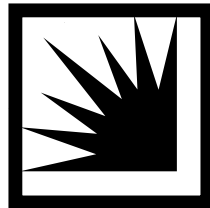


Application No.: \_\_\_\_\_

Exhibit No.: \_\_\_\_\_

Witnesses: Various



SOUTHERN CALIFORNIA  
**EDISON**<sup>®</sup>

An *EDISON INTERNATIONAL*<sup>®</sup> Company

(U 338-E)

***Devers-Palo Verde No. 2  
Transmission Line Project  
Applicant's Prepared Direct Testimony***

Before the

**Public Utilities Commission of the State of California**

Rosemead, California

April 5, 2005

# Devers-Palo Verde No. 2 Transmission Line Project

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1 managed distribution system reliability projects, and after 1999 I managed  
2 primarily transmission and substation projects.

3 Q. What is the purpose of your testimony in this proceeding?

4 A. I will provide the general overview, including a description of the Devers-  
5 Palo Verde No. 2 Project. I am sponsoring the following sections of the  
6 Application: Chapter III, "Proposed Scope", and Appendix A, "Project Plan". I  
7 am sponsoring the following sections of the Proponent's Environmental  
8 Assessment ("PEA"): Chapter 1.0, "Summary"; Section 3.8, "Project Economics";  
9 Section 3.9, "Decommissioning"; Appendix E, "Public Participation  
10 Program/Contact Records"; and Appendix F, "Property Owners List". I am also  
11 sponsoring Table 3-9, "Summary of Estimated Construction Costs for the Devers  
12 to Palo Verde 2 Project".

13 Q. Are you familiar with the proposed transmission line project?

14 A. Yes, I am. I have overall responsibility for the proposed project, including the  
15 licensing effort.

16 Q. Do you have a map to illustrate the approximate location of the facilities  
17 associated with the proposed Project?

18 A. Yes. Figure Nos. 1-1, 1-2, 3-2a, 3-2b, and 3-2c of the PEA have been prepared to  
19 show the location of these facilities.

20 Q. Would you please describe the facilities proposed, which are shown in Figure  
21 Nos. 1-1 and 1-2?

22 A. The proposed 500 kV transmission line would parallel SCE's existing 230-mile  
23 500 kV transmission line (Devers-Palo Verde No. 1), of which 102 miles are  
24 located in Arizona and 128 miles are located in California from the high-voltage  
25 switchyard adjacent to the Harquahala Generating Company ("HGC") in Arizona  
26 to Devers Substation near Palm Springs, California. SCE also proposed  
27 upgrading four 230 kV transmission lines from Devers Substation to the



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San Bernardino substation near San Bernardino and Vista substation near Grand Terrace along an existing corridor.

Q. Has the management of SCE made a decision regarding this project?

A. Yes. This project has been approved by the management of SCE subject to final review by SCE's Board of Directors after regulatory approvals have been granted.

Q. Was this material prepared by you or under your supervision or reviewed by you?

A. Yes. It was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

1 **SOUTHERN CALIFORNIA EDISON COMPANY**

2 **DPV2 Application**

3 **Qualifications and Prepared Direct Testimony**  
4 **of Jerry Amalfitano**

5 Q. Please state your name and business address for the record.

6 A. My name is Jerry Amalfitano, and my business address is 2244 Walnut Grove  
7 Avenue, Rosemead, California 91770.

8 Q. By whom are you employed?

9 A. I am employed by Southern California Edison Company ("SCE").

10 Q. Briefly describe your present responsibilities at SCE.

11 A. I am the manager of the Transmission Engineering and the Civil/Structural  
12 Engineering groups. These groups are comprised of electrical and structural  
13 engineers, technical specialists, and designers. In my role as manager, I plan,  
14 oversee, and direct the engineering analysis and design of electrical  
15 transmission facilities, including facilities operating at 230 kV and 500 kV. Our  
16 overall responsibilities include the engineering design of all aspects of electrical  
17 transmission facilities and civil and structural engineering needs. In addition,  
18 we support SCE's electrical facilities planning process, transmission line route  
19 selections, and engineer transmission line access roads.

20 Q. Briefly describe your educational and professional background.

21 A. I have a Bachelor of Science Degree in Engineering from Loyola Marymount  
22 University and am a California Registered Civil Engineer. I have approximately  
23 30 years of experience in engineering and construction. I have been at my  
24 current position since February 2002.

25 Q. What is the purpose of your testimony in this proceeding?

26 A. The purpose of my testimony is to sponsor the following sections of the  
27 Proponent's Environmental Assessment ("PEA"): Section 3.3, "Proposed

1 Transmission Line Facilities”; Section 3.5, “Construction”; Section 3.6,  
2 “Operation and Maintenance”; and Section 3.7, “Safety Considerations”.

3 Q. Please explain your involvement with this transmission line project.

4 A. As manager of the Transmission Engineering Organization, I maintain oversight  
5 of the organization’s engineering efforts within my discipline areas in support of  
6 the proposed project. In addition to designing the transmission facilities, the  
7 Transmission Engineering Organization will support construction activities  
8 during installation of this project. The Transmission Engineering Organization  
9 is also responsible for access road engineering and the civil and structural  
10 engineering of related structures such as: transmission line structures,  
11 substation facility foundations, electrical structures, and buildings.

12 Q. Would you present a brief overview of the types of transmission line structures  
13 to be used for the proposed project 230 kV and 500 kV transmission lines?

14 A. In general, the proposed 230 kV and 500 kV transmission line designs will use  
15 lattice steel towers that are essentially the standard designs in the SCE system.  
16 These designs are also similar to 230 kV and 500 kV transmission designs used  
17 throughout the United States.

18 These types of tower designs are reliable, cost-effective, and are visually  
19 similar to the majority of transmission towers located in the project area. For  
20 the nature-dominated landscapes that are traversed by the proposed 500 kV  
21 transmission lines, and most of the proposed 230 kV transmission lines, the  
22 lattice steel towers are aesthetically preferable, because the tower structures  
23 tend to blend into the background. In addition, whenever a number of  
24 transmission lines are placed in a single corridor, visual impacts are minimized  
25 when tower structures are similar in appearance, and are aligned beside each  
26 other.

1                   Suspension-type towers are designed to support the conductors in roughly  
2 straight lines. "Dead-end" type towers are specifically designed to allow the  
3 transmission line alignment to go through large changes in direction (horizontal)  
4 or elevation (vertical) and where there are very long distances between towers.

5 Q. Do you have any materials which would help illustrate and/or clarify your  
6 testimony?

7 A. Yes. In addition to the detailed discussion of the tower types and tower locations  
8 contained in my sponsored portions of the PEA, there are a number of figures in  
9 the PEA which would help illustrate and/or clarify my testimony.

10 Q. What are these figures?

11 A. They are:

- 12 1. Figure No. 3-1 depicts a 500 kV single-circuit, lattice steel "suspension"  
13 type tower structure.
- 14 2. Figure No. 3-2 depicts an existing 500 kV double-circuit, "suspension"  
15 tower structure that will be utilized for DPV2.
- 16 3. Figure No. 3-3 depicts the special 500 kV single-circuit, lattice steel  
17 H-frame structure that will be used in intensively developed agricultural  
18 areas.
- 19 4. Figure No. 3-4 depicts a 500 kV single-circuit, tubular steel pole structure.
- 20 5. Figure No. 3-7 depicts a 230 kV double-circuit, lattice steel structure.

21 Q. What will be the range of structure heights to be used on this project?

22 A. The range of structure heights will be from approximately 104 feet to 193 feet for  
23 the single-circuit 500 kV transmission lines with a typical height of 140 feet. For  
24 the 230 kV transmission lines the range is approximately 105 feet to 240 feet  
25 with a typical height of 140 feet for the double-circuit towers.

26 Q. What will be the typical tower-to-tower spacing (span) for the proposed lines?

1 A. The typical tower-to-tower spacing will be approximately 1,550 feet for the  
2 500 kV transmission lines, and approximately 1,400-1,500 feet for the 230 kV  
3 transmission lines.

