
Notice of Preparation

FROM: Stefan Galvez-Abadia
Director of Environmental Services
California High-Speed Rail Authority
770 L Street, Suite 620
Sacramento, CA 95814

SUBJECT: Notice of Preparation of a Project Level Environmental Impact Report for a Solar Array and Battery Energy Storage System Project for the California High-Speed Rail System, Central Valley, California

The California High-Speed Rail Authority (Authority), as the Lead Agency for the California Environmental Quality Act (CEQA) process for a proposed California High-Speed Rail (CAHSR) system, is issuing this Notice of Preparation (NOP) for preparing an Environmental Impact Report (EIR) for a Photovoltaic (PV) and Battery Energy Storage System (BESS) Project to be located in the Central Valley, California (Central Valley PV/BESS Project). The Authority also intends to publish a Notice of Intent (NOI) for initiating public scoping under the National Environmental Policy Act (NEPA) needed for preparing the Environmental Impact Statement (EIS). Ultimately, the Authority intends to publish a joint EIR/EIS document.

This NOP initiates the State CEQA process and the preparation of an EIR for the Central Valley PV/BESS Project. The Authority is issuing this NOP to solicit public and agency input on the development of the scope of the EIR and to advise the public that outreach activities will be conducted by the Authority and its representatives in the preparation of an EIR/EIS.

Pursuant to U.S. Code Title 23 Section 327, under the National Environmental Policy Act (NEPA) Assignment Memorandum of Understanding (MOU) between the Federal Railroad Administration (FRA) and the State of California, dated July 23, 2019 (renewed July 22, 2024), the Authority is also the federal lead agency for environmental reviews and approvals for all Authority Phase 1 and Phase 2 CAHSR System projects, including ancillary facilities, such as the proposed Central Valley PV/BESS Project. In this role, the Authority is the project sponsor and the lead federal agency for complying with NEPA and other federal laws for the CAHSR System, including the Central Valley PV/BESS Project. The Authority will publish a Notice of Intent in the *Federal Register*, announcing the intention to initiate the federal environmental review process for the Central Valley PV/BESS Project.

In August 2005, the Authority and the FRA completed a Statewide Program EIR/EIS as the first phase of a tiered environmental review process for the proposed CAHSR system. The Authority and the FRA completed a second program EIR/EIS in July 2008 to identify a preferred alignment for the Bay Area to Central Valley section of the HSR system. Tiering from the two program EIR/EISs, the Authority and the FRA prepared and certified the Merced to Fresno Project Section Final EIR/EIS (2012), the Merced to Fresno Project Section Final Supplemental EIR/EIS (2020), and the Fresno to Bakersfield EIR/EIS (2014). In 2008, a study prepared for the Authority indicated that while the HSR would be supplied with energy from the California grid, it

was not feasible to physically control the flow of electricity from particular sources. However, it would be feasible for the Authority to obtain the quantity of power required for the system from 100 percent clean, renewable energy through a variety of mechanisms.¹

In September 2011, the Authority along with the U.S. Department of Transportation, FRA, U.S. Department of Housing and Urban Development, Federal Transit Administration, and the U.S. Environmental Protection Agency (USEPA), signed a memorandum of understanding (MOU) entitled *Achieving an Environmentally Sustainable High-Speed Train System in California*. Under the MOU the Authority and other signatory agencies recognized that “ample opportunities exist to promote energy efficiency and renewable energy . . .” and that “CAHSRA [(the Authority)] will continue to partner with USEPA to identify such opportunities through development of a strategy energy plan, which will assist CAHSRA in achieving its goal of operating the HSR System with 100 percent renewable energy.” Since 2018, and each year thereafter, the Authority has renewed this commitment to using 100 percent renewable energy in its annual Sustainability Report. The most recent version, published in September 2024, directs the Authority to develop solar, battery storage, and additional resources to support and achieve its renewable policy goals and resilient train operations.

