CALIFORNIA HIGH-SPEED TRAIN

Project Environmental Impact Report / Environmental Impact Statement

Merced to Fresno Section

Staff Recommendations: Preferred Alternative

November 2011

CALIFORNIA
High-Speed Rail Authority

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Summary

The extended 60-day public comment period for the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) on the Merced to Fresno Section of the California High-Speed Train (HST) Project ended on October 13, 2011. After careful consideration of data in the Draft EIR/EIS and public comments, the "Hybrid Alternative" is the staff recommendation for the preferred north-south alignment for the Merced to Fresno Section (see Figure S-1). The Hybrid Alternative provides the least environmental impacts considering the collective evaluation of natural and community resources, is the least costly alternative, has the fewest constructability issues, and therefore best meets the California High-Speed Rail Authority's (Authority's) project objectives and purpose and need.

The Hybrid Alternative results in the following:

- Fewer natural resource impacts than the BNSF Alternative and generally similar to the UPRR/SR 99 Alternative.
- Fewer effects on community resources than either of the other two alternatives, but substantially fewer effects than the UPRR/SR 99 Alternative.
- Fewer construction impacts such as noise, dust, air quality, and reduced access to parks and businesses than the other two alternatives.
- Least constructability issues and lowest cost alternative.
- Second best travel time compared to the UPRR/SR 99 Alternative, taking only 30 seconds longer between San Francisco and Los Angeles, a minute more between Merced and Fresno, and the same amount of time between San Francisco and Merced.

The estimated cost of the Hybrid Alternative is about $450 million less than the BNSF Alternative for the equivalent wye connection and over $1 billion less than the UPRR/SR 99 Alternative. The Hybrid Alternative avoids Downtown Madera and the community of Le Grand. The Hybrid Alternative also minimizes constructability issues that can lead to delay and cost escalation.

The Hybrid Alternative is similar in impacts or the least impacting alternative consistently over all environmental resources. The environmental process demands a balanced view of the collective resources to inform the decision process. The Authority and Federal Railroad Administration (FRA) anticipate that the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE) will conclude that the Hybrid Alternative is the least environmentally damaging practicable alternative (LEDPA), consistent with the USACE's permit program (33 Code of Federal Regulations [CFR] Part 320-331) and EPA's Section 404(b)(1) Guidelines (40 CFR 230-233).

The Mariposa Alternative is recommended as the preferred station location for Downtown Fresno. This location best serves the City of Fresno's land use planning, has the most potential for transit-oriented development, and is strongly supported by the City of Fresno. The Downtown Merced Station location is recommended as the preferred station location for Merced.

Staff recommends that no preferred alternative for the wye option or the Heavy Maintenance Facility (HMF) be identified at this time. The wye decision is dependent on additional environmental analysis being developed as part of the San Jose to Merced Section; therefore, all three wye alternatives identified in the Merced to Fresno Section Draft EIR/EIS are carried forward for further evaluation. Both the wye and HMF for the Merced to Fresno Section should be determined as part of the San Jose to Merced Section EIR/EIS process.

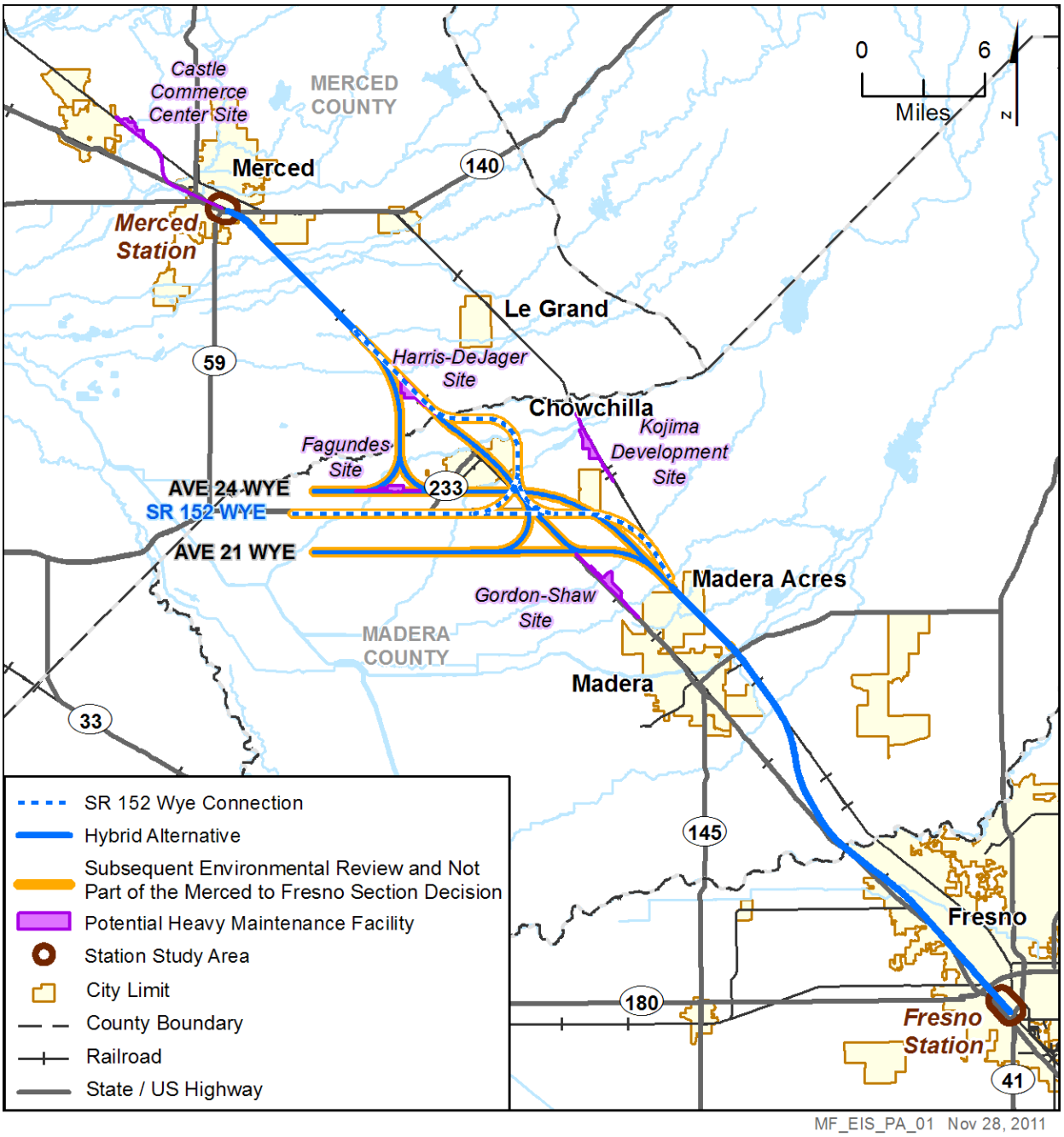

Figure S-1
Preferred Alternative - Hybrid

Introduction

This document presents the Authority staff's recommendation for the Hybrid Alternative as the preferred HST alternative for the Merced to Fresno Section (specifically the north-south alignment) and provides an evaluation of the identification of the preferred alternative. The Draft EIR/EIS did not identify a preference among the alternatives presented.

To facilitate the identification of a preferred HST north-south alignment alternative and station locations in the Final EIR/EIS, the Authority staff will present their recommendation as an action item to the Authority at the December 13, 2011, board meeting and provide an opportunity for the board to offer input and direction to staff. At the conclusion of this environmental review process, the Authority board will consider whether to certify the Final EIR/EIS, adopt necessary findings, and take action to approve the preferred north-south alignment alternative and station locations for this portion of the HST System; and it is further anticipated that the FRA would issue a Record of Decision (ROD) on the Final EIR/EIS.

The Merced to Fresno Section EIR/EIS process did not result in a recommendation for the selection of the following:

- The wye connection to the west. All alternatives work with both of the wyes discussed for informational purposes in the Merced to Fresno Section EIR/EIS. The San Jose to Merced Section EIR/EIS will present these routing options, as well as a third wye option, and will select an east-west connection as the preferred alternative.
- The HMF site. Selecting any of the north-south alignments and subsequently the east-west connections narrows the number of possible HMF sites that could work with the track alignment. The San Jose to Merced Section EIR/EIS will present the HMF options and select a preferred HMF site. The Fresno to Bakersfield Section is also evaluating HMF sites. Ultimately, one site will be selected for the HMF.

The identification of the preferred alternative is based upon the data presented in the Merced to Fresno Section Draft EIR/EIS, including the supporting technical reports, and comments received on the Merced to Fresno Section Draft EIR/EIS (the 60-day comment period concluded on October 13, 2011).

The Draft EIR/EIS provided an overview of the relative differences among physical and operational characteristics and potential environmental consequences associated with the HST north-south alignment alternatives and station location options, including the following:

- Physical/operational characteristics:
  - Alignment
  - Length
  - Capital cost
  - Travel time
  - Ridership
  - Constructability
  - Operational issues.
- Potential environmental impacts.
- Environmental impacts:
  - Transportation-related topics (air quality, noise and vibration, and energy)

- Human environment (land use and community impacts, farmlands and agriculture, aesthetics and visual resources, socioeconomics, utilities and public services, hazardous materials and wastes)
- Cultural resources (archaeological resources, historical properties) and paleontological resources
- Natural environment (geology and seismic hazards, hydrology and water resources, and biological resources and wetlands)
- Section 4(f) and Section 6(f) resources (certain types of publicly owned parklands, recreation areas, wildlife/waterfowl refuges, and historical sites).

In identifying a preferred north-south alignment alternative, the Authority was guided by the project purpose and need and project objectives found in Chapter 1, Project Purpose and Need, as well as the objectives and criteria as developed for and recorded in the *Preliminary Alternatives Analysis Report, Merced to Fresno Section High-Speed Train Project EIR/EIS* and the *Supplemental Alternatives Analysis Report, Merced to Fresno Section High-Speed Train Project EIR/EIS,* which can found at http://www.cahighspeedrail.ca.gov/lib_Merced_Fresno.aspx. Additionally, these criteria are consistent with Section 404(b)(1), Guidelines of the Clean Water Act (40 CFR 230–233), including minimizing impacts on Waters of the U.S. and other sensitive environmental resources. For the Merced to Fresno Section, these include agricultural resources, cultural resources, and parks.

