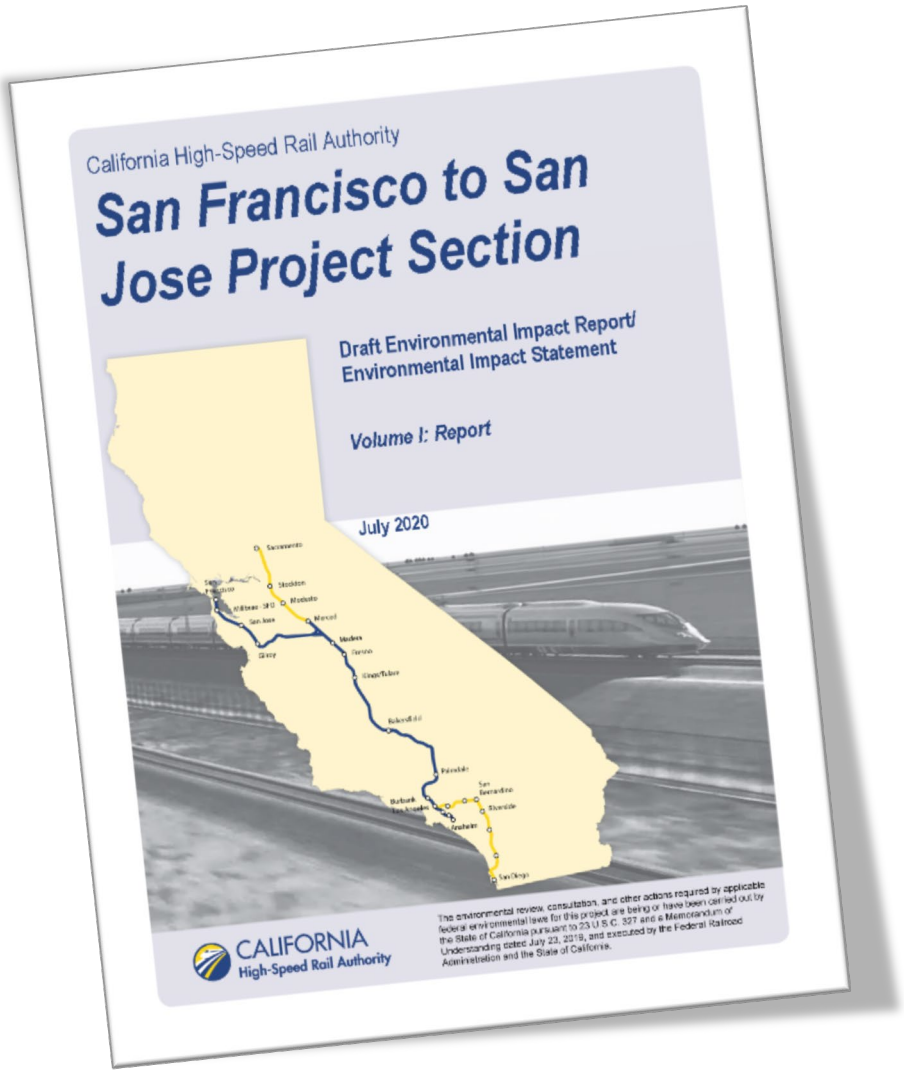
- **Public comment period: July 10 – September 9, 2020**
- **View or download at the Authority website:**
  - » hsr.ca.gov/programs/environmental/eis_eir/draft_san_francisco_san_jose.aspx

Online comment form (comments can also be emailed or mailed):

- » hsr.ca.gov/programs/environmental/eis_eir/draft_san_francisco_san_jose_comment.aspx

For more information visit:

MeetHSRNorCal.org



WHAT'S IN THE DRAFT EIR/EIS?

TABLE OF CONTENTS

- **Volume I: Executive Summary & Report/Statement**
  - » Executive Summary
  - » Chapter 1: Project Purpose, Need, and Objectives
  - » Chapter 2: Alternatives
  - » Chapter 3: Affected Environment, Environmental Consequences, and Mitigation Measures
  - » Chapter 4: Section 4(f)/6(f) Evaluation
  - » Chapter 5: Environmental Justice
  - » Chapter 6: Project Costs and Operations
  - » Chapter 7: Other CEQA/NEPA Considerations
  - » Chapter 8: Preferred Alternative
  - » Chapter 9: Public and Agency Involvement
  - » Supporting other Chapters
- **Volume II: Technical Appendices**
  - » Detailed data supporting environmental analysis
- **Volume III: Preliminary Design**
  - » Preliminary engineering design plans

WHAT SUBJECTS ARE REVIEWED IN THE DRAFT EIR/EIS?

