

California High-Speed Rail Authority

Palmdale to Burbank Project Section

CHSRA Staff Report: State's Preferred Alternative

November 2018



CALIFORNIA
High-Speed Rail Authority

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ACRONYMS AND ABBREVIATIONS

Authority	California High-Speed Rail Authority
CEQA	California Environmental Quality Act
EIR	environmental impact report
EIS	environmental impact statement
FRA	Federal Railroad Administration
HSR	high-speed rail
IAMF	Impact Avoidance and Minimization Feature
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NOP	Notice of Preparation
PAA	Preliminary Alternatives Analysis
PPA	Preliminary Preferred Alternative
ROD	Record of Decision
SR	State Route
SAA	Supplemental Alternatives Analysis
USDOT	United States Department of Transportation

1 INTRODUCTION

1.1 Report Purpose

This report has been prepared by the staff of the California High-Speed Rail Authority (Authority). Its purpose is to present the rationale for identifying Refined SR14 Alternative as the staff-recommended State's Preferred Alternative (PA) that the Palmdale to Burbank Draft Environmental Impact Report/Draft Environmental Impact Statement (EIR/EIS) will identify. The EIR/EIS is being prepared pursuant to the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). This staff report refers to the staff recommended Preferred Alternative because it has not yet received Authority Board of Directors (Board) or Federal Railroad Administration (FRA) concurrence. Authority staff will present this report to the Board at the November 2018 board meeting and provide an opportunity for the Board members to offer input and direction to staff. If the Board concurs with the staff report and recommendation, Authority staff will present the Refined SR14 Alternative to the FRA for concurrence. If the FRA concurs, then the Draft EIR/EIS will identify the Refined SR14 Alternative as the PA. **Neither the staff report nor Board concurrence on the recommendation constitutes a final decision by the Authority or FRA on selection of the Refined SR14 Alternative.** At the conclusion of the public comment period, the Authority will determine whether to certify the Final EIR, adopt necessary findings and take action to approve the PA or another alternative for the Palmdale to Burbank Section. The Authority anticipates that the FRA would issue a Record of Decision (ROD) on the Final EIS.

1.2 Preferred Alternative Approach

The approach of presenting a staff recommended PA in the Draft EIR/EIS represents a change in process for the Authority and FRA. For the Merced to Fresno and Fresno to Bakersfield project sections, the Authority and FRA identified the PA after the Authority and FRA issued the Draft EIR/EIS and received public comments, but before issuance of the Final EIR/EIS.

The Authority and FRA are modifying the process to facilitate a more effective public comment period by identifying the PA in the Draft EIR/EIS. This allows the public, stakeholders and public agencies to have more time to focus their attention and comments, if they so choose, on the PA. For the Palmdale to Burbank Project Section, the PA will be identified in the Draft EIR/EIS for the first time, rather than in the Final EIR/EIS. This approach also aligns more closely with recent federal transportation laws which encourage the federal transportation modal administrations to name a PA in the Draft EIS project development phase rather than the Final EIS. This approach also aligns more closely with recent federal laws regarding approval of transportation projects and with CEQA¹, under which a Draft EIR identifies and defines the proposed project (which is conceptually equivalent to a Preferred Alternative).

¹ Public Resources Code (21000-21189)

2 ALTERNATIVES EVALUATED AND PUBLIC INVOLVEMENT

2.1 Alternatives Development

After the 2005 Statewide Final Program EIR/EIS (Program EIR/EIS) was adopted, the Authority, in cooperation with FRA, began the environmental review process for the Palmdale to Los Angeles Project Section of the California High-Speed Rail (HSR) System. The environmental review process included a Notice of Intent (NOI) and Notice of Preparation (NOP), published in 2007, and an agency and public scoping process. In 2014, the Authority split the Palmdale to Los Angeles Project Section into two project sections: Palmdale to Burbank and Burbank to Los Angeles. The Authority and FRA published an NOI and NOP for the Palmdale to Burbank Project Section in 2014. The environmental review process resulted in a number of alternatives analysis reports being developed in consultation with public, federal, state, and local agencies, as well as community groups.

Program EIR/EIS (2005)

The 2005 Programmatic EIR/EIS identified broad study corridors in the Palmdale to Burbank Section, which then were used to narrow down the potential alignment alternatives and station options. The Program EIR/EIS examined potential corridor alignments and determined that sharing existing commuter and freight tracks would not meet the project's purpose and that dedicated tracks are necessary to achieve its performance goals in this section. Based on the 2005 Program EIR/EIS, the Authority and FRA made the decision in 2005 to select the SR-58/Soledad Canyon (Antelope Valley) corridor as the preferred alignment between the Sylmar neighborhood of Los Angeles and the City of Bakersfield. Between the cities of Palmdale and Santa Clarita, a broad corridor was identified inclusive of both the Soledad Canyon and SR14 alignment alternatives (see Figure 1). The evaluated station options include Sylmar, Sun Valley, Downtown Burbank, and Los Angeles Union Station (LAUS). The preferred stations were identified as: Palmdale, Sylmar, Burbank, and LAUS. Alternatives analyzed in the Preliminary Alternatives Analysis (PAA) and Supplemental Alternatives Analysis (SAA) are summarized below.

Preliminary Palmdale to Los Angeles Alternatives Analysis Report (July 2010)

The 2010 Palmdale to Los Angeles PAA Report built upon the 2005 Program EIR/ EIS and identified alignment alternatives between the City of Palmdale and the City of Los Angeles and included station options in the City of Palmdale and the San Fernando Valley. This PAA provided the initial range of alternatives between Palmdale and Los Angeles.

Supplemental Palmdale to Los Angeles Alternatives Analysis Report (March 2011)

The 2011 Palmdale to Los Angeles SAA Report refined alignment alternatives between the LAUS and Sylmar subsections. This SAA report deferred analysis of the Santa Clarita and Palmdale subsections to a later date.

Palmdale to Los Angeles Supplemental Alternatives Analysis Report: Sylmar-Palmdale Subsection (April 2012)

The 2012 Palmdale to Los Angeles SAA Report focused solely on the Santa Clarita and Palmdale areas. The 2012 SAA refined the SR14 East and SR14 West Alignments to create an East/West Hybrid option. The 2012 SAA recommended that the following alternatives be carried forward for further study:

Palmdale Subsection

- SR14 East Option - Refined to avoid directly impacting the Vasquez High School property, lower it by 20 feet, and move it 600 feet from the proposed school facilities.
- SR14 West Option - Refined to avoid the Ward Road interchange bridge, without additional direct residential impacts.
- SR14 E/W Hybrid Option – Follows the SR 14 West alignment up to the tunnel portal in Acton and enters Palmdale east of Palmdale Lake (similar to SR14 East). This option would have

similar residential impacts in Acton to SR14 West, avoiding impacts to Vasquez and High Desert Schools, and an approximately 7-mile-long tunnel with a 175-mph design speed, resulting in a 20-second (less than 5 percent) journey time penalty. In Palmdale, this option follows the METRO/UPRR right-of-way with a station at the Palmdale Transportation Center (TC).

Santa Clarita Subsection

- Sand Canyon Preliminary AA Option - Renamed Santa Clarita North
- Sand Canyon Metrolink 200 Option - Renamed Santa Clarita South

In addition, the Pacoima Wash Station Option was withdrawn primarily because of constructability and cost issues.

Palmdale to Los Angeles Supplemental Alternatives Analysis Report (May 2014)

The 2014 Palmdale to Los Angeles SAA Report reevaluated all alignment alternatives and station options of the SR14 Corridor of the Palmdale to Los Angeles Section based on the then current definition of the HSR objectives, and project purpose and need. The SR14 West alignment alternative was not carried forward in the Palmdale area because of the inability of its associated station (Palmdale West Station) to provide intermodal connections to existing inter-regional rail service; the inability to serve the planned transit-oriented development (TOD) uses at the Palmdale Transportation Center (PTC); the inability to provide a direct connection to the proposed High Desert Corridor (HDC)/XpressWest interstate HSR service; and a lack of local and regional support.

Additionally, the San Fernando and Branford Street Station Options were not carried forward. The San Fernando Station Option was not carried forward because of the potential impacts on local business and residences and because the land use plans in the areas limited TOD potential. The Branford Street Station Option was not carried forward primarily because of potential impacts to non-aquatic biological resources. The following recommendations were made in the 2014 SAA for each subsection:

Palmdale Subsection

- SR14 East alignment alternative and station option – carried forward
- SR14 West alignment alternative and station option – withdrawn
- SR14 E/W Hybrid alignment alternative and station option – carried forward

Santa Clarita Subsection

- Santa Clarita South alignment alternative – carried forward
- Santa Clarita North alignment alternative – carried forward

San Fernando Valley Subsection

- San Fernando station option – withdrawn
- Branford Street station option – withdrawn
- Burbank Airport station option – carried forward
- HSR aligned on the west side of Metrolink – carried forward
- HSR aligned on the east side of Metrolink – carried forward

Los Angeles Subsection

- LAPT1 alignment alternative – carried forward
- LAPT3 alignment alternative – carried forward
- Surface alignment alternative – carried forward

Additionally, the 2014 SAA introduced the concept of splitting the Palmdale to Los Angeles Section into two project sections: Palmdale to Burbank and Burbank to Los Angeles, which occurred July 2014 with the public scoping process. The Authority proposed an eastern study area, through the Angeles National Forest (ANF), for the Palmdale to Burbank Project Section.

Within the Palmdale to Burbank Project Section, three new alternatives were proposed through the ANF, and the SR14 Hybrid alternative was modified in the Acton area. The Burbank to Los Angeles Project Section was to be analyzed in a separate document.

Palmdale to Burbank Project Section Supplemental Alternatives Analysis Report (June 2015)

The 2015 Palmdale to Burbank SAA Report reevaluated all alignment alternatives and station options in the SR14 Corridor that were carried forward from the 2014 SAA.

