LEAPS Detailed Interconnection description and one-Line Diagrams

The three major segments of the projects are:

1)Northern Point, Proposed Lee Lake Substation 500-kV, Optional 115-kV Tie, and 13.8-kV Station Power:
The high-voltage transmission line will run approximately 30 statute miles generally north to south in the Cleveland National Forest and interconnect the SCE and SDG&E transmission systems. The Project is electrically similar to the former Valley Rainbow project, CPUC Docket # A.01-03-036. The power lines will be sized for 1,600 MW or 1,780 MVA. As proposed, the northern connection and substation will be at Lee Lake (Corona Lake). This will be on the northern side of Interstate 15, in close proximity to the existing SCE 115-kV, 13.8-kV lines and 500-kV Valley-Serrano line. This new substation will occupy an area of roughly 40 to 60 acres with a new breaker and a half configuration. The loop in/out will be approximately half way between Serrano and Valley substations. The Applicant will need a connection to the existing SCE 13.8-kV lines for station power, and as an option, five circuits, of 115-kV loop in/out connection. This optional connection could eliminate the Elsinore or Skylark 115-kV connections, from the LEAPS mid point substation/switchyard. This 115-kV tie would likely include a tap changing transformer for flow control and may or may not include fault current upgrades to SCE Elsinore or Skylark substations.

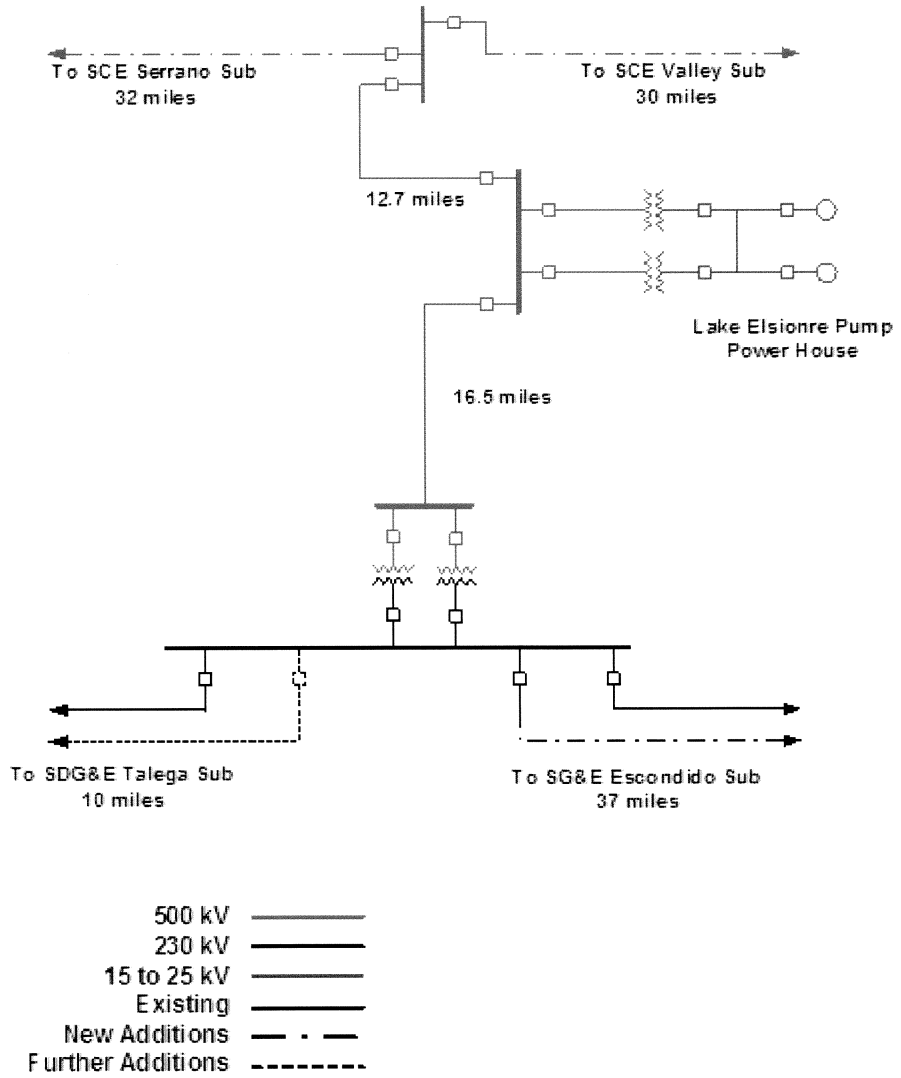
2) **Mid Point, Proposed LEAPS Substation/Switchyard, 500-kV, 115-kV Ties, and 13.8-kV Station Power**:
The mid point substation/switchyard will be for connection to the LEAPS 500-MW pumped storage project. It will be located to the rear of the proposed Santa Rosa powerhouse site located, in whole or in part, in the Cleveland National Forest, near Lake Elsinore. Distance to the northern substation is approximately 12.7 statute miles and approximately 16.5 statute miles to the southern connection. The substation/switchyard will be approximately 60 acres and will also enclose a breaker and a half, 500-kV configuration. In addition, it will have the LEAPS substation/switchyard gear, including two 16-kV to 500-kV step up transformers for two, 250-MW pumped turbines. As mentioned above, two optional ties to the existing 115-kV Elsinore and Skylark, SCE substations (8 and 6 miles, respectively) may also be included. These substations may require upgrades for fault current rating. Also, required is a 13.8-kV connection from Grand Avenue for station power (approximately 4,800 feet).

3) Southern Point, Proposed Case Springs, Camp Pendleton Substation, 500-kV, 230-kV, 69-kV upgrades/voltage support, and 13.8-kV Station Power.
The southern substation will be approximately 60 to 80 acres, and located near the existing SDGE 230-kV lines on or near the border of Camp Pendleton. These existing lines traverse the Talega-Escondido substations. The Applicant proposes to construct a new 500/230-kV substation with some form of flow control. In the Applicant's Phase I study, two phase shifting transformers sized for nominal operation, at 25 to 30 deg with a southern flow of approximately 1,000 MW, are proposed. The FACTS devices presently show no real benefit for flow control. The existing SDG&E 230-kV Talega-Escondido lines would loop in/out and bundling (adding a second conductor) will upgrade the existing lines. An additional circuit would be added to the existing spare tower supports, each direction matching the bundled circuits. This re-conductoring and added circuit would bring the SDGE 230-kV Talega-Escondido rating to approximately 1,000 MW. Other upgrades considered are

rebuilding approximately 7.7 miles of 69-kV lines between Paula and Lilac substations. Also, adding voltage support at the existing Mission, Miguel, and Sycamore Canyon substations. Still unresolved is a requirement for one 13.8-kV circuit for station power. If unresolved, 13.8-kV conductors will be added on the same towers from the northern and mid point substations.

All 500 kV air insulated circuits will be twin bundled 2156 ASCR, "BLUEBIRD". The underground circuits are GIL lines rated at 3100 amps continuous and 63 kA short circuit. The conductor type for the second 230kV circuit between Talega and Escondido substation is now proposed as 3M Company Composite Conductor Part Number 3M1033-T13 with the upgraded path nominally rated at 1000 MW with overload at approximately 2000 MW. The final ratings and conductor will be finalized in the Facilities Study.

LEAPS Simplified One-line Diagram



Lake Elsinore Advanced Pump Storage
Transmission Project One-Line Diagram
Rev H281 05/18/06