

ATTACHMENT 4-B VISUAL SIMULATION METHODS

As part of the visual resources analysis for Pacific Gas and Electric Company's (PGandE) Delta Distribution Planning Area Capacity Increase Substation Project (project), visual simulations were produced to illustrate "before" and "after" visual conditions in the project area. The simulations, presented in Attachment 4-A, illustrate the location, scale, and appearance of the project area as seen from two representative public viewpoints. The visual study employs photographs taken in October 2004 using a single lens reflex camera with a 50-millimeter lens, which represents a horizontal view angle of 40 degrees.

Computer modeling and rendering techniques were employed to produce the visual simulation images. The computer-generated visual simulations are the results of an objective analytical and computer modeling process, described below. The images are accurate within the constraints of available site and project data.

The simulation vantage points are summarized in Table 4-B-1 and delineated on Figure 4-1 in Chapter 4: Aesthetics.

Table 4-B-1: Summary of Visual Simulation Locations

Location (<i>Figure #</i>)	Viewpoint Number¹
View of project area from Chaparral Park (Figure 4-3)	2
View of project area from Heidorn Ranch Road (Figure 4-4)	7

¹ Refer to Figure 4-1 for photograph viewpoint locations.

Existing Geographic Information System and engineering data and digital aerial photographs provided the basis for developing an initial digital model. A three-dimensional model of the substation facilities and transmission tower was also developed using design and project data. The three-dimensional computer model of the substation and transmission tower was combined with the digital site model to produce a complete computer model of the project. A set of computer-generated perspective plots was then produced to represent the selected viewpoints.

For each of the simulation viewpoints, viewer location was digitized from topographic maps using 5 feet as the assumed eye level. Computer "wireframe" perspective plots were overlaid on photographs to verify scale and viewpoint location. Digital visual simulation images were then produced based on computer renderings of the three-dimensional model combined with digital versions of the selected site photographs.

The final hard copy visual simulation images were printed from the digital image files and produced in color on 11- by 17-inch sheets.