The 2014 SAA analyzed SR14 alternatives by geographic subsections (Palmdale, Santa Clarita, and San Fernando Valley subsections). Each of these subsections contained multiple alignment alternatives. This SAA combined those subsection alternatives into station-to-station alignments. The station-to-station alternatives consist of the following combinations:

- SR14-1: Palmdale Subsection Hybrid Alternative; Santa Clarita Subsection SCLT Alternative; and the San Fernando Valley Subsection SFW Alternative
- SR14-2: Palmdale Subsection Hybrid Alternative; Santa Clarita Subsection SCS Alternative; and San Fernando Valley SFW Alternative
- SR14-3: Palmdale Subsection East Alternative; Santa Clarita SCLT Alternative; and San Fernando Valley SFW Alternative
- SR14-4: Palmdale Subsection East Alternative; Santa Clarita SCS Alternative; and San Fernando Valley SFW Alternative

The 2015 SAA also introduced additional alignments that generally follow a second proposed corridor, the East Corridor, across the San Gabriel Mountains. These alignments would travel through the eastside of the community of Acton and cross the ANF, including the San Gabriel Mountains National Monument (SGMNM), where it would then enter the northeast San Fernando Valley and eventually share a corridor with the existing Metrolink Antelope Valley Line.

The 2015 SAA made several refinements to alternatives in the 2014 SAA. The Authority defined six alignment alternatives that would travel beneath the ANF (E1a, E1b, E2a, E2b, E3a, and E3b). Alternatives SR14-3 and SR14-4 were not carried forward because of community impacts in the Acton area. Additionally, alignments were adjusted in the Palmdale area and from Lake Palmdale to Acton and platform option locations were refined at the PTC and Burbank Airport Stations. The 2015 SAA minimized impacts in the community of Acton, refined Santa Clarita North (also known as Santa Clara Long Tunnel) to have the same horizontal location as the Santa Clarita South alignment, and to withdraw consideration for HSR tracks east of Metrolink in the San Fernando Valley Subsection.

Alignment alternatives along the SR14 Corridor were analyzed on an end-to-end basis, by combining the Palmdale Subsection options (East, West, and Hybrid), the Santa Clarita Subsection options (Santa Clarita South and Santa Clara Long Tunnel), and the San Fernando Valley Subsection alignment options (HSR aligned west of Metrolink).

Palmdale to Burbank Project Section Supplemental Alternatives Analysis Report (April 2016)

The 2016 Palmdale to Burbank SAA Report reevaluated all alignment alternatives and station options of the SR14 Corridor and East Corridor carried forward from the 2015 SAA between the cities of Palmdale and Burbank.

The SR14 Refined alignment alternative, carried forward as SR14 and introduced in the 2016 SAA refined the SR14 corridor alternatives that were presented in the 2015 SAA by optimizing the Santa Clara River crossing and minimizing community impacts in the San Fernando Valley area by tunneling under a portion of the ANF.

The E1 Refined alignment alternative, carried forward as E1 and introduced in the 2016 SAA was carefully designed to improve design and constructability by reducing the grade in the tunnel and

by reducing the tunnel depths. Overall travel time would be reduced under E1 due to the reduced track curvature (which would allow for higher travel speeds).

The E2 Refined alignment alternative, carried forward as E2 and introduced in the 2016 SAA was carefully designed to reduce potential surface impacts by increasing tunnel length and avoid the mitigation area within the Big Tujunga Wash.

Burbank Station Refinement Memo (2018)

Subsequent to the 2016 SAA, the two Burbank Station Options (A and B) have been further studied and refined in order to minimize community and environmental impacts, and a refined version of Station Option B is carried forward for environmental analysis. Station Option A was not carried forward for further environmental analysis, as documented in the Burbank to Los Angeles Preferred Alternative Staff Report. The Palmdale to Burbank Project Section PA will include a single station option adjacent to the Burbank Airport and the proposed relocated terminal.



Figure 1 Program EIR/EIS Alignments and Station Options (2005)

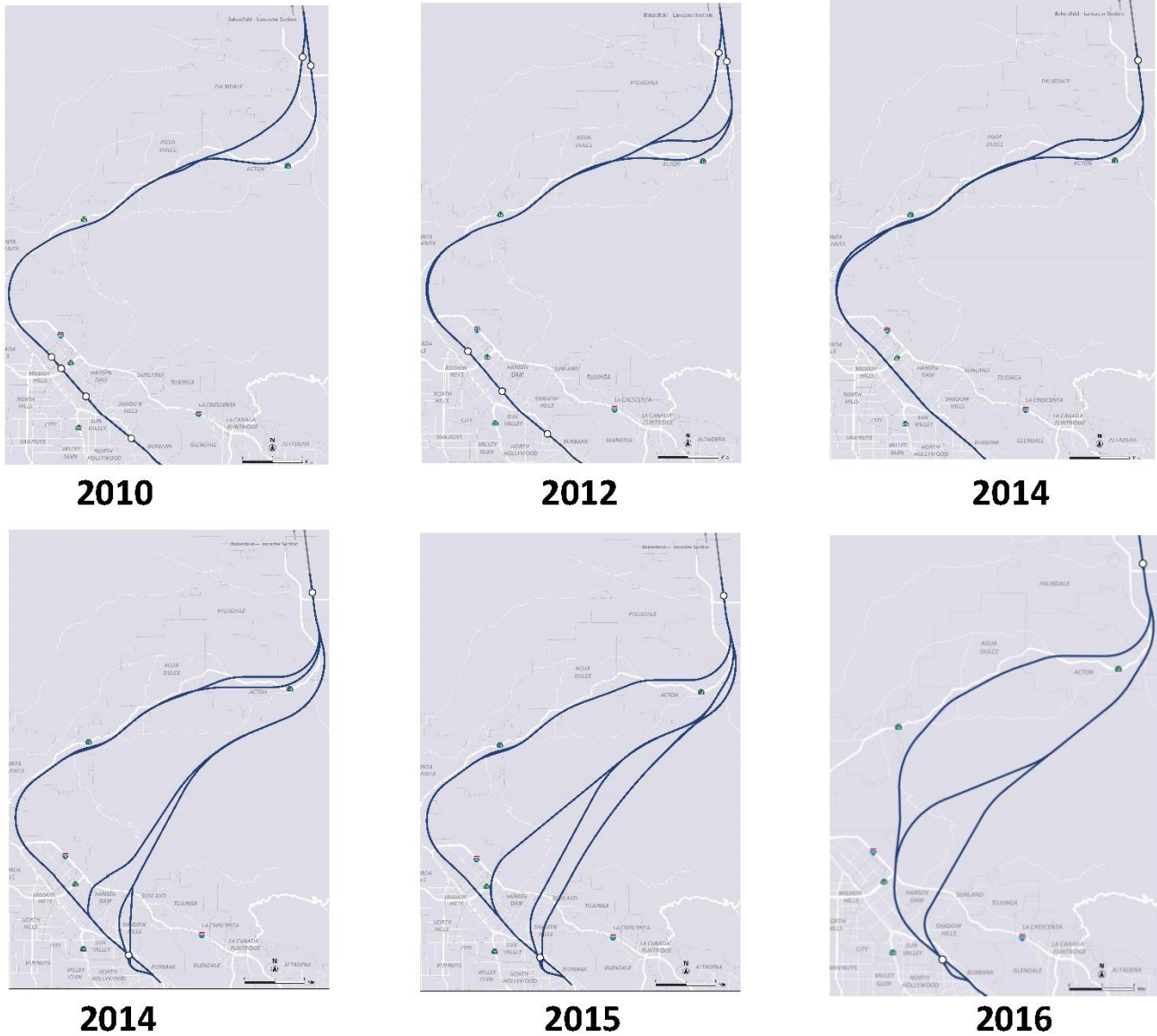


Figure 2 Evolution of Alternatives

2.2 Alternatives Evaluated in Environmental Document

This section briefly describes the Palmdale to Burbank Project Section alternatives: Refined SR14, E1, and E2 (Figure 3). These three alternatives represent the range of alternatives carried forward in the Checkpoint B document for consideration in the Tier 2 environmental review.

Refined SR14 Alternative

The Refined SR14 Alternative would be approximately 38.4 miles in length, would originate at the proposed Palmdale TC in Palmdale and terminate at the Burbank Airport Station. From Palmdale through Acton and Agua Dulce, the alignment would generally parallel the SR-14 freeway corridor. The Refined SR14 Alternative would pass Lake Palmdale, and would enter a tunnel north of the California Aqueduct. The tunnel would pass beneath the Aqueduct and would emerge to cross over the SR-14 freeway on elevated structure at Red Rover Mine Road. The Refined SR14 Alternative would continue to generally parallel the SR-14 freeway via a series of tunnels, at-grade sections, and elevated structures towards Santa Clarita.

Near Lang Station, the Refined SR14 Alternative would traverse the Santa Clara River. The alignment would turn south and cross the river on elevated structure. The alignment would then transition into a tunnel on entering a portion of the ANF/SGMNM that includes an existing mining operation. The alignment would travel within a 12-mile-long bored tunnel that would continue beneath portions of the SGMNM/ANF until emerging from the tunnel in the Pacoima neighborhood (City of Los Angeles). The alignment would cross over the Los Angeles County Flood Control Channel and Hansen Spreading Grounds before following the existing Metrolink corridor into Burbank Airport Station.

E1 Alternative

The E1 alignment alternative would be approximately 36.3 miles in length, would originate at the proposed Palmdale TC in Palmdale and terminate at the Burbank Airport Station. The E1 alignment would pass Lake Palmdale, and would continue south at-grade, crossing over the California Aqueduct. The alignment would then continue at grade or in shallow tunnel east of the SR-14 freeway towards the Vincent Substation. West of the substation, the E1 alignment would traverse two unnamed drainages on elevated structures. The alignment would then transition to a tunnel as it approaches the boundary of the ANF/SGMNM near Searchlight Ranch Road.

In the Aliso Canyon area, the E1 alignment would emerge from a tunnel at-grade then transition to an elevated structure over a tributary of the Santa Clara River and Aliso Canyon Road. After passing over Aliso Canyon Road, the E1 alignment would enter an approximately 22 mile-long bored tunnel passing under the ANF/SGMNM. The E1 alignment would emerge from a tunnel at-grade in the Pacoima neighborhood (City of Los Angeles). The alignment would cross over the Los Angeles County Flood Control Channel and Hansen Spreading Grounds before following the existing Metrolink corridor into Burbank Airport Station.