The Central Valley PV/BESS Project would provide both a primary source of power and backup power to Traction Power Substations (TPSS) #7, #9, #10, and #12 along the rail alignment between Merced and Bakersfield, California. The TPSS locations are designed to provide a connection between an investor owned or municipal electric utility and the HSR system. The four substations² were environmentally evaluated and approved by the Authority as part of the Merced to Fresno EIR/EIS (2012) and the Fresno to Bakersfield EIR/EIS (2014). The battery storage would be co-located with the TPSS, while the solar arrays would be located adjacent to the HSR alignment, between 2 and 11 miles from a TPSS. The PV and BESS will be used to fully support the energy needs of the rail system in the Central Valley. The PV will produce the energy to power the system, while the BESS will provide energy backup in the event of an outage and reduce peak-demand during normal train operations.

Project Description

Following a screening analysis of potential PV site locations, Figure 1 shows four proposed sites that would support TPSS #7, while Figures 2 through 4 show the proposed sites that would support TPSS #9, #10, and #12. Based on power needs, the sites associated with TPSS #7 would require between 70 and 78 acres. TPSS Sites #9, #10, and #12 would require between 54 and 72 acres depending on the number of solar arrays to be installed on the site. In summary, the project is the construction of PV solar array facilities at four locations and their connection to one of the four associated TPSS Sites.

The alternative sites are located west of the Union Pacific Railroad and State Route 99 to avoid the additional cost and constraints of constructing, operating, and maintaining a transmission line within active transportation corridors owned by other public agencies and private freight railroads.

¹ Navigant Consulting, 2008; also Merced to Fresno Final EIR/EIS, page 2-13.

² Traction Power Substations are responsible for converting power from multiple resources, to ensure availability and quality of traction power ultimately supplied to the Overhead Contact System (OCS). The OCS delivers electricity directly to the trains via overhead wires, enabling their operation on the rail network.

