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 Necessity for the Sunrise Powerlink Transmission Project.	))))))	Application 06-08-010 (Filed August 4, 2006)

PHASE 1 REPLY BRIEF OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

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November 30, 2007

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Pursuant to the July 13, 2007 ruling of Administrative Law Judge Weissman, the California Independent System Operator Corporation ("CAISO") submits its Phase 1 reply brief in support of California Public Utilities Commission ("Commission") approval of a Certificate of Public Convenience and Necessity ("CPCN") for the Sunrise Powerlink Transmission Project ("Sunrise").

I. INTRODUCTION

As discussed in the CAISO's Opening Brief, both the record in general and the CAISO's analysis in particular demonstrate that San Diego Gas & Electric Company ("SDG&E") will experience a resource deficiency and long-term reliability need in its service area beginning in 2010 and that Sunrise is the superior option for meeting this need. In their respective opening briefs, the Utility Consumers' Action Network ("UCAN"), Division of Ratepayer Advocates ("DRA"), The Nevada Hydro Company ("TNHC") and the South Bay Replacement Project ("SBRP") challenge this conclusion. These parties present unconvincing arguments that cannot be relied upon by the Commission.

UCAN and DRA assert that Sunrise is not needed because SDG&E will not experience a reliability need until 2015 (DRA) or later (UCAN). In the case of UCAN, its position is based on a fundamentally flawed analysis that relies on overly aggressive and unrealistic estimates of

load growth, energy efficiency, demand response, Advanced Metering Infrastructure ("AMI"), and transmission upgrades that the CAISO has shown to be deficient. DRA's analysis is equally flawed, albeit for different reasons. DRA's basis for claiming that Sunrise is not needed in 2010 is dependent on assumptions related to the retirement of existing in-basin generation that DRA, itself, acknowledges will not occur. Arguments made by TNHC in support of the Talega-Escondido/Valley-Serrano ("TE/VS") transmission project and SBRP for in-area generation also ignore material deficiencies in their respective projects relative to Sunrise and are simply attempts to advance the viability of these projects.

In its analysis, the CAISO has considered new in-area peakers and combined cycle facilities, transmission alternatives, non-wires solutions, and combinations of them all. It has also considered the continued operation of existing resources in SDG&E's service territory. After considering all of these alternatives, the CAISO has determined that Sunrise is needed to meet SDG&E's reliability need in 2010, provides the significant net benefits, and will facilitate compliance with RPS requirements. As discussed below, in the CAISO's Opening Brief, and in its testimony, no party has identified an alternative or course of action that will ensure a similar level of reliability and provide the amount of benefits to be realized from Sunrise.

II. PROCEDURAL HISTORY[1]

III. STANDARD OF REVIEW

IV. PROJECT DESCRIPTION AND SCOPE

V. NEED FOR THE PROJECT

As discussed in the CAISO's Opening Brief, a resource deficiency/reliability need exists in SDG&E's service area beginning in 2010. While UCAN and DRA agree with the CAISO that SDG&E will experience a resource deficiency, they disagree with the CAISO regarding the size

of the deficiency and the timing of the reliability need. Such disagreement, however, should be expected. As the CAISO noted in its Opening Brief, long-term resource planning is not an exact science; but rather requires planners to make hundreds of "judgment calls" with respect to the inputs and assumptions used to determine the need, timing, and benefits associated with new infrastructure investments.[2] *Indeed, even the results of the analysis performed by SDG&E and the CAISO – the two primary parties supporting the need for Sunrise – are not the same*.

Nevertheless, a decision must be made regarding the need for Sunrise in this proceeding. As a result, it is incumbent on the Commission to evaluate the reasonableness of each party's analysis of the need for the project. As discussed below, the "need" analyses performed by UCAN and DRA are fundamentally flawed in many respects, overly optimistic in other respects, and demonstrably unreasonable as a general matter. Accordingly, the Commission should not rely on the analysis performed by either UCAN or DRA in making a decision in this proceeding.

Unlike UCAN and DRA, the CAISO took two important steps as part of its participation in this proceeding to ensure that its analysis of the need for Sunrise is based on plausible and conservative assumptions that provide a reasonable basis for evaluating the project. The first step was putting together a new team of experts to study the project. This new team was comprised of members of the CAISO staff and outside experts that had not previously worked on the CAISO South Regional Transmission Plan ("CSRTP") process.[3] Their task was simple: to conduct a comprehensive review of the CSRTP analysis for the purpose of independently determining whether a need for Sunrise exists.[4]

---

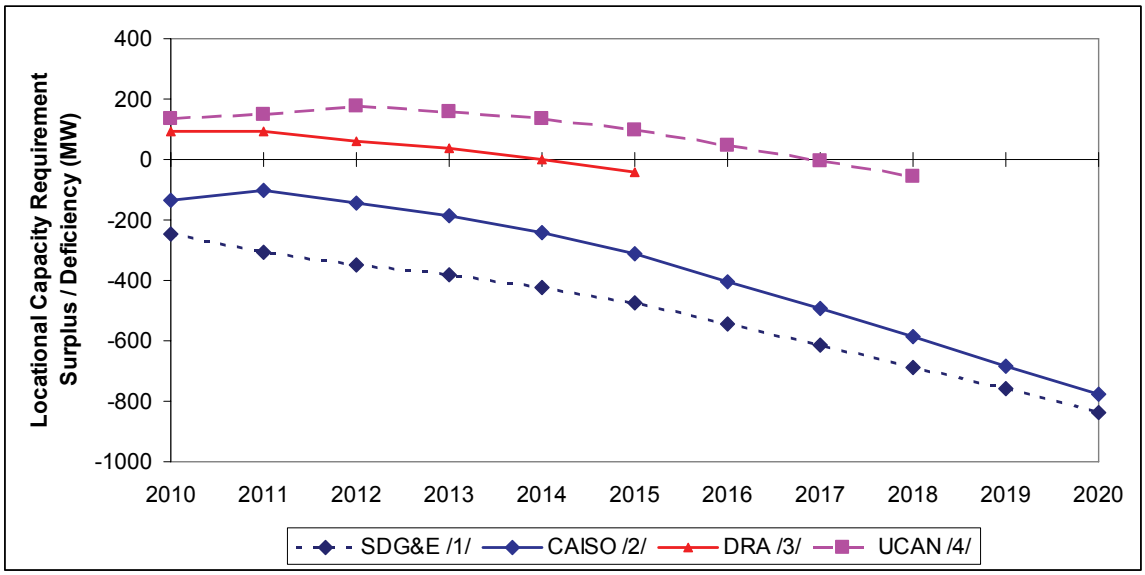
[1] In its Reply Brief, the CAISO does not address all issues raised by other parties in their respective opening briefs. The fact that the CAISO does not address a particular issue in its Reply Brief should not be taken to mean that the CAISO agrees with a party's position on that particular issue.
[2] CAISO Opening Brief at 2.
[3] CSRTP was formed under the umbrella of the Southwest Transmission Expansion Plan ("STEP") group to specifically study Sunrise, along with transmission projects associated with Tehachapi wind development and the Lake Elsinore Advanced Pumped Storage ("LEAPS") project. CAISO Ex. I-1 at 6.
[4] CAISO Ex. I-6 at 6.

The second step was to engage intervenors in the CAISO's evaluation process and, perhaps most importantly for determining the reasonableness of the CAISO's analysis, be receptive to their input and suggestions. For example, the CAISO held a workshop after submitting its Part 1 testimony where intervenors had the opportunity to propose revisions to CAISO study assumptions and inputs.[5] Following this workshop, the CAISO made several revisions to its study assumptions and inputs both on its own initiative (as part of its comprehensive review of the CSRTP process)[6] and in response to suggestions from intervenors, in particular UCAN.[7] Later, in its rebuttal testimony, the CAISO made additional adjustments to its analysis, many based on DRA's assessment of San Diego's local capacity requirement ("LCR").[8] The net effect of these changes was to *reduce* the San Diego LCR in 2015 by about 250 MW – from 565 MW to 313 MW.[9] Thus, in contrast to claims made by UCAN that the CAISO's support for Sunrise was "predetermined,"[10] the record demonstrates that the CAISO incorporated changes to its needs analysis over the course of this proceeding that served to reduce the LCR need in the San Diego area.

Given the CAISO's approach, it is no surprise that the results of its analysis of the need for Sunrise[11] fall in-between the results of the analysis done by SDG&E,[12] DRA,[13] and UCAN.[14]

[5] CAISO Opening Brief at 11.
[6] *See e.g.*, CAISO/Orans, Tr. at 2590-2592.
[7] *See e.g.*, CAISO Ex. I-6 at 4.
[8] CAISO Ex. I-6 at 37-38.
[9] CAISO Ex. I-6 at 40.
[10] UCAN Opening Brief at 309.
[11] *See* CAISO Opening Brief at 21.
[12] SDG&E's base case scenario – South Bay retires November 2009. *See* SDG&E Opening Brief at 72.
[13] Based on DRA adjustments to SDG&E's needs analysis. *See* DRA Opening Brief at 10.
[14] *See* UCAN Opening Brief at Table 1.

Figure V-1. San Diego Locational Capacity Requirement Comparison Chart



As Figure V-1 illustrates, by adopting, where appropriate, changes to study assumptions and inputs proposed UCAN and DRA, the CAISO's analysis results in a reasonable "middle ground,"[15] providing the Commission with an LCR forecast on which it can confidently rely in determining the need for Sunrise.

A. Analytical Baseline

Although the CAISO adopted many of the study assumptions and inputs proposed by UCAN and DRA, it did not accept all them and it does not believe that, as a whole, the analysis presented by either party is reasonable nor should be relied upon by the Commission in making a decision in this proceeding. As discussed in more detail below, UCAN's analysis relies on an unlikely combination of extremely aggressive energy efficiency, demand response, and Advanced Metering Infrastructure ("AMI") goals being met, coupled with a load growth rate that is less than SDG&E has experienced over the past three years. While the CAISO supports demand reduction initiatives and, as described in its Opening Brief, accounted for likely

[15] In saying that its analysis represents a "conservative middle ground," the CAISO is not suggesting that it simply "split the difference" between SDG&E, UCAN, and DRA. As described in its testimony and Opening Brief, the CAISO performed an independent analysis of the need for Sunrise.

reductions in its analysis,[16] it is unreasonable and simply too risky to assume for purposes of capacity planning that – as UCAN does - *all* of these very aggressive goals will be met.

The primary area where DRA's analysis diverges from the CAISO's analysis relates to the continued operation of existing in-basin resources – in particular, the existing South Bay power plant ("South Bay"). Specifically, DRA assumes that South Bay will continue to operate in 2010 and beyond, notwithstanding its acknowledgement that the plant, along with more than 1,100 MW of other in-basin generation, will likely retire at some point before 2020.[17] In contrast, both SDG&E and the CAISO assume that South Bay will retire before 2010 which, as discussed below, is a reasonable assumption given the age of the plant in 2010 (approximately 49 years old) and other questions related to the plant's ability to operate beyond 2009.[18]

1. Analysis Period

2. Consistency with Prior Rulings and Decisions

3. Energy Efficiency, Demand Response, and Onsite Generation Additions

In its Opening Brief, UCAN presents a table which purports to show that SDG&E does not need any additional resources to meet reliability needs until 2017.[19] Support for this assertion is based, in large part, on (1) SDG&E meeting extremely aggressive post-2008 energy efficiency goals that are in addition to the energy efficiency already included in load forecasts prepared by the California Energy Commission ("CEC") and accounted for in the CAISO's analysis; and (2) an aggressive demand response and AMI forecast that would have SDG&E reducing its peak load by 1% in 2008, increasing to 8% in 2014 -2018.[20]

[16] CAISO Opening Brief at 21-24.
[17] DRA/Woodruff, Tr. at 2715.
[18] *See infra* Section V.A.4.
[19] UCAN Opening Brief at Table 1.
[20] These numbers were calculated using information shown on Table 1 of UCAN's Opening Brien.

