



BRIEFING: SEPTEMBER 2016 BOARD MEETING AGENDA ITEM #4

TO: Chairman Richard and Board Members

FROM: Frank Vacca, Chief Program Manager

DATE: October 11, 2016

RE: Consider Approving a Contract with Pacific Gas & Electric for Engineering and Permits Associated with Electrical Interconnections

Summary of Action Requested

Staff is recommending that the Board authorize a contract with Pacific Gas and Electric (PG&E) for the completion of design, and the acquisition of permits for, PG&E facility improvements and design review services related to 10 PG&E substations to provide for high-speed rail electricity needs within their service area.

Background

Operation of California's high-speed rail system will require the design and installation of a number of individual power connections along the alignment to provide the electricity needed to power the trains. These interconnections will require the Authority to contract with PG&E, Southern California Edison, Los Angeles Department of Water and Power (for 115 kV or higher voltages) and possibly the City of Burbank.

The Authority has been working with PG&E since 2012 to identify the power needs and the appropriate locations to interconnect the HSR System with PG&E's power grid and has previously executed two contracts with PG&E:

- Contract HSR 10-10: A Feasibility and Technical Study contract was executed on December 12, 2012 for \$500,000. It was completed in June 2014 and identified 15 possible connection sites.
- Contract HSR 14-37: This effort evaluated an additional 10 possible locations and developed sufficient information to determine the environmental footprint. The contract was for \$4,986,355.72 with a term ending September 30, 2017.

PG&E and the Authority have identified 10 interconnection locations and the proposed contract will enable PG&E to begin the critical task of engineering the interconnections for the high-

speed rail track facilities and to provide design oversight of the Authority's design-builder(s) that will build facilities for traction power substation (TPS) interconnections. In addition, PG&E will identify and secure all necessary permits to meet regulatory requirements. Electrification must be completed in accordance with the overall project schedule as identified in the 2016 Business Plan.

This request is to authorize a new contract for engineering and permits with PG&E and allows for the next step of effort following the work completed pursuant to HSR 10-10 and HSR 14-37.

Prior Board Action

The Board has not previously taken action on any items pertaining to this issue.

Discussion

The Engineering and Permits Interconnections Contract with PG&E will require PG&E to design, engineer, and permit upgrades to the PG&E system to provide power to the Authority's Traction Electrification System which will power the trains. It will also require PG&E to provide engineering oversight to the design of electrical facilities at the Authority's traction power stations that the Authority will build.

Ten high-speed rail TPSs will be located along the alignment at approximately 30 mile intervals. Each TPS will require a utility connection supplying the electricity originating from either PG&E's 115 kV or 230 kV transmission lines (see Attachment 1, *Interconnection Substations 4 – 13 Within the PG&E Service Area* and Attachment 2 *Sites of Engineering and Permits Work*). Depending on final alignments, the Authority will build 4-5 new switching stations (with PG&E oversight), 5-6 PG&E substation modifications will be needed, and the Authority will construct between 14-18 miles of interconnection transmission lines (with PG&E oversight).

This contract will require PG&E to complete the design and engineering for the utility connections, as well as identify and secure permits that will be required for the ultimate construction. Engineering activities PG&E will perform pursuant to this contract will include design for modification and/or expansion of any existing PG&E substation and oversight of the design of the new facilities (substations and interconnection lines) that the Authority will design and ultimately build, specifically:

- Transmission line planning and engineering
- Substation and switchyard expansion and upgrade engineering
- Protection engineering
- Automation engineering
- Supervisory Control and Data Acquisition (SCADA) engineering
- IT engineering
- Project management needed for project construction
- Land planning, including determination of land needed for temporary construction easements
- Surveys and rights-of-way acquisition needed for construction

The engineering and permitting phase is estimated to take two years and, once complete, phased construction of the interconnection facilities will commence under a subsequent contract between the Authority and PG&E. It is anticipated that construction activities will begin by September 2018 and it will take approximately two years to build and/or reconstruct transmission lines, switching stations, and substations. The schedule outlined in the 2016 Business Plan has testing of the system beginning in January 2021. Approval of this contract now will assist in ensuring that the power necessary to conduct the testing will be available to meet this schedule.