As a result of the analyses incorporated in the Draft EIR/EIS and the subsequent Final EIR/EIS as well as the biological assessment of ecosystems impacts and cultural, and community impacts, the Authority and FRA anticipate that the EPA and USACE will conclude that the Hybrid Alternative is the LEDPA, consistent with USACE's permit program (33 CFR Part 320–331) and EPA's Section 404(b)(1) Guidelines (40 CFR 230–233).

Summary of Comments

During the comment period, there were 857 comment submittals on the Merced to Fresno Section Draft EIR/EIS. The comments covered a wide range of issues and represented viewpoints from government agencies, organizations, business groups, businesses, residents, and property owners.

Most expressed support or opposition opinions about the project or its alternatives. Of the 857 submittals, approximately 103 generally supported and 127 were generally opposed to the project. Most comments came from individuals in the general public living, working, or with property interests in the project study area. About a fourth of the comments submitted concerned the UPRR/SR 99 Alternative. Few preferred the BNSF Alternative; most comments on the BNSF Alternative expressed opposition to this alternative. Only a few comments mentioned the Hybrid Alternative by name.

Among comments received from the general public, effects on agricultural and private property were the top concerns about the project. Also, comments expressed concern over the project cost estimates, funding availability (including whether any money should be spent on this type of project in light of state and federal budget deficits), and questions regarding the accuracy of the ridership projections. Common issues also covered safety at stations, station access limitations for vehicles and pedestrians, and connectivity to ultimate destinations upon arriving at HST stations. Other common environmental concerns included noise and vibration, ecosystem effects, neighborhoods, and construction effects.

Approximately 41 submittals included suggestions to change the Merced to Fresno Section HST alternatives. Most common among these comments was that the alternatives do not strictly remain within or along existing transportation corridors. These comments most often referenced the east-west wye connections from San Jose and the BNSF Alternative. The primary suggestion was to consider an alignment adjacent to I-5 that would bypass this Merced to Fresno Section corridor and the HST stations in Merced and Fresno altogether. In addition, other comments suggested a preference for the State of California to invest in the development of the Amtrak system instead of HST or use funding for other infrastructure improvements.

California Legislators

Congressman Dennis Cardoza supports the project; more specifically, he supports the UPRR/SR 99 Alternative because it best follows existing transportation corridors. His comment notes that this project represents job and economic opportunities. However, he noted that it is premature to decide on the HMF at this time, requesting that the evaluation and discussion of HMF options be removed from the Final EIR/EIS and evaluated at a more appropriate time. State Assembly member Cathleen Galgiani expressed support for the project, its purpose and economic benefit connecting over 5 million persons in the San Joaquin Valley and potential improvements on traffic along SR 99 and I-5, as well as subsequent improvements to air quality. She believes that linking to University of California-Merced will be valuable, but, most important, she believes the project may support additional jobs and economic recovery.

Project Area Local Governments

The City of Merced supports the UPRR/SR 99 Alternative, citing the minimized environmental impacts and opportunities for economic diversification with this alternative. This is supported by several hundred letters from Merced County from persons living in Le Grand who are very concerned about the effects of the BNSF Alternative on their community. The City of Chowchilla supports the BNSF Alternative with the Ave 21 Wye, and feels that the UPRR/SR 99 Alternative and Ave 24 Wye would divide and disrupt their community. The City of Madera supports the BNSF and the Hybrid alternatives, and feels that the UPRR/SR99 Alternative would divide and disrupt their community as well. However, Fairmead residents expressed concern about impacts on their church and community center after having already endured impacts from changes to SR 99. The City of Fresno did not express support for a particular alternative but does support the Downtown Fresno Station, and prefers the Mariposa Street Station Alternative over the Kern Street Station Alternative.

Merced County supports the UPRR/SR 99 Alternative over use of the BNSF corridor because of the lower impact on their community, farmland, and the environment, and because it supports the County's planning efforts. Madera County did not express preference for any alternative, but was more concerned about the ability to mitigate impacts on the communities and rural land uses in their county. Fresno County did not address the Merced to Fresno Section.

Federal Agencies and Tribes

EPA did not express support for a particular alternative, but was concerned with minimizing impacts on wetlands, aquatic resources, air quality, and induced growth. USACE did not support a particular alternative, but requested more information on mitigation prior to determining the LEDPA. Both EPA and the USACE mentioned previous correspondence regarding concerns about the alternatives analysis process, during which they both had mentioned to the Authority that the BNSF Alternative could not be considered the LEDPA. NOAA Fisheries did not address specific alternatives, but provided comments primarily related to their jurisdiction within the project corridor. Amtrak provided detailed comments related to different alternatives, but did not express support for a specific alternative. The U.S. Coast Guard and U.S. Department of Interior, Office of Environmental Policy and Compliance sent letters stating they did not have any comments on the EIR/EIS. The USFWS did not submit a comment letter on the Draft EIS.

State Agencies

The California State Department of Corrections and Rehabilitation is opposed to the BNSF Alternative with either the Ave 24 Wye or the Ave 21 Wye and the Hybrid Alternative with the Ave 24 Wye because of encroachments on their facilities from these alternatives. The University of California-Merced supports the UPRR/SR 99 Alternative because of the reduced impacts and noted that the BNSF Alternative would have greater impacts than other alternatives on lands managed by their department, with the greatest impacts occurring under the Le Grand design

option. Other state departments that commented, including the Department of Conservation, Water Resources Control Board, Caltrans, Department of Resources Recycling and Recovery, Native American Heritage Commission, State Lands Commission, and Public Utilities Commission, did not express preference for specific alternatives.

Regional and Other Public Agencies

The Madera County Economic Development Commission supports the BNSF Alternative and opposes the UPRR/SR 99 Alternative, but requested that a below grade option for the UPRR/SR 99 Alternative be considered. The 25 other regional and public agencies submitting comments, most of which were water districts, school districts, and irrigation districts, did not state a preference for a specific alternative.

Businesses

Comments were received from 73 different businesses, and most comments focused on impacts on their property and/or their business. Businesses whose property would be affected by the project typically stated preference for the alternative that would avoid their property. Businesses that stated a position for the UPRR/SR 99 Alternative or against the BNSF Alternative included Agriland Farming Company, Cavalleto Ranches, Wells Nut Farm Inc., Olam Farming, Kelsey Ranch, Lazy K Ranch, Shasky Farms, Santa Fe Farms, and Swanson Farms. Businesses for the BNSF Alternative or against the UPRR/SR 99 Alternative included Azteca Milling, Fagundes Brothers Dairy, George Dakovich & Son Inc., Ghosoph Real Estate, Jurkovich Doak Department, KB Home, Rancho Calera LLC, Ready Roast Nut Company, an unidentified business owner on Santa Fe Drive, an unidentified manufacturing facility, Valley Venture LLC, and the Vineyard Restaurant. Two businesses stated that they were against the Hybrid Alternative. These businesses were Cavalleto Ranches and an unidentified manufacturing facility. One business, T-Mobile, noted that their Fresno switching office would be impacted by all alternatives and that relocation of this facility would be extremely disruptive and costly and request that the alternatives be modified to avoid it.

Several businesses were concerned about the loss of jobs and if they were acquired and could not be relocated, and about impacts on the economy due to the loss of jobs, businesses, and tax revenue for the local jurisdictions. Some businesses were concerned about impacts during operation and construction, such as loss of access, noise, dust, and visual changes, affecting them. Other businesses felt the project would benefit the economy.

Twenty-two farms or ranches expressed concern about impacts on agriculture and farmlands, such as their ability to comply with district water quality board regulations and state pesticide and drift regulations with the project, the cost of changes to irrigation systems, the cost of relocating livestock, and the impacts of noise, vibration, dust, and stray voltage on livestock.

A unique business in this project area is the UPRR, because all alternatives would have some adjacency with this railroad corridor. UPRR provided comments primarily related to their right-of-way and uses proposed in and adjacent to it. They state that their entire right-of-way must be preserved, and the project should not be located within that right-of-way.

Organizations

Comments were received from 43 special interest or community organizations, including groups representing environmental interests or farming interests, groups organized in response to this project, and groups representing other organized stakeholder groups. Organizations representing environmental interests generally supported the UPRR/SR 99 alternative because of its reduced environmental impacts, although one group, the Planning and Conservation League, supported moving the project to the I-5 corridor. Some were also concerned about sprawl, induced growth, and cumulative impacts. Organizations supporting farming interests included the California Farm Bureau Federation; the Farm Bureaus for Fresno, Madera, Merced and Kings counties; associations for growers and producers; and

farmland trusts, and generally supported the UPRR/SR 99 Alternative because of the reduced impacts on farmlands. Some of these groups felt the analysis of impacts on farmland was inadequate and suggested an alternative that followed I-5 or the California Aqueduct in order to minimize impacts on farmland.

Organizations formed in response to the HST Project either generally supported or opposed the project and did not express an alternative preference or supported the UPRR/SR 99 Alternative. Some groups supported the project for the economic benefits, while others were concerned about funding. One particular grassroots effort, named Madera Friends of High-Speed Rail, sent in 1,113 submittals generally grouped in 9 standardized letters, each supporting the UPRR/SR 99 Alternative. Themes expressed support for this alternative stating that it would protect farmlands; provide connectivity, economic opportunities, and jobs in Madera; grade-separate the existing track through Madera; eliminate blight along the "E" Street corridor through the city; and, with mitigation could, improve the City of Madera. Several groups commented on the Merced and Fresno HST stations, such as the Californians for High-Speed Rail, which asked for the consideration of satellite parking facilities at the Merced and Fresno stations. Other organizations not in the groups above provided comments focused on specific types of impacts, such as jobs or public health and safety, related to all alternatives but did not generally support any one alternative.

