

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

In the Matter of the Application of San Diego)	
Gas & Electric Company (U 902 E) for a)	
Certificate of Public Convenience and)	Application 06-08-010
Necessity for the Sunrise Powerlink)	(Filed August 4, 2006)
Transmission Project.)	
_____)	

**PHASE 2 REPLY BRIEF OF THE CALIFORNIA
INDEPENDENT SYSTEM OPERATOR CORPORATION**

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ACRONYMS FOR SUNRISE ALTERNATIVES

ASGA:	In-Area All-Source Generation Alternative
ENRA:	Enhanced Northern Route Alternative
ESNRA:	Environmentally Superior Northern Route Alternative
ESSRA:	Environmentally Superior Southern Alternative
LEAPS:	Lake Elsinore Advanced Pumped Storage project
MSRA:	Modified Southern Route Alternative
NPA:	Aspen's No Project Alternative (DEIR/EIS)
RGA:	In-Area Renewable Generation Alternative
UNPA:	UCAN No Project Alternative
USRA:	UCAN Southern Route Alternative
TE/VS:	Talega-Escondido/Valley-Serrano transmission project

SUMMARY OF RECOMMENDATIONS

The California Public Utilities Commission (“Commission”) should grant San Diego Gas & Electric Company (“SDG&E”) a Certificate of Public Convenience and Necessity for either the Sunrise Powerlink Transmission Project (“Sunrise”) or SDG&E’s Enhanced Northern Route Alternative (“ENRA”) based on the following considerations:

- SDG&E is facing an impending resource deficiency and long-term reliability needs.
- Individually, Sunrise and the ENRA will increase SDG&E’s import capability into its service area from 2850 MW to at least 4000 MW, thus enabling SDG&E to meet its resource deficiency and reliability needs.
- A conservative estimate of the net economic benefits of Sunrise and the ENRA are \$145 million and \$143 million per year (levelized) respectively and the net economic benefits for each could exceed \$300 million per year.
- The California Independent System Operator Corporation (“CAISO”) evaluated over 60 proposed alternatives to Sunrise and ran more than 80 models analyzing the reliability and economic impacts of these alternatives. Based on the CAISO’s analysis, Sunrise and the ENRA provide superior long-term benefits relative to other alternatives evaluated in this proceeding, including various no project alternatives.
- Sunrise and the ENRA facilitate SDG&E compliance with California’s renewables portfolio standard requirements by providing access to renewable resources expected to be developed in the Salton Sea and other areas in the Imperial Valley.
- Sunrise and the ENRA provide options for future expansion of import capability and strategic interconnections between SDG&E and Southern California Edison.
- Sunrise and the ENRA provide much needed long-term improvement to California’s aging transmission infrastructure.
- Sunrise and the ENRA will facilitate the replacement of old and inefficient power plants currently needed to ensure reliability in SDG&E’s service area, many of which rely on once-through-cooling.
- Sunrise and the ENRA provide insurance against unexpected load growth and/or extreme weather conditions, such as the July 2006 heat storm experienced in Southern California.

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**PHASE 2 REPLY BRIEF OF THE CALIFORNIA
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Pursuant to the December 11, 2007 ruling of Administrative Law Judge Weissman setting the schedule for Phase 2, the California Independent System Operator Corporation (“CAISO”) submits its Phase 2 reply brief in support of California Public Utilities Commission (“Commission”) approval of a Certificate of Public Convenience and Necessity (“CPCN”) for either the Sunrise Powerlink Transmission Project (“Sunrise”) or the Enhanced Northern Route Alternative (“ENRA”).

I. INTRODUCTION¹

As discussed in the CAISO’s Phase 2 Opening Brief, the record in this proceeding demonstrates that San Diego Gas & Electric Company (“SDG&E”) is facing an impending resource deficiency and long-term reliability needs in its service area, and that Sunrise and the ENRA are the superior options for meeting these needs. In their respective Phase 2 opening briefs, the Utility Consumers’ Action Network (“UCAN”), Division of Ratepayer Advocates (“DRA”), The Nevada Hydro Company (“TNHC”), and the South Bay Replacement Project, LLC (“SBRP”) challenge these conclusions.² In addition, while supporting a new transmission

¹ Headings match those in the Phase 2 joint outline, except that headings for sections that the CAISO is not addressing in its Phase 2 Reply Brief have been omitted.

² In its Phase 2 Reply Brief, the CAISO does not address all issues raised by other parties in their respective opening briefs. Rather, the CAISO’s Phase 2 Reply Brief focuses on issues related to (1) the need for Sunrise or the ENRA; and (2) the ability of alternatives to either Sunrise or the ENRA to meet the three primary project objectives.

line between the Imperial Valley (“IV”) and San Diego, the Imperial Irrigation District (“IID”) opposes the proposed routes for Sunrise and the ENRA in a favor of the DEIR’S so-called Environmentally Superior Southern Route Alternative (“ESSRA”). The Commission should reject the recommendations of these parties.

Over the course of this proceeding, the CAISO has evaluated the various arguments and positions offered by UCAN, DRA, THNC, SBRP and IID for why the Commission should not approve Sunrise (or the ENRA) as proposed by SDG&E, and has shown each and every one of them to be without merit. Specifically, the alternatives proposed by these parties will not meet the three Primary Project Objectives identified in the DEIR/EIS,³ nor provide SDG&E with an expansion option that could be used to significantly expand the connection between the SDG&E and Southern California Edison (“SCE”) systems in the future. As discussed in the CAISO’s Phase 2 Opening Brief, connecting the SDG&E and SCE systems with a high capacity 500 kV line will provide SDG&E with access to additional resources, help meet future reliability needs, and create a more robust transmission network in Southern California. Thus, the expansion option provides significant long-term value that should be considered by the Commission in making its decision in this proceeding.

The record demonstrates that Sunrise and the ENRA are the best options for meeting SDG&E’s long-term reliability needs. Both of these options produce significant net economic benefits, facilitate the delivery of renewable energy to SDG&E from the Imperial Valley, and provide SDG&E with additional long-term value through the “expandability” option. As discussed below, in the CAISO’s Phase 2 Opening Brief, and in the CAISO’s Phase 1 briefs, no

(“Primary Project Objectives”) identified in the draft environmental impact report/environmental impact statement (“DEIR/EIS”). The fact that the CAISO does not address a particular issue in its Phase 2 Reply Brief should not be taken to mean that the CAISO supports a party’s position on that particular issue.

³ The three primary project objectives are: (1) maintaining reliability; (2) reducing energy costs; and accommodating the delivery of renewable energy from geothermal and solar resources located in the Imperial

party has identified an alternative that offers SDG&E and its ratepayers anywhere near the scope and level of benefits provided by either Sunrise or the ENRA. For these and other reasons discussed by the CAISO in its previously filed briefs, the CAISO supports Commission approval for either Sunrise or the ENRA, and further urges the Commission to move quickly to ensure that this much needed new infrastructure is in-service as soon as possible.

B. Summary of Phase 2 Evidence

1. UCAN

Much of UCAN's 200+ page brief is a rehash of its arguments from Phase 1. To the extent that UCAN does respond to issues raised by the CAISO in Phase 2, the CAISO's position has been misinterpreted or misunderstood, apparently leading to UCAN's assertion that "the ISO also engages in selective assessments of alternatives."⁴ After weeding through UCAN's hyperbole and examining the substance of its position, it is clear that the alternatives proposed by UCAN raise reliability concerns and do not resolve concerns that the CAISO has repeatedly raised throughout this proceeding.

2. DRA

DRA asserts that neither Sunrise, the ENRA, nor any other transmission line connecting the Imperial Valley to the San Diego area (referred to by DRA as an "IV-SD transmission line") would provide significant local reliability benefits to SDG&E and its customers.⁵ DRA's position is based, in large part, on the notion that an IV-SD transmission line will not reduce the San Diego LCR by 1000 MW in light of a newly created Greater Imperial Valley – San Diego ("Greater IV-SD") local area.⁶

Valley and wind and other resources located in San Diego County. CAISO Ex. I-8 at 2; *see also* CAISO Phase 2 Opening Brief at 2-3.

⁴ UCAN Phase 2 opening brief at 33.

⁵ DRA Phase 2 Opening Brief at 16.

⁶ DRA Phase 2 Opening Brief at 17.

In addition, while DRA notes that it is possible that Sunrise may produce net economic benefits, DRA asserts that it is more likely that a combination of new gas turbines (“GTs”) and combined cycle gas turbines (“CCGTs”) would produce superior benefits to any IV-SD transmission line evaluated in this proceeding.⁷ With respect to the CAISO’s economic analysis in particular (which shows both Sunrise and the ENRA would produce significant net economic benefits), DRA claims that the CAISO overstates renewable portfolio standard (“RPS”) compliance benefits and understates the cost of reliability must-run (“RMR”) generation.

Based on its analysis, DRA recommends that the Commission issue an “interim” decision rejecting a new IV-SD transmission line, and instead require SDG&E to secure new in-basin generation pursuant to Decision 07-12-052.⁸ In effect, DRA supports some form of the In-Area All-Source Generation Alternative (“ASGA”) which, as discussed in the CAISO’s Phase 2 Opening Brief, will unlikely provide the same level of reliability benefits as sunrise or the ENRA.

3. TNHC

In its Phase 2 testimony, the CAISO demonstrated that neither the Talega-Escondido/Valley-Serrano transmission line (“TE/VS”) nor TE/VS in combination with the Lake Elsinore Advanced Pumped Storage (“LEAPS”) project provides access to renewable generation in the Imperial Valley (whether directly or indirectly) nor reduces the San Diego area locational capacity requirement (“LCR”) by the same 1000 MW as Sunrise or the ENRA.⁹ TNHC challenges the CAISO’s analysis, claiming that the CAISO (1) incorrectly applies more stringent grid planning criteria than is required by the Western Electric Coordinating Council (“WECC”) and North America Electric Reliability Council (“NERC”) in determining that TE/VS provides

⁷ DRA Phase 2 Opening Brief at 7-11.

⁸ DRA Phase 2 Opening Brief at 1-2.

⁹ CAISO Ex. I-8 at 14, 20.

only 625 MW reduction in the San Diego LCR;¹⁰ and (2) erroneously determined that the San Diego area LCR reduction provided by TE/VIS is offset by an equal increase in the Los Angeles (“LA”) basin LCR.¹¹ As discussed in detail below, TNHC’s position evidences a fundamental lack of understanding of the CAISO’s LCR criteria and how the LCRs for the San Diego area and LA basin interact.

4. SBRP

While purportedly taking a position of “neutrality” with respect to the approval of Sunrise, SBRP suggests that in-area generation - specifically, the replacement of the existing South Bay Power Plant - is a viable option for meeting San Diego area reliability needs. Notwithstanding the statements in SBRP’s Phase 2 Opening Brief, the *record* clearly demonstrates that a replacement for the existing South Bay Power Plant is not being actively developed.

