



April 23, 2013

BOARD MEMBERS

Dan Richard
CHAIRPERSON

Lynn Schenk
VICE CHAIRPERSON

Thomas Richards
VICE CHAIRPERSON

Jim Hartnett

**Katherine
Perez-Estolano**

Michael Rossi

Thomas J. Umberg

Jeff Morales
CHIEF EXECUTIVE OFFICER

TBA
Company
Address 1
Address 2

Dear XXX,

The California High-Speed Rail Authority (Authority) is responsible for planning, designing, building and operation of the first high-speed rail system in the nation. California high-speed rail will connect the mega-regions of the state, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands. By 2029, the system will run from San Francisco to the Los Angeles basin in under three hours at speeds capable of over 200 miles per hour. The system will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations. In addition, the Authority is working with regional partners to implement a statewide rail modernization plan that will invest billions of dollars in local and regional rail lines to meet the state’s 21st century transportation needs.

Furthering its commitment to using 100 percent renewable energy for the high-speed rail system, the California High-Speed Rail Authority (Authority) enclosed with this letter a Call to Industry: Sourcing Renewable Power Supplies to solicit guidance and insight about purchasing renewable power sources.

The Authority plans to achieve its renewable energy goal by procuring or producing enough renewable energy to offset the amount of energy it takes from the state’s power grid to operate trains and facilities: that is, renewable energy sources feed energy into the utility network and the utility network feeds the loads of the high-speed system. This net-zero approach will increase the environmental benefits of the rail system and reinforce California’s renewable energy economy while providing the Authority with a cost-stable source of electricity. The Authority views the adoption of best practices in energy and sustainability in its daily operations as core to its mission.

To that end, the Authority is seeking information from renewable energy providers, developers, and other renewable energy market participants on specific opportunities to meet its goal. In addition to traction power, the Authority is also considering the feasibility of meeting the energy requirements of train stations, rolling stock maintenance facilities, and other installations, completely with renewable energy. This request is for recommendations about renewable energy ideas and opportunities in accordance with California’s Renewable Portfolio Standard.

EDMUND G. BROWN JR.
GOVERNOR



Please review the attached document that provides project milestones and load schedules, as well as objectives of the request and background information.

The Authority would appreciate your prompt attention and response to this request. We welcome a response as soon as possible, but no later than May 31, 2013, submitted to the Authority, per the directions in the attachment "Call to Industry: Sourcing Renewable Power Supplies for California High-Speed Rail Authority." Please contact Margaret Cederoth, Sustainability Manager at 916-403-2691 if you have any questions or need any clarification.

Sincerely,

A handwritten signature in blue ink, consisting of a series of loops and a long horizontal stroke extending to the right.

Mark A. McLoughlin
Deputy Director of Environmental Planning



Call to Industry: **Sourcing Renewable Power Supplies for California High-Speed Rail**

Introduction

The California High-Speed Rail Authority (Authority) is responsible for planning, designing, building and operation of the first high-speed rail system in the nation. California high-speed rail will connect the mega-regions of the state, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands. By 2029, the system will run from San Francisco to the Los Angeles basin in under three hours at speeds capable of over 200 miles per hour. The system will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations. In addition, the Authority is working with regional partners to implement a statewide rail modernization plan that will invest billions of dollars in local and regional rail lines to meet the state's 21st century transportation needs.

The Authority has committed to using 100 percent renewable energy for powering the system. This will be achieved by procuring or producing enough renewable energy to offset the amount of energy it takes from the state's power grid to operate trains and facilities. This net-zero approach will increase the environmental benefits of the rail system and reinforce California's renewable energy economy while providing the Authority with a cost-stable source of electricity. The Authority views the adoption of best practices in energy and sustainability in its daily operations as core to its mission.