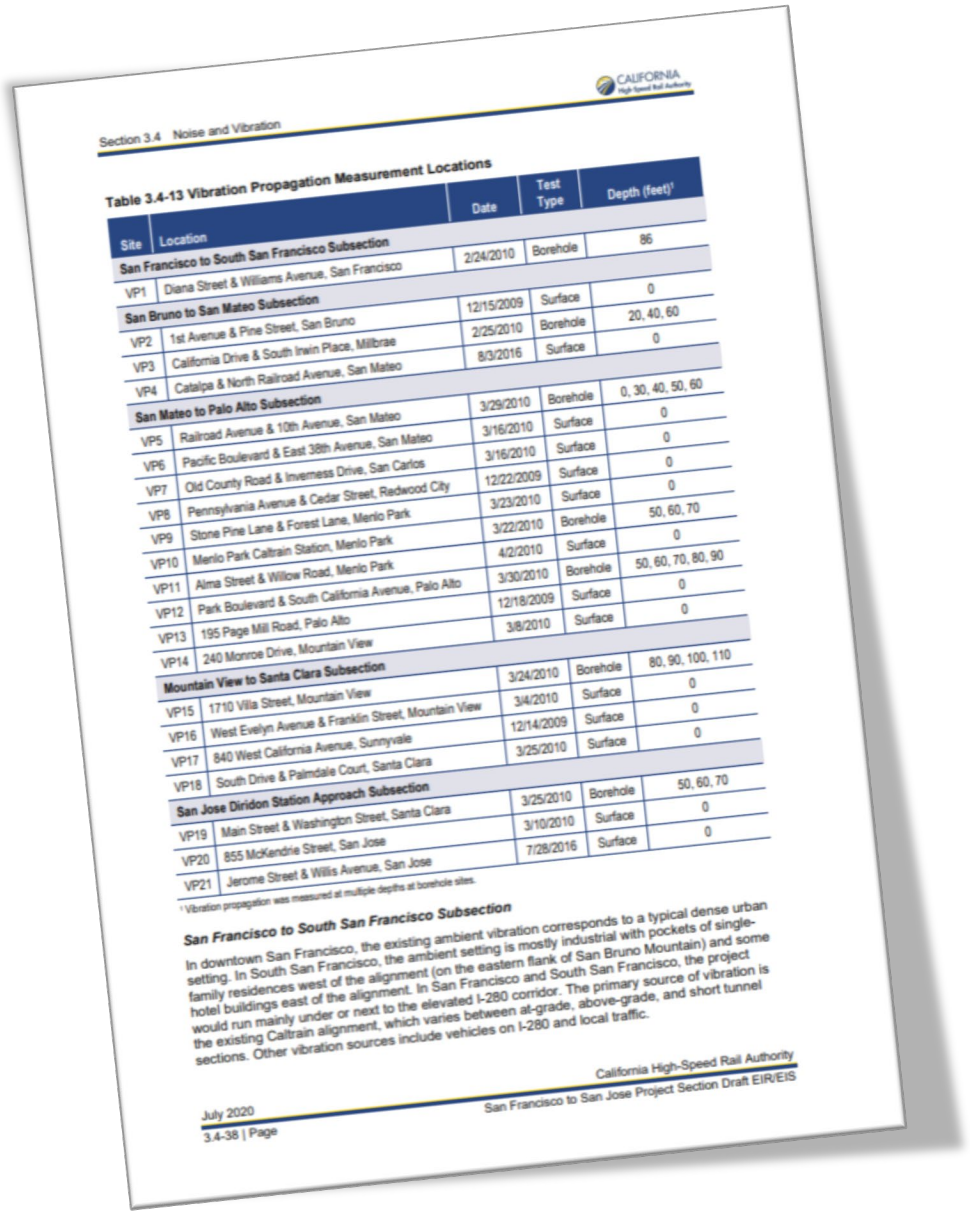
VOLUME I, CHAPTER 3-6 TOPICS

- Aesthetics & Visual Quality
- Air Quality & Greenhouse Gases
- Biological & Aquatic Resources
- Capital & Operating Costs
- Cultural Resources
- Cumulative Impacts
- Design Variants to Optimize Speeds
- Electromagnetic Fields & Electromagnetic Interference
- Environmental Justice
- Geology, Soils, Seismicity & Paleontological Resources
- Hazardous Materials & Waste
- Hydrology & Water Resources
- Noise & Vibration
- Parks, Recreation & Open Space
- Public Utilities & Energy
- Regional Growth
- Safety & Security
- Section 4(f)/6(f) Evaluation
- Socioeconomics & Communities
- Station Planning, Land Use & Development
- Transportation

WHAT'S IN THE DRAFT EIR/EIS?

