

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Southern California Edison Company) Docket No. EL05-80-000

**Intervention and Supporting Comments of the
California Wind Energy Association**

The California Wind Energy Association (CalWEA) respectfully moves to intervene in this proceeding, and submits these comments in support of the Petition for Declaratory Order filed by Southern California Edison in this docket on March 23, 2005.

CalWEA is a non-profit corporation supported by members of the wind energy industry, including turbine manufacturers, project developers and owners, component suppliers, support contractors and others. CalWEA represents its members in California's policy forums, seeking to encourage and support the production of electricity through the use of wind generators.

Persons on whom communications concerning this proceeding should be served are:

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In its Petition, SCE seeks specific treatments for three transmission projects it calls the

"Antelope Transmission Projects." The specific treatments are:

1. costs rolled-in to SCE's general transmission rates rather than costs assigned directly to generators;
2. protection from disallowance of reasonable costs should the projected amount of independent generation not seek transmission service yet the facilities are still constructed;
3. protection from disallowance of reasonable costs should the projected amount of independent generation not seek transmission service and certain facilities are abandoned; and
4. clarification that the facilities at issue will be eligible to be placed under California Independent System Operator (CA ISO) control.

CalWEA herein offers comments on two of these areas.

I. The cost associated with Segment 3 should be rolled-in because Segment 3 will be integrated with the transmission network

SCE describes these projects in terms of three "segments." Segment 1 and Segment 2, in the opinion of SCE's affiants, are "integrated" with the transmission grid and therefore entitled to rolled-in treatment under Commission precedent. SCE asserts, however, that Segment 3 is not integrated with the transmission grid. SCE still seeks rolled-in treatment for Segment 3, offering a rationale different from the Commission's customary integration test.

CalWEA agrees with SCE that all three segments should receive rolled-in treatment. The purpose of this instant response is to provide the Commission with a factual basis for finding that Segment 3, the proposed Antelope-Tehachapi 230 kV line, will in fact be integrated into the regional transmission grid and thereby constitute a network upgrade facility. This factual basis appears in the attached affidavit of Whitfield Russell, an electrical engineer with 30 years' experience, much of it spent laboring in the California transmission vineyards. Mr. Russell makes two major points:

First, he explains that Segment 3 will be integrated with the existing 66 kV network in the Antelope-Bailey area. Segment 3 will literally cross over portions of the ISO Controlled 66 kV network in the Antelope-Bailey area. This proximity between the two sets of facilities will allow efficient interconnection between Segment 3 and the existing 66 kV network. That interconnection would result in integration, in two ways:

1. Segment 3 can provide a means of backing up service to existing loads in the Tehachapi area.
2. By enabling the shifting of existing generation off the 66 kV network and onto the new 230 kV network, Segment 3 will:
 - a. increase the deliverability of existing generation that is shifted onto the new 230 kV network,
 - b. increase the deliverability of existing generation that remains on the 66 kV network, and
 - c. provide more reliable service to loads connected to the 66 kV system.

Second, he expects, based upon the proposed plan, that Segment 3 will be integrated with SCE and PG&E transmission facilities. Specifically, Segment 3 will (1) reinforce the critical interfaces between PG&E and SCE; and (2) allow wind generation in the Tehachapi region to be delivered directly to PG&E.

For these reasons, as detailed by Mr. Russell, Segment 3 will benefit not only the interconnecting generators but the transmission network as a whole. This analysis provides a basis for the Commission to grant SCE's request to roll in the costs of Segment 3, along with those of Segments 1 and 2.

II. SCE's request for protection from disallowance warrants Commission approval due to unique California legal facts

Commission precedent requires cost-sharing between ratepayers and shareholders in the case of prudent but abandoned (or surplus) plant. The purpose of this precedent is to protect ratepayers from the full risk of abandonment or surplus. But in California, the Legislature, by enacting section 399.25, already has determined that ratepayers should bear this risk, in the name of encouraging the interconnection and deployment of renewable generation. Specifically, Section 399.25(b)(4) of the California Public Utilities Code requires the California Public Utilities Commission to:

allow[] recovery in retail rates of any increase in transmission costs incurred by an electrical corporation resulting from the construction of the transmission facilities that are not approved for recovery in transmission rates by the Federal Energy Regulatory Commission after the commission determines that the costs were prudently incurred in accordance with subdivision (a) of Section 454.

Since the state law already makes retail ratepayers responsible for the full costs, there is no need for this Commission to use its ratemaking discretion to disallow costs that fall into this category of prudent but not used.

Conclusion

WHEREFORE, for the foregoing reasons, CalWEA respectfully urges the Commission to grant SCE's Petition.

Respectfully submitted,

April 14, 2005

Scott Hempling
Attorney for CalWEA

CERTIFICATE OF SERVICE

I hereby certify that on April 14, 2005, I served a copy of the foregoing document on the Secretary and on the official service list of this proceeding, by first class mail or equivalent service.

Scott Hempling

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Southern California Edison Company)

Docket No. EL05-80-000

**Affidavit
Of
Whitfield A. Russell**

on behalf of

California Wind Energy Association

Q. Please state your name and your professional qualifications.

A. My name is Whitfield A. Russell. I am a public utility consultant and principal in Whitfield Russell Associates. I have been accepted as an expert on bulk power systems in approximately 150 proceedings before State and Federal courts, State and Federal administrative agencies and other tribunals in approximately 30 States and in two Canadian provinces. I hold a Bachelor of Science degree in Electrical Engineering from the University of Maine at Orono, a Master of Science degree in Electrical Engineering from the University of Maryland, and a Juris Doctor degree from Georgetown University Law Center. My complete resumé and a description of cases on which I have worked are attached as Attachment A to this Affidavit.

Q. On whose behalf have you prepared this affidavit?

A. I have prepared this Affidavit on behalf of the California Wind Energy Association (“CalWEA”). CalWEA has been involved in legislative and regulatory proceedings concerning renewable energy and the development of wind energy within California. To that end, CalWEA and some of its members have participated in California Public Utilities Commission (“CPUC”) proceedings involved in implementing a state law which set renewable goals for California utilities.¹ I filed testimony in CPUC Investigation 00-11-001 in 2003 with respect to the Tehachapi Transmission Conceptual Facility Study (“Tehachapi CFS” or “TCFS”), performed by Southern California Edison (“SCE” or “Edison”). The TCFS was carried out at the expense of a group of wind generators.

Q. What is the purpose of your affidavit?

A. The purpose of this affidavit is to explain how and why the proposed Antelope-Tehachapi 230 kV line will be integrated into the regional transmission grid and thereby constitute a network upgrade facility. Because the proposed Antelope-Tehachapi 230 kV line will constitute a network upgrade facility, its costs should be rolled into the costs to be collected from all users of the regional grid and should not be collected solely from wind generators connecting to the facility.

Q. How is your affidavit organized?

A. My affidavit is organized into three parts:

Part I provides factual background.

¹ Cal. Pub. Util. Code Sections 399.11 – 399.16; 399.25 (2002).

Part II explains that the proposed Antelope-Tehachapi 230 kV line (Segment 3 of SCE's proposed upgrades to the Tehachapi area) will be integrated with the existing 66 kV network in the Antelope-Bailey area.

Part III explains that Segment 3 will be integrated with SCE and PG&E transmission facilities.

I. Factual Background

Q. Please provide factual background necessary to the Commission's understanding of your position on integration of Segment 3.

A. The CPUC has found that (a) the Tehachapi area contains the largest wind resource area in California, and that (b) if more fully developed, will meet a significant portion of the state's renewable energy goals. The CPUC found further that existing transmission constraints currently prevent new wind installations.² In order to encourage the development of those resources, the CPUC formed the Tehachapi Collaborative Study Group ("TCSG") to develop a plan for the phased expansion of transmission in the Tehachapi region, thus enabling potential wind projects to be constructed and interconnected to the transmission system and to deliver energy to California energy customers.³

The TCSG filed a report ("TCSG Report") on its plan with the CPUC on March 16, 2005.⁴ The TCSG Report recommends the following conceptual transmission plan at page 7:

² CPUC Decision 04-06-010 in I.00-11-001 (June 9, 2004) at p. 40.

³ *Ibid* at p. 41.

⁴ CPUC Docket No. I. 00-11-001, *Report of the Tehachapi Collaborative Study Group* (March 16, 2005).

Three major 500 kV transmission lines are needed to connect the anticipated 4,060 MW of wind generation to the grid. Two of these lines connect the Tehachapi area to Antelope and Vincent substations, and the third major line is expected to connect the area to the PG&E system at the Midway, Gregg, or other substation to be identified in future studies.

...

The main collector system will consist of 230 kV transmission lines connecting from 4 to 6 local substations. Depending on the quantity and location of wind projects developed, these substations may eventually be connected to form an electrical loop. The power generated in the Tehachapi area collected in this loop will be connected to the backbone grid through a single 500 kV substation, Tehachapi Substation #1. Additional wind power will enter the system at other substations connected to the grid at Antelope.

On March 23, 2005, SCE filed a Petition for Declaratory Order (“Petition”) before this Commission requesting assurances that the Commission will allow SCE rolled-in rate treatment for the first phase of the TCSG plan: SCE’s proposed Antelope Transmission Projects. According to SCE, the first phase involves the following three segments:

- i. Antelope-Pardee 500 kV line (Segment 1)
- ii. Antelope-Vincent 500 kV line (Segment 2)
- iii. Antelope-Substation One 500 kV line (initially operated at 220 kV)⁵ and a Substation One-Substation Two 220 kV line (SCE Petition, p. 12). This line is also referred to as the “Antelope-Tehachapi 230 kV line” (Segment 3).

Q. How has SCE characterized the three segments?

⁵ Although a 220 kV facility is not identical to a 230 kV facility, SCE and the TCSG seem to have equated them for purposes of analyzing Tehachapi alternative expansion plans.

- A. SCE asserts that Segments 1 and 2 above are network upgrades. However, SCE believes that Segment 3 is a generation tie line. SCE explains that Segment 3 will function as a radial line that will potentially interconnect multiple generators to the transmission grid.⁶ Because SCE views Segment 3 as a radial line, it offers a rationale for rolling in its costs that differs from the Commission's traditional integration tests.

In this affidavit, I offer the Commission a basis on which to find that Segment 3 is in fact integrated with the transmission grid, and therefore deserving of roll-in under the Commission's traditional tests. I explain that SCE's characterization of Segment 3 does not take into account the existing network facilities in the Tehachapi region, and the contribution of Segment 3 to those facilities' power-carrying capability. If the Commission takes these existing network facilities into account, it will see a basis for finding that Segment 3 makes a network contribution.

Q. Please describe the major facilities in the vicinity of Tehachapi.

- A. The Tehachapi wind resource area is located east of the 500 kV A.C. north-south transmission corridor linking California to the Pacific Northwest, Arizona and other portions of the Desert Southwest.⁷ Passing directly through the Tehachapi wind resource area are (a) the +/- 500 kV D.C. Line linking the Pacific Northwest to Sylmar and Olive Converter Stations near Los Angeles (passing within 5 miles of Substation #1), (b) the 230 kV Owens Gorge-Rinaldi transmission line owned

⁶ Petition at 12.

⁷ See Fig 2.4 from page 13 of TCSG Report included as Attachment B hereto.

by the Los Angeles Department of Water and Power (“LAWDP”) (passing within 5 miles of Substation #1), and (c) the 230 kV Sagebrush Line developed and owned privately by existing wind generators so as to deliver their output to SCE’s Vincent Substation.

Q. What criteria did you apply in determining that Segment 3 was integrated with the transmission grid?

A. The Commission’s criteria for determining whether a facility is integrated with the transmission network and becomes a network upgrade were set forth in *Mansfield Municipal Electric Department and North Attleborough Electric Department v. New England Power Company (“Mansfield”)*.⁸ In *Mansfield*, the Commission articulated five factors for determining when facilities are integrated with the transmission network:

- a. Whether the facilities are radial, or whether they loop back into the transmission system;
- b. Whether energy flows only in one direction, from the transmission system to the customer over the facilities, or in both directions, from the transmission system to the customer, and from the customer to the transmission system;
- c. Whether the transmission provider is able to provide transmission service to itself or other transmission customers...over the facilities in question;
- d. Whether the facilities provide benefits to the transmission grid in terms of capability or reliability, and whether the facilities can be relied on for coordinated operation of the grid; and [,]

⁸ 97 FERC ¶ 61,134 (2001), *aff’g* 94 FERC ¶ 63,023 (initial decision).

- e. Whether an outage on the facilities would affect the transmission system.⁹

In citing the *Mansfield* factors, I am not suggesting that all five tests must be satisfied in order for the facilities to be considered integrated with the transmission network (“network upgrades” or “rolled-in”). In fact, the Commission’s decision in *Northeast Texas Electric Cooperative* reiterated that “the Commission's policy [is] that costs should be rolled in when *any* degree of integration has been shown” (emphasis added).¹⁰

II.
**Segment 3 Will Be Integrated With the Existing 66 kV Network
in the Antelope-Bailey Area**

Q. Please summarize your first main argument.

A. Segment 3 will cross over portions of the California ISO (“ISO”) Controlled 66 kV network in the Antelope-Bailey area. This proximity between the two sets of facilities will allow efficient interconnection between Segment 3 and the existing 66 kV network. That interconnection would result in integration, in two distinct ways:

1. Segment 3 can provide a means of backing up service to existing loads in the Tehachapi area
2. By enabling the shifting of existing generation off the 66 kV network and onto the new 230 kV network, Segment 3 will:
 - a. increase the deliverability of existing generation that is shifted onto the new 230 kV network,

⁹ *Mansfield*, 97 FERC ¶61,134 at p. 61,613-14.

