

## **1.0 PURPOSE OF ACTION AND NEED FOR POWER**

On February 2, 2004, the Elsinore Valley Municipal Water District (Elsinore Valley MWD) and the Nevada Hydro Company, Inc. (Nevada Hydro), or co-applicants, filed an application for an original license with the Federal Energy Regulatory Commission (Commission or FERC) for the construction and operation of the Lake Elsinore Advanced Pumped Storage Project (LEAPS Project). The proposed 500 megawatt (MW) project would occupy about 2,412 acres of federal lands, including lands managed by the U.S. Department of Agriculture, Forest Service (USFS), Cleveland National Forest, U.S. Bureau of Land Management (BLM), and the Department of Defense (Camp Pendleton) (see figure 1). The USFS is reviewing an application for special use permit for the construction of transmission lines associated with the LEAPS Project as a transmission line only project. The Commission and the USFS have agreed to participate as cooperating agencies in the preparation of an environmental impact statement (EIS) for the LEAPS Project.

### **1.1 PURPOSE OF ACTION**

The Commission must decide whether to issue an original hydropower license to the co-applicants for the project and what conditions, if any, should be placed on that license. The USFS must decide whether to issue a special use permit for the Talega-Escondido/Valley-Serrano 500-kilovolt (kV) Interconnect Project (TE/VS Interconnect Project) and to issue any necessary special use authorizations for the LEAPS Project. The TE/VS Interconnect is a high-voltage regional interconnection that would link Southern California Edison's (SCE's) Valley-Serrano 500-kV transmission line in western Riverside County with San Diego Gas & Electric Company's (SDG&E's) 230-kV Talega-Escondido transmission line in northern San Diego County. The co-applicants filed a special use permit application for the TE/VS Interconnect Project with the USFS on July 3, 2003, pursuant to the provisions of Title 5 Section 501 of the Federal Land Policy and Management Act.

In this draft EIS, we assess the effects associated with the construction and operation of the proposed project as well as a staff alternative to the proposed project. In deciding whether to issue a license, the Commission must determine that the project would be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued (e.g., flood control, irrigation, and water supply), the Commission must give equal consideration to the purposes of energy conservation; protection of, mitigation of damage to, and enhancement of fish and wildlife (including related spawning grounds and habitat); protection of recreational opportunities; and the preservation of other aspects of environmental quality. Under the Federal Land Policy and Management Act, the USFS must decide whether to grant an easement for rights-of-way over, across, and upon National Forest System lands for electrical poles and lines for the transmission and distribution of electrical power (see appendix A).