SECTION OUTLINE

- **Section 3.X: Individual Resource Section**
  - » 3.X.1 Introduction
  - » 3.X.2 Laws, Regulations, and Orders
  - » 3.X.3 Consistency with Plans and Laws
  - » 3.X.4 Methods for Evaluating Impacts
  - » 3.X.5 Affected Environment
  - » 3.X.6 Environmental Consequences
  - » 3.X.7 Mitigation Measures
  - » 3.X.8 Impact Summary for NEPA Comparison of Alternatives
  - » 3.X.9 CEQA Significance Conclusions



Section 3.4 Noise and Vibration

Table 3.4-13 Vibration Propagation Measurement Locations

Site	Location	Date	Test Type	Depth (feet)[1]
San Francisco to South San Francisco Subsection				
VP1	Diana Street & Williams Avenue, San Francisco	2/24/2010	Borehole	86
San Bruno to San Mateo Subsection				
VP2	1st Avenue & Pine Street, San Bruno	12/15/2009	Surface	0
VP3	California Drive & South Irwin Place, Millbrae	2/25/2010	Borehole	20, 40, 60
VP4	Catalpa & North Railroad Avenue, San Mateo	8/3/2016	Surface	0
San Mateo to Palo Alto Subsection				
VP5	Railroad Avenue & 10th Avenue, San Mateo	3/29/2010	Borehole	0, 30, 40, 50, 60
VP6	Pacific Boulevard & East 38th Avenue, San Mateo	3/16/2010	Surface	0
VP7	Old County Road & Inverness Drive, San Carlos	3/16/2010	Surface	0
VP8	Pennsylvania Avenue & Cedar Street, Redwood City	12/22/2009	Surface	0
VP9	Stone Pine Lane & Forest Lane, Menlo Park	3/23/2010	Surface	0
VP10	Menlo Park Caltrain Station, Menlo Park	3/22/2010	Borehole	50, 60, 70
VP11	Alma Street & Willow Road, Menlo Park	4/2/2010	Surface	0
VP12	Park Boulevard & South California Avenue, Palo Alto	3/30/2010	Borehole	50, 60, 70, 80, 90
VP13	195 Page Mill Road, Palo Alto	12/18/2009	Surface	0
VP14	240 Monroe Drive, Mountain View	3/8/2010	Surface	0
Mountain View to Santa Clara Subsection				
VP15	1710 Villa Street, Mountain View	3/24/2010	Borehole	80, 90, 100, 110
VP16	West Evelyn Avenue & Franklin Street, Mountain View	3/4/2010	Surface	0
VP17	840 West California Avenue, Sunnyvale	12/14/2009	Surface	0
VP18	South Drive & Palmdale Court, Santa Clara	3/25/2010	Surface	0
San Jose Diridon Station Approach Subsection				
VP19	Main Street & Washington Street, Santa Clara	3/25/2010	Borehole	50, 60, 70
VP20	855 McKendrie Street, San Jose	3/10/2010	Surface	0
VP21	Jerome Street & Willis Avenue, San Jose	7/28/2016	Surface	0

[1] Vibration propagation was measured at multiple depths at borehole sites.

San Francisco to South San Francisco Subsection

In downtown San Francisco, the existing ambient vibration corresponds to a typical dense urban setting. In South San Francisco, the ambient setting is mostly industrial with pockets of single-family residences west of the alignment (on the eastern flank of San Bruno Mountain) and some hotel buildings east of the alignment. In San Francisco and South San Francisco, the project would run mainly under or next to the elevated I-280 corridor. The primary source of vibration is the existing Caltrain alignment, which varies between at-grade, above-grade, and short tunnel sections. Other vibration sources include vehicles on I-280 and local traffic.