¹⁰ 108 FERC ¶61,084 (July 29, 2004), *aff’d* 100 FERC ¶63,033 at para. 51 (2002) (Initial Decision) (emphasis added).

- b. increase the deliverability of existing generation that remains on the 66 kV network and
- c. provide more reliable service to loads connected to the 66 kV system.

Reasonable engineering practice calls for exploiting this proximity between Segment 3 and the existing network in order to ensure achievement of these integration benefits.

Q. Please describe the existing 66 kV network and its importance.

- A.** An understanding of the network benefits of Segment 3 requires an understanding of the 66 kV network in the Tehachapi area.¹¹

By analyzing the diagram of 66 kV facilities in SCE's Antelope-Bailey 66 kV transmission system in combination with the list of ISO Controlled facilities (shown in Attachment E but not shown in the maps appended to SCE's Petition), one can see that 28 lines operating at 66 kV in the Antelope-Bailey system are part of the ISO Controlled Grid, having been transferred to the ISO's control by SCE.¹² Those continuously closed portions of the 66 kV network form a loop between the Antelope and Bailey 230 kV substations of SCE, so that these 66 kV lines operate in parallel with SCE's 230 kV transmission system. Power from the

¹¹ See Attachment A to the April 2003 Testimony of Mr. Jorge Chacon in CPUC Docket I.00-11-001 included herein as Attachment C. Also see Attachment D, an enlarged version of the Tehachapi area shown on Figure 2.4 of the TCSG Report.

¹² See the one-line diagram of SCE's Antelope-Bailey 66 kV system taken from an affidavit of Mr. Armando Perez, then a senior employee of SCE, combined with the list of facilities that SCE labeled as "transmission" to be turned over to ISO control, included as Attachment E. I understand that, on the diagrams originally filed at the Commission by SCE, the portions of SCE's 66 kV facilities under Cal ISO control are shown colored red. However, the version of those diagrams is only available in black-and-white from the Commission website.

230 kV transmission system can enter the 66 kV system at either Antelope or Bailey, and power flowing on the 66 kV Antelope-Bailey system flows in parallel with power flowing on the 230 kV system. The network nature of these 66 kV facilities is undisputed.

Q. What opportunities for integration of Segment 3 into the transmission grid are presented by this 66 kV network?

A. Because Segment 3 will cross over the ISO Controlled 66 kV network in the Antelope-Bailey area, it is logical to consider opportunities for integration through physical interconnection. In order to understand the opportunities for integration, one must first understand the current condition of the 66 kV network.

Most importantly, the 66 kV network is at its limit. SCE's Mr. Jorge Chacon testified at the CPUC that if additional generation is constructed in the Tehachapi area and if that generation cannot be interconnected to the Sagebrush line or to the lines of LADWP, SCE would need to construct new 230 kV transmission facilities because SCE's existing 66 kV network and SCE's Big Creek 230 kV network (located 15 miles to the west) are fully loaded:

SCE's existing 66kV network in the Tehachapi area and the Big Creek 230kV network located approximately 15 miles to the West are fully loaded, so if new generation is constructed in the Tehachapi area and connected to SCE's system, SCE would need to construct new transmission facilities in order to provide additional capability in the area. As identified in Phase 1 and Phase 2 of the Tehachapi Transmission Conceptual Study reports issued by SCE in 2002 (discussed below), new 230kV transmission facilities will be needed to interconnect the amounts of new wind generation being proposed. Of course, the exact facilities necessary will be dependent upon the amount of wind generation actually connecting to SCE's system."¹³

¹³ Chacon Testimony in CPUC Docket I.00-01-001, April 2003 at 11:17-26.

New 230 kV and 500 kV facilities are required because the addition of 66 kV lines would not be able to accommodate the planned addition of up to 4,000 MW of generation, cost-effectively.¹⁴

Q. What are the effects of the limits on the 66 kV network?

A. The inherent characteristics of the 66 kV network have not only limited grid expansion opportunities to accommodate new generation; they also cause shortfalls in the reliable and economic supply of existing generation. In testimony before the CPUC, SCE's Jorge Chacon described the tripping problems in the Tehachapi area:

What happens when you have a faulted condition is a degradation in voltage of the system throughout the entire system, and generally the worst performance or the worst voltage performance is where the fault is at. So if you fault the line that goes or that ties the system to Antelope, you will have voltage degradation in the Tehachapi area, and that would cause windparks to be tripped on their undervoltage protection. If you have lines that fault where windparks are connected directly to that line, then the protection settings would clear the line to isolate the fault and the windparks connected to the lines would also be tripped in an effort to isolate the fault, and the protection settings of -- of the system, thus the protection characteristics, there is no way around -- around that other than overbuilding and gold plating the system.¹⁵

¹⁴ The cost per MW-mile of transmission capacity is generally related to the inverse of the square of the voltage. In other words, doubling the voltage of a transmission line (or transmission system) cuts its cost per MW-mile to approximately one-fourth of the cost associated with the lower voltage line (or system). Right-of-way requirements per MW mile are similarly reduced as a line's operating voltage is increased.

¹⁵ In the June 11, 2003, hearing in Docket I.00-11-001, page 1404:13-28.

Mr. Chacon indicated that the Tehachapi 66 kV transmission system is not planned by SCE to meet an N minus one (“N-1”) contingency criteria, but instead depends on self-tripping of at least 50 MW of PURPA QF wind generation whenever an event occurs in order to keep the system from experiencing cascading outages. Self-tripping is when the equipment at a wind park automatically opens in order to protect the generator. Mr. Chacon explained:

Q Okay. We'll leave it at that. And again, to reiterate, your position is that if there is a loss under the conditions we've been talking about of maximum wind and minimum customer load, if the Antelope to Cal Cement Line opens, that there will not be a cascading outage.

A. That's correct.

Q. And have you run load flow studies to analyze that?

A. I have.

Q. And the studies resolve without a cascading outage?

A. The studies indicate that approximately 50 megawatts of wind generation need to be tripped and would be tripped, at least 50 megawatts, as a result of the undervoltage protection settings of the wind generators.¹⁶

Q. How do these interruptions affect those who rely on the transmission network?

A. Adversely. Economic loss occurs to large retail customers, especially those with continuous processes, such as cement companies. These interruptions also cause damage to wind turbine control panels and to the wind turbine drive trains as a result of the shock and stress of recurring high power shutdowns. I think these effects should be undisputed; but if they are, an opportunity for discovery at hearing should remove doubt.

¹⁶ *Ibid*, at 1414:2-17.

Q. Does the support to the 66 kV network provided by Segment 3 enable this Segment to satisfy the *Mansfield* integration test?

A. Yes. First, SCE's engineering expert recognizes the supportive role. Mr. Chacon of SCE testified about the benefits of extending 230 kV lines from Antelope to Tehachapi in a configuration similar to that which now is proposed in the TCSG Report:¹⁷

In the first stage, which assumes total new wind generation in the Tehachapi area less than 1,140 MW, a new Substation 1 and a new sixty mile double-circuit 230 kV line connecting that substation to Pardee substation would be built. . . . *While the nature of these facilities would appear to be consistent with that of a generation tie line, constructing the first stage of the conceptual project will potentially afford SCE the opportunity to better manage the existing Tehachapi area 66-kV network by transferring power and/or load between the existing system and the new line, thereby making the best use of the new line for the existing system.* The new line is part of the comprehensive transmission plan to interconnect new Tehachapi area wind generation and will be used, to the extent possible, in such a fashion as to improve the total SCE system performance.¹⁸

Q. Do you have more comments on this subject?

A. Yes. I would stress the following two points in support of the Antelope-Tehachapi 230 kV line functioning as a network upgrade facility.

1. The Antelope-Tehachapi 230 kV line will form a physical loop of the constrained existing 66 kV network between Antelope and Cal Cement, which will relieve problems on the 66 kV network. Even if the combination of Segment

¹⁷ Please see Attachment F, a diagram of the proposed Antelope-Tehachapi upgrades based upon the 2003 TCSF.

¹⁸ Chacon testimony in CPUC Docket I.00-01-001, April 2003, at p. 19:1-12 (emphasis added).

3 and the 66 kV network were not to form a continuously closed loop of the existing 66 kV network initially, Segment 3 will provide substantial support to the loads and generation now connected to the existing 66 kV network. With Segment 3, SCE and the ISO will be able to alleviate existing and predicted low voltage conditions on the underlying 66 kV network (by shifting load and/or generation to the new 230 kV line) and keep those conditions from worsening with the addition of new generation.

2. The Antelope-Tehachapi 230 kV line will form a physical loop of the constrained existing 66 kV network between Antelope and Cal Cement, which will provide deliverability to generators seeking to interconnect to the existing network. These generators fall into two categories, both those generators that plan to interconnect to SCE's transmission system in the future, and those generators now approved for interconnection to SCE's system which cannot be interconnected because the existing 66 kV system is constrained. Up to 4,000 MW has been estimated as prospective wind generation in the Tehachapi area, of which approximately one quarter is already in the queue, and much more is at an advanced stage of development.

Q. Please summarize your views on the first category of integration benefits.

A. The following integration benefits arise:

1. Segment 3 can provide a means of backing up service to existing loads in the Tehachapi area
2. By enabling the shifting of existing generation off the 66 kV network and onto the new 230 kV network, Segment 3 will:

- a. increase the deliverability of that existing generation shifted to the 230 kV facilities,
- b. increase the deliverability of existing generation that remains on the 66 kV network and
- c. provide more reliable service to loads connected to the 66 kV system.

Reasonable engineering practice would exploit the proximity of the existing 66 kV network and the proposed 230 kV facilities so as to ensure achievement of these integration benefits.

III. Segment 3 Will Help Integrate SCE and PG&E Transmission Facilities

Q. Please summarize your second major argument.

A. Plans exist, authored by the TCSG, SCE and PG&E, to increase the points of interconnection between those two utilities. Segment 3 can play a role in this inter-company integration. The integrating benefits arising from this scenario include:

1. Reinforcing the critical interfaces between PG&E and SCE
2. Allowing wind generation in the Tehachapi region to be delivered directly to PG&E

Q. Please provide factual background necessary to understand this point.

A. The geographical center of the Tehachapi wind resource area (which is approximately where Substation #1 will be built) is located close to Path 15 and Path 26. These two paths, which are part of the ISO Controlled Grid, are frequently congested; thereby limiting flows between northern and southern California. The placement of Segment 3 in this area, in light of long-term

transmission expansion plans under serious discussion, creates additional opportunities for integration, such as increasing the transfer capability between northern and southern California.

Q. To what studies are you referring?

A. Phase 4 of the TCSG’s Recommended Conceptual Plan calls for a “Transmission line, Tehachapi-PG&E (Midway, Gregg or other) 500 kV.”¹⁹ The plan also includes a 230 kV tie between PG&E and SCE in the Fresno area.²⁰ The TCSG Report evaluates a number of alternatives to the ultimate recommended plan, all but one of which call for a similar interconnection between SCE and PG&E. Many of the alternatives call for this interconnection to terminate at Tehachapi. For instance, three of SCE’s alternatives involve a 500 kV line terminating at Tehachapi.²¹ Two of PG&E’s alternatives involve a 500 kV line terminating at Tehachapi.²²

Q. What integration benefits would arise from Segment 3’s interaction with the new interconnections contemplated by these studies?

A. In and of themselves, these new interconnections contemplated by these studies would have several benefits:

¹⁹ TCSG Report, Executive Summary at 6.

²⁰ TCSG Report at 11-12. “In addition to the Fresno tie, PG&E believes that substantial upgrades of its system will be necessary to make 2,000 MW of Tehachapi power deliverable to PG&E load centers. These may include additional upgrades of Path 15 (Midway-Los Banos-Tesla), or new 500 kV lines from Tehachapi to the Gregg substation or Midway-Gregg. Potential network upgrade alternatives and a potential main line from Tehachapi to Gregg will be studied as part of Phases 3 and 4.” *Id.* at 12.

²¹ See TCSG Report, Appendix A, Figures A-1 through A-4.

²² See TCSG Report, Appendix B, Figures B-1 through B-4.

1. They would allow the delivery of up to 2,000 MW of Tehachapi wind generation to PG&E
2. They would reinforce Path 15 and/or Path 26.²³

Segment 3, by becoming a component of the integrated regional transmission system, would enhance these two benefits. Segment 3, the Antelope-Tehachapi 230 kV line, would be the first segment of a new interconnection between SCE and PG&E. Once Segment 3 is upgraded to 500 kV and combined with other 500/230 kV line segments linking Tehachapi to an existing PG&E 500/230 kV substation, the completed interconnection will operate in parallel and form a closed loop with other ISO Controlled Grid facilities linking SCE and PG&E, such as Path 15 and/or Path 26.

In summary, if the preferred plan or any of these five alternatives is built, the line from Antelope to Tehachapi will satisfy all five of the *Mansfield* tests. Specifically, Segment 3, combined with a 500/230 kV line to PG&E (“Expanded Segment 3”), will create a closed loop between SCE’s and PG&E’s transmission systems. Expanded Segment 3 will enable energy to flow both to and from PG&E from the Tehachapi region. Expanded Segment 3 would be under ISO control so that the ISO, as transmission provider, could provide transmission service to any ISO customer over this facility. And Expanded Segment 3 would increase the transmission capability and reliability of the system by providing a means for more power to exit the Tehachapi region and by reinforcing critical

²³ See the TCSG Report at Figures B-1 through B-4 of Appendix B and Section 2.1 at page 11 of Appendix B.

paths on the ISO Controlled Grid. Finally, as part of the 230/500 kV ISO Controlled transmission system, an outage on Expanded Segment 3 would affect the transmission system.