Figure 1 – Potential PV/BESS Facility Locations for TPSS #7

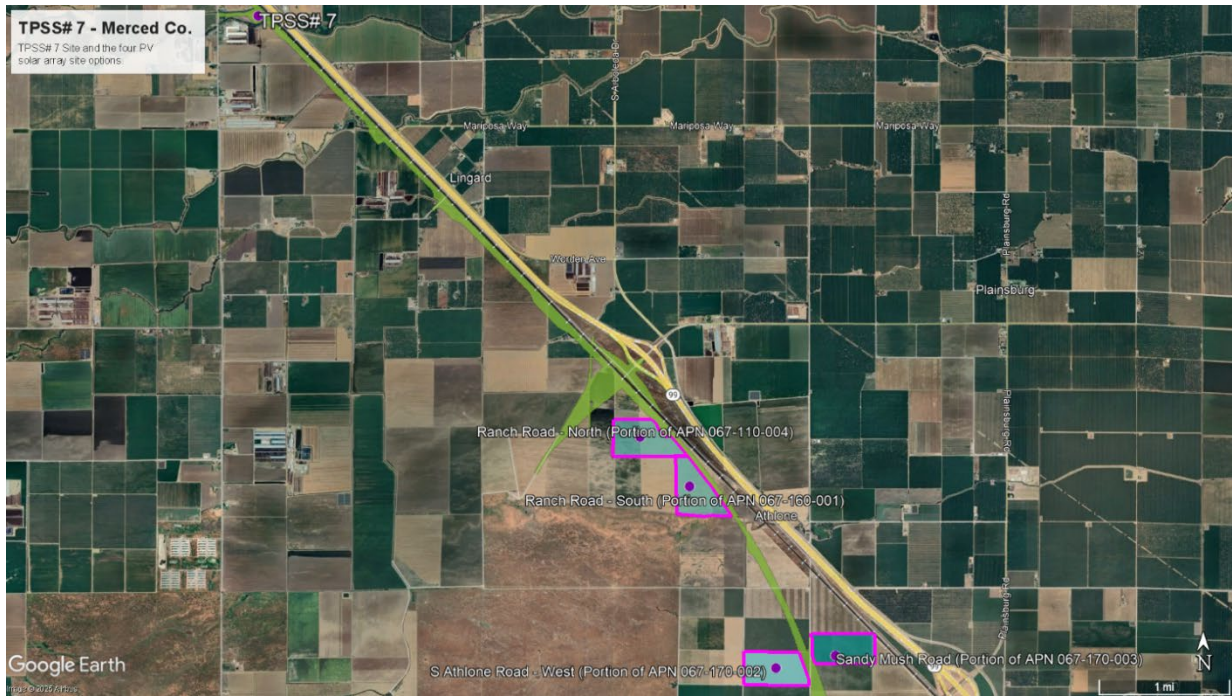


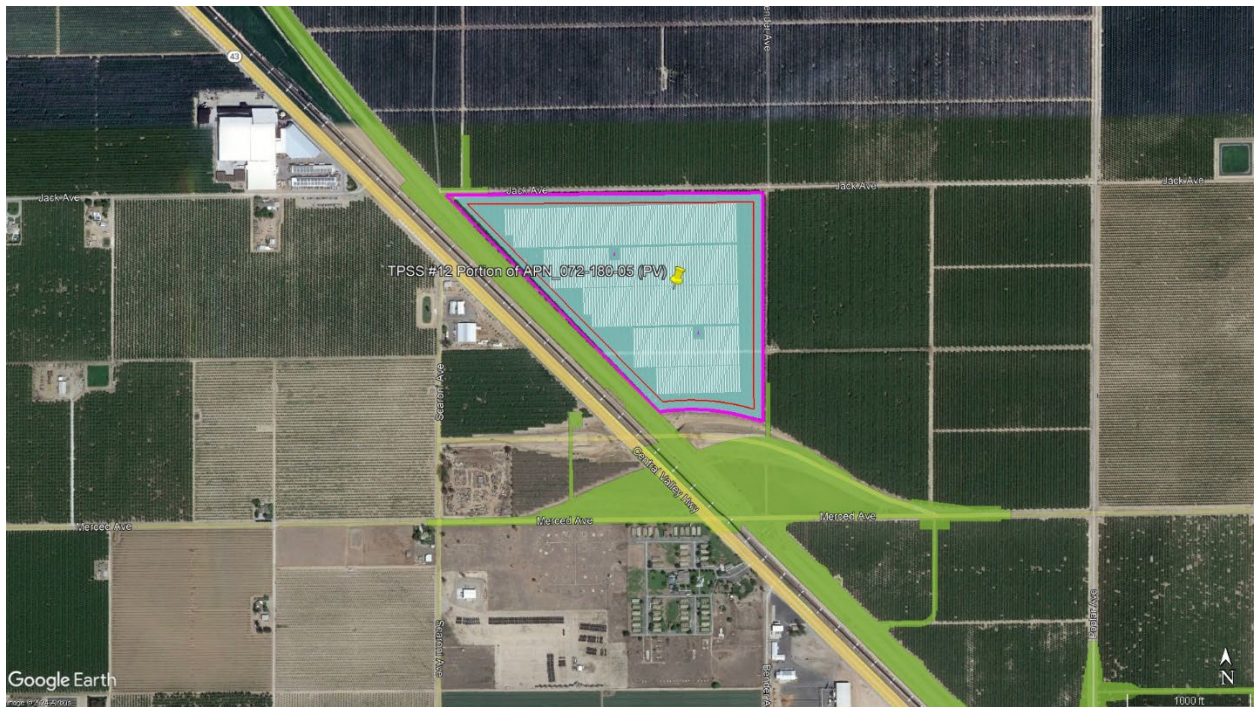
Figure 2 – Potential PV/BESS Facility Location for TPSS #9



