California ISO
Shaping a Renewed Future

REQUEST WINDOW SUBMISSION FORM

Please complete this submission form and the Attachment A (technical data) and send the documentation to the ISO contact listed in section 2. Please note that this form should be used for the purpose of submitting information that applies to the scope of Request Window that is a part of the ISO Transmission Planning Process only. For more information on the Request Window, please refer to the Business Practice Manual (BPM) for the Transmission Planning Process which is available at: http://www.caiso.com/planning/Pages/TransmissionPlanning/Default.aspx.

The undersigned ISO Stakeholder Customer submits this request to be considered in the CAISO Transmission Plan. This submission is for (check one)[1]:

- ☒ Reliability Transmission Project (refer to section 1 of Attachment A)
  - ☒ Submission is requested by a PTO with a PTO service territory
  - ☐ Submission is requested by a non-PTO, a PTO without a PTO service territory or a PTO outside its PTO service territory.
- ☐ Merchant Transmission Facility (refer to section 1 of Attachment A)
- ☐ Location Constrained Resource Interconnection Facility (LCRIF) (refer to sections 1 & 2 of Attachment A)
- ☐ Project to preserve Long-term Congestion Revenue Rights (CRR) (refer to section 1 of Attachment A)
- ☐ Demand Response Alternatives (refer to section 3 of Attachment A)
- ☐ Generation Alternatives (refer to section 4 of Attachment A)

1. Please provide the following basic information of the submission:

   a. Please provide the project name and the date you are submitting the project proposal to the ISO. It is preferred that the name of the project reflects the scope and location of the project:

Project Name:	**Northern Fresno 115 kV Area Reinforcement**
Submission Date:	**09/14/2012**

   b. Project location and interconnection point(s) : **Herndon, Woodward, Clovis, Kerckhoff, Sanger, McCall, Helms and Gregg**

   c. Description of the project. Please provide the overview of the proposed project (e.g. overall scope, project objectives, estimated costs, etc.): **Build a new 230/115 kV substation north-east of Fresno, reconductor 115 kV facilities using existing right of ways.**

   d. Proposed In-Service Date, Trial Operation Date and Commercial Operation Date by month, day, and year and Term of Service.

[1] Please contact the ISO staff at requestwindow@caiso.com for any questions regarding the definitions of these submission categories in this form.

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Proposed In-Service date: **05 / 01 / 2018**

Proposed Trial Operation date (if applicable): / /

Proposed Commercial Operation date (if applicable): / /

Proposed Term of Service (if applicable):

e. Contact Information for the Project Sponsor:

Name:	Redacted
Title:	**Manager**
Company Name:	**Pacific Gas and Electric Company**
Street Address:	Redacted
City, State:	
Zip Code:	
Phone Number:	Redacted
Fax Number:	Redacted
Email Address:	Redacted

2. This Request Window Submission Form shall be submitted to the following ISO representative:

Name: Dana Young

Email Address: requestwindow@caiso.com

3. This Request Window Submission Form is submitted by:

Check here if the information is the same as the Project Sponsor information in 1 (f) of this submission: ☒

Name:

Title:

Company Name:

Street Address:

City, State:

Zip Code:

Phone Number:

Fax Number:

Email Address:

Northern Fresno 115 kV Area Reinforcement

IN-SERVICE DATE

May 2018

PURPOSE AND BENEFIT

Reliability – NERC compliance.

PROJECT CLASSIFICATION

This project is submitted to the CAISO for Board approval at its March 2013 meeting.

DESCRIPTION AND SCOPE OF PROJECT

The project scope is to:

- Build a new 230/115 kV substation that sectionalizes the Helms-Gregg #1 and #2 230 kV lines near where they cross the Kerckhoff-Clovis-Sanger #1 and#2 115 kV lines. The 230 kV bus will have two 230 kV lines to Gregg, two 230 kV lines to Helms, and two 420 MVA 230/115 kV transformers. In addition to the transformers, the 115 kV bus will also have two 115 kV lines to Kerckhoff PH2, two 115 kV lines to Sanger and one 115 kV line to Shepherd substation.
- Install sectionalizing breaker at McCall substation between 230/115 kV transformer #1 and #2, and move the bus tie breaker to a new bay position
- Install sectionalizing breaker at Herndon substation between 230/115 kV transformer #2 and the new transformer #3
- Reconductor 18 miles of the Kerckhoff-Clovis-Sanger #1 and #2 115 kV lines from the new substation to Sanger substation.
- Reconductor 9 miles of the McCall-Sanger #3 115 kV line.
- Reconductor 22 miles of the Herndon-Woodward 115 kV line from Herndon to the new substation.
- Replace terminal equipment as needed to achieve necessary conductor ratings.
- Install one +/- 200 MVAR SVC at the new substation
- Update Helms RAS if necessary.

