

SDG&E 3/19/10 Response
A.09-08-003 East County Substation (ECO) PTC
Energy Division Data Request 4 Dated March 8, 2010
SDGE-ED-004: Q1-3

Question 1:

Transmission and Substation Alternatives

CPUC staff is assessing the merits of a project alternative that would eliminate the 138 kV connection between Boulevard and the proposed ECO substation and reconductor or otherwise upgrade existing East County 69 kV facilities to accommodate up to 300 MW of new wind resources. With respect to this alternative please provide the following information.

- a) How much wind capacity could the existing 69 kV system deliver into the SDG&E system?
- b) How much additional capacity could be incorporated into the existing system through a) reconductoring utilizing conventional conductor or b) through application of composite conductor technology. Please note the impact (if any) of the age of the current facilities and any need to reinforce/rebuild/ replace existing poles and other equipment.
- c) Please describe a system upgrade that would provide a second source of power into the Boulevard area, which is not dependant upon construction of the ECO substation. That is what upgrades to the existing 69 kV system are necessary to provide a second source of power into the Boulevard area.

SDGE Response to Q1:

- a) Using the existing facilities, without any upgrades to the 69kV transmission lines, the available capacity for integrating generation, while in compliance with all the transmission planning reliability standards is only 10 MW. The limiting factor is the Boulevard-Crestwood 69kV line capacity. This scenario will not address the improved reliability to the Eastern San Diego County that is incorporated into the proposed East County Substation Project.
- b) Re-conductoring with conventional conductor on existing structures in this area is not feasible. The majority of the poles in the backcountry were sized based on the small diameter conductor that is currently in place today. By installing a larger diameter, heavier conductor most of the poles will need to be upgraded. In order to increase the capacity of the 69kV system in the backcountry, hundreds of miles of conductor will need to be replaced, and substation upgrades will be necessary at the majority of the backcountry substations. However, by replacing poles and re-conductoring only the 69kV lines from Boulevard to Crestwood Substations, and from Crestwood Substation to Cameron Tap (TL6931 and

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TL629), the capacity for integrating generation at Boulevard Substation will increase to 60 MW. As the generation level increases further, the limits of the 69kV system are caused by voltage violations, which cannot be remedied by re-conductoring the existing 69kV transmission lines and require upgrading to a higher voltage class such as 138 kV.

SDG&E has looked into using several composite conductors, and has installed a few thousand feet of ACCR on a 69kV line (pilot project), but feels that the effects of ballistic impacts have not been fully analyzed. SDG&E has had to install numerous repair splices and new sections of conductor in the backcountry due to bullet damage. Based on unofficial destructive testing, the composite core does not fare as well as multi-stranded steel core conductors. As additional tests are performed on composite conductor, and there is more performance history for these conductors, SDG&E will reevaluate the potential for using such conductors. In addition, as stated above, the limitations on the 69kV transmission system at higher generation levels are voltage related, not thermal overloads. The change to composite core conductor will not help to mitigate voltage violations that arise from high line flows as a result of generation levels.

- c) Building a second 69kV transmission line from Boulevard Substation to the existing Cameron Tap, and removing the tap to provide two separate lines, will provide two 69kV lines to Boulevard Substation. Construction of this line will require either an additional minimum 50' easement for a separate pole-line or the rebuild of the existing pole-line in the area. This configuration will still leave Boulevard Substation exposed to outages due to a single structure failure. Building a new 69kV line from Boulevard Substation to Cameron Tap will allow the capacity for integration of generation at Boulevard Substation to increase to 100 MW. The cost of getting this 100 MW of capacity is in excess of \$100M.

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SDGE-ED-004: Q1-3

Question 2:

As presently understood the SDG&E proposed upgrades in the Boulevard area are, in part, designed to accommodate the interconnection of approximately 300 MW of wind generation located in the surrounding area. Current estimates indicate that as much as 500 MW of wind generation may ultimately be built in the area.

- a) What changes, if any, in the SDG&E plan would be required to accommodate this higher generation level?
- b) How would the higher generation level impact your responses to the above data request? That is, if the 300 MW level were to be increased to 500 MW.

SDGE Response to Q2:

- a) Based on the current CAISO queue, there is close to 600 MW of wind generation proposed to be developed in the Boulevard area. The current plan is proposed with enough flexibility to be able to accommodate the additional MW injection when it is developed. This additional generation at Boulevard Substation will connect to ECO Substation through the proposed Boulevard-ECO 138kV transmission line. The 138kV transmission line is proposed/planned as bundled 900 ACSS/AW conductor installed on both sides of the 138kV structure line (two circuits) from ECO Substation to Boulevard Substation. This bundled conductor configuration (two conductors per phase) per circuit, would accommodate the queued generation.
- b) In addition to what is provided under a) above, as the level of generation injection at ECO increases to beyond 350 MW there may be a need for series compensation.

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SDGE-ED-004: Q1-3

Question 3:

Socioeconomic Analysis - Project Description Data Needs

Please provide the following information:

Construction Work Force

- a) Estimate of percentage work force employed locally.

Local Expenditures of Supplies and Equipment for Construction

- b) Estimate of cost of equipment, materials, supplies and services that will be purchased locally (eg concrete, sand, gravel, asphalt, portable toilets).
- c) Estimate of local contracts that will be given.

Local Expenditures of Supplies and Equipment for Operation

- d) Supplies and local contracts required for operations.

SDGE Response to Q3:

- a) SDG&E has a long history of using local labor. For the purpose of this response, SDG&E is assuming the term “locally” to be defined as employees that live in the greater San Diego region. Given that clarification, all of SDG&E’s personnel who will be working on the project are local. The majority of subcontractors working on this project are also likely to be local. As a result, it is anticipated that at least 80%, if not higher, of the workers assigned to the ECO Substation Project will be local labor. Where possible, the substation and transmission line construction workforce will be hired out of the local chapter of the International Brotherhood of Electrical Workers (IBEW).
- b) Construction of a 500kV substation requires specialized transformers, steel structures and other material that is not available locally. However, it should be noted that most of this material is available in the United States. There are products and services that are available locally, which SDG&E and its primary contractor will aggressively pursue. For example, it is expected that all of the concrete, sand, gravel, portable toilets and other supplies will be purchased locally. SDG&E’s primary contractor,

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Beta Engineering, has also opened up a San Diego office for projects in the Western United States.

- c) At the outset of the project, SDG&E and its prime contractor will identify services that can be provided by local contractors. Currently it is anticipated that services including site development, below grade construction, and fencing will be provided by local contracts. SDG&E has a proven track record of using qualified local contractors and will continue this practice with the ECO Substation project. In addition to the supplies addressed in answer 3b, SDG&E has identified approximately \$36 million in local contracts which will be awarded for this project.

- d) SDG&E maintains and operates its own electrical system with existing local workforce. Once completed, the ECO Substation will be integrated into the SDG&E transmission system and maintained by SDG&E personnel. Electrical supplies necessary to operate the ECO Substation and related projects will be available from SDG&E stock that is serviced by existing contracts, of which many are local.