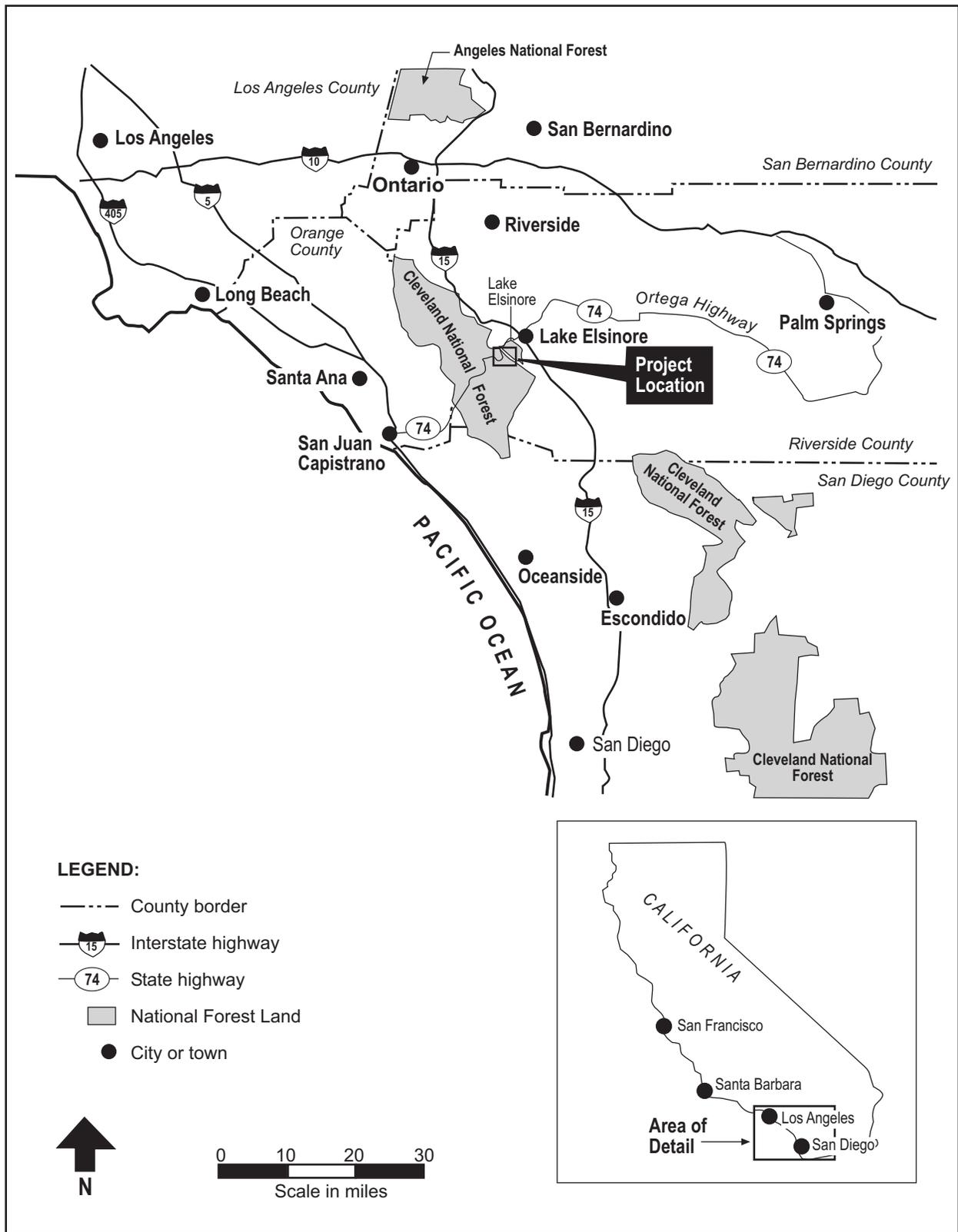


Figure 1. LEAPS Project—Location map. (Source: Elsinore Valley MWD and Nevada Hydro, 2004a, as modified by staff)

In this draft EIS, consistent with the National Environmental Protection Act (NEPA), we analyze and evaluate the environmental and economic effects of the construction and operation of the project. The alternatives we consider include: (1) the no-action alternative; (2) the co-applicants' proposed action; and (3) a staff alternative, consisting of the co-applicants' proposed action with Commission and USFS staff's modifications. Important issues that we address include erosion, water quality, entrainment, cultural resources, recreation resources, aesthetic resources, and regional socioeconomics.

## **1.2 NEED FOR POWER AND TRANSMISSION**

### **1.2.1 Power**

The Commission must consider the public's need for power in its licensing decision. Because the proposed project is designed to provide peak energy, the key concern in this case is the projected need for peaking energy relative to future power requirements and planned resource additions. Additional factors to be considered in evaluating need for power from a pumped storage project include:

- availability of off-peak generation to provide pumping energy;
- effect on system reliability; and
- possible ancillary benefits including standby and reserve duties, black-station start, frequency control, and flexible reactive loading.