4 Q. Briefly describe what factors are considered in the determination of tower  
5 locations.

6 A. Determination of tower locations along a selected route is the result of the  
7 evaluation of engineering, topographic, geotechnical constraints and  
8 opportunities, scenic visual concerns, and environmental sensitivities. Selection  
9 of the proposed tower locations requires an SCE multi-disciplinary team review,  
10 which applies to each tower location along with access road and operational and  
11 maintenance considerations. Should there be any significant environmental  
12 sensitivity at specific proposed tower locations, the team will develop mitigation  
13 measures that will reduce environmental impacts associated with construction  
14 and operation of the line to insignificant levels. The visual and other  
15 environmental considerations are more fully described in the PEA.

16 Q. What is the minimum height above ground or clearance over obstacles that the  
17 conductors are required to maintain?

18 A. In general, the required minimum clearance between the conductors and  
19 physical features and/or obstructions (e.g., the underlying terrain, roads,  
20 man-made structures, etc.) is 35 feet at a conductor temperature of 60 degrees  
21 Fahrenheit for 500 kV lines, and 30 feet at 60 degrees Fahrenheit for 230 kV  
22 lines. This height satisfies both the CPUC General Order 95 "Rules for  
23 Overhead Electric Line Construction" and the "National Electrical Safety Code".

24 Q. Are there facilities other than transmission lines and structures that will be  
25 designed and constructed?

26 A. Yes, there are. These facilities are described in the testimony of Ms. Alicia  
27 Lopez.

1 Q. Was this material prepared by you or under your supervision, or reviewed by  
2 you?

3 A. Yes, it was.

4 Q. Insofar as this material is factual in nature, do you believe it to be correct?

5 A. Yes, I do.

6 Q. Insofar as this material is in the nature of opinion or judgment, does it represent  
7 your best judgment?

8 A. Yes, it does.

9 Q. Does this conclude your qualifications and prepared testimony?

10 A. Yes, it does.

1 **SOUTHERN CALIFORNIA EDISON COMPANY**

2 **DPV2 Application**

3 **Qualifications and Prepared Direct Testimony**  
4 **of Thomas A. Burhenn**

5 Q. Please state your name and business address for the record.

6 A. My name is Thomas A. Burhenn, and my business address is 2244 Walnut Grove  
7 Avenue, Rosemead, California 91770.

8 Q. By whom are you employed?

9 A. I am employed by Southern California Edison Company ("SCE").

10 Q. Briefly describe your present responsibilities at the Southern California Edison  
11 Company ("SCE").

12 A. I am Manager of Regulatory Operations in the Regulatory Policy and Affairs  
13 Department. Among my responsibilities are the licensing of transmission and  
14 generation facilities, and regulatory issues related to real property and utility  
15 assets.

16 Q. Briefly describe your educational and professional background.

17 A. I received a Bachelor of Science Degree in Economics from California Polytechnic  
18 State University, San Luis Obispo, in 1980.

19 I joined SCE in 1980 and worked in SCE's System Planning Division from  
20 1980 to 1989. My duties entailed preparing demand forecasts for Edison's  
21 wholesale and retail customer groups, project licensing support, resource  
22 planning and scenario planning. I joined the Regulatory Policy and Affairs  
23 Department in 1989. I have been responsible for the regulatory aspects of  
24 numerous proceedings including: transmission and generation project licensing,  
25 the EMF and LEV investigations, and P.U. Code Section 851 applications, while  
26 holding a series of positions with increasing responsibilities. I assumed my  
27 present position in 2002.

1 Q. What is the purpose of your testimony in this proceeding?

2 A. The purpose of my testimony in this proceeding is to sponsor Section 3.1.1,  
3 “Overview”, of the Proponent’s Environmental Assessment.

4 Q. Would you briefly describe your testimony?

5 A. My testimony in this proceeding describes the steps taken by SCE and the status  
6 of permitting actions by state and federal regulatory agencies in the  
7 development of the DPV2 transmission line project.

8 Q. Was this material prepared by you or under your supervision?

9 A. Yes, it was.

10 Q. Insofar as this material is factual in nature, do you believe it to be correct?

11 A. Yes, I do.

12 Q. Insofar as this material is in the nature of opinion or judgment, does it represent  
13 your best judgment?

14 A. Yes, it does.

15 Q. Does this conclude your qualifications and prepared testimony?

16 A. Yes, it does.





1 A. The purpose of my testimony is to sponsor the following portions of the  
2 Proponent's Environmental Assessment ("PEA"): Section 2.2.4.2, "Technical  
3 Alternatives"; Section 2.4.1, "230 kV West of Devers Upgrades"; Section 2.4.2,  
4 "West of Devers Alternatives"; Section 2.4.2.1, "Operating Procedures";  
5 Section 2.4.2.2, "New Devers-Mira Loma 500 kV Transmission Line";  
6 Section 2.4.2.3, "New 230 kV Transmission Line", Section 2.4.3, "500 kV Static  
7 Var Compensators"; Section 2.4.4, "Special Protection System"; and  
8 Section 3.2.1, "Termination Points".

9 Q. What is the Plan of Service for the Devers-Palo Verde No. 2 ("DPV2") Project?

10 A. The Plan of Service is defined as the complete scope for DPV2 that enables a  
11 1200 MW increase in the transfer capability between Arizona and California  
12 through the Western Electricity Coordinating Council's ("WECC") defined as  
13 East of the River ("EOR") and West of the River ("WOR") paths. The DPV2 Plan  
14 of Service consists of:

- 15 1. Constructing a new 230-mile, 500 kilo-volt ("kV") line between  
16 Harquahala Generating Company's Harquahala Switchyard in Arizona to  
17 SCE's Devers 500 kV Substation, near Palm Springs, California. For  
18 detail of the line construction and line route, please refer to Section 3.3 of  
19 the PEA.
- 20 2. Installing series capacitors within the new Devers-Harquahala 500 kV  
21 line, at 46 percent compensation and with a 2700 amp rating. The rating,  
22 compensation level, and installation locations match the existing series  
23 capacitor installations on the Devers-Palo Verde No. 1 500 kV line. This  
24 ensures the power flow on these parallel lines is appropriately balanced.  
25 For discussion on the design of the series capacitors please refer to  
26 Section 3.4 of the PEA.

- 1           3.     Rebuilding and reconductoring four 230 kV lines west of the Devers  
2           Substation: The Devers–San Bernardino No. 1 and No. 2 230 kV lines,  
3           and the Devers–Vista No. 1 and No. 2 230 kV lines. The 1200 MW  
4           proposed increase in the EOR and WOR path ratings results in the four  
5           existing 230 kV lines west of Devers to be overloaded for the contingency  
6           of the Devers-Valley 500 kV line. For discussion of the upgrade west of  
7           Devers, please refer to Section 2.4 of the PEA.
- 8           4.     Installing dynamic voltage support equipment needed to mitigate  
9           violations of the voltage stability criteria of the WECC and North  
10          American Electric Reliability Council (“NERC”) Planning Standards. The  
11          dynamic voltage support technology proposed for DPV2 is a 388 MVAR  
12          Static VAR Compensator (“SVC”), one located at Valley 500 kV Substation  
13          and another located at Devers 500 kV Substation. For discussion on the  
14          design of the SVC, please refer to Section 3.4 of the PEA.
- 15          5.     Installing a Special Protection System (“SPS”) to mitigate post-transient  
16          voltage violations for the simultaneous loss of Devers-Palo Verde No. 1  
17          and Devers-Harquahala, or Devers-Palo Verde No. 1 and  
18          Harquahala-Hassayampa 500 kV lines. This SPS will be designed to drop  
19          approximately 900 MW of generation in the Palo Verde area and  
20          approximately 900 MW of SCE load. For discussion on the design of the  
21          SPS, please refer to Section 3.4 of the PEA.
- 22          6.     Replace and upgrade existing 230 kV circuit breakers to increase the  
23          rating. For discussion on the circuit breaker replacements and upgrades,  
24          please refer to Section 3.4 of the PEA.

25          Final scope of the SVC, SPS, and the circuit breaker upgrades or replacement  
26          will be determined upon completion of the WECC Rating Studies. The projected

1 time frame for completion of the DPV2 WECC Rating Study and WECC's  
2 acceptance of the proposed rating increase for EOR is summer 2005.