5. IID

Although IID generally supports a new transmission line between the Imperial Valley and San Diego, it opposes the ENRA and SDG&E’s proposed route for Sunrise largely environmental reasons and the possibility that a northern route could strand certain IID facilities.¹² IID also suggests that upgrades to the IID system will enable SDG&E to access renewable generation in the Imperial Valley without Sunrise (or the ENRA) via IID’s proposed Coachella Valley- Devers II (“CV-Devers II”) project.¹³

The CAISO disputes the notion that access to renewable generation in the Imperial Valley can be provided through the transmission system upgrades identified by IID. For instance, these upgrades will not resolve the 1150 MW dispatch limit currently applicable to

¹⁰ TNHC Ex. N-42 at 2-3.

¹¹ TNHC Ex. N-43 at 2.

¹² See List of Recommendations, IID Phase 2 Opening Brief, 29-30.

generation connected to the IV substation or the IV-Miguel portion of SWPL.¹⁴ Thus, without Sunrise, the ENRA, or an equivalent transmission line, generation connected to the IV substation or the IV-Miguel portion of SWPL is limited by an outage of the IV-Miguel portion of SWPL.

Moreover, it is unlikely that the CV-Devers II project, in conjunction with TE/VS or TE/VS + LEAPS, will provide direct access to renewable generation in Imperial Valley. Similar to other IID transmission upgrades, CV-Devers II will not resolve the 1150 MW dispatch limit, and without the completion of the Palo Verde-Devers 2 project, Imperial Valley generation would be constrained. This will occur because CV-Devers II would reinforce the transmission system between IID and Devers, but not other known constraints west of Devers.¹⁵

In addition, TE/VS, in conjunction with GreenPath North (“GPN”), cannot be used to deliver renewable generation in the IID interconnection queue to San Diego. This is the case because GPN will not at relieve the 1150 dispatch limit nor mitigate flows on the Comision Federal de Electricidad (“CFE”) system which trigger the cross-tripping scheme discussed in the CAISO’s Phase 2 Opening Brief.¹⁶

It should also be noted that the CV-Devers II project is a proposed IID connection to the proposed GPN project.¹⁷ To the extent that the GPN project is not built, IID acknowledges that it would re-evaluate the project.¹⁸ Thus, given the limited value of TE/VS, TE/VS + LEAPS, and the IID upgrades in providing access to Imperial Valley renewables, the Commission should reject the arguments of IID.

¹³ See discussion of updates on IID’s Transmission Expansion Plan, IID Phase 2 Opening Brief at 17-27; see also 6.

¹⁴ CAISO Ex. I-9 at 13.

¹⁵ CAISO Ex. I-9 at 14.

¹⁶ CAISO Ex. I-9 at 15.

¹⁷ IID/Montano Tr. at 3455.

¹⁸ IID/Montano Tr. at 3456.

III. THE PROPOSED PROJECT, ALTERNATIVES IN THE DEIR AND ROUTE ALTERNATIVES PROPOSED BY PARTIES

A. The Proposed Project

4. Effect on System Reliability.

a. DRA incorrectly concludes that Sunrise will not reduce the San Diego area LCR by 1000 MW

DRA asserts that Sunrise will not reduce the San Diego LCR by 1000 MW and thus not provide the level of reliability benefits shown by the CAISO. Specifically, DRA claims that the CAISO's reliability analysis is inconsistent with LCR studies the CAISO performed for 2006 and 2007.¹⁹ According to DRA, the 2006 and 2007 LCR studies show that a 1000 MW reduction in the San Diego area LCR resulting from Sunrise would be offset by the creation of the Greater IV-SD local area with "an LCR need exactly equal to the San Diego area's *pre-Sunrise* need."²⁰ In other words, Sunrise would not result in a net LCR reduction if the Greater IV-SD local area is considered.

The CAISO has expected the creation of a Greater IV-SD local area since at least October 2006²¹ and views such an outcome as a positive development.²² Specifically, the creation of a Greater IV-SD local area would be a positive development because it would allow renewable generation in the Imperial Valley to satisfy both RPS and LCR (*i.e.*, Resource Adequacy) requirements. Indeed, DRA itself acknowledges that generation capacity in the Imperial Valley could meet "the new Greater IV-SD need . . . at no additional expected cost to SDG&E customers."²³

It is undisputed that SDG&E and the rest of California needs to procure additional renewable resources to meet its RPS obligations and that the San Diego area LCR is currently

¹⁹ DRA Phase 2 Opening Brief at 17.

²⁰ DRA Phase 2 Opening Brief at 17 (emphasis in original).

²¹ CAISO/Sparks Tr. at 5379-5380.

²² CAISO Ex. I-9 at 17.

being met by old, inefficient fossil-fueled generation²⁴ that DRA, itself, expects will retire over the next decade.²⁵ Thus, by connecting the Imperial Valley to the San Diego area, Sunrise will enable the same renewable resources to contribute both to RPS and Resource Adequacy compliance obligations.

The CAISO's Phase 1 testimony conclusively demonstrates that Sunrise will reduce the San Diego area LCR by 1000 MW.²⁶ The analysis underlying this testimony was performed after the 2006 LCR study referred to by DRA was issued and thus necessarily considered the impact, if any, that the creation of a Greater IV-SD local area would have on the ability of Sunrise to reduce the San Diego area LCR. Accordingly, DRA's assertion that Sunrise will not reduce the San Diego LCR by 1000 MW is not supported by the record and is without merit.

b. Potential delays in the development of renewable generation will not materially affect the ability of Sunrise to reduce the Greater IV-SD LCR over the long-term

DRA correctly points out that San Diego area LCR benefits attributable to Sunrise are dependent on the development of renewable generation in the Imperial Valley area. DRA posits, however, that Imperial Valley renewable generation will not be timely developed and, as a result, Sunrise will not reduce the Greater IV-SD LCR to the extent the CAISO has determined.²⁷

The CAISO acknowledges that forecasting future events is not an exact science. Specifically, the CAISO agrees that there is uncertainty as to the timing of new renewable generation in the Imperial Valley. However, a significant contributor to this uncertainty relates to the lack of transmission infrastructure out of the Imperial Valley.²⁸ Once this "barrier" is

²³ DRA Phase 2 Opening Brief at 18.

²⁴ CAISO Ex. I-9 at 17.

²⁵ DRA Ex. D-66 at 50.

²⁶ CAISO Ex. I-2 at 73.

²⁷ DRA Phase 2 Opening Brief at 17-18.

²⁸ CAISO Ex. I-9 at 17.

overcome – *which either Sunrise or the ENRA would accomplish* - the CAISO expects that the pace of renewable generation development in the Imperial Valley will quickly increase.²⁹

Moreover, as DRA admits, the Imperial Valley has “a large renewable energy potential”³⁰ Thus, it is simply unrealistic to assume for transmission planning purposes that significant amounts of renewable generation will not be developed in the Imperial Valley over the 58 year expected life of Sunrise or the ENRA. Furthermore, the potential delay in renewable generation being constructed in the Imperial Valley in and of itself does not change the CAISO’s analysis. On the contrary, the CAISO’s analysis demonstrates that even if less than half the renewable generation the CAISO assumes will be on-line in 2012 is actually built by that date (500 MW as compared to 1080 MW), the benefits associated with Sunrise would not be dramatically affected.³¹ Thus, the record shows that potential delays in the development of renewable generation located in the Imperial Valley will not materially effect the ability of Sunrise to reduce LCR over the long-term.

5. Effect on “ability to deliver renewable energy to SDG&E customers.”

UCAN suggests that the ability of Sunrise³² to deliver renewable energy to SDG&E customers is somehow tied to the development of the Stirling Energy Systems (“SES”) 900 MW solar project (the “Stirling Project”).³³ UCAN’s position is based on the assumption that Stirling represents the *only* renewable development in the Imperial Valley:

The Commission must find that the SES project is not viable in any near-term time frame. . . . Thus, the need for [Sunrise] (or anything else) to meet the DEIR’s “Basic Project Objective”

²⁹ CAISO Ex. I-9 at 17.

³⁰ DRA/Suurkask Tr. at 5592, 5595.

³¹ CAISO Ex. I-13 at 19. The CAISO’s analysis assumes that from 2012 to 2015, the total installed capacity of Imperial Valley renewable generation will increase to 1080 MW.

³² UCAN addresses the effect on “ability to deliver renewable energy to SDG&E customers” within the context of the ENRA. However, it is the CAISO’s understanding that UCAN treats Sunrise and the ENRA as functionally equivalent. See UCAN Phase 2 Opening Brief at 66.

³³ UCAN Phase 2 Opening Brief at 68-69.

number three [facilitating the delivery of renewable generation located in the Imperial Valley] is diminished *if not eliminated*.³⁴

The mere suggestion that the Stirling Project represents the bulk of renewable generation potential in the Imperial Valley and is the sole driver of renewable benefits attributable to Sunrise is clearly not supported by the record. As discussed above, the Imperial Valley has significant renewable energy potential. Thus, it is unreasonable to assume that large amounts of renewable generation will not be developed in the area over the life of Sunrise. Indeed, the record demonstrates that there is approximately *6000 MW* of renewable generation projects in the CAISO queue proposed to be located in the Imperial Valley and along the IV-Miguel corridor.³⁵ Moreover, with respect to potential solar thermal generation in particular, the record further shows that there is significant potential for such generation in the Imperial Valley and that developers *other than SES* are interested in building solar thermal generation in the area.³⁶

The ability of Sunrise to facilitate the delivery of renewable generation is not dependent on whether the Stirling Project comes on-line in 2012, 2016, or not at all. Rather, by simply reinforcing the connection between the IV substation and the San Diego area, Sunrise will allow the delivery of much needed renewable generation that will no doubt be developed in the Imperial Valley – whether solar thermal, geothermal, or wind.

B. SDG&E's Enhanced Northern Route

4. Effect on System Reliability

As discussed in the CAISO's Phase 2 Opening Brief, the ENRA will have the same beneficial effect on reliability as Sunrise.³⁷ Thus, DRA's position that Sunrise will not reduce San Diego LCR by 1000 MW and that potential delays in the development of renewable

³⁴ UCAN Phase 2 Opening Brief at 69 (emphasis added).

³⁵ CAISO Ex. I-9 at 13.

³⁶ CAISO/Orans Tr. at 5548-5549.

³⁷ CAISO Phase 2 Opening Brief at 19-20.

generation will affect the ability of Sunrise to reduce the Greater IV-SD LCR is similarly wrong with respect to the ENRA.

5. Effect on “ability to deliver renewable energy to SDG&E customers.”

As discussed in the CAISO’s Phase 2 Opening Brief, the ENRA has the same ability as Sunrise to deliver renewable energy located in the Imperial Valley to SDG&E customers.³⁸ Thus, contrary to UCAN’s assertions, the ENRA will facilitate the delivery of renewable generation to SDG&E customers irrespective of whether the Stirling Project is timely developed.