Q. Does this conclude your affidavit?

A. Yes.

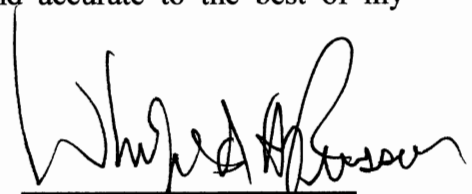
UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Southern California Edison Company)


Docket No. EL05-80-000

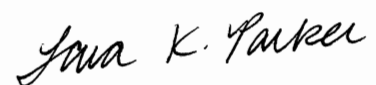
AFFIDAVIT
OF
WHITFIELD A. RUSSELL

I, Whitfield A. Russell, certify that the attached Affidavit and Exhibits, on behalf of California Wind Energy Association (CalWEA), which bear my name, were prepared by me or under my direct supervision and are true and accurate to the best of my knowledge and belief formed after a reasonable inquiry.


WHITFIELD A. RUSSELL

Subscribed and sworn to before me on this 14th day of April, 2005.


NOTARY PUBLIC
Commonwealth of Virginia
City of Alexandria
My Commission Expires:
November 30, 2007

I was commissioned:


TARA K. PARKER
NOTARY PUBLIC
Commonwealth of Virginia
My Commission Expires Nov. 30, 2007

WHITFIELD A. RUSSELL

Whitfield A. Russell is an electrical engineer, attorney and President of Whitfield A. Russell and Associates, P.C., a corporate Partner of Whitfield Russell Associates. He holds a Bachelor of Science degree in Electrical Engineering from the University of Maine at Orono, a Master of Science in Electrical Engineering from the University of Maryland, and a Juris Doctor degree from Georgetown University Law Center.

Mr. Russell is experienced in electric utility system planning (transmission and generation), ratemaking and bulk power contracts. Mr. Russell has been qualified as an expert witness in 27 states (as well as in the Provinces of Alberta and Manitoba and the District of Columbia) and has been accepted as an expert in approximately 150 proceedings before state and federal Courts, arbitration panels, public service commissions, the Federal Energy Regulatory Commission and other administrative agencies. Mr. Russell's clients have included public power utilities, state and federal power marketing agencies, investor owned utilities, independent power producers, and State regulatory bodies and their staffs. Mr. Russell has written and spoken extensively on matters relating to regulated electric utilities.

Mr. Russell founded Whitfield Russell Associates in 1976.¹ From 1972 to 1976, Mr. Russell served as Engineer and subsequently as Chief Engineer, at the Division of Corporate Regulation of the Securities and Exchange Commission. The Division administers the Public Utility Holding Company Act of 1935.

From 1971 to 1972, Mr. Russell was on the staff of the Federal Power Commission. He served as a consultant to staff attorneys in proceedings, and as an expert witness in an administrative proceeding before the Atomic Energy Commission.

From 1969 to 1971, Mr. Russell served as an Associate Engineer in the System Planning Division of the Potomac Electric Power Company. At PEPCO, he conducted system studies of load flows and stability. He was also a member of numerous study groups concerned with planning and operation of the Pennsylvania-New Jersey-Maryland Interconnection.

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**PROCEEDINGS IN WHICH
WHITFIELD A. RUSSELL
HAS TESTIFIED**

1. Anaheim v. Kleppe, U.S. District Court, Arizona (Civil No. 74-542 PHX-WEC), concerning the availability of transmission capacity in the Pacific Southwest.
2. In re: Potomac Electric Power Company, before the Maryland Public Service Commission, Case No. 7004, concerning the need for proposed 500 kV transmission lines in the Washington, D.C. area.
3. In re: Baltimore Gas and Electric Company, and Potomac Electric Power Company, before the Maryland Public Service Commission, Case No. 6984, involving the same transmission lines mentioned in the preceding case.
4. Perry v. The City of Monroe, Louisiana (State of Louisiana, Parish of Ouachita, Fourth District Court; Nos. 111145, 111146, 111147 filed August 16, 1977) regarding the necessity of Monroe's disposing of its municipal utility system.
5. In re: Potomac Electric Power Company, before the District of Columbia Public Service Commission, in Case No. 685, concerning the system planning of the Potomac Electric Power Company and the PJM Pool.
6. In re: Generic Hearings on Rate Structure, before the Colorado Public Utilities Commission, Case No. 5693, regarding the engineering aspects of marginal cost pricing and power pooling in Colorado.
7. In re: Pacific Gas and Electric Company, FERC Docket No. ER76-532, regarding the proper level of rates to be charged by PG&E to the Central Valley Project for transmission service.
8. In re: Pacific Power and Light Company, FERC Docket No. E-7796, regarding the Seven Party Agreement and related matters.
9. In re: Pacific Gas and Electric Company, FERC Docket No. E-7777 (II), concerning the provisions of numerous bulk power arrangements governing electric utilities in California.
10. In re: Potomac Edison Company, before the Maryland Public Service Commission, Case No. 7055, concerning the need for a 230 kV transmission line in Montgomery County, Maryland.
11. In re: Delmarva Power and Light Company, before the Maryland Public Service Commission, Case Nos. 7239F, 7239G, 7239H, 7239I, 7239J, 7239K, 7239L, 7239M and 7239N concerning fuel rate adjustments.

12. In re: Baltimore Gas and Electric Company, before the Maryland Public Service Commission, Case Nos. 7238G, 7238H, 7238I, 7238J, 7238L and combined dockets 7238P, Q, R and S, concerning fuel rates.
13. In re: Potomac Electric Power Company, before the Maryland Public Service Commission, Case Nos. 7240A, 7240B, 7240C, 7240D, 7240E, 7240F and 7240G, concerning fuel rate adjustments.
14. In re: Florida Power & Light Company, FERC Docket No. E-9574, concerning system planning for the City of Vero Beach, Florida. FP&L withdrew its application to acquire the Vero Beach system.
15. In re: Oklahoma Gas and Electric Company, FERC Docket No. ER77-465, concerning rates for energy banking and transmission services rendered to the Western Farmers Electric Cooperative.
16. In re: Idaho Power Company, before the Idaho Public Utility Commission, Case No. U-1006-158, concerning the value of interruptible industrial loads and Idaho Power Companies entitlement to Federal secondary energy.
17. In re: Potomac Electric Power Company, before the District of Columbia Public Service Commission, Case No. 737, concerning the Company's construction program.
18. In re: Virginia Electric and Power Company, before the Virginia State Corporation Commission, Case No. PUE 800006, concerning construction of transmission lines in the Charlottesville, Virginia area.
19. In re: Pacific Gas and Electric Company, FERC Project Nos. 2735 and 1988, concerning the Helms Project, a pumped storage generating unit.
20. Southeastern Power Administration v. Kentucky Utilities Company, FERC Docket No. EL 80-7, concerning SEPA's attempt to obtain a FERC wheeling order under the Public Utility Regulatory Policies Act of 1978.
21. In re: Sierra Pacific Power Company, before the Public Service Commission of Nevada, Docket No. 81-105, concerning construction and transmission planning.
22. In re: Virginia Electric and Power Company, before the North Carolina Utilities Commission, Docket No. E-22, Sub 257, concerning production cost simulation and normalized fuel adjustment clause formula.
23. In re: the Investigation of the Capital Expansion For Electric Generation, before the New Mexico Public Service Commission, Case No. 1577, concerning construction

- programs of the Public Service Company of New Mexico and El Paso Electric Company.
24. In re: Potomac Edison Company, before the Maryland Public Service Commission, Case Nos. 7241A, 7241B, 7241C and 7241D, concerning fuel rate adjustments and productivity of generating units.
 25. In re: Potomac Edison Company, before the Maryland Public Service Commission, Case No. 7528, concerning the method of calculating Potomac Edison's fuel rate.
 26. In re: Delmarva Power & Light Company, before the Maryland Public Service Commission, Docket No. 7570, concerning transmission loss allocation methodology.
 27. In re: Nebraska Public Power District, before the South Dakota Public Utilities Commission, Docket No. F-3371, concerning proposed construction and operation of the 500 kV MANDAN Transmission Facility.
 28. In re: Sierra Pacific Power Company, before the Public Service Commission of Nevada, Docket No. 81-660, concerning construction and transmission planning.
 29. In re: Kentucky Utilities Company, FERC Docket Nos. ER-81-341-000 and ER81-267-000, concerning construction planning and the market for short term power.
 30. In re: Kentucky Power Company et al., before the Kentucky Public Service Commission, Case No. 8566, concerning cogeneration and avoided costs.
 31. In re: Appalachian Power Company, before the West Virginia Public Service Commission, Case No. 82-162-42T, concerning the wholesale market and short-term power sales.
 32. In re: Central Maine Power Company, before the Maine Public Utility Commission, Docket No. 82-137, concerning the application of Central Maine Power Company to reorganize in the form of a holding company.
 33. In re: Houston Lighting & Power Company, before the Public Utility Commission of Texas, Docket No. 4712, concerning rates to be paid to cogenerators and small power producers.
 34. In re: Dow Chemical Company, before the Public Utility Commission of Texas, Docket Nos. 4802, 5050 and 5062, concerning rates for interruptible service.
 35. In re: Nevada Power Company, before the Nevada Public Service Commission, Docket No. 83-707, concerning the Reid Gardner No. 4 Participation Agreement.

36. Dow Chemical Company vs. Houston Lighting & Power Company, before the District Court of Brazoria County, Texas, 149th Judicial District, No. 79-F-2620, regarding the custom and usage of contract terms in the electric utility industry. Live direct testimony in a jury trial. No transcript available.
37. In re: The Montana Power Company and the Confederated Salish and Kootenai Tribes of the Flathead Reservation, Project Nos. 5-004 and 2776-000, concerning the Tribes' intention and ability to sell its output to one or more entities in the Western states, if obtaining the license to the Kerr Project.
38. In re: the Dow Chemical Company vs. Gulf States Utilities Company, before the Louisiana Public Service Commission, Docket No. U-16038, concerning cogeneration and small power production.
39. In re: Petition of the Dow Chemical Company, before the Public Utility Commission of Texas, Docket No. 5651, for an order compelling Houston Lighting & Power Company to comply with the Commission Order concerning cogeneration and small power production.
40. In re: Oklahoma Gas and Electric Company, before the Oklahoma Corporation Commission, Cause No. 29017, concerning priority for recognition of capacity costs to Qualifying Facilities.
41. In re: Kansas City Power & Light Company of Kansas City, Missouri, before the Missouri Public Service Commission, Case Nos. ER-85-128 and EO-85-185, regarding rate design and allocation of production-related costs for the Company's Wolf Creek Generating Station on behalf of the United States Department of Energy.
42. In re: Kansas City Power and Light Company, before the State Corporation Commission of the state of Kansas, Docket Nos. 142,099-U and 120,924-U, concerning operating problems caused by excess capacity, mitigation measures and regulatory requirements, on behalf of Johnson County Joint Intervenors.
43. In re: Duke Power Company, before the North Carolina Utilities Commission, Docket No. E-7, Sub 391, concerning the Company's use of an Extended Cold Shutdown program to mitigate its excess capacity situation resulting from the Catawba Units, on behalf of the Department of Justice for the State of North Carolina.
44. Sierra Pacific Power Company, before the Public Service Commission of the State of Nevada, Docket No. 85-430, on behalf of the State of Nevada Attorney General's Office of Advocate for Customers of Public Utilities, concerning the effects upon retail rates of placing Valmy Unit No. 2 in service.

45. United States of America Department of Energy, before the Bonneville Power Administration, on behalf of the City of Vernon, California, concerning the 1985 Proposed Firm Displacement Power Rate.
46. In re: City of Anaheim, et al., v. Southern California Edison, Docket No. 78-0810, on behalf of five partial requirements wholesale customers of Southern California Edison Company, making claims under Federal antitrust laws for access to the Pacific Northwest-Pacific Southwest Intertie.
47. In the Matter of the Application of Sierra Pacific Power Company for Approval of its 1986-2006 Electric Resource Plan, Docket No. 86-701, on behalf of the State of Nevada Attorney General's Office of Advocate for Customers of Public Utilities, concerning efforts of Sierra Pacific Power Company to develop a new interconnection (the SMUD Tie) with the Sacramento Municipal Utility District.
48. The Federal Executive Agencies, Complainant v. Public Service Company of Colorado, before the Public Utilities Commission of the State of Colorado, Case No. 6551, on behalf of the Federal Executive Agencies concerning the feasibility of wheeling federal preference power to the Government's facilities at Rocky Flats, the Lowry Air Force Base, the Rocky Flats Technical Center and the Denver Federal Center.
49. Commonwealth Edison Company, before the State of Illinois, Illinois Commerce Commission, Docket Nos. 87-0043, 87-0044 and 87-0057 Consolidated, on behalf of Intervenor, Citizen's Utility Board of Illinois, concerning Edison's proposal to form a generating subsidiary.
50. Nevada Power Company, before the Nevada Public Service Commission, Docket No. 87-750, concerning a 345 kV transmission line proposed to connect Nevada Power Company to Utah Power and Light Company.
51. Utah Power & Light Company, PacifiCorp, PC/UP&L Merging Corporation, FERC Docket No. EC88-2-000, establishing conditions for the proposed merger; also challenging PP&L's/UP&L's assertion that the claimed coordination benefits would not be attainable through power pooling or by contract.
52. Rosemount Cogeneration Joint Venture, Biosyn Chemical Corporation and Oxbow Power Corporation vs. Northern States Power Company, before the Minnesota Public Utilities Commission, Docket No. E-002/GG-88-491, on behalf of Petitioners, Rosemount Cogeneration Joint Venture, Biosyn Chemical Corporation and Oxbow Power Corporation, concerning a contract between Northern States Power and Biosyn Chemical Corporation covering the 50 MW output of a yet-to-be-constructed power plant based on the forecast costs of Sherburne County Unit #3 ("Sherco Unit 3").