Alternatives Considered

Following the Statewide and Bay Area Program EIR/EIS decisions as discussed above, the Authority, in cooperation with FRA, began the environmental review process for the Merced to Fresno Section of the California HST Project, which included a Notice of Intent (published in 2008) and public scoping process in early 2009.

The potential alternatives included five primary north-south routes between Merced and Fresno, four station alternatives for the Merced Station, two station alternatives in Chowchilla and Madera, and another six alternatives for the Fresno Station. Potential alternatives also considered five options for the west connection (i.e., the wye) from the San Jose to Merced Section. These potential alternatives were developed using HST system performance criteria, which were then used to determine the potential effects of the proposed alternatives on the natural and human environment. Once components were screened to lowest effects and highest HST performance, a Preliminary Alternatives Analysis compared the alternatives against each other and documented the results. While the Preliminary Alternatives Analysis process considered multiple criteria, the screening emphasized the project objective to maximize the use of existing transportation corridors and available rights-of-way, to the extent feasible.

The Preliminary Alternatives Analysis identified the following elements to be carried forward, which are included in the Merced to Fresno Section Final EIR/EIS:

- Two rail alignments (the UPRR/SR 99 and the BNSF alternatives)
- Two wye options (Ave 24 Wye and Ave 21 Wye)
- Five HMF sites (Castle Commerce Center, Harris-DeJager, Fagundes, Gordon-Shaw , and Kojima Development)
- One station site in Downtown Merced (Downtown Merced Station)
- Two Downtown Fresno Station alternatives (Mariposa Street Station and Kern Street Station)

Later, during the Supplemental Alternatives Analysis, the Authority developed a Hybrid Alternative to take better advantage of existing transportation corridors, while reducing impacts on Chowchilla and Downtown Madera. This alternative was carried forward and analyzed in the Merced to Fresno Section Draft and Final EIR/EISs. Figure 1 illustrates the HST alternatives and the HMF sites evaluated in the Merced to Fresno Section Final EIR/EIS. Those alternatives that were not carried forward had greater direct and indirect environmental impacts and the potential to cause undesirable growth patterns over those alternatives that closely follow existing transportation corridors. Please see Section 2.3 of the

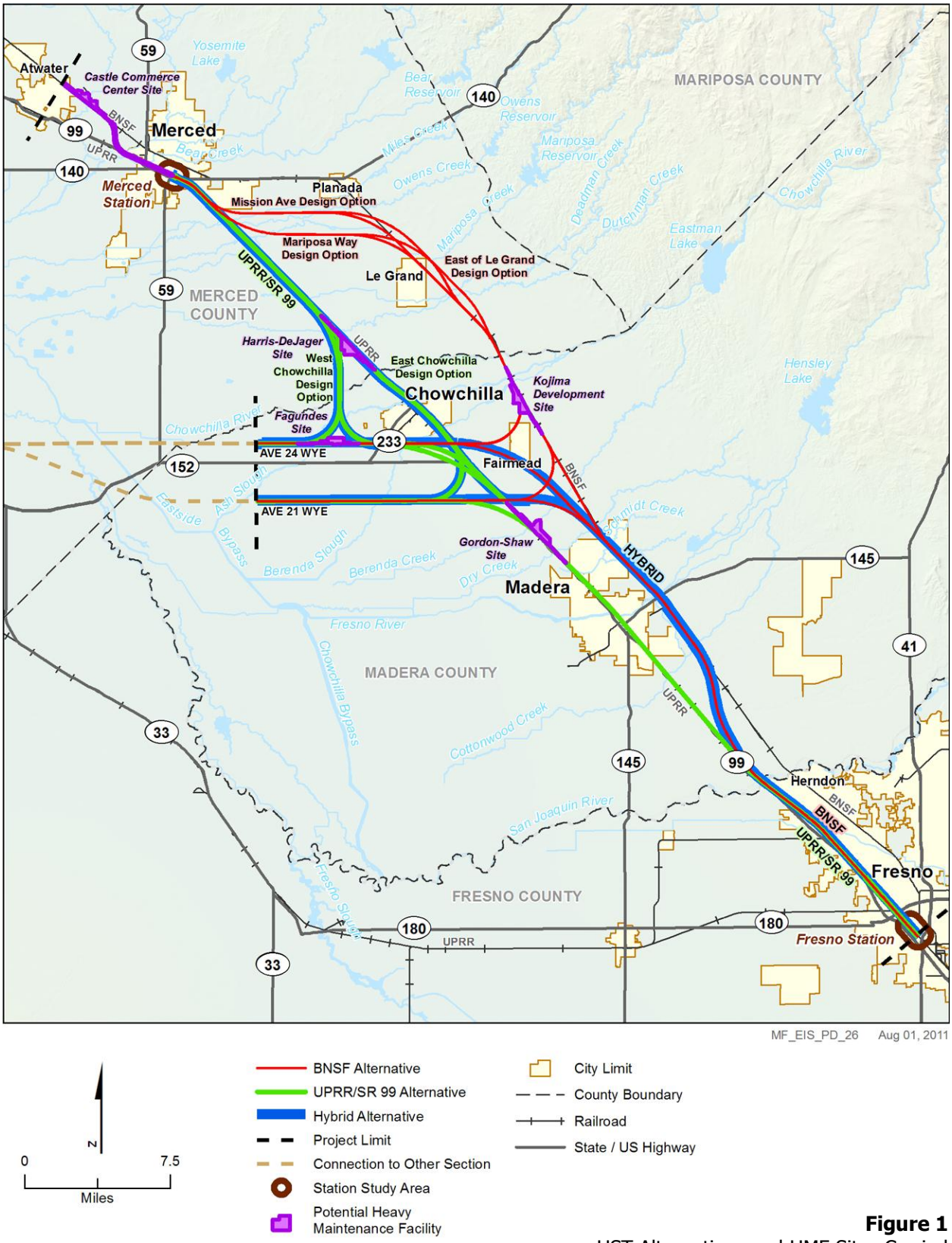

Figure 1
HST Alternatives and HMF Sites Carried Forward for Further Study

Merced to Fresno Section Draft EIR/EIS for a discussion of the potential alternatives considered and rejected.

Another project element that was added for further consideration after the Preliminary Alternatives Analysis was the SR 152 Wye (see Figure 2). Although this wye option was originally eliminated from detailed study in the Preliminary Alternatives Analysis, it was subsequently carried forward for evaluation in the San Jose to Merced Section EIR/EIS (Authority and FRA 2011a) based on additional input from regulatory agencies (EPA and USACE). Design refinements to this connection would avoid many of the impacts that led to its original dismissal from consideration. The Merced to Fresno Section Draft EIR/EIS does not analyze the SR 152 Wye. All three east-west alignments (i.e., Ave 24 Wye, Ave 21 Wye, and SR 152 Wye) will be carried forward for additional study and consideration as part of the San Jose to Merced EIR/EIS process. All three wye options connect to all three Merced to Fresno alignment alternatives.

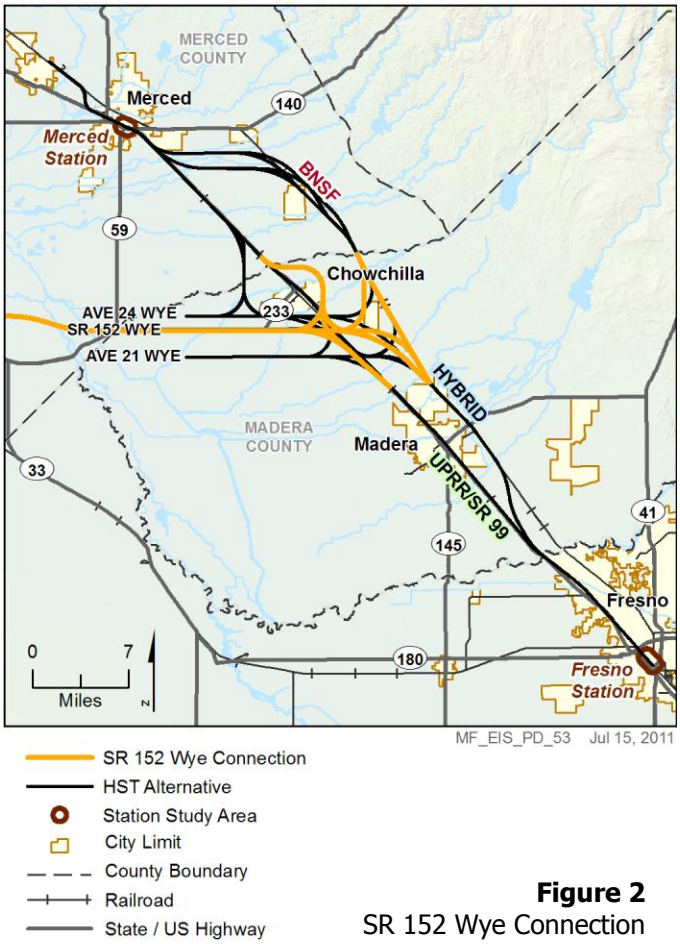

Figure 2
SR 152 Wye Connection

Alternatives Evaluation – North-South Alignment

Environmental Impacts

In recommending the Preferred Alternative, the Authority staff has balanced important environmental factors that differentiated the alternatives and continued to coordinate with and consider input from stakeholders. Generally, environmental issues identified are grouped into natural resources impacts, community impacts (including transportation infrastructure), and effects during construction. Tables 1 and 2 summarize impacts in each of these groupings, respectively. The color coding signifies a relative range of impacts that would be substantially higher (represented by red), average (yellow), or substantially lower (green). The color codes offered the resource specialist a method of integrating a professional, qualitative judgment with the quantity of impacts. For instance, when the quality of the resources affected varied more by habitat value than by acres, the color code reflects the value of impacts applied using professional judgment rather than only quantities.

Only those resources that would have significant effects and would differentiate alternatives are included in this comparison. The following resources were not included in this discussion because either the effects were less than significant, or the effects were common among the alternatives considered: hydrology, public utilities and energy, geology, soils and seismicity, hazardous materials, electromagnetic fields and interference, station planning, land use and development, and cultural and paleontological resources.