All transmission line upgrades may be accommodated within the existing PG&E Right of Ways (Brownfield) with very little new Right of Way acquisitions. It is expected that the new substation will require land acquisition and permitting.

This project is expected to cost between $110M and $190M.

This project protects against 20 NERC category C1, C2, C3 and C5 contingencies in the Fresno Metropolitan area, the most severe of which may lead to facility overloads of up to 200% and/or voltage collapse within the local transmission system. Approximately, 550 MW of 1100 MW local load may need to be dropped in order to mitigate the overload and stabilize voltage condition in the absence of system upgrades. In the interim period, between the years 2013 and 2017, NERC compliance is provided by conducting operator switching actions in preparation for the next outage.

BACKGROUND

Herndon 230 kV substation is located in Fresno County. Herndon is the main source of power for northern Fresno and surrounding areas. The 230 kV bus at Herndon is a double bus single breaker design. A fault on the 230 kV bus tie breaker will cause overloads of up to 200% on 10 lines and low voltage throughout Fresno. The existing Kerckhoff PH2 SPS will activate and trip Kerckhoff PH2 causing voltages to drop further. In response to the low voltages McCall UVLS will activate dropping 260 to 290 MW of load in Metro Fresno. After all SPS have acted there will still be overloads of up to 140% on 7 lines. To mitigate these overloads operators could drop an additional 240 to 260 MW of load via SCADA, bringing the total load dropped to between 500 and 550 MW. If this outage leads to voltage collapse the amount of load dropped could be substantially higher.

The main source of power for Southern Fresno is McCall 230 kV substation. A fault on the 230 kV bus tie breaker at McCall substation would cause overloads of up to 126% on 4 facilities and low voltage throughout Southern Fresno. McCall UVLS would initiate for this contingency and drop 260 to 290 MW of load. An additional 50 MW of load may need to be dropped via SCADA to alleviate overloads of the Herndon-Barton and Herndon-Manchester 115 kV lines. This outage may also lead to voltage collapse, in which case the consequences for this outage could be more severe.

There are several other outages that lead to overloads. During peak the Herndon 230/115 kV transformers #1, #2 and #3, McCall 230/115 kV transformers #1, #2 and #3, Herndon-Barton 115 kV line and Herndon-Manchester 115 kV line all overload for NERC category C2 and C3 (N-1-1) outages. In order to take clearances at McCall extensive switching would need to be performed to radialize the 115 kV system. This would make routine maintenance difficult, expensive and would significantly increase the risk of customer outages.

The Northern Fresno 115 kV Area Reinforcement project will strengthen the system so that it can withstand the Herndon 230 kV bus tie breaker fault without relying on SPS or dropping any load. The system will also be strengthened

enough to withstand the McCall 230 kV bus tie breaker fault and will mitigate overloads on 20 additional facilities resulting from at least 10 separate contingencies. This project will also increase operating flexibility, load serving capability, customer reliability and reduce losses. The impact on Helms pumping capability will be negligible.

This Northern Fresno 115 kV Area Reinforcement Project is separate from but closely related to the Central California Transmission – Greater Fresno Upgrade project, which will also be submitted by PG&E as a reliability project on September 14.

BASE CASE AND STUDY ASSUMPTIONS

PG&E used base cases and assumptions approved in the CAISO Unified Planning Assumptions and Study Plan for the 2012/2013 Transmission Planning Process cycle.

STUDY CRITERIA

NERC Transmission Planning Reliability Standards
WECC Transmission Planning System Performance Criterion
California ISO Planning Standards

OTHER ALTERNATIVES CONSIDERED

Alternative 1: Status Quo

This alternative is not recommended because it does not mitigate the expected capacity constraints and does not address load growth concerns.

Alternative 2: Substation Upgrades and Reconductoring

This alternative proposes to convert the 230 kV DBSB at Herndon and McCall to BAAH, reconductor the McCall-Sanger #3, the Herndon-Barton and Herndon-Manchester 115 kV lines, install a fourth 230/115 kV transformer at Herndon, install a fourth 230/115 kV transformer at McCall, and rebuild the Herndon-Woodward-Shepherd 115 kV line as a double circuit tower line. The BAAH will mitigate the 230 kV bus tie breaker faults without relying on SPS or load dropping. In order to mitigate numerous category C violations, provide adequate operating flexibility and increase load serving capability, reconductoring and transformer additions are needed. This alternative will have a negligible effect on Helms pumping capabilities. Low voltage at McCall will remain a concern. This alternative is expected to cost between $125M and $200M.

This alternative is not recommended because it does not address load growth concerns.