3 Q. How did you determine the DPV2 Plan of Service?

4 A. As discussed in Mr. Hemphill's testimony, it was apparent during the 2000-2001  
5 energy crisis that an increase in import capability between Arizona and  
6 California was needed to gain access to the competitive generation in the  
7 Southwest. In 2002, SCE initiated a power system technical analysis to  
8 determine the required Plan of Service to increase import capability.  
9 The objective of the DPV2 power system technical analysis was to study the  
10 rating increase for the WECC EOR and WOR paths that would result in the  
11 most cost-effective increase of the transfer capability between Arizona and  
12 California. SCE's DPV2 power system technical study used the following types  
13 of power system analyses: (1) Load Flow, (2) Post-Transient Stability, and  
14 (3) Dynamic Stability.

- 15 • Load Flow analysis determines: (1) the amount of power flowing through  
16 transmission lines and transformers, and (2) the voltage level at  
17 substations.
- 18 • Post-Transient Stability analysis<sup>1</sup> determines the severity of voltage drops  
19 in the time period immediately following loss of a power system element  
20 (i.e., transmission line, transformer, or generator).<sup>2</sup>
- 21 • Dynamic Stability analysis<sup>3</sup> determines if generators connected to the  
22 transmission grid continue to operate at similar speeds and maintain

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<sup>1</sup> Post-Transient Modeling analyzes load flows shortly after a disturbance when fast-acting automated system devices can respond, but prior to operator intervention and response of relatively slower automated devices.

<sup>2</sup> A one- to three-minute period following loss of a transmission line or transformer is the post-transient period.

1 normal frequency following loss of a transmission line or transformer. If  
2 generators do not operate at similar speeds, generators could experience  
3 catastrophic damage to physical or electrical systems.

4 Attached in the PEA at Appendix G is the DPV2 Technical Report, dated April 7,  
5 2004, which provides the detail of the study assumptions<sup>4</sup> and results of the  
6 technical analysis.

7 Q. What other project alternatives were evaluated?

8 A. The alternatives evaluated included varying levels of increase in import  
9 capability due to the construction of a new 500 kV transmission line from  
10 Arizona to California, and two technical modification alternatives to the existing  
11 Devers-Palo Verde No. 1 500 kV line in place of the new 500 kV line  
12 construction. For discussion on these alternatives, please refer to Section 2.2.4.2  
13 of the PEA.

14 Q. Is the EOR9000+ being evaluated by Salt River Project as an alternative to  
15 DPV2?

16 A. No. Salt River Project is evaluating a project to increase the EOR path rating by  
17 1,245 MW, called EOR9000+. This project would not increase the WOR path,  
18 which is the transmission system that delivers power into southern California  
19 from Arizona and southern Nevada. By contrast, DPV2 would result in an  
20 increase in both EOR and WOR paths, and allow the delivery of an additional  
21 1200 MW of power to southern California and to the CAISO grid. Actually, the  
22 EOR9000+ and DPV2 projects could be considered complementary, owing to the

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Continued from the previous page

<sup>3</sup> Dynamic Stability Modeling simulates the transmission network, and connected machinery, such as generators, over a timeframe immediately during and just following a loss of a transmission line or transformer.

<sup>4</sup> The technical studies were performed with both SONGS Units 2 & 3 on-line. For the Mohave Plant, two scenarios were evaluated, one with Mohave on-line and the other with Mohave off-line.

1 fact that the EOR9000+ project plans to upgrade facilities in the northern  
2 portion of the EOR path, while DPV2 will reinforce the southern portion.

3 Q. Has the CAISO reviewed the technical studies for DPV2?

4 A. Yes, it has.

5 Q. Can you summarize the CAISO's findings?

6 A. The CAISO found the DPV2 Technical Study to be correct. They concurred with  
7 the study approach and assumptions, and the resulting proposed Plan of Service.  
8 The CAISO also found the project to be cost effective. The summary of the  
9 cost-effectiveness is contained in Section 2.2.1 of the PEA.

10 Q. What are the regional review forums that have or will evaluate the DPV2  
11 Project?

12 A. The regional forums include the Southwest Transmission Expansion Plan  
13 ("STEP"), WECC, and Western Arizona Transmission System ("WATS") Study  
14 Group.

15 Q. Please describe the STEP forum.

16 A. The STEP forum is a collaborative sub-regional study group whose "focus is on  
17 economically driven expansion projects that support the development of  
18 seamless west-wide markets, while satisfying established reliability criteria".<sup>5</sup>

19 DPV2 has been identified and evaluated as part of the project  
20 alternatives' STEP identified to expand the EOR/WOR systems. The CAISO  
21 screened 26 alternatives to expand the EOR/WOR.<sup>6</sup> The number of alternatives  
22 was narrowed down to six alternatives of which DPV2 was included in three of  
23 six alternatives. The analyses of these six alternatives led STEP to develop a  
24 preferred sequence of upgrades to expand the southwest transmission system.

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<sup>5</sup> See, Jan. 17<sup>th</sup> 2003 PDF file at: <http://www1.caiso.com/docs/2003/01/22/2003012211380012544.pdf>.

<sup>6</sup> STEP Screening Report located on ISO website:  
<http://www1.caiso.com/docs/2003/07/11/2003071114390719585.pdf>.

1 DPV2 was included in this sequence as the preferred new 500 kV line between  
2 Arizona and California. SCE participated in this multi-year stakeholder process  
3 and supports its recommendation that DPV2 is a necessary project, as compared  
4 to other potential transmission alternatives that STEP evaluated.

5 STEP concluded their analysis and the report is available on the CAISO  
6 website.<sup>7</sup>

7 Q. Please describe WECC and WATS Study Group forums.

8 A. The WECC Procedures for Regional Planning Project Review and Rating  
9 Facilities, dated December 2001, outlines the Regional Planning Review Process  
10 a project sponsor needs to follow to meet the WECC Regional Planning  
11 Guidelines. The purposes of these guidelines are to:

- 12 a. foster the development of a broad regional planning perspective among all  
13 stakeholders in the planning process;
- 14 b. promote and encourage the most efficient use and development of the  
15 region's existing and future facilities that enhance interconnected system  
16 operations; and
- 17 c. assure that all relevant regional planning issues are considered during  
18 the planning of transmission projects with regional significance.

19 SCE initiated the regional planning process through the distribution of a  
20 letter to the Planning Coordinating Committee ("PCC") and the Technical  
21 Studies Subcommittee ("TSS"), dated October 10, 2003. With this initial  
22 Regional Planning Announcement, Phase I of the WECC Rating Process begins,  
23 which simply consists of preparation of a Project Comprehensive Report by the  
24 Project Proponent.

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<sup>7</sup> <http://www.caiso.com/docs/2002/11/04/2002110417450022131.html>.

1 A Regional Planning Review Group meeting was held on November 12,  
2 2003, to gather input from the Review Group participants of their future project  
3 plans in the Colorado River area. A WECC Regional Planning Review Report  
4 was submitted to WECC for their approval on June 21, 2004. The WECC  
5 accepted and approved SCE's DPV2 Regional Planning Review Report on  
6 July 21, 2004, which completed the Regional Project Review required for WECC  
7 path rating process.

8 In addition to the WECC Regional Planning Review, a WECC/WATS  
9 Rating Study Review Process was initiated on April 22, 2004.

10 SCE combined the WECC Rating Review process with the WATS Study  
11 Group review of the Project. WATS's approval of the study work related to  
12 DPV2 and the proposed 1200 MW EOR rating increase is required before the  
13 technical study results are presented to the Palo Verde Transmission System  
14 ("PVTS") E&O Committee for their approval.

15 The WECC Rating Process is required to gain approval of the 1200 MW  
16 rating for the DPV2 project. The process involves formation of a Rating Review  
17 Group, consisting of interested WECC-member utilities, who voluntarily  
18 participate in this peer-review process.

19 SCE's Planning Group has been working diligently on DPV2 rating  
20 activities within the WECC and WATS forums since 2003. DPV2 completed  
21 Phase 1 of the WECC three-phase rating process with official acceptance of the  
22 Regional Planning Compliance Report on September 14, 2004. SCE completed  
23 the following WECC Phase 1 rating activities:

- 24 • Submitted a notification letter to WECC on October 10, 2003;
- 25 • Regional Review Group met on November 12, 2003;
- 26 • Submitted project data to WECC in April 2004;
- 27 • Submitted Regional Planning Report to WECC Regional Review Group on



1 May 12, 2004;

- 2 • Submitted Regional Planning Report to PCC on June 7, 2004; and  
3 • Received PCC acceptance letter on September 14, 2004.