The project would be located within the SCE service territory. By way of comparison, the 500-MW LEAPS Project would be equivalent to almost half SCE's current total hydroelectric capacity. Hydroelectric generation accounts for 1,150 MW (written testimony of W.D. Pagel, Manager, Eastern Region, Hydro Generation, SCE, before the National Parks, Recreation, and Public Lands Subcommittee of the U.S. House Committee on Resources, on April 29, 2004) of SCE's total generation supply of 5,000 MW (Hoover's, 2004).

At a regional scale, the project would be located within the Western Electricity Coordinating Council (WECC) that includes the states west of the Rockies; portions of Texas, Nebraska and Kansas; Alberta and British Columbia, Canada; and a portion of North Baja California. To anticipate how the demand for electricity is expected to change in the region, we looked at the regional need for power as reported by WECC (WECC, 2005). The project is located in the California-Mexico Power area of WECC.

The California-Mexico Power area, which encompasses most of California and a part of Baja California in Mexico, has a significant summer peak demand. For the period from 2005 through 2014, WECC forecasts peak demand and annual energy requirements in the area to grow at annual compound rates of 2.4 and 2.6 percent, respectively. Severe weather conditions in 1998 and 2000 affected the area, resulting in numerous curtailments of service to interruptible customers. Even with assumptions about future

generation and transmission extension projects, short-term statewide and local reliability problems exist. Resource capacity margins for the California-Mexico Power area range between 13.2 and 14.8 percent of firm peak summer demand for the next 10 years, including allowances for projected new capacity. Winter reserves are expected to fall from 31.3 percent in 2005 to 2006 to 15.1 in 2014 to 2015. Available reserves in the California-Mexico Power area are projected to decrease below generally accepted values of 15 to 18 percent. Therefore, new capacity from this potential project could have a significant positive effect on the ability of the area to meet regional requirements for generation in both summer and winter.

Simple-cycle combustion turbines are designed to operate at lower plant factors than combined cycle combustion turbines and would likely be built to serve a similar portion of California-Mexico Power load if the LEAPS Project were not built. The projected plant factor for LEAPS is just under 36 percent (i.e., the project would generate about 500 MW for 3,120 hours out an average 8,766 hours per year). Simple-cycle combustion turbines are expected to add about 692 MW to the capacity supply between 2005 and 2014 or just over 10 percent of the total capacity growth (WECC, 2005).

WECC anticipates that 6,783 MW of new capacity would come on line within the next 10 years in the California-Mexico Power region of the WECC region. According to WECC's most recent estimates (WECC, 2005), hydroelectric generation will only account for 20 MW (0.3 percent), of the projected capacity growth of 6,783 MW in the region between 2005 and 2014. Hydro pumped storage will potentially add an additional 390 MW, accounting for 5.7 percent of projected capacity growth. The LEAPS Project is not included in this forecast.

Combined-cycle combustion turbines are forecast to account for most of the supply growth with WECC estimating nearly 15 percent<sup>7</sup> growth in this category. By comparison, pumped storage, even with LEAPS Project, would add just 1.5 percent of new capacity growth. Growth of firm capacity supplies in other categories including certain renewables is estimated at 45 MW between 2005 and 2014. Although there may be significant additions of wind power, such power is generally not treated as firm capacity due to the intermittent nature of wind. Wind power, however, will contribute to the overall energy supply. The value of pumped storage generation is that it transfers a significant portion of the electricity generated during off-peak hours to on-peak hours for more rapid dispatch. Building additional pumped storage would enhance the power resource mix for projects with this type of operating characteristic. We conclude that the

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<sup>7</sup> Combined-cycle combustion turbines not only contribute to overall capacity growth but also would replace a significant percentage of retirements and hence growth in combined-cycle combustion turbines exceeds overall growth rates. For example, oil fired steam generation in 2005 accounts for 0.5 percent of capacity, but this will drop to zero by 2014.

region has a need for power over the near term and power from the proposed project could help meet that need in the future.