Figure 3 – Potential PV/BESS Facility Location for TPSS #10



Figure 4 – Potential PV/BESS Facility Location for TPSS #12



Solar Components: The solar array facilities would consist of photovoltaic solar modules arranged into arrays supported by a tracking system and tracker units that track the sun. The photovoltaic modules on the trackers convert sunlight into electricity. When modules are mounted on tracking devices, they are referred to as “trackers” or “tracker blocks.” The trackers are organized in rows in a uniform grid pattern approximately 15 feet apart. Single-axis trackers would be oriented on a north / south axis on centerline and panels would rotate around this axis from east to west at a maximum of +/- 50-degree tilt.

The trackers would be installed on rows of piers of driven steel piles spaced approximately 22 feet apart, with the piles driven approximately 10 feet into the ground. The pile supports would elevate the trackers and solar modules such that the maximum height of the system would be approximately 10 feet above ground level.

In addition to the panels, tracking, and mounting systems, the system would include electrical equipment such as current inverters, transformers, switchgear, cable boxes, and a data acquisition system. These electrical equipment components would be housed at each solar PV facility in a small structure approximately eight (8) feet wide by twenty (20) feet long by ten (10) feet tall, typically constructed from cinderblock and/or concrete, and placed on a concrete slab foundation. The concrete or cinderblock structure would be accessed for maintenance activities and would not be regularly occupied during operations. Exact sizing is dependent on the capacity of the electrical equipment. Each solar array facility would be enclosed by a chain-link security fence.

Power Distribution: Each TPSS site would be designed to receive a single high voltage utility circuit from the nearest utility owned switching station. An additional switchgear would be added to the existing utility switching infrastructure to provide the new circuits. Overhead, pole mounted transmission lines at high voltage would bring a new utility circuit to each TPSS station. In addition, each TPSS site would transmit power to the overhead contact system (OCS) to deliver power to the trains.

Depending on the total generating capacity and distance of each solar array facility from its respective TPSS site, the mode of routing power back to each TPSS site would differ. The distance between the solar array facility and TPSS varies for each site, which in turn impacts the mode of routing power. For distances less than six miles, the solar power feeders would be directly buried underground, running parallel to the high-speed rail train tracks. For distances greater than six miles, the solar power feeders would be routed overhead, utilizing the same power poles which carry the high-speed rail OCS.

TPSS Components: Each TPSS parcel would house an open-air electrical substation that would convert high voltage to medium voltage. Equipment would include, but is not limited to, power poles, pad-mounted oil-filled transformers, air and gas-insulated switches, and concrete cinder-block box structures up to 20 feet tall to house interior rated equipment. A small diesel generator up to 500kW with an integrated fuel tank may be installed at each TPSS for legally required emergency power systems serving buildings and spaces occupied by personnel and combustible equipment. If legally required emergency systems do not include the diesel generator typically provided for fire sprinkler and suppressions systems, then a separate, small, battery system may be provided for emergency egress lighting and other low voltage emergency subsystems, as necessary.

A single BESS facility housed at each TPSS parcel would consist of multiple modular steel enclosures. Each modular steel enclosure would be approximately 6 feet wide by 8-9 feet tall by 25 feet long and be equipped with integral heating, cooling, and fire suppression systems. Each BESS module would be located on concrete equipment pads and would include switchgear, equipment pads, and transformers. The BESS modules would be grouped into rows based on

site configuration and sized based on the power supply and storage needs of each site. The BESS would contain a safety system that would be triggered automatically when the system senses imminent fire danger. BESS operations would include 24/7 remote performance monitoring occurring at the operations center. The total number of BESS modules would vary for each TPSS depending on available solar generation and load. The TPSS location, the estimated number of BESS modules required at each BESS facility, and the estimated generation capacity are listed below:

- TPSS 7, located on a portion of Merced County APN 066-271-002 along the west side of the HSR alignment, east of Healy Road and north of Reilly Road, would house an estimated nineteen (19) BESS modules with an estimated capacity of 75 megawatt/hours (MWh).
- TPSS 9, located on a portion of Fresno County APN 338-100-43T along the west side of the HSR alignment, east of South Cedar Avenue, north of East Dinuba Avenue, and south of Springfield Avenue, would house and estimated fifteen (15) BESS modules with an estimated capacity of 60 megawatt/hours (MWh).
- TPSS 10, located on a portion of Kings County APN 028-080-001 along the east side of the HSR alignment, east of State Route 43/ Central Valley Highway, north of Jersey Avenue, and south of Jackson Avenue, would house and estimated thirteen (13) BESS modules with an estimated capacity of 50 megawatt/hours (MWh).
- TPSS 12, located on a portion of APN 487-020-07 along the west side of the HSR alignment in the City of Wasco (Kern County), east of North F Street, and north of State Route 46/ State Route 43/ Central Valley Highway would house an estimated twenty (20) BESS modules with an estimated capacity of 80 megawatt/hours (MWh).

The BESS units would contain storage cells with Lithium Iron Phosphate (LFP) chemistry. LFP cells are known for their longevity, resistance to combustion, cost to manufacture, and increased recyclability.³ The BESS units would last upwards of 25 years, but it is assumed they would be routinely replaced after being used for 15 years depending on usage. See Figure 5 for a conceptual layout.

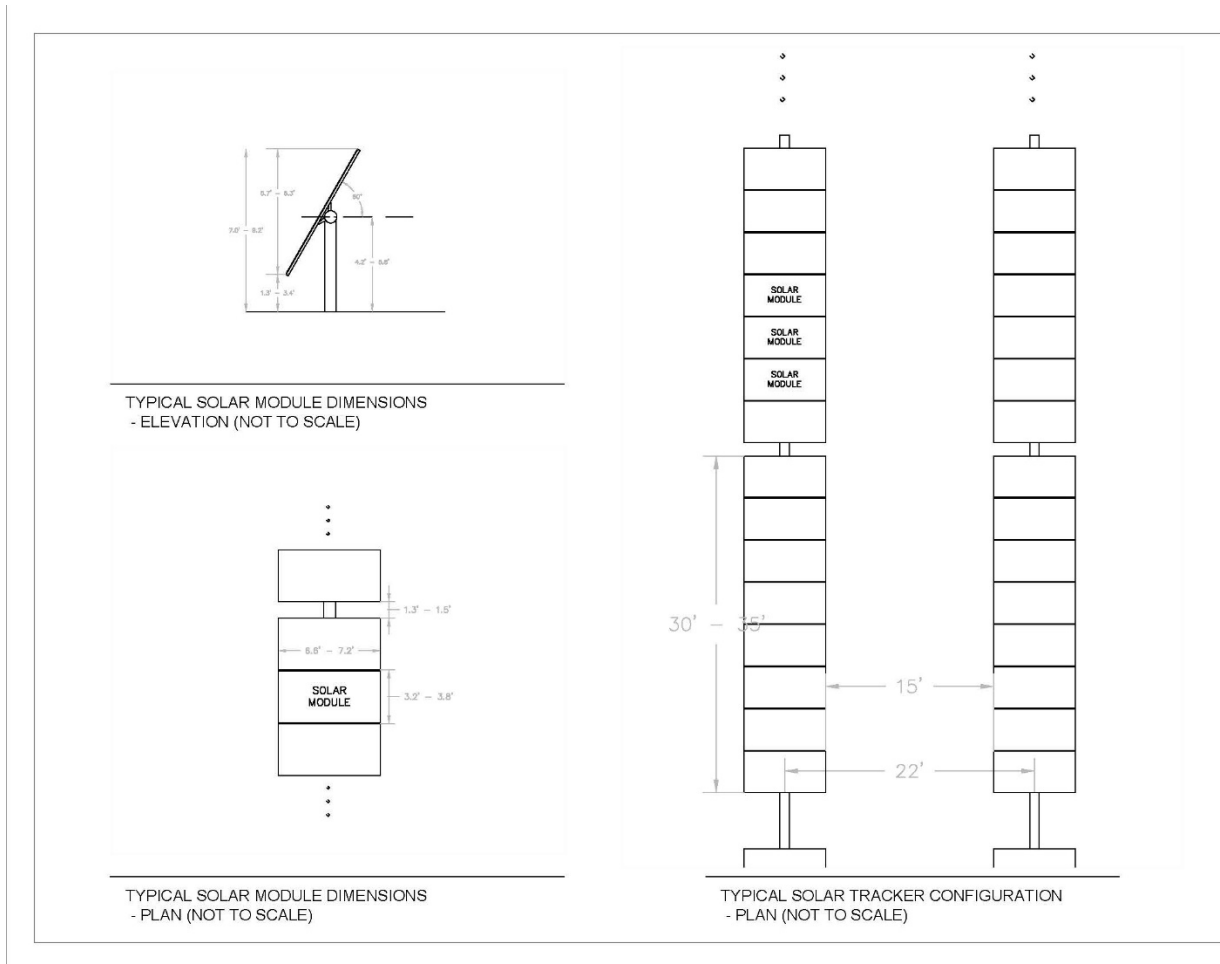
Additional Project Features: Depending on the location, access to each TPSS and array would be either via existing public roadways adjacent to the site or along the HSR project alignment. Secure gate access would be provided at each site entry. Perimeter and interior access roads would be required for all critical equipment and between each row of trackers.