4 Accordingly, DPV2 was granted Phase 2 status on September 21, 2004.

5 DPV2 is now considered on an equal basis with other projects similarly situated  
6 in Phase 2. This phase of the rating process will address outstanding  
7 non-simultaneous rating issues and evaluate potential simultaneous impacts  
8 DPV2 may have on other transmission systems through technical studies. DPV2  
9 rating study objectives include:

- 10 • Establishing a 1,200 MW increase on the East of the Colorado River (EOR)  
11 non-simultaneous Rating with DPV2;  
12 • Establishing a 1,200 MW increase on the West of the Colorado River (WOR)  
13 non-simultaneous Rating with DPV2;  
14 • Evaluating possible simultaneous impacts with other transmission paths and  
15 resolve any issues; and  
16 • Assessing possible interaction of DPV2 with other projects as sensitivities.

17 WECC Phase 2 rating process has been initiated with the following activities:

- 18 • Submitted Final Comprehensive Progress Report to WECC on April 21, 2004.  
19 • Began WECC/WATS DPV2 Project Review Group rating study on July 21,  
20 2004.  
21 • Four Project Review Group stakeholder meetings have been held to date.  
22 • Completion of EOR rating study is expected in July 2005.  
23 • Initiation of WOR rating study is expected to begin upon completion of  
24 Path 49 Series Capacitor Upgrade project's WOR rating study, which is likely  
25 to be in late summer 2005.

26 Barring unforeseen circumstances, SCE expects to complete the Phase 2  
27 EOR rating process by July 2005. Completion of the Phase 2 WOR rating

1 process will likely be sometime in the first quarter of 2006. The culmination of  
2 the Phase 2 process will result in being granted Phase 3 status by WECC, which  
3 will result in an Accepted Rating for the EOR path and the WOR path due to  
4 DPV2. Having entered this final phase will mean that DPV2 will have a firm  
5 rating and will be treated as any other existing facility.

6 Q. Was this material prepared by you or under your supervision, or reviewed by  
7 you?

8 A. Yes, it was.

9 Q. Insofar as this material is factual in nature, do you believe it to be correct?

10 A. Yes, I do.

11 Q. Insofar as this material is in the nature of opinion or judgment, does it represent  
12 your best judgment?

13 A. Yes, it does.

14 Q. Does this conclude your qualifications and prepared testimony?

15 A. Yes, it does.

1 **SOUTHERN CALIFORNIA EDISON COMPANY**

2 **DPV2 Application**

3 **Qualifications and Prepared Direct Testimony**  
4 **of Bryan W. Frazee**

5 Q. Please state your name and business address for the record.

6 A. My name is Bryan Frazee, and my business address is 2244 Walnut Grove  
7 Avenue, Rosemead, California 91770.

8 Q. By whom are you employed?

9 A. I am employed by Southern California Edison Company ("SCE").

10 Q. Briefly describe your present responsibilities at SCE.

11 A. I am a Manager of Projects/Products 2 in SCE's Federal Regulation and  
12 Contracts department. My responsibilities include the administration of SCE's  
13 transmission contracts that predate the California Independent System  
14 Operator ("CAISO").

15 Q. Briefly describe your educational and professional background.

16 A. I have a Bachelor of Arts degree from Claremont-McKenna College and a Juris  
17 Doctorate degree from the University of San Diego. I am a member of the  
18 California State Bar Association. I began working for Edison in 1982 as an  
19 attorney in the Antitrust Section of the Law Department. In 1989, I transferred  
20 to the Utility Contracts Section of the Law Department. My experience in the  
21 Law Department included issues related to the development and administration  
22 of interutility contracts as well as litigation with the Public Power Utilities. In  
23 May 1991, I left the Law Department and joined Utility Contracts. Early in  
24 1993, I became a team leader in the Administration Section of Utility Contracts.  
25 In 1998, I became a project manager in charge of the Contract Analysis and  
26 Amendments group of the Federal Regulation and Contracts department. Since  
27 that time I have been primarily responsible for issues concerning SCE's

1 transmission service contracts with other utilities that were entered into prior to  
2 formation of the CAISO.

3 Q. What is the purpose of your testimony in this proceeding?

4 A. The purpose of my testimony in this proceeding is to sponsor Section 2.3.1,  
5 “Los Angeles Department of Water and Power” of the Proponent’s  
6 Environmental Assessment.

7 Q. Would you briefly describe your testimony?

8 A. My testimony in this proceeding discusses the existing arrangement between  
9 SCE and the Los Angeles Department of Water and Power (“LADWP”) that  
10 provides for joint participation by the parties in the Devers-Palo Verde No. 2  
11 500 kV transmission line project. This arrangement was entered into on  
12 December 18, 1987 and is referred to as the SCE-LADWP Exchange Agreement.

13 Q. Was this material prepared by you or under your supervision?

14 A. Yes, it was.

15 Q. Insofar as this material is factual in nature, do you believe it to be correct?

16 A. Yes, I do.

17 Q. Insofar as this material is in the nature of opinion or judgment, does it represent  
18 your best judgment?

19 A. Yes, it does.

20 Q. Does this conclude your qualifications and prepared testimony?

21 A. Yes, it does.



1 From 1990 to 1994, I worked in the Resource Strategies section of  
2 Electric System Planning. I performed studies in integrated planning,  
3 integrated bidding, and addressed other resource planning issues. Specifically, I  
4 was responsible for examining and evaluating supply- and demand-side resource  
5 alternatives and the economic and environmental consequences of alternative  
6 choices. I also performed economic and operational studies and helped develop  
7 SCE's long-term resource plan.

8 From 1994-1996, I worked in the Corporate Development Department of  
9 SCEcorp. I developed business plans for new businesses and evaluated large  
10 technology investments.

11 From 1996 through September 2000, I worked at Edison International's  
12 Strategic Planning and New Business Development group, where I helped  
13 evaluate business initiatives for Edison International's companies. These  
14 initiatives included: new business startups, acquisitions, performance  
15 improvement programs, and alternative operating strategies.

16 From September 2000 through October 2002, I served as Director of  
17 Business Development of SCE, where I evaluated a variety of opportunities for  
18 the Company.

19 In November 2002, I became Director of Resource Planning and Strategy.  
20 In this position, I direct the development of long-term resource plans for SCE.  
21 The Resource Planning group evaluates the economics of resource options and  
22 works with SCE's business units to balance trade-offs between supply- and  
23 demand-side resources. I directed the development of SCE's 2003 resource plan,  
24 2004 Long-Term Procurement Plan, and the need and cost-effectiveness analysis  
25 of the Mountainview Power Plant, San Onofre Steam Generators,  
26 Devers-Palo Verde 2 transmission line, and SCE's 2003 Renewables solicitation.

27 Q. What is the purpose of your testimony in this proceeding?

1 A. I oversee the analysis of the economic benefits associated with constructing  
2 DPV2, as performed by Mr. Holmes. The purpose of my testimony is to state  
3 that DPV2 is an important part of SCE's resource plan and provides valuable  
4 resource adequacy and enhanced market opportunities for the State of  
5 California. I am sponsoring Section II, Part B, "Reasons for SCE's Request" and  
6 Section IV, "Purpose and Need" of SCE's Application. I am also sponsoring the  
7 following sections of the Proponents Environmental Assessment: Section 2.1,  
8 "Purpose and Need for the Proposed Project"; Section 2.1.1, "Increase  
9 California's Transmission Import Capability"; Section 2.1.2, "Enhance the  
10 Competitive Energy Market"; Section 2.1.3, "Support the Energy Market in the  
11 Southwest"; Section 2.2, "SCE's Economic Analysis"; Section 2.2.4, "Alternatives  
12 SCE Considered"; Section 2.2.4.3.5, "No Project Alternative"; and, Section 2.2.5,  
13 "Non-Quantifiable Benefits".