Trends in energy and capacity needs in California are echoed by the California Energy Commission. Utilities in southern California would likely use the electricity from the project to displace the use of gas-fired energy during on-peak hours. If the project is not licensed, utilities would still need to provide a comparable amount of capacity and energy from other resources, most likely through the operation of gas-fired generation facilities.

The California Energy Commission was created in 1974 and is responsible for forecasting future energy needs and keeping historical energy data amongst other duties. The California Energy Commission noted in its 2004 Integrated Energy Policy Report Update that “while supplies are tight during peak periods, the state has more than adequate amounts of power in the low load periods, especially at night.” California utilities and generators have some options for shifting power supplies from off-peak to on-peak periods through the use of pumped-storage facilities. The co-applicants have also identified on-going development of geothermal energy resources in the Salton Sea area of southern California as another possible source of off-peak energy for overnight pumping (Elsinore Valley MWD and Nevada Hydro, 2004b).

In summary, if licensed, the power from the project would be useful in meeting a part of the local and regional need for on-peak power. Pumped storage generates and stores power during off-peak periods that can be provided rapidly during on-peak periods. Neither of the co-applicants has end use customers. Licensing the LEAPS Project would allow the co-applicants to compete in the power market for sale of the project’s power.

### **1.2.2 Transmission**

California’s existing transmission system links power generation resources with customer loads in a complex electrical network that must balance supply and demand on a moment-by-moment basis. An efficient and robust transmission system is required not only to help deliver the lowest-cost generation to consumers but also to stimulate competitive behavior in energy markets, pool resources for ancillary services, and provide emergency support in the event of unit outages or natural disasters. Some of the problems facing the transmission system in the area of the LEAPS Project include congestion on major paths, which prevents optimal economic operation of the system, and constraints such as power flow restrictions, which affect both the economic and reliable operation of the system, in major load centers such as San Diego.

Various state agencies and regional planning groups recently have studied the need for SDG&E to import additional electric power beginning in 2005. Of these agencies and planning groups, the Southwest Transmission Expansion Plan (STEP), SDG&E, and California Independent System Operators have conducted the most current and applicable studies.

The STEP studies conducted in 2003 indicate that a new 500-kV transmission line into San Diego would be necessary to serve future load growth. Many STEP participants believe that the existing transmission system in this area is inadequate to fully deliver all the new generation that has been developed. By enhancing the capability of the transmission system, new, clean, and efficient generation would be available to service future load growth and replace older and less efficient generation.

The STEP examined several options for routing a new transmission line into San Diego, including several alternative routes from Imperial Valley into San Diego, known as the Imperial Valley-San Diego Expansion Plan Project, as well as the proposed Talega-Escondido/Valley-Serrano transmission line associated with the LEAPS Project. Detailed analyses (power flow and stability) and economic (production costs) studies were conducted for each of these options. The STEP found that neither project had annual benefits large enough to offset its costs; however, the STEP did not analyze the strategic project benefits<sup>8</sup> of these projects, which could improve the projects' economic outlook.

Korinek (2003) re-enforces the need to increase San Diego's import capability, which is currently limited to 2,850 MW, to cover an estimated reliability deficiency of 291 MW in 2007. This deficiency, based on G-1/N-1<sup>9</sup> reliability criteria, is primarily due to the inability to permit the 500-kV Valley-Rainbow transmission line (Valley-Rainbow transmission line, which, from an electrical network viewpoint, is almost identical to the Talega-Escondido/Valley-Serrano transmission line), combined with increasing loads in San Diego.

In February 2002, the Office of Ratepayer Advocates, under the California Public Utilities Commission completed its assessment of the Valley-Rainbow transmission line and found that the project affords negligible reliability benefits in at least the next 5 years (Sierra Energy & Risk Assessment, 2002). However, it appears that after SDG&E

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<sup>8</sup> Strategic benefits include reliability, load diversity, fuel diversity, access to lower cost power plants, firm power purchase, economical energy and surplus hydro purchases, power exchanges and reserve sharing.