Natural Resources

Table 1 demonstrates that the BNSF Alternative would have greater impacts on high-value natural resources than the UPRR/SR 99 and the Hybrid alternatives. A short summary describing the relative differences of natural resource impacts follows for each category of natural resources.

All alternatives would have a substantial effect on suitable **habitat for special-status species**. Effects would either be direct during site preparation and construction or indirect through runoff, noise, motion, startle, and ongoing facility operation. The degree of direct and indirect effects would be greatest with the BNSF Alternative as it contains significant acreages of suitable habitat within the construction footprint. Beyond the specific acreages are habitat types, or mix, within those direct and indirect effects. The BNSF Alternative would also have a more profound impact on species that inhabit hydraulically dependent habitats such as vernal pools. The footprint of the UPRR/SR 99 and Hybrid alternatives contain less acreage of similar riparian-wetland communities, although both retain the same impacts on special-status species habitat.

Table 1
Natural Resources Impacts in the Merced to Fresno Section

Resource Categories[a]	Range of Natural Resource Impacts by HST Alternative[b]			Explanation of Measured Impact
	UPRR/ SR 99 Alternative	Hybrid Alternative	BNSF Alternative	
Biological Resources- Habitat	198/1,879 – 221/1,999	301/2,147 – 303/2,291	355/2,339 – 453/2,496	Permanent Conversion of Habitat with Potential to Support Special-status Plant Species (acres)/Special-status Wildlife Species (acres)
Biological Resources-Waters of the U.S.	28 – 33	35 – 37	35 – 46	Impacts on Waters of the U.S. (aquatic communities) (acres)
Biological Resources-Vernal Pools	1 – 2	5	9 – 14	Impacts on Vernal Pools and Other Seasonal Wetlands (acres)
Biological Resources-Riparian Communities	5 – 16	5 – 13	5 – 11	Impacts on Great Valley Mixed Riparian and Other Riparian Communities (acres)
Biological Resources-Conservation Areas	1	1	2	Number of Conservation Areas Affected (Camp Pashayan, Great Valley Mitigation Bank)
Biological Resources-Wildlife Crossings	3.6 – 4.1	3.6 – 4.1	6.1 – 6.8	Miles of Wildlife Crossings Traversed within Eastman Lake-Bear Creek ECA and Modeled Wildlife Corridors (Including Berenda Slough)

NOTES:

Substantially higher impact
Average impact
Substantially lower impact

[a] Biological resources effects are based on habitat-level evaluation because surveys were only conducted on properties where access was permitted. Habitat-level evaluations are conservative because they present potentially suitable habitat.

[b] When a single value is presented for the range of impacts, there is no appreciable difference between the project component combinations for the alternative.

The alternatives all would have substantial effects on the **Waters of the U.S.** (aquatic communities). The BNSF Alternative would have the most acreage affected because its location is more in the upstream

gradient of the local watersheds. In addition to the larger impact acreage for the BNSF Alternative, it also would cross more aquatic resources/drainages at key locations, such as within the Eastman Lake-Bear Creek Essential Connectivity Area (ECA) and at locations where there are other complementary regional resources such as vernal pools. The UPRR/SR 99 and Hybrid alternatives would have less acreage affected, and although the UPRR/SR 99 Alternative would have slightly less acreage impacted than the Hybrid Alternative, they both affect similar resources in proximity. Based on an evaluation of the condition of Waters of the U.S., including wetlands as they relate to functions and values, the second highest score was a natural watercourse intersected by the BNSF Alternative and the highest score was at the San Joaquin River crossing, common to all alternatives. Most of the other natural watercourse values were in the medium scoring range for the UPRR/SR 99 and the Hybrid alternatives. The lowest-impacts on wetlands/waters were most frequently found in the UPRR/SR 99 Alternative followed by the Hybrid and BNSF alternatives. The lower acreage impacted would mean less impact overall (since they are disturbed aquatic features) and thus would have less need for mitigation.

Vernal pools and seasonal wetlands would be affected by each of the HST alternatives, although the BNSF Alternative directly and indirectly impacts the largest acreages. Vernal pools and seasonal wetlands are complex, sensitive habitats with the largest potential for impacts among the habitat types analyzed. Indirect effects outside the construction footprint are magnified through changes in local micro-watersheds, which maintain suitable inundation levels for the lifecycles of vernal pool fauna. Due to their inherent biotic and abiotic sensitivity, vernal pools are a challenge to mitigate and/or re-establish for their full functions and values. The UPRR/SR 99 Alternative contains the least acreage (1 to 2 acres) and thus would have a more manageable mitigation/restoration requirement. The Hybrid Alternative would impact more vernal pool acreage (5 acres) than the UPRR/SR 99 Alternative yet substantially less than the BNSF Alternative (8.91 to 13.85 acres). An evaluation of the condition of wetlands (as it relates to functions and values) showed that agricultural activities reduce the condition of almost all nonriverine wetlands (i.e., vernal pools) within the wetland study area, but that there are vernal pools along the BNSF corridor that score average to above average with respect to condition. Thus, there would be less overall reduction of the condition of vernal pools for the UPRR/SR 99 and Hybrid alternatives.

Riparian communities include the broader linear drainages dominated by Great Valley mixed riparian and other riparian plant communities. These plant communities include all vegetated portions of the channel from the median high-water mark to the outer edges of the natural watercourses. Riparian habitat is frequently used as linear dispersal corridors that funnel wildlife movement through an otherwise fragmented landscape. The range of acreages representative of the direct and indirect effect is similar through all HST alternatives.

All HST alternatives would have some impact on **conservation areas.** The BNSF Alternative would traverse a portion of the Great Valley Conservation Bank and parallel another reserve in development; the UPRR/SR 99 and Hybrid alternatives would not. Each of the alternatives would traverse Camp Pashayan. The Great Valley Conservation Bank provides direct mitigation opportunities for impacts on San Joaquin kit fox, California tiger salamander, western burrowing owl, Swainson's hawk, and three vernal pool branchiopods (conservancy fairy shrimp, vernal pool fairy shrimp, and vernal pool tadpole shrimp). Project impacts on mitigation banks are typically mitigated at higher ratios to offset direct and indirect effects; this would increase mitigation requirements. The BNSF Alternative would have the largest effect on biological conservation areas.

Although all HST alternatives would present a barrier to **wildlife crossing**, the existing landscape already restricts wildlife movement, including within the Eastman Lake-Bear Creek ECA. The Hybrid Alternative would minimize its footprint within the Eastman Lake-Bear Creek ECA to reduce the project's effect on wildlife mobility. The BNSF Alternative would have the longest potential barrier across this linkage, as well as the most watercourses/riparian corridor crossings. Wildlife crossing opportunities are the locations of the bridges and culverts within the project that are situated to maximize dispersal opportunities.

The best option for the UPRR/SR 99 Alternative for wildlife movement is the East Chowchilla design option with the Ave 21 Wye; this alternative would cross Deadman Creek and Dutchman Creek once with

no other access road crossing within the ECA. This design option also includes five canals and culverts at-grade, which have low value crossings for terrestrial wildlife movement. The Hybrid Alternative with the Ave 21 design option is the best option as it crosses once at Deadman and Dutchman creeks. The Hybrid Alternative with Ave 24 design option has three crossings with two at Dutchman Creek.

The BNSF Alternative would have the most watercourse crossings and the longest distance traversing the Eastman Lake-Bear Creek ECA. The Mission Ave East of Le Grand design option with both wye options would have the fewest crossings and would likely have less conflict with wildlife movement compared to the other design options associated with the BNSF Alternative. No culverts or bridges are provided over natural watercourses in the other modeled wildlife corridor limits.

Community Resources

As shown on Table 2, the UPRR/SR 99 Alternative would result in the highest level of community impacts and the Hybrid Alternative would result in the least. The UPRR/SR 99 Alternative would have 5 more miles of trackway within the urbanized area than either the BNSF or Hybrid alternatives. Notably, all alternatives would equally affect the Merced and Fresno areas, but these communities also would realize the greatest community benefits; therefore, the differentiators among the alternatives are related to effects on the communities of Le Grand, Fairmead, and Madera Acres and the cities of Chowchilla and Madera. The UPRR/SR 99 Alternative generally would affect the City of Chowchilla and community of Fairmead, but would have greater impact on the City of Madera. The BNSF Alternative generally would affect Le Grand and Madera Acres. Finally, the advantage of the Hybrid Alternative is that it would avoid most communities, except that it shares the effects on Madera Acres with the BNSF Alternative and that it would pass south of, but adjacent to, Fairmead.

A short summary describing the relative differences in operation and construction community impacts follows for each category of community resource.

Table 2
Community Resource Impacts in the Merced to Fresno Section

Resource Categories	Range of Community Impacts by HST Alternative[a]			Explanation of Measured Impact
	UPRR/ SR 99 Alternative	Hybrid Alternative	BNSF Alternative	
Operation Community Impacts				
Acquisitions	255 – 285	235 – 262	246 – 273	Total Number of Residential Displacements
Acquisitions	311 – 323	228 – 249	245 – 260	Total Number of Business/Institution Displacements
Noise and Vibration	810 – 884	220 – 419	421 – 467	Number of Residences Affected by Severe Noise Impacts
Noise and Vibration	3 – 4	1	1	Number of Institutional Facilities Affected by Severe Noise Impacts
Transportation	20 – 25	30 – 37	27 – 42	Permanent Road Closures
Transportation				Impediments to Future Transportation Infrastructure

Resource Categories	Range of Community Impacts by HST Alternative[a]			Explanation of Measured Impact
	UPRR/ SR 99 Alternative	Hybrid Alternative	BNSF Alternative	
State Facilities	0	0 – 1	0 – 1	Conflicts with Correctional Facilities
Community Resources	17.4 – 19.2	12 – 15.6	12 – 15.5	Linear Miles within Urban Limits
Agricultural Lands	262 – 314	283 – 299	317 – 470	Prime Farmlands Affected (acres)
Agricultural Lands	751 – 854	992 – 1,137	941 – 1,164	Important Farmlands[b] Affected (acres)
Agricultural Lands	1 – 7	3 – 7	1 – 5	Number of Dairies Affected
Parks, Recreation and Open Space	3	1	1	Number of Parks Affected by Full or Partial Acquisition During Operations
Visual/Aesthetic Resources	3	2	5	Number of Landscape Units with Decreased Visual Quality.
Visual/Aesthetic Resources	32 – 41	15 – 17	21 – 24	Miles of Elevated Track
Construction Community Impacts				
Parks, Recreation and Open Space	3	1	1	Number of Parks Affected by Full or Partial Closure During Construction Period
Schools	16	13	13 – 14	Number of Schools Within .25 Miles of HST Alignment
Biological Resources	NA[c]	NA[c]	NA[b]	See footnote c.
Air Quality	Highest	Lowest	Mid-range	Construction-related Pollutant Emissions

NOTES:

Substantially higher impact
Average impact
Substantially lower impact

[a] When a single value is presented for the range of impacts, there is no appreciable difference between the project component combinations for the alternative.