53. In re: Potomac Electric Power Company, before the District of Columbia Public Service Commission, Case No. 869, on behalf of the District of Columbia Office of the People's Counsel, concerning the prudence of off-system purchases.
54. In re: Wisconsin Public Power Inc. System, Advance Plan 5, before the Public Service Commission of the state of Wisconsin, on behalf of the Wisconsin Public Power System, Inc., concerning transmission planning in the state of Wisconsin.
55. In re: Nevada Power Company, before the Public Service Commission of Nevada, Docket No. 88-701, on behalf of the Attorney General's Office of Advocate for Customers of Public Utilities, concerning NPC's 1988 Resource Plan.
56. In re: Commonwealth Edison Company, before the Illinois Commerce Commission, Docket Nos. 87-0427, 87-0169, 88-0189 and 88-0219, on behalf of the Citizens Utility Board, concerning rejection of an unfair, Staff-proposed rate order.
57. In re: Dow Chemical Company vs. Houston Lighting & Power Company, before the Texas Public Utilities Commission, Docket No. 8425, 8431, on behalf of The Dow Chemical Company, concerning application of Houston Lighting & Power Company for authority to change rates; Fuel Reconciliation, Revenue Requirements and Rate Design.
58. Dow Chemical Company vs. Houston Lighting & Power Company, before the Texas Public Utilities Commission, Docket No. 8555, on behalf of The Dow Chemical Company, concerning rate discrimination, cost to serve and class load characteristics.
59. In re: Sierra Pacific Power Company, before the Public Service Commission of Nevada, Docket No. 89-676, on behalf of the Attorney General's Office of Advocate for Customers of Public Utilities, concerning Sierra's system planning.
60. In re: Northern California Power Agency vs. Pacific Gas and Electric Company, before the Federal Energy Regulatory Commission, Docket No. EL89-4-000, on behalf of the Northern California Power Agency ("NCPA"), concerning the Interconnection Agreement between Pacific Gas & Electric Company and NCPA.
61. In re: M-S-R Public Power Agency vs. Tucson Electric Power Company, before the United States District Court of Arizona, No. CIV-86-521-TUC-ACM, on behalf of M-S-R, concerning TEP's breach of contract.
62. In re: Southern California Edison Company and San Diego Gas & Electric Company, before the Federal Energy Regulatory Commission, Docket No. EC89-5-000, on behalf of the City of Vernon, California concerning expected effects of the proposed merger on competition, system operation and transmission access.

63. In re: Farmers Electrical Cooperative Corporation and City Water & Light Plant of the City of Jonesboro, Arkansas, v. Arkansas Power & Light Company, No. LR-C-86-118. Presented deposition testimony on AP&L's liability and assisted in settlement negotiations of treble damage claims for transmission line foreclosure made by plaintiffs, City Water and Light Department of Jonesboro, Arkansas and the Farmers Electric Cooperative.
64. In re: Southern California Edison Company and San Diego Gas & Electric Company, before the California Public Utilities Commission, Docket No. 88-12-035, on behalf of the City of Vernon, California concerning expected effects of the proposed merger on competition, system operation and transmission access.
65. In re: Northeast Utilities Service Company and Public Service Company of New Hampshire, before the Federal Energy Regulatory Commission, Docket Nos. EC90-10-000, ER90-143-000, ER90-144-000, ER90-145-000 and EL90-9-000, on behalf of Massachusetts Municipal Wholesale Electric Company, concerning the effect of a proposed merger on competition and transmission access.
66. Report to the Public Utilities Board of Manitoba concerning 1990 Manitoba Hydro Capital Projects Review: Generation and Transmission Requirements. Whitfield Russell Associates was appointed to report to The Public Utilities Board on matters regarding the economic consequences to the domestic customers of the Manitoba Hydro capital program.
67. In re: Northeast Utilities Service Company, before the Federal Energy Regulatory Commission, Docket Nos. ER90-373-000, et al., on behalf of the Massachusetts Municipal Wholesale Electric Company, evaluating the Preferred Transmission Service Agreement between MMWEC and Northeast Utilities Service Company, for the transmission of MMWEC's power purchase from the New York Power Authority.
68. In re: New Hampshire Electric Cooperative Rate Plan Proposal, before the New Hampshire Public Utilities Commission, Docket No. DR90-078, on behalf of the New Hampshire Electric Cooperative, concerning contract valuation.
69. Tampa Electric Company v. Zeigler Coal Company. This was an arbitration held in August 1991, concerning provisions of a coal contract in which Mr. Russell offered testimony for Zeigler to the effect that Tampa Electric was not suffering a hardship by measures commonly used in the electric utility industry.
70. In re: The Long Range Forecast of Ohio Power Company, before the Ohio Public Utilities Commission, Docket No. 90-660-EL-FOR (Phase II). Mr. Russell presented and defended testimony on behalf of Ormet Aluminum Corporation concerning Ormet's right to allowances to emit sulfur dioxide from the Kammer Power Plant of Ohio Power Company under the Clean Air Act Amendments of 1990 and the propriety of Ohio Power's Compliance Plan.

71. In re: Application of Tex-La Electric Cooperative to Increase Rates. Mr. Russell presented testimony in 1991, demonstrating that Tex-La was prudent in selling its entitlement in a nuclear plant and in settling its 1988 claims against Texas Utilities concerning Texas Utilities' fraud and imprudence in the construction of the Comanche Peak Nuclear Plant.
72. In re: Southern California Edison Company, before the Federal Energy Regulatory Commission, Docket No. ER88-83, on behalf of the City of Vernon, California concerning expected effects of Edison's administration of its transmission network on competition, system operation and transmission access.
73. In the Matter of the Application of the Public Service Company of New Mexico for Approval to Construct, Own, Operate and Maintain the Ojo Line Extension and for Related Approvals before the New Mexico Public Service Commission, Case No. 2382, on behalf of the United States Department of Energy, concerning transmission line construction programs of the Public Service Company of New Mexico.
74. In re: Wisconsin Public Power Inc. System et al., Advance Plan 6, before the Public Service Commission of the state of Wisconsin, Docket No. 05-EP-6, concerning Eastern Wisconsin Utility Joint Transmission System and Interface Study.
75. In re: MidAtlantic Energy v. Monongahela Power Company and the Potomac Edison Company, before the Public Service Commission of West Virginia, Case No. 89-783-E-C, on behalf of MidAtlantic Energy, concerning need for capacity and the appropriate avoided cost.
76. In re: Northeast Utilities Service Company, before the Federal Energy Regulatory Commission, Docket No. EL91-36-000, on behalf of the Massachusetts Municipal Wholesale Electric Company evaluating the tie-line adjustment charge borne by MMWEC that arose under a Transmission Service Agreement between New England Power Company and Northeast Utilities.
77. In re: Application of Houston Lighting & Power Company for a Certificate of Convenience and Necessity for the DuPont Project, before the Public Utility Commission of Texas, Docket No. 11000, on behalf of Destec Energy, Inc.
78. In re: Investigation on the Commission's Own Motion into Barriers to Contracts Between Electric Utilities and Nonutility Cogenerators and Certain Related Policy Issues, before the Public Service Commission of the state of Wisconsin, Docket No. 05-EI-112, on behalf of JOINT PARTIES: DESTEC Energy, Inc., EnerTran Technology Company, LS Power Corporation, The AES Corporation, LG&E Development Corporation, National Independent Energy Producers, and Citizens' Utility Board, concerning appropriate QF contract provision.

79. In re: Application of Cap Rock Electric Cooperative, Inc. for a Certificate of Convenience and Necessity, before the Public Utility Commission of Texas, Docket No. 11248, on behalf of Cap Rock Electric Cooperative, Inc., concerning its proposed transmission system improvements.
80. In re: Application of Texas Utilities for Authority to Change Rates, before the Public Utility Commission of Texas, Docket No. 11735, on behalf of Cap Rock Electric Cooperative, Inc., concerning standby rates, wholesale rate contracts and terms and conditions of the Power Sales Agreement.
81. In re: Determination of Houston Lighting & Power Company's Standard Avoided Cost Calculation for the Purchase of Firm Energy and Capacity from Qualifying Facilities Pursuant to P.U.C. Subst. R. 23.66(H)(3), before the Public Utility Commission of Texas, Docket No. 10832, on behalf of Destec Energy, Inc.
82. In re: Complaint of Phibro Refining, Inc. v. HL&P, Docket No. 11989, before the Public Utility Commission of Texas, on behalf of Phibro Energy, USA, Inc., concerning electric service contracts and terms and conditions of HL&P's industrial rate schedule.
83. In re: Application of Texas Utilities Electric Company for Authority to Implement Economic Development Service, General Service Competitive Pricing, Wholesale Power Competitive Pricing, and Environmental Technology Service, Docket No. 13100, before the Public Utility Commission of Texas, on behalf of Rayburn Country Electric Cooperative, Inc., concerning TU Electric's so-called "competitive rates."
84. In re: Complaint of Kenneth D. Williams v. HL&P, Docket No. 12065, on behalf of Destec before the Public Utility Commission of Texas.
85. In re: Rebuttal testimony in a Complaint of Tex-La v. TUEC, Docket No. 12362, on behalf of Rayburn County Electric Coop. before the Public Utilities Commission of Texas.
86. In re: Application for Authorization and Approval of Merger Between Wisconsin Electric Power Company, Northern States Power Company (Minnesota), Northern States Power Company (Wisconsin), and Cenergy, Inc., in Docket No. EC-95-16-000, before the Federal Energy Regulatory Commission (on behalf of Certain Intervenors, including Madison Gas & Electric Company, Wisconsin Public Service Corporation, Minnesota Power & Light Company, Otter Tail Power Company and the Lincoln Electric System), in Docket Nos. 6630-UM-100 and 4220-UM-101, before the Wisconsin Public Service Commission and Docket No. 6-2500-10601-2 before the Minnesota Office of Administrative Hearings for the Minnesota Public Utilities Commission (both on behalf of Madison Gas & Electric, Wisconsin Industrial Energy Group, Wisconsin Federation of Cooperatives and the Citizen's

- Utility Board), concerning the effect upon transmission access of the merger of NSP and WEPCO into Primergy.
87. In re: Merger of The Washington Water Power Company and Sierra Pacific Power Company, Docket Nos. EC94-23-000 and ER95-808-000, before the Federal Energy Regulatory Commission, on behalf of Truckee Donner Public Utility District, concerning ancillary services and single system transmission rates.
 88. In re: Alberta Electric Utilities 1996 Tariff Application before the Alberta Energy And Utilities Board, on behalf of the Industrial Power Consumers Association of Alberta concerning calculation of charges for ancillary services.
 89. In re: Surrebuttal Testimony in Docket Nos. EC95-16-000, ER95-1357-000 and ER95-1358-000, on behalf of Madison Gas & Electric Company, Citizens Utility Board and Wisconsin Electric Cooperative Association.
 90. In re: City Public Service Board of San Antonio Filing in Compliance with Subst. Rule 23.67, Docket No. 15613, before the Public Utility Commission of Texas, on behalf of Certain Power Marketers and Independent Power Producers, Destec Power Services and Enron Power Marketing, concerning Ancillary Services under the state-wide rate in Texas.
 91. In re: City of Austin Filing in Compliance with Subst. Rule 23.67, Docket No. 15645, before the Public Utility Commission of Texas, on behalf of Certain Power Marketers and Independent Power Producers, Destec Power Services and Enron Power Marketing, concerning Ancillary Services under the state-wide rate in Texas.
 92. In re: Central Power and Light and West Texas Utilities Filing in Compliance with Subst. Rule 23.67, Docket No. 15643, before the Public Utility Commission of Texas, on behalf of Certain Power Marketers and Independent Power Producers, Destec Power Services and Enron Power Marketing, concerning Ancillary Services under the state-wide rate in Texas.
 93. In re: Texas Utilities Electric Company, Filing in Compliance with Subst. Rule 23.67, Docket No. 15638, before the Public Utility Commission of Texas, on behalf of Certain Power Marketers and Independent Power Producers, Destec Power Services and Enron Power Marketing, concerning Ancillary Services under the state-wide rate in Texas.
 94. In re: Docket No. 15840, Regional Transmission Proceeding to Establish Postage Stamp Rate and Statewide Load Flow Pursuant to P.U.C. Subst. Rule. 23.67 on behalf of Certain Power Marketers and Independent Power Producers, Destec Power Services and Enron Power Marketing, concerning Ancillary Services under the state-wide rate in Texas.