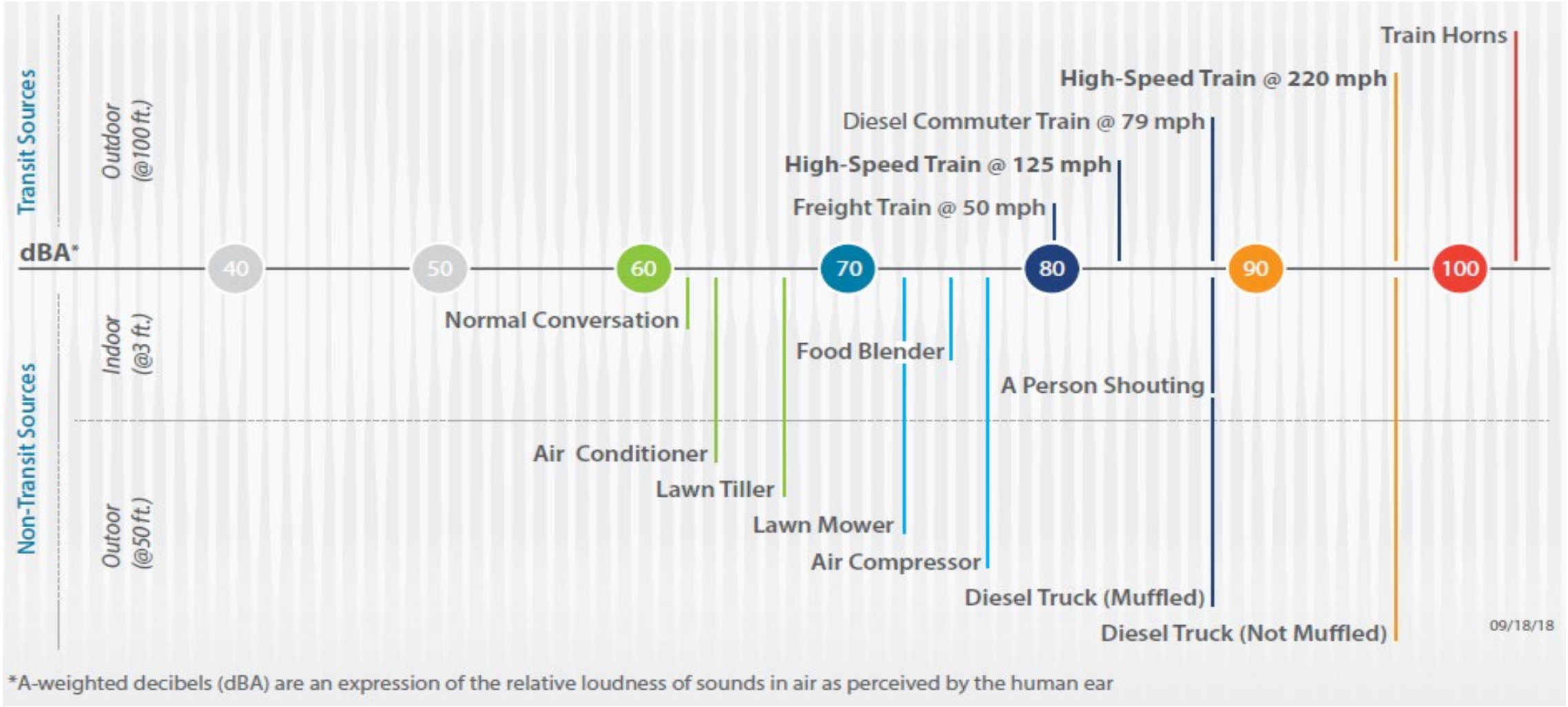
SAN FRANCISCO TO SAN JOSE PROJECT SECTION

NOISE ANALYSIS & MITIGATION

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated July 23, 2019 and executed by the Federal Railroad Administration and the State of California.