E2 Alternative

The E2 alignment alternative would be approximately 32.8 miles in length. Between the Palmdale TC and Aliso Canyon Road, the E2 alignment would be identical to E1, described above.

Immediately west of Aliso Canyon Road, the E2 alignment would enter a 17 mile-long tunnel. The tunnel would follow a southwesterly route beneath the ANF and SGMNM, curving progressively in a more south-southwesterly direction as the alignment passes beneath Mendenhall Ridge Road. The E2 alignment would exit the tunnel at-grade in the hills north of the Lake View Terrace neighborhood, near the private, unimproved BP & L Road. The E2 alignment would then continue at grade for approximately 1,000 feet, before transitioning to an elevated structure. The elevated structure would cross over Arnwood Road, Foothill Boulevard, and the I-210 freeway, then Big Tujunga Wash, and under Wentworth Street into the Shadow Hills neighborhood (City of Los Angeles). The E2 Big Tujunga Wash crossing would be located in between the two existing electrical transmission towers and lines crossing the Big Tujunga Wash. From Wentworth Street,

the E2 alignment would generally continue in tunnels beneath the Shadow Hills and Sun Valley neighborhoods, connecting to the Burbank Airport Station.



Figure 3 Palmdale to Burbank Alignment Alternatives and Stations

2.3 Public and Stakeholder Engagement in Environmental Document

Stakeholder input is a critical component of the Authority’s process in identifying the reasonable range of alternatives for further evaluation in the NEPA and CEQA environmental processes. The Authority has been closely coordinating with a variety of individuals, local governments, and organizations to obtain input on which of the Palmdale to Burbank Project Section alternatives are preferred by local agency and public stakeholders. The lead agencies have conducted extensive agency and public outreach as part of the analysis.

Since the 2010 PAA, public engagement for key environmental stakeholders has occurred, with outreach meetings and events held in communities along the proposed HSR alignments. The Authority and FRA held and participated in public meetings hosted by the Authority and by other agencies to provide project information and obtain feedback. The various meeting formats included open houses, formal presentations, and question and comment sessions, and were used to present information and provide opportunities for input by participants.

Public information meetings were held to inform the public about the alternatives analysis recommendations for the Palmdale to Burbank Project Section and the status of the EIR/EIS preparation. In addition, these meetings offered information on various HSR project components and gave opportunities for obtaining feedback. The public information meetings included brief presentations and project information materials. Project staff members were also available to answer questions. Meetings were announced through direct mail to those in the project database, through advertisements in local newspapers, and through postings on the Authority’s website (www.hsr.ca.gov). Various publications and materials were also made available on the Authority’s website.

Throughout the environmental process to date, the Authority held more than 230 individual and group meetings in the Palmdale to Burbank area (See Table 1). Frequently asked questions received via email, phone calls, public information meetings, and one-on-one discussions with stakeholders pertained to sensitive plant and animal habitat, water and groundwater, community character, air quality, noise and vibration, and traffic. Other commonly asked questions included concerns about alternative alignments, station locations, environmental justice, and impacts on communities. Project staff responded to these and other questions, often referring to the environmental analysis already underway for the Palmdale to Burbank Project Section Draft EIR/EIS and informing people of upcoming opportunities to make comments.

Table 1 Summary of Public and Agency Meetings for Palmdale to Burbank Project Section

Date	Organization/Individual	Category ^a	Number of Meetings
Federal Agencies			
Summer 2014	USFS, USACE and USEPA	AS	2
Fall 2014	USACE, USEPA, USFWS, and USFS	AS	1
Winter 2014/2015	USHSR Conference, USFS, USACE	GIO/AS	4
Spring 2015	USACE, USEPA, USFWS, USFS	AS	5
Summer 2015	FRA	AS	1
Fall 2015	FRA, USFWS, USACE, NMFS	AS	3
Winter 2015/2016	USFWS, USFS, FRA	AS	2
Spring 2016	USFWS, USFS, FRA	AS	2
Summer 2016	USFWS, USFS, FRA	AS	2

Date	Organization/Individual	Category ^a	Number of Meetings
Fall 2016	FRA, USFWS, USFS	AS	3
Winter 2016/2017	USFWS, USACE	AS	1
State, Local, Regional Agencies, and Legislative Briefings			
Winter 2014	Palmdale Station Area Planning Meeting/ City of Glendale Briefing/ City of Palmdale Coordination Meeting/ Sun Valley Watershed Call/ High Desert Corridor HSR Coordination Meeting	AS	5
Spring 2014	CHSRA California Passenger Rail Forum/ HSR Presentation to Santa Monica Chamber of Commerce's Government Affairs Committee/ City of Los Angeles, San Fernando TWG/ Los Angeles Metropolitan Transportation Authority (Metro) National Train Day	GIO/ TAG/TWG/ P	4
Summer 2014	Metro and Metrolink/ City of Palmdale/ City of Burbank Transportation Committee/ Metro and Metrolink/ Los Angeles Department of Transportation (LADOT) and Planning Department/ Los Angeles River/Natural Resources Defense Council (NRDC) Working Group/ City of San Fernando	AS/STO/B	8
Fall 2014	Joint City of Burbank Council and Transportation Commission meeting/ Burbank Area Legislative Briefing/ Northern Valley Legislative Briefing/ Metro and Metrolink/ CHSRA Tribal Information Meeting/ Los Angeles River Cooperation Committee/ Orange County Transportation Authority Small Business Expo/ City of San Fernando/ City of Santa Clarita/ Metro and Metrolink/ City of Burbank	STO/AS/B/ GIO	12
Winter 2014/2015	Anaheim Regional Transportation Intermodal Center (ARTIC) Grand Opening/ Metro and Metrolink/ CHSRA Groundbreaking, Fresno/ Los Angeles Business Council Institute, Legislative Committee/ City of Glendale/ City of Palmdale	GIO/AS/P	8
Spring 2015	City of Palmdale/ Legislative Briefing/ Los Angeles Metropolitan Transportation Authority (Metro) and Los Angeles Sustainability Coalition (LASC) Sustainability Construction Forum/ City of Lancaster, California Poppy Festival/ Metropolitan Water District of Southern California Spring Green Expo/ CHSRA Tribal Information Meeting/ Legislative Briefing: Open House Preview/ Metro and other Southern California transportation agencies - 'Women Can Build' Photo Exhibit Opening/ Tour of the proposed Northeast San Fernando Valley alignments—Authority Board Member Katherine Perez-Estolano, Joel Fajardo, Mayor, San Fernando, and Dave DePinto of Save Angeles Forest for Everyone (SAFE)	AS/GIO/P/ B/STO	12

Date	Organization/Individual	Category ^a	Number of Meetings
Summer 2015	CDFW/ Metrolink/ Burbank City Staff/ City of Burbank, Burbank Starlight Bowl/ Burbank-Glendale-Pasadena Airport Authority/ Southern California Association of Governments Environmental Justice Forum	AS/STO/P	7
Fall 2015	City of Palmdale/ General Meetings with Metrolink Staff/ City of Burbank Council Meeting/ Meeting with Burbank City Council/Transportation Commission/ CDFW	AS/STO	10
Winter 2015/2016	City of Palmdale/ General Meetings with Metrolink Staff/ CDFW, Metro and Metrolink/ Metro Meet the Primes/	AS/P	7
Spring, 2016	Metro and Metrolink/ CDFW/ City of Los Angeles/San Fernando Valley Stakeholder Working Group Meeting/ City of Palmdale HSR Station Area Plan Community Meeting/ Palmdale Water District	AS/SWG/S TO/ GIO	7
Summer 2016	CDFW	AS	2
Fall 2016	Environmental Resource Agencies Monthly meeting/ PTE Advance Site Visit: Blum Ranch Property, Acton/ PTE Field Work: Blum Ranch Property, Acton (Elizabeth Billet)/ Presentation: Placerita Canyon Homeowners Association/ Burbank to Los Angeles Project Section Open House	AS/P/STO/ PIM	5
Winter 2016/2017	CDFW/ Councilmember Mike Bonin's Staff/ Councilmember Jose Huizar's Staff	AS/EL	4
Spring 2014	Congressman McKeon's Staff/ City of Santa Clarita/ Congresswoman Hahn's Staff/ Assemblymember Mike Gatto's Staff/ Senator Carol Liu's Staff/ State Senator Alex Padilla's Staff/ Assemblymember Steve Fox's Staff/ Congressman Tony Cardenas and Assemblymember Raul Bocanegra's Staff/ Burbank City Council/ Los Angeles City Councilmember Felipe Fuentes' Staff	EL	10
Summer 2014	Los Angeles City Councilmember Felipe Fuentes & Staff	B/EL	2
Fall 2014	State Senator Fran Pavley's Office/ Los Angeles City Councilmember Mitch O'Farrell's Office/ Gateway Cities Council of Governments, Board of Directors/ Los Angeles City Councilmember Gilbert Cedillo's Office/ Congressman Xavier Becerra's Office/ Congressman Buck McKeon's Office/ Legislative Briefing, City of Burbank/ Legislative Briefing, City of Santa Clarita/ Los Angeles City Councilmember Felipe Fuentes	B/ EL/AS	9