95. In re: Rebuttal Testimony on behalf of MG&E, WIEG, WFC, CUB in Docket Nos. 6630-UM-100 and 4220-UM-101 before the Public Services Commission of Wisconsin.
96. In re: Houston Lighting & Power Company Filing in Compliance with Subst. Rule 23.67, Docket No. 15639, before the Public Utility Commission of Texas, on behalf of Certain Power Marketers and Independent Power Producers, Destec Power Services and Enron Power Marketing, concerning Ancillary Services under the state-wide rate in Texas.
97. In re: IES Utilities, Inc., Interstate Power Company, Wisconsin Power & Light Company, South Beloit Water, Gas & Electric Company, Heartland Energy Services, and Industrial Energy Applications, Inc., Docket Nos. EC96-13-000, ER96-1236-000, and ER96-2560-000, before the Federal Energy Regulatory Commission, on behalf of Wisconsin Intervenors ("WI"). Mr. Russell simultaneously filed 2 sets of testimony; the first, sponsored by the intervenors listed above as well as by Wisconsin Public Service Corporation ("Pub Service"), and Dairyland Power Cooperative. ("Dairyland") analyzed engineering and operating problems created by the merger of WP&L, IPW and IES. The second set of testimony discusses how the IEC Independent System Operator ("ISO") fails in general to meet the rigorous and comprehensive ISO standards promulgated by the Wisconsin Public Service Commission (WPSC). Both sets of testimony (Engineering and ISO) were filed before the Federal Energy Commission.
98. In re: Joint Application of WPL Holdings, Inc. and Wisconsin Power & Light Company for all Requisite Approvals in Connection with a Series of Related Transactions by which Interstate Power Company Becomes a Subsidiary of WPL Holdings, Inc., IES Industries, Inc. is Merged into WPL Holdings, Inc. and is Renamed Interstate Power Corporation and for Certain Related Transactions and Matters, in Docket No. 6680-UM-100, before the Public Service Commission of Wisconsin.
99. In re: City of College Station, FERC Docket No. TX 96-2-000, concerning transmission rates.
100. In re: Application for Approval of Restructuring Plan Under Section 2806 of the Public Utility Code, in Docket No. R-00973981 on behalf of Mid-Atlantic Power Supply Association, before the Pennsylvania Public Utility Commission.
101. In re: Application for Approval of Restructuring Plan Under Section 2806 of the Public Utility Code, in Docket No. R-00974104 on behalf of Mid-Atlantic Power Supply Association, before the Pennsylvania Public Utility Commission.
102. In re: New England Power Company, FERC Docket No. OA96-74-000, concerning proposed formula rates for Tariffs No. 9 and 4, on behalf of the Massachusetts Municipals.

103. In re: Sierra Pacific Power Company before the Federal Energy Regulatory Commission in Docket Nos. ER97-3593-000, ER97-3779-000, ER97-4462-000 on behalf of Truckee Donner Public Utility District, addressing lack of comparable access to transmission systems.
104. In re: Application for Approval of Restructuring Plan Under Section 2806 of the Public Utility Code, on behalf of Newmont Gold Company and Barrick Goldstrike Mines, in Docket Nos. 97-11018 and 97-11028, before the Public Service Commission of Nevada.
105. In re: Southern California Edison Company before the Federal Energy Regulatory Commission in Docket No. ER97-2355-000 on behalf of Department of Water Resources of the State of California, regarding lower pricing for off-peak transmission services.
106. In re: Response to Procedural Order Number Three Load Pockets, on behalf of Newmont Gold Company and Barrick Goldstrike Mines, Docket Number 97-8001, before the Public Utilities Commission of Nevada.
107. In re: Supplemental Testimony in an Application for Approval of Restructuring Plan Under Section 2806 of the Public Utility Code, on behalf of Newmont Gold Company and Barrick Goldstrike Mines, Docket Numbers 97-11018 and 97-11028, before the Public Utilities Commission of Nevada.
108. In re: Southern California Edison Company, on behalf of The Department of Water Resources of The State of California, Docket No. ER97-2355, before FERC in reference to Transmission Revenue Balancing Account Adjustment ("TRBAA").
109. In re: Ormet Primary Aluminum Corporation, on behalf of Ormet Primary Aluminum Corporation, Arbitration Number 55-199-0051-94, before the American Arbitration Association, concerning the relationship between AEP and other power systems within NERC and ECAR.
110. In re: Rebuttal Testimony in response to Mr., Walter R. Kelley and Mr. Thomas Kennedy, on behalf of Ormet Primary Aluminum Corporation, Arbitration Number 55-199-0051-94, before the American Arbitration Association.
111. In re: Application No. RE95081 – TransAlta Utilities Corp., on behalf of Albchem Industries Ltd., CXY Chemicals and Dow Chemicals Canada Ltd., before the Alberta Energy & Utilities Board addressing ACD's interest in providing interruptible service.
112. In re: Tri-State Generation and Transmission Assoc., Inc., in Arbitration No. 77 Y 181 0023097 before the American Arbitration Association.

113. In re: Joint Application for Approval of Merger, Docket No. 98-7023 on behalf of The Staff of the Public Utilities Commission, before the Public Utilities Commission of Nevada.
114. In re: Independent System Administrator, Docket No. 97-8001 on behalf of The Staff of the Public Utilities Commission, before the Public Utilities Commission of Nevada.
115. In re: Petition for Order Concerning Delineation of Transmission and Local Distribution Facilities, Docket No. 98-0894 on behalf of The City of Chicago, before the Illinois Commission in reference to re-functionalization.
116. In re: Consolidated Edison Company, Docket No. EL99-58-000 on behalf of The Village of Freeport, New York, before FERC in reference to remedies for the breach of contract to provide firm service on a non-discriminatory basis.
117. In re: Wisconsin Public Power, Inc. Docket No. 05-EI-119 on behalf of Wisconsin Transmission Customer Group ("WTCG"), before the Public Service Commission of Wisconsin to address the concerns of municipally-owned utilities within Wisconsin.
118. In re: Joint Application of Utilicorp United Inc. & St. Joseph Light & Power Co., Docket No. EM-2000-292 on behalf of Springfield (MO) City Utilities before the PSC of the State of Missouri to address why the merger between the two is detrimental to the public interest.
119. In re: Utilicorp United Inc, and Empire District Electric Co. Docket No. EM-2000-369, before the Public Service Commission of the State of Missouri to explain why the merger between the two is detrimental to the public interest.
120. In re: Arrowhead - Westin Transmission Line Project, Docket No. 05-CE-113, before the Public Service Commission of the State of Wisconsin to provide support for the transmission project as proposed by WPSC and Minnesota Power.
121. In re: Kansas Municipal Energy Agency ("KMEA"), Docket No. ER00-2644-000, before the Federal Energy Regulatory Commission ("FERC") to review, assess and comment on the actions taken by the Southwest Power Pool in connection with two transmission service requests made by the Kansas Municipal Energy Agency aggregating 39 MW of contract demand.
122. In re: Arrowhead - Weston 345 kV Transmission Line, Rebuttal testimony in Docket No. 05-CE-113, before the Public Service Commission of the State of Wisconsin to address matters set forth in the direct testimony of Dr. Richard A. Rosen on behalf of Save Our Unique Lands ("SOUL"), Mr. David Schoengold on behalf of Wisconsin's Environmental Decade, and Mr. George R. Edgar on behalf of the Citizens' Utility Board ("CUB").

123. In re: Ethyl Corporation verses Gulf States Utilities Company, Civil Docket No. M, live direct testimony in a dispute over direct assignment of substation facilities
124. In re: Joint Application of Entergy Louisiana, Inc. and Entergy Gulf States, Inc., Docket No. U-25533, before the Louisiana Public Service Commission for authorization to participate in contracts for the purchase of capacity and electric power for the Summer of 2001.
125. In re: Petitioners' Joint Proposal for Merger & Rate Plan, testimony in Case No. 01-M-0075, before the New York State Public Service Commission on behalf of Alliance for Municipal Power for the purpose of (1) the inappropriateness of Rule 52 in the post merger competitive energy markets; (2) to have stranded transmission cost and distribution costs expunged; and (3) to show how merged Companies exacerbates the incentive to abuse Rule 52 against newly formed municipal utilities.
126. In re: Northeast Utilities Service Company Transmission Line Project, direct testimony in Docket No, 217 before the Connecticut Siting Council of the State of Connecticut on behalf of the Attorney General, State of Connecticut for the purpose of (1) Whether there is a need for the 345 f transmission line from Plum-tree to Norwalk; (2) whether the proposed transmission system design is the best option based on current transmission design and (3) whether any approval of the project by the Siting Council should be conditioned upon CL&P and NU's agreement.
127. In re: Alliance Companies, et al., Affidavit in Docket Nos. RM01-12-000, RT01-87-000 and RT01-88-000, before the Federal Energy Regulatory Commission on behalf of the Ormet Primary Aluminum Corporation, for the purpose of providing relevant engineering fundamentals related to the proper design of methodology for quantifying transmission losses and for allocating such losses to the customers of regional transmission organizations.
128. In re Cannon Power Corporation:, Affidavit in Docket No. ER02-2189-000, before the Federal Energy Regulatory Commission on behalf of Whitewater Hill Wind Partners, LLC developing a 66 MW wind power project to be interconnected to Southern California Edison Company.
129. In re Cannon Power Corporation:, Affidavit in Docket No. ER02-1764, before the Federal Energy Regulatory Commission on behalf of Cabazon Wind Partners, LLC developing a 66 MW wind power project to be interconnected to Southern California Edison Company.
130. In re: Response to Pacificorp's Motion: Affidavit in Response to Pacificorp's Daubert Motion Regarding Richard Slaughter and Supplemental Expert Report on behalf of Snake River Valley Electric Association.
131. In re: Pacific Gas & Electric Company : Direct Testimony in Docket No. ER01-2998, before the Federal Energy Regulatory Commission on behalf of Northern

- California Power Agency to explain what level of firmness is required of transmission service under the Stanislaus Commitments.
132. In re: American Electric Power Corp.: Affidavit in Docket No. ER03-242, before the Federal Energy Regulatory Commission on behalf of Ormet Primary Aluminum Corp. to respond to AEP's proposed electric transmission rates to be included in the OATT of the PJM Interconnection.
 133. In re: Application of the CT Light & Power Company: Supplemental Direct Testimony in Docket No. 217, before the State of CT Siting Council on behalf of The Attorney General, State of CT as a follow-up to the direct testimony filed on March 12, 2002 and to address various studies and reports that have been filed since that original testimony.
 134. In re: Pacific Gas & Electric: Rebuttal Testimony before the Federal Energy Regulatory Commission in Docket No. ER01-2998 on behalf of Northern California Power Agency ("NCPA") to respond to testimony from witnesses Judi K. Mosley, Kevin J. Dasso, Dr. Roy Shanker and Linda Patterson.
 135. In re: Order Instituting Investigation of Assembly Bill 970: Direct testimony before the Public Utilities Commission of California on behalf of Oak Creek Energy Systems. The purpose of the testimony is to provide comments on and recommendations with respect to the Tehachapi Transmission Conceptual Facility Study ("Tehachapi CFS" or "TCFS"), performed by Southern California Edison ("SCE" or "Edison").
 136. In re: Order Instituting Investigation of Assembly Bill 970: Rebuttal testimony before the Public Utilities Commission of California on behalf of Oak Creek Energy Systems. The purpose of the testimony is to rebut the testimony of Mr. Jorge Chacon and Mr. Melvin Stark on behalf of Southern California Edison Company, taking into account the testimony of Mr. Robert Sparks filed on behalf of the California Independent System Operator ("CA ISO" or "ISO").
 137. In re: California ISO Amendment No. 27: Direct testimony before the Federal Energy Regulatory Commission in Docket No. ER00-2019 on behalf of State Water Contractors and the Metropolitan Water District of Southern California. The purpose of the testimony is to provide a critical analysis of ISO's proposed Transmission Access Charge.
 138. In re: Ameren Services Company, et al.: Affidavit in Docket No. EL03-212-000, before the Federal Energy Regulatory Commission on behalf of Ormet Primary Aluminum Corp. to respond to AEP's Submission in Response to the Commission's Section 206 Investigation.
 139. In re: Pacific Gas and Electric Company SCS Tariff: Direct Testimony in Phase I before the Federal Energy Regulatory Commission in Docket Nos. ER00-565-000, ER00-565-003, and ER00-565-007 on behalf of the Northern California Power

- Agency. The purpose of the testimony is to explain the nature of the costs for which Pacific Gas and Electric Company seeks recovery through its Scheduling Coordinator Service Tariff.
140. In re: California ISO Amendment No. 27: Surrebuttal Testimony before the Federal Energy Regulatory Commission in Docket Nos. ER00-2019-006, ER01-819-002, and ER03-608-000 on behalf of State Water Contractors and the Metropolitan Water District of Southern California. The purpose of the testimony is to respond to the Prepared Rebuttal Testimony of Mr. Johannes P. Pfeifenberger on behalf of the ISO.
 141. In re: GFA No. 111- Agreement Between Wisconsin Public Service Corporation and the City of Marshfield, Wisconsin Concerning Siting, Construction, Ownership and Operation of Combustion Turbine Generation and Purchase Power Agreement and GRA No. 374 Arpin Substation Benefit Area Joint Operating Planning and Cost Sharing Agreement Dated June 1, 1988 Between Northern States Power-Minnesota, Northern States Power-Wisconsin, the City of Marshfield, Wisconsin Power and Light Company, Wisconsin Public Service Corporation, and Wisconsin Electric Power Company: Prepared Testimony before the Federal Energy Regulatory Commission in Docket Nos. ER04-691-000 and EL04-104-000 on behalf of Marshfield Electric & Water District. The purpose of the testimony is to review Marshfield Electric & Water District's transmission arrangements in order to respond to the Commission's May 26, 2004 Order in this proceeding.
 142. In re: Pacific Gas and Electric Company SCS Tariff: Direct Testimony in Phase II before the Federal Energy Regulatory Commission in Docket Nos. ER00-565-000 and ER00-565-003 on behalf of the Northern California Power Agency ("NCPA"). The purpose of the testimony is to discuss PG&E's propriety in passing through ISO Charge Type costs as Scheduling Coordinator Service charges to NCPA under the terms of the NCPA-PG&E Interconnection Agreement.
 143. In re: Southern California Edison IFA Agreement: Prepared Direct Testimony before the Federal Energy Regulatory Commission in Docket No. ER02-2189-003 on behalf of Whitewater Wind Hill Partners. The purpose of the testimony is to provide support for Whitewater's request that the Commission revise the Interconnection Facilities Agreement ("IFA") between Whitewater and Southern California Edison Company ("SCE or Edison").
 144. In re: Cabazon Wind Partners, LLC Distribution System Facilities: Affidavit in Docket No. EL04-137 before the Federal Energy Regulatory Commission on behalf of Cabazon Wind Partners, LLC ("Cabazon"). This Affidavit provides support for Cabazon's request that Southern California Edison Company ("SCE") grant Cabazon reimbursement, in the form of a transmission credit or otherwise,