The net result of employing these assumptions is that UCAN believes SDG&E will be able to reduce the 1.7% growth rate in peak demand that it has experienced annually over the last 3 years to 0.26% per year. While laudable as a policy goal, the CAISO simply cannot support – *for capacity planning purposes* – an approach that relies so heavily on SDG&E meeting such aggressive AMI and energy efficiency goals, particularly given the early stage of AMI deployment and new energy efficiency programs. Put another way – it is simply too risky to base resource planning decisions on such aggressive load reduction assumptions.

Energy Efficiency

In calculating the impact of energy efficiency on the need for Sunrise, UCAN relies on estimates of energy efficiency embedded in the CEC's long-term load forecast and then piles-on additional load reductions associated with post-2008 energy efficiency measures.[21] While such an approach may be intuitively appealing, it is unreliable for purposes of determining need in this proceeding.

As an initial matter, it is important to note that the CEC does not actually know how much energy efficiency is embedded in its load forecast because the CEC's load forecast model is *not* designed to disaggregate the impacts of energy efficiency. As a result, the only way that the CEC can estimate the impacts of energy efficiency programs on demand is through an iterative "backing-out" of energy efficiency measures:

> Attribution of savings from standards is guided by the principle that program savings are determined in the reverse order of introduction. This chronological sequencing approach requires that a series of model runs be made. For example, the effects of the 2005 building standards were calculated by comparing energy use with those standards in effect (the baseline forecast) to what energy use would have been under prevailing 1998 building standards.[22]

[21] UCAN Opening Brief at 42.
[22] UCAN Updated Ex. U-47 at 24.

The problem with this approach, however, is that it results in an *estimate* of energy efficiency impacts that is beyond what the CEC model was designed to do, making it unreliable for capacity planning purposes. Indeed, the CEC, itself, acknowledges that its methodology for estimating energy efficiency is problematic:

> A difficulty arises in correctly projecting uncommitted impacts versus market effects, standards effect, and savings from public or utility programs that are captured in forecast models. . . . [A]s models are calibrated to historic actual data, they implicitly account for the effects of many years of energy efficiency program. Therefore, the forecasts may include some impacts associated with the historic and ongoing levels of programs to the extent they represent impacts associated with replacement of aging building stock and equipment or installation of new stock and equipment at efficiency levels that comply with current building and appliance standards…."[23]

In addition, the CEC's energy efficiency estimates are highly influenced by what assumptions are made about how natural gas prices would change in the absence of any energy efficiency programs, and how consumption patterns would (or would not) change in response to those prices. The CEC attempts to estimate what energy demand, starting in 1977, would have been in the absence of building and appliance standards, and price effects. It does this by removing all building and appliance standards from its model, and by holding all prices constant in 1977.[24] The problem with this approach is that it ignores exogenous shocks to fuel prices in the years between 1977 and 2007. The effects on demand caused by such changes in fuel prices are therefore not captured in the CEC model.

UCAN further compounds the inherent limitations in the CEC's modeling of energy efficiency savings by making a methodological error. In the CEC's analysis, "all [energy efficiency] savings are ultimately measured against a baseline prior to 1975, the year in which

[23] UCAN Updated Ex. U-47 at 24.
[24] UCAN Updated Ex. U-47 at 24-25.

the first standards were introduced."[25] By netting out energy efficiency savings in 2008 from all subsequent years, UCAN's approach is inconsistent with the CEC's methodology, since under the CEC's approach, energy efficiency savings are relative to 1975, not to 2008.

Given the inherent limitations of the CEC's long-term load forecast to accurately estimate load reductions resulting from energy efficiency measures, prudent resource planning calls for the Commission to reject UCAN's effort to include overly aggressive post-2008 energy efficiency goals in its evaluation of the need for Sunrise.

AMI

UCAN believes the Commission should consider 106 MW more AMI than the CAISO included in its analysis for the year 2015.[26] As noted above, this equates to SDG&E reducing its peak load by 8% beginning in 2014. By comparison, the 8% target is 60% *higher* than the 5% goal set by the Commission. In light of the early stage of AMI deployment, the Commission should not rely on such aggressive estimates for increased demand reduction resulting from AMI, particularly given UCAN's reasoning.

UCAN believes that AMI can achieve substantially higher reductions in peak load than estimated by the CAISO by virtue of increasing customer price incentives from 50¢ to $1 per KWh or higher.[27] The CAISO has several concerns with this reasoning. As an initial matter, it is not a "given" that higher incentive rates will necessarily result increased load reductions. On the contrary, peak period load reductions can be statistically similar regardless of rates, suggesting that customers respond more to day-ahead notification than to price levels. Moreover, higher incentive rates can produce more "free riders" in cases where the demand response rate is an option, which, in turn mitigates reductions in load. There is also a cost to

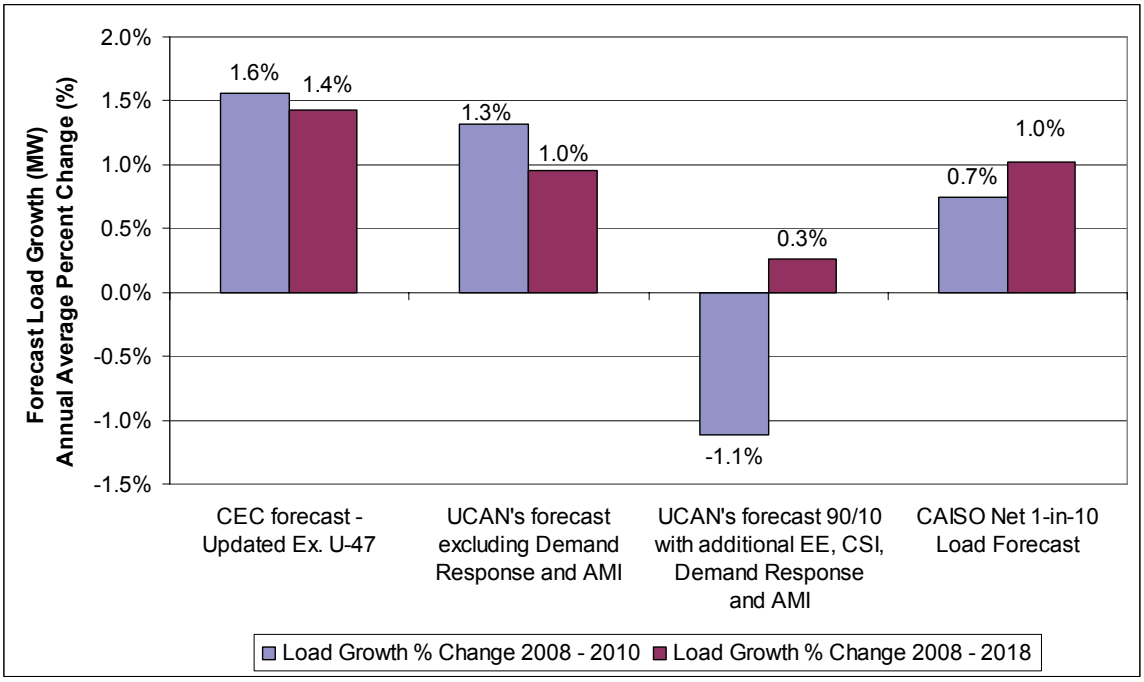
[25] UCAN Updated Ex. U-47 at 72.
[26] UCAN Opening Brief at 133-134.
[27] UCAN Opening Brief at 130-131.

consumers anytime a utility charges more than their marginal or incremental costs during peak periods. One dollar per MWh is substantially above any reasonable level of market based avoided costs.

Summary

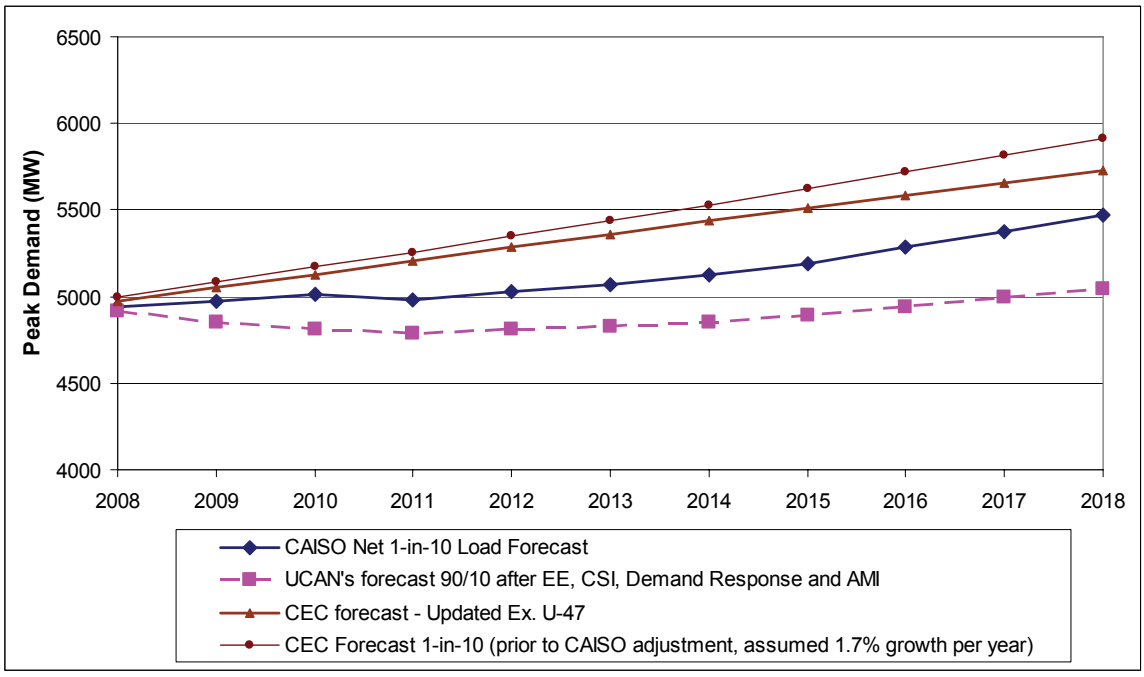
Figure V-2 compares UCAN's forecasted load growth with the growth rates forecasted by the CEC and CAISO. As the figure demonstrates, UCAN's reliance on SDG&E realizing such substantial levels of load reductions from demand response and AMI programs results in UCAN's forecast showing SDG&E's rate of load growth falling to *negative* 1.1% between 2008 and 2010 – a rate that is, on its face, unreasonable given recent load growth rates in San Diego.