14 Q. Was this material prepared by you or under your supervision?

15 A. Yes, it was.

16 Q. Insofar as this material is factual in nature, do you believe it to be correct?

17 A. Yes, I do.

18 Q. Insofar as this material is in the nature of opinion or judgment, does it represent  
19 your best judgment?

20 A. Yes, it does.

21 Q. Does this conclude your qualifications and prepared testimony?

22 A. Yes, it does.

1 **SOUTHERN CALIFORNIA EDISON COMPANY**

2 **DPV2 Application**

3 **Qualifications and Prepared Direct Testimony**  
4 **of Darell F. Holmes**

5 Q. Please state your name and business address for the record.

6 A. My name is Darell F. Holmes, and my business address is 2244 Walnut Grove  
7 Avenue, Rosemead, California 91770.

8 Q. By whom are you employed?

9 A. I am employed by Southern California Edison Company ("SCE").

10 Q. Briefly describe your present responsibilities at SCE.

11 A. I am the Transmission Planning Manager in the Resource Planning and  
12 Strategy department of SCE's Generation Business unit. My current  
13 responsibilities include analyzing the economics of transmission facilities and  
14 providing transmission expertise to other projects being managed in Resource  
15 Planning and Strategy.

16 Q. Briefly describe your educational and professional background.

17 A. I received a Bachelor of Science degree in Electrical Engineering from California  
18 State University, Sacramento, in 1989 and a Juris Doctorate degree from  
19 Whittier Law School in 1998.

20 I began working at SCE in 1990 in the Transmission Planning section of  
21 Electric System Planning. Initially, I was responsible for analyzing the  
22 reliability and economics of SCE's transmission system. My primary duties at  
23 that time were to develop, manage, and present to management five and ten  
24 year transmission facility programs that recommended system improvements  
25 ranging from tens of millions of dollars to over one hundred million dollars.

26 In 1995, my responsibilities broadened to analyze Federal Energy  
27 Regulatory Commission ("FERC") regulation and Federal legislation directed at



1 electric utilities. During this time I provided key support in development and  
2 implementation of federal and state electric industry restructuring. I supported  
3 the design of Western Regional transmission planning process and held officer  
4 positions in regional planning committees, wrote testimony for federal filings,  
5 was an active member of numerous regional planning task forces, and made  
6 frequent presentations to management, stakeholders, and regulators.

7 Prior to joining Resource Planning and Strategy in 2003, I worked in  
8 SCE's FERC Rates and Regulations department for over a year where I was  
9 responsible for various FERC ratemaking activities.

10 Q. What is the purpose of your testimony in this proceeding?

11 A. The purpose of my testimony is to sponsor the cost-effectiveness of the  
12 Devers-Palo Verde No. 2 Transmission project ("DPV2"). I am sponsoring the  
13 following sections of the Proponent's Environmental Assessment: Section 2.2.,  
14 "Economic Analysis"; Section 2.2.2, "Results of the Economic Analysis";  
15 Section 2.2.3, "California Independent System Operator's Evaluation of DPV2";  
16 Section 2.2.4.1, "Transmission Alternatives"; Appendix G-1, "Update to SCE's  
17 April 7 Report to the CAISO"; and Appendix G-2, "Cost Effectiveness Report".

18 Q. What is the purpose and need of DPV2?

19 A. DPV2 is needed for California electricity customers to receive the estimated  
20 \$1.1 billion of benefits that DPV2 is expected to provide over its life. The  
21 purpose of DPV2 is to provide additional high-voltage electrical transmission  
22 infrastructure to increase access to generation in the southwest, enhance  
23 competition among energy suppliers, and increase supply adequacy and resource  
24 reliability, which will enable SCE and other California entities to reduce energy  
25 costs to customers.

26 Q. What is the cost-effectiveness of DPV2?

1 A. DPV2 is estimated to be very cost-effective with a benefit-to-cost ratio of 1.7:1.  
2 The vast majority of benefits are derived from importing lower cost energy. The  
3 analysis used to estimate DPV2's cost-effectiveness utilized a reasonable set of  
4 assumptions, and accounted for uncertainty of major economic drivers.

5 Q. What approach did you use to determine DPV2's cost-effectiveness?

6 A. I used a four step approach that included project screening, project ordering,  
7 setting a baseline, and project evaluation. The first step, project screening, is  
8 where a project objective and alternatives are identified. The project objective  
9 was to determine if it would be economic to construct new transmission facilities  
10 to access surplus generation existing in the southwest United States or from  
11 Mexico through southern California. I evaluated five alternatives to access this  
12 energy: a second Devers-Palo Verde 500 kV line, a second Southwest Power  
13 Link 500 kV line, upgrades to series capacitors on existing lines, a new Imperial  
14 Valley-Devers 500 kV line, and a combination of the last two alternatives.  
15 Having a project objective and a reasonable set of assumptions I conducted a  
16 screening analysis, which estimated each project's benefits and costs. All but  
17 DPV2 and upgrades to series capacitors had costs in excess of their projected  
18 benefits. The projects with positive benefits were evaluated further. The second  
19 step in my analysis was project ordering. In this step, projects having positive  
20 net benefits are ordered based upon their operating date for further evaluation.  
21 The operating date is an important factor in modeling our production  
22 simulations, since it determines which project is likely to be constructed first. In  
23 this case, it was estimated that the project to upgrade series capacitors would be  
24 constructed first, with an operating date of 2006, and DPV2 was given an  
25 operating date of 2009. We estimated DPV2's benefits assuming that the project  
26 to upgrade series capacitors would be constructed by 2006. The third step in my  
27 cost-effectiveness analysis of DPV2 is setting a baseline. Setting a baseline is

1 important in that it sets assumptions for new projects that may impact the  
2 proposed project's benefits. In this step, we determine which new generation  
3 and transmission projects are likely to be operating during the DPV2 study  
4 period, and which generation units will retire. The final step in my evaluation is  
5 project evaluation where I conduct detailed analyses of DPV2's benefits. This  
6 analysis included a thorough analysis of the project's costs and benefits over a  
7 range of uncertainties, and over the life of the project. As a result of this step,  
8 we estimated DPV2 to have a benefit-to-cost ratio of 1.7:1.

9 Q. What are the estimated benefits of DPV2 to CAISO ratepayers?

10 A. DPV2's total benefits result from accessing surplus generation in the southwest,  
11 and third-party transmission revenues are valued at about \$1.1 billion (2005 net  
12 present value) over the life of the project.

13 Q. What are the estimated costs of DPV2 to CAISO ratepayers?

14 A. The estimated 2005 present value of the project's revenue requirement is about  
15 \$650 million. Witness Ahumada is sponsoring SCE's estimate of DPV2's costs.

16 Q. Did the CAISO review DPV2's cost-effectiveness?

17 A. Yes, both through reports SCE provided and the CAISO's own internal analysis.  
18 SCE submitted technical and economic reports to the CAISO on April 7, 2004.<sup>8</sup>  
19 The CAISO reviewed these reports and conducted their internal analysis of  
20 DPV2. On February 24, 2005, the CAISO's Board of Governors approved  
21 construction of DPV2.<sup>9</sup>

22 Q. Did you evaluate DPV2's benefits using the CAISO's Transmission Economic  
23 Assessment Methodology ("TEAM")?

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<sup>8</sup> See Appendix G of SCE's PEA for this report.

<sup>9</sup> <http://www.caiso.com/docs/09003a6080/34/e4/09003a608034e440.pdf>

1 A. Yes. SCE attempted to incorporate all of the principles developed by the CAISO  
2 pertaining to our economic analysis. The \$1.1 billion benefit I describe above is  
3 the benefit calculated using SCE's interpretation of the CAISO's TEAM  
4 methodology. SCE began analysis of DPV2 while the TEAM methodology was  
5 being developed, but I believe our reported benefits still comply with the current  
6 TEAM methodology.

7 Q. Did you consider the project's economics over a reasonable range of  
8 assumptions?

9 A. Yes. The production simulation tool we used for DPV2 varies load, natural gas  
10 prices, and hydro generation over a wide range of potential outcomes. Our  
11 estimated benefits for DPV2 are an expected value of benefits due to this  
12 uncertainty analysis.

13 Q. Does this conclude your testimony?

14 A. Yes.



1 A. Yes, I am.

2 Q. What is the purpose of your testimony in this proceeding?

3 A. The purpose of my testimony is to sponsor Section 3.4, "Related Facilities" of the  
4 Proponent's Environmental Assessment ("PEA").

5 Q. Please explain your involvement with this transmission line project.

6 A. As technical project manager of the Transmission/Substation Engineering  
7 Organization, I maintain oversight of the engineering efforts of the substation  
8 and telecommunication facilities for the proposed project.