SOUND OF HIGH-SPEED TRAIN TRAVEL

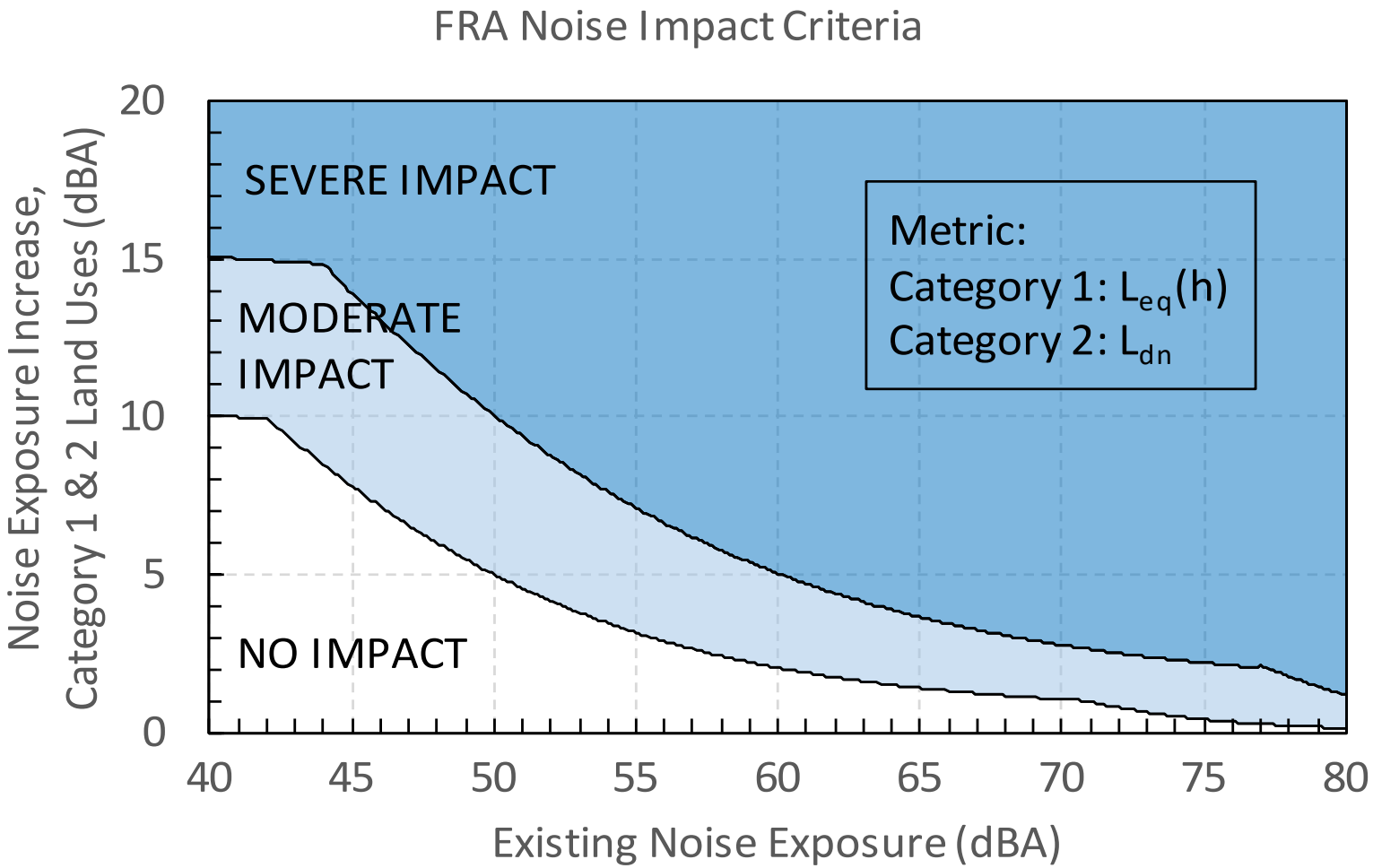
Typical Maximum Noise Levels Before Mitigation



- Train horns at at-grade crossings and stations are the largest (though not only) source of noise between San Francisco and San Jose.

FRA NOISE IMPACT CRITERIA

San Francisco to San Jose



Note:
Category 1 = sensitive land uses requiring quiet (like concert halls)
Category 2 = residential, hospitals, hotels
Category 3 = institutional land uses such as schools, theaters, churches, etc.
Source: Draft EIR/EIS

- NorCal team worked with Rail Operations on train horn placement resulting in HSR train horns being placed at 7 feet above the top of rail compared to 16 feet for existing Caltrain and freight trains. This reduces noise impacts.