Date	Organization/Individual	Category ^a	Number of Meetings
Winter 2014/2015	Office of Congressman Adam Schiff/ Acton-Agua Dulce Unified School District—Meeting with Dr. Brent Woodard, Superintendent/ Office of Los Angeles County Supervisor Michael Antonovich/ Office of Congresswoman Judy Chu/ Office of Assemblymember Patty Lopez/ City of San Fernando/ Office of Los Angeles County Supervisor Kuehl Office of Los Angeles County Supervisor Solis/ Chairman Richard Tour with Santa Clarita (Mayor McLean, Councilmember Boydston)/ City of Santa Clarita/ City of Burbank City Council Meeting/ Office of Congressman Tony Cardenas/ Office of State Senator Bob Hertzberg/ Legislative Briefing	EL/STO/AS /B	15
Spring 2015	Los Angeles City Mayor Garcetti's Office/ Office of Congressman Tony Cardenas/ Office of Assemblymember Miguel Santiago/ San Fernando Valley Council of Governments Transportation Committee Presentation/ Office of Assemblymember Patty Lopez/ Office of Los Angeles County Supervisor Sheila Kuehl/ Office of Los Angeles City Councilmember Felipe Fuentes/ Legislative Briefing: Open House Preview Office of Congressman Adam Schiff, Office of State Senator Carol Liu, Office of State Senator Bob Hertzberg, Office of State Senator Mike Gatto, Office of State Senator Fran Pavley/ Office of Congressman Steve Knight/ Office of Los Angeles County Supervisor Michael Antonovich	AS/STO/B	11
Summer 2015	City of Santa Clarita City Council Meeting/ Joint Meeting: City of Burbank City Council and Burbank-Glendale-Pasadena Airport Authority/ Briefing with Assemblymember Patty Lopez Staff/ Assemblymember Patty Lopez HSR Community Meeting & Forum	EL/AS/PIM	5
Fall 2015	Office of Senator Bob Hertzberg/ Briefing with Assembly Member Patty Lopez and Staff/ Office of Congresswoman Judy Chu/ Office of Congressman Adam Schiff/ Office of State Senator Carol Liu/ City of Los Angeles City Councilmember Felipe Fuentes/ Office of Los Angeles Mayor Garcetti/ Office of Los Angeles City Councilmember Nury Martinez/ Office of Congressman Tony Cardenas/ Office of Congressman Brad Sherman	B/EL	11
Spring 2016	Office of Los Angeles City Councilmember Nury Martinez/ Office of Los Angeles City Councilmember Paul Krekorian/ Office of Congressman Tony Cardenas/ Office of State Senator Bob Hertzberg/ Office of Congressman Brad Sherman/ Office of Congressman Adam Schiff & Staff/ Office of Assemblymember Mike Gatto/ Office of State Senator Carol Liu/ Los Angeles City Councilmember Fuentes and Staff/ PTE Site Observation/Office of Mayor Garcetti/ Office of Supervisor Mike Antonovich/ Office of Assemblymember Patty Lopez	EL	12

Date	Organization/Individual	Category ^a	Number of Meetings
Summer 2016	Field Visit: Elected Officials' Staff Visit to ANF Drill Sites. Office of Congressman Tony Cardenas, Office State Senator Carol Liu, Office of Assemblymember Patty Lopez, Office of Los Angeles County Supervisor Michael Antonovich./ Office of Senator Robert Hertzberg/ Office of Los Angeles City Councilmember Nury Martinez/ Office of Los Angeles City Councilmember Paul Krekorian/ Office of L.A. Mayor Eric Garcetti	EL	6
Fall 2016	Office of Los Angeles Councilmember Mitch O'Farrell/ Los Angeles Deputy Mayor Barbara Romero/ Office of Los Angeles Councilmember Herb Wesson/ Office of Los Angeles Councilmember Mike Bonin/ Acton/Agua Dulce Unified School District	EL	5
Winter 2016/2017	Office of State Senator Anthony Portantino/ Office of Assembly Member Dante Acosta/ Office of Assembly Member Raul Bocanegra/ Office of Assembly Member Laura Friedman	EL	4
Spring 2017	Member Ara Najarian, City of Glendale/ Corridor Tour with Assemblymember Raul Bocanegra and Staff/ Office of Councilmember Nury Martinez	EL	3
Winter 2017/2018	Office of Los Angeles City Councilmember Mike Bonin	EL	1
Spring 2018	Office of Los Angeles City Councilwoman Monica Rodriguez	EL	1
Neighborhood/Local Councils			
Winter 2014	Santa Clarita Stakeholder Working Group Meeting/ San Fernando Valley Stakeholder Working Group Meeting/ Burbank-Glendale Stakeholder Working Group Meeting/ Acton/Agua Dulce Stakeholder Working Group Meeting	STO	4
Spring 2014	Downtown LA Stakeholder Working Group Meeting/ Northeast LA Stakeholder Working Group Meeting/ San Fernando Valley Council of Governments Mobility Summit/ MoveLA, Transportation Conversation Event/ Acton/Agua Dulce Workshop/ San Fernando City Council, Public Comment/ SAA Community Open House Meeting - DTLA Union Station/ SAA Community Open House Meeting - Burbank/ SAA Community Open House Meeting - Palmdale	STO/PIM/E L/GIO	9
Summer 2014	SAA Community Open House Meeting - Santa Clarita/ Presentation to Foothill Trails Neighborhood Council/ Presentation to City of Burbank Transportation Commission/ Presentation to Acton Town Council/ Foothill Trails District Neighborhood Council/ Acton/Agua Dulce Town Council/ Santa Clarita Scoping Meeting/ Burbank Scoping Meeting/ Palmdale Scoping Meeting/ Acton/Agua Dulce Scoping Meeting/ Sunland-Tujunga Neighborhood Council/ Sylmar Scoping Meeting/ Lake View Terrace Scoping Meeting/ Downtown Los Angeles Scoping Meeting/ Pacoima Neighborhood Council/ Sylmar Neighborhood Council	PIM/STO/A S	16

Date	Organization/Individual	Category ^a	Number of Meetings
Fall 2014	North Hollywood North East Neighborhood Council/ Regional Hispanic Chamber of Commerce/ Burbank Chamber of Commerce/ Burbank and Glendale Transportation Management Organizations/ Valley Alliance of Neighborhood Councils	STO	5
Winter 2014/2015	Community Open House Meeting #1 – Santa Clarita/ Community Open House Meeting #2 – Shadow Hills/Lake View Terrace/Foothill Communities/ Community Open House Meeting #3 – Palmdale/ Community Open House Meeting #4 – Burbank/ Community Open House Meeting #5 – San Fernando/ Community Open House Meeting #6 – Sylmar/ Antelope Valley African American Chamber of Commerce/ Community Open House Meeting #7 – Acton/ Foothill Communities Stakeholder Meeting/ Los Angeles Business Council (LABC) Legislative Committee/ Pacoima Neighborhood Council Board of Directors/ Northern Corridor Cities Meetings/ Sunland-Tujunga Neighborhood Council - Town Hall Meeting/ Burbank City Council Meeting/ Los Angeles Neighborhood Council Coalition/ Pacoima Neighborhood Council/ Crescenta Valley Town Council/ Foothill Trails Neighborhood Council/ Tour of Shadow Hills Community Area—Chairperson Dan Richard visited and toured Kagel Canyon, Tujunga Wash, and Shadow Hills with members of the community/ CWG #1: Foothill Communities/ CWG #2: San Fernando/ CWG #3: Sylmar/ San Fernando Valley Town Hall—Imagining Our Transportation Future/ Follow-up meeting with Foothill community leaders/ Communities Against Displacement Stakeholder Meeting (Pacoima, San Fernando, and Sylmar)	PIM/GIO/S TO/B	25
Spring 2015	CWG #4: Palmdale/CWG #5: Santa Clarita Valley/ CWG #6: Burbank/ Ongoing follow-up meeting with Foothill community leaders/ CWG #7: Acton / Agua Dulce/ CWG #8: Sun Valley/ Chairman Dan Richard Tour of San Fernando (City Councilmembers)/ San Fernando Valley Council of Governments Board of Directors/ Independent Cities Association, Board of Directors Member, Robert Gonzales/ San Fernando Road Business Alliance/ CWG #1: Burbank/ CWG #2: Foothill Communities/ Valley Industry and Commerce Association Government Affairs Committee Presentation/ CWG #3: Sylmar/ CWG #4: Sun Valley/ CWG #5: Pacoima (Spanish/bilingual)/ CWG #6: Santa Clarita Valley/ CWG #7: San Fernando/ CWG #8: Acton / Agua Dulce/CWG #9: Palmdale/ Foothill Communities Representatives Small Group Meeting/ San Fernando Valley Council of Governments Transportation Committee/ Valley Industry and Commerce Association Transportation Committee/ Santa Clarita Stakeholders/ Community Open House Meeting #1 – Pacoima/ Community Open House Meeting #2 – Burbank/ Community Open House Meeting #3 - Sun Valley	PIM/STO/B /EL /AS	28
Summer 2015	Los Angeles Area Chamber Transportation & Goods Movement Council/ San Fernando, Special City Council Meeting/ San Fernando Valley Council of Governments Board of Directors	B/EL/PWG	3
Fall 2015	San Fernando Valley Council of Governments/ Field Visit and Tour with SAFE Community Representatives	STO	2

Date	Organization/Individual	Category ^a	Number of Meetings
Winter 2015/2016	San Fernando Valley Council of Governments Board of Directors Meeting	STO	1
Spring 2016	San Fernando Valley Council of Governments Board Meeting/ Burbank Stakeholder Working Group Meeting/ North Los Angeles County Stakeholder Working Group Meeting/ Acton Town Council/ Antelope Valley Union High School District	STO/SWG/ GIO	6
Summer 2016	Community Working Group Meeting, Sun Valley/Pacoima/ Stakeholder Working Group Meeting, Santa Clarita/ Community Working Group Meeting, Acton/Agua Dulce/ Community Working Group Meeting, Northeast San Fernando Valley	TWG/SWG	4
Fall 2016	Palmdale Community Open House Meeting/ LAUSD Board Member Staff Briefing/ Acton/Agua Dulce Community Open House Meeting/ Northeast San Fernando Valley Open House Meeting	PIM/EL	4
Spring 2017	Antelope Valley Hispanic Chamber of Commerce Presentation, Palmdale	STO	1
Summer 2017	Summer Reading Program, Sun Valley Branch Library EJ Outreach Event/ Antelope Valley Partners for Health Back 2 School Event EJ Outreach	P	2
Organizations and Businesses			
Summer 2014	Walt Disney Studios/ California Construction Expo Panel Discussion/ Shadow Hills Property Owners Association (SHPOA)/ Little Tokyo Leadership	STO/GIO	4
Fall 2014	Los Angeles River Cooperation Committee/ Los Angeles Cleantech Incubator/ Los Angeles Cleantech Incubator/ Neighborhood Housing Services of Los Angeles County Neighborhood Sustainability Symposium/ Railway Association/ Armenian Engineers and Scientists of America/ CalPoly Pomona, American Planning Students Association/ Burbank & Glendale Transportation Management Organizations/ Los Angeles: Cathedral of Our Lady of the Angels-Conference Center Path to Positive/ University of California, Los Angeles (UCLA) Institute of Transportation Studies/ KCAA 1050 AM "Money Talk" Host/ Small Business DVBE Summit/ Los Angeles Auto Show Connected City Summit	B/GIO/STO /P	13
Winter 2014/2015	Shadow Hills Property Owners Association, David DePinto/ Walt Disney Studios/ Foothill Communities Community Meeting, SAFE/ The American Society of Civil Engineers (ASCE) Orange County Branch/ Valley Industry and Commerce Association/ VerdeXchange 2015/ KCRW "Which Way LA?" Interview/ Los Angeles Tourism and Convention Board	STO/GIO/ M	9