9 Q. Would you briefly describe the type of substation facilities that are being  
10 proposed for this project?

11 A. The proposed substation facilities work consists primarily of upgrades within the  
12 existing property lines of the existing Devers, Harquahala, Valley,  
13 San Bernardino, Lewis, San Onofre, and Vista substations. Work in these  
14 stations is at the 230 kV and 500 kV switchracks.

15 The Devers Substation work primarily consists of the addition of dynamic  
16 reactive power devices, the size of which will be determined in the WECC rating  
17 process, and the addition of a 500 kV 150 Million Volt-Ampere Reactive  
18 ("MVAR") shunt reactor bank for the new transmission line within the existing  
19 substation property line. Additional work includes the relocation and upgrade of  
20 existing equipment to accommodate the above-mentioned equipment.

21 The Harquahala 500 kV switchyard is presently owned by the  
22 Harquahala Generating Company ("HGC"). The Harquahala switchyard scope  
23 of work consists of additions to, and relocation of switchyard equipment to  
24 accommodate the proposed line within the existing substation property line. A  
25 500 kV 150 MVAR shunt line reactor would be installed in approximately  
26 two acres of property that would be acquired for this project adjacent to the new  
27 Devers-Harquahala line, north of the Harquahala property. Additionally,

1 approximately one acre would be required temporarily for lay-down and  
2 construction purposes.

3 The Valley Substation scope of work includes the addition of a new 500 kV  
4 dynamic reactive device within the existing substation property line. The size of  
5 the device will be determined through the WECC rating process.

6 The San Bernardino Substation and Vista Substation scope of work is  
7 within the existing substation property line and consists of upgrading the  
8 230 kV substation and relay protection equipment to accommodate the west of  
9 Devers line upgrades.

10 The Lewis Substation is a 230/66 kV substation presently owned,  
11 operated, and maintained by SCE and the City of Anaheim. The substation  
12 scope of work consists of the replacement of two 230 kV circuit breakers. The  
13 replacement of these circuit breakers is due to an increase of short-circuit duty.

14 The San Onofre 230 kV Switchyard is presently owned, operated, and  
15 maintained by SCE and SDG&E. The San Onofre Switchyard scope of work  
16 consists of upgrades to four 230 kV circuit breakers, due to an increase in  
17 short-circuit duty within the existing switchyard property line.

18 Q. Do you have any materials which would help illustrate and/or clarify your  
19 testimony?

20 A. Yes. Portions of the PEA at Section 3.4 provide a discussion of the scope of work  
21 that will help clarify my testimony.

22 Q. Are there facilities other than the substation facilities described above that will  
23 be designed and constructed as part of this project?

24 A. Yes. This project requires the addition of two 500 kV series capacitors that are  
25 generally within the right-of-way of the proposed Devers-Harquahala 500 kV  
26 transmission line. One of the 500 kV series capacitors will be installed  
27 approximately 65 miles to the east of Devers Substation, in California.

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Approximately two acres would be acquired for the installation of the series capacitors and approximately one acre would be required temporarily for lay-down and construction purposes.

The second of the 500 kV series capacitors would be installed approximately 55 miles west of Harquahala Switchyard in Arizona. Approximately two acres would be acquired for the installation of the series capacitors and additionally, approximately one acre would be required temporarily for lay-down and construction purposes.

In addition, a Special Protection System (“SPS”) will be needed. The work identified is expected to be within the existing substation and switchyard property lines.

The telecommunications requirements for the proposed Devers-Palo Verde No. 2 500 kV transmission line include redundant digital communications channels for Protective Relaying and SPS per WECC requirements, voice data, SCADA, and system dispatching. The telecommunications requirements are discussed in more detail in Section 3.4.2 of the PEA.

Q. Was this material prepared by you or under your supervision, or reviewed by you?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.





1 Section 3.1.2, "Alternative Routes – Devers-Harquahala 500kV Segment";  
2 Section 3.1.3, "West of Devers 230 kV Transmission System Alternatives";  
3 Section 3.1.4, "Permits or Other Actions Required Prior to Construction";  
4 Section 3.2.2, "Description of the Proposed and Alternative Routes and  
5 Switching Stations";  
6 Chapter 4, "Existing Environmental Setting";  
7 Chapter 5, "Environmental Impact Assessment Summary";  
8 Chapter 6, "Significant and Potentially Significant Impacts and Mitigation of the  
9 Proposed Project";  
10 Chapter 7, "Cumulative Impacts of the Proposed Project";  
11 Chapter 8, "Growth-Inducing Impacts";  
12 Chapter 9, "Indirect Effects";  
13 Chapter 10, "References";  
14 Chapter 11, "List of Preparers";  
15 Appendix A, "CEQA Checklist";  
16 Appendix B, "Record of Decision (BLM 1989) and Right-of-Way Grant";  
17 Appendix C, "Certificate of Right-of-Way Compatibility (USFWS 1989)"; and  
18 Appendix D, "DPV2 Amended PEA – Chapter 10 Alternatives".

19 Q. Briefly describe your assignment on this project.

20 A. My assignment on this project included overseeing and coordinating the results  
21 of the studies of the various environmental disciplines into the PEA and in  
22 support of our filing with the California Public Utilities Commission for  
23 compliance with the California Environmental Quality Act ("CEQA"), the  
24 Bureau of Land Management ("BLM") in compliance with the National  
25 Environmental Policy Act ("NEPA"), and the Arizona Siting Commission  
26 application for a Certificate of Environmental Compatibility. All studies were

1 done to support compliance with the CEQA, NEPA, and other appropriate  
2 environmental regulations.

3 Q. How does SCE evaluate various routes for transmission lines from an  
4 environmental perspective?

5 A. The primary approach for evaluating alternatives was to undertake the  
6 environmental studies of the various routes for this project, in order to comply  
7 with the requirements of a number of state and federal laws and regulations,  
8 including NEPA, the National Historic Preservation Act of 1966, Executive  
9 Order 11593, Title 36, CFR Part 800 *et seq.*, the CEQA, the State of California  
10 Public Utilities Commission ("CPUC") Rules of Practice and Procedure, and the  
11 Federal Endangered Species Act of 1973, as amended and the California  
12 Endangered Species Act. All of these regulations were considered in developing  
13 our PEA and other documents we will use to demonstrate compliance with these  
14 state and federal laws. This compliance was accomplished by developing  
15 sufficient information that would allow SCE to build, operate, and maintain this  
16 transmission line in an environmentally acceptable and reliable manner, at an  
17 acceptable cost to the consumer, and while meeting the constraints and planning  
18 requirements of all affected governmental agencies.

19 Q. What investigations did you perform in carrying out your assessment of the  
20 impacts of this transmission line, and what were the results of the investigation?

21 A. A number of discipline-specific studies were undertaken to examine the  
22 preferred route and the alternatives in order to assess the existing environment;  
23 assess the potential impacts that may occur as a result of building, operating,  
24 and maintaining the transmission line in the proposed location; and, as  
25 appropriate, determine what mitigation measures may be required to reduce  
26 impacts to levels of insignificance. In addition to these current studies, one must  
27 be aware that this is not the first time that the area where this transmission line

1 is proposed to be built has been examined. In 1976, an area that covered  
2 approximately 1,000 square miles in California and 5,000 square miles in  
3 Arizona was intensively studied by SCE for the Devers-Palo Verde No. 1  
4 (“DPV1”) 500 kV transmission line. It is important to note that when DPV1 was  
5 built, SCE envisioned that there would be a second 500 kV transmission line  
6 built immediately adjacent to it. To that end, SCE has assessed the Devers-Palo  
7 Verde No. 2 (“DPV2”) 500 kV transmission line several times over the last  
8 20 years. Our assessment indicates that building a second transmission line  
9 (i.e., DPV2) immediately adjacent to DPV1, within an approved BLM utility  
10 corridor, is highly preferable to constructing a new corridor and opening up new  
11 land to the potential impacts of a high-voltage transmission line. The  
12 environmental assessment for the No. 2 line was based upon the premise that a  
13 second line adjacent to the first would create the least possible impact, and  
14 would achieve the greatest degree of acceptance from the public and  
15 governmental agencies. This premise was tested by means of an environmental  
16 evaluation considering the potential effects of siting the No. 2 line parallel to the  
17 No. 1 line. The potential effects were evaluated by: (1) reviewing the siting  
18 studies that were conducted in 1976 and 1977 for the No. 1 line; (2) reviewing  
19 the environmental studies conducted in 1988 in support of the amended PEA;  
20 (3) updating important siting information; (4) identifying currently existing  
21 sensitivities; and (5) identifying preferred and subalternate routes for impact  
22 assessment of the proposed DPV2 line.