C. Aspen’s Environmentally Superior Northern Route Alternative (“ESNRA”)

As discussed in the CAISO’s Phase 2 Opening Brief, Aspen’s Environmentally Superior Northern Route Alternative (“ESNRA”) meets the three Primary Project Objectives identified in the DEIR/EIS.³⁹ However, the ENRA does not provide SDG&E and its rate payers with the additional value associated with the expansion option provided by Sunrise and the ENRA. In addition, the ESNRA produces substantially lower net economic benefits than the net benefits to be realized from either Sunrise or the ENRA as a result of the extensive undergrounding associated with the alternative. Accordingly, the CAISO has concluded that the ESNRA does not provide the same level of overall benefits as either Sunrise or the ENRA.

D. Aspen’s Environmentally Superior Southern (SWPL) Alternative

IID Supports approval of the ESSRA.⁴⁰ As discussed in the CAISO’s Phase 2 Opening Brief, the ESSRA would facilitate the delivery of renewable energy to SDG&E customers and would provide significant net economic benefits of between \$155 million and \$320 million.⁴¹ However, because the ESSRA shares a common corridor with SWPL, it introduces a new Category C contingency that would require 1000 MW of load shedding under the WECC-

³⁸ CAISO Phase 2 Opening Brief at 19.

³⁹ CAISO Phase 2 Opening Brief at 21-22.

⁴⁰ See IID Phase 2 Opening Brief at 29

required remedial action scheme. In addition, the ESSRA does not provide the same expansion option for connecting the SDG&E and SCE systems as Sunrise or the ENRA. For these reasons, the ESSRA does not provide the same level of overall benefits as either Sunrise or the ENRA.

F. UCAN's Southern Route

1. Scope and Plan of Service

As the CAISO noted in its Phase 2 Opening Brief, UCAN's Southern Route Alternative ("USRA") begins at the IV substation and, similar to the ESSRA, follows the I-8 route paralleling SWPL for 40 miles.⁴² At that point, the USRA deviates from the ESSRA. UCAN suggests that this deviation from the ESSRA avoids the risk of a common corridor outage with SWPL and, accordingly, the USRA should not be considered to introduce a Category C contingency under WECC guidelines.⁴³ Notwithstanding that the USRA deviates from SWPL in certain places. UCAN is wrong because the USRA parallels SWPL for 40 miles, WECC has determined that the USRA constitutes a Category C contingency.

4. Effect on system reliability

UCAN questions the reasonableness of the WECC common corridor reliability determination with respect to the USRA given that, according to UCAN, the USRA would share a common corridor with SWPL only in areas with low fire risk.⁴⁴ Irrespective of UCAN's argument before the Commission, an independent determination establishing an entity responsible for setting reliability standards applicable to the CAISO. Category C contingency was made by the WECC Planning Coordination Committee.⁴⁵ The Commission cannot nor

⁴¹ CAISO Phase 2 Opening Brief at 23.

⁴² CAISO Phase 2 Opening Brief at 26.

⁴³ UCAN Phase 2 Opening Brief at 101-103.

⁴⁴ UCAN Phase 2 Opening Brief at 93.

⁴⁵ CAISO/Sparks Tr. at 5339-5340.

should not substitute its judgment for the judgment of the WECC with respect to the reliability standards for which the CAISO must comply.

G. Aspen’s In-Area, All-Source Generation Alternative

Although DRA does not explicitly articulate its support for the ASGA, it recommends that the Commission reject a new IV-SD transmission line (whether Sunrise, the ENRA, or one of the southern route alternatives) in favor of new in-basin generation. Specifically, DRA recommends that the Commission require SDG&E to “secure efficient, cost-effective combined cycle generation, or other cost-effective, new in-basin resources,” pursuant to Decision 07-12-052.⁴⁶

As an initial matter, the procurement authority granted to SDG&E in Decision 07-12-052 was not contemplated by the Commission to be an *alternative* to Sunrise; but rather, a safety net to ensure adequate resources are available to SDG&E should the Commission not approve a CPCN for the project.⁴⁷ However, as discussed in the CAISO’s Phase 2 Opening Brief, based on the development status of the various in-area projects identified in the DEIR/EIS, it is extremely unlikely that new in-area generation (whether CCGTs, GTs, or renewable) would come on-line when needed, much less by the dates assumed in the DEIR/EIS.⁴⁸ Accordingly, the ASGA does not provide the same reliability benefits as Sunrise or the ENRA. As a result, the Commission should not consider new in-area generation to be the equivalent nor a reasonable alternative to Sunrise or the ENRA.

⁴⁶ DRA Phase 2 Opening Brief at 1-2.

⁴⁷ Decision 07-12-052, mimeo at 301 (Ordering Paragraph 6).

⁴⁸ CAISO Phase 2 Opening Brief at 35-36.

I. Aspen's LEAPS Transmission-Only Alternative

4. Effect on System Reliability

- a. **The import capability study conducted by TNHC does not properly apply the CAISO LCR criteria and cannot be used to establish the LCR reduction capability of TE/VIS**

In Phase 1, TNHC disagreed with the CAISO's conclusion that TE/VIS would produce only a 500 MW reduction in the San Diego area LCR, questioning whether the CAISO appropriately applied its LCR criteria in reaching its conclusion.⁴⁹ Noting TNHC's apparent confusion, the CAISO's Phase 1 Rebuttal Testimony explained that TNHC's position was based on its failure to apply the limiting condition described in the CAISO's 2009-2011 Local Capacity Technical Analysis for the San Diego area.⁵⁰ Specifically, the CAISO pointed out that TNHC ignored the CAISO's finding that, under the LCR study criteria used in the 2009-2011 CAISO analysis the San Onofre-San Luis Rey 230 kV #1 is pushed to 99% of its 1150 MVA emergency rating under the contingency of its parallel line (San Onofre – San Luis Rey 230 kV #2) at 500 MW of increased imports into San Diego. If the San Diego import limit were increased further, there would be contingency overloads of both San Luis Rey-Mission lines #1 and #2.⁵¹

During the Phase 1 evidentiary hearings, the CAISO further explained that the methodology it used for conducting the LCR study of the San Diego area was consistent with its past practices:

...the real impact here is how much local capacity requirements can be eliminated by the transmission upgrade.

And, again, the methodology we applied is a carryover of how the San Diego system is -- has been studied for RMR purposes since 1998 up until now and then even with the Sunrise project in that

⁴⁹ TNHC Ex. N-7 at 8, lines 9-17.

⁵⁰ CAISO Ex. I-6 at 29-30. It is interesting to note that TNHC cited to the 2009-2011 local capacity Technical Analysis in its Phase 1 testimony.

⁵¹ CAISO Ex. I-6 at 30, lines 9-17.

long-term LCR report. This is the methodology that we've applied in this testimony.⁵²

Moreover, in its Phase 1 rebuttal testimony, the CAISO's LCR analysis for the San Diego area was explained in detail:

Local capacity requirements in the San Diego area are established so that during the outage of the largest generating unit followed by [the] worst single transmission line outage all load in the San Diego area (i.e. line 7 of the [Table]) can be reliably served. Currently the largest generator in the area is the 541.5 MW Palomar unit. In 2010 the 561 MW Otay Mesa unit will be the largest unit in the area as shown on line 18. The worst single transmission line outage is the Imperial Valley-Miguel 500 kV line outage, and in order to avoid load shedding, the import power flow into San Diego must be maintained at or below 2500 MW.⁵³

Despite the CAISO's detailed explanation of the LCR methodology applied to the San Diego area, the LCR analysis performed by TNHC in Phase 2 does not use the appropriate planning criteria. Moreover, as evidence of its complete misunderstanding of the CAISO's LCR methodology, TNHC accuses the CAISO (and SDG&E) of using the wrong - "more severe" - planning criteria when evaluating the effect TE/VS has on the San Diego area LCR.⁵⁴ In fact, in its Phase 2 Opening Brief, TNHC brazenly asserts that its study represents "the only comprehensive, expert engineering analysis on the record on this subject" and further states that, while the CAISO and SDG&E undoubtedly know what the planning criteria are, understanding them and applying them as written are a different matter.⁵⁵

In contrast to these assertions, the record shows that, despite the CAISO's repeated efforts, TNHC simply fails to understand how to apply the CAISO's LCR planning criteria applicable to areas like San Diego which have or are expected to have established path ratings. TNHC's stubborn insistence that TE/VS should be evaluated using criteria that is *less stringent*

⁵² CAISO/Sparks, Tr. at 2120.

⁵³ CAISO Ex. I-6 at 31.

⁵⁴ TNHC Ex. N-42 at 6-7.

⁵⁵ TNHC Phase 2 Opening Brief at 29, 33.

than the planning criteria consistently used by the CAISO to evaluate the impact that *TE/VS, Sunrise and the CAISO reference case* would have on LCR reduction in San Diego renders TNHC's LCR analysis invalid. TNHC's failure to apply the correct planning criteria is particularly puzzling given that TNHC acknowledges that it "looked at" the CAISO LCR planning criteria in conducting its TE/VS analysis,⁵⁶ agreed that those criteria require that applicable path ratings into the local areas be maintained,⁵⁷ and that the path rating must also be maintained under the G-1/N-1 criteria.⁵⁸ TNHC also accepted the 2500 MW rating for Path 44 established during the WECC Path 44 re-rating study process, without characterization or consideration of how that analysis had been conducted.⁵⁹ Thus, while TNHC might disagree with the CAISO LCR planning criteria, TNHC cannot apply different planning assumptions to its own project simply to increase the benefits of TE/VS relative to Sunrise. Accordingly, TNHC's analysis must be disregarded.

In addition to addressing LCR planning criteria issues, TNHC, asserts that the analysis performed by the CAISO and SDG&E omits a third phase-shifting transformer at the proposed Camp Pendleton substation, and that the capability of the transformers is underutilized.⁶⁰ The number of phase-shifting transformers proposed by TNHC as part of its plan of service has been an ever-changing number. The TE/VS plan of service presented to the CAISO in early 2007 included two phase-shifting transformers, and that is the configuration studied by the CAISO in this proceeding. It should be noted that when the CAISO re-evaluated TE/VS in Phase 2 by setting the phase shifters to force the TE/VS line flow to 1000 MW, the phase shifters were only marginally effective at mitigating overloads, producing only a small increase in LCR reduction

⁵⁶TNHC/Depenbrock Tr. at 5486-5487.

⁵⁷ TNHC/Depenbrock Tr. at 5487.

⁵⁸TNHC/Depenbrock Tr. at 5487.