Figure V-2. Comparison of Annual Average Load Growth Forecasts



Furthermore, when viewed in terms of yearly peak demand, UCAN's forecast is significantly lower than load forecasts prepared by both the CEC and CAISO.

Figure V-3. Comparison of Yearly Peak Demand Forecasts



As shown in Figure V-3, UCAN expects SDG&E's 2018 peak load to be *less than 130 MW higher than its peak load in 2008*. To the CAISO's knowledge such limited load growth over a ten year period is unprecedented and, in no instance, should be relied upon by the Commission for resource planning purposes.

4. Generation and Transmission Additions

DRA

DRA and the CAISO generally agree on the amount of generation resources that should be assumed to be added in the San Diego area during the analysis period, with the CAISO assuming the addition of slightly *more* capacity (11.5 MW) than DRA.[28] The parties disagree, however, with respect to the amount of generation that should be expected to retire for planning purposes and the timing of such retirements. This difference forms the basis for DRA's claim

[28] DRA identifies 802 MW of "likely" capacity additions, including the EnerNOC project. *See* DRA Opening Brief at 20. In contrast, the CAISO assumes 813.5 MW of new capacity will be added. *See* CAISO Opening Brief at 21 (Table V-1 lines 5 (EnerNOC) and 9-15).

that Sunrise is not needed until 2015. DRA's position is not supported by the record and, accordingly, should be rejected.

Of the 1,822 MW of existing generation formerly owned by SDG&E,[29] the CAISO has conservatively assumed that only 702 MW (representing South Bay) will retire during the analysis period. In contrast, DRA assumes that all 1,822 MW will retire, although it does not provide any specificity as to the dates of the retirements, other than to assert that all of this capacity "may reasonably be expected to be available in the early years of the next decade, including the 702 MW [South Bay facility]."[30]

Instead of trying to forecast the dates that existing generation will retire, DRA relies on an arbitrary retirement schedule for planning purposes that has no basis in the real world. Specifically, to account for expected generation retirements, DRA simply assumes that, beginning in 2011, the 1,822 MW of local generation formerly owned by SDG&E will begin to retire annually in 182 MW increments.[31] DRA makes this assumption notwithstanding that it admits that it is *impossible* for such a scenario to actually occur:

> Q [Gray] And you would agree that given the units that comprise the 1822 megawatts of local generation, that it's not possible that 182 megawatts could even retire in any given year?
>
> A [Woodruff] Yeah, you -- that's true. I got that by dividing total capacity by 10.[32]

An analytical approach that relies on events which the Commission knows will not occur is patently unreasonable and should not be relied upon by as a matter of prudent capacity planning. Furthermore, as it relates to the need for Sunrise, DRA's flawed analytical approach serves to o*verstate* existing generation through 2015 relative to the CAISO's analysis (which

[29] This generation consists of South Bay (702 MW), Encina (960 MW), and Cabrillo II (160 MW). *See* DRA/Woodruff, Tr. at 2716.
[30] DRA Opening Brief at 13 (citation omitted).
[31] DRA/Woodruff, Tr. at 2715.
[32] DRA/Woodruff, Tr. at 2717.

assumes the retirement of South Bay in 2009). By overstating existing generation through 2015, DRA is able to conclude – *albeit incorrectly* - that SDG&E will not have a resource need in 2010.

With respect to the assumption made by the CAISO that South Bay will retire in 2009, DRA asserts that there is no reason to believe that the plant will retire by that date.[33] This assertion is based on DRA's belief that the CAISO, itself, has the ability to keep South Bay operating by simply giving South Bay a reliability must-run ("RMR") contract.[34] DRA's position, however, is contradicted by its own testimony which acknowledges, in no uncertain terms, that an RMR contract is not sufficient, in and of itself, to ensure that existing generation will continue to operate:

> DRA believes the Commission should anticipate that many of the SDG&E-divested units will retire by the year 2020 – *even if they continue to receive RMR or other contracts*.[35]

Given the age of South Bay (49 years old in 2010), it is entirely reasonable to assume that, notwithstanding a potential RMR contract, a lease extension, and the successful resolution of potential air and water quality issues – *none of which are certain to occur* - the plant may still be unavailable beginning in 2010:

> Q [Gray] Now as you sit here today, can you tell me with absolute certainty that South Bay will physically be able to operate in the year 2010?
>
> A [Woodruff] Again, that's true for South Bay, Encina, and Cabrillo 2: can't say with absolute certainty.[36]

The CAISO's assumption that South Bay will retire before 2010 is reasonable given the facts and should be relied upon by the Commission for capacity planning purposes. In stark

[33] DRA Opening Brief at 14.
[34] DRA Ex. D-66 at 19.
[35] DRA Ex. D-66 at 25 (emphasis in original).
[36] DRA/Woodruff, Tr. at 2716.

contrast, DRA's assumption that local generation formerly owned by SDG&E will begin to retire annually in 182 MW increments is fundamentally flawed and demonstrably unreasonable.

SBRP

SBRP appears to suggest that Sunrise will have no impact on the need for SDG&E to procure local generation to meet local resource adequacy ("RA") requirements.[37] Specifically, SBRP argues that "[t]he CAISO's analysis does not consider SDG&E's need for local capacity to meet the Local RA requirement."[38] SBRP's interpretation of the CAISO's analysis is so patently wrong, the CAISO is not quite sure how to respond, other than to question whether SBRP read the CAISO's testimony or is familiar with the record. Having said that, the CAISO simply notes that a significant part of its participation in this proceeding has focused specifically on the San Diego area LCR[39] and the impact of Sunrise and alternatives to the project – including in-basin generation – on SDG&E's LCR need.

5. Load Growth Scenarios

As described in CAISO's Opening Brief, the load growth scenario used for its need analysis is based on the CEC's May 2007 forecast of 2008 peak demand.[40] This forecast shows that, between 2006 and 2008, load in the San Diego area grew at a rate of 1.7% per year. UCAN asserts that the CAISO's approach overstates load growth. The Commission should reject UCAN's assertion.

In support of its position, UCAN cites to a CEC Staff long-term forecast that shows annual load growth for SDG&E of 1.48%.[41] The long-term forecast, however, provides no explanation for why long-term growth rates should be lower that the CEC's weather adjusted regression results for the past three years. Moreover, the CEC's long-term forecast does not

[37] SBRP Opening Brief at 13.
[38] SBRP Opening Brief at 14.
[39] *See e.g.*, CAISO Ex. I-6 at 39 (Table 5).

provide any reason why it would be reasonable to expect that load will grow at a rate less than 1.7% through *2010*. Given that lack of any explanation for why the CEC's long-term growth rate is less than historical load growth in the San Diego area between 2006 and 2008, it is reasonable to assume that, for planning purposes, load will continue to grow at historical rates at least through 2010.

As the CAISO has demonstrated, assuming a 1.7% growth in load between 2008 and 2010 (along with other assumptions in the CAISO's analysis), a resource deficiency/reliability need will exist for SDG&E beginning in 2010.[42] Thus, even if the rate of load growth is reduced at some point *after* 2010, resulting in an aggregate growth rate of 1.48% over an 8-10 year period (which the CAISO does *not* concede), the CAISO's analysis would still show a resource deficiency beginning in 2010, and continuing through 2020.

It is also important to note that, on November 16, 2007, the CEC issued its "final" load forecast, which shows SDG&E's net peak demand growing at a rate of 1.6% from 2006-2010.[43] The CAISO, however, is not offering the final CEC report as evidence that load will grow at 1.6%; but rather to demonstrate the inherent uncertainty in the CEC's demand forecast and modeling. Specifically, the CEC's final report represents the 4th time over the last year that the CEC has modified its load growth estimate.

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[40] CAISO Opening Brief at 21.
[41] UCAN Updated Ex. U-47 at 116 (Table 21).
[42] CAISO Ex. I-6 at 39 (Table 5).
[43] *See* http://energy.ca.gov/2007publications/CEC-200-2007-015/CEC-200-2007-015-SF2.PDF

B. Project costs

1. Cost Estimates

2. Cost Cap

C. Reliability

The CAISO is mandated by statute to "ensure efficient and reliable operation of the transmission grid."[44] As discussed in its Opening Brief, in order for the CAISO to meet this statutory responsibility, critical infrastructure must be in place when and where it is needed. In this case, the CAISO's analysis demonstrates that a reliability need exists in SDG&E's service area beginning in 2010 and that Sunrise will cost-effectively enable SDG&E to meet this need. The arguments of UCAN, DRA, and SBRP that Sunrise is not needed for reliability are wholly unconvincing and, if adopted, would put reliability in the San Diego area at risk.

UCAN

UCAN asserts that SDG&E does not need any additional resources to meet reliability needs until 2017, "and needs only 56 M[W] in the year 2018.[45] This conclusion is based primarily on (1) load growing at an unlikely rate of 1.47%; (2) substantial reductions in load resulting from post-2008 energy efficiency measures; (3) an overly optimistic and unsubstantiated forecast of AMI; and (4) the addition of one in-basin combustion turbine ("CT") to provide peaking capacity.[46] As discussed above,[47] these assumptions are simply unrealistic. As a result, UCAN's analysis essentially turns what is suppose to be a conservative, risk averse approach for identifying the amount of demand that will occur once every 10 years into a risky – if not irresponsible – projection of peak load dependent on aggressive policy goals being achieved. The net effect is that if UCAN's approach is accepted by the Commission, the

[44] Pub. Util. Code § 345.
[45] UCAN Opening Brief at 51.
[46] UCAN Opening Brief at 51-52.

probability that load will be higher than UCAN's load forecast will be much greater than the 1 in 10 year benchmark used for resource planning.

As a general matter, resource planning should not be based on "stretch goals" or overly aggressive policy targets. More specifically, when considering projects that could have a material impact on reliability, the Commission should rely on an analysis that results in a load forecast that is still conservative after accounting for demand side programs and based on expected results rather than what the Commission itself has called "aggressive" demand reduction goals.

DRA

DRA asserts that SDG&E has already taken several steps in recent years to meet reliability needs in the San Diego area through at least 2013 without Sunrise.[48] Specifically, DRA claims that AMI, the proposed J Power (Pala) and Wellhead, (Margarita) CTs, additional demand reduction, and South Bay will enable SDG&E to meet its reliability needs well past 2010. The CAISO has considered and accounted for each of these items and its analysis demonstrates that Sunrise is needed in 2010.

As discussed above and in its Opening Brief, the CAISO's analysis of the need for Sunrise accounts for AMI and demand response programs. In addition, the CAISO's analysis assumes that both the J Power and Wellhead CTs will be available beginning in 2010 (along with several other new resources).[49] With respect to South Bay, for the reasons noted above, it is entirely reasonable to assume that the plant will not be available in 2010 or beyond given its age, and potential issues involving the plant's property lease and compliance with environmental regulations.

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[47] The addition of an in-basin CT as proposed by UCAN was not discussed above. However, new generation additions are discussed as they relate to DRA's analysis.
[48] DRA Opening Brief at 23-24.

SBRP

With respect to reliability, SBRP asserts that the CAISO has failed to consider SDG&E's need for local capacity. As discussed above,[50] this assertion has no basis in fact and should be summarily dismissed by the Commission.