Additionally, Authority maintenance vehicle parking would be provided at each site. Interior roads and parking areas would be covered with an aggregate base or other native material with a soil stabilization material, if necessary. Interior and perimeter access routes would be approximately 20 feet wide. Each TPSS site would also be surrounded with a 6-foot chain link fence with a one-foot barbed wire top with signage indicating Danger High Voltage. Security lighting would also be installed around the perimeter and, as needed, in the interior at critical locations.

Construction of the project is anticipated to take 21 to 27 months and would begin in 2026 and be completed by 2028.

³ Article entitled “An overview on the Life Cycle of Lithium Iron Phosphate: Synthesis, Modification, Application, and Recycling,” published in the *Chemical Engineering Journal*, Volume 485, April 2024.

Figure 5 – Conceptual Site Layout



DATES: Written comments on the scope of the Central Valley PV/BESS project EIR/EIS should be provided to the Authority starting on February 19, 2025, and must be received not later than 5:00 p.m. April 8, 2025. The Authority will make scoping materials and information concerning in-person scoping meetings available on the Authority’s website: <https://hsr.ca.gov/>. Please check the website for up-to-date information.

ADDRESSES: Written comments on the scope of the Central Valley PV/BESS Project EIR/EIS should be sent to Stefan Galvez-Abadia, Director of Environmental Services, ATTN: Central Valley PV/BESS Project EIR/EIS, California High-Speed Rail Authority, 770 L Street, Suite 620, MS-2, Sacramento, CA 95814, or via email with a subject line to “Central Valley PV/BESS Project EIR/EIS” to PV-BESS@hsr.ca.gov. Comments may also be provided orally at the public scoping meetings described below or in writing at the scoping meetings.

FOR FURTHER INFORMATION CONTACT: Stefan Galvez-Abadia at the above-noted address.

SUPPLEMENTAL INFORMATION: The Authority was established in 1996 and is authorized and directed by statute to undertake the planning for the development of a proposed statewide HSR network that is fully coordinated with other public transportation services. The Authority adopted a Business Plan in April 2024, which reviewed the economic feasibility of an 800-mile

long HSR system capable of speeds in excess of 200 miles per hour on a mostly dedicated, fully grade-separated, state-of-the-art track.