⁵⁹ TNHC/Depenbrock Tr. at 5469-5477

⁶⁰ TNHC Phase 2 Opening Brief at 30.

capability from 500 MW to 625 MW.⁶¹ Based on the analysis, the CAISO does not expect the addition of a third phase shifter to materially impact these results.

b. The CAISO LCR analysis correctly determined that the TE/VS LCR reduction in the San Diego area is offset by equal LCR increases in the LA Basin

TNHC states that the CAISO has “understated the merit of TE/VS” with its conclusion that any LCR reductions in the San Diego area would be offset by LCR increases in the LA Basin. This issue was thoroughly addressed in the CAISO’s Phase 1 testimony, without comment by TNHC. Nonetheless, in Phase 2 TNHC now asserts that “the TE/VS project’s LCR benefits to San Diego may be significantly greater than the CAISO witnesses acknowledge.”⁶²

When questioned about this assertion, however, it was apparent that Dr. Wu had not correctly analyzed the CAISO’s power flow studies which, when scrutinized, clearly revealed that increased flows into the San Diego area causes additional, offsetting generation to be dispatched in the LA LCR area. Indeed, during cross-examination, Dr. Wu agreed that the generation dispatch differences shown on CAISO Exhibit I-14 accurately represented the generation dispatch differences in the cases he analyzed with and without the TE/VS project, after a correction that he pointed out.⁶³ With this correction, Exhibit I-14 shows that the TE/VS case has 788 MW of more generation dispatched in the LA Basin LCR area, and 400 MW more generation in the Big Creek/Ventura LCR area to support the 1000 MW increase in transfer capability to the San Diego area.⁶⁴ This result is consistent with the CAISO’s findings that a decrease in San Diego LCR generation dispatch would require an equal increase in the LA Basin LCR dispatch in order to maintain the South of Lugo Path flow below its limit.

⁶¹ CAISO Ex. I-8 at 15.

⁶² TNHC Ex. N-43 at 3.

⁶³ Tr. at 5501-5502.

⁶⁴ Tr. at 5503-5504.

5. Effect on “ability to deliver renewable energy to SDG&E customers”

As the CAISO noted in its Phase 2 Opening Brief, the TE/VS and TE/VS + LEAPS alternatives provide neither direct nor indirect access to renewable generation in the Imperial Valley and Salton Sea areas, and therefore do not meet the third Primary Project Objective identified in the DEIR/EIS.⁶⁵ TNHC does not dispute this conclusion, but rather argues that TE/VS is a “smarter investment” because it is not “directly tied” to the “risk of the Stirling solar technology.”⁶⁶ According to TNHC, TE/VS provides better “market access” to these renewables through GPN and IID upgrades because of its connection to the SCE system.⁶⁷ Contrary to these assertions, and as discussed above, the IID-proposed system upgrades will have no effect on the 1150 MW dispatch limit and therefore is not a means by which Imperial Valley renewables can be delivered without Sunrise.⁶⁸

7. Meets Project Objectives?

The CAISO has demonstrated that TE/VS and TE/VS + LEAPS do not provide the same 1000 MW level of LCR reduction provided by Sunrise and do not provide access to renewable generation in the Imperial Valley and Salton Sea areas. Furthermore, when compared to Sunrise and the ENRA, these alternatives have negative net benefits. For these reasons, TE/VS and TE/VS + LEAPS do not provide the same level of overall benefits as either Sunrise or the ENRA.⁶⁹

⁶⁵ CAISO Phase 2 Opening Brief at 40-41.

⁶⁶ TNHC Phase 2 Opening Brief at 37.

⁶⁷ TNHC Phase 2 Opening Brief at 40.

⁶⁸ The same is also true of GPN.

⁶⁹ This does not mean that TE/VS and TE/VS + LEAPS cannot provide certain operational benefits once Sunrise is in-service. Specifically TE/VS has the potential to provide a 500 kV connection between the SDG&E and SCE systems, meaning that the line could be utilized to realize the value of the expansion option discussed above. CAISO Ex. I-8 at 20.

L. UCAN's No Action Alternative

1. Scope and Description

The scope and description of the UCAN No Project Alternative (“UNPA”) is difficult to discern given UCAN’s ill-defined “Chinese menu” approach. Nevertheless, the “two primary hallmarks” are an upgrade to Path 44 and the construction of a new transformer at the Miguel substation.

3. Estimated Cost

In light of the lack of definition of this alternative, it is no surprise that UCAN does not provide a cost estimate for UNPA.⁷⁰ Absent a cost estimate it is not possible to determine whether the UNPA would produce any economic benefits relative to Sunrise or the ENRA.

4. Effect on System Reliability

UCAN claims that the UNPA will provide 350 MW of new import capability from upgrading Path 44, thus meeting SDG&E’s reliability needs “through the entire period of analysis covered by the DEIR/[EIS].”⁷¹ However, as explained by the CAISO in both its Phase 1 and Phase 2 testimony, neither the Path 44 upgrades nor the Miguel transformer will allow these reliability needs to be met. On the contrary, the Path 44 upgrades raise reliability concerns. Nevertheless, UCAN again challenges the CAISO Phase 1 findings that the UCAN Path 44 and Mexico Light proposals cause frequency dip criteria violations on the CFE system. UCAN also speculates that the identification of a South Bay sub-area in the CAISO 2009 LCR study will increase the reliability benefits of the UNPA by requiring that South Bay remain in service beyond 2010 at no additional cost.

⁷⁰ UCAN Phase 2 Opening Brief at 112.

⁷¹ UCAN Phase 2 Opening Brief at 112-113.

a. Path 44 /Barre-Ellis 230 kV line upgrades; Miguel capacity upgrades

In its Phase 2 testimony, the CAISO noted that the DEIR/EIS incorrectly identified Path 44 upgrades and Mexico Light as transmission projects that were likely to be pursued as part of the “No Project” alternative, and that these proposals would “help to ensure that San Diego meets the reliability criteria in the absence of the Proposed Project.” Both of these proposals had been studied by the CAISO in Phase 1 and that, as noted above, cause reliability and economic concerns on the CAISO and CFE systems. Specifically, the impacts of a Path 44 upgrade on the LA Basin LCR and the risk of increased usage of a common corridor for some of the Path 44 upgrades presents significant concerns to the CAISO.⁷² As a result, the UNPA does not provide the same level of reliability and access to renewables that is provided by Sunrise and the ENRA.⁷³ Notably, the Path 44 upgrades would provide no relief for the 1150 MW dispatch limit on generation connected to the IV substation or the IV-Miguel portion of SWPL.

Similarly, the CAISO also addressed in Phase 1 modifications being made to the Miguel substation Special Protection System (“SPS”) and the construction of a new transformer.⁷⁴ Despite assertions by UCAN that these modifications will help the provide access to renewables generation,⁷⁵ the changes at the Miguel substation would only mitigate existing congestion problems at that substation, and not have any effect on the 1150 MW dispatch limit. The Miguel SPS would not provide for the deliverability of incremental megawatts of renewable generation to SDG&E over SWPL.⁷⁶

Despite the CAISO’s straight forward testimony on this issue, UCAN persists in arguing that the Path 44 upgrades (including the upgrade of the SCE Barre-Ellis 230 kV line) and the

⁷² CAISO Ex. I-9 at 12.

⁷³ CAISO Ex. I-8 at 21; CAISO Ex. I-9 at 12; *see also* CAISO Ex. I-6 at 54-57.

⁷⁴ CAISO Ex. I-9 at 11.

⁷⁵ UCAN Ex. U-100 at 27.

⁷⁶ CAISO Ex. I-9 at 11.

proposed modifications of the Miguel SPS, will allow the UNPA to “meet all three of the main project objectives identified in the DEIR.”⁷⁷ However, UCAN has provided no new information as to how these upgrades will meet these objectives in light of the CAISO’s testimony. On the contrary, UCAN simply references the CAISO’s 2008 Transmission Plan containing information about proposed Barre-Ellis 230 kV line upgrades and the Miguel substation modifications.⁷⁸ This information does not support UCAN’s position nor provide any grounds for adopting the UNPA in lieu of Sunrise or the ENRA. On the other hand, the CAISO has clearly and consistently maintained that these proposals—part of UCAN’s “Chinese menu”—should not seriously be considered as viable alternatives.

b. The South Bay Sub-Area

Based on a review of the CAISO’s 2009 LCR study, UCAN concludes that South Bay generation may be needed in 2010 and beyond to meet SDG&E’s “South Bay sub-area” LCR needs.⁷⁹ UCAN then postulates that if South Bay remains in service, the costs for retaining the facility, shown on SDG&E Table 11.5, are erroneous because the incremental cost of keeping South Bay in service to meet sub-area LCR requirements would be zero.⁸⁰

The 2009 LCR does contain a South Bay sub-area, showing that generation resources are necessary to avoid overloading the 138/69 kV transformer at the South Bay substation for the year 2009. However, this problem is caused by the dispatch of South Bay generation connected to the South Bay 138 kV bus which overloads the South Bay 138/69 kV transformer. In order to mitigate this problem, the South Bay generation located on the South Bay 69 kV bus must be dispatched. However, once the South Bay generation is retired the problem no longer exists. A review of the 2010-2012 Local Capacity Technical Analysis Report and Study Results, dated

⁷⁷ UCAN Phase 2 Opening Brief at 115.

⁷⁸ See, e.g. UCAN Phase 2 Opening Brief at 106.

⁷⁹ UCAN Phase 2 Opening Brief at 74-75.

December 28, 2007, reveals that there is no need for a South Bay 69 kV sub-area when South Bay is retired.⁸¹ Thus, UCAN's assumption that South Bay must remain in service is unfounded.

c. Mexican Frequency Dip Violations

(1) Frequency dip violations identified in the Sunrise WECC path rating study

UCAN asserts that the CAISO has engaged in "selective assessments of alternatives" by, for example, accusing the CAISO of "ignoring" Mexican frequency dip violations caused by Sunrise that were identified in the WECC path rating study.⁸² This issue was addressed in the CAISO's Phase 1 Reply Brief.⁸³ Without repeating itself here, the CAISO would note that one of the two contingency violations, caused by a violation of the Tijuana-Otay Mesa 230 kV line, occurs *with or without* Sunrise and can be resolved by boosting the voltage on the Tijuana bus. This is a contingency that is internal to the CFE and must be mitigated by CFE.⁸⁴

The other contingency violation identified by UCAN occurs only *without Sunrise* and, as explained in the CAISO Phase 1 Reply Brief, can be mitigated only by changing the generation dispatch in CFE. The CAISO further noted that CFE should not be expected to accept new generation dispatch constraints in order to mitigate a reliability criteria violation caused by planned generation development outside of its system. Incidentally, although the 1150 dispatch limit is driven by a different reliability criteria violation (*i.e.*, a thermal overload problem rather than transient frequency problem), it also serves to substantially mitigate the frequency dip criteria violations. The decision to impose the 1150 MW dispatch limit was made collaboratively with SDG&E and CFE for the purposes of protecting the CFE system from contingency criteria violations in the event of an IV-Miguel outage.