23 An interdisciplinary study team of professionals experienced in  
24 environmental impact assessment was established to undertake the  
25 transmission line impact assessment study. The team was comprised of both  
26 SCE personnel and outside consultants. Environmental subjects studied  
27 included physiography and major drainages, geology and soils, vegetation and

1 wildlife, including threatened, endangered, and sensitive species, cultural  
2 resources, traffic and transportation, current and planned land uses, public  
3 health and safety, recreation, scenic resources, and socioeconomic factors.

4 The methodology utilized in data collection and other pertinent  
5 information for the impact assessment procedure included:

- 6 1. A literature and site records search;
- 7 2. On-the-ground field studies;
- 8 3. Low-level helicopter reconnaissance;
- 9 4. Utilization of data previously collected for the Devers-Palo Verde  
10 No. 1, previous Devers-Palo Verde No. 2 studies, and the Desert  
11 Southwest Transmission Line; and,
- 12 5. Interviews with and data acquisition from applicable federal, state  
13 and local agency representatives, special interest groups, and  
14 environmental groups.

15 The conclusion of the assessments of the potential transmission line  
16 routes was based on a synthesis of data gathered by these methods. The study  
17 results concluded that a line paralleling the No. 1 line is environmentally  
18 preferred and would minimize any potentially adverse effects.

19 Q. What specific factors were considered in the selection of the preferred route?

20 A. The U.S. Department of Interior - BLM approved the selection of the preferred  
21 DPV2 route based on the findings of a Supplemental Environmental Impact  
22 Statement and issued a Record of Decision and right-of-way grant in 1989. The  
23 studies conducted in 2003 and 2004 for this PEA demonstrate that there have  
24 been minimal changes in the condition of the environment in the study area  
25 since 1989, and would therefore support the BLM decision on the selection of the  
26 preferred route. If a route were to be proposed outside of the existing Devers  
27 corridors that are designated in the BLM's Resource Management Plans in

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Arizona and California, plan amendments would be required and necessitate an additional review process under the Federal Land Policy Management Act and NEPA. Such a review by the BLM would likely cause critical delays in the project schedule.

The data collected by the study team clearly indicated the most environmentally acceptable route between the Devers Substation and Harquahala Switchyard was one within the BLM-approved Utility Corridor that paralleled the existing DPV1 line as much as possible, thus maximizing the use of existing access roads and minimizing potentially adverse visual impacts.

Q. Briefly describe the preferred route for the DPV2 project.

A. The California portion of the preferred route parallels SCE's existing single-circuit DPV1 500 kV transmission line for its entire length. The line departs SCE's existing Devers Substation and parallels the No. 1 line and other existing lower voltage transmission lines in a southeasterly direction for about 46 miles to a point in the Shavers Valley, approximately two miles east of the Cactus City rest stop, where it crosses Interstate Highway 10 ("I-10") and turns easterly on the north side of the No. 1 line. DPV2 generally parallels I-10 for approximately 63 miles to a point two miles south of I-10 and five miles southwest of the Blythe Airport.

At this point, the route turns southeasterly for approximately four miles to the top of the Palo Verde Mesa, where it turns and proceeds easterly across farmlands in the Palo Verde Valley, five miles south of Blythe, for approximately ten miles to the Colorado River, where it leaves California and passes into Arizona.

There are two additional elements in California and one in Arizona that are part of this application that were either not part of the previous application or have been expanded from the 1988 Application. In California, one of the

1 elements consists of the upgrade of existing SCE transmission lines west of  
2 Devers into Vista Substation. This upgrade was considered in an earlier  
3 application for this project; however, it is more extensive this time than before.  
4 The second element is a new Midpoint Substation proposed near Blythe in order  
5 to interconnect existing power from proposed generating plants in this area. In  
6 Arizona, we are looking at a transmission subalternate in the vicinity of the  
7 Harquahala Switchyard.

8 The west of Devers upgrades, as discussed in the PEA, can be  
9 accomplished with minimal impact to the environment. No significant,  
10 unmitigable impacts are expected to result from the proposed activity.

11 In order to accommodate transmission service for existing and proposed  
12 generating stations near Blythe, a 500 kV substation called Midpoint would be  
13 built along the Devers-Palo Verde route somewhere south of these generating  
14 stations. Three alternate sites were evaluated. All three of these alternate sites  
15 were evaluated with respect to the various environmental disciplines.  
16 Construction of a substation at any of these sites will result in no significant,  
17 unmitigable impacts.

18 The subalternate would proceed west from Harquahala to a point where it  
19 meets an existing gas pipeline and then proceeds northwest to join the  
20 Devers-Palo Verde corridor. The transmission line would follow the proposed  
21 route for the rest of the way to Devers.

22 Q. Did the environmental studies identify any areas that may be sensitive to the  
23 construction of a second line?

24 A. Yes, there were several areas along the proposed route that may be sensitive to  
25 the construction of a second line.

26 In California, the most sensitive area is the Palo Verde Valley near Blythe,  
27 California. Therefore, the siting study focused on identifying routing options in

1 this area to determine whether sensitivities associated with current  
2 environmental conditions proved greater than they were when the Devers-Palo  
3 Verde No. 1 transmission line was approved. The sensitivities near Blythe,  
4 California, within the Palo Verde Valley area, are associated with the crossing of  
5 farmlands by the proposed line. Two subalternate routes were considered to  
6 minimize crossing the farmlands. The northern subalternate route would  
7 require significant new access roads and have land-use compatibility impacts.  
8 More significantly, the route crosses the Colorado River Indian Reservation.  
9 Reservation officials have previously expressed their intent to deny access to  
10 their lands for the project.

11 The southern subalternate route crosses less agricultural land than the  
12 preferred route, but would create significant access and land use impacts,  
13 particularly on the Arizona side of the river. It would impact several significant  
14 archaeological sites, including the Ripley Intaglio, and would result in adverse  
15 biological impact as it crosses the Colorado River.

16 Other subalternate routes were investigated but rejected. Entry into the  
17 Palo Verde Valley from Arizona is confined by the location of the Colorado River  
18 Indian Reservation to the north of I-10 and by the Dome Rock Mountains and  
19 Yuma Proving Grounds south of I-10. Paralleling I-10 through Blythe would  
20 result in significant land use and socioeconomic and visual impacts in the City of  
21 Blythe along the highway. Routing farther south than the southern  
22 subalternate would require paralleling the Colorado River, potentially causing a  
23 significant impact to riparian habitat, bird travel, recreational use along the  
24 river, and visual considerations.

25 In analyzing the relative impacts of the subalternates, it was noted that  
26 the DPV1 line route through the Valley was selected after an intensive study of  
27 a number of subalternate routes similar to this subalternate of the preferred



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route. The No. 1 line tower design and locations were selected to minimize loss of cropland. The No. 2 line towers would be similarly designed and placed. The No. 1 line was placed on section lines to minimize potential conflicts with crop-dusting activities. The No. 2 line would also be located to minimize the potential conflicts. The BLM and the CPUC approved the preferred route for the No. 1 line, based on the results of a lengthy Environmental Impact Study/ Environmental Impact Report (“EIS/EIR”) process, which included public hearings. No advantages to the subalternates were identified by the current studies. For all of these reasons, the preferred route paralleled to the No. 1 line was selected as being more compatible with the environment for the proposed No. 2 line routing across the Palo Verde Valley.

It should be noted that another area of some sensitivity is the Edom Hill area (a feature with sacred significance to the Cahuilla people) where the No. 2 line would be parallel to the No. 1 line, an existing 230 kV transmission line, and a pipeline. My opinion, and the opinion of an SCE Cultural Resource Specialist, Mr. Tom Taylor, is that the proposed transmission line constitutes a relatively slight additional impact.

Q. What considerations were made by SCE to reduce potential impacts?

A. The proposed No. 2 line will incorporate the design measures adopted for the No. 1 line to alleviate significant adverse environmental impacts. Foremost among the design measures in alleviating impacts is the duplication of the existing line in appearance and location, to the extent practicable. The new line therefore will not create a noticeable contrast with the existing line, minimizing the visual impact of the new line.