- for the cost of certain upgrades Cabazon has borne to interconnect its generation to SCE.
145. In re: Southern California Edison IFA Agreement: Cross Answering Testimony before the Federal Energy Regulatory Commission in Docket No. ER02-2189-003 on behalf of Whitewater Hill Wind Partners. The purpose of the testimony is to respond to testimony filed on October 28, 2004, in this proceeding by Commission Staff witnesses, Ms. Tania Martinez Navedo and Mr. Edward W. Mills. As discussed in my prior testimony, the issue in this case involve the designation of disputed upgrades contained in the IFA between Whitewater and Southern California Edison Company.
 146. In re: Pacific Gas and Electric: Direct and Answering Testimony before the Federal Energy Regulatory Commission in Docket No. ER01-1639-006 on behalf of Northern California Power Agency. The purpose of this testimony is to explain 1) PG&E's failure to justify the pass-through of Reliability Service charges to Western and PG&E's additional failure to "unbundle the rates in its ETCs and provide a full cost of service analysis supporting the unbundled rates," 2) PG&E's attempt to pass-through Scheduling Coordinator Service Charges to Western, and 3) The inappropriateness of PG&E's imposition of interest charges.
 147. In re: Petition for a Declaratory Order or Advisory Opinion as to the Applicability of the Commission's Decision in Docket No. 03-10003: Affidavit in Docket No. 04-10023, before the Public Utilities Commission of Nevada on behalf of Ridgewood Renewable Power, LLC ("Ridgewood") with respect to a landfill methane gas powered electric generating project located at the Olinda/Alpha landfill in Orange County, California.
 148. In re: Cabazon Wind Partners, LLC Request for Reimbursement of Interconnection Costs from Southern California Edison: Prepared Direct Testimony before the Federal Energy Regulatory Commission in Docket No. EL04-137, on behalf of Cabazon Wind Partners, LLC. The purpose of this testimony is to provide support for Cabazon's request that Southern California Edison ("SCE") grant Cabazon reimbursement, in the form of transmission credit or otherwise, for the cost of certain upgrades Cabazon has borne to interconnect generation to SCE.
 149. In re: Pacific Gas and Electric Company SCS Tariff: Phase II Answering Testimony to PG&E's Supplemental Testimony; Cross Answering Testimony; and Errata of Whitfield A. Russell before the Federal Energy Regulatory Commission in Docket No. ER00-565-000, et al and ER04-1233-000, on behalf of Northern California Power Agency. The purpose of this testimony is to respond to Mr. Bray's contention that the SCS Tariff is a formula rate, to respond to aspects of the Prepared Direct and Answering Testimony of Ms. Linda M. Patterson on behalf of the Federal Energy Regulatory Commission Staff and to provide updates to my previously filed testimony.

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA**

Order Instituting Investigation into)
Implementation of Assembly Bill 970) I.00-11-001
Regarding the Identification of Electric)
Transmission and Distribution)
Constraints, Actions to Resolve Those)
Constraints, and Related Matters Affecting)
the Reliability of Electric Supply.)

REPORT OF THE TEHACHAPI COLLABORATIVE STUDY GROUP

MICHAEL D. MACKNESS

Attorney for
SOUTHERN CALIFORNIA EDISON COMPANY

2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770
Telephone: (626) 302-2863
Facsimile: (626) 302-2610
E-mail: mike.mackness@sce.com

Dated: March 16, 2005

Development Plan for the
Phased Expansion of

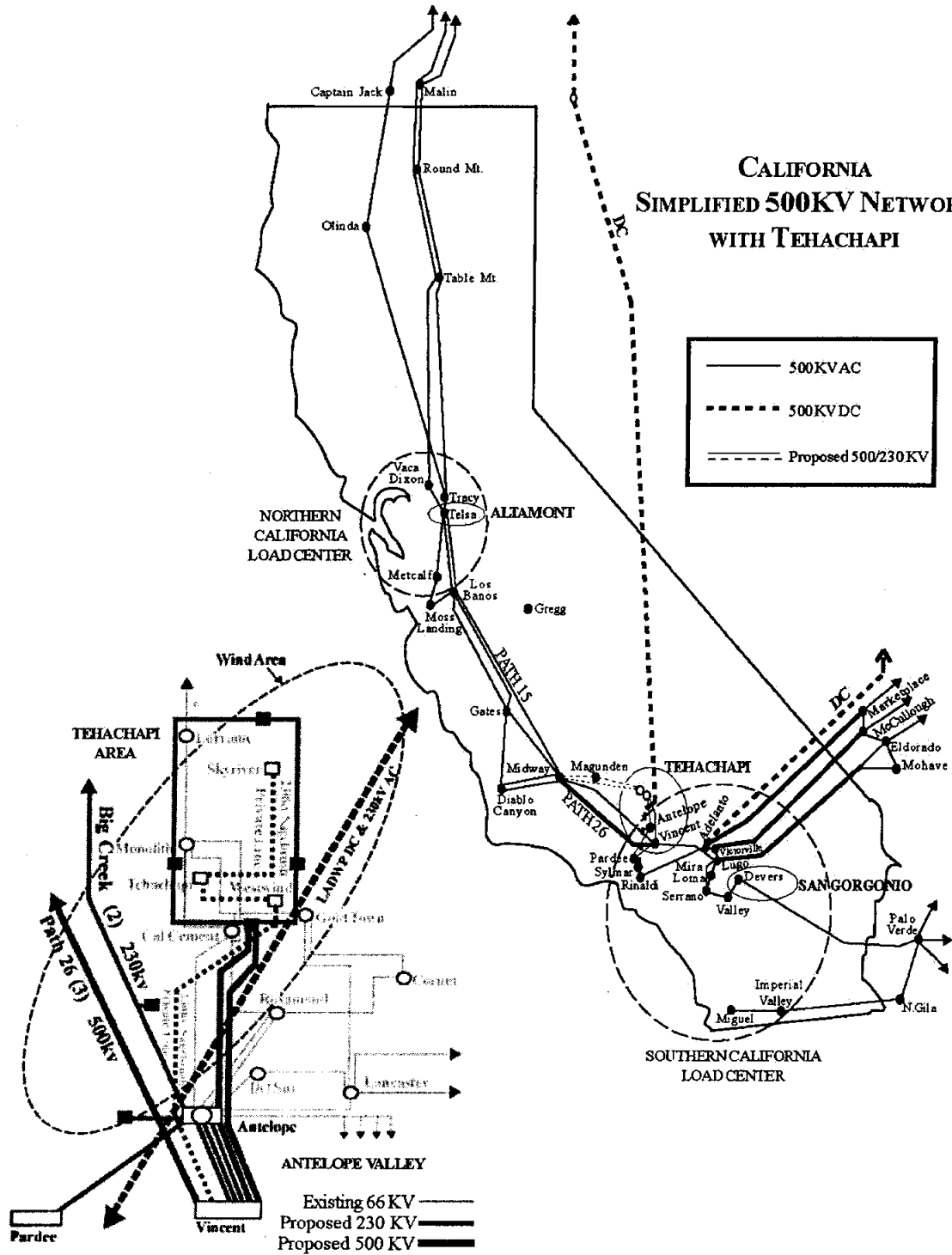
Transmission
in the
Tehachapi Wind Resource Area

Report
of the
**Tehachapi Collaborative Study
Group**

California Public Utilities Commission

OII 00-11-001
March 16, 2005

Fig. 2.4 Schematic of Tehachapi Connections to 500 kV System



Application No.: I.00-11-001

Exhibit No.: _____

Witnesses: Jorge Chacon
Melvin Stark



SOUTHERN CALIFORNIA
EDISON

An *EDISON INTERNATIONAL* Company

(U 338-E)

***Southern California Edison Company's
Opening Testimony on Tehachapi
Transmission Project (Phase 6)***

Before the

Public Utilities Commission of the State of California

Rosemead, California

April 2003

**Southern California Edison Company's Opening Testimony on
Tehachapi Transmission Project (Phase 6)**

Table of Contents

<u>Section</u>	<u>Page</u>	<u>Witness</u>
I. Ratemaking and Contribution to the Renewable Portfolio Standard	1	M. Stark
II. Engineering, Cost, and Network Benefits	9	J. Chacon

Appendix

Attachment A: Schematic Illustrating the Facilities in and Around the Tehachapi Area

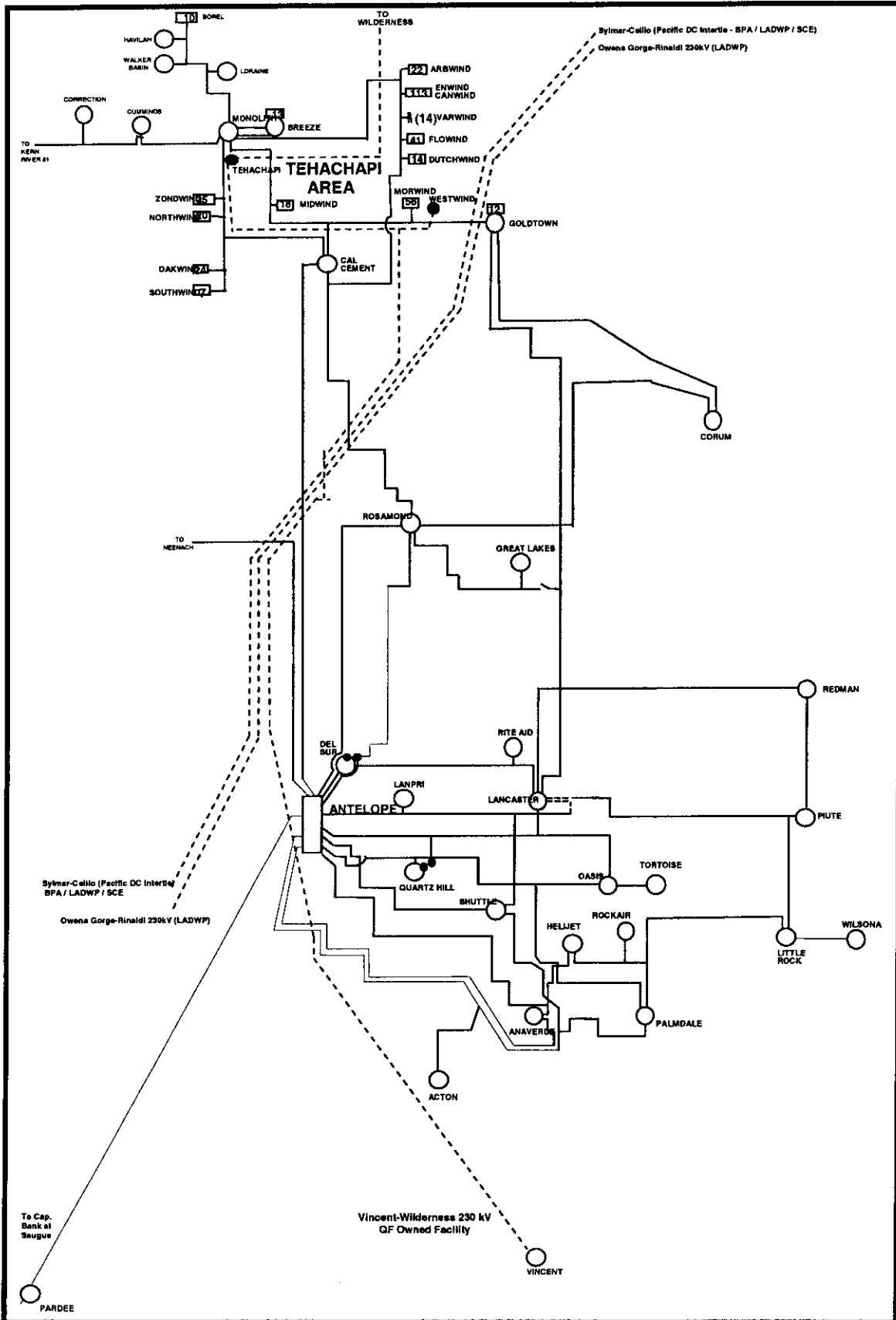
Attachment B: Report on Phase 1 of Conceptual Study, Issued on March 14, 2002 ("Phase 1 Report")