Date	Organization/Individual	Category ^a	Number of Meetings
Spring 2015	Angeles National Golf Club/ California State University Northridge—Transportation/Urban Planning Students/ Eco Rapid Transit Board/ Time Warner Cable Videotaping/ Construction Management Association of America Breakfast of Champions/ National Association of Women in Construction/ American Institute of Architects (AIA), Los Angeles Chapter/ Shadow Hills Property Owners Association (SHPOA) / SAFE./ Pacoima Beautiful (All-Spanish Presentation)/ Railway Association of Southern California/ Rail Users Network Annual National Conference – “Making the Transition from Roads to Rail”/ San Fernando Road Business Alliance/ Independent Cities Association—Board of Directors Member, Robert Gonzales/ Santa Clarita Cougar News (high school news) Video Interview/ USC Rail Engineering Students Presentation/ State Building & Construction Trades Council - Women Building the Nation Presentation/ Chinese-American Engineers & Scientists Association of Southern California Presentation/ Santa Clarita Stakeholders	STO/GIO/M/B	18
Summer 2015	Friends 4 HSR SoCal, Champions for High-Speed Rail (kick-off meeting)/ Palmdale Kiwanis Club/ Metro Active Transportation Strategic Plan Open House Workshop/ St. Didacus Catholic Stakeholder Meeting	STO/GIO	5
Fall 2015	Field Visit and Tour with SAFE Community Representatives	STO	1
Winter 2015/2016	SAFE High-Speed Rail Status Meeting/ Pacoima Work Source Center Youth Policy Institute Small Business Workshop	STO/PIM	2
Spring 2016	Vulcan Materials Meeting/ Disney Headquarters Environmentalty Fair	GIO/P	2
Summer 2017	Summer Reading Program, Sun Valley Branch Library EJ Outreach Event/ Antelope Valley Partners for Health Back 2 School Event EJ Outreach	P	2

^a Category Key: AS = Agency Staff; B = Briefing; EL = Elected, GIO = General Interest Organization; M = Media, P = Public, PIM = Public Information Meeting; STO = Stakeholder Organization

Note: Spring= March-May; Summer= June-August; Fall = September- November; Winter= December- February

Agency Consultation

The Authority and FRA have consulted with cooperating agencies under NEPA and with trustee and responsible agencies under CEQA regarding specific resource areas associated with these agencies. Interested federal, state, and local agencies have also been consulted throughout the process. Since January, 2015, the Authority has held monthly regulatory agency meetings to discuss the Southern California Project Sections, including the Palmdale to Burbank Project Section. These meetings have provided an opportunity for agencies to preview technical studies and discuss project developments and review timelines. In addition, the Authority has hosted numerous focused consultation meetings with agencies on key topics, including: Pacific Crest Trail (PCT), waters of the U.S., and other resources of interest within the Project Section.

US Forest Service

Since 2014, the Authority and FRA have held regular coordination meetings with the US Forest Service (USFS) to discuss key project elements and the proposed project footprint within the ANF boundaries, provide updates on geotechnical investigations and data collected, and coordinate and provide updates on other fieldwork conducted within the ANF boundaries. The Authority and FRA have also shared environmental methodologies for key topics and preliminary analyses with

the USFS. These meetings have provided an opportunity to discuss USFS processes regarding NEPA compliance and authorizations allowing for the use of USFS lands, which led to the Authority, FRA and USF to enter into an agreement that documents and facilitates ongoing cooperation among the parties. The agreement is formally titled the “Memorandum of Understanding between the United States Department of Transportation Federal Railroad Administration, and the California High Speed Rail Authority and the USDA, Forest Service, Angeles National Forest,” and was executed in September 2017.

Bureau of Land Management

Since 2015, the Authority and FRA have held regular coordination meetings with the Bureau of Land Management (BLM) to discuss key project elements and proposed footprint on BLM lands, key environmental resources on BLM lands, and provide updates on data collected on BLM lands. The Authority and FRA have also shared environmental methodologies for key topics and preliminary analyses with BLM.

Pacific Crest Trail

The Authority and FRA have consulted with the USFS, BLM, and the Pacific Crest Trail Association (PCTA) to discuss potential impacts of the proposed project on portion of the Pacific Crest Trail (PCT) within the Palmdale to Burbank Project Section. The Authority and FRA have also proposed trail realignment options for Refined SR14 Alternative, analyzed potential noise and visual effects to the realigned trail, and proposed design features that would not impede equestrian use of the trail.

The Authority, FRA, USFS, BLM, and PCTA have worked collaboratively to develop a preferred realignment route for the portion of the Pacific Crest Trail that would be impacted by the Refined SR14 Alternative. This trail realignment route met the objectives proposed by PCTA and USFS, and minimized noise and visual impacts to trail users. The proposed realignment route was further refined following a field visit by the Authority and PCTA in late 2017. Further consultation is currently underway, and a proposed realignment option will be presented in the Draft EIR/EIS.

Checkpoint Process

In November 2010, the Authority, FRA, U.S. Environmental Protection Agency (EPA), and the USACE signed a Memorandum of Understanding (MOU) for integrating the NEPA, Section 404 of the Clean Water Act (CWA), and Rivers and Harbors Act Section 14 [33 U.S.C. 408] (Section 408) processes for the HSR project. The Authority and FRA have been coordinating regularly with the EPA and USACE pursuant to November 2010 MOU.

The MOU contemplates the completion of three milestones, which are aimed at advancing the NEPA and Section 404 processes:

- Checkpoint A: Purpose and Need - In December 2014, the Authority and FRA submitted a Purpose and Need statement to the USEPA and USACE, pursuant to the MOU’s Checkpoint A provisions. Both USACE and USEPA provided written concurrence with the purpose and need statement (respectively, on December 18 and 29, 2014).
- Checkpoint B: Range of Alternatives for Consideration - The MOU establishes that Checkpoint B consider additional information developed subsequent to programmatic analyses of alternatives. This information is used to inform the selection of a reasonable range of alternatives for consideration in the Tier 2 environmental review. The Authority is continuing to coordinate with USACE and USEPA to prepare a Checkpoint B report for the Palmdale to Burbank section.
- Checkpoint C: Determination of the preliminary Least Environmentally Damaging Practicable Alternative (LEDPA) pursuant to the Section 404(b)(1) Guidelines. The Checkpoint C process will likely commence after publication of the Draft EIR/EIS. The preferred alternative identified in the Draft EIR/EIS could be modified based on the outcome of agency coordination at Checkpoint C.

3 EVALUATION CRITERIA AND METHOD

This staff report evaluates the alternatives to be carried forward in the Palmdale to Burbank Section Draft EIR/EIS by comparing the three alternatives across multiple criteria, as described below. The Authority has balanced important factors that differentiate among the alternatives.

- **Community Factors and Environmental Issues:** The evaluation matrix in Table 2 compares 16 key community factors and environmental issues that differentiate among the alternatives:
 - Transportation
 - Air Quality and Global Climate Change
 - Noise and Vibration
 - Public Utilities and Energy
 - Biological Resources and Wetlands
 - Hydrology and Water Resources
 - Hydrogeology
 - Geology, Soils, Seismicity, and Paleontological Resources
 - Hazardous Materials and Wastes
 - Safety and Security
 - Socioeconomics and Communities
 - U.S. Forest Service Land (ANF/SGMNM)
 - Parks, Recreation and Open Space
 - Aesthetics and Visual Resources
 - Cultural Resources
 - Section 4(f) and 6(f) Resources
- **Performance, operations and capital costs:** These characteristics of the project section affect how the project section would perform in implementing high-speed rail, as well as the estimated capital and maintenance costs associated with the alternatives. Engineering estimates and the system operating plan inform the cost estimates.

Table 2 provides information for each criterion. This report provides quantitative data, where available, and qualitative comparisons where necessary to adequately differentiate among the alternatives. The analysis in Table 2 uses green shading to signify the alternative/s that have less potential impacts, or more beneficial effects, when compared with other alternatives.

Table 2 includes only those environmental resource areas potentially adversely affected which differentiate the alternatives. Resource areas that are affected generally equally by all the alternatives are not listed on the table. These include:

- Electromagnetic Fields and Electromagnetic Interference
- Station Planning, Land Use, and Development
- Regional Growth
- Environmental Justice

4 EVALUATION OF ALTERNATIVES

The purpose of the Palmdale to Burbank Project Section is to contribute to completion of the statewide HSR system by providing the public with electric-powered HSR service that offers predictable and consistent travel times between Palmdale and Burbank, connects the northern and southern portions of the statewide HSR system, and provides enhanced connections to airports, mass transit, and the highway network in the Antelope Valley and the San Fernando Valley, consistent with the Passenger Rail Vision in the California State Rail Plan, including the State's travel time objectives for the HSR system.