⁸⁰ UCAN Phase 2 Opening Brief at 75.

⁸¹ See discussion of the San Diego LCR requirements, 2010-2012 Local Capacity Technical Analysis, starting at 72. <http://www.caiso.com/1cc2/1cc2dab86fd50.pdf>

⁸² UCAN Phase 2 Opening Brief at 33.

⁸³ See CAISO Phase 1 Reply Brief at 20-22.

In summary, one of the two observed frequency dip violations was not “caused” by Sunrise, and the other one will be mitigated by Sunrise. The violation that that occurs with or without Sunrise is not attributable to any contingencies in, or changes to, the CAISO system. UCAN’s recycled argument in this regard should once again be rejected.

(2) Impact of CFE load changes on frequency dip violations

UCAN suggests that both the CAISO and SDG&E should have re-studied the Mexican frequency dip violations with “dramatically changed Phase 2 load forecasts for CFE and with a changed CFE point of cross-trip.”⁸⁵ As far as the CAISO can determine, the sum total of this “re-study” issue is set forth in a sentence or two in UCAN’s Phase 2 Opening Brief with no further evidentiary support. The changed CFE point of cross-trip, however, appears to be another issue resurrected from Phase 1, notwithstanding having been put to rest in the CAISO Phase 1 Reply Brief.

As a practical matter, it makes no sense to re-study the frequency dip violations in this instance because changes in CFE load will not impact these contingency conditions. The frequency dip violations are caused by excessive power transfers from IV to Miguel on SWPL and through the parallel CFE system. Changing CFE load without changing CFE imports does not significantly affect the frequency dip problems, and all of the studies were performed with a zero CFE import level.

Because UCAN has provided no record citations regarding its proposal that a “changed CFE point of cross-trip” be included in the re-study, the CAISO assumes that this refers UCAN’s suggestion that the CFE cross-trip be set at Tijuana-Otay Mesa rather than IV-ROA.⁸⁶ Once again UCAN overlooks the fact that it is CFE, *not the CAISO*, who sets the cross-trip location.

⁸⁴ CAISO Phase 1 Reply Brief at 20.

⁸⁵ UCAN Phase 2 opening brief at 27.

⁸⁶ UCAN Phase 1 opening brief at 66.

While it is true that the CAISO has not studied the Tijuana-Otay Mesa cross-trip following an IV-Miguel outage, it is equally true that if the cross-trip occurs at Tijuana-Otay Mesa, UCAN's Mexico Light proposal will not work.⁸⁷ UCAN has provided no additional information in Phase 2 that would cause the CAISO to reconsider its position with respect to changing the CFE point of cross-trip. As explained in Phase 1, the current transmission system in this area has a very weak interconnection between the CFE and CAISO systems, and the cross-trip is designed to be operated at either location to provide operational flexibility and meet system needs. A change in the cross-trip location limits this flexibility and will almost certainly create adverse impacts with CFE under some operating conditions.⁸⁸ The Commission should not consider Sunrise alternatives that would increase CAISO reliance on CFE and not provide relief for this fragile portion of the CAISO system. It goes without saying that no amount of re-studying of the IV-ROA cross-trip and the Mexican frequency dip violations will eliminate the need for the 1150 MW dispatch limit without Sunrise or an electrically equivalent transmission alternative.

5. Effect on “ability to deliver renewable energy to SDG&E customers.”

Despite voluminous evidence that, as a result of the 1150 MW dispatch limit on renewable generation at the IV substation, the UNPA cannot possibly provide access to renewables in the Imperial Valley and Salton Sea areas, UCAN nonetheless confidently asserts that an increase in the Miguel substation transformer capacity to 1900 MW would increase SDG&E's ability to import renewable energy from the IV substation over SWPL “[for] the great majority of hours.”⁸⁹ Alternatively, and just as erroneously, UCAN postulates that with the construction of GPN, the various no project alternatives will achieve the third Primary Project Objective identified in the DEIR/EIS.

⁸⁷ CAISO Phase 1 opening brief at 21.

⁸⁸ CAISO Phase 1 Opening Brief at 21; *see* footnote 64 describing the fragile nature of the Baja California portion of the CFE system that could be islanded from all external resources if both tie-lines to the CAISO suffered outages.

a. The effect of GPN on the delivery of renewables without Sunrise

Not surprisingly, in its Phase 2 Opening Brief, UCAN ignores the CAISO's rebuttal testimony to UCAN's assertions that GPN will facilitate the ability of SDG&E to access renewables in the Imperial Valley area without Sunrise. For example, at UCAN states that in Phase 1 the CAISO "admitted" that GPN "would enable the delivery of up to 2000 MW of new generation from Imperial County to the Southern California grid."⁹⁰ In response, the CAISO noted that the CAISO's Phase 1 studies assumed that a total of 2000 MW of renewable generation could be reliably connected and delivered to the CAISO and to the Los Angeles Department of Water and Power ("LADWP") via GPN, as opposed to the 2700 MW that would be delivered solely to the CAISO by Sunrise. However, the same transmission constraints requiring the 1150 MW dispatch limit are also expected to significantly reduce the amount of renewable generation that could be reliably connected and delivered to San Diego via GPN to well below the 2000 MW assumed in the CAISO Phase 1 studies.⁹¹

Notwithstanding the fact that GPN can no longer be assumed to deliver 2000 MW of Imperial Valley generation, UCAN goes on to assert that "the CAISO now expects GPN to be built with or without [Sunrise]."⁹² Once again, UCAN is off-base, apparently stemming from the CAISO's 2010-2012 LCR modeling assumptions. In actuality, GPN is included in the WECC base case because it is a *non-CAISO* project in Phase 3 of a WECC path rating study. Being in the WECC base case means that the project will automatically be included in the CAISO's LCR base case for modeling purposes. However, the CAISO explained that achieving a Phase 3 status in the WECC path rating process does not mean that the project will actually be built. The mere

⁸⁹ UCAN Phase 2 Opening Brief at 114.

⁹⁰ UCAN Phase 2 Opening Brief at 43.

⁹¹ CAISO Ex. I-9 at 6.

⁹² UCAN Phase 2 Opening Brief at 43.

status of the WECC’s review of GPN is not assurance that the project will go forward.⁹³ The CAISO has repeatedly advised the Commission against relying on a Sunrise “alternative” that is not within its jurisdiction and that has not yet completed the environmental review process. The fact that transmission constraints in the CFE system and at the IV substation will adversely impact the ability of GPN to deliver Imperial Valley renewables generation provides another basis for rejecting any alternatives that rely on GPN to provide access to Imperial Valley renewables.

In addition, UCAN states that a recent CAISO deliverability study shows that 1561 MW of wind and solar generation can be fully deliverable to SDG&E “in the presence of GPN.” This is a blatant misconception - the deliverability study referred to by UCAN *assumes that Sunrise is in service.*⁹⁴ Finally, UCAN states that “GPN is not part of any of the alternatives in the DEIR.”⁹⁵ This is not entirely accurate because, at a minimum, the TE/VS and TE/VS + LEAPS alternatives are dependent upon the completion of GPN in order to even “partially” meet the third Primary Project Objective identified in the DEIR/EIS (access to renewables).⁹⁶ Indeed, GPN was considered, and eliminated, as a project alternative in the DEIR/EIS:

...Green Path would improve the deliverability of renewable resources from Imperial County to the Los Angeles area, but absent the Sunrise Powerlink, no facilities would be provided to expand the deliverability of this power to load centers in San Diego County. Any benefits this alternative could provide to the SDG&E service area would be ancillary to its intended purpose and would depend upon other upgrades such as the Proposed Project or upgrades within SCE’s service territory...⁹⁷

In light of this analysis and the application of the 1150 MW dispatch limit, UCAN’s argument that GPN should be included as part of the No Project alternative-- and that with GPN

⁹³ CAISO Ex. I-9 at 5.

⁹⁴ CAISO Ex. I-9 at 6-7.

⁹⁵ UCAN Phase 2 Opening Brief at 44.

⁹⁶ DEIR/EIS at Ap.1-258.

⁹⁷ DEIR/EIS at Ap.1-300.

the No Project alternative will meet the third Primary Project Objective—is inaccurate and not supported by the record.

b. The 1150 MW dispatch limit on generation connected to the IV substation of the IV-Miguel portion of SWPL

UCAN’s treatment of the 1150 MW dispatch limit on generation connected at the IV substation and the IV-Miguel portion of SWPL is another prime example of UCAN’s blatant misinterpretation of the CAISO testimony. Indeed, by selectively ignoring and mischaracterizing the CAISO’s testimony, UCAN implies that this operating procedure was simply cooked up by SDG&E and the CAISO to make Sunrise “look better.”⁹⁸

For example, despite lengthy cross-examination of CAISO witness Robert Sparks by both UCAN and Administrative Law Judge Weissman, UCAN somehow concludes that “[t]he ISO concedes that the purpose of the 1150 MW ‘limiter’ [this is UCAN’s terminology] *is to replace the existing cross-trip*” and that “[i]n March 2008,⁹⁹ the ISO unilaterally chose to implement a limiter in lieu of the cross-trip.”¹⁰⁰ How UCAN came to this conclusion, is simply a mystery:

Q [ALJ Weissman]. Doesn't the cross-trip exist today?

A [CAISO/Sparks]. Yes, it does.

Q. And so there's some greater level of concern that popped up causing this additional limit to be created?

A. Absolutely. The expectation is that the frequency of the cross-trip would increase. The cross-trip is basically just a relay that monitors the flows through the CFE system. If they exceed a certain level, the relay activates and opens up the line. As you add more generation, the duration of flows above this threshold increases. So the exposure to the CFE system increases directly

⁹⁸ See, generally, UCAN Phase 2 Opening Brief at 51-53.

⁹⁹ This date is completely fabricated:

Q.(TURN/Marcus) When did the ISO conclude that there needed to be an 1150-megawatt dispatch limit?

A.(CAISO/Sparks) During the process of an interconnection study, our LGIP process, sometime in the fall or early winter of 2007.

Q. Early winter means December or January?

A. The November and December time frame. (CAISO /Sparks Tr. 5308).

¹⁰⁰ UCAN Phase 2 Opening Brief at 52 (emphasis added).

for every megawatt of generation you leave on the IV bus after the IV-Miguel outage. This increased exposure was determined to be an unacceptable adverse impact on CFE.¹⁰¹

On a related matter, UCAN argues that the proposed Miguel transformer tripping scheme would eliminate the need for the 1150 MW dispatch limit.¹⁰² However this is incorrect because the Miguel transformer tripping scheme protects the Miguel transformers but does not protect the parallel CFE system, something the dispatch limit is intended to do. UCAN conveniently overlooks the adverse impacts on the CFE system that would be caused by the interconnection of more than 1150 MW of generation at the IV substation by blithely concluding that “it is perfectly feasible to have more than 1150 MW both connected to [the] IV substation and/or SWPL, and have more than 1150 MW generating, and have a loss of either a Miguel transformer or the SWPL line itself, and still not need to trip more than 1150 MW of generation.”¹⁰³

UCAN is simply wrong. The LGIP procedures require the CAISO to consult with neighboring impacted systems and consider the adverse effects that generation interconnection could have on these systems.¹⁰⁴ Certainly a unilateral decision on the part of the CAISO to ignore the impact on CFE would be inappropriate - especially after consulting with this adjoining system.