The 2024 Business Plan reaffirms the Authority's commitment to operate the HSR system relying on renewable energy and describes, in part, the Authority's progress in completing the 171-mile high-speed rail corridor between Merced and Bakersfield. This Initial Operating Segment will serve as a steppingstone toward the broader 494-mile system connecting San Francisco to Los Angeles/Anaheim. By reducing vehicle miles traveled and the accompanying emissions produced, the use of electrified, zero-emission trains powered by renewable energy will reduce greenhouse gas emissions by around 92,000 metric tons in the first year of operation, reducing global emissions and contributing to improved local air quality.

Project Objectives/Purpose and Need: The need for a HSR system is related to the expected growth in population and increase in intercity travel demand in California over the next twenty years and beyond. With growth in travel demand, there will be an increase in travel delays from the growing congestion on California's highways and airports. In addition, there will be negative effects on the economy, quality of life, and air quality in and around California's metropolitan areas from a transportation system that will become less reliable as travel demand increases. The intercity highway system, commercial, airports, and conventional passenger rail serving the intercity travel market are currently operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future growth. Travel by HSR requires less energy than travel by airplanes and is therefore environmentally superior. The HSR system will also use 100% renewable energy.

In 2005 and 2008, the Authority and the FRA completed a Statewide Program EIR/EIS for the HSR system and also completed a program-level EIR/EIS, referred to as the Bay Area to Central Valley EIR/EIS, for that segment of the HSR system. Since then, the Authority has approved several project-level EIR/EIS documents for construction, operation, and maintenance of the HSR system between San Francisco and Los Angeles. Within these geographic limits, the Authority has been advancing design and construction of a 171-mile segment between Merced and Bakersfield in the Central Valley. In addition, the Authority is currently preparing an eighth project-level EIR/EIS that would provide a HSR connection between Los Angeles and Anaheim. The Authority is also preparing a project-level EIR/EIS for locating a heavy maintenance facility (HMF) between Merced and Bakersfield in the Central Valley.

Based on technical studies it conducted, the Authority in 2011 joined FRA and a number of other federal agencies by signing a memorandum of understanding that committed the Authority to operate the HSR within 100 percent renewable energy. As part of its 2024 Sustainability Report titled *Connecting Communities Across California*, the Authority indicated its intention to develop solar, battery storage, and additional resources to support and achieve its renewable policy goals and resilient train operations.

As a result, the purpose of the Central Valley PV/BESS Project is for the Authority to operate the HSR System on 100 percent renewable energy through solar generation and battery storage on Authority-owned land. The PV will produce the energy to power the system while the BESS will provide energy backup in the event of an outage and reduce peak-demand during normal train operations.

As part of its 2024 Sustainability Report titled *Connecting Communities Across California*, the Authority indicated its intention to operate the HSR System on 100 percent renewable energy through solar generation and battery storage on Authority-owned land. The PV will produce the energy to power the system while the BESS will provide energy backup in the event of an outage and reduce peak-demand during normal train operations.

Alternatives: The Central Valley PV/BESS Project EIR/EIS will consider a No Action or No Project Alternative and seven PV/BESS sites, including four alternatives for TPSS #7, and one alternative each for TPSS #9, #10 and #12.

No Action Alternative: Under the No Action Alternative (No Project or No Build Alternative), the PV solar arrays and BESS would not be built. Therefore, analysis of impacts under the No Project Alternative is based on a review of city and county adopted general plans, regional transportation plans for all modes of travel, and agency-provided lists of pending and approved projects in Merced, Fresno, Kings, and Kern counties. In assessing future conditions, it was assumed that all known, programmed, and funded improvements to the intercity transportation system (i.e., highway, rail, and transit) and reasonably foreseeable local development projects (with funding sources already identified) would be developed as planned by 2040.