PROJECT SCHEDULE

- Environmental and Permitting Processes – TBD
- Design – TBD
- Major Equipment – Transformers, Conductor, Towers, Breakers, Switches, Relays
- Construction – TBD
- Operational – May, 2018

KEY ISSUES

- Land-Use Restrictions – TBD
- Environmental Concerns – TBD
- Special Metering or Protection - None
- Common Mode Exposure Items - None
- Interaction with other Projects or Studies – Central California Transmission – Greater Fresno Area Upgrade Project

MISCELLANEOUS DATA

- PG&E will construct, own, and finance the project
- PG&E will be the planned operator of the project

GEPSLF MODELING INFORMATION

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ATTACHMENTS

1. Single Line Diagrams
2. Demand Forecast
3. Power Flow Summary
4. P-V Curve
5. Pre and Post Project Power Flow Plots

Attachment 1

Redacted

Redacted

Attachment 2

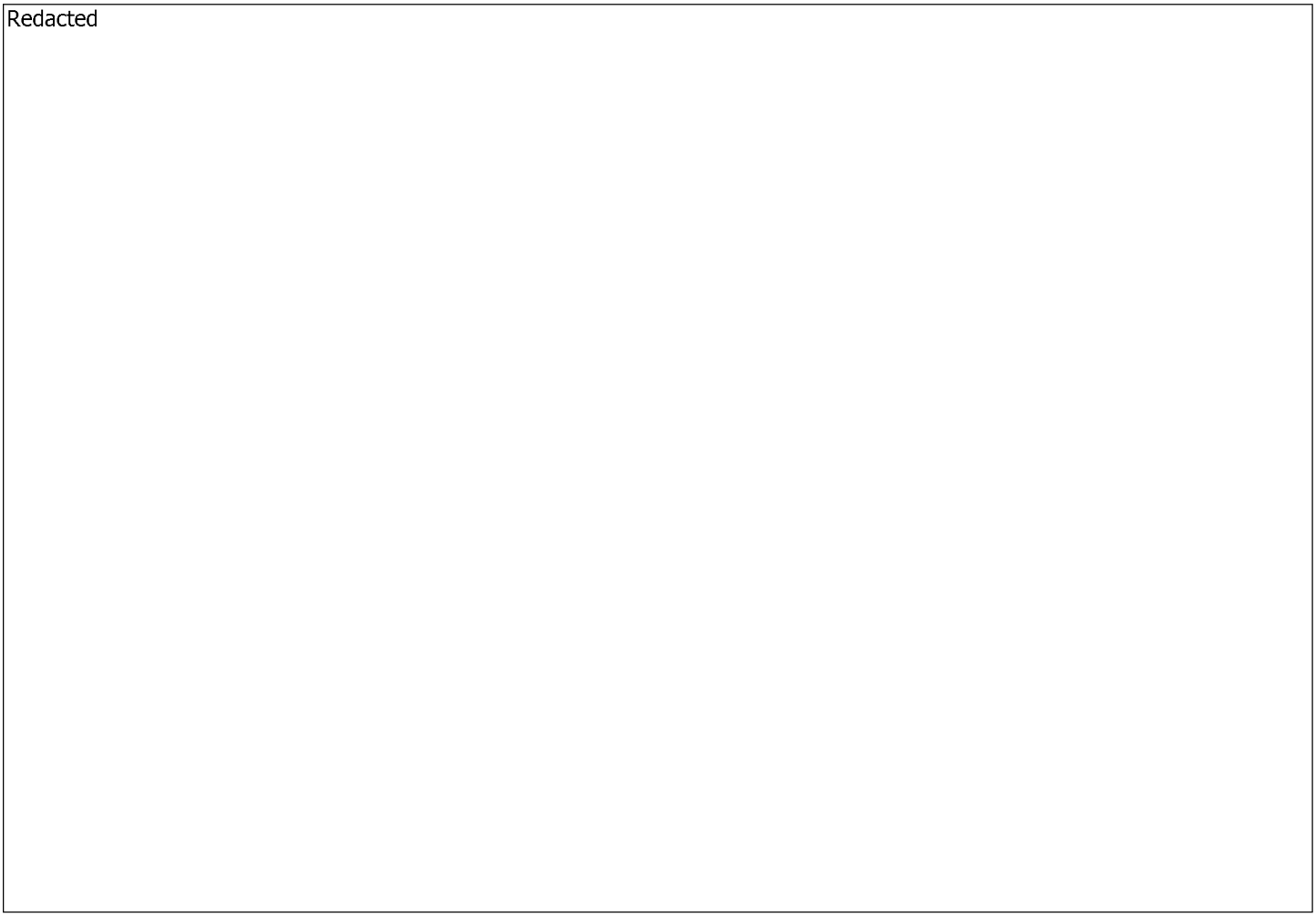

Figure 3: Demand Forecast Graph

Attachment 3

Fresno Peak		Pre-Project						Post-Project	
Facility	Rating	2013	2014	2015	2016	2017	2022	2022	Contingency
Redacted									

Fresno Peak		Pre-Project						Post-Project	
Facility	Rating	2013	2014	2015	2016	2017	2022	2022	Contingency
Redacted									

Redacted

Redacted

Redacted