In addition, if UCAN were correct that the CFE cross tripping scheme is sufficient to protect the CFE system, then it would not be necessary to trip all of the 1070 MW of generation that is currently connected to the IV substation today. It would follow that some of that generation could remain on-line following an outage of the SWPL. Certainly the CAISO and the generation owners would much prefer to keep that generation operating as scheduled rather than trip all of that generation following a SWPL outage. However, the reality is that all of that

¹⁰¹ CAISO/Sparks Tr. at 5401-5402.

¹⁰² UCAN Phase 2 Opening Brief at 52-53

¹⁰³ UCAN Phase 2 Opening Brief at 52.

generation must be tripped following a SWPL outage in spite of having the CFE cross-trip in-service, and this was explained to UCAN during cross examination.¹⁰⁵

The decision to trip all of this generation in spite of having the cross-trip in-service was made with full participation of the all generation owners and transmission owners in the area. The 1150 dispatch limit is simply an extension of the current practice that requires all generation to be tripped from the IV substation following the outage of the SWPL, in order to protect the CFE system from unacceptable adverse impacts.

Because UCAN's understanding of the 1150 MW generation dispatch "limiter" is clearly in error and not based on the record, the unfounded, off-hand references to this operating procedure sprinkled throughout the UCAN brief should be given no weight.¹⁰⁶

7. Meets Project Objectives?

The UNPA cannot meet the SDG&E reliability needs and components of this Alternative actually raise the reliability concerns discussed above. Additionally, the UNPA cannot provide access to renewable generation in the Imperial Valley and Salton Sea areas, even if GPN is eventually constructed. The UCAN proposal is not a viable alternative to Sunrise and the ENRA.

M. Other Party Alternatives

1. UCAN's Jacumba-Sycamore Route

UCAN asserts that "a line with its eastern terminus at Jacumba may be the most economical alternative of all, at least initially, if any transmission line at all need to be built."¹⁰⁷

¹⁰⁴ CAISO/Sparks Tr. 5311 at 5311

¹⁰⁵ See e.g. CAISO/Sparks Tr. 5320-5321.

¹⁰⁶ For example, UCAN's description of the dispatch "limiter" as "highly contestible and controversial" (UCAN Phase 2 opening brief at 59) is contradicted by Mr. Sparks testimony that similar operating conventions are in place in the CAISO grid. CAISO/Sparks Tr. at 5310-5311.

¹⁰⁷ UCAN Phase 2 Opening Brief at 116.

UCAN is wrong for several reasons and, in fact if adopted by the Commission, UCAN's Jacumba-Sycamore Route would raise both immediate and long-term reliability concerns.

As an initial matter, UCAN's Jacumba-Sycamore Route would not alleviate the 1150 MW dispatch limit currently applicable to generation connected to the IV substation of the IV-Miguel portion of SWPL. Thus, UCAN's Jacumba-Sycamore Route would not resolve *existing* reliability problems.

With respect to reliability in the long-term, to the extent the future build-out of the Jacumba-Sycamore line – which UCAN offers is a benefit of this alternative¹⁰⁸ - follows the I-8 path to the IV substation, the line would present the same Category C reliability concerns discussed above with respect to the USRA and be subject to 1000 MW of load shedding under the WECC-required remedial action scheme.

Furthermore, even if these reliability concerns did not exist, building only a Jacumba-Sycamore line would limit renewable procurement options immediately available to SDG&E to wind generation located near the Jacumba substation, as opposed to accessing significant geothermal, solar *and* wind resources that could be located in the Imperial Valley. For purposes of meeting SDG&E's LCR, wind generation is much less effective than geothermal and solar generation. In contrast, by providing a new line into the IV substation, Sunrise or the ENRA would increase the deliverability of imports from Palo Verde and Hassayampa and provide additional reliability benefits related to the need to integrate intermittent resources.¹⁰⁹

2. South Bay Replacement Project

In its Phase 2 Opening Brief, SBRP asserts that it “continues to be interested in developing a replacement for the South Bay plant in San Diego” and that “[d]evelopment of a

¹⁰⁸ See *e.g.*, UCAN Phase 2 Opening Brief at 81.

¹⁰⁹ CAISO Ex. I-9 at 9.

replacement plant for South Bay is feasible.”¹¹⁰ Nothing in the record supports this assertion.

On the contrary, the undisputed facts are that a replacement for South Bay is *not* being developed. In its Phase 2 direct testimony the CAISO attached a letter from SRBP stating, in no uncertain terms, that it was not developing a replacement for South Bay. SBRP could have presented a witness or submitted testimony contesting this fact – it did not.

V. THE ECONOMIC BENEFIT OF THE PROPOSED PROJECT, THE DEIR ALTERNATIVES, AND PARTY-PROPOSED ROUTE OPTIONS

In Phase 2, the CAISO, SDG&E, UCAN, DRA, and TNHC each presented an analysis of the net benefits (or cost-effectiveness) of Sunrise, the ENRA, and other proposed project alternatives. Predictably, the results of the parties’ respective economic analysis differed as a result of the different input assumptions utilized by the parties. In particular, UCAN, DRA, and the TNHC conclude that neither Sunrise nor the ENRA is cost effective when compared to either in-area generation (UCAN and DRA) or TE/VIS (THNC). As demonstrated below, however, the economic analysis performed by these parties is flawed, unreliable, and should not form the basis for the Commission’s evaluation of the net benefits provided by Sunrise or the ENRA relative to other alternatives.

A. Definition/description of baseline against which benefits for each alternative are compared

Four different reference cases have been developed in this proceeding. As discussed in its Phase 2 Opening Brief, for purpose of comparing the relative net benefits of Sunrise and the alternatives to Sunrise, the CAISO developed a reference case consisting of a combination of all existing generation capacity in the San Diego area (with the South Bay Power Plant assumed retired in 2010) and additional capacity from new GTs sufficient to meet San Diego’s local capacity needs. In order to ensure an “apples-to-apples” economic comparison of the CAISO’s

¹¹⁰ SBRP Phase 2 Opening Brief at 5.

reference case to Sunrise and the Sunrise alternatives, the CAISO's reference case was designed to include sufficient amounts of new GTs when they are needed. Ensuring its reference case includes the same amount of capacity as Sunrise and the Sunrise alternatives allowed the CAISO to compare the relative benefits of options that provide the same level of reliability.

Near the close of the Phase 2 evidentiary hearings, SDG&E developed three additional reference cases. These additional reference cases were developed at the direction of Administrative Law Judge Weissman and in response to a request by UCAN. For the reasons discussed below, the three reference cases prepared by SDG&E for Administrative Law Judge Weissman and UCAN result in the substantial understatement in the net economic benefits attributable to Sunrise and the ENRA. Accordingly, these reference cases should not be used to evaluate the net benefits of Sunrise and the ENRA.

1. The ALJ Gas Turbine Reference Case that SDG&E was directed to develop is fundamentally flawed and does not provide a reasonable reference point for evaluating the economic benefits of Sunrise and the ENRA

The starting point of the net benefits analysis discussed by both DRA and UCAN in their respective Phase 2 opening briefs is the \$40M/yr levelized net benefit that SDG&E calculated for the ENRA¹¹¹ relative to the GT reference case SDG&E was directed to develop by Administrative Law Judge Weissman ("ALJ GT Reference Case"). The net benefits of Sunrise, the ENRA, and other alternatives evaluated in the DEIR/EIS relative to the ALJ GT Reference Case is presented at Table 11-6 in Exhibit SD-142.¹¹² Based on its review, the CAISO has concluded that the ALJ GT Reference Case is fundamentally flawed and does not provide a reasonable reference point for evaluating the economic benefits of either Sunrise or the ENRA. Specifically, the CAISO has concluded that the ALJ GT Reference Case is not a reasonable

¹¹¹ SDG&E calculated a \$41M/yr levelized net benefit for Sunrise.

¹¹² See SDG&E Ex. SD-142 at 14, Table 11-6 (column entitled "Annual Levelized Net Benefits").

reference point for evaluating the economic benefits in this proceeding because it does not provide for (1) the same level of total capacity as Sunrise or the ENRA; nor (2) the cost for equipment replacement (or major overhaul) that would be required given that it assumes the GTs remain in service for 58 years (*i.e.*, the project life for Sunrise and the ENRA). For these reasons, the ALJ-GT Reference Case should not be assumed to represent an apple-to-apples comparison with Sunrise and the ENRA.

a. The ALJ GT Reference Case does not provide the same level of total capacity as Sunrise or the ENRA

Once in service (which SDG&E expects to be 2011), either Sunrise or the ENRA will reduce the San Diego area LCR by 1000 MW. The ALJ GT Reference Case, on the other hand, consists of only three GTs (each with a dependable capacity of 46.6 MW) in 2011 and four additional GTs (with the same dependable capacity) by 2016.¹¹³ Thus, in contrast to the 1000 MW reduction in LCR provided by Sunrise and the ENRA, the seven GTs in the ALJ GT Reference Case will provide only 326 MW of dependable capacity by 2016. The capacity differential between Sunrise/ENRA and the ALJ GT Reference Case is a fundamental flaw given that SDG&E's peak demand is projected to rise after 2016 through the remainder of 58-year project life of Sunrise and the ENRA. Because the ALJ GT Reference case does not include additional GTs to meet the increasing reliability need after 2016,¹¹⁴ it does not provide the same reliability benefits as either Sunrise or the ENRA.

¹¹³ SDG&E Ex. SD-142 at 3, "Generic Gas Turbine Additions" line, "Gas Turbine Reference Case" columns. 2010 value is 140 MW, representing 3 turbines (140 MW/46.6 MW dependable capacity per turbine). 2016 value is 326, representing 7 turbines (326 MW/46.6 MW dependable capacity per turbine).

¹¹⁴ This lack of additional resources is shown in San Diego's investment schedule for the CT reference case. See SDG&E Ex. SD-143 at 22. The GT Reference Case is here titled "Alt A ALJ". In this schedule, the first set of CT investments in 2010 is broken out as the "Gas Turbine (initial additions)" subheading. The second set of CT investments, which occurs in 2016, is shown in the "Gas Turbine (subsequent additions)" subheading. After 2016, the depreciation is identical in each of the subsequent years (until the end of the 25-book life of the CT plants), reflecting the fact that that no further CT investments are made after 2016. Moreover, no new plant additions are made after the end of the "initial" and "subsequent" plants' book lives.