Anticipated Future Board Action

All work and facilities relating to supply of electricity are included in the capital cost estimates for traction power approved in the 2016 Business Plan. Future contracts associated with PG&E for which staff will seek Board approval include:

- Heavy Maintenance Facility Power Supply Contract (estimated cost is \$1,740,000)
- Design/build contract for utility connection facilities (switching station and interconnection transmission lines; estimated cost is \$280,000,000).
- PG&E grid reinforcements contract to support the interconnections (necessity will be determined in the future).

Legal Approval

The Chief Counsel has reviewed and approved this contract.

Budget Implications

This contract is for \$36,034,000 to complete engineering and design, provide engineering oversight, and secure necessary permits to construct the interconnection within the PG&E service area, with initial work to start on Sites 8 – 12. This contract would be for work through January 31, 2019. The contract amount establishes an allowance for this work. As this project is in the early stages and includes high risk elements, the project manager will proactively manage the scope, schedule and budget for this contract to minimize the use of the allowance. The funding for the contract is included within the 2016 Business Plan estimate and is included in the budget.

Contract	Existing Amount	Requested Amount	Total Amount	Contract Term
Engineering and Permits Contract	\$0.00	\$36,034,000.00	\$36,034,000.00	January 31, 2019

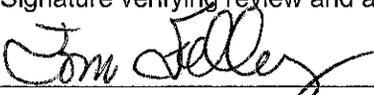
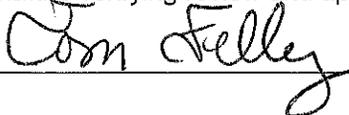
Cost Estimation

PG&E uses historical engineering and construction data to accurately forecast engineering costs for new projects and has specific industry regulated methodology. The Project Work Breakdown Structure identifies specific engineering tasks for each component of construction, with each site

costed individually. A 15% Known Risk primarily due the risk of vernal pools found on proposed locations and 100% Contingency is applied in accordance with AACE Cost Estimate Class Specification. The estimate for this project is a Class 5 estimate as this project is in the early planning phase and considered "high risk" due to the project uncertainties, multiple sites and land acquisitions issues. The applicability of 100% contingency and 15% contingency are applied per PG&E internal procedures.

Recommendations

Staff recommends that the Board authorize the CEO to execute a contract with PG&E for the completion of design and the acquisition of permits for PG&E facility improvements and design review services related to 10 PG&E substations to provide for the Authority's electricity needs within their service area. The contract is for an amount not to exceed \$36,034,000 with a term ending January 31, 2019.