D. Access to Renewables

The CAISO analysis shows that renewable development in the Imperial Valley and Salton Sea areas will be adversely impacted by transmission constraints which limit the amount of resources from these areas that can be reliably delivered into the CAISO control area. Although the interveners take issue with the CAISO conclusions in this regard, their analyses are flawed and should not be seriously considered by the Commission in this proceeding.

UCAN

In its Executive Summary/Introduction, UCAN asserts that "…SDG&E can import up to 2100 MW of renewable energy over existing infrastructure – double the amount that is required of SDG&E to comply with the 2010 RPS requirements" and that "the [CA]ISO study affirms this fact."[51] This theme is followed throughout UCAN's Opening Brief and is an essential underpinning of UCAN's argument that Sunrise, as proposed by SDG&E, is not needed and should not be approved.[52] In making this argument, UCAN glibly ignores the CAISO's study results demonstrating that interconnecting additional Imperial Valley area resources to an infrastructure that is already fully utilized will cause violations of reliability standards that cannot be feasibly or practically mitigated, even if *all* of the items on UCAN's "Chinese menu" are ordered.[53]

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[49] CAISO, Ex. I-6 at 39 (Table 5, lines 9-15).
[50] *See supra* Section V.A.4.
[51] UCAN Opening Brief at 8 (citation omitted).
[52] As an alternative to its patchwork of cheap fixes, UCAN also recommends a southern route alternative that would avoid Anza-Borrego State Park (UCAN Opening Brief at 3).
[53] UCAN Opening Brief at 3.

Indeed, UCAN's position ignores the CAISO's Rebuttal Testimony and demonstrates UCAN's continued misunderstanding of the Gridview studies performed by the CAISO. For instance, UCAN incorrectly concludes that because the Gridview runs performed by the CAISO *for UCAN* included 2700 MW of renewable development in both the with- Sunrise and without-Sunrise cases (as requested by UCAN) without "perceiving" transmission limitations, either the CAISO's deliverability concerns are invalid or all of the SDG&E and CAISO economic studies are worthless.[54]

Both SDG&E and the CAISO used Gridview to determine the energy related benefits of each alternative that is produced from dispatching generators in a least cost fashion subject to transmission equipment thermal loading limits. Gridview does not have the capability to identify reliability constraints due to transient instability when a large line or generator fails, and that is not the purpose of the model. In contrast, the transient stability analysis completed by the CAISO demonstrates that additional resources beyond 700 MW in Imperial Valley will violate existing criteria. The CAISO accounted for this transient instability constraint and other related deliverability constraints in its Gridview assumptions by limiting the amount of new renewable generation in the Imperial Irrigation District ("IID") area to approximately 700 MW and at the Imperial Valley ("IV") substation to 0 MW. By requesting that the CAISO modify its base case renewable generation assumptions to include 2700 MW, *UCAN expressly instructed the CAISO to ignore this constraint*. Accordingly, UCAN's claim that the CAISO's Gridview results are invalid because this constraint was not identified by the Gridview program is without merit.

Alternatively, UCAN assumes that the Mexican frequency dip criteria violation identified by the CAISO exists but "is too weak a reed to support a conclusion that renewables can't be

[54] UCAN Opening Brief at 63

developed in the Imperial Valley without [Sunrise]."[55] UCAN further claims that the CAISO's findings were "thoroughly discredited" (apparently in UCAN's direct testimony) because SDG&E found similar violations with Sunrise "but that didn't stop them from proceeding with that project."[56] Specifically, in its direct testimony, UCAN states that, according to the WECC Path Rating Study for Sunrise,[57] SDG&E found two different mitigations for the Commission Federal de Electricidad ("CFE") frequency violations. In actuality, the Comprehensive Path Rating Study demonstrates that two separate contingency conditions cause a frequency dip criteria violation in Mexico, and thus two mitigation plans are identified to resolve these two contingency violations.[58] The study shows that the first contingency violation, which is caused by an outage of the Tijuana-Otay Mesa 230 kV line, occurs with or without Sunrise and can be resolved by boosting the voltage on the Tijuana 230 kV bus. In other words, the first contingency is internal to the CFE system, is an existing problem, and should be mitigated by CFE.

The second contingency criteria violation only occurs without Sunrise. This criteria violation cannot be resolved by increasing voltage at the Tijuana 230 kV bus and can be mitigated only by changing the generation dispatch in CFE (effectively creating a must-run generation requirement for CFE). This is the same contingency criteria violation, the IV-Miguel 500 kV line (*i.e.*, the Southwest Power Link – "SWPL") outage, that the CAISO found would be significantly impacted by the interconnection of additional generation electrically close to the IV substation.[59] Because this violation is caused by circumstances outside of the CFE network, CFE should not be expected, on its own, to mitigate the problem by redispatching generation.

[55] UCAN Opening Brief at 67.
[56] UCAN Opening Brief at 66; fn. 267 referring to pages 88-89 of Ex. U-3.
[57] *See* UCAN Ex. U-54.
[58] *See*, *e.g.*, Ex. U-54 at 4.
[59] CAISO Ex. I-6 at 33-34; CAISO/Sparks, Tr. at 1905-1906.

Having misrepresented the conclusions in the WECC Path Rating Study, UCAN goes on to claim that "SDG&E now says there won't be any cross-trips of IV-ROA under high load conditions," noting that there have only been two overlapping outages of both SWPL and IV-ROA during the last ten years.[60] Such sweeping assertions fail to take into account that CFE can elect to set the cross-trip based on its own system needs.[61] Indeed, UCAN correctly notes that, if the cross-trip occurs at Tijuana instead of IV, the Mexico Light proposal would not work.[62] Nevertheless, UCAN goes on to suggest that the CAISO is contradicting itself by raising concerns about the cross-trip at both Tijuana and IV, even though setting the cross-trip at Tijuana might not cause frequency dip criteria violations for the same outage (IV-Miguel, then Tijuana-Otay-Mesa).[63]

The fact of the matter is that the current transmission system in this area has a very weak interconnection between the CFE and CAISO systems that must be partially cross tripped during an IV-Miguel outage, resulting in a transient frequency criteria violation for two different contingencies. The cross-trip is designed to be operated at either location, to provide operational flexibility and meet system needs. Limiting this operational flexibility would almost certainly create adverse impacts under some operating conditions. Increasing the reliance on the existing interconnection with CFE would also create adverse impacts under some operating conditions.[64]

The operational flexibility of the CFE system should not be limited, nor should the CAISO increase its reliance on this weak system as suggested by UCAN. By contrast, Sunrise

[60] UCAN Opening Brief at 66.
[61] *See* CAISO's Opening Brief at 35-36 (Mexico Light discussion).
[62] UCAN Opening Brief at 67, note 275.
[63] As Mr. Sparks explained during cross-examination, the CAISO had not studied the Tijuana-Otay Mesa cross-trip following an IV-Miguel outage (CAISO/Sparks, Tr. at 1900).
[64] The Baja California portion of the Mexico CFE system serves the areas near Tijuana and Mexicali, is part of the WECC interconnection and is not connected to the rest of the Mexico CFE system. This portion of the CFE system is connected to the CAISO/WECC by two tie-lines primarily for reliability purposes. If both of these tie lines are lost, then this system is islanded from all external resources and may be vulnerable to major electric service interruptions.

provides badly needed relief to this fragile portion of the CAISO network. Furthermore, adding renewable generation electrically close to the IV bus, without Sunrise, would rapidly increase the likelihood that the IV-ROA cross-trip would occur, and this would be an unacceptable adverse impact on CFE.

Continuing its series of alternative arguments, UCAN asserts that "even if the CAISO were right," the Mexican frequency dip criteria violations "will be smaller" than discussed in the CAISO rebuttal testimony.[65] The basis for this statement appears to be UCAN's conclusion that the 700 MW renewable generation limit in the CAISO's "without Sunrise" analysis is based on an incorrect reading of the "WECC rules about frequency violations, which apply only to load buses." UCAN, however, is patently wrong in this regard. The "WECC rules" to which UCAN refers are contained in the "WECC Performance-Disturbance Table."[66] Note 5 to this Table states that "Load buses include generating unit auxiliary loads."

Finally, UCAN argues that because Green Path North was modeled by the CAISO as being able to facilitate the delivery of 2000 MW of renewable generation to the San Diego area, the Commission should not consider Sunrise until after this 2000 MW of generation has been developed.[67] UCAN then goes on to opine that even under the "unlikely scenario" that Green Path North is not built, new generation from the IID area can be delivered to the Southern California Edison ("SCE") area because "IID is already in talks with SCE about doubling the capacity of the existing IID-SCE interconnection by simply reconductoring two existing 230 kV line (Path 42) between IID and SCE" and "IID is planning a 500 kV transmission line from its Indian Hills substation to the Devers substation.[68] According to UCAN, if the CAISO is "willing

[65] UCAN Opening Brief at 67.
[66] This document can be found at http://www.wecc.biz/documents/library/publications/PCC/PCC_Handbook_Section_11.pdf
[67] UCAN Opening Brief at 75.
[68] UCAN Opening Brief at 76.

to believe" that IID will build an Indian Hills-Devers 500 kV line, the claims that Sunrise is needed to meet RPS goals will be largely mooted.

Whether or not the CAISO is "willing to believe" that IID will take certain actions, UCAN's theory in this regard is flawed and untenable. The CAISO has already assumed that the 230 kV upgrades to Path 42 were necessary to deliver the 700 MW of renewable generation from the IID area without Sunrise.[69] Furthermore, without the completion of Green Path North or the West of Devers upgrades associated with the Palo Verde-Devers 2 transmission line project (PVD2), reliance on the IID to SCE interconnection as the primary transmission path for IV area renewable generation flows could cause major transmission problems. As the Commission is well aware, the status of PVD2 is currently unsettled in light of the actions of the Arizona Corporation Commission.

UCAN's bottom line with respect to the deliverability of renewables located in the IV and Salton Sea areas is that the CAISO should identify a "cheap fix" to resolve what is in actuality a very real transmission limitation (*i.e.*, the Mexican frequency dip violations) that will impede California's ability to meet its RPS goals in a least cost manner. The Commission should reject such an approach. The precarious state of the transmission infrastructure in the IV Substation area today is the result of a series of "cheap fixes" rather than solid long-term planning. As discussed throughout the CAISO testimony, the critical contingency is the loss of IV-Miguel 500 kV line (*i.e.*, SWPL). This outage causes potential overloads in the CFE and IID systems. These overloads are corrected by forcing out parallel transmission lines and forcing out generation, which is akin to a controlled cascading outage. This area is already maxed out on cheap solutions, nevertheless, UCAN asks the Commission to look for more, including reliance on the actions of non-jurisdictional entities (CFE, IID and LADWP) over which neither the

Commission nor SDG&E has any control. UCAN's proposals do not meet the reliability standards to which the CAISO must operate the grid and are simply not acceptable.