The HSR project alternatives for TPSS #7, #9, #10, and #12, include the following seven potential PV or solar array sites that have been identified for further evaluation:

1. Ranch Road North Alternative APN (671-100-040) (TPSS #7) – in Merced County, south of the City of Merced on the west side of the HSR alignment and west of State Route (SR) 99 and the Union Pacific Railroad (UPRR).
2. Ranch Road South Alternative (APN 371-600-050) (TPSS #7) – in Merced County, south of the City of Merced on the west side of the HSR alignment and west of SR 99 and the UPRR.
3. S. Athlone Road – West Alternative (APN 671-170-002) (TPSS #7) – in Merced County, south of the City of Merced on the west side of the HSR alignment and west of SR 99 and the UPRR.
4. Sandy Mush Road Alternative (APN 671-700-030) (TPSS #7) – in Merced County, south of the City of Merced on the east side of the HSR alignment and west of SR 99 and the UPRR.
5. State Route 43 West Alternative (APN 056-030-11T) (TPSS #9) in Fresno County on the west side of the HSR alignment and west of SR 99 and the UPRR.
6. Kansas Avenue Alternative (028-202-005) (TPSS #10) in Kings County on the east side of the HSR alignment and west of SR 99 and the UPRR.
7. Merced Avenue Alternative (072-180-05) (TPSS #12) in Kern County on the east side of the HSR alignment and west of SR 99 and the UPRR.

Probable Effects: The purpose of the EIR/EIS process is to explore, in a public setting, the effects of a proposed project on the physical, human, and natural environment. The Authority will continue the tiered evaluation of the potential environmental, social, and economic impacts of the construction and operation of the PV/BESS project as part of the HSR system. Probable environmental effects include impacts to agricultural farmlands. Other impact topics to be addressed include, but are not limited to, transportation; air quality and greenhouse gases; noise and vibration; electromagnetic fields and electromagnetic interference; public utilities and energy; biological and aquatic resources; hydrology and water resources; geology, soils, seismicity, and paleontological resources; hazardous materials and wastes; safety and security; socioeconomics and communities; land use and development; parks, recreation and open space; aesthetics and visual quality; cultural resources; and regional growth. Measures to avoid, minimize, and mitigate adverse impacts will be identified and evaluated.

Scoping and Comments: The Authority encourages broad participation in the EIR/EIS process during scoping and review of the resulting environmental documents. Comments and suggestions are invited from all interested parties and the public to ensure that the full range of issues related to the proposed action and reasonable alternatives, and all significant issues are identified. In particular, the Authority is interested in determining whether there are areas of environmental concern where there might be a potential for site-specific significant impacts. In response to this NOP, public agencies with jurisdiction are requested to advise the Authority of the applicable permit and environmental review requirements of each agency, and the scope and content of the environmental information that is germane to the agency's statutory responsibilities in connection with the proposed project.

Three public scoping meetings have been scheduled as an important component of the scoping process for both the State and federal environmental reviews. The scoping meetings described in this NOP will be advertised locally where project features would be located and included in additional public notification. Scoping meetings are scheduled as follows:

- Tuesday, March 11, 2025, 5:00 p.m. to 7:00 p.m. California High-Speed Rail Authority, Central California Regional Office (Boardroom), 1111 H Street, Fresno, CA
- Wednesday, March 12, 2025, 5:00 p.m. to 7:00 p.m., Wasco Veterans Hall (Room 1), 1202 Poplar Avenue, Wasco, CA
- Thursday, March 13, 2025, 5:00 p.m. to 7:00 p.m., Hanford Civic Auditorium, 400 N. Douty Street, Hanford, CA

Public agencies are requested to send their responses to this Notice of Preparation to the Authority at the earliest possible date but not later than 5:00 p.m. Tuesday, April 8, 2025.

Please send your response and direct any comments or questions regarding this project to Stefan Galvez-Abadia, Director of Environmental Services, California High-Speed Rail Authority at the address shown above.

Date: 2/18/2025

Signature:  for Stefan Galvez-Abadia