[b] Important Farmlands includes Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance.

[c] NA (not available) means that acreage of impact cannot be provided since this would result in double counting for some temporary impacts. Measured impacts include Temporary Disturbance of Habitat with Potential to Support Special-status Plant Species and Wildlife Species, Temporary Disturbance of Vernal Pools and Other Seasonal Wetlands, and Temporary Disturbance of Great Valley Mixed Riparian and other Riparian Communities.

Property acquisition of residential units would be similar among the alternatives; however, the UPRR/SR 99 Alternative would have substantially higher nonresidential displacements (nearly 100 more

than the BNSF or Hybrid alternatives). This highlights the effects on the business and industrial properties that would be affected because the UPRR/SR 99 Alternative would travel through the Madera and Chowchilla industrial development areas. The BNSF and Hybrid alternatives would have similar impacts, with the BNSF Alternative resulting in approximately 10 more nonresidential displacements than the Hybrid Alternative.

All HST alternatives would have **noise impacts.** The highest number of moderate and severe noise impacts would be associated with the UPRR/SR 99 Alternative. The number of severe noise impacts under the BNSF and Hybrid alternatives would be almost half the number of severe impacts associated with the UPRR/SR 99 Alternative. The BNSF and Hybrid alternatives would have nearly the same number of affected sensitive receptors. The UPRR/SR 99 Alternative is the only alternative to result in noise impacts on a school, a hospital, and an outside movie theater.

All HST alternatives would result in **transportation impacts**. The BNSF and the Hybrid alternatives both would provide a benefit to Madera Acres by providing a grade-separated roadway crossing over the existing BNSF railroad; the new crossing would be shared by roadway and HST guideway and would improve circulation for this portion of the community. The UPRR/SR 99 Alternative would be elevated in Madera as the only prudent profile to avoid conflicts with major arterials and existing freeway structures at either end of the city. However, this elevated design proposal would not alleviate existing transportation conflicts between the UPRR railroad track and local circulation. Due to the proximity of the UPRR/SR 99 Alternative, future grade separations would not be possible for the City of Madera without the high cost of trenching under both the UPRR railroad and the HST Project. An elevated crossing would not be able to cross the UPRR railroad and clear the proposed UPRR/SR 99 Alternative elevated HST guideway without substantial damage to the community and a high cost. Because the BNSF and Hybrid alternatives would avoid urban areas that require grade separation over multiple roadways to minimize impacts, these alternatives would require fewer modifications to the state highway system than the UPRR/SR 99 Alternative would. The Hybrid Alternative would require more local road closures than the UPRR/SR 99 Alternative, but could have more or fewer than the BNSF Alternative depending on the design option and wye. The road closures would mostly affect rural areas where there are other roadway options available to meet circulation demands and where there would be a smaller possibility of congestion issues. The UPRR/SR 99 Alternative road closures, although fewer in number, include more roadways in the urbanized areas, which may result in higher community effects.

The alternatives would have differing levels of impact on **agriculture**. The BNSF Alternative would require crossing and potentially severing more farmlands and dairies than the other HST alternatives because it traverses large areas that do not parallel transportation corridors. It also would have the highest impact on Prime farmlands (317 to 470 acres), whereas the other two alternatives would have similar levels of impact (262 to 314 acres for the UPRR/SR 99 Alternative and 282 to 299 acres for the Hybrid Alternative). The UPRR/SR 99 Alternative would require nearly as much Important Farmland because more adjacent infrastructure would need to be modified, thus extending the footprint into adjacent farmlands. The UPRR/SR 99 Alternative with the West Chowchilla design option would reduce the modifications to the SR 99 infrastructure, and it represents the lower range of agricultural land conversion for the UPRR/SR 99 Alternative. Although the Hybrid Alternative would not be as long as the BNSF Alternative, it would be longer than the UPRR/SR 99 Alternative, and therefore the impacts on Important Farmland are similar to the BNSF Alternative. Alternatives that do not follow an existing transportation corridor would sever more farmlands than alternatives that closely follow existing transportation corridors. Severance would be greatest at the northern and southern ends of the BNSF Alternative, the southern end of the Hybrid Alternative, all wye transitions, and the UPRR/SR 99 Alternative with the West Chowchilla design option.

Visual resources, such as viewsheds and aesthetic corridors, cross over both urban and rural landscapes. The Hybrid Alternative would result in the least impact on visual quality of aesthetic features and corridors. Additionally, as proposed, the Hybrid Alternative would have the least elevated guideway, and thus would disrupt the visual terrain less than either the UPRR/SR 99 Alternative or the BNSF Alternative. While the UPRR/SR 99 Alternative has the most elevated guideway, the BNSF Alternative

actually would degrade the visual quality in more sensitive view corridors than the UPRR/SR 99 and the Hybrid alternatives.

All HST alternatives would affect **park resources**. The BNSF Alternative and the Hybrid Alternative would result in the use of up to four Section 4(f) resources, including one park and recreation resource and three historic resources. This is preferable to the UPRR/SR 99 Alternative, which would affect the same resources as well as others found in Madera, for a use of up to eight Section 4(f) resources, including four park and recreation resources and four cultural resources.

While **construction** is typically considered to be a temporary effect, the HST project construction period would endure for approximately 4 to 5 years of heavy construction and another 2 years of track testing. This duration would perhaps intensify impacts on community resources more than impacts on natural resources (see Table 2 under the construction subheading). Construction effects on natural resources can be minimized by implementing best management practices (BMPs) to avoid affecting water quality and to limit work during sensitive periods. In addition, relocation of species and other forms of mitigation can be performed before construction commences, further minimizing effects on related species. Construction effects on community resources include dust, noise, closing access to parks, rerouting of circulation and diversion of traffic that can lead to reduced business activity, and air quality effects. These effects can concern businesses, result in health concerns for school children and others suffering respiratory illnesses, result in frustration, and lower the community quality during this construction period. Simply, the related noise, dust, and economic effects on the communities are directly proportionate to the miles of construction through these urbanized areas.

Capital Costs

The Hybrid Alternative would have substantially lower capital costs than the UPRR/SR 99 Alternative and the BNSF Alternative. The estimated cost of the Hybrid Alternative is about $450 million less than the BNSF Alternative and over $1 billion less than the UPRR/SR 99 Alternative (for the equivalent wye connection). Overall, in balancing the effects on the natural and community resources, the Hybrid Alternative is the least expensive because it minimizes environmental impacts the most and represents the least constructability issues. This is because this alternative is shorter than the BNSF Alternative and has less elevated guideway and fewer impacts on adjacent infrastructure than the UPRR/SR 99 Alternative.

The Preferred Alternative is estimated to cost between $3.8 billion to $4.8 billion (in 2010 dollars). Cost estimates vary depending on the wye option that is ultimately selected. The Fresno Kern Street Station Alternative is estimated to cost $27 million more, but would still be within the range provided above.

Constructability Issues

The UPRR/SR 99 Alternative would have the most miles of HST track in urbanized areas, followed by the BNSF and the Hybrid alternatives, which would have similar lengths of track in urbanized area. However, in addition to the linear miles, the UPRR/SR 99 Alternative would require 32 to 41 miles of elevated guideway in urbanized areas to avoid conflicts with transportation circulation. The UPRR/SR 99 Alternative must remain elevated through Downtown Madera because an at-grade option would require multiple roadway over- and under-crossings and even closure of some major arterials in the congested downtown area. These effects from an at-grade profile along the UPRR/SR 99 Alternative would have resulted in a larger division of the Madera community than the elevated profile would cause. The UPRR/SR 99 Alternative could be almost double the amount of elevated guideway as the BNSF Alternative; the Hybrid Alternative would have the least elevated guideway with only 15 to 17 miles. Construction of elevated guideway requires large amounts of concrete, which increases air quality impacts during construction. The Hybrid Alternative would have the least severe air quality impacts during construction because it is shorter than the other alternatives (the UPRR/SR 99 Alternative with the West Chowchilla design option and Ave 24 Wye is similar in length to the Hybrid Alternative) and would have the least elevated structure, which would require less construction equipment and result in lower emissions.

The BNSF Alternative also would pose more elevated structure constructability issues in Madera Acres compared to the Hybrid Alternative. The alignments for the BNSF and Hybrid alternatives would pass through a constrained urban community in Madera Acres. The wye connection for the BNSF Alternative would occur in this area, requiring elevated crossover of the turnout tracks adjacent to an at-grade track profile in a residential area. On the other hand, the Hybrid Alternative at this location would consist only of two at-grade tracks because the wye connection for the alternative is farther to the north and west along the alignment.