In addition to the visual consistency considerations, the duplication of the H-frame tower design in the Blythe farmland areas will minimize the permanent loss of cropland. It is estimated that permanent loss of cropland associated with

1 the new H-frame towers will be 0.5 acres or less for the approximately ten miles  
2 of line through the farmlands.

3 Clustering the towers of the No. 1 and No. 2 lines together at the Colorado  
4 River crossing is the best means of minimizing any increased hazard for avian  
5 collision.

6 Additional mitigation would include the performance of site-specific  
7 cultural resource and biological investigations to avoid significant adverse  
8 impacts to any, as yet, unidentified sensitive resources. These investigations  
9 would be performed during the actual siting of the towers and other project  
10 facilities. Each facility site would be examined. It should be noted that the  
11 cultural resource surveys required prior to construction would be minimal for  
12 the preferred route, since the route was surveyed for the No. 1 line. This would  
13 result in significant cost savings for the project. Cultural resource surveys were  
14 conducted by SCE and its consultants in 2003 and 2004. These surveys included  
15 intensive pedestrian field surveys within the area of potential effect that  
16 encompassed the proposed tower sites and spur roads for the DPV2 project.  
17 Based on the results of these studies, and because affected archaeological sites  
18 were identified and subsequently mitigated, where appropriate, during the  
19 construction of DPV1, no significant archaeological sites would be impacted by  
20 the construction of DPV2.

21 Q. Based on your background, education, participation in the routing investigation  
22 and preparation of the PEA, have you formed an opinion as to whether or not  
23 DPV2 will have significant impact on the environment?

24 A. Yes.

25 Q. What is that opinion?

1 A. It is my opinion that construction and operation of the Project will not result in  
2 environmental impacts, which cannot be reduced to levels of insignificance with  
3 appropriate mitigation.

4 Q. Please summarize the reasons for your opinion.

5 A. The preferred route and the design of facilities were selected following a  
6 thorough evaluation of the potential environmental impacts of a number of  
7 alternatives, including the preferred route. It is my opinion that the preferred  
8 route and proposed facility design contain mitigation measures that effectively  
9 avoid significant adverse impacts to the environment. I do not believe that the  
10 incorporation of additional mitigation measures, apart from those contained in  
11 the SCE proposal would be necessary to adequately protect the environment.

12 Q. Was this material prepared by you or prepared under your supervision, or  
13 reviewed by you?

14 A. Yes, it was.

15 Q. Insofar as this material is factual in nature, do you believe it to be correct?

16 A. Yes, I do.

17 Q. Insofar as this material is in the nature of opinion or judgment, does it represent  
18 your best judgment?

19 A. Yes, it does.

20 Q. Does this conclude your statement of qualifications and prepared direct  
21 testimony?

22 A. Yes, it does.



1 A. The purpose of my testimony in this proceeding is to sponsor Appendix B, "Field  
2 Management Plan" of the Application.

3 Q. Was this material prepared by you or under your supervision?

4 A. Yes, it was.

5 Q. Insofar as this material is factual in nature, do you believe it to be correct?

6 A. Yes, I do.

7 Q. Insofar as this material is in the nature of opinion or judgment, does it represent  
8 your best judgment?

9 A. Yes, it does.

10 Q. Does this conclude your qualifications and prepared testimony?

11 A. Yes, it does.

1 **SOUTHERN CALIFORNIA EDISON COMPANY**

2 **DPV2 Application**

3 **Qualifications and Prepared Direct Testimony**  
4 **of Gilbert H. L. Tam**

5 Q. Please state your name and business address for the record.

6 A. My name is Gilbert H. L. Tam and my business address is 2244 Walnut Grove  
7 Avenue, Rosemead, California 91770.

8 Q. By whom are you employed?

9 A. I am employed by Southern California Edison Company ("SCE").

10 Q. Briefly describe your present responsibilities at SCE.

11 A. I am the Director of Grid Contracts within SCE's Federal Regulation and  
12 Contracts Business Line.

13 Q. Briefly describe your educational and professional background.

14 A. I received my Bachelor of Science degree in Mechanical Engineering in 1974  
15 from the California State University in Long Beach, and have retained a  
16 Professional Engineering License in the State of California since 1976. I joined  
17 SCE on March 31, 1975, as an Assistant Plant Engineer at the Alamos  
18 Generating Station. I held several positions within SCE's Steam Generating  
19 Division, including Supervisor of Power Resources and was subsequently  
20 promoted to Manager of Energy Control Center ("ECC") in 1990. As Manager of  
21 ECC, I was responsible for the scheduling and dispatching operations for the  
22 SCE system, including the loads of the municipalities located within SCE's  
23 control area. From 1992 to 1995, I was the Manager of Utility Contracts and  
24 was responsible for the administration of utility contracts and the development  
25 of power and transmission sales and purchase contracts with other utilities.  
26 From 1995 to 1998, I was appointed Manager of Grid Contracts and Business  
27 Management in the Power Grid Business Unit, where I was responsible for

1 transmission contracts and tariffs, financial management and budget control,  
2 business development, system applications and support, and human resource  
3 management. Since 1998, I have been the Director of Grid Contracts for the  
4 Transmission and Distribution Business Unit, where I am responsible for the  
5 development and administration of grid contracts and distribution tariff.

6 Q. What is the purpose of your testimony in this proceeding?

7 A. I am sponsoring the following sections of the Proponent's Environmental  
8 Assessment: Section 2.3.2, "Harquahala Generating Company Option  
9 Agreement" and Section 2.5, "Midpoint Substation".

10 Q. Was this material prepared by you or under your supervision or reviewed by  
11 you?

12 A. Yes. It was.

13 Q. Insofar as this material is factual in nature, do you believe it to be correct?

14 A. Yes, I do.

15 Q. Insofar as this material is in the nature of opinion or judgment, does it represent  
16 your best judgment?

17 A. Yes, it does.

18 Q. Does this conclude your qualifications and prepared testimony?

19 A. Yes, it does.

1                                   **SOUTHERN CALIFORNIA EDISON COMPANY**

2   **DPV2 Application**

3                                   **Qualifications and Prepared Direct Testimony**  
4   **of Michael Whatley**

5 Q. Please state your name and business address for the record.

6 A. My name is Michael Whatley, and my business address is 2244 Walnut Grove  
7 Avenue, Rosemead, California 91770.

8 Q. By whom are you employed?

9 A. I am employed by Southern California Edison Company (“SCE”).

10 Q. Briefly describe your present responsibilities at the Southern California Edison  
11 Company (“SCE”)

12 A. I am the Integrated Planning Manager in SCE’s Resource Planning & Strategy  
13 group. In that capacity, I am responsible for managing aspects of SCE’s  
14 Long-Term Procurement Plan (LTPP) and directing scenario analyses in support  
15 of the LTPP. My position also requires me to provide recommendations on  
16 emerging issues, including forecasts for needed generation, economic evaluation  
17 of new supply-side and demand-side resources, and establishing long-term  
18 market price forecasts and scenarios.

19 Q. Briefly describe your educational and professional background.

20 A. I earned my Bachelor of Science in Nuclear Engineering from the University of  
21 California, Santa Barbara. I have nearly 13 years experience in the energy  
22 sector addressing natural gas and electric power issues both domestically and  
23 internationally. I joined SCE in March 2003 as Integrated Planning Manager. I  
24 have previously held the position of Manager, Systems Dynamics for Edison  
25 Mission Energy where I conducted technical analyses for various business  
26 development opportunities in the U.S. and United Kingdom markets. I have  
27 also held positions in Edison International’s Strategic Planning & New Business



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Development Group, in SCE's Energy Supply & Marketing Department and for SCE at the San Onofre Nuclear Generating Station. I have held a Professional Engineering License in the State of California since 1997.

Q. Are you familiar with the proposed Devers-Palo Verde No. 2 500 kV transmission line project?

A. Yes, I am.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to sponsor the following sections of the Proponent's Environmental Assessment: Section 2.2.1, "Description of Modeling Assumptions;" Section 2.2.4.3, "Non-Transmission Alternatives"; Section 2.2.4.3.1, "New Generation Alternatives"; Section 2.2.4.3.2, "Demand Response Alternative"; Section 2.2.4.3.3, "Energy Efficiency Alternative"; and Section 2.2.4.3.4, "Distributed Generation Alternative".

Q. Was this material prepared by you or under your supervision, or reviewed by you?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.