To correct this flaw, the ALJ GT Reference case should include additional GTs, when needed, so that it provides a capacity level equal to Sunrise and the ENRA.¹¹⁵ To do this, the ALJ-GT Reference Case would essentially have to triple the number of GTs units. The levelized cost of the 326 MW of GTs and the associated transmission costs is approximately \$44 million per year.¹¹⁶ Thus, tripling the number of GTs would increase the levelized cost of the ALJ GT Reference Case dramatically, which in turn would increase the net benefits of Sunrise and the ENRA relative to the reference case on a dollar for dollar basis.

b. The ALJ GT Reference Case fails to include sufficient costs for equipment replacement or major overhauls

Based on its review of the ALJ GT Reference Case and SDG&E's supporting work papers, the CAISO has determined that the ALJ GT Reference Case does not include any costs for generator replacement or major overhauls that would undoubtedly be necessary to maintain the GTs over the same 58 year project life as Sunrise and the ENRA. The failure to include GT replacement and repair costs results in an artificially low cost estimate for the ALJ GT Reference Case, which serves to reduce the net benefits of Sunrise and the ENRA when compared to the ALJ GT Reference Case.

2. UCAN's 7165 Btu/kWh Heat Rate Combined Cycle Gas Turbine Reference Case suffers from the same flaws as the ALJ GT Reference Case and should not be relied upon by the Commission for evaluating the net benefits of Sunrise and the ENRA

Subsequent to Administrative Law Judge Weissman directing SDG&E to develop the ALJ GT Reference Case, SDG&E developed an additional reference case at the request of UCAN that included both GTs and a new CCGT with a 7165 Btu/kWh heat rate ("UCAN 7165 Heat Rate CCGT Reference Case").¹¹⁷ The net benefits of Sunrise, the ENRA, and other

¹¹⁵ Alternately, the reference case and the Sunrise case could have included CT additions as needed to meet load growth for the entire 58 year analysis term. This is the approach that the CAISO used in its modeling.

¹¹⁶ SDG&E Ex. SD-142 at 35. *See also* SDG&E Ex. SD-143 at 17-18 ("ALT A ALJ Total).

¹¹⁷ SDG&E also developed an 8100 Btu/kWh heat rate CCGT reference case

alternatives evaluated in the DEIR/EIS relative to the UCAN 7165 Heat Rate CCGT Reference Case is presented in Exhibit SD-143.¹¹⁸

Similar to the ALJ GT Reference Case, the UCAN 7165 CCGT Reference Case includes three new GTs in 2010 (each with a dependable capacity of 46.6 MW).¹¹⁹ In 2016, however, the UCAN 7165 CCGT Reference Case adds one new 540 MW(dependable capacity) CCGT instead of additional GTs.¹²⁰ The addition of the 540 MW CCGT in 2016 in place of the four GTs in the ALJ GT Reference Case is the only difference between the two reference cases. This modification to the ALJ GT Reference Case results in the UCAN 7165 CCGT Reference Case providing a total of 680 MW of dependable capacity.¹²¹

Although the UCAN 7165 CCGT Reference Case provides slightly more than twice the capacity provided by the ALJ GT Reference Case, it still provides significantly less capacity (again, when needed) than the 1000 MW reduction in San Diego area LCR provided by Sunrise and the ENRA. As is the case with the ALJ GT Reference Case, this capacity differential is a fundamental flaw of the UCAN 7165 CCGT Reference Case because it does not provide for the same reliability benefits as Sunrise or the ENRA. Furthermore, the UCAN 7165 CCGT Reference Case does not include any costs for generator replacement or major overhauls that would undoubtedly be necessary to maintain the GTs over the same 58 year project life as Sunrise and the ENRA. Accordingly, the “cost” of the UCAN 7165 CCGT Reference Case is unreasonably low, which reduces the relative net benefits of Sunrise and the ENRA.

¹¹⁸ SDG&E Ex. SD-143 at 5 (*see* second column, “Intervener Requested Gas Turbine Combined Cycle Reference Case with 7165 BTU/kWh Heat Rate”). The Enhanced Northern Route in this table has a net benefit of \$10M relative to this CC-GT reference case.

¹¹⁹ Ex. SD-143 at 23. The CC-GT reference case is titled “Alt B UCAN”. The costs for the “initial addition” of GT in 2010 and subsequent years for this case has a depreciation component of \$6.3M/yr, the identical amount as the cost for “Gas Turbine (initial addition)” for the GT reference case, shown in Ex. SD-143 at 21.

¹²⁰ Ex. SD-143 at 23. Depreciation costs shown for “Combined Cycle” begin in 2016 and remain constant through the book life of the CCGT. The 7165 Btu/kWh CCGT plant capacity is assumed the same as the capacity used in San Diego’s original run of UCAN’s CC-GT case, shown in Ex. SD-142 at 3, “Carlsbad Energy Center” line, “Gas

B. Cost of Baseline

As discussed above, costs associated with both the ALJ GT Reference Case and the UCAN 7165 CCGT Reference case are significantly understated. Specifically, these reference cases do not include additional GTs or CCGTs after 2016 that will be needed to (1) meet the continued growth in SDG&E's peak demand; and (2) provide a level of reliability comparable to Sunrise and the ENRA. Moreover, both reference cases fail to include costs for generator replacement or major overhauls that will be necessary to maintain new generation over the same 58 year project life as Sunrise and the ENRA. As a result, the economic analysis performed by UCAN and DRA results in the substantial understatement of the relative net benefits of both Sunrise and the ENRA. The net effect of this flaw is that neither of these reference cases provide a useful, much less reasonable, point of reference for evaluating the relative net benefits of Sunrise and the ENRA.

C. Net economic benefit of proposed project and alternatives relative to baseline (total NPV), consistent with "costs" in sections II.A-M.3

The CAISO's Phase 2 economic analysis demonstrates that, relative to the CAISO's reference case, the net benefits produced by Sunrise, the ENRA, and the ESSRA are significantly greater than the net benefits produced by the Sunrise alternatives.¹²² Specifically, the CAISO's analysis shows that a conservative estimate of the net economic benefits of Sunrise and the ENRA are \$145 million and \$143 million per year respectively and that the net economic benefits for each could exceed \$300 million per year. In addition, notwithstanding the flaws inherent in the ALJ GT Reference Case and the UCAN 7165 CCGT Reference Case, Sunrise and

Turbine/Combined Cycle Reference Case (requested by an intervener)" columns. 2016 value is 540 MW. This case also shows the 140 MW addition of three generic GT in 2010.

¹²¹ 680 MW calculated as sum of 540 MW for the combined cycle plant and (3 x 46.6M) for the three GT additions.

¹²² CAISO Phase 2 Opening Brief at 47. In light of reliability concerns associated with the ESSRA, the CAISO has concluded that the ESSRA does not meet all of the Primary Project Objectives identified in the DEIR/EIS. See CAISO Phase 2 Opening Brief at 47-48.

the ENRA still show net benefits ranging from \$10 million/year¹²³ to \$41 million/year¹²⁴ relative to these reference cases. Accordingly, in order to support their position that Sunrise and the ENRA do not produce net economic benefits, UCAN and DRA rely, as they must, on additional assumptions that further undermine the reasonableness of their respective net benefits analysis.

1. UCAN’s net benefits analysis is based on fundamentally flawed reference cases

The foundation of UCAN’s net benefits analysis is the flawed ALJ GT Reference Case which shows net benefits of \$40 million/year for the ENRA and \$41 million/year for Sunrise.¹²⁵ Using the results of the ALJ GT Reference Case as a “jumping off” point, UCAN then makes numerous adjustments that produce a net *cost* of \$74.3 million/year for the ENRA and Sunrise.¹²⁶ When these adjustments are applied to the UCAN 7165 CCGT Reference Case, the net cost of the ENRA and Sunrise increases to \$106.4 million/year.¹²⁷

The CAISO does not believe the additional adjustments made by UCAN to the two reference cases are reasonable or should be considered by the Commission. Nevertheless, irrespective of the merits of the additional UCAN adjustments, as discussed above, the underlying reference cases relied upon by UCAN are fundamentally flawed. As a result, UCAN’s economic analysis cannot provide any meaningful or appropriate basis for evaluating the net benefits of either Sunrise or the ENRA.

2. DRA’s net benefits analysis is based on numerous unrealistic assumptions

DRA believes that CAISO has overstated the net benefits produced by Sunrise and the ENRA. DRA’s position is based on its “scenarios” analysis that is meant to capture uncertainties

¹²³ The ENRA under the UCAN 7165 CCGT Reference Case. *See* SDG&E Ex. SD 144.

¹²⁴ Sunrise under the ALJ GT Reference Case. *See* SDG&E Ex. SD 142.

¹²⁵ UCAN Opening Brief, Line 9 of Table 1 at 174. The \$40 million/year number comes from Ex. SD-142, Alternative 7: SDG&E’s “Enhanced Northern Route” in Table 11-6.

¹²⁶ UCAN Opening Brief, Line 16 of Table 1 at 174.

¹²⁷ UCAN Opening Brief, Line 23 of Table 1 at 174.

that could impact the net benefits of an IV-SD transmission line¹²⁸ and premised in large part on unreasonable assumptions regarding the development and cost of renewable generation in the Imperial Valley, and a fundamental misunderstanding of the CAISO's assumptions regarding RMR costs once Sunrise or the ENRA is in-service.

a. DRA's assumption that no renewable generation will be developed in the Imperial Valley over the next 60 years is unreasonable

As noted above, DRA correctly points out that the San Diego area LCR benefits attributable to Sunrise are dependant on the development of renewable generation in the Imperial Valley area. However, DRA's attempt to quantify San Diego LCR benefits of Sunrise should not be relied upon by the Commission, for at least two reasons. First, DRA's Minimal Relief (Low Scenario) for San Diego LCR benefits is a ridiculously pessimistic scenario and should not be regarded as a plausible scenario. This scenario assumes that zero renewable generation will be developed in the Imperial Valley area for the next sixty years. In light of the renewable generation potential in the Imperial Valley, it is absurd to assume that no renewable generation will be developed in the area, particularly given California's aggressive RPS goals.

In addition, DRA assumes that only renewable generation connected directly to IV substation could replace the Stirling Project and still achieve the same San Diego area LCR benefits. The CAISO's LCR benefits analysis, however, correctly assumes that renewable generation development connected to the IV substation, IV-Miguel line, or the IID system would all behave electrically equivalent and are interchangeable in an analysis of San Diego LCR benefits of Sunrise.