All alternatives would cross SR 99 and existing railroads. Interaction with other infrastructure would result in more complex construction and longer delays affecting the adjacent community. The UPRR/SR 99 and BNSF alternatives would result in from 6 to 10 railroad crossings; the Hybrid Alternative would have from 4 to 6 crossings. The UPRR/SR 99 Alternative would result in modifications to eight Caltrans facilities, whereas the Hybrid and BNSF alternatives would result in five and three modifications, respectively. The Hybrid Alternative, however, would cross SR 99 and the UPRR railway at a favorable crossing angle, making it easier to construct than a narrower crossing angle. The BNSF Alternative crossings of SR 99 and the BNSF railroad at Mission Avenue and/or Mariposa Avenue, as well as the UPRR/SR 99 Alternative crossings near Chowchilla and Fairmead, are at "small skewed" angles, which would result in longer crossings that are difficult and more costly to construct.

Main construction access routes for all alternatives would heavily depend on SR 99. Therefore, the UPRR/SR 99 Alternative generally would be closest to the main access route. The Hybrid Alternative generally would be either adjacent to or within 2 miles of SR 99, where the BNSF Alternative would be nearly 5 miles away from SR 99 for the northern portion of its alignment (from approximately just south of Merced to south of Madera).

Ridership and Revenue/Travel Times/Travel Conditions

Ridership forecasts are similar for all alternatives in the Merced to Fresno Section. The Hybrid Alternative offers the second best travel time, taking only 30 seconds longer between San Francisco and Los Angeles, a minute more between Merced and Fresno, and the same amount of time between San Francisco and Merced, compared to the UPRR/SR 99 Alternative. The UPRR/SR 99 Alternative was found to optimize travel time and minimize environmental impacts at the cost of a more elevated profile and potentially more community impacts than the other alternatives. The BNSF Alternative would have the same travel time as the Hybrid Alternative between San Francisco and Los Angeles, but otherwise it would take as much as 4 minutes longer than the other two alternatives. This is important because the project is held to a strict travel time between San Francisco and Los Angeles—a total of 2 hours and 40 minutes to travel over 500 miles.

Station Locations

There is only one station considered for Merced, the Downtown Merced Station (see Figure 3). Developed through multiple meetings and discussions with the City of Merced, this station is consistent with the City's future land use plans for the downtown area and the intent to strengthen connectivity with the City's transit center. The Downtown Merced Station would be between Martin Luther King Jr. Way to the northwest and G Street to the southeast. The station would be accessible from both sides of the UPRR, but the primary station house would front 16th Street. The closest access to the parking facility from the SR 99 freeway would be R Street, which has a full interchange with the freeway. The site proposal includes a parking structure that would have the potential for up to six levels with a capacity of approximately 2,250 cars and an approximate height of 50 feet.

There are two station considerations for the Fresno Station, the Mariposa Street and the Kern Street alternatives (see Figures 4 and 5, respectively). The Mariposa Street Station would be centered on Mariposa Street and bordered by Fresno Street on the north, Tulare Street on the south, H Street on the east, and G Street on the west. Landmarks in the vicinity of the station include the Fulton Mall and Chukchansi Park to the east and Historic Chinatown to the west. The majority of station facilities would be located east of the UPRR tracks. The station site includes the station, bus transit center, surface

parking lots, and kiss-and-ride accommodations. A new intermodal facility would be included in the station footprint. Among other uses, the intermodal facility would accommodate the Greyhound facilities and services that would be relocated and integrated into the site plan. The site proposal includes the potential for up to three parking structures and surface parking with a capacity of approximately 4,800 cars.

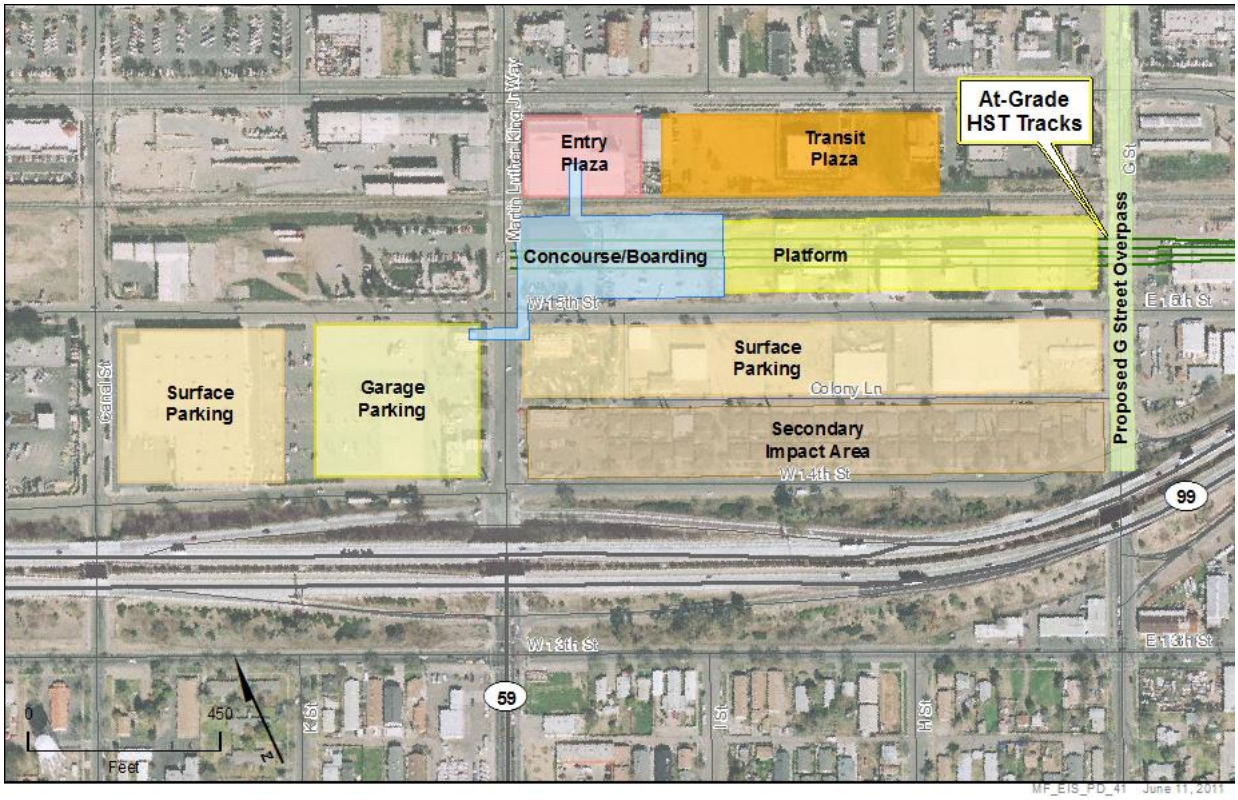

Figure 3
Downtown Merced Station Location

The City of Fresno prepared the draft *Fulton Corridor Specific Plan* and the draft *Downtown Neighborhoods Plan*, both of which cover the area surrounding the HST station. The plans were developed to revitalize the downtown area through higher densities and infill development. The plans reference the Downtown Fresno Station centered at Mariposa Street. The City of Fresno views the HST station centered along Mariposa Street as an important element acting as a gateway to the downtown area by connecting the civic plaza, which contains county and city buildings as well as Fulton Mall. The *Fulton Corridor Specific Plan* includes the following references to the HST station:

- Create a seamless connection between HST station and Downtown Fresno.
- Establish a stronger axial connection between the County Courthouse and the proposed HST station along the Mariposa corridor/Plaza.
- Align with the proposed Mariposa Plaza open space.

The plans describe the proposed Mariposa Street HST station location, noting that "The terminal building (would) function as the western terminus of a City Hall to HST station axis. The station (would) terminate at Mariposa Street and be designed as a 'front door' to the Downtown with a façade that can be seen from the County Courthouse." Additionally, City of Fresno's Transportation Master Plan includes relocating

the city's transit center across from the Downtown Fresno HST Station and specifies that the Mariposa Street Station Alternative would better serve the planned transit improvements for the downtown area.