<sup>9</sup> Specifically, the 500-kV Valley-Rainbow Project was proposed to mitigate a CAISO reliability criteria violation that could result from an overlapping outage involving the single largest generator (G-1) and the single largest transmission line (N-1) serving the San Diego area. The problem is known technically as a G-1/N-1 violation. The G-1/N-2 violation was identified through transmission planning studies that SDG&E, the CAISO, and other parties conducted jointly as part of the CAISO grid planning process. Those studies for 2005–2010 showed that in the case of a heavy summer peak load, an outage of SDG&E's largest generation project (Encina 5 at 329 MW) followed by an outage of the Southwest Power Link would result in a generation deficiency in the San Diego area, requiring the CAISO to drop customer load.

performed additional analyses in 2003, SDG&E can justify this project as marketable in the 2010 time frame, based on its ability to relieve transmission congestion and improve power import capability into the San Diego area.

In May 2004, Kyei (2004) completed *Comparative Reliability Evaluation for Alternative New 500-kV Transmission Lines into San Diego*, a study that evaluated the relative reliability benefits of the Talega-Escondido/Valley-Serrano transmission line and the most technically desirable alternative for a new line from Imperial Valley into San Diego (i.e., the Imperial Valley-San Diego Expansion Plan transmission line). The results of Kyei (2004) revealed that either the Talega-Escondido/Valley-Serrano transmission line or the Imperial Valley-San Diego Expansion Plan transmission line would substantially increase the capability to import electricity (from 2,850 MW to 3,600 MW with all lines in service) to the San Diego area.

A combination of the Talega-Escondido/Valley-Serrano and Imperial Valley-San Diego Expansion Plan transmission lines would provide additional benefits, such as a 3,800-MW import capability. SDG&E's long-term plan is to identify a way to connect the western end of the Imperial Valley-San Diego Expansion Plan transmission line with the southern end of the Talega-Escondido/Valley-Serrano transmission line, creating one continuous path.

Based upon our review of available documentation, it appears that the Talega-Escondido/Valley-Serrano transmission line interconnection between the SCE and SDG&E transmission systems would be an appropriate long-term solution to southern California's transmission congestion bottlenecks as well as the transmission-constrained, generation-deficient San Diego area. The Talega-Escondido/Valley-Serrano transmission line could provide 1,000 MW of import capability into the San Diego area with up to 500 MW of this import power being supplied by the LEAPS Project during high-demand periods. Appendix B contains our detailed assessment for the need for the LEAPS Project's Talega-Escondido/Valley-Serrano 500-kV transmission line.

### 1.3 INTERVENTIONS

Organizations and individuals may petition to intervene and become a party to subsequent proceedings. On January 25, 2005, the Commission issued a notice accepting the co-applicants' application to license the LEAPS Project. The notice set a deadline of March 26, 2005, for filing protests and motions to intervene.

<b><u>Intervenor</u></b>	<b><u>Date of Filing</u></b>
California Independent System Operator Corporation	April 2, 2004
City of Lake Elsinore	June 24, 2004
Mike Hilberath	February 9, 2005
California State Water Resources Control Board	February 28, 2005

<b><u>Intervenor</u></b>	<b><u>Date of Filing</u></b>
Cities of Anaheim, Azusa, Banning, Colton, and Riverside, California	March 7, 2005
County of Riverside	March 15, 2005
Jay Scott	March 17, 2005
Bill Soderquist	March 22, 2005
Elsinore Testing of Experimental Aircraft Mechanisms, Inc.	March 24, 2005
LaCresta Highlands Association	March 24, 2005
California Unions for Reliable Energy	March 25, 2005
Benjamin Grenis	March 28, 2005
Jack Burdy	March 28, 2005
San Diego Gas & Electric Company	March 31, 2005

In addition to the motions to intervene listed above, 157 individuals filed protests. These individuals cited concerns about the high-voltage transmission lines relative to fire suppression within the Cleveland National Forest, interference with the historical use of the site for hang gliding and parasailing, the negative visual effects of the transmission lines, the health risk of electromagnetic fields, effects on tourism, and effects on property values.