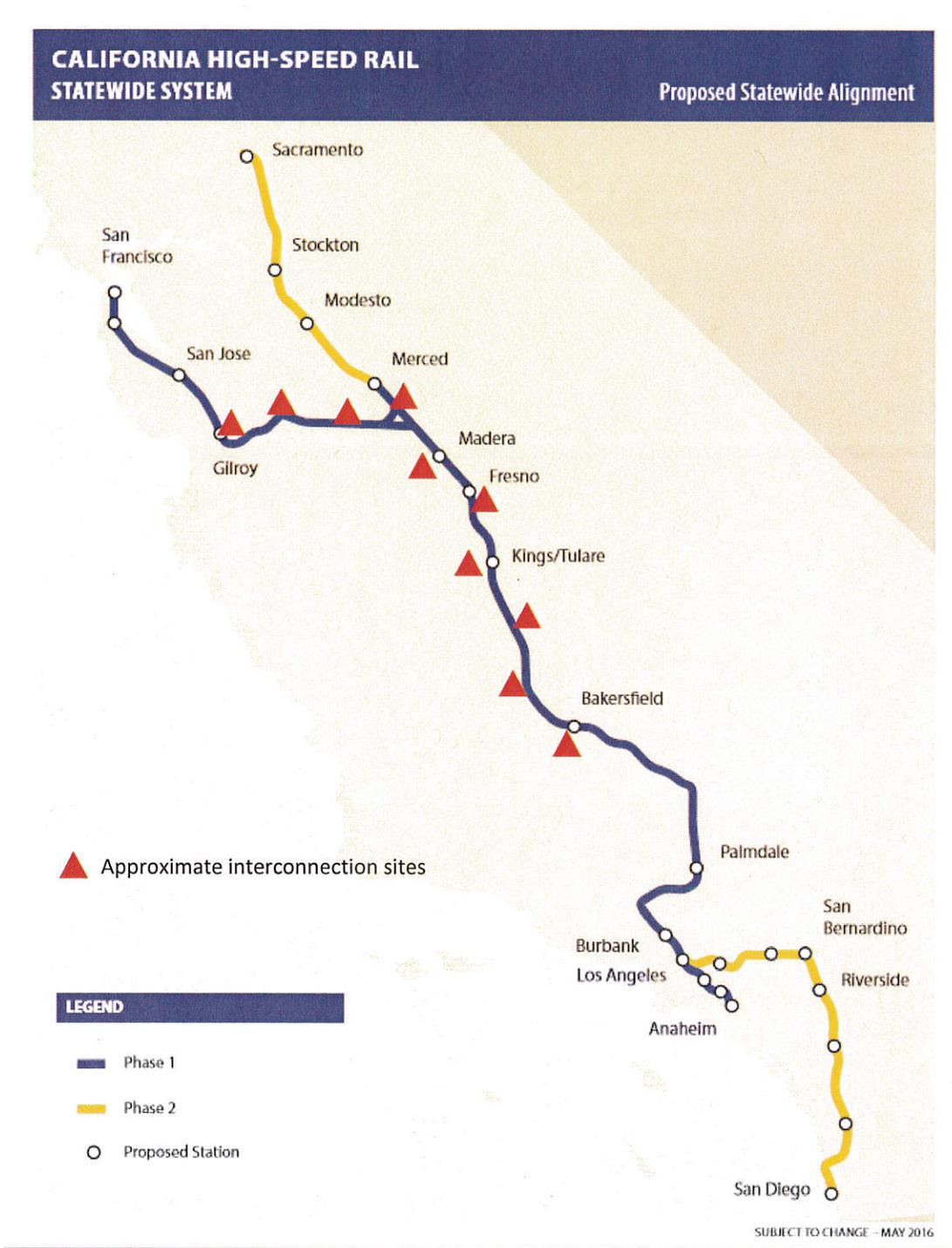
APPROVED BY	
Reviewer Name and Title: Russell Fong, CFO	Signature verifying review and approval: 
Reviewer Name and Title: Tom Fellenz, Chief Counsel	Signature verifying review and approval: 
Reviewer Name and Title: Frank Vacca, Chief Program Manager	Signature verifying review and approval: 

for

Attachments

- Draft Resolution #HSRA 16-26
- Draft Contract PG&E Engineering and Permit Services

Attachment 1. Interconnection Substations 4-13 Within the PG&E Service Area



Attachment 2. Sites of Engineering and Permits Work

Location/substation and activities, identified by Site #:

- 4 Gilroy/Llagas substation – new Double Circuit (DC) 115 kV lines
- 5 O’Neil/Quinto – new DC 230 line extensions and tower upgrades
- 6 Southwest of El Nido – new DC 115 kV line
- 7 Le Grand Junction – new DC 115 kV lines
- 8 Madera/Storey substation – new DC 230 kV line
- 9 Fresno/McCall substation – new DC 230 kV line
- 10 Hanford/Jackson Avenue – new DC 115 kV line
- 11 Pixley/Alpaugh substation – new DC 115 kV line
- 12 Wasco/Charca substation – new DC 115 kV line
- 13 West Bakersfield – new DC 115 kV line