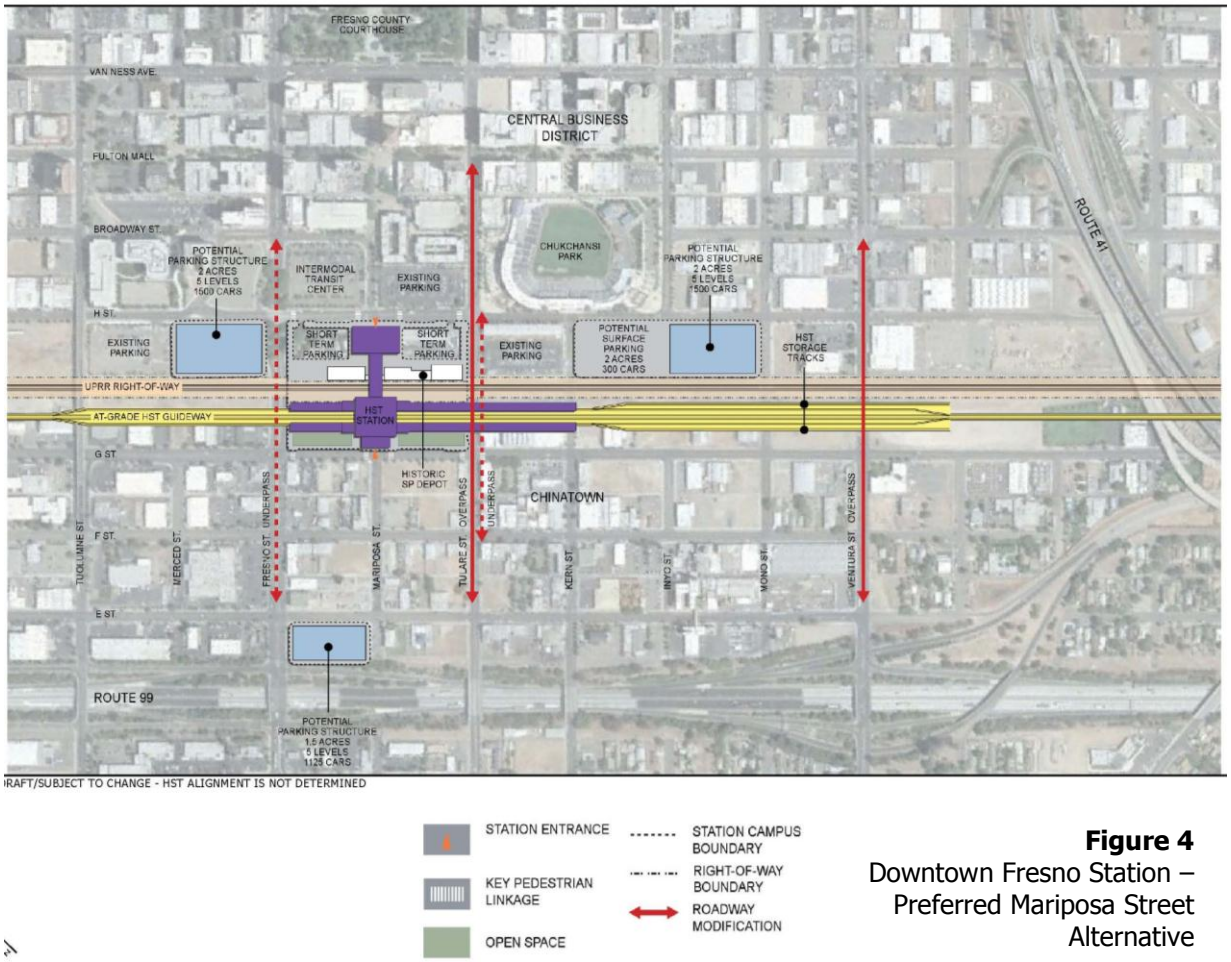

Figure 4
Downtown Fresno Station – Preferred Mariposa Street Alternative

The Kern Street Station Alternative for the HST station is also situated in Downtown Fresno and would be centered on Kern Street between Tulare Street and Inyo Street. The station building would be approximately 75,000 square feet, with a maximum height of approximately 64 feet. The station building would have two levels housing the same facilities as the Mariposa Street Station Alternative (i.e., UPRR tracks, HST tracks, mezzanine, and station office). The approximately 18.5-acre site would include 13 acres dedicated to the station, bus transit center, short-term parking, and kiss-and-ride accommodations. Two of the 3 potential parking structures would each sit on 2 acres and each would have a capacity of approximately 1,500 cars. The third structure would be slightly smaller in footprint (1.5 acres) and have a capacity of approximately 1,100 cars. Like the Mariposa Street Station Alternative, the majority of station facilities under the Kern Street Station Alternative would be sited east of the HST tracks.

In the environmental evaluation for the Fresno station options, the environmental impacts were similar. Both stations would result in affecting historic structure eligible or already on the Nation Register of Historic Places. Other effects include noise that would be mitigated, as well as temporary impacts during construction on businesses and transportation circulation. However, due to the City's planning and the orientation of the downtown Fresno City Center, the Mariposa Street Station option offers substantially more opportunities for transit-oriented development.

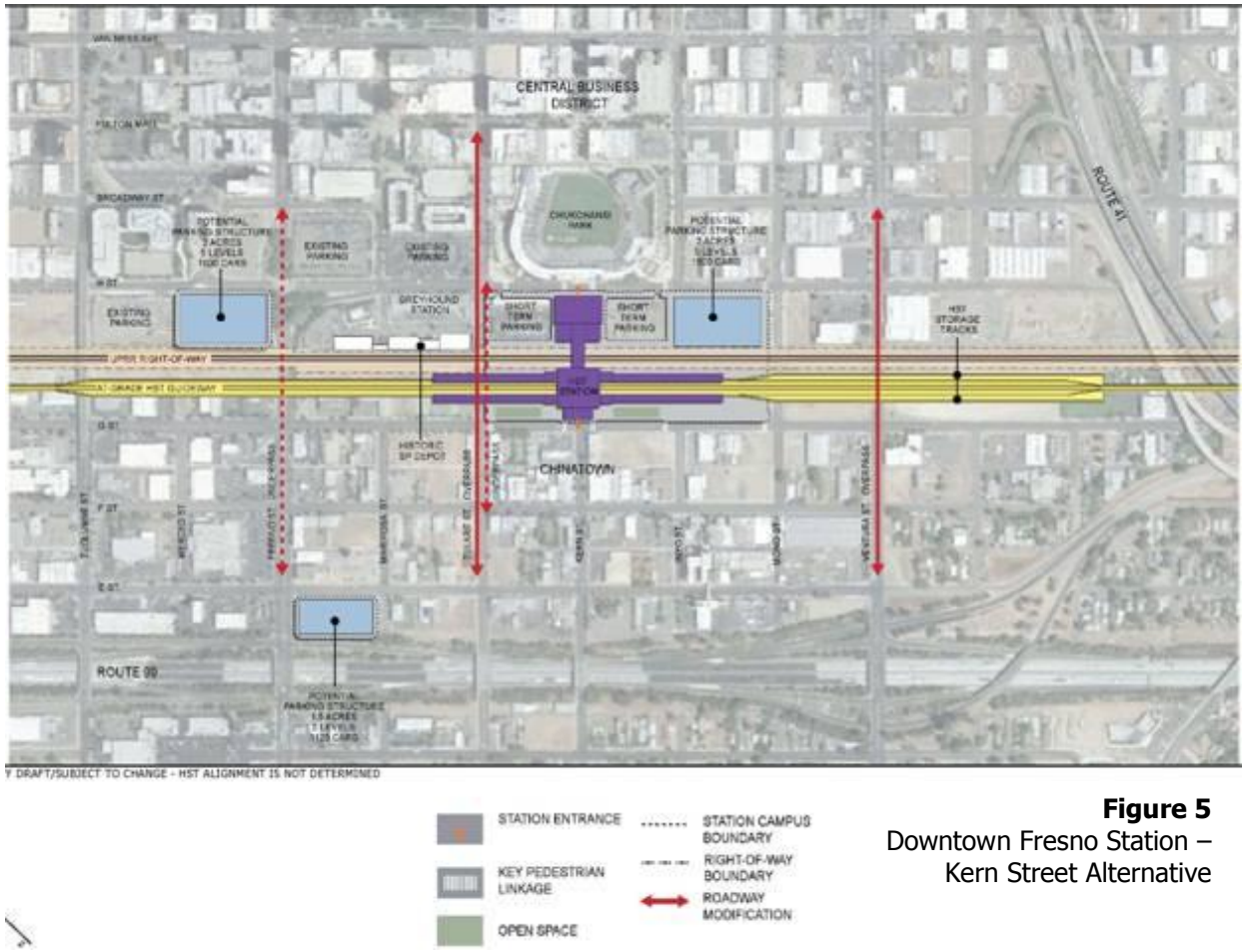

Figure 5
Downtown Fresno Station – Kern Street Alternative

Regulatory Considerations

The Authority and FRA are working closely with federal, state, and regional agencies to meet regulatory requirements by refining the Merced to Fresno Section alternatives to avoid and minimize impacts and, where necessary, to reach agreement on mitigation measures for impacts that cannot be avoided. One important process that integrates many of the applicable regulatory requirements is Section 404 of the Clean Water Act (CWA) and Section 408 as managed by the USACE with oversight from EPA. The Authority and FRA signed a National Environmental Policy Act (NEPA)/Section 404/408 Integration Process Memorandum of Understanding (MOU) (Authority et al. 2010), which outlines three major checkpoints in the integration of the NEPA and Section 404/408 process. Each checkpoint consists of the submittal of technical data and studies by the Authority and FRA to USACE and EPA for review and consideration prior to issuing a formal written agency response. The first of these submittals is Checkpoint A, which involves preparing a project purpose statement that duly serves NEPA and Section 404 of the CWA requirements. EPA concurred on the Merced to Fresno Section purpose and need on January 20, 2011, and USACE concurred on the purpose and need on February 2, 2011, to satisfy Checkpoint A. The second submittal is Checkpoint B, which is required to screen and reduce the potential alternatives to an appropriate range of "reasonable" and "practicable"[1] alternatives using the best available information. On June 14 and June 24, 2011, respectively, USACE and EPA concurred on the range of alternatives to be carried forward in the Merced to Fresno Section EIR/EIS, with the exception of the Western Madera (A3) Alternative and the State Route (SR) 152 Wye connection alternative.

[1] "Practicability" is defined as available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purposes (40 CFR Part 230.10(a)(2)).

Supplemental information was provided to USACE and EPA to support the elimination of the Western Madera (A3) Alternative on November 9, 2011, but the SR 152 Wye connection will be addressed in the San Jose to Merced Section environmental process to complete the Checkpoint B concurrence.

Finally, Checkpoint C is the assembly and assessment of information contained in the EIR/EIS and associated technical studies for consideration by USACE and EPA in determining the Preliminary LEDPA and providing a formal agency response. The documentation includes those analyses completed to meet requirements of NEPA, the CWA 401/Section 404, and the Rivers and Harbor Act Section 14, which include consideration of compliance with the federal Endangered Species Act and the National Historic Preservation Act. The Authority is in the process of completing Checkpoint C.

Agency Consultations

Leading to the submittal of the Checkpoint C information, the FRA, the Authority, and resource specialists have been meeting with the following agencies: USFWS and the California Department of Fish and Game (CDFG) in development of the biological assessment; the San Joaquin Central Valley Flood Control Board and the USACE in the development of the approach to the 408 permit related to crossing Waters of the U.S.; and the State Historic Preservation Office supporting the development of the cultural resources report. Other agencies represented have included EPA, the State Water Resources Control Board, and the Authority's regional consultants.

In addition, a series of Technical Working Group (TWG) meetings have occurred to coordinate and communicate technical issues and clarifications regarding how to assess the functional values of sensitive wetlands and waters of the U.S. so that impacts can be appropriately mitigated. For mitigation planning, the watershed analysis will provide possible targets for appropriate mitigation.

To assist in applying regulatory responsibilities (e.g., CWA Sections 401/404, and California Endangered Species Act Sections 2081 and 1600), USACE suggested that mitigation planning efforts should not distinguish aquatic impacts from wildlife impacts. In accordance with the intent of the Compensatory Mitigation Plan, the Authority is working on the Mitigation Strategy and Implementation Plan to identify currently available mitigation sites to meet obligatory mitigation consistent with the overall project schedule.