The project would construct, maintain, and operate an electrified, high-speed train system, which includes the construction, improvement, upgrade, operation, and maintenance of new and existing facilities and infrastructure necessary to support the system connecting the Palmdale Transportation Center in Palmdale to the Hollywood Burbank Airport in Burbank.


The alternatives evaluated and recommended in the 2016 SAA incorporate refinements that, when compared to the alternatives studied in previous AAs avoid or minimize potential impacts to existing facilities, land uses, and environmental resources.

In addition, the refinements incorporated in the 2016 SAA improve the constructability of the Palmdale to Burbank Project Section and optimize the HSR system's operations. The recommended Preferred Alternative, included in this refinement, reflects additional engineering, collaborative engagement with communities along the Palmdale to Burbank Project Section, and environmental studies conducted since the 2016 SAA.

Table 2 below provides information on the environmental impacts or benefits of the proposed alternatives by topical area, and where these alternatives differ from each other or are similar. This analysis is based on preliminary engineering completed to date and environmental analyses conducted on available information. The comparison table uses the following symbols to denote which alignment is most or least favorable:

Coding key:

 – Most favorable

 – Favorable

 – Least favorable
















The Draft EIR/EIS will contain a complete analysis of potential environmental impacts. Table 2 represents a distilled summary of environmental considerations that stood out as differentiating factors between the HSR Build Alternatives. Of the factors outlined in Table 2, certain factors were particularly influential in the identification of the Staff's recommended PA because they had most meaningful differences in impacts. These factors are highlighted in yellow in Table 2.



















Table 2 Comparison of High-Speed Rail Build Alternatives

Impact	HSR Build Alternative		
	Refined SR14	E1	E2
Transportation			
Construction Impacts			
Spoils			
Roadway and intersection impacts			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Air Quality and Global Climate Change			
Construction Impacts			
Construction pollutants			
Construction GHG emissions			
Operational Impacts - - No key differentiating effects among the HSR Build Alternatives			
Noise and Vibration			
Construction Impacts - No key differentiating effects among the HSR Build Alternatives			
Operational Impacts			
Noise			
Vibration			

Impact	HSR Build Alternative		
	Refined SR14	E1	E2
Electromagnetic Fields and Electromagnetic Interference			
Construction Impacts - No key differentiating effects among the HSR Build Alternatives			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Public Utilities and Energy			
Construction Impacts			
Construction water usage			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Biological Resources and Wetlands			
Special-status plant species	No differentiating effects among the HSR Build Alternatives. All build alternatives would have similar impacts to listed special-status plant species and non-listed special-status plant species		
Listed plant species habitat			
Listed wildlife species			
Non-listed special-status wildlife species			
Non-listed wildlife species habitat			
Wetland Waters of the US			
Non-wetland Waters of the US			
Riparian habitat, lakes, and streambeds			

Impact	HSR Build Alternative		
	Refined SR14	E1	E2
Wildlife Connectivity			
Hydrology and Water Resources			
Construction Impacts			
Special flood hazard areas			
Groundwater basins crossed			
Operational Impacts – No key differentiating effects among the HSR Build Alternatives			
Hydrogeology			
Seeps and springs			
Length of tunnels beneath the ANF			
Narrow faults crossed beneath the ANF			
Wide faults crossed beneath the ANF			
Width of gouge, crushed, and sheared rock zones within the ANF			
Tunnel under potential high water pressure			
Geology, Soils, Seismicity, and Paleontological Resources			
Construction Impacts			
Paleontological sensitivity			

Impact	HSR Build Alternative		
	Refined SR14	E1	E2
Operational Impacts			
Hazardous and potentially hazardous fault zones			
Hazardous and potentially hazardous fault zone encounters			
Dam inundation zones			
Surface footprint within MRZ-2			
Subsurface footprint within MRZ-2			
















Impact	HSR Build Alternative		
	Refined SR14	E1	E2
Hazardous Materials and Wastes			
Construction Impacts			
PEC sites			
Inactive oil/gas facilities			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Safety and Security			
Construction Impacts - No key differentiating effects among the HSR Build Alternatives			
Operational Impacts			
High/very high wildfire hazard zones			
Very high wildfire hazard zones within the ANF	 2		
Socioeconomics and Communities			
Construction Impacts			
Single-family residential displacements			
Multi-family residential displacements			

2 The permanent at-grade acreage of the Refined SR14 Alternative within very high wildfire hazard zones within the ANF is entirely associated with the Vulcan Mine site. The Refined SR14 Alternative offers the opportunity to restore the Vulcan Mine site to a natural topography and habitat, consistent with the surrounding ANF lands, once construction is complete which would provide a benefit over other alternatives that do not provide this opportunity.


Impact	HSR Build Alternative		
	Refined SR14	E1	E2
Business displacements			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Station Planning, Land Use, and Development			
Construction Impacts- No key differentiating effects among the HSR Build Alternatives			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Forest Lands (ANF/SGMNM)			
Construction Impacts			
Temporary use of forest land (ANF)			
Operational Impacts			
Permanent Surface Footprint within the ANF/SGMNM	3		
Parks, Recreation, and Open Space			
Parks, recreation, and open space	4	4	


3 While the Refined SR14 Alternative would result in the most footprint within the ANF, the majority of this land is associated with the Vulcan mine (a gravel extraction facility) which is a developed area within the ANF and SGMNM. The Refined SR14 Alternative may have an opportunity to restore the Vulcan Mine site, which is currently an open gravel mining pit, to natural topography and habitat consistent with surrounding ANF lands. This is proposed with the SR 14 Alternative and may provide a benefit over the other alternatives if this restoration would be available and beneficial to the USFS. Beyond the Vulcan Mine site, permanent expressions within the ANF would be largely associated with adits (on private inholdings) and would comprise utility connections placed along existing infrastructure. Once the Vulcan Mine site is restored to natural conditions, the Refined SR14 Alternative would have the smallest extent of permanent surface footprint within the SGMNM/ANF.


4 The direct and indirect impacts to the Hansen Dam Open Space under the E2 Alignment Alternative would represent one of the largest direct and indirect impacts of all the alignment alternatives. While there are more parks located within 1,000 feet of the Refined SR14 Alternative than the E1 and E2 Alternatives, the impacts of the E2 Alternative to the Hansen Dam Open Space would be more substantial than any impacts to parks from the SR14 and E1 Alternatives.


Impact	HSR Build Alternative		
	Refined SR14	E1	E2
Aesthetics and Visual Quality			
Construction Impacts			
Key viewpoints with decreased visual quality			
Operational Impacts —No differentiating effects among build alternatives			
Cultural Resources			
Construction Impacts			
Significant prehistoric and historic-era archaeological resources			
Native American Resources			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Regional Growth			
Construction Impacts - No key differentiating effects among the HSR Build Alternatives			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Environmental Justice			
Construction Impacts - No key differentiating effects among the HSR Build Alternatives			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Section 4(f)			
Construction Impacts			
Key Section 4(f) resources			
Operational Impacts - No key differentiating effects among the HSR Build Alternatives			
Key Section 4(f) resources affected by project operations			

Coding key:

 – Most favorable

 – Favorable

 – Least favorable

 – Differentiating factor that weighed more in identification of the Staff Recommended PA

4.1 Differential Factors Influencing Identification of a Preferred Alternative

The public outreach meetings and stakeholder engagement have provided the Authority with comments and information that assisted in identifying a Preferred Alternative alignment. Based on the public outreach information, along with the impact analysis conducted to date that will be included in this EIR/EIS, Staff has concluded that the Refined SR14 Alternative is the preferred alignment option with regard to balancing functional, technical, economic and constructability factors while reducing impacts on natural resources and the community impacts.

For the three HSR Build Alternatives (Refined SR14, E1, and E2) analyzed, the following resources were not considered differentiators in the evaluation and recommendation of a Preferred Alternative because the impacts were of similar magnitude or did not vary widely: electromagnetic fields and interference; station planning, land use, and development; regional growth; and environmental justice.

The following key resource factors were considered by the Authority and FRA in identifying the Preferred Alternative:

Transportation

Construction-period traffic impacts would result in impacts to roadway segments and intersections without mitigation. Spoils hauling would entail trucks off-hauling the spoils generated by project construction, especially tunnel boring, to disposal sites. The E1 Alternative would result in the most roadway segment and intersection impacts caused by spoils hauling, while the Refined SR14 Alternative would result in the least traffic impacts due to spoils hauling. Given the magnitude of spoils off-haul required, and the potential for this to impact local communities, this was considered a differentiator between alternatives.

Air Quality and Global Climate Change

Construction-period pollutant emissions from construction activities, spoils hauling, and construction-period traffic delays, would result in the HSR Build Alternatives exceeding general thresholds for pollutant emissions. While the HSR Build Alternatives would all exceed these thresholds at some point during construction, the Refined SR14 Alternative would exceed thresholds the least. The Refined SR14 Alternative would also result in the least amount of greenhouse gas (GHG) emissions during construction.

Noise and Vibration

Construction of the HSR Build Alternatives would result in similar magnitudes of noise effects as most of the sensitive receivers in the Palmdale to Burbank Project Section are located in the Antelope Valley (Lancaster and Palmdale) and San Fernando Valley (Los Angeles neighborhoods, Burbank) where the HSR Build Alternatives would be the same.

Operational noise impacts would largely occur around stations, while operational vibration impacts would occur along the alignment. The Refined SR14 Alternative, would result in the fewest number of sensitive residential receivers that would experience operational noise impacts.

Biological Resources and Wetlands

Each of the HSR Build Alternatives would have the potential to impact biological resources, including plant species and habitat, wildlife species and habitat, and wetlands. The degree to which the alternatives could impact each resource varies, as do the specific resources that the alternatives could impact. For example, only the Refined SR14 Alternative would require crossing the Santa Clara River, while avoiding impacts to habitat for the Unarmored Three-spined Stickleback (UTS) fish, which is a fully protected species under state law, which limits (even more than other protected species) the types of activities that can be done in areas where such species or habitat is located. The Refined SR14 Alternative would have the least effect on wildlife movement because of the total distance of tunnels and viaducts in critical wildlife movement areas. The E2 Alternative would cross the Big Tujunga Wash, which is home to many special status plant and wildlife species and habitat.