The California High-Speed Rail Authority 2012 Business Plan, issued and approved in April 2012 by the Authority's Board of Directors, clarifies the phased implementation plan for the high-speed rail system. The current plan is to provide a 300 mile long Initial Operating Section (IOS) through the Central Valley by 2022, followed by the Phase 1 Blended service connecting the San Francisco Bay area and Southern California by 2029. Starting with the IOS, the high-speed rail system will be blended with existing rail and transportation infrastructure in both in the northern and the southern parts of the state (bookends). The plan outlines how early investments will be made in bookend systems, such as Caltrain and Metrolink, that will lead to early benefits for commuters who utilize those systems. Under this phasing, the target is to have electrified track for testing and commissioning of rolling stock by 2020.

In 2008, the Authority Board of Directors adopted a policy goal to use renewable energy to power the electrically-driven high-speed rail system. Since then, the Authority has worked with state partners such as the California Energy Commission (CEC), to gain knowledge on the use and availability of renewable energy to supply the system's needs over the life of the project. Given the abundance of renewable energy resources in California, as discussed in a 2008 report to the Authority¹, there is sufficient renewable energy resource capacity to meet the State of California's Renewable Portfolio Standard (RPS), a substantial amount, as well as the minimal demand of the high speed rail system. At this time, given the understanding of system demand and phasing laid out in the 2012 Implementation Plan, the Authority is requesting information from renewable energy providers, developers, and other renewable energy market participants on specific opportunities to meet its goal, according to the identified time and load schedule.

¹ *The Use of Renewable Energy Sources to Provide Power To California's High Speed Rail*, Navigant 2008.
http://www.cahighspeedrail.ca.gov/energy_policy_goal.aspx

In addition to traction power, the Authority is also considering the feasibility of meeting the energy requirements of train stations, rolling stock maintenance facilities, and other installations, completely with renewable energy from sources that qualify for California's RPS. The renewable energy infrastructure design shall provide for daily and seasonal demand variations, however in each 12 month calendar year, the Authority proposes to purchase renewable energy from RPS-eligible renewable energy resources to match the annual aggregated GWh required to operate the system.

Objectives of this Call to Industry:

1. Gain insight into anticipated renewable power and energy costs by technology, size, location, mode of delivery (direct or by displacement), transmission/distribution network and contract type
2. Understand regulatory, environmental and technical challenges and opportunities
3. Increase familiarity and build vital exchanges with renewable system developers, financiers and operators
4. Apprise the renewable system developers, financiers and operators of the opportunity to commit capacity to the rail system or the Authority
5. Discover opportunities not yet considered, such as the use of surplus right of way (ROW) for renewable energy generation
6. Gain insight towards the development of best practices procurement strategies

This call to industry seeks recommendations from renewable energy providers, developers, and other market participants about renewable energy ideas and opportunities in accordance with California's RPS policy. Supplier facilities shall be capable of delivering RPS-eligible renewable energy to the California Independent System Operator (CAISO) or other California balancing authority, as appropriate, for use by the Authority. The total of the energy supply arrangements shall at least match the annual energy demand for traction as well as for train stations and other facilities as the project is launched, as the route miles are further developed and as passenger volumes grow.

Authority Requirements

It is possible to directly purchase renewable energy from the utility companies that serve any geographical territory and the energy would be purchased per applicable utility company tariffs for the supply of RPS-eligible renewable energy. However, utility companies have obligations to meet California's RPS to supply 33% of retail from renewable energy by year 2020. The Authority's policy is to develop new renewable energy sources to supplement existing capacity in California.

The Authority is soliciting conceptual proposals for RPS-eligible renewable energy and capacity to be provided at competitive rates from third party owner operators, investor owned utilities (IOUs), local publicly owned electric utilities (POUs), and co-op utilities operating in California. Power buying pools are also of interest. The renewable energy must meet the eligibility requirements under the California RPS and the proposed arrangement must be in compliance with the requirements of the California RPS and all other applicable codes and laws.² The proposed facilities must use technology that is technically proven and commercially competitive at the proposed time of utility contract or Power Purchase Agreement (PPA) execution.