¹²⁸ DRA Phase 2 Opening Brief at 10.

b. DRA admits that its low RPS benefits case is premised on the unlikely scenario that geothermal costs increase by 5% while at the same time wind costs decrease by 5%

Notwithstanding the renewable generation potential in the Imperial Valley, DRA asserts that a plausible low range estimate for RPS compliance benefits is near zero.¹²⁹ As DRA explains, this is the case because the relative cost of Imperial Valley renewable generation drives RPS compliance benefits associated with Sunrise.¹³⁰ While the CAISO agrees that the relative cost of different types of renewable resources can affect RPS compliance benefits, DRA's low range estimate is based on arbitrary assumptions that appear solely designed to produce near zero RPS benefits. Specifically, for purposes of its low range estimate, DRA assumes that the cost of geothermal generation *increases* by 5% while, at the same time, the cost of generation *decreases* by 5%.¹³¹ During cross examination, however, DRA admitted that it is more likely that the costs of geothermal and wind generation would move in the same – *not different* - direction:

Q [CAISO Gray] Okay. Well, relatively speaking, do you believe that it would be more likely for geothermal costs to increase while at same time wind costs decrease, or more likely for the costs to move in the same direction at the same time?

A [DRA Suurkask] I guess I'm not really a betting man, but -- but, you know, those -- those seem to have more theoretical appeal, yes. So I can't give you a probability, but I'll -- I'll just say, you know, on a theoretical basis they -- they have more appeal, yeah.

Q Well, on a theoretical basis it's more likely for the costs to move in the same direction at the same time?

A Sure. Yeah.¹³²

Given that DRA's own expert witness believes that the exact opposite of a fundamental assumption that drives DRA's low range RPS analysis is more likely to occur than the

¹²⁹ DRA Phase 2 Opening Brief at 30-32; *see also* DRA/Suurkask Tr. at 5596; DRA Ex. D-99 at 8.

¹³⁰ DRA/Suurkask Tr. at 5596.

¹³¹ DRA/Suurkask Tr. at 5598; DRA Ex. D-99 at 7.

¹³² DRA/Suurkask Tr. at 5606-5607.

assumption actually used in DRA's analysis, there is simply no basis for the Commission to consider the low range of DRA's RPS benefits estimate a possible, much less plausible, scenario.

c. DRA fails to grasp the CAISO's assumptions regarding RMR costs once Sunrise or the ENRA is in-service

DRA asserts that the CAISO's modeling of San Diego area RMR costs is implausible because, according to DRA, the CAISO assumes that the owners of RMR generation will enter into contracts that pay them below their cost of service.¹³³ As a result, DRA suggests that the CAISO overstates reliability benefits produced by Sunrise, the ENRA and other IV-SD transmission lines.¹³⁴ DRA's position, however, evidences a fundamental misunderstanding of the CAISO's reliability benefits analysis.

As the record demonstrates, the CAISO's reliability analysis does not assume that RMR contracts will be below the RMR unit owner's cost of service. On the contrary, recognizing that RMR units have different cost of service profiles, the CAISO reasonably assumes that, as the need for local capacity declines with the introduction of Sunrise or the ENRA, SDG&E will be able to contract with the lowest cost RMR units. The net effect will be a reduction in average RMR costs on a \$/kW basis. Thus, contrary to DRA's assertion, the CAISO's reliability benefits analysis does not assume RMR payments appreciably below cost of service; but rather simply reflects the reality of lowest-cost RMR contracting.¹³⁵

3. TNHC overstates TE/VS's ability to reduce San Diego area LCR

TNHC's recommendation regarding the cost effectiveness of TE/VS relative to Sunrise and the ENRA is driven largely by TNHC's assumptions that TE/VS will reduce the San Diego area LCR by 1000 MW¹³⁶ and the cost of the project will be only \$350 million (2006 dollars).¹³⁷

¹³³ DRA Phase 2 Opening Brief at 24-27.

¹³⁴ DRA Phase 2 Opening Brief at 23-28.

¹³⁵ CAISO Ex. I-13 at 20.

¹³⁶ TNHC Opening Brief at 36.

¹³⁷ TNHC Opening Brief at 11.

As discussed above and in the CAISO's Phase 2 Opening Brief, the use of phase shifters would produce a small increase in the LCR reduction capability of TE/VS from 500 MW to 625 MW. In Phase 2, the CAISO incorporated this increase in LCR reduction capability for TE/VS in its net benefits analyses. The net result, however, still showed TE/VS resulting in net costs to ratepayers.¹³⁸

With regard to the cost of TE/VS, the CAISO's analysis used a direct cost of \$968 million (\$2012) and a mitigation cost of \$124 million (\$2012).¹³⁹ These cost estimates are comparable to the cost assumptions used for Sunrise and the other project alternatives considered by the CAISO. Using comparably developed costs and its technical analysis of LCR reduction, the Phase 2 analysis presented by the CAISO has demonstrated the TE/VS line to be not cost-effective when compared to Sunrise.¹⁴⁰

VII. COMPARISON OF THE PROPOSED PROJECT, THE DEIR ALTERNATIVES, AND PARTY-PROPOSED ROUTE OPTIONS

A. Ability to Provide System Reliability

UCAN, DRA, SBRP, TNHC and IID each presented arguments (some more voluminous than others) challenging the CAISO's determination that Sunrise and the ENRA provide the best solution for meeting the impending resource deficiency and long-term reliability needs SDG&E is facing. However, as explained above and in the CAISO's previously filed briefs, the alternatives offered by these parties fall short of providing the same level of reliability benefits afforded by Sunrise and the ENRA. For instance, the UNPA is based on proposed system upgrades that do not mitigate - and, in fact could serve to exacerbate - existing constraints on the fragile interconnection of the CAISO, IID and CFE systems at the IV substation. The USRA, UCAN's Jacumba-Sycamore Route, and IID's preference for a southern route in general, present

¹³⁸ CAISO Ex. I-13 at 22 (Phase 2 Rebuttal Table 1).

¹³⁹ CAISO Opening Brief at 39.

the Category C common mode outage concerns and would not allow for future system expandability.

The TE/VS and TE/VS + LEAPS alternatives do not provide the same level of LCR reduction capability provided by Sunrise or the ENRA, although TE/VS does provide the connection between the SDG&E and SCE systems that could ultimately be connected to Sunrise or the ENRA at the Central substation. Finally, DRA (and SBRP to a limited extent) essentially propose no solution for SDG&E reliability needs. None of these approaches should be adopted by the Commission.

B. Ability to Facilitate Renewable Energy

Sunrise, the ENRA, and other electrically equivalent alternatives provide SDG&E with the ability to access renewable generation in the Imperial Valley and Salton Sea areas. In contrast, no combination of GPN, IID transmission upgrades, and TE/VS would resolve the current 1150 dispatch limit applicable to generation connected to the IV substation and the IV-Miguel portion of SWPL. Furthermore, the UCAN and Aspen no project alternatives, as well as the in-basin generation alternatives will not facilitate access to renewable generation located in the Imperial Valley. In essence, none of the environmentally superior alternatives in the DEIR/EIS, except for Sunrise and its routing alternatives, meet the third Primary Project Objective.

D. Ability to Provide an Economic Benefit

In its Phase 2 Opening Brief, the CAISO stated that, while all of the alternatives analyzed by the CAISO in Phase 2 - except TE/VS and TE/VS + LEAPS - would produce net economic benefits, the respective net benefits produced by Sunrise, the ENRA, and the ESSRA are substantially more than the net benefits produced by these other alternatives. No argument or

¹⁴⁰ CAISO Opening Brief, Table 2 at 14.

fact has been raised in the Phase 2 Opening Briefs of UCAN, DRA, TNHC, IID, or SBRP that change this fundamental conclusion.

G. Expandability

The CAISO explained in its Phase 2 Opening Brief that only Sunrise and the ENRA provide SDG&E with an expansion option to further increase import capability in the future through a high capacity 500 kV connection between SDG&E and SCE. Connecting the SDG&E and SCE systems would provide SDG&E with access to additional resources, help meet future reliability needs, and create a more robust transmission system in Southern California. While a precise value of this expansion option is not quantifiable at this time, the expansion option provides significant long-term value to SDG&E at literally no additional cost to ratepayers and should be an important factor in evaluating Sunrise and the alternatives to Sunrise in this proceeding.¹⁴¹

None of the parties challenging the CAISO's support for Sunrise and the ENRA has seriously disputed this option value. UCAN argues that expandability should not be viewed as a project objective, and that the route of the "Full Loop" option considered in the DEIR/EIS is infeasible because it crosses the Cleveland National Forest and Indian tribal lands.¹⁴² UCAN seems to miss the point. The expansion flexibility provided by Sunrise and the ENRA does not include a specific route for the future interconnection of the SDG&E and SCE systems. As SDG&E explained in its Phase 2 testimony, the proposed Central East substation is designed for an ultimate build out of two 500 kV circuits and six 230 kV circuits of which initially there will be one 500 kV circuit and two 230 kV circuits. The precise routes of these future lines are currently unknown.¹⁴³ Sunrise and the ENRA are the only alternatives that include the proposed

¹⁴¹ CAISO Phase 2 Opening Brief at 49-50.

¹⁴² UCAN Phase 2 Opening Brief at 65.

¹⁴³ SDG&E Ex. SD-35 at 6.24- 6.25.

Central East substation, and therefore the only alternatives that provide this prudent planning option. UCAN's concerns have nothing to do with the matter before the Commission which is a consideration of the relative benefits provided by Sunrise and the proposed alternatives. The record in both phases of this proceeding clearly reveal that future transmission expansion capability is an important benefit provided by Sunrise and the ENRA.

X. CONCLUSION

For the reasons discussed herein and in the CAISO's Phase 1 briefs, the CAISO urges the Commission to grant a CPCN for either Sunrise or the ENRA.

Respectfully submitted,

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Dated: June 13, 2008

CERTIFICATE OF SERVICE

I, Judy Pau, certify:

I am employed in the City and County of San Francisco, California, am over eighteen years of age and am not a party to the within entitled cause. My business address is 505 Montgomery Street, Suite 800, San Francisco, California 94111.

On June 13, 2008, I caused the following to be served:

**PHASE 2 REPLY BRIEF OF THE CALIFORNIA
INDEPENDENT SYSTEM OPERATOR CORPORATION**

enclosed in a sealed envelope, by first class mail on the parties listed as “Appearance” and “State Service” on the attached service list who have not provided an electronic mail address, and via electronic mail to all parties on the service list who have provided the Commission with an electronic mail address.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration was executed on the date above at San Francisco, California.

/s/ Judy Pau

Judy Pau

cc: Commissioner Dian M. Grueneich (via US Mail and email)
Commissioner Michael R. Peevey (via US Mail and email)
Commissioner John A. Bohn (via US Mail and email)
Commissioner Timothy Alan Simon (via US Mail and email)
Commissioner Rachelle Chong (via US Mail and email)
ALJ Steven A. Weissman (via US Mail and email)
Service List A. 06-08-010 (via US Mail or email)