With regard to impacts to wetland waters of the U.S., both the Refined SR14 and E1 Alternatives would have the least impact, with the E2 Alternative having the greatest. The Refined SR14 Alternative would have most impacts to non-wetlands waters of the US, followed by the E1 and E2 Alternatives. The surface footprint of Refined SR14 Alternative would have most impacts to listed plant and wildlife species, as compared to the E1 and E2 alternatives. The E1 and E2 Alternatives would have footprint within the Critical Biological Land Use Zone in the ANF/SGMNM, while the Refined SR14 Alternative avoids this impact. Figure 4 shows the Critical Biological Land Use Zone in the ANF/SGMNM.

The Refined SR14 Alternative has fewer surface water features (seeps and springs) than the E1 or E2 Alternatives in close proximity to the alignment that could potentially be affected by tunneling underneath the ANF. The Authority is continuing to investigate the potential for changes in hydrogeologic conditions to occur within the ANF as a result of tunnel construction. Specifically, the Authority is analyzing whether such changes could indirectly affect surface hydrology within the ANF, which could potentially impact aquatic resources and other natural communities. Based on the most recent assessments, it appears that the E1 and E2 alternatives would pose a substantially higher risk as compared to the Refined SR14 Alternative that such hydrologic changes, and potential associated biologic changes, could occur.

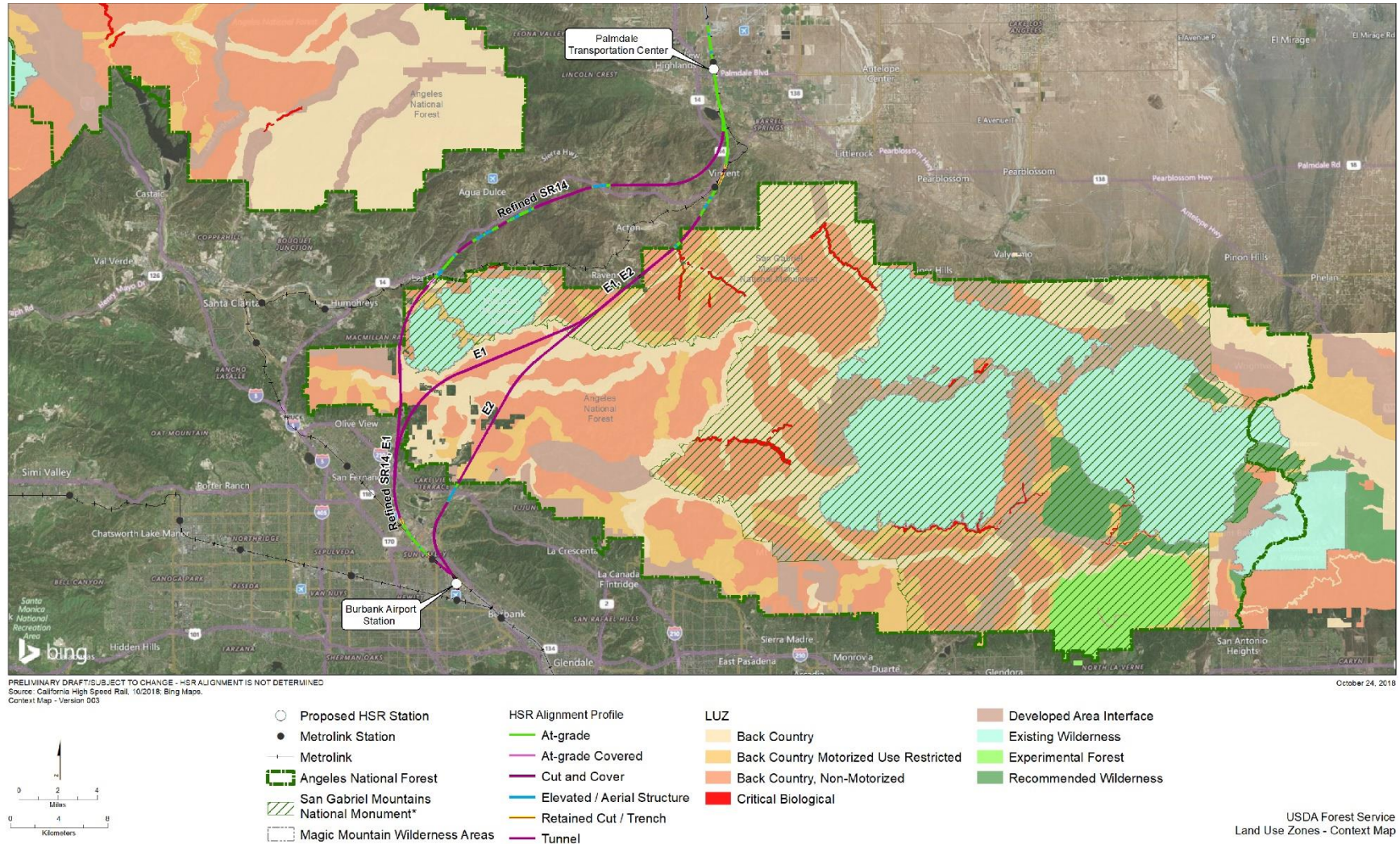


Figure 4 Land Use Zones in the ANF/SGMNM

Hydrogeology

Groundwater pressure is a key constructability issue where bored tunnels would travel beneath the ANF. High groundwater pressures would create conditions where achieving a water-tight tunnel would be more of a challenge. As such, the length of bored tunnel exposed to potential high groundwater pressures is a key differentiator in determining a PA in the Palmdale to Burbank Project Section. In addition, historic fracturing and faulting beneath the ANF has created fissures (i.e. gouge, crushed, and sheared rock zones) within the bedrock that allows groundwater to move through the rock mass. Thus, the number and width of fault crossings for each Build Alternative is a key differentiator for potential impacts to hydrogeological resources.

The Refined SR14 Alternative would have the least potential for adverse effects relative to hydrogeological concerns. The Refined SR14 Alternative would have the least amount of tunnel beneath the ANF and SGMNM, the least amount of tunnel under potential high groundwater pressures, the fewest wide fault crossings, and the second lowest length of tunnel alignment through gouge, crushed, and sheared rock zones.

As discussed in the Biological and Wetland Resources section, the Refined SR14 Alternative has the fewest surface water features (seeps and springs) that may be affected by tunnel construction. As further noted, the Authority is continuing to investigate the potential for changes in hydrogeologic conditions to occur within the ANF as a result of tunnel construction. Specifically, the Authority is analyzing whether such changes could indirectly affect surface hydrology within the ANF, which could potentially impact aquatic resources and other natural communities. Based on the most recent assessments, it appears that the E1 and E2 alternatives would pose a substantially higher risk as compared to the Refined SR14 Alternative that such hydrologic changes, and potential associated biologic changes, could occur.

Hazardous Materials and Wastes

Potential Environmental Concern (PEC) sites, where a possibility of existing, past, or potential hazardous materials release into soil, groundwater, or surface water, of high concern would be present within each of the HSR Build Alternatives. However, the E2 Alternative has slightly fewer high-priority PEC sites than the Refined SR14 and E1 Alternatives. This is because the E2 Alternative would travel the most in deep, bored tunnels through the ANF, avoiding PEC sites which are generally caused by surface releases of hazardous materials. The Refined SR14 and E1 Alternatives would affect fewer inactive oil and gas facilities than the E2 Alternative, resulting in less risk of accidentally encountering abandoned oil wells.

Safety and Security

Each of the HSR Build Alternatives would pass through wildfire hazard zones; however, the E2 Alternative would have the least amount of surface footprint within high/very high wildfire hazard zones. This is largely due to the fact that the majority of high/very high wildfire hazard zones in the HSR Build Alternatives' are located west of the ANF, and the E2 Alternative would pass most directly between Palmdale and Burbank, through the ANF. There is no high wildfire hazard zone designation within the ANF boundaries, only very high, and the E2 Alternative would have the least amount of surface footprint within the very high wildfire hazard zone designation within the ANF boundaries. This is because the E2 Alternative would pass beneath much of the ANF in deep, bored tunnels. While the Refined SR14 Alternative would have the most permanent at grade footprint within very high wildfire hazard zones within the ANF, all of it would be associated with the Vulcan Mine site. The Refined SR14 Alternative may present an opportunity to restore the Vulcan Mine site, which is currently an open gravel mining pit, to natural topography and habitat consistent with surrounding ANF lands. This is proposed with the SR 14 Alternative and would provide a benefit over the other alternatives if this restoration would be available and beneficial to the USFS.

Socioeconomics and Communities

All of the HSR Build Alternatives would result in residential and business displacements as a result of the right-of-way acquisition requirements. The E2 Alternative would have the fewest

residential (single-family and multi-family) and business displacements because it would utilize tunnels more than the other alternatives. However there has been substantial community opposition to the E2 alternative, particularly in the Shadow Hills and Lake View Terrace communities where the E2 alternative would emerge from tunneling at the southern end of the ANF and span the Big Tujunga Wash on an elevated structure. Among other things, these communities have expressed concerns about potential noise impacts, residential displacements, and potential impacts to equestrians resulting from the project. The Refined SR14 and E1 Alternatives would result in very similar numbers of both residential and business displacements. There has also been community opposition to the Refined SR14 Alternative in the communities of Acton and Agua Dulce where communities are concerned about residential displacements and potential noise and vibration impacts. Additionally, in the San Fernando Valley, communities are concerned about residential and business displacements that could occur if either the Refined SR14 or E1 Alternatives are constructed.