² Requirements for the RPS are codified in Public Utilities Code Section 399.11 et seq., and Public Resources Code Section 25740 et seq. RPS eligible renewable energy resources must satisfy the requirements of Public Utilities Code Section 399.12 (e) and Public Resources Code Section 25741 (a), as determined by the California Energy Commission, and includes facilities that use the following resources or technology to generate electricity: biomass, solar thermal, photovoltaic, small hydroelectric generation, geothermal, wind, fuel cells using renewable fuels, digester gas, landfill gas, ocean wave, ocean thermal, or tidal current. Information on the RPS is available from the Energy Commission's website at <http://www.energy.ca.gov/portfolio/>.

The objective is to further develop viable responses in order to solicit and execute utility contracts or PPAs that will be in place by 2018 in time for the initial power demand for the final stages of project construction, rolling stock testing, first phase commissioning and entry into service. In parallel with this call to industry, the Authority is working with utility companies, both IOUs and POU's to develop the necessary electricity supply infrastructure along the route.

The energy requirements of the high-speed rail system are of three types:

1. For traction purposes (powering the electrically driven high-speed trains)
2. For lighting, HVAC and operation of other machinery and plant at train stations, rolling stock maintenance facilities and other installations
3. For other uses identified thru this call to industry or other initiatives

The energy required for traction purpose, which forms the bulk of the energy requirement of the high-speed rail system (around 89%), has to be supplied through the 115 kV and above transmission networks of the utility companies which alone have the necessary system inertia and system capacities to meet the reliability, availability and operational requirements of traction loads. Therefore, this requirement can be met by the renewable energy sources indirectly through displacement, that is, the renewable energy sources feed energy into the utility network and the utility network feeds the traction loads of the high-speed trains.

The energy requirement for other purposes, such as train stations, rolling stock maintenance facilities and other installations, which account for roughly 11% of the energy requirements of the high-speed rail system, can be supplied directly by the renewable energy sources, provided the requisite reliability, availability and legal/procedural requirements are met. Meeting this load with renewable energy expands upon the Authority's existing policy goal. The results of this call to industry will inform the feasibility of that expanded goal.

For the purposes of this call to industry, the requirement of renewable energy for meeting the Authority's energy needs will be in three parts:

- (a) Around 89% to be fed into utility transmission/distribution network and thereafter supplied by displacement at different specified locations (traction substations) for traction requirements,
- (b) Around 11% to be supplied directly (or, by displacement) to different high-speed rail system installations,
- (c) Additional as appropriate to other uses identified through this call to industry.

Land under direct control by the Authority is limited to an estimated 24 stations, rolling stock and infrastructure maintenance facilities, storage yards and some areas along the rail line necessary for access. It is unlikely that large-scale renewable energy facilities will be built on Authority-owned right-of-way. However, the Authority will explore opportunities for renewable energy generation located on site and integrated with new facility construction, including station roofs, surface parking, platform canopy, and at vehicle and heavy maintenance facility sites, as well as any surplus right-of-way. The Authority is also interested in opportunities for renewable energy facilities to be sited on brownfields. The US Environmental Protection Agency (EPA) Region 9 website has several resources concerning siting of renewable energy facilities on brownfield parcels.³ Also, the Desert Renewable Energy Conservation Plan identified Development Focus Areas, which are ideal land parcels for renewable development in the California Deserts.

Based on the present project implementation schedule of the high-speed rail system the estimated energy requirements during initial phases of the project are presented in the Table 1 below. This table also includes indicative figures for the combined installed generating capacity required for supplying traction energy during this period.