Based on these agency consultations and the information contained above, it is the staff's assessment that the Hybrid Alternative is the LEDPA.

Preferred Alternative

The Authority staff is recommending the Hybrid Alternative as the Preferred Alternative for the north-south connection between Merced to Fresno, including the Downtown Merced Station and the Mariposa Street Alternative for the Downtown Fresno Station. Due to influencing factors from adjacent sections, the identification of the preferred wye option and the HMF are being postponed until after the Fresno to Bakersfield Section and the San Jose to Merced Section environmental evaluation processes are complete. The Authority staff has consulted with FRA staff on the analysis and reasons for selecting preferred alternatives. The recommended Preferred Alternative is shown in Figure 6 and the reasons for the selection of each project feature are described below.

Preferred Alignment

The Authority staff recommendation for the Preferred Alternative:

- The Hybrid Alternative

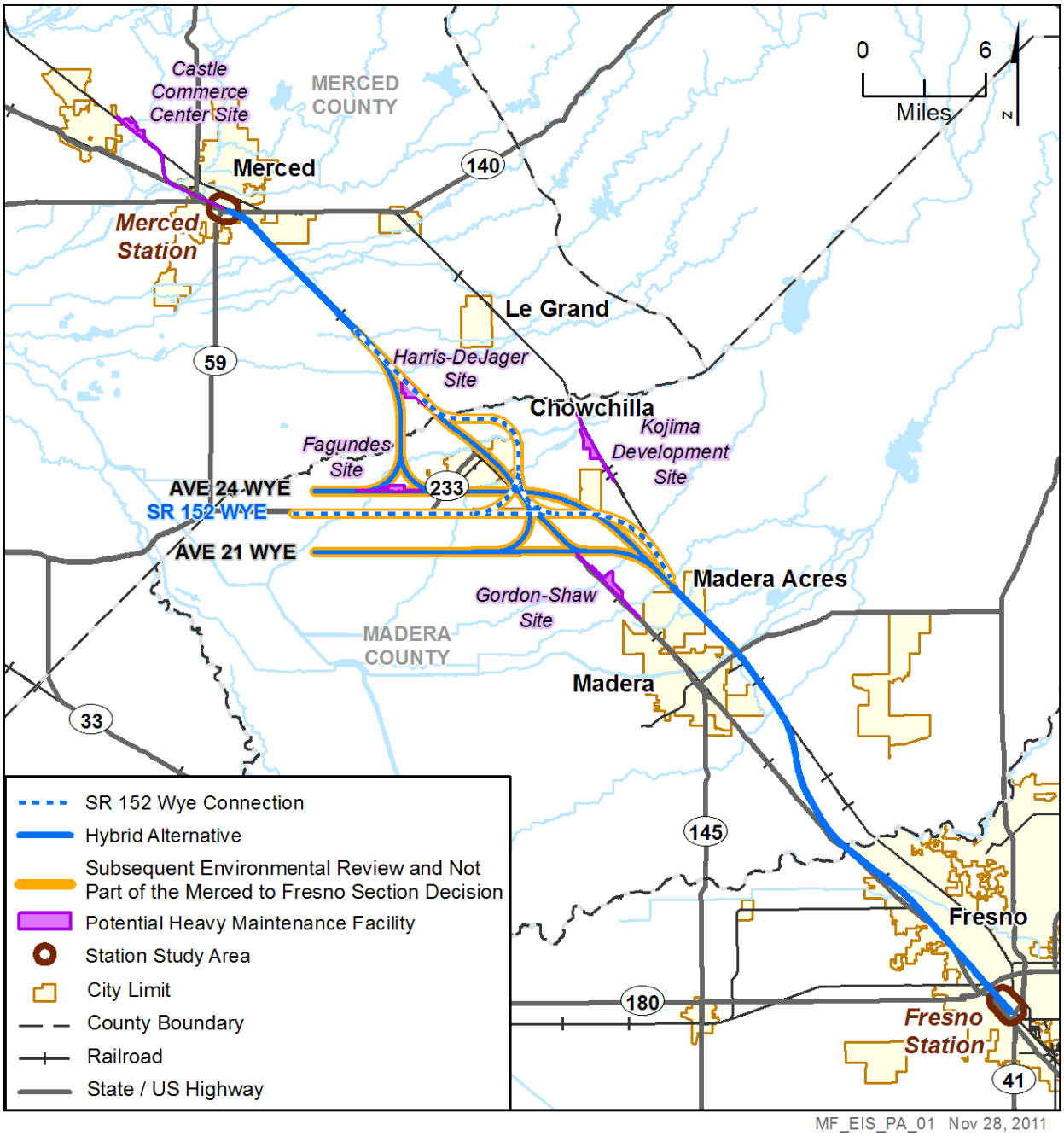

Figure 6
Preferred Alternative - Hybrid

Analysis

As presented above, the Hybrid Alternative would have natural resource impacts generally similar to the UPRR/SR 99 Alternative and fewer impacts than the BNSF Alternative. The Hybrid Alternative would result in fewer effects on community resources than either of the other two alternatives but substantially less than the UPRR/SR 99 Alternative, for which impacts would be exacerbated during construction for impacts such as noise, dust, air quality, and reduced access to parks and businesses. Overall, in balancing the effects on the natural and community resources, the Hybrid alternative minimizes environmental impacts the most. The Hybrid Alternative represents the least constructability issues, which is also reflected in being the lowest cost alternative, at approximately $450 billion less than the BNSF Alternative and over $1 billion less than the UPRR/SR 99 Alternative. This is because this alternative is shorter than the BNSF Alternative and has less elevated guideway and fewer impacts on adjacent infrastructure than the UPRR/SR 99 Alternative. The Hybrid Alternative offers the second best travel time, taking only 30 seconds longer between San Francisco and Los Angeles, a minute more between Merced and Fresno, and the same amount of time between San Francisco and Merced compared to the UPRR/SR 99 Alternative. The BNSF Alternative would have the same travel time as the Hybrid Alternative between San Francisco and Los Angeles, but otherwise it would take as much as 4 minutes longer than the other two alternatives. Overall, the Hybrid Alternative best meets the regulatory requirements and wishes of the majority of the public by minimizing impacts on the environment, farmland, and communities. It would avoid the greater impacts on the environment and rural communities in Merced County that occur with the BNSF Alternative, and would avoid the greater impacts on more urban areas along the UPRR/SR 99 Alternative, such as in the City of Madera.

Wye Option

- The Authority has not identified a preferred alternative for the wye option at this time. This will be determined as part of the San Jose to Merced Section EIR/EIS document.

Analysis

The connection between the north-south alignment of the preferred Hybrid Alternative in the Merced to Fresno Section and the east-west alignment of the San Jose to Merced Section would require a railroad wye. The Hybrid Alternative has wye options whose selection depends on the east-west HST section between San Jose and Merced. The Merced to Fresno Section Final EIR/EIS does not select the preferred alternative for an east-west HST connection, i.e., the route for the wye. The San Jose to Merced Section EIR/EIS will fully evaluate all three wye configurations currently under consideration, including the two wye configurations that would connect to the Hybrid Alternative identified in this Merced to Fresno Section Final EIR/EIS and the SR 152 Wye. A decision regarding the preferred east-west connection of the San Jose to Merced Section to the Merced to Fresno Section would occur following circulation of the San Jose to Merced Section EIR/EIS and a presentation to the Board by Authority staff of a recommended preferred east-west HST alignment.

The options for the wye connections as considered in the Merced to Fresno Section Final EIR/EIS will include the Ave 24 Wye, which would connect west of Chowchilla, and the Ave 21 Wye, which would connect south of Fairmead, following UPRR and SR 99 through Chowchilla on an elevated guideway. The SR 152 Wye would connect with the Hybrid Alternative north of Chowchilla, bypassing Chowchilla to the east. While the SR 152 Wye will not be studied in the Final EIR/EIS, the EIR/EIS will report on the variation among the Ave 24 and Ave 21 wyes as originating from Road 8, west of Chowchilla.

Stations

The Authority identifies the Downtown Merced Station, shown in Figure 4, as the preferred alternative. The preferred Downtown Fresno Station alternative is the Mariposa Street Station Alternative shown in Figure 5.

Analysis

The City of Merced worked closely with the project team and as such there is only one preferred location for the Merced Station. The preferred station for the City of Fresno is the Mariposa Street Station Alternative. Based on cooperation with the City of Fresno, the Mariposa Street Station Alternative provides the best opportunity for enhancement of land use densities consistent with the City's current planning for transit-oriented development in the draft *Fulton Corridor Specific Plan* and the draft *Downtown Neighborhoods Plan*. Additionally, there were relatively minor differences in the impacts between the two stations.

Heavy Maintenance Facility

- The Authority has not identified a preferred alternative for an HMF site at this time. This decision will be deferred to a later date as part of the San Jose to Merced EIR/EIS document since the selection of the HMF is highly dependent on the selection of the wye and the Fresno to Bakersfield Section EIR/EIS process.

Analysis

The Merced to Fresno HST section, which is the focus of this Final EIR/EIS, does not select the preferred alternative for an east-west connection to the Merced to San Jose Section (see the discussion of the wye selection above). On October 27, 2011, via email, the Harris-DeJager sponsor withdrew its proposal from the Authority's consideration of potential HMF sites. However, to remain consistent with previous analysis and provide a basis of comparison among the HMFs, the analysis of this potential HMF site continues to be evaluated in the Final EIR/EIS. The Hybrid Alternative has HMF site options whose selection depends on the east-west wye connection, and the Harris-DeJager HMF site was one of the potential HMF sites connecting with the Hybrid Alternative. The subsequent San Jose to Merced Section Final EIR/EIS will select the preferred east-west connection, which may also influence the range of potential HMFs within the Merced to Fresno Section. Additionally, there are several HMFs considered in the Fresno to Bakersfield Section EIR/EIS. The preferred HMF site will likely be identified once additional environmental review is complete by both sections.