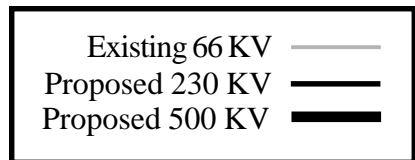
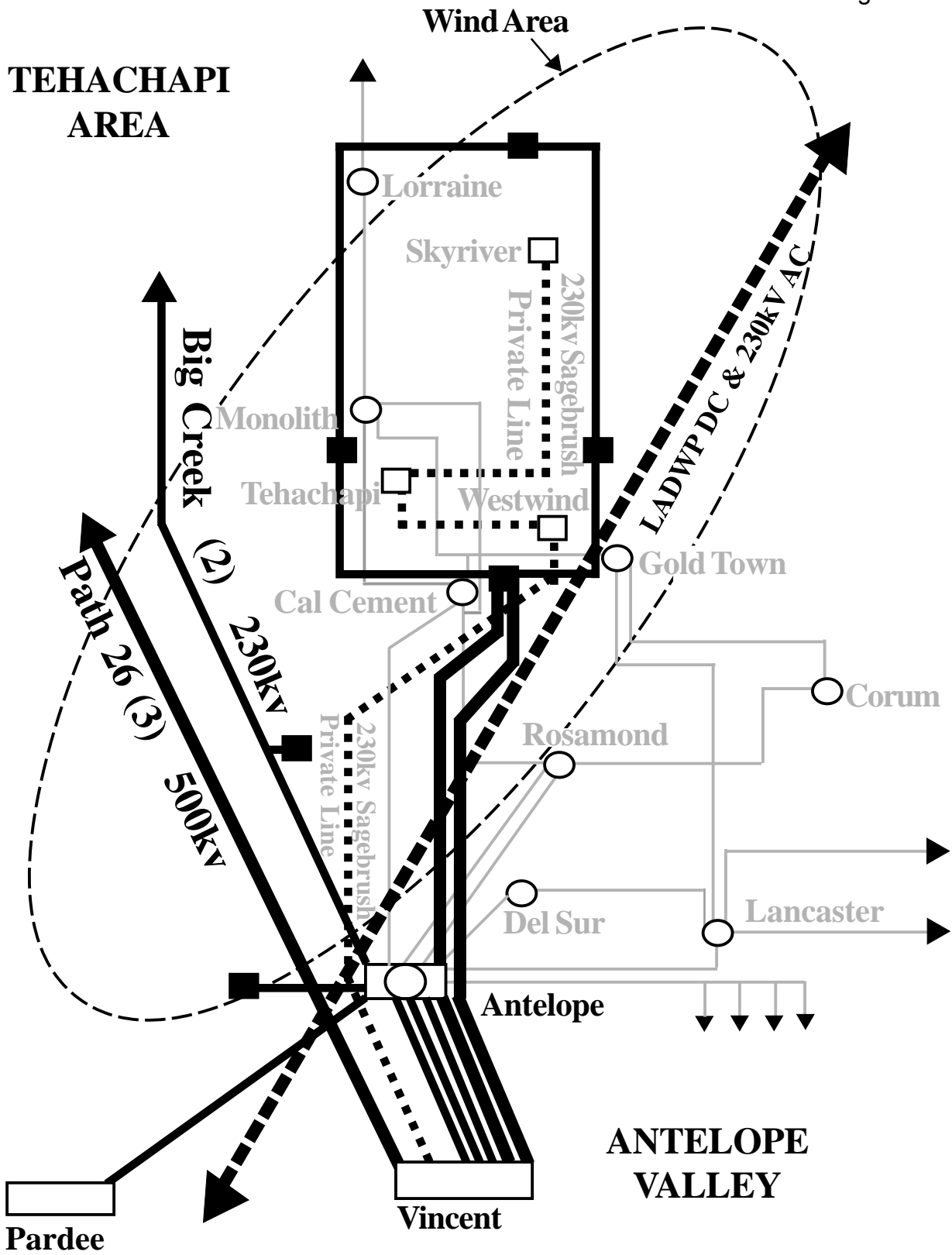
Attachment C: Report on Phase 2 of Conceptual Study, Issued on January 15, 2003 ("Phase 2 Report")

Attachment A

Schematic Illustrating the Facilities in and Around the Tehachapi Area

Existing Tehachapi Area Transmission Facilities
 SCE Antelope-Bailey 66kV Subtransmission System & Other Lines







SOUTHERN CALIFORNIA
EDISON

An EDISON INTERNATIONAL Company

Michael D. Mackness
Attorney

FILED
OFFICE OF THE SECRETARY

Attachment E

May 3, 1996

96 MAY -3 PM 1:44 Page 1 of 11

FEDERAL ENERGY
REGULATORY
COMMISSION

The Honorable Lois D. Cashell
Secretary, Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

RIMS Electric

Re: Pacific Gas & Electric Company
San Diego Gas & Electric Company
Southern California Edison Company
Docket No. EL96-48-000

Dear Ms. Cashell:

One of the supporting documents included in the filing made by Pacific Gas and Electric Company, San Diego Gas & Electric Company and Southern California Edison Company in the above-captioned docket on April 29, 1996, the Affidavit of Armando J. Perez, inadvertently included an incorrect set of maps. Enclosed herewith is a corrected version of the affidavit. The attached affidavit also includes revisions to paragraphs 8 and 9 to clarify the treatment of certain Edison facilities.

Also enclosed is a corrected copy of the Affidavit of Russell G. Worden that corrects a typographical error in paragraph 6.

I regret any inconvenience which this may have caused. Copies of the attached documents are being provided to the Public Utilities Commission of the State of California. Copies of the corrected pages are being made available to other parties previously provided copies of the filing.

Respectfully submitted,

Michael D. Mackness

Enclosures

MDM:amd:LW961230.007

9605070345

FERC DOCKETED
MAY 3 1996

ORIGINAL

REVISED

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Attachment E
Page 2 of 11

**PACIFIC GAS AND ELECTRIC COMPANY)
SAN DIEGO GAS & ELECTRIC COMPANY)
SOUTHERN CALIFORNIA EDISON COMPANY)**

DOCKET NO. EL96-48-000

**FILED SECRETARY
OFFICE OF THE SECRETARY
96 MAY -3 PM 1:41
FEDERAL ENERGY
REGULATORY
COMMISSION**

**PETITION FOR DECLARATORY ORDER OF
PACIFIC GAS AND ELECTRIC COMPANY,
SAN DIEGO GAS & ELECTRIC COMPANY, AND
SOUTHERN CALIFORNIA EDISON COMPANY**

APPENDIX 3

**AFFIDAVIT OF MR. ARMANDO J. PEREZ
FOR THE SOUTHERN CALIFORNIA EDISON COMPANY**

May 3, 1996

Attachment 3: One line diagrams showing Edison's transmission and subtransmission facilities with facilities color-coded as follows:

Legend (58 pages):

red:	transmission system
black:	distribution system
green:	generation facilities
blue:	non-Edison facilities

Attachment E
 Page 4 of 11
 WEPEX ACCOUNTING
 ANTELOPE-BAILEY 66 KV
 SUBSTATION SYSTEM
 Page 1 of 2

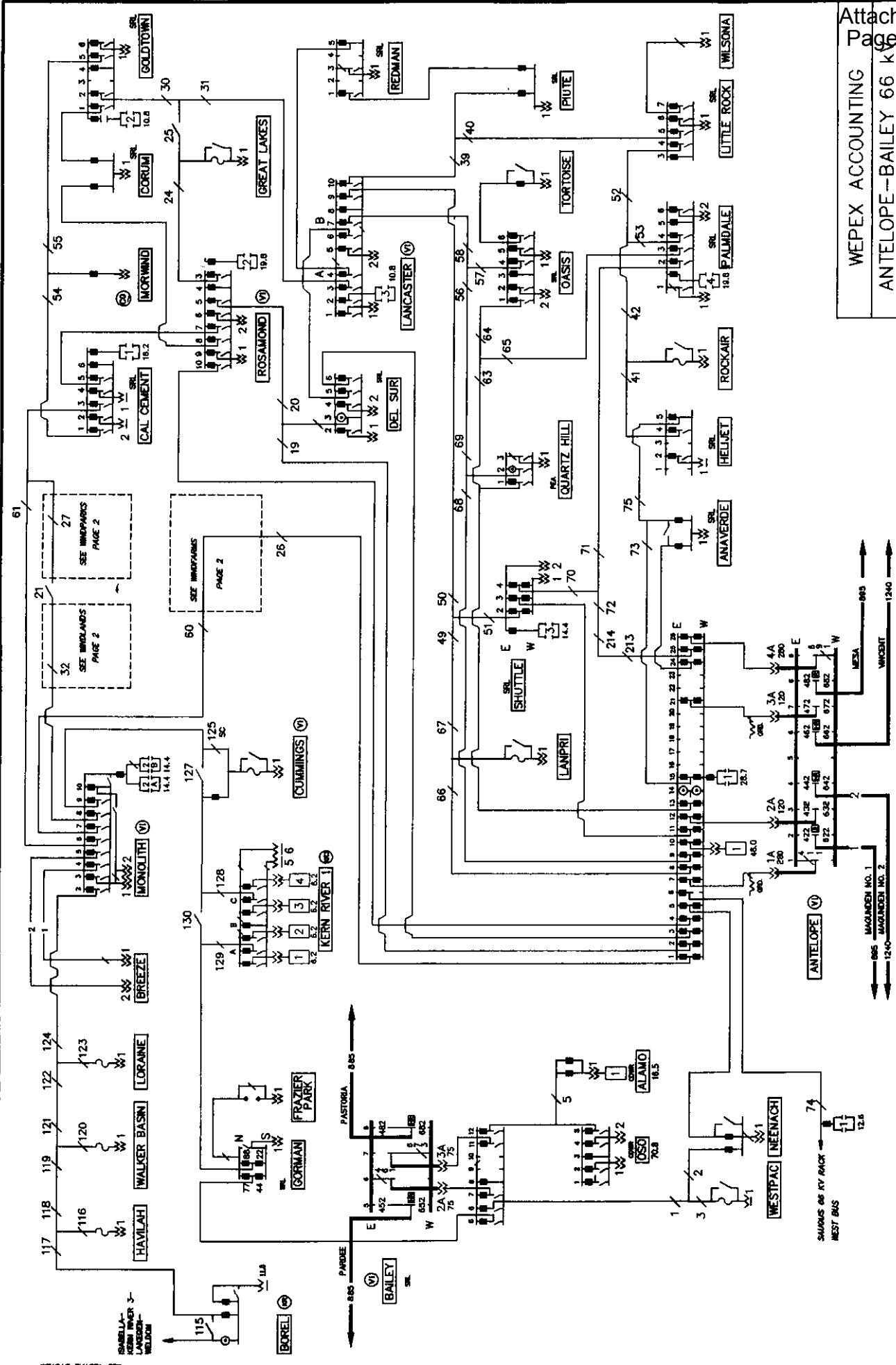


POWER GRID E0&M

3-2 (revised)

DATE	DWG. NO.
4/22/96	W5052M

REF. NO. 5052-M



SYMBOLS: REFER TO INDEX
 ⊕ C-B. NORMALLY OPEN
 — PILE SWITCH NORMALLY OPEN

**Attachment 5: List of transmission lines, including non-radial subtransmission lines
(shown in red on Attachment 3)**

ATTACHMENT 5
Transmission Lines in WEPEX, Including Non-Radial Subtransmission Lines
(designated as RED on one-line diagrams)

<u>Line Name</u>	<u>Voltage (kV)</u>
CELILO-SYLMAR (SCE PORTION)	1000
DEVERS-PALO VERDE	500
DEVERS-VALLEY	500
ELDORADO-LUGO	500
ELDORADO-MOENKOPI (SCE PORTION)	500
ELDORADO-MOHAVE	500
LAUGHLIN-MOHAVE (SCE PORTION)	500
LUGO-MIRA LOMA NO.2	500
LUGO-MIRA LOMA NO.3	500
LUGO-MOHAVE	500
LUGO-SERRANO	500
LUGO-VICTORVILLE (SCE PORTION)	500
LUGO-VINCENT NO.1	500
LUGO-VINCENT NO.2	500
MIDWAY-VINCENT NO.1 (SCE PORTION)	500
MIDWAY-VINCENT NO.2 (SCE PORTION)	500
MIDWAY-VINCENT NO.2 (SCE PORTION)	500
MIRA LOMA-SERRANO	500
SERRANO-VALLEY	500
ALAMITOS-BARRE NO.1	220
ALAMITOS-BARRE NO.2	220
ALAMITOS-CENTER	220
ALAMITOS-LIGHTHIPE	220
ANTELOPE-MAGUNDEN NO.1	220
ANTELOPE-MAGUNDEN NO.2	220
ANTELOPE-MESA	220
ANTELOPE-VINCENT	220
BAILEY-PARDEE	220
BAILEY-PASTORIA	220
BARRE-ELLIS	220
BARRE-LEWIS	220
BARRE-VILLA PARK	220
BIG CREEK 1-BIG CREEK 2	220
BIG CREEK 1-RECTOR	220
BIG CREEK 2-BIG CREEK 3	220
BIG CREEK 2-BIG CREEK 8	220
BIG CREEK 3-BIG CREEK 4	220
BIG CREEK 3-BIG CREEK 8	220
BIG CREEK 3-RECTOR	220
BIG CREEK 3-SPRINGVILLE	220
BIG CREEK 4-SPRINGVILLE	220
CENTER-DEL AMO	220
CENTER-MESA	220
CENTER-OLINDA	220

ATTACHMENT 5
Transmission Lines in WEPEX, Including Non-Radial Subtransmission Lines
(designated as RED on one-line diagrams)