U.S. Forest Service Lands

All three HSR Build Alternatives would pass underneath the ANF, and result in limited permanent surface expressions (i.e., limited visual evidence on the surface that a tunnel runs beneath) within the ANF boundaries (See Figure 4). While the Refined SR14 Alternative would result in the most footprint within the ANF, the majority of this land is associated with the Vulcan mine (a gravel extraction facility) that is a developed area within the ANF and SGMNM. The Refined SR14 Alternative may present an opportunity to restore the Vulcan Mine site, which is currently an open gravel mining pit, to natural topography and habitat consistent with surrounding ANF lands. This is proposed with the SR 14 Alternative and may provide a benefit over the other alternatives if this restoration would be available and beneficial to the USFS. Beyond the Vulcan Mine site, permanent expressions within the ANF would be largely associated with adits (on private inholdings) and would comprise utility connections placed along existing infrastructure. Once the Vulcan Mine site is restored to natural conditions, the Refined SR14 Alternative would have the smallest extent of permanent surface footprint within the SGMNM/ANF. The E1 and E2 Alternatives would have surface impacts associated with construction of portals in the Aliso Canyon area and north of Tujunga Wash for the E2 Alternative. The E1 and E2 Alternatives would have footprint within the Critical Biological Land Use Zone in the ANF/SGMNM, while the Refined SR14 Alternative avoids this impact. Beyond the portals, the E1 and E2 Alternatives would have permanent expressions within the ANF associated with adits (on private inholdings) and utility connections placed along existing roads and/or utility poles.

Parks, Recreation, and Open Space

The Refined SR14 Alternative would include improvements in close proximity (within 1,000 feet) to the greatest number of parks, recreation, and open space resources; the E2 Alignment Alternative would be constructed in close proximity to the fewest parks, recreation, and open space resources.

While the total number of resources potentially affected (i.e., within 1,000 feet of proposed HSR improvements) would differ between the alignment alternatives, the most significant impacts (i.e., direct acquisition of parkland and/or realignments of trails) are common to all of the alignment alternative and include:

- Dr. Robert C. Saint Clair Parkway
- Littlerock Trail (proposed)
- Acton Community Trail (proposed)
- Palmdale Hills Trail (proposed)

In addition to the common resources directly impacted by the project, the Refined SR14 Alternative would result in direct impacts to the following resources:

- Santa Clara River Trail (proposed)
- Rim of the Valley Trail (proposed)

The E1 and E2 Alternatives would result in direct impacts to Vasquez Loop Trail (proposed). The E2 Alternative would result in direct impacts to the Hansen Dam Open Space as well as to the Rim of the Valley Trail (proposed), as described for the Refined SR14 Alternative.

The largest differences in direct impacts would occur between the Refined SR14 and E2 Alternatives. While there are more parks located within 1,000 feet of the Refined SR14 Alternative than the E1 and E2 Alternatives, the direct and indirect impacts to the Hansen Dam Open Space under the E2 Alignment Alternative would represent one of the largest direct and indirect impacts of all the alignment alternatives. The construction of an elevated railway within this open space area would only occur under the E2 Alternative, which makes the Refined SR14 and E1 Alternatives less impactful with regards to parks, recreation, and open space resources.

While the alternatives would travel in close proximity to the Magic Mountain Wilderness Area, which is located within the boundaries of the ANF, none of the alternatives would traverse the boundaries of the Magic Mountain Wilderness Area. The Refined SR14 and E1 Alternatives would be located closest to the Magic Mountain Wilderness Area, and would travel in tunnels in proximity to the area, avoiding any potential surface impacts to the resource.

Aesthetics and Visual Quality

In general, during construction, a greater and wider variety of visual impacts would occur under the Refined SR14 and E2 Alternatives than under the E1 Alternative. The E1 Alternative would travel largely below grade and would thus result in the least visual impact on its surroundings, while the Refined SR14 and E2 Alternatives, though they too include substantial below-grade portions, would cross various waterways and other scenic natural resources above grade, thereby causing greater changes in visual quality. In particular, while the Refined SR14 Alternative would generally be either in close proximity to existing transportation infrastructure or below ground in tunnels, large-scale overcrossing structures would block views in some areas, such as on Red Rover Mine Road and the Pacific Crest Trail. While the Project components for the E2 Alternative would mostly not be visible (below ground in tunnels), near the tunnel portals the project's features would contrast with natural harmony of some views, such as near Lake View Terrace and Big Tujunga Wash.

Cultural Resources

None of the HSR Build Alternatives would adversely impact built historic resources during construction or operation. However, construction of each of the HSR Build Alternatives would adversely affect known archaeological resources. The Refined SR14 Alternative would adversely impact the fewest known archaeological resources as compared to the E1 and E2 Alternatives. In addition, the Refined SR14 Alternative would avoid any potential impacts to Aliso-Arrastre Special Interest Area within the ANF and any potential impacts to tribal resources in Aliso Canyon impacted by E1 and E2.

Section 4(f) Resources

The Authority anticipates that each of the HSR Build Alternatives would result in de minimis impacts to Section 4(f) resources. Most notably, the Refined SR14 Alternative would realign a portion of the Pacific Crest Trail (PCT), while the E1 and E2 Alternatives would travel on elevated track structure near the historic Blum Ranch.

The Refined SR14 Alternative would require a segment of the PCT be used as a construction staging area. Ultimately, the Refined SR14 Alternative would require the permanent acquisition of this segment of the current alignment of the PCT trail. These acquisitions would require the realignment of the PCT during construction as well as operation. The Authority has consulted with the Pacific Crest Trail Association, the Bureau of Land Management, and USFS regarding trail realignment options and has developed a preliminary PCT realignment that would be part of the Refined SR14 Alternative. The trail would be realigned, and a new crossing would be constructed to allow trail users to cross under the HSR alignment. This realignment has been designed to minimize air quality, visual, and noise impacts to the PCT, including such effects currently existing, associated with the PCT's present alignment in proximity to the SR-14 freeway.

With implementation of the E1 and E2 Alternatives, the HSR alignment would be visible from the historic property of Blum Ranch. The rail viaduct structure would be south of the historic Blum Ranch property. Given the distance of the HSR alignment from the historic property and the fact that the integrity of the contributing structures or key agricultural features would not be diminished, the attributes and features that qualify this historic property for protection under Section 4(f) would not be diminished by views of the E1 and E2 Alternatives from this historic property. Therefore, the Authority has preliminarily concluded that views of the HSR elevated rail structure from the historic Blum Ranch property would not constitute a use under Section 4(f). The E1 and E2 alternatives would have footprint within the Critical Biological Land Use Zone in the ANF/SGMNM, however, given the limited extent of footprint in this land use zone, there would likely be a de minimis impact under Section 4(f).

The Authority is continuing consultation with the USFS regarding the potential Section 4(f) status of lands within the ANF/SGMNM and regarding the potential for a use of those lands. A full analysis of Section 4(f) resources will be included in the Draft EIR/EIS.

4.2 Capital Costs

The following Table 3 shows the construction costs of the HSR Build Alternatives from the Palmdale to Burbank Project Section in 2017 dollars. The cost estimate includes the total effort and materials necessary to construct the Palmdale to Burbank Project Section, including stations, maintenance facilities, and modifications to roadways required to accommodate grade-separated guideways.

Table 3 Estimate of the High-Speed Rail Palmdale to Burbank Project Section Capital Costs (2017 Dollars, \$Millions)

Cost Category	Refined SR14	E1	E2
Total Capital Cost	\$20,334	\$18,332	\$19,257

5 STAFF RECOMMENDATION

Preliminary analyses indicate the Refined SR14 Alternative strikes the best balance among the project objectives, environmental impacts to natural resources and community concerns, and stakeholder input. This alternative is shown in Figure 5. The Authority has refined the design of the Refined SR14 Alternative in response to input from community stakeholders, businesses, local agencies, and elected officials. The community engagement has resulted in further refinement of the Refined SR14 Alternative in the community of Acton to minimize potential land use, noise, and visual impacts. The Refined SR14 Alternative includes additional enhancements designed to minimize impacts within the Angeles National Forest and the San Gabriel Mountains National Monument.

In summary, the Authority's staff recommends that the Board identify the Refined SR14 Alternative to be the PA because of the following key differentiators:

- **Transportation, Air Quality, and GHG:** The Refined SR14 Alternative would generate the least amount of spoils, would require the least amount of spoils truck hauling, and would cause the fewest construction period impacts to the transportation network and regional air quality as compared to the E1 and E2 Alternatives.
- **Hydrology, Hydrogeology, and Water Resources:** The Refined SR14 Alternative would be preferred in terms of potential hydrogeology impacts because it has the least amount of tunneling beneath the ANF/SGMNM and because the Refined SR14 Alternative tunnels would be shallower than those in E1 and E2, resulting in the least amount of tunnel under potential high groundwater pressures, the fewest wide fault crossings, and the second lowest length of tunnel alignment through gouge, crushed, and sheared rock zones. This results in Refined SR14 Alternative having the least constructability risk, and the lowest potential impact to water resources in the ANF, and least potential for associated biologic changes.
- **Cultural Resources:** The Refined SR14 Alternative would be preferred over the E1 and E2 Alternatives with respect to cultural resources because it would impact the fewest known archaeological resources as compared to the E1 and E2 Alternatives. The Refined SR14 Alternative would also avoid any potential impacts to Aliso-Arrastre Special Interest Area within the ANF and any potential impacts to tribal resources in Aliso Canyon. Native American tribes have expressed strong concerns about E1/E2 alignments going through Aliso Canyon.

Staff recommends that the Board identify Refined SR14 Alternative as the State Preferred Alternative for the purpose of preparing the Palmdale to Burbank Section EIR/EIS. This identification will allow the public and other stakeholders, during their review of that draft document, to focus their attention and comments on the PA. If the Board accepts the staff recommendation, and FRA concurs with that recommendation, Refined SR14 Alternative will be identified as the State Preferred Alternative in the Draft EIR/EIS. The Authority and FRA will release the Draft EIR/EIS for public and agency review and comment and will take those comments into consideration in developing the final environmental document.

The Board is neither adopting nor approving an alternative at this time. No alternative will be approved until completion of the final environmental document. Staff will return to the Board in the future to consider approving an alignment for the Palmdale to Burbank Project Section, informed by the final environmental document.



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HSR ALIGNMENT IS NOT DETERMINED
 Source: HSR Authority, 5/2017. Basemap Source: National Geographic, 2016

September 29, 2017



Figure 5 Refined SR14 Alternative: Preferred Alternative