³ See: <http://www.epa.gov/region9/climatechange/renewcontlands/index.html>

TABLE I: HIGH-SPEED RAIL SYSTEM ENERGY REQUIREMENT ESTIMATES

Year	Energy for traction (GWh)	Energy for train stations, maintenance facilities, other installations etc. (GWh)	Total energy requirements (GWH)
2022	180	20	200
2023	270	30	300
2024	270	30	300
2025	440	60	500
2026	440	60	500
2027	710	90	800
2028	710	90	800
2029	890	110	1000
2030	1070	130	1200
2035	1150	150	1300
2040	1150	150	1300
2045	1150	150	1300
2050	1240	160	1400

Notes:

1. These estimates are for operation of (a) the Initial Operating Section from Merced to San Fernando Valley during the period 2022-2026, (b) the Bay-to-Basin System from San Jose to San Fernando Valley during the period 2027-2028, and (c) the Phase I Blended System from San Jose to Los Angeles with some high-speed trains continuing further north from San Jose to San Francisco on the Caltrain network during the period 2029-2050. If the full Phase I is implemented during this period the energy and installed capacity requirements will increase.
2. The installations where energy for other than traction purposes will be required are currently planned to include stations in San Francisco, San Jose, Gilroy, Merced, Fresno, Hanford, Bakersfield, Palmdale, Sylmar, and Los Angeles, among others.
3. The installed capacity estimates for traction energy are for the whole section under consideration during that period. The electricity utilities may have their own rules and procedures regarding the transmission/distribution voltage level at which they agree to wheel the energy supplied by outside renewable energy suppliers. The minimum installed capacity required at each renewable energy source for supplying energy for traction purposes will depend upon these rules/procedures and other technical and economic considerations.

Any PPAs for renewable energy shall be on the basis of periodic renewal on terms to be mutually agreed that reflect changing market conditions and growth of the project electrical loads. The Authority wishes to achieve the 100% renewable energy objective with a manageable number of suppliers or generating facilities. Proposers shall arrange energy transmission and dispatch directly with CAISO and other appropriate California balancing authorities, based on project substation locations to be finalized.

Responses

All responses will be treated in strict confidence. In order to determine the number of potential suppliers in each category, the Authority requests responses as follows:

1. Acknowledgement of receipt of this document and indication of your intention to respond or not by completion of Exhibit A of this document;
2. Questions/issues/concerns;
3. Initial responses within 6 weeks of receipt of this industry by completion of Exhibit B of this document; and
4. By mutual agreement, more detailed, written responses that will lead to discussion of the objectives outlined on pages 1 &2.

Depending upon the responses received, the Authority may arrange for workshops, conference calls, or web-based presentations.

EXHIBIT A
Initial Response Form

Submit to:
Mark A. McLoughlin
Deputy Director of Environmental Planning
California High Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

Respondent company name; address, contact person	
Decision to respond	(Yes/No)
Able to respond within 6 weeks	(Yes/No)
Anticipate renewable energy resource or technology and size of facility	

EXHIBIT B
Response Form

Submit to:
Mark A. McLoughlin
Deputy Director of Environmental Planning
California High Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

Respondent company name, address, contact person	
Identify if the facility is existing or new	
If is an existing facility, is the proposal to add capacity to or repower an existing facility?	
Identify the proposed renewable energy resource or technology	
What is the size of the proposal facility (MW)?	
What is the size of the proposed facility (MW) that would be available for contract with the Authority?	
What is the expected capacity factor of the facility?	
Location Proposed connection point (sub-station or other node)	
Expected in-service date	
Expected initial price / kWh	
Anticipated annual / periodic rate escalation	
Please list any tax enhancements the bid price includes	
Expected term of utility contract or PPA	
Expected service life for the proposed facility(s) or renewable energy supply	
Desired interconnection model (utility, direct, other)	
Brief description of proposed power purchase arrangements. Include existing supply contract arrangements with utilities within the project area.	
Brief description of proposed transmission interconnection arrangements. Include existing transmission study progress and results.	
Brief discussion of the proposed development strategy given the extended nature of the project development timeline.	
Brief description of development experience, lessons learned and best practices developed based on this experience.	