<u>Line Name</u>	<u>Voltage (kV)</u>
CHEVMAIN-EL NIDO	220
CHEVMAIN-EL SEGUNDO	220
CHINO-MIRA LOMA NO.1	220
CHINO-MIRA LOMA NO.2	220
CHINO-MIRA LOMA NO.3	220
CHINO-SAN ONOFRE	220
CHINO-SERRANO	220
CIMA-ELDORADO-PISGAH NO.1	220
CIMA-ELDORADO-PISGAH NO.2	220
COACHELLA VALLEY-DEVERS (SCE PORTION)	220
COOL WATER-KRAMER NO.1	220
COOL WATER-KRAMER NO.2	220
DEL AMO-ELLIS	220
DEL AMO-HINSON	220
DEL AMO-LAGUNA BELL	220
DEVERS-MIRAGE	220
DEVERS-SAN BERNARDINO NO.1	220
DEVERS-SAN BERNARDINO NO.2	220
DEVERS-VISTA NO.1	220
DEVERS-VISTA NO.2	220
EAGLE ROCK-MESA	220
EAGLE ROCK-PARDEE	220
EL NIDO-EL SEGUNDO	220
EL NIDO-LA CIENEGA	220
EL NIDO-LA FRESA NO.3	220
EL NIDO-LA FRESA NO.4	220
ELDORADO-MEAD NO.1	220
ELDORADO-MEAD NO.2	220
ELLIS-HUNTINGTON BEACH NO.1	220
ELLIS-HUNTINGTON BEACH NO.2	220
ELLIS-HUNTINGTON BEACH NO.3	220
ELLIS-HUNTINGTON BEACH NO.4	220
ELLIS-JOHANNA	220
ELLIS-SANTIAGO	220
ETIWANDA-MIRA LOMA	220
ETIWANDA-PADUA	220
ETIWANDA-SAN BERNARDINO	220
ETIWANDA-VISTA	220
GOLETA-SANTA CLARA NO.1	220
GOLETA-SANTA CLARA NO.2	220
GOODRICH-GOULD	220
GOODRICH-LAGUNA BELL	220
HARBORGEN-HINSON	220
HARBORGEN-LONG BEACH	220

ATTACHMENT 5
Transmission Lines in WEPEX, Including Non-Radial Subtransmission Lines
(designated as RED on one-line diagrams)

<u>Line Name</u>	<u>Voltage (kV)</u>
HINSON-LA FRESA	220
HINSON-LIGHTHIPE	220
HOOVER-MEAD NO.2	220
HOOVER-MEAD NO.3	220
JOHANNA-SANTIAGO	220
JULIAN HINDS-MIRAGE	220
KRAMER-LUGO NO.1	220
KRAMER-LUGO NO.2	220
LA CIENEGA-LA FRESA	220
LA FRESA-LAGUNA BELL	220
LA FRESA-REDONDO 2 NO.1	220
LA FRESA-REDONDO 2 NO.2	220
LAGUNA BELL-RIO HONDO	220
LAGUNA BELL-VELASCO (SCE PORTION)	220
LEWIS-SERRANO NO.1	220
LEWIS-SERRANO NO.2	220
LEWIS-VILLA PARK	220
LIGHTHIPE-LONG BEACH	220
LIGHTHIPE-MESA	220
LIGHTHIPE-REDONDO 2	220
LUGO-PISGAH NO.1	220
LUGO-PISGAH NO.2	220
LUGO-VICTOR NO.1	220
LUGO-VICTOR NO.2	220
MAGUNDEN-PASTORIA NO.1	220
MAGUNDEN-PASTORIA NO.2	220
MAGUNDEN-PASTORIA NO.3	220
MAGUNDEN-SPRINGVILLE NO. 1	220
MAGUNDEN-SPRINGVILLE NO. 2	220
MAGUNDEN-VESTAL NO.1	220
MAGUNDEN-VESTAL NO.2	220
MANDALAY-SANTA CLARA NO.1	220
MANDALAY-SANTA CLARA NO.2	220
MESA-REDONDO 2	220
MESA-RIO HONDO	220
MESA-VINCENT	220
MESA-WALNUT	220
MIRA LOMA-OLINDA	220
MIRA LOMA-PADUA	220
MIRA LOMA-VISTA NO.1	220
MIRA LOMA-VISTA NO.2	220
MIRA LOMA-WALNUT	220
MOORPARK-ORMOND BEACH NO.1	220
MOORPARK-ORMOND BEACH NO.2	220

ATTACHMENT 5
Transmission Lines in WEPEX, Including Non-Radial Subtransmission Lines
(designated as RED on one-line diagrams)

<u>Line Name</u>	<u>Voltage (kV)</u>
MOORPARK-ORMOND BEACH NO.3	220
MOORPARK-ORMOND BEACH NO.4	220
MOORPARK-PARDEE NO.1	220
MOORPARK-PARDEE NO.2	220
MOORPARK-PARDEE NO.3	220
MOORPARK-SANTA CLARA NO.1	220
MOORPARK-SANTA CLARA NO.2	220
OLINDA-WALNUT	220
PARDEE-PASTORIA	220
PARDEE-PASTORIA-WARNE	220
PARDEE-SANTA CLARA	220
PARDEE-VINCENT	220
RECTOR-VESTAL NO.1	220
RECTOR-VESTAL NO.2	220
RIO HONDO-VINCENT NO.1	220
RIO HONDO-VINCENT NO.2	220
SAN BERNARDINO-VISTA	220
SAN ONOFRE-SANTIAGO NO.1	220
SAN ONOFRE-SANTIAGO NO.2	220
SAN ONOFRE-SERRANO	220
SANTA CLARA-VINCENT	220
SERRANO-VILLA PARK NO.1	220
SERRANO-VILLA PARK NO.2	220
EAGLE MOUNTAIN-BLYTHE	161
CONCHO-INDIAN WELLS	115
CONCHO-INDIAN WELLS-SANTA ROSA	115
CONTROL-HAIWEE-INYOKERN NO.1	115
CONTROL-HAIWEE-INYOKERN NO.2	115
COOL WATER-SEGS 2-TORTILLA	115
DEVERS-BANNING-GARNET-WINDPARK-ZANJA	115
DEVERS-BUCKWIND-FARRELL	115
DEVERS-CAPWIND-CONCHO-MIRAGE	115
DEVERS-EISENHOWER	115
DEVERS-GARNET	115
EISENHOWER-FARRELL	115
EISENHOWER-THORNHILL	115
ELDORADO-BAKER-BIOGEN-COOL WATER-DUNN SIDING-MT. PASS	115
GARNET-SANTA ROSA	115
KRAMER-COOL WATER	115
KRAMER-INYOKERN-RANDBURG NO.1	115
KRAMER-INYOKERN-RANDBURG NO.3	115
KRAMER-ROADWAY-VICTOR	115
KRAMER-TORTILLA	115
KRAMER-VICTOR	115

ATTACHMENT 5
Transmission Lines in WEPEX, Including Non-Radial Subtransmission Lines
(designated as RED on one-line diagrams)

<u>Line Name</u>	<u>Voltage (kV)</u>
MIRAGE-TAMARISK	115
SANTA ROSA-TAMARISK	115
TAMARISK-THORNHILL	115
ANTELOPE-ACTON-PALMDALE-SHUTTLE	66
ANTELOPE-ANAVERDE	66
ANTELOPE-ANAVERDE-HELIJET	66
ANTELOPE-DEL SUR	66
ANTELOPE-DEL SUR-ROSAMOND	66
ANTELOPE-LANCASTER-LANPRI-SHUTTLE	66
ANTELOPE-LANCASTER-OASIS-QUARTZ HILL	66
ANTELOPE-MONOLITH-WINDFARMS	66
ANTELOPE-NEENACH	66
ANTELOPE-OASIS-PALMDALE-QUARTZ HILL	66
ANTELOPE-ROSAMOND	66
ANTELOPE-SHUTTLE	66
BAILEY-GORMAN	66
BAILEY-NEENACH-WESTPAC	66
CAL CEMENT-GOLDTOWN-MORWIND	66
CAL CEMENT-MONOLITH-WINDPARKS	66
CAL CEMENT-ROSAMOND	66
CORUM-GOLDTOWN	66
CORUM-ROSAMOND	66
CUMMINGS-KERN RIVER 1	66
CUMMINGS-MONOLITH	66
DEL SUR-LANCASTER	66
GOLDTOWN-LANCASTER	66
GORMAN-KERN RIVER 1	66
HELIJET-LITTLE ROCK-PALMDALE-ROCKAIR	66
LANCASTER-LITTLE ROCK-PIUTE	66
LANCASTER-REDMAN	66
PIUTE-REDMAN	66
CONTROL-SILVER PEAK "A" (SCE PORTION)	55
CONTROL-SILVER PEAK "C" (SCE PORTION)	55

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF
CALIFORNIA**

Order Instituting Investigation into implementation of Investigation 00-11-001
Assembly Bill 970 regarding the identification of
electric transmission and distribution constraints, actions (Filed November 2, 2000)
to resolve those constraints, and related matters affecting
the reliability of electric supply.

DIRECT TESTIMONY OF

WHITFIELD A. RUSSELL

and

HAROLD M. ROMANOWITZ

On Behalf Of

Oak Creek Energy Systems, Inc.

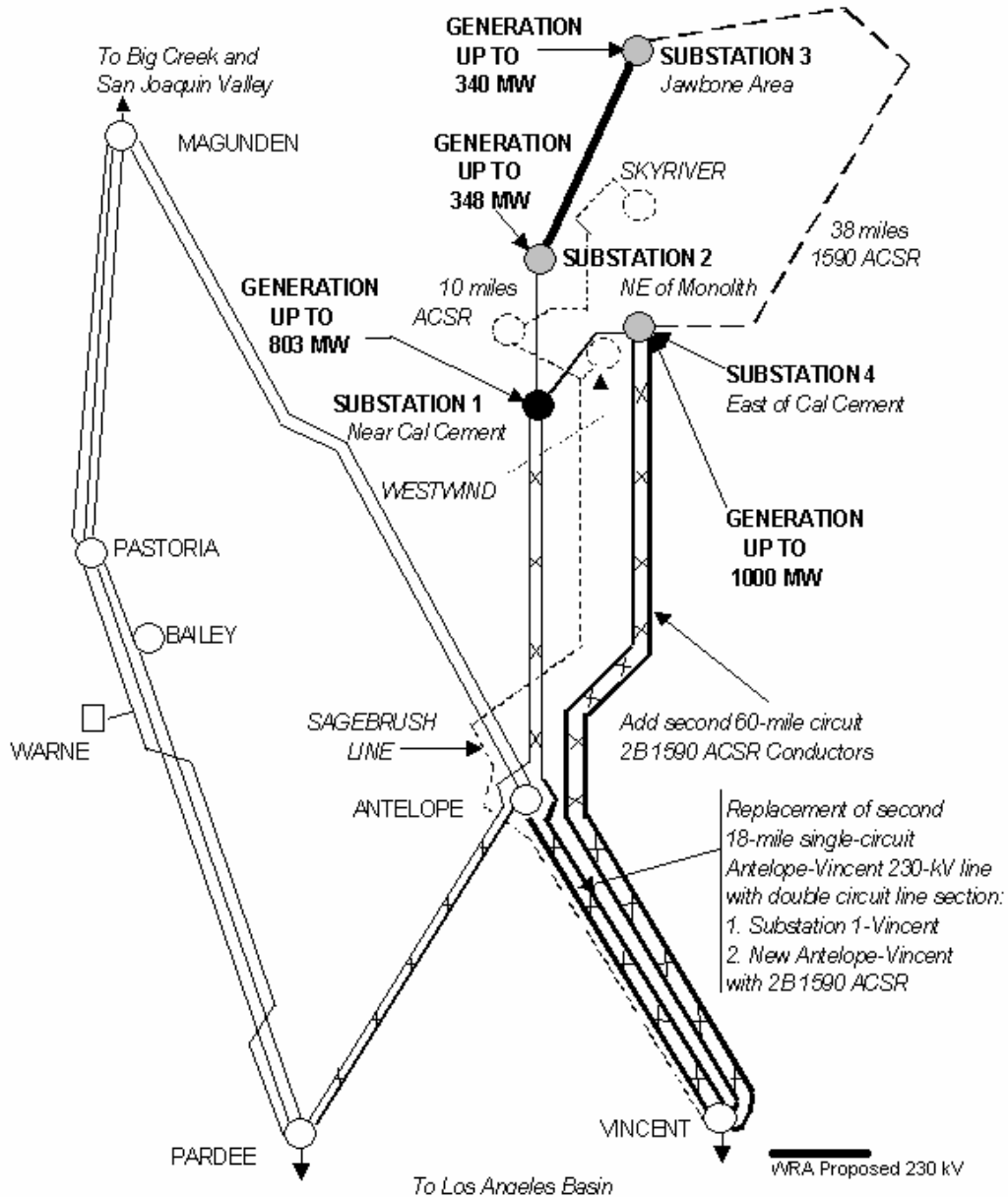
And

The Kern Wind Energy Association

April 22, 2003

TEHACHAPI WIND GENERATION ADDITION STAGE C TOTAL NEW GENERATION: MORE THAN 1,400 MW

SCE 230-KV SYSTEM NORTH OF PARDEE AND VINCENT SUBSTATIONS



**STAGING OF NEW SUBSTATIONS 2, 3, & 4, AND LINES 1-2, 1-4, & 4-3
IS DETERMINED BY STAGING OF WIND GENERATION FOR EACH AREA**