TNHC

TNHC's entire discussion of access to renewables provided by Sunrise relative to TE/VS consists of several statements sprinkled throughout its brief that are entirely unsupported by the record in this case. For example, in its "Summary of Recommendations," TNHC states that the CAISO's assertion that Sunrise will permit imports of renewables from the Imperial Valley "rests on speculative and dubious renewable projects," and that "TE/VS would offer a new path, to the north, with access to Tehachapi wind and other renewable sources."[70]

The CAISO's RPS analysis is an attempt to forecast the future of renewable generation development. Like any other resource planning study, this process requires thoughtful assumptions based on the best available information. While the CAISO admittedly lacks a crystal ball to see into the future, the results of its extensive RPS analysis, discussed at length in the CAISO testimony and Opening Brief, are anything but "speculative and dubious." On the contrary, the CAISO has relied extensively on prior studies sponsored and conducted by both the Commission and the CEC to determine the renewable potential for each resource zone in California. Although the absolute levels that will ultimately be developed is uncertain, no party (*including TNHC*) has challenged or put forward any evidence suggesting that the potential solar or geothermal resources used in the CAISO analysis are inflated. Several parties have questioned the viability of SDG&E's contract with Stirling and have suggested that the area contains substantially more wind than the CAISO assumes, but no party has questioned the fact that substantial amounts of renewable resources are located in the IID and Imperial Valley areas.

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[69] *See* CAISO Initial Testimony, Part II (Ex. I-2) at 13, discussing the Path 42 upgrades that increased the Salton Sea IID area's export capability by 600 MW.
[70] TNHC Brief at v-vii.

As discussed above, the CAISO analysis shows that approximately 700 MW of renewable generation in the IID area could be deliverable without sunrise. SDG&E repeatedly gave oral testimony that Sunrise was required to develop renewable resources in the IID area. Moreover, SDG&E has stated that it has received very few bids from developers in Tehachapi.[71] The suggestion that TE/VS supports the development of renewable resources is not supported anywhere in the record, and, in fact, has been refuted by the TNHC itself.[72] Thus, TNHC's statements about the CAISO's RPS analysis should be disregarded.

SBRP

Similar to the case with TNHC, the SBRP's criticism of the CAISO's RPS analysis has no support in the record. For instance, SBRP notes that when a system of tradable renewable energy credits ("RECs") is implemented, "SDG&E's ability to meet its RPS goals will no longer be constrained by the limits of transmission capacity into its system."[73] As has been the case with most of SBRP's analysis, this statement is simply wrong. The CAISO analysis conservatively estimates that RECs are available to help SDG&E meet its RPS requirements and it has only included sufficient amounts of transmission to deliver renewable resources to the grid, not to SDG&E's load.[74]

VI. ALTERNATIVES

A. Transmission

1. Path 44 upgrades

In its Opening Brief, UCAN largely reiterates the Path 44 upgrade alternative proposal as it was set forth in its direct testimony.[75] Although not part of its "superlative alternative" to

[71] THNC Opening Brief at 16, note 17.
[72] "…it is undeniable that TE/VS would not offer direct access to renewable generation for SDG&E." TNHC Brief at 16.
[73] SBRP Opening Brief at 17.
[74] CAISO Ex. I-2 at 56.
[75] UCAN Opening Brief at 77-109.

Sunrise,[76] UCAN nonetheless continues to recommend that the Path 44 upgrade alternative be pursued regardless of whether Sunrise is approved.[77] Sprinkled throughout its discussion of the various proposed network upgrades and the purported costs of these upgrades is the comment that the CAISO did not address these issues in its Rebuttal Testimony. For example, UCAN states that "[t]he ISO's rebuttal was focused on the infeasibility of increasing the Path 44 upgrade without new transmission facilities, which is not what UCAN proposed in its testimony. The [CA]ISO admits that it never analyzed the Path 44 upgrade proposal in UCAN's direct testimony."[78] UCAN's reference to Mr. Sparks' comments during cross-examination, while technically an accurate representation of what Mr. Sparks said on that page of the transcript, is a misrepresentation of Mr. Sparks' overall testimony. Specifically, during further questioning, Mr. Sparks corrected his earlier comment:

> Q. [Marcus] And you have read UCAN's testimony and you have prepared rebuttal to UCAN's testimony?
>
> A. [Sparks] Yes. I believe—and I may have misspoke earlier-- …we basically assumed that the upgrade UCAN was proposing, you know, if you spent enough money could increase the LCR requirement or decrease the LCR requirement by 350 megawatts. And we provided analysis based on that assumption and talked about some of the other impacts that it would cause, such as on the LA Basin.[79]

Thus, UCAN seems to miss the point that the CAISO did analyze the Path 44 upgrades as part of the alternative scenarios submitted by UCAN for study, and the CAISO addressed the results of the studies in its Rebuttal Testimony. Indeed, in its rebuttal testimony the CAISO notes that criteria violations were identified when the Path 44 emergency rating level was

[76] As described on page 77, UCAN's "superlative alternative" consists of SDG&E's commitment to a) post-2008 energy efficiency, b) AMI, c) "already contracted for dispatchable demand response", d) "already contracted for near term peaking capacity, and e) one under 50 MW CT. These elements are addressed in other sections of the CAISO's reply brief.
[77] UCAN Opening Brief at 77.
[78] UCAN Opening Brief at 98; *see also* Opening Brief at 87.
[79] CAISO/Sparks, Tr. at 1929.

increased as part of the model, but that UCAN identified mitigation plans and costs that the CAISO implicitly accepted as being capable of mitigating many of the criteria violations.[80]

However, although acknowledging that mitigation plans had been offered as part of UCAN's proposal, the CAISO raised the two issues that UCAN now seems to be conveniently dismissing. First and foremost, UCAN downplays the impacts on the Los Angeles ("LA") Basin that increased reliance on a Path 44 upgrade would create.[81] Secondly, UCAN seems to also ignore the CAISO's concern that that the frequency dip problem in CFE's system would be exacerbated by the increased reliance on imports into the San Diego area that would occur as a result of the proposed upgrade to Path 44.[82] The CAISO discusses the LA Basin LCR requirements in detail in the Reliability Cost Savings section of Section VIIIA.2[83] and the Mexican frequency dip violations in the Access to Renewables section.[84] Suffice it to say that UCAN has provided no information that should cause the Commission to dismiss the CAISO's reliability concerns with the Path 44 upgrade proposal and consider it as part of a package of "fixes" to remedy SDG&E's looming capacity deficiency.

2. Mexico Light

UCAN does not address the Mexico Light proposal in its Opening Brief, presumably because its direct testimony identifies a "fatal flaw" in the proposal.[85] Two other Miguel upgrade proposals, however, are addressed by UCAN: uprating the Miguel import capability to 1900 MW, and an analysis to determine the economic benefit that might be derived from increasing Miguel outflow capability from 1900 MW to 2100 MW. As noted by UCAN, the CAISO did state in a UCAN discovery response that the 1900 MW uprate should be considered

[80] CAISO Ex. I-6 at 56.
[81] CAISO Ex. I-6 at 56-57.
[82] CAISO Ex. I-6 at 56-57. The Mexican frequency dip violations were also identified throughout Part III of the CAISO Initial Testimony with respect to each UCAN scenario that included the Path 44 upgrade assumption.
[83] *See infra* Section VIII.A.2.
[84] *See supra* Section V.D.

during the current transmission planning cycle[86] and this proposal was discussed at a CAISO Transmission Plan Stakeholder Meeting held on November 20, 2007.

The CAISO is proceeding cautiously with the proposed changes to the Miguel transformer remedial action scheme ("RAS") as a short-term, interim solution and will solicit extensive input from stakeholders, particularly SDG&E, CFE, IID and IV generation owners, before proceeding further with this proposal. As discussed above, the CAISO has concerns with the fragility of this portion of the system, and these concerns are amplified when considering increases to the Miguel outflow capability to 2100 MW. Under no circumstances should the Commission consider these recommendations to be viable Sunrise alternatives, or even worthy of being addressed in the Final Order in the Sunrise proceeding. The topics can be addressed by the CAISO and its stakeholders in the context of transmission planning processes.

3. Second SWPL

The CAISO addressed its concerns with both the "Second SWPL" and "Southern Route" alternatives in its Opening Brief,[87] and has nothing to add to that discussion in response to the arguments presented on the subject in the opening briefs of other parties. The Sunrise route, as proposed by SDG&E, remains the CAISO's preferred routing alternative for all of the reasons set forth in its testimony.[88]

4. Talega-Escondido/Valley-Serrano

Overall, TNHC has set forth two basic arguments: the CAISO/SDG&E studies supporting Sunrise should not be relied upon by the Commission, and the TE/VS project is a superior alternative to Sunrise. As discussed below and in other sections of this Reply Brief, neither contention is valid.

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[85] *See* CAISO Opening Brief at 36-37.
[86] UCAN Ex. U-53, CAISO response to UCAN DR5-14c.
[87] *See* CAISO Opening Brief at 37-38, 41-42.

TNHC identifies six examples of "flaws" in the SDG&E and CAISO study methodologies that it asserts should cause the Commission to find that the record is "insufficient" to approve Sunrise.[89] Four of these examples are blatantly wrong, have no record support, and/or are contradicted by TNHC at later portions of the brief:

1. "…Omission of TE/VS from the base case is contrary to the CAISO's methodology upon which the CAISO Board relied and contrary to the Assigned Commissioner's Scoping Memorandum."

TNHC appears to accuse the CAISO (and SDG&E) of deliberately removing TE/VS from the base case developed during the CSRTP process:

> …a proper economic analysis of Sunrise should have been premised on a base case that includes the TE/VS line. That was the basis on which the CAISO studied Sunrise in its CAISO South Regional Transmission Planning (CSRTP) stakeholder process, the basis on which the CAISO's management recommended approval of Sunrise to the CAISO board, and thus the basis on which the CAISO Board approved Sunrise…Nevertheless, for reasons that SDG&E and the CAISO never explained on this record, both the Sunrise proponents modified their base cases to exclude TE/VS when the time came to present evidence to this Commission (emphasis added, footnotes omitted).[90]

The above statement is simply false and TNHC should know it because it participated in the CSRTP process. TE/VS as a stand-alone transmission project was never considered by the CSRTP group because it had not been presented to the CAISO for evaluation – and still has not been so presented.[91]

The CSRTP Report makes it clear that the TNHC project being studied by that group was the combined TE/VS + LEAPS *as an advanced transmission project*, and matters involving cost

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[88] CAISO Ex. I-5 at 81.
[89] TNHC Brief at v-vi.
[90] TNHC Brief at 4.
[91] Page 15 of the TNHC CPCN application: "TNHC will be submitting a Participating Transmission Owner (PTO) application for the TE/VS Interconnect to the CAISO and will be seeking Board approval in the near future." *Re The Nevada Hydro Co.,* A.07-10-005 (Oct. 9, 2007)

recovery and operational control had been brought to the FERC by TNHC.[92] Indeed, on the *first page* of the CSRTP Report Executive Summary, it states: "…In the case of the LEAPS project, the delay [in studying the project] relates to issues pending before the Federal Energy Regulatory Commission (FERC) on the treatment and CAISO control of the power plant portion of the project …."[93] The CSRTP Report contains numerous other references to the unresolved FERC issues and the fact that the TE/VS + LEAPS combined project could not be evaluated until further guidance was forthcoming from that agency.