#### **1.4 SCOPING PROCESS**

Under the Commission's regulations, issuing a license decision for any project first requires preparation of either an environmental assessment or an EIS, in accordance with NEPA. Based on our review of the license application and of comments from agencies, interested parties, and the public, we issued a notice of intent to prepare an EIS on August 9, 2004.

Before preparing the draft EIS, the Commission and USFS staff conducted scoping to identify issues and alternatives. The Commission and the USFS issued Scoping Document 1 on August 9, 2004. Three scoping meetings for the LEAPS Project were conducted on September 8 and 9, 2004, in San Juan Capistrano and Lake Elsinore, California, to receive oral comment on the project. A court reporter recorded all comments and statements made at the scoping meetings, and these comments are part of the Commission's public record for this proceeding. In addition to comments provided at the scoping meetings, the following entities provided written comments:

<b><u>Entity</u></b>	<b><u>Date of Letter</u></b>
Joanne Mortensen	September 4, 2004
Sherry Kunshel	September 6, 2004
Paul Carlton	September 8, 2004
Elsinore Hang Gliding Association	September 10, 2004
Lori Lara and Jon Hernandez	September 13, 2004
Michelle Greget	September 14, 2004
Chris and Michele Lawrence	September 14, 2004
Paul Sulman	September 15, 2004
Bureau of Indian Affairs	September 16, 2004
Christopher Wills	September 17, 2004
Richard Pierce	September 18, 2004
Anna Lee	September 20, 2004
U.S. Fish and Wildlife Service	September 23, 2004
Douglas Earnhart	September 23, 2004
Harold W. Sampson	September 24, 2004
Evelyn Wolke	September 25, 2004
Scott Green	September 25, 2004
Lisa McIntyre	September 27, 2004
P. Niba	September 27, 2004
Pamela Nelson	September 27, 2004
Anders Beckrot	September 27, 2004
The Nevada Hydro Company, Inc.	September 28, 2004
Bruce Heckle	September 29, 2004
Mike and Debbie Connolly	September 29, 2004
Diane Plummer	October 1, 2004
Cowan A. Plummer	October 1, 2004
Michael and Laurie Vartanian	October 3, 2004
Jeffrey Lesser	October 3, 2004
J. Stickler	October 3, 2004

<b><u>Entity</u></b>	<b><u>Date of Letter</u></b>
William Plummer	October 4, 2004
Hans Mulyapatera	October 5, 2004
Margaret Long	October 5, 2004
Parilee Roberts	October 5, 2004
Mari Tolman	October 6, 2004
The Mead Family	October 6, 2004
Tim McIntyre	October 6, 2004
Robert Peterson	October 6, 2004
John, Gayle, Garrett, and Adam Larsson	October 6, 2004
Clarence Bostian	October 7, 2004
California State Water Resources Quality Control Board	October 8, 2004
Pacific Clay Products	October 8, 2004
U.S. Environmental Protection Agency	October 8, 2004
Center for Biological Diversity	October 11, 2004
City of Lake Elsinore	October 11, 2004
San Diego Gas and Electric	October 11, 2004
Southern California Edison	October 12, 2004
Rancho Capistrano Property Owners Association	October 12, 2004
Lake Elsinore Unified School District	October 14, 2004
John and Vera Kalachian	October 18, 2004
Michael and Linda Palmer	October 18, 2004
Hobie Burgess	October 18, 2004
Leonard and Julie Gaspusan	October 18, 2004
Keith Fletcher	October 18, 2004
John and Donna Guzman	October 20, 2004
Mike and Elin Motherhead	October 21, 2004
National Oceanic and Atmospheric Administration Fisheries	October 22, 2004
City of Riverside	October 28, 2004
Cynthia Fry	November 1, 2004

Scoping Document 2 that addresses all of the comments presented at the scoping meetings and in letters filed subsequent to the scoping meetings was issued on January 25, 2005.

