SAN FRANCISCO TO SAN JOSE
PROJECT SECTION

PROJECT FEATURES
SAN FRANCISCO – SAN JOSE
PROJECT ALTERNATIVES A AND B

San Francisco to San Jose Project Section

Alternative A Features
- East Option Light Maintenance Facility
- No Additional Passing Tracks

Alternative B Features
- West Option Light Maintenance Facility
- Additional Passing Tracks

- HSR Stations
- San Jose to Merced Alignments
- Downtown Extension

Light Maintenance Facility
East Option (Alt A)
West Option (Alt B)

No Additional Passing Tracks (Alt A)
Additional Passing Tracks (Alt B)
Relocation of San Carlos Station
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
SAN FRANCISCO TO SAN JOSE
Common Project Elements – Alternatives A & B

• High-Speed Rail stations¹
  » 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

- Channelization
- Quad road barriers
- 8ft high right-of-way fence
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
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.
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.

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Category 1 = sensitive land uses requiring quiet (like concert halls)
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• 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.
<table>
<thead>
<tr>
<th>2040 Noise Impacts Prior to Mitigation (a)(b)</th>
<th>No Project (w / PCEP)</th>
<th>Alternative A</th>
<th>Alternative B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak/Off-Peak Hour Caltrain Revenue Trains per Direction (North of Diridon)(c)</td>
<td>6/1-2</td>
<td>6/1-2</td>
<td></td>
</tr>
<tr>
<td>Peak/Off-Peak Hour HSR Revenue Trains per Direction (North of Diridon)(c)</td>
<td>0</td>
<td>4/3</td>
<td></td>
</tr>
<tr>
<td>Maximum Speed</td>
<td>Up to 79 mph</td>
<td>Up to 110 mph</td>
<td></td>
</tr>
<tr>
<td>Severe Noise Impacts per FRA Criteria</td>
<td>9</td>
<td>1,758</td>
<td>1,648 / 1,628 (d)</td>
</tr>
</tbody>
</table>

(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
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).
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.
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

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

Simulation of Solid Noise Barrier, Monterey Road
### Potential Noise Barriers Without Quiet Zones (that meet HSR Performance Requirements)

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Alternative A (miles)</th>
<th>Alternative B (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length NB</td>
<td>Length SB</td>
</tr>
<tr>
<td>San Francisco to South San Francisco</td>
<td>0.0</td>
<td>0.6</td>
</tr>
<tr>
<td>San Bruno to San Mateo</td>
<td>2.0</td>
<td>2.9</td>
</tr>
<tr>
<td>San Mateo to Palo Alto</td>
<td>5.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Mountain View to Santa Clara</td>
<td>0.9</td>
<td>4.1</td>
</tr>
<tr>
<td>San Jose Diridon Station Approach</td>
<td>0.3</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9.0</strong></td>
<td><strong>12.1</strong></td>
</tr>
</tbody>
</table>

*For locations of potential noise barriers refer to Section 3.4, Table 3.4-21, and Figures 3.4-32 through 3.4-43*
### Potential Noise Barriers With Quiet Zones (that meet HSR Performance Requirements)

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Alternative A (miles)</th>
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<tbody>
<tr>
<td></td>
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<td>San Francisco to South San Francisco</td>
<td>0.0</td>
<td>0.3</td>
</tr>
<tr>
<td>San Bruno to San Mateo</td>
<td>1.0</td>
<td>1.2</td>
</tr>
<tr>
<td>San Mateo to Palo Alto</td>
<td>1.4</td>
<td>2.3</td>
</tr>
<tr>
<td>Mountain View to Santa Clara</td>
<td>0.3</td>
<td>0.0</td>
</tr>
<tr>
<td>San Jose Diridon Station Approach</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2.6</strong></td>
<td><strong>3.9</strong></td>
</tr>
</tbody>
</table>

- 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 \(^{(a)(b)}\)

<table>
<thead>
<tr>
<th></th>
<th>No Project (w / PCEP)</th>
<th>Alternative A</th>
<th>Alternative B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak/Off-Peak Hour Caltrain Revenue Trains per direction (North of Diridon)</td>
<td>6/1-2</td>
<td>6/1-2</td>
<td></td>
</tr>
<tr>
<td>Peak/Off-Peak Hour HSR Revenue Trains per Direction (North of Diridon) (^{(c)})</td>
<td>0</td>
<td>4/3</td>
<td></td>
</tr>
<tr>
<td>Maximum Speed</td>
<td>Up to 79 mph</td>
<td>Up to 110 mph</td>
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</table>

(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

<table>
<thead>
<tr>
<th></th>
<th>Alternative A</th>
<th>Alternative B (^{(a)})</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Noise Barriers only</td>
<td>482</td>
<td>455 / 452</td>
</tr>
<tr>
<td>With Quiet Zones and Noise Barriers</td>
<td>254</td>
<td>237 / 234</td>
</tr>
</tbody>
</table>

(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
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
APPENDIX
### SUMMARY OF NOISE IMPACTS BEFORE MITIGATION

San Francisco to San Jose

<table>
<thead>
<tr>
<th>2040 Noise Impacts w/ and w/out HSR before mitigation (a)(b)</th>
<th>No Project (w / PCEP)</th>
<th>Alternative A</th>
<th>Alternative B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak/Off-Peak Caltrain Revenue Trains per direction (North of Diridon)(c)</td>
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<td></td>
</tr>
<tr>
<td>Subsection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Francisco to South San Francisco</td>
<td>0</td>
<td>173</td>
<td>168</td>
</tr>
<tr>
<td>San Bruno to San Mateo</td>
<td>7</td>
<td>497</td>
<td>497</td>
</tr>
<tr>
<td>San Mateo to Palo Alto</td>
<td>0</td>
<td>771</td>
<td>770</td>
</tr>
<tr>
<td>Mountain View to Santa Clara</td>
<td>2</td>
<td>193</td>
<td>193</td>
</tr>
<tr>
<td>San Jose Diridon Station Approach</td>
<td>0</td>
<td>124</td>
<td>20/0 (d)</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>1,758</td>
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</tr>
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(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
## Potential Noise Barrier Lengths (that meet HSR Performance Requirements)

<table>
<thead>
<tr>
<th></th>
<th>Alternative A (miles)</th>
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</tr>
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<tr>
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<tr>
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<td>9.0</td>
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