In addition to the fact that the CSRTP group did not have a standalone TE/VS plan of service before them that would allow the project to be included in the base case, the CSRTP Report describes the cases that were studied and LEAPS + TE/VS was clearly not part of the reference case. For example, the Report describes the studies of Sunrise (Sun Path) under three scenarios: Sunrise alone, Sunrise in the presence of Tehachapi, and Sunrise in the presence of Tehachapi and LEAPS. If TE/VS or some other configuration of the LEAPS projects had been included in the base case, it would not have been run as a sensitivity study.

> 2. "…TE/VS was assessed only in combination with LEAPS, a proposed pump storage facility, and then without the benefits LEAPS would yield."

This statement alone is patently absurd. TE/VS was studied individually and in numerous combinations, as discussed at length in the CAISO's Opening Brief. The results of the CAISO's studies are set forth in Table 49 (line 12) of the CAISO Initial Testimony, Part V[94] and this table was also included in the CAISO's Opening Brief. Furthermore, the benefits of LEAPS were specifically studied and described in the CAISO's Rebuttal Testimony.[95] Even TNHC refutes this statement several pages later by admitting that the CAISO did study TE/VS alone,

[92] TNHC discusses this concept at 29, fn 30.
[93] SDG&E Ex. SD-2 App. I-1 at 1.
[94] CAISO Ex. I-5 at 83.

ostensibly because the CAISO decided that its study of TE/VS + LEAPS + GreenPath North was "mistaken."[96]

3. "SDG&E fails to address the timing and extent of reliability need for Sunrise, and fails to address the advantages of the TE/VS tie to SCE transmission."

In light of the extensive debate over the date Sunrise is needed for reliability, as well as the operational flexibility provided by Sunrise that was discussed by both the CAISO and SDG&E, this statement does not require further discussion.

4. "…TE/VS would offer a new path, to the north, with access to Tehachapi and other renewable resources."

The CAISO addresses this "flaw" above [97] but it bears repeating that TNHC itself admits that TE/VS alone does not provide access to renewables.[98] TNHC also suggests that TE/VS together with Green Path North provides a "cost-effective alternative" that would "achieve the same amount of Imperial Valley development, in spite of its earlier position that the CAISO had no possible reason for studying TE/VS in combination with any other projects.[99]

The fifth alleged "flaw" discussed by TNHC pertains to SDG&E's calculation of $1.8 billion in network upgrades associated with increasing levels of TE/VS import capability. For the sake of clarity, the CAISO did not assign any cost to "upgrades" for TE/VS. SDG&E reported in the CAISO's first workshop in San Diego (March 27, 2007) that it had completed some preliminary estimates that were in this range. SDG&E has since stated that it believes that the upgrades are in the 1 billion dollar range.

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[95] CAISO Ex. I-6 at 76-81.
[96] TNHC Brief at 5, 26-28. It should be noted that the CAISO was not so much "mistaken" as confused by TNHC's position on whether it would like LEAPS to be evaluated as a merchant generator or as an advanced transmission device.
[97] *See supra* Section V.D
[98] TNHC Opening Brief at 16.
[99] As noted at pages 43-44 of the CAISO' Opening Brief, the Commission should not rely on any alternatives to Sunrise that include GreenPath North, given the Commission's utter lack of control over whether the project will ever go forward, among other things.

The record is also unclear about the costs of TE/VS and LEAPS, which THNC has conspicuously chosen not to include in its testimony. THNC filed a cost estimate of $1.283 billion with FERC for the combination of both TE/VS and LEAPS.[100] These costs were in 2005 dollars and require adjustment for inflation to place them in the same 2010 year dollars as the other alternatives. These costs exclude costs required to make LEAPS capable of taking full advantage of the ancillary services benefits the CAISO attributes to the facility as well as both interconnection costs and any necessary upgrades to both the SCE and SDG&E grid infrastructure.

The final "flaw" TNHC claims to identify has nothing to do with the CAISO and SDG&E economic studies, but rather states that TE/VS would reduce energy production costs for CAISO consumers by approximately $14 million per year.[101] Presumably this information relates to the TNHC's belief that "…TE/VS is a lower-cost, and cost-effective, means of meeting SDG&E's reliability requirements and of providing SDG&E and its customers with energy cost savings."[102] This statement is not supported by the CAISO's analysis and should be rejected. Table VI-1 below shows TE/VS as a stand alone project relative to the other 4 alternatives that the CAISO was directed to run by the Commission. All three analyses show that Sunrise is a more economic alternative than TE/VS. In each analysis, both Sunrise and TE/VS are alternatives that can be compared with one another or with the reference case.

[100] CAISO Ex. I-2 at 42 (Table 3.6)
[101] CAISO Opening Brief at vi.
[102] TNHC Opening Brief at 5.

Table VI-1. Levelized costs and benefits by alternative assuming supplemental non-local capacity purchases, $27/kW-yr RA price floor, exclusion of non-TAC paying utilities, and Revised Local Capacity Requirements.[103]

	A	B	C	D	E	F	G	H	I
Summary of Levelized Costs and Benefits	**Costs** ($ millions per year, nominal)					**Net Benefits** (Base case cost - Alt. case cost)			
	Base Case - San Diego & LA	Sunrise	South Bay	Green Path + LEAPS	TE/VS	Sunrise	South Bay	Green Path + LEAPS	TE/VS
Energy and Reliability Costs									
1 Customer Payments from Gridview	15,736	15,615	15,684	15,694	15,720	121	53	42	16
2 Less CAISO congestion cost (reduces TAC)	(123)	(88)	(102)	(110)	(121)	(36)	(21)	(13)	(3)
3 Less URG Margin (reduces URG bal acct)	(4,744)	(4,710)	(4,719)	(4,735)	(4,740)	(34)	(24)	(9)	(4)
4 Less IOU excess loss payments	(808)	(792)	(802)	(799)	(807)	(16)	(6)	(9)	(1)
5 **Subtotal Energy Cost and Benefit**	10,061	10,026	10,060	10,051	10,053	**35**	**1**	**10**	**8**
6 RMR Capacity Payments - Levelized	312	287	341	320	317	25	(29)	(8)	(5)
7 RMR Operating Payments - Levelized	60	43	60	55	55	17	(0)	5	5
8 CT Capacity Costs - Levelized	363	278	315	276	354	85	49	87	10
9 Transmission cost for new CTs-Levelized	128	98	111	97	124	30	17	31	3
10 Remediation cost to provide reactive support	-	-	-			-	-	-	-
11 System RA Provided by local capacity & RPS	(356)	(327)	(356)	(339)	(356)	(29)	-	(17)	-
12 **Subtotal Reliability Cost and Benefit**	507	379	471	409	493	**129**	**37**	**98**	**14**
13 **Total Energy and Reliability Benefits**						**164**	**37**	**109**	**22**
RPS Procurement Cost									
14 Adjusted RPS Cost	4,265	4,220	4,265	4,232	4,265	45	-	33	-
15 **Total Benefits**						**209**	**37**	**142**	**22**
Transmission Cost									
16 **Levelized Cost of Transmission**	-	157	8.5	97.0	66.5	(157)	(8.5)	(97.0)	(66.5)
17 **Total Costs and Benefits**	14,834	14,782	14,805	14,789	14,878	**52**	**29**	**45**	**(44)**

5. Southern Route Alternatives

As discussed above, the CAISO addressed its concern with the Southern Route alternatives in its Opening Brief,[104] and has nothing to add to that discussion in response to the arguments presented in the opening briefs of the other parties.

6. Coastal Route Alternatives

The CAISO has no additional comments to the discussion of coastal route alternatives included in its Opening Brief.[105]

[103] The Base Case, Sunrise, South Bay, and Green Path + LEAPS cases are from the CAISO Rebuttal testimony, table 6. The TEVS costs and net benefits are based the analysis prepared by the CAISO for its prepared testimony PartV, Table 4 (Energy Division 1). The energy net benefits shown in this table vary slightly from those shown in Part V, Table 4 ($8M in energy net benefits versus $10M). Part V, Table 4 incorporates an interpolation of Gridview 2015 and 2020 values. The CAISO rebuttal testimony Table 6 does not use interpolation, so the TE/VS energy costs and net benefits were recalculated for this table to be consistent with the other four cases.

[104] *See* CAISO Opening Brief at 37-38, 41-42.

[105] CAISO Opening Brief at 42-43.

7. Others

B. Non-Wires

1. AMI

The disagreement among the parties with respect to AMI does not involve whether AMI will reduce demand going forward; but rather, the level of AMI-related load reduction that should assumed for planning purposes. As discussed above, UCAN believes it is reasonable to assume that SDG&E will be able to achieve AMI-related load reductions that are significantly higher than the load reduction goals set by the Commission. In contrast, the AMI-related load reductions assumed in the CAISO's analysis are based on assumptions in Decision 07-04-043,[106] which approved a settlement of SDG&E's AMI deployment application among SDG&E, DRA and UCAN. To be sure, the AMI-related load reductions assumed in the CAISO's analysis will be helpful in meeting a portion of SDG&E's capacity needs; however, as DRA itself admits, on its own, AMI is not "an effective alternative to [Sunrise]."[107]

2. Other Demand Response

UCAN asserts that expected load reduction from non-AMI demand response should be assumed to be "slightly" (specifically, 4 MW) above the 59 MW assumed by the CAISO in its analysis. However, even if UCAN is correct (something which the CAISO does not concede), this 4 MW difference will have no impact on the need for Sunrise.

3. Energy Efficiency

UCAN asserts that, based on the CEC's long-term load forecast, 26 – 442 MW of post-2008 energy efficiency potential exists that is not accounted for in its analytical baseline in 2016.[108] As discussed above, however, there are inherent limitations in the CEC's long-term load forecast that make it ill-suited for estimating post-2008 energy efficiency in this case.

[106] CAISO Ex. I-6 at 41.
[107] DRA Opening Brief at 31.

UCAN further compounds the analytical problems caused by these limitations in the CEC forecast by making a methodological error when attempting to "back-out" reductions in load resulting from post-2008 energy efficiency.[109] The net effect is that UCAN's assumption on energy efficiency are overly aggressive and unreliable for purposes of determining the need for Sunrise.

4. In-Area Combined Cycle Generation

The CAISO does not dispute that in-area combined cycle gas turbines ("CCGTs") can meet the San Diego area LCR need beginning in 2010. Thus, the issue is not whether in-area CCGT's can serve as an alternative to Sunrise (they clearly can); but rather, whether the net benefits of such CCGT's are equal to or greater than Sunrise. The CAISO's analysis demonstrates that they clearly are not. Specifically, under the CAISO's RPS Base Case, the total levelized net benefits of Sunrise are $23 million more per year than the net benefits for an in-area CCGT and almost $200 million per year more under the high RPS case.[110] Moreover, because in-area generation does not include new transmission equivalent to Sunrise, in-area CCGTs will not facilitate SDG&E's compliance with RPS requirements. Indeed, the CAISO's analysis shows in-area CCGTs providing zero RPS benefits.[111]

5. In-Area Peaking Generation

As in the case of in-area CCGTs, in-area peaking generation can meet the San Diego area LCR need beginning in 2010. The CAISO's analysis, however, demonstrates that the annual net benefits of Sunrise relative to adding new in-area peaking generation will range from $52 million to $226 million range (levelized) depending on the level of renewable development that

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[108] UCAN Opening Brief at 137.
[109] *See* supra Section V.A.3.
[110] CAISO Opening Brief at 46.
[111] CAISO Opening Brief at 46.

ultimately takes place.[112] In addition, much like the case with CCGTs, in-area peaking generation will not facilitate SDG&E's compliance with RPS requirements.