Many residents and several agencies, including the California State Water Resources Control Board (SWRCB) and the U.S. Environmental Protection Agency (EPA), expressed concerns about the potential for the project to adversely affect the water quality in the San Juan and San Mateo creeks and in Lake Elsinore. They also commented that the proposed project would affect Lion Spring, a type of aquatic resource that is relatively rare in the region. We discussed potential effects of the proposed project and action alternatives on water quality and surface water in section 3.3.2.2, *Environmental Consequences*, in *Water Resources*.

Amateur hang gliders raised concerns about the effect of the proposed project transmission lines on hang gliding opportunities in Cleveland National Forest and the city of Lake Elsinore and whether the project as proposed would eliminate these world class hang gliding opportunities. We discuss the potential effects of the proposed project and action alternatives on hang gliding in section 3.3.6.2, *Environmental Consequences*, in *Recreational Resources*.

A number of residents and agencies commented that the upper reservoir at Morrell Canyon would remove an oak-woodland community that provides important wildlife habitat and recreational opportunities. They also raised concerns about the potential for the upper reservoir to provide breeding opportunities for mosquitoes. Several agencies, including the U.S. Fish and Wildlife Service (FWS), expressed concerns about whether the transmission lines would create barriers to wildlife movement and affect raptors and migratory birds. We discuss the potential effects of the proposed project and action alternatives on oak woodlands, wildlife, and mosquito populations in section 3.3.4.2, *Environmental Consequences*, in *Terrestrial Resources*.

The National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) expressed concerns about the effects of project construction and operation on steelhead populations. We discuss potential effects of the proposed project and action alternatives on steelhead populations in section 3.3.5.2, *Environmental Consequences*, in *Threatened and Endangered Species*.

Local school officials and residents raised concerns about the potential for flood inundation should the upper reservoir fail. We discuss this potential in section 3.3.1.2, *Environmental Consequences*, in *Geology and Soils*.

Other issues of concern to residents and local agencies were the potential fire threat from construction and installation of the 500-kV transmission lines, the potential for traffic congestion on and damage to local roads, the potential effects of electromagnetic fields created from the generation and transmission of electricity, and the potential for the upper reservoir to create unpleasant odors. We discuss each of these issues in section 3.3.7.2, *Environmental Consequences* in *Land Use and Aesthetics*.

Numerous members of the public commented that the proposed project would affect property values in the surrounding communities. One entity suggested that the growth-inducing impacts be considered. We discuss these issues in section 3.3.8.2, *Environmental Consequence in Socioeconomic Resources*.

Several residents commented on the dust and noise that would be generated by the project over the construction period of several years. We discuss the potential effects of proposed project construction and operation on air quality and noise in section 3.3.10.2, *Environmental Consequences in Air Quality and Noise*.

## **1.5 AGENCY CONSULTATION**

On February 28, 2005, the Commission issued a Notice for Ready for Environmental Analysis for the LEAPS Project, soliciting comments, recommendations, terms and conditions, and prescriptions. The notice set a filing deadline of April 29, 2005. In response to this notice, the following entities filed comments:

<b><u>Commenting Entities</u></b>	<b><u>Date of Filing</u></b>
U.S. Department of the Interior	April 28, 2005
U.S. Forest Service, Pacific Southwest Region	April 28, 2005
County of Riverside	April 28, 2005
San Diego Gas & Electric Company	April 29, 2005
California Department of Transportation District 8	May 3, 2005
U.S. Department of Interior, Bureau of Indian Affairs	May 19, 2005

The co-applicants filed reply comments to the comments, recommended terms and conditions, and prescriptions by letter dated June 7, 2005.