SUMMARY OF NOISE IMPACTS

San Francisco to San Jose

2040 Noise Impacts Prior to Mitigation [a][b]			
	No Project (w / PCEP)	Alternative A	Alternative B
Peak/Off-Peak Hour Caltrain Revenue Trains per Direction (North of Diridon)[c]	6/1-2	6/1-2	
Peak/Off-Peak Hour HSR Revenue Trains per Direction (North of Diridon)[c]	0	4/3	
Maximum Speed	Up to 79 mph	Up to 110 mph	
Severe Noise Impacts per FRA Criteria	9	1,758	1,648 / 1,628 [d]

(a) Projected freight train volumes are also included in both No Project and Project analysis
(b) Other projected passenger train volumes (ACE, Capitol Corridor, etc.) included from Santa Clara station southward in analysis.
(c) South of Diridon there would be up to 7 HSR trains per peak hour per direction
(d) Values are presented for Alternative B (Viaduct to I-880) first, followed by Alternative B (Viaduct to Scott Boulevard).

- For noise impacts prior to mitigation refer to Section 3.4, Table 3.4-16, and Figures 3.4-9 through 3.4-19

OPERATIONAL NOISE MITIGATION

San Francisco to San Jose

NV-MM#3: Implement HSR Project Noise Mitigation Guidelines

- Noise Barrier Guidelines and Performance Requirements
  - High and long enough to break line-of-sight between source and receptor
  - Potential barriers for this section vary from 6 to 12 feet with most less than 9 feet
  - Impervious material with no gaps or holes between the panels or at bottom
  - Solid barrier no more than 6 feet in height; above that barrier to be made of transparent materials. Specific materials and height decisions based on consultation with community and jurisdiction.
  - Min. of 5 dB of reduction, at least 10 receptors, at least 800 feet long
  - Max. cost of $95,000 per benefited receptor
  - Only done through planning with community and if *approved by 75% of the affected receptors*.
- Building Insulation
  - Sound insulation of residences and institutional buildings
  - Used when the use of noise barriers is not feasible, cost-effective and/or not approved by affected receptor
  - Can reduce indoor noise levels 5 to 10 dBA; Does not address exterior noise.
  - Methods: extra window glazing, sealing holes in exterior surfaces, and/or forced ventilation and air conditioning (so that windows do not need to be opened).

OPERATIONAL NOISE MITIGATION

San Francisco to San Jose

NV-MM#3: **Continued**

- Noise Easements
  - » Used when noise barriers/sound insulation do not result in substantial noise reduction and severe impact remains
  - » Case-by-case basis and only in isolated cases.
  - » Consists of agreement between the Authority and the property owner wherein the property owner releases the right to petition the Authority regarding the noise level and subsequent disruptions.

NV-MM#4: **Support Implementation of Quiet Zones by Local Jurisdiction**

- Currently: 1 quiet zone at Fair Oaks Lane in Atherton
- Can only be implemented at the initiative of local jurisdictions (not HSR, Caltrain, or UPRR)
- Proposed four-quad gates and median channelization included in project will in many cases provide the physical improvements necessary to apply to FRA for quiet zone designation

NV-MM#5: **Vehicle Noise Specification**

- HSR vehicles required to meet federal regulations (40 CFR 201.12/13) for locomotive noise levels at the time of procurement

NV-MM#6: **Special Trackwork**

- Impact of HSR wheels over rail gaps at turnouts can increase HSR noise by approximately 6dB over typical operations
- This measure seeks to minimize and/or eliminate gaps at crossovers and turnouts
- Where turnouts cannot be moved from sensitive areas, special trackwork could eliminate the gap.

OPERATIONAL NOISE MITIGATION

San Francisco to San Jose

Noise Barrier Aesthetics

- Approximately half of potential noise barriers are in areas with existing screening (e.g. trees, building walls, etc.).
- Per Aesthetic Options for Non-Station Structures (Authority 2017), noise barriers could be solid or transparent, and made of various colors, materials, and surface treatments.
- Design of individual barriers to be selected with input from the local jurisdiction

Mitigation Measure AVQ-MM#6: Treatments

- Elevated guideways may incorporate transparent materials where sensitive views would be adversely affected by opaque noise barriers
- Nonreflective materials and neutral colors
- Surface design enhancements and vegetation appropriate to the visual context of the area.
  - » Vegetation consistent with the provisions of AVQ-MM#5.
  - » Architectural elements (e.g., stamped pattern, surface articulation, decorative texture treatment)
  - » Surface coatings used on wood and concrete barriers to facilitate cleaning and the removal of graffiti

Simulation of Solid Noise Barrier, Monterey Road

Examples of other noise barriers
(may not be representative of designs employed for this project)