6. In-Area Renewables (Wind, PV, Biomass, other)

The CAISO has no additional comments to the discussion of in-area renewable included in its Opening Brief.[113]

7. Out-of-Area Renewables (North of SONGS)

The CAISO has no additional comments to the discussion of out-of-area renewables (North of Songs) included in its Opening Brief.[114]

8. Out-of-Area Renewables (Imperial Valley and Mexico)

Citing UCAN's direct testimony, DRA asserts that "according to CAISO modeling results, up to 2700MW of renewable power can be imported into San Diego without [Sunrise]."[115] This assertion, which is incorrect, is discussed in detail above.[116]

9. LEAPS

As the CAISO noted in its Opening Brief, LEAPS standing alone is not a true "non-wires" alternative to Sunrise because it requires the TE/VS interconnection. LEAPS + TE/VS produces negative net benefits relative to the CAISO Base Case and therefore is not viable alternative when compared to Sunrise. Interestingly, TNHC concurs with this recommendation, stating that:

> …Nevada Hydro contends that it is inappropriate to include LEAPS generation in alternatives to Sunrise, because LEAPS is neither local generation for SDG&E nor a transmission facility.(footnote omitted)[117]

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[112] CAISO Opening Brief at 47.
[113] CAISO Opening Brief at 47-48.
[114] CAISO Opening Brief at 48.
[115] DRA Opening Brief at 37.
[116] *See supra* Section V.D.
[117] TNHC Brief at 29.

Since the proponent of the project is not proposing that LEAPS in combination with other elements be evaluated as a Sunrise alternative, the Commission should not consider any alternative involving LEAPS a viable alternative to Sunrise.

10. Others

C. Combined Wires/Non-wires Alternatives

1. UCAN

It is clear that UCAN's strategy in this proceeding has been to throw various "alternatives" against the wall and see what sticks. At the outset of its Opening Brief, UCAN claims to identify 24 "alternatives" to Sunrise that can provide up to 7000 MW of capacity, including 1900 MW of renewable energy imported over SWPL.[118] The list includes alternatives that have been evaluated in this proceeding - TE/VS, LEAPS, Mexico Light; alternatives that are already included in the CAISO's analysis of the need for Sunrise – Palomar inlet chillers, J Power (Pala), Wellhead (Margarita); an alternative that are no longer viable - South Bay generation replacement project; and a bunch of alternatives that are so speculative or unknown that no other parties in this proceeding have even mentioned them.

From this list of "alternatives," UCAN proposes a combined wires/non-wires alternative consisting of:

- An upgrade to Path 44;
- New in-area peaking generation;
- Modifications at the Miguel substation; and
- Mexico Light.

[118] UCAN Opening Brief at 14 -16.

UCAN asserts that, based on its analysis, this combined wires/non-wires proposal "represent[s] a $111 million reliability insurance policy" that compares favorably to Sunrise.[119] In reality, UCAN's proposal falls substantially short of an acceptable level of reliability.

As an initial matter, the costs of UCAN's recommended bundle of alternatives cannot be compared to Sunrise, the CAISO's Base Case, or any of the alternatives that the CAISO evaluated because UCAN's bundle of resources relies on an unlikely combination of overly aggressive assumptions that when combined with small investments in transmission infrastructure does not provide the same level of reliability as Sunrise. Specifically, as discussed above, the demand forecast, AMI, and energy efficiency assumptions relied upon by UCAN are extremely aggressive and, as a result, simply too speculative to be relied upon by the Commission in this proceeding.[120] UCAN's proposed upgrade to Path 44, Miguel substation modifications, and Mexico Light alternative are similarly flawed and do not represent reasonable means for meeting reliability needs in the San Diego area.[121] The new in-area peaking generation identified by UCAN is already included in the CAISO's analysis of the need for Sunrise which shows a reliability need in 2010.[122] Thus, the record demonstrates that UCAN's combined wire/non-wire alternative is not an adequate alternate to Sunrise.

2. DRA

DRA does not address combined wires/non-wires alternatives in its Opening Brief.

3. SBRP

SBRP asserts that economic and reliability goals can best be met with in-area generation and that access to renewable resources can be accomplished using existing transmission.[123] As the CAISO discussed in its Opening Brief, its analysis of the South Bay Replacement project

[119] UCAN Opening Brief at 143.
[120] *See supra* Sections V.A.3 – V.A5 and Section V.C.
[121] *See supra* Section VI.A.
[122] *See supra* Section V.C.

demonstrates that the net benefits of Sunrise significantly exceed the net benefits of an in-area generation alternative.[124] This same analysis demonstrates that Sunrise is the superior transmission option for accessing renewable energy resources in the Imperial Valley and facilitating compliance with RPS requirements, even considering the availability of tradable RECs.

4. TNHC

As discussed above, TNHC has taken the position that LEAPS should not be combined with other elements (such as TE/VS) and considered to be an alternative to Sunrise. TNHC does seem to suggest that two *transmission* projects- Green Path North + TE/VS, could be combined and considered as a "comparable" Sunrise alternative.[125] However, TNHC's understanding of the CAISO's analysis of Sunrise alternatives is faulty. The scenario that TNHC refers to as "Green Path North + TE/VS" includes LEAPS as merchant generation.[126] The same analysis also includes LEAPS as a transmission asset.[127]

The actual Green Path North + TE/VS scenario was studied by the CAISO at the request of the Energy Division and discussed in the CAISO Initial Testimony, Part V.[128] This scenario produces -$43 million per year in levelized net benefits and clearly is not a viable alternative to Sunrise.

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[123] SBRP Opening Brief at 32.
[124] CAISO Opening Brief at 52.
[125] *See* TNHC Opening Brief at 24.
[126] *See* CAISO Ex. I-6 at 42 (Table 6).
[127] CAISO Ex. I-6 at 43 (Table 6B).
[128] CAISO Ex. I-5 at 18-23.

5. Others

D. Delay in the Online Date for the Project

1. CAISO

2. DRA

As discussed above, DRA's assertion that Sunrise is not needed until 2015 is based on the assumption that local generation formerly owned by SDG&E will begin to retire annually in 182 MW increments – something that DRA itself admits will never occur.[129] Thus, DRA's analysis does not support a delay in the online date for Sunrise.

With respect to the CAISO's analysis, DRA rejects the conclusion that Sunrise is needed in 2010 and focuses on the CAISO's economic analysis which DRA – incorrectly – claims "shows that the levelized net benefits of [Sunrise] do not materialize until about 2012 assuming a reasonable cost escalation rate."[130] The CAISO provided a detailed discussion of the differences between its needs analysis and its economic deferral case in its Opening Brief, and will not repeat that discussion herein. However, DRA goes on to make the interesting comment that the CAISO "failed to consider the cost escalation of generation resources," based on industry information that "concludes that generation costs are certainly not growing at a rate slower than transmission, but are actually growing faster."[131]

The CAISO agrees that the same cost drivers that are driving the costs of transmission up are also driving the costs of new generation up as well. With the exception of its rebuttal testimony addressing UCAN's deferral analysis, the CAISO did not incorporate greater than inflation cost increases in either transmission or generation. However, substantially higher costs of new generation, combined with a greater demand for new plants (due to DRA's assumed retirement of older plants), will make Sunrise with its renewable resources that much more

[129] *See* supra Section V.A.4.

attractive. The CAISO did not believe there was any reason to develop additional assumptions that improved the benefits of Sunrise, but increasing the generation cost escalation rate would certainly have that effect.

3. UCAN

UCAN asserts that Sunrise "is not required to be in operation by 2010 or anywhere close to that year" and should be delayed until 2018 – at the earliest.[132] As discussed above, UCAN's analysis of the need for Sunrise is based on unrealistic assumptions that cannot be relied upon by the Commission. Accordingly, the record demonstrates a reliability need for Sunrise beginning in 2010.

With respect to the CAISO's analysis, similar to DRA, UCAN focuses on the CAISO's economic analysis of the impact of deferring Sunrise. As the CAISO discussed in detail in its Opening Brief, using plausible assumptions regarding construction and RPS costs, deferring Sunrise could result in negative incremental benefits.[133] Thus, the CAISO's deferral analysis provides the Commission with a range of plausible construction cost escalation rates and RPS cost assumptions showing that the benefits of deferring Sunrise as asserted by UCAN (and DRA) are, at a minimum, much too high and are either flat or negative in most years.[134]

4. Others

E. Other

VII. ECONOMICS

A. Cost/benefit analysis

As described in the CAISO's Opening Brief, its economic analysis determined that Sunrise produces positive economic benefits in all three categories of cost savings (energy,

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[130] DRA Opening Brief at 39.
[131] DRA Opening Brief at 39-40.
[132] UCAN Opening Brief at 10.
[133] CAISO Opening Brief at 53.

reliability and RPS compliance), particularly with respect to reliability and RPS compliance savings. In light of the open and iterative process through which the CAISO developed its economic studies, many of the interveners' concerns were either incorporated into the CAISO studies or rejected and addressed in the Rebuttal Testimony. Consequently, many of the issues raised in the interveners' opening briefs were covered in the CAISO Opening Brief. Items requiring additional response are set forth below. It is important to note that despite the scope and breadth of several of the briefs in this proceeding (particularly UCAN's "brief"), the CAISO has not been presented with any arguments that would call into question the validity of its economic evaluation.

1. Production Cost Savings

UCAN

The CAISO notes that UCAN devotes a large portion of its brief to assailing SDG&E's estimate of energy benefits attributable to Sunrise. While the CAISO's own estimates of energy benefits are significantly lower than SDG&E's estimates, the CAISO points out that its estimates are intended to be conservative (*i.e.*, low) estimates of energy benefits. As Dr. Orans indicated on the stand, the CAISO chose to use plausible conservative assumptions and methods to calculate benefits that would be on the conservative low end of the distribution of potential outcomes. The mere fact that the CAISO's conservative results are lower than SDG&E's estimates should not be used to impugn SDG&E's analysis.

DRA

DRA's levelized annual production cost savings are based on the CAISO's production cost modeling results and are estimated to be $25M, in contrast to the CAISO's $35M in energy

[134] CAISO Opening Brief at 54.

savings.[135] DRA characterizes the CAISO's model as "flawed," but states that it has corrected major flaws in the SDG&E model.[136] Nonetheless, DRA goes on to discuss alleged modeling problems that are common to both CAISO and SDG&E, one of which being the "overbuilt" WECC condition and impact of new coal resources on the study results.[137]

In particular, DRA takes issue the CAISO's statement in its Rebuttal Testimony that non-gas fired resources in general, whether in excess or being dispatched, have a "second order" impact on market prices and the economic evaluation Sunrise benefits. Not satisfied with that explanation, DRA points out that "SDG&E's data demonstrates a 26.5 percent reduction in benefits in 2015…from removing 3,000 MW of Desert Southwest coal", which "directly contradicts CAISO's 'second order impacts' due to coal assumption."[138]

This comparison of the SDG&E and CAISO study assumptions is invalid and meaningless. The CAISO's case is substantially different from SDG&E's case, and its analysis indicates that for the majority of hours during the year, the CAISO marginal resources inside and outside of California are burning gas and are therefore is not very sensitive to the level of coal resources in service. However, even if we were to accept SDG&E's analysis as an upper bound estimate of sensitivity, 26.5 percent of $35 million in estimated energy benefits is roughly $9 million per year, which is less than 5 percent of the estimated total project benefits of Sunrise. The CAISO would characterize this impact as "second order."

SBRP

The substantial differences between the transportation cost model used by SBRP and the full network models used by SDG&E, the CAISO and TNHC were the source of much controversy in this proceeding, despite the fact that the SBRP study results should have little

[135] CAISO Opening Brief at 43.
[136] CAISO Opening Brief at 43.
[137] CAISO Opening Brief at 46.

impact on the Commission's decision since SBRP did not actually take a position as to whether Sunrise should be approved. However, SBRP has mischaracterized the CAISO's modeling assumptions/approach and managed to interject confusion into the record of the case.

For example, SBRP states "…the evidence does not show that purchasing capacity from the Southwest is materially less expensive tha[n] purchasing from comparable resources within the San Diego area."[139] This is simply not true; the CAISO opined extensively on the reasonableness of using the SSG-WI differences in fuel costs between the delivered costs of fuel in the Desert Southwest and those in California.[140] The small 0.20 $/MMBTU difference make it slightly less expensive to generate power in the Desert Southwest.

With respect to the cost model differences, SBRP discusses, at pages 29-30 of its opening brief, Power Transmission Distribution Factors ("PTDFs" or shift factors) which are described as intended to simplify modeling and "simulate the power flows of the extremely complex" power grid. SBRP states that "[i]deally, the PTDFs would be calculated for every hour of the year." According to SBRP, the Gridview model "focuses only on one hour and applies the PTDFs developed for that hour for each hour of the year." These statements evidence a total lack of understanding of the Gridview model, and are both technically and factually wrong.

Indeed, the shift factors don't change if all elements in the system are in service. For normal service, the CAISO explained that a single PTDF matrix was used.[141] PTDF's were adjusted for each of the contingencies included in the analysis. By contrast, the SBRP zonal transportation model does not have any shift factors because it doesn't model real flows. One anomaly of the transportation model, reflected on the Joint Comparison table, is the significant amount of congestion produced by a zonal model that doesn't accurately model flows. These

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[138] CAISO Opening Brief at 47.
[139] SBRP Brief at 14.
[140] CAISO Ex. I-2 at 17.

and numerous other shortcomings of the transportation model, described in the CAISO Rebuttal Testimony, compel the rejection of SBRP's production cost analysis.

2. Reliability Cost Savings

Although the CAISO continuously refined its LCR/RMR reliability cost savings analysis, based largely on comments and recommendations suggested by the interveners, the parties have nonetheless taken issue with the CAISO studies in their opening briefs, particularly with respect to the impacts of Sunrise on LCR requirements in the LA Basin and on the retirement or mothballing of local generation. For the most part, the arguments set forth in the briefs evidence a misunderstanding of, or simply unsupported disagreement with, with the CAISO analysis. The Commission has been provided with no credible basis upon which to reject the CAISO's position regarding the economic impacts of Sunrise and its alternatives on San Diego and LA Basin LCR requirements.

UCAN

In its discussion on pages 154-156, UCAN concludes that Sunrise will not cause the retirement of Encina generation, based on SDG&E witness Kruger's testimony that these resources will obtain non-local RA revenues in years when it is not needed for local reliability and thus not receiving local RA revenues. UCAN opines that it is "persuaded" by Mr. Kruger's argument and that it should be given "greater weight" than the CAISO's argument which, according to UCAN, assigned the local RA price floor to the Encina generation and assumed that such facilities would be mothballed in the presence of Sunrise, or if Path 44 was upgraded, or in the presence of TE/VS.[142] Interestingly, DRA takes the opposite approach, arguing that it is "wildly unreasonable" to assume continued operation of the Encina Units 1 to 5 beyond 2020,

[141] *See* the Joint Comparison Table, SDG&E Ex. S-31.
[142] UCAN Opening Brief at 154; fn. 764.

and that the units barely participated in the market during 2006.[143] Instead, DRA's analysis assumed that existing RMR units not receiving full cost recovery would be retired immediately.[144]

UCAN misunderstands the CAISO LCR analysis, which, in actuality, takes a middle ground between UCAN and DRA with respect to the Encina Units. The CAISO did agree with UCAN that the local price floor should be equal to the non-local price, and set that floor at $28/ kW-yr. However, the CAISO study methodology increases the local price as the local supply diminishes and does not assign a price to specific generation. The methodology does not identify which units would get local contracts, and there are peaking units in the San Diego load pocket that have lower revenue requirements. Thus, UCAN's premise that the CAISO assigned the non-local price to Encina Units 1-5 is incorrect. Given this invalid assumption, UCAN's conclusion that there will be no financial impacts on SCE-area customers for increased LA Basin RA requirements due to a Path 44 upgrade falls wide of the mark.[145]

Indeed, UCAN seems to rebut its own erroneous conclusion at a later point in its brief. In discussing the alleged non-quantifiable benefits of deferring Sunrise, UCAN argues that "accelerated retirements in the San Diego area due to [Sunrise] will reduce SP15-wide reserve margins, and thus require somebody to pay for more new generation in SP15 than would otherwise have been required."[146] SP15 is, of course, the CAISO's designation for the southern California portion of the CAISO-controlled grid, and the LA Basin LCR area constitutes about two-thirds of it. Thus, UCAN tacitly concedes that the elimination of local generation in San Diego due to transmission will cause a local generation cost impact in the LA Basin.

[143] DRA Opening Brief at 61.
[144] DRA Opening Brief at 62.
[145] UCAN Opening Brief at 155-156.
[146] UCAN Opening Brief at 184. UCAN notes that this conclusion is based on the assumption that Sunrise will accelerate the retirement of in-basin generation.

Indeed, generation connected to Imperial Valley substation is considered to be inside of SP15. With Sunrise, the CAISO expects that geothermal, solar and wind generation electrically close to Imperial substation and deliverable to the CAISO would also be considered to be SP15. As discussed in the CAISO's rebuttal testimony, these resources can be expected to provide reliability benefits in both the base case and the Sunrise case by reducing the LA Basin LCR requirements.[147] However, in its brief at pages 178-180, UCAN questions the CAISO's calculation of these benefits, noting that the Imperial Valley generation is missing on the CAISO's list of resources that are effective in mitigating south of Lugo flows and commenting that "the ISO's operators do not appear to agree with their planners that Imperial Valley generators can help solve LA Basin reliability problems."[148]

UCAN appears to feign confusion because the answer to the riddle is fairly obvious. Imperial Valley generation must be backed down to mitigate problems at Miguel. Operators cannot rely on Imperial Valley generation to mitigate South of Lugo problems because that could cause problems on Miguel. Sunrise would mitigate the Miguel problem and allow the Imperial generation to relieve the South of Lugo problem.[149] As part of the same discussion, UCAN also asserts that a different mix of renewables—more wind and less solar and geothermal—will produce a significantly lower LCR benefit in the LA Basin due to lower RA credits for wind.[150] The CAISO would direct the Commission's attention to the analysis provided at pages 70-73 showing slightly higher net levelized benefits under the higher wind scenario suggested by UCAN. Based on this analysis, it is clear that the CAISO's LCR study does not "overstate" the

[147] CAISO Ex. I-6 at 19-20.
[148] UCAN Opening Brief at 178-180.
[149] The CAISO assumed a third Miguel transformer for the purposes of the base case. (I-3 bottom of Page 13)
[150] UCAN Opening Brief at 180.

Sunrise benefits by "misstating SDG&E LCR requirements," as UCAN would lead us to believe.[151]

DRA

DRA launches its discussion of the Sunrise reliability cost savings by attacking the CAISO's basic assumption that LCRs in the San Diego load pocket will decrease by 1000 MW when Sunrise becomes operational, based on a recent CAISO Long-Term LCR study identifying a new Greater Imperial Valley-San Diego Local Reliability Area (GIV-SD LRA) with an LCR of 1000 MW- identical to the San Diego LRA without Sunrise.[152] Based on this finding, DRA jumps to the sweeping conclusion that "[g]iven the uncertainty of a reduction in San Diego customers' MW procurement requirements to meet their local reliability needs, the Commission cannot safely conclude that [Sunrise] offers any reliability cost reduction advantage."[153] This conclusion is untenable in light of the extensive record developed by the CAISO in support of its LCR analysis. Indeed, the findings of the CAISO LCR study cited by DRA, which do identify a 1-to-1 relationship between the LCR reduction in the San Diego LRA and LCR increase in the GIV-SD LRA, simply underscore the CAISO study findings in this proceeding that a similar 1-to-1 relationship exists between the San Diego load pocket and the La Basin by the addition of TE/VS or an increase in Path 44 transfer capability.[154] DRA is apparently quite selective in the study results it chooses to support, but it can't have both ways. Furthermore, DRA also fails to acknowledge that there will be 2700 MW of new renewable generation that would be developed electrically close to the Imperial Valley substation that would more than meet the incremental local capacity requirement of the new GIV-SD LRA.

[151] UCAN Opening Brief at 180.
[152] DRA Opening Brief at 55.
[153] DRA Opening Brief at56.
[154] *See*, *generally*, CAISO/Sparks Tr.at 1992 -1994.

In addition, DRA's disagreement with the CAISO's conclusions regarding the cost impacts on the LA Basin LCR requirements evidences a fundamental lack of understanding of power flows on this portion of the transmission system. At page 65 of its brief, DRA asserts that the CAISO "ignored the possible reduction in LA Basin LCRs that the application of its LCR methodology would actually yield" because "in an analysis of the impact of TE/VS on LA Basin LCRs, imports *into* the LA Basin should thus be maximized." Simply stated, the addition of TE/VS electrically will not create a reduction in LA Basin LCR requirements, as Mr. Sparks tried to explain during cross-examination by DRA on this subject.[155] The Path 43 (North of SONGS path) allows 2440 MW of "imports" from SONGS to the LA Basin and this path has never been a constraint in determining the LA Basin LCR requirements. Adding TE/VS may increase the Path 43 transfer capability, but since the Path 43 limit is not a determining factor in the LA Basin LCR, TE/VS would not reduce LA Basin LCR requirements. Further study by the CAISO will not change this underlying truism, and DRA's lack of understanding in this regard certainly does not render the CAISO study results "speculative, untested, and incomplete."[156]

In addition to these incorrectly perceived "fundamental flaws", DRA goes on to criticize other CAISO study assumptions. For example, as touched on briefly above with respect to UCAN's criticisms of the CAISO LCR cost reduction benefit studies, DRA takes issue with the CAISO's assumptions regarding the payments that existing older generation units will continue to receive under the various study scenarios. Specifically, DRA opines that it is "not realistic" to expect unit owners "to run at a loss" and that they will need to anticipate "recovery of their full costs of service to continