

**SDG&E 9/1/10 Response**  
**A.09-08-003 East County Substation (ECO) PTC**  
**Energy Division Data Request 4 Dated July 19, 2010**  
**SDGE-ED-010: Q 7**

**Visual Resources**

**Question 7:** It was requested that a viewshed analysis be provided for the ECO Substation project components; consequently please prepare a viewshed analysis for the following:

- ECO and Boulevard Substations out 3 miles each
- 138 kV transmission line out 2 miles.

Please provide a high resolution .jpg file for this analysis.

**SDG&E's Response to Question 7:**

**SDG&E East County Substation Project  
Data Response Question 7**

**Project Viewshed Overview**

The Proposed Project viewshed is defined as the general area from which the Proposed Project will be visible. Within this area, the existing Boulevard Substation, in addition to several existing overhead transmission lines, including the Southwest Powerlink (SWPL), are established landscape features. As seen from many places along the 138 kilovolt (kV) transmission line, intervening landforms screen views of these existing facilities. For reference, it may be noted that visual details generally become apparent to the viewer when they are seen in the foreground at distances of 0.25 to 0.5 mile or less (Smardon 1986). For the purpose of the visual analysis, the primary focus considered this foreground viewshed area, where visual details are apparent, and up to approximately one mile from the Proposed Project area, where change could be potentially noticeable.

**Viewshed Maps**

Environmental Vision employed computer geographic information system (GIS) methods to produce a set of viewshed maps for the Proposed Project as described in the Proponent's Environmental Assessment (PEA Project) and the Project alternative that involves the shift to the substation footprint and redesign of the 138 kV line (Revised Project). The maps illustrate the potential visibility of the proposed transmission line and substations from the surrounding area. The Transmission Line Viewshed Maps show potential visibility of the proposed 138 kV line and proposed SWPL loop-in. The Composite Viewshed Maps illustrate both transmission line and substation visibility. In order to highlight the foreground viewshed, the maps include a line delineating the area 0.5 mile from the proposed transmission line and SWPL loop-in. A second line at a distance of one-mile is also shown. Beyond this one-mile zone, visible portions of the Project would generally be unnoticed to the casual observer.

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**Methodology**

The Transmission Line Viewshed Maps illustrate the potential visibility of the proposed poles from observer points on the ground. The PEA Project pole heights range generally from 90 to 120 feet; whereas, the Revised Project poles are 150 feet tall. Specific pole heights, as identified in the geographic information system data that was submitted with the PEA, were used to generate the viewshed map for the PEA Project. A worst-case height of 150 feet was used for the Revised Project for all poles for the purposes of viewshed mapping. Potential visibility up to two miles away was mapped. The viewshed maps distinguish four levels of potential project visibility:

- no poles,
- 1 to 10 poles,
- 11 to 20 poles, and
- more than 20 poles.

For the Composite Viewshed Map, substation visibility was calculated based on the substation pad location and the height of the tallest components; 38 feet for Boulevard Substation, and ECO Substation heights of 65 feet and 135 feet for the 230 kV and 500 kV sections, respectively. Potential substation visibility was calculated and mapped out to a distance of three miles. For each ground location, the composite map shows whether transmission line poles, a substation facility, or both Project components could be visible.

The viewshed maps were produced using ArcGIS computer software and a three-dimensional topographic based computation from Project data and digital elevation (DEM) data from the U.S. Geological Survey (USGS) National Elevation Dataset (NED). The 1/3 Arc second NED elevation data has a horizontal resolution of approximately 10 meters. The ArcGIS viewshed calculation used object heights of the proposed transmission poles and tallest substation components, and the assumption of a five-foot observer height on the ground.

The viewshed maps consider only topographic screening and, in this respect, present a worst-case assessment of Project visibility because the views of the Project could be screened by existing vegetation and structures, as well as topography. Proposed landscaping will also screen views of the Project substations. In addition, as demonstrated by the PEA visual simulations, visible poles and substation structures can be difficult to distinguish depending on factors such as viewing distance and backdrop conditions. For example, as shown in Attachment 4.1 B: Visual Simulations – Viewpoint 18 in the view from Old Highway 80 in Jacumba, the Proposed Project will be barely visible against the landscape backdrop at a distance over 0.5 miles away.

**Evaluation**

As shown in the maps, the viewshed for the Proposed Project extends the full length of the transmission line and up to two miles away. The proposed substation viewshed extends up to three miles away. Most of the viewshed is comprised of sparsely populated or undeveloped areas. However, the community of Jacumba is located over 0.5 miles from the proposed 138 kV line and the town of Boulevard is near the Boulevard Substation. In many of the foreground

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views, the Project will be partially or fully screened by existing vegetation and structures. The viewshed includes sections of Old Highway 80 and limited parts of Interstate 8. Views from these highways are generally of brief duration and seen from distances over 0.5 mile. The viewshed also includes a small part of the Anza-Borrego Desert State Park, south of I-8 and over one mile from the proposed transmission line. However, the existing SWPL is already visible from this location. PEA Attachment 4.1 A: Visual Character Photographs includes a set of 32 photographs that document representative existing visual conditions within the viewshed. Additional description of these views is included in the PEA Section 4.1.2 Existing Conditions.

The viewshed maps support the conclusions from the PEA analysis of aesthetic impacts, as follows:

- Most of the area where the Proposed Project has the greatest potential visibility is sparsely populated or undeveloped.
- Along most of the Project route where the proposed 138 kV line will be visible, the poles are located parallel to the existing SWPL transmission towers.
- Portions of the Proposed Project will be visible to the public. As discussed in the PEA Section 4.1.3 Impacts, and demonstrated by comparing the before and after views presented in Attachment 4.1 B: Visual Simulations, with implementation of APMs listed in Section 4.1.4 Applicant-Proposed Measures, the Proposed Project will not result in a substantial alteration of the existing visual character of the area.
- None of the Proposed Project components will be visible from a designated state scenic highway.

A comparison of the revised Project viewshed maps with the PEA Project shows that generally there is little difference in the potential visibility between the two. The primary difference is seen in the area along Interstate 8 northeast of the ECO Substation where the viewshed maps show additional areas with potential views of the Project at distances over 0.5 mile away. In particular, the Project shift eastward increased the potential visibility of the SWPL loop-in towers from Interstate 8 to the northeast. However, as shown in Photograph 2 in Attachment 4.1 A: Visual Character Photographs, the existing view from I-8 looking southwest towards the Project includes the existing SWPL towers in the foreground adjacent to the highway. A minor increase in potential visibility may also be associated with the increased 138 kV pole height.