OPERATIONAL NOISE MITIGATION

San Francisco to San Jose

Potential Noise Barriers Without Quiet Zones (that meet HSR Performance Requirements)

	Alternative A (miles)			Alternative B (miles)		
Subsection	Length NB	Length SB	Total	Length NB	Length SB	Total
San Francisco to South San Francisco	0.0	0.6	0.6	0.0	0.6	0.6
San Bruno to San Mateo	2.0	2.9	4.9	2.0	2.9	4.8
San Mateo to Palo Alto	5.8	3.8	9.6	5.8	3.8	9.6
Mountain View to Santa Clara	0.9	4.1	5.0	0.9	4.1	5.0
San Jose Diridon Station Approach	0.3	0.8	1.1	0.3	1.0	1.3
Total	**9.0**	**12.1**	**21.1**	**8.9**	**12.3**	**21.2**

- For locations of potential noise barriers refer to Section 3.4, Table 3.4-21, and Figures 3.4-32 through 3.4-43

OPERATIONAL NOISE MITIGATION

San Francisco to San Jose

Potential Noise Barriers With Quiet Zones (that meet HSR Performance Requirements)

	Alternative A (miles)			Alternative B (miles)		
Subsection	Length NB	Length SB	Total	Length NB	Length SB	Total
San Francisco to South San Francisco	0.0	0.3	0.3	0.0	0.3	0.3
San Bruno to San Mateo	1.0	1.2	2.1	1.0	1.2	2.1
San Mateo to Palo Alto	1.4	2.3	3.7	0.7	2.3	2.9
Mountain View to Santa Clara	0.3	0.0	0.3	0.3	0.0	0.3
San Jose Diridon Station Approach	0.0	0.2	0.2	0.0	1.0	1.0
Total	**2.6**	**3.9**	**6.6**	**1.9**	**4.7**	**6.6**

- For locations of potential noise barriers with quiet zones refer to Section 3.4, Table 3.4-22 and Figures 3.4-44 to 3.4-55

SUMMARY OF NOISE IMPACTS

San Francisco to San Jose

2040 Noise Impacts Prior to Mitigation [a][b]			
	No Project (w / PCEP)	Alternative A	Alternative B
Peak/Off-Peak Hour Caltrain Revenue Trains per direction (North of Diridon)	6/1-2	6/1-2	
Peak/Off-Peak Hour HSR Revenue Trains per Direction (North of Diridon)[c]	0	4/3	
Maximum Speed	Up to 79 mph	Up to 110 mph	
Severe Noise Impacts per FRA Criteria	9	1,758	1,648 / 1,628 [d]

(a) Projected freight train volumes are also included in both No Project and Project analysis
(b) Other projected passenger train volumes (ACE, Capitol Corridor, etc.) included from Santa Clara station southward in noise analysis.
(c) South of Diridon there would be up to 7 HSR trains per peak hour per direction
(d) Values are presented for Alternative B (Viaduct to I-880) first, followed by Alternative B (Viaduct to Scott Boulevard).

2040 Noise Impacts After Mitigation	Alternative A	Alternative B[a]
With Noise Barriers only	482	455 / 452
With Quiet Zones and Noise Barriers	254	237 / 234

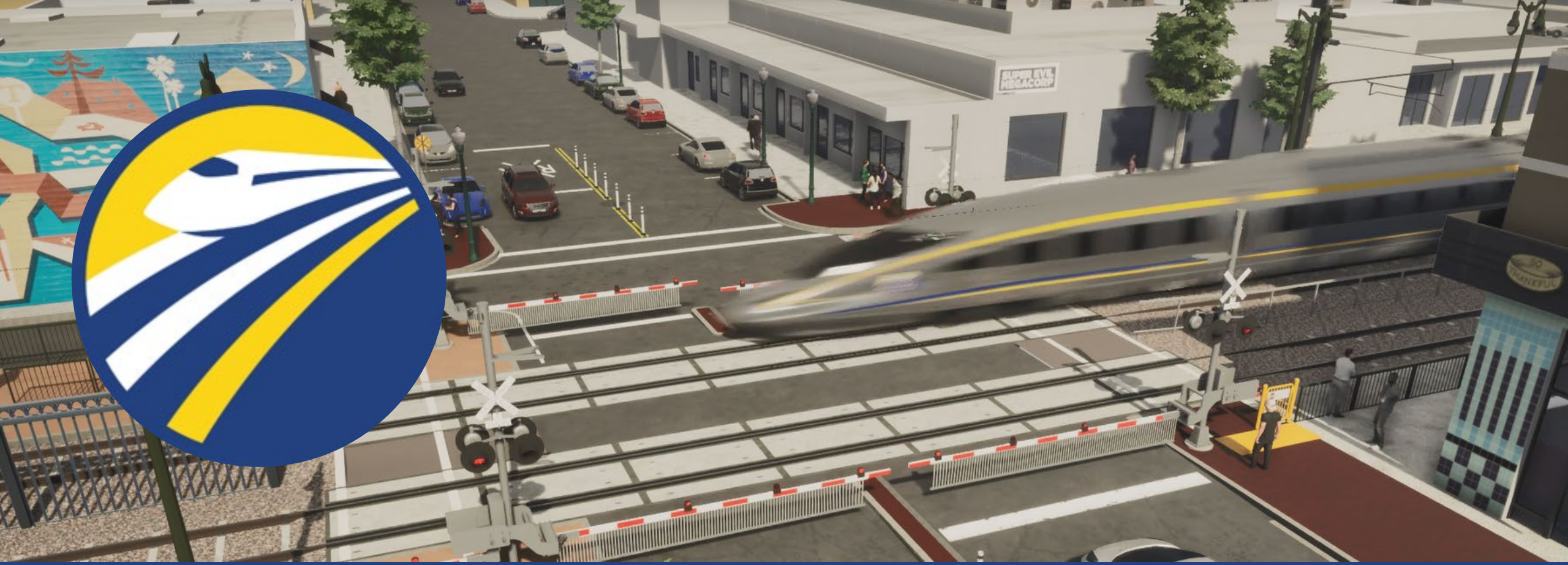
(a) Values are presented for Alternative B (Viaduct to I-880) first, followed by Alternative B (Viaduct to Scott Boulevard).

- For noise impacts after noise barriers or noise barriers and quiet zones refer to Section 3.4, Tables 3.4-23, 3.4-24, and 3.4-17 and Figures 3.4-32 through 3.4-55

FUTURE STEPS

San Francisco to San Jose

- Draft EIR/EIS discloses noise impacts and analyzes the effectiveness of potential mitigations.
- Feedback will be addressed and responded to in Final EIR/EIS
- Specific decisions on the placement and design of noise barriers will be part of final design process (after environmental clearance)
- Community approval and input into aesthetics are critical components of those decisions
- Levels of residual noise will depend on what mitigation is ultimately advanced



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APPENDIX

SUMMARY OF NOISE IMPACTS BEFORE MITIGATION

San Francisco to San Jose

2040 Noise Impacts w/ and w/out HSR before mitigation (a)(b)			
	No Project (w / PCEP)	Alternative A	Alternative B
Peak/Off-Peak Caltrain Revenue Trains per direction (North of Diridon)(c)	6/1-2	6/1-2	
Peak/Off-Peak HSR Revenue Trains per direction (North of Diridon)(c)	0	4/3	
Maximum Speed	Up to 79 mph	Up to 110 mph	
Subsection	Severe Impacts		
San Francisco to South San Francisco	0	173	168
San Bruno to San Mateo	7	497	497
San Mateo to Palo Alto	0	771	770
Mountain View to Santa Clara	2	193	193
San Jose Diridon Station Approach	0	124	20/0 (d)
Total	9	1,758	1,648 / 1,628 (d)

(a) Projected freight train volumes are also included in both No Project and Project analysis
(b) Other projected passenger train volumes (ACE, Capitol Corridor, etc.) included from Santa Clara station south in analysis
(c) S. of Diridon there would be up to 7 peak hour HSR trains per direction.
(d) For Alternative B, where two values are shown, the first is for the Viaduct to I-880 variant and the second is for the Viaduct to Scott Blvd. Variant

OPERATIONAL NOISE MITIGATION

San Francisco to San Jose

Potential Noise Barrier Lengths (that meet HSR Performance Requirements)

	Alternative A (miles)			Alternative B (miles)		
San Francisco to San Jose	Length NB	Length SB	Total	Length NB	Length SB	Total
Noise Barriers without Quiet Zones	9.0	12.1	21.1	8.9	12.3	21.2
Noise Barriers with Quiet Zones	2.6	3.9	6.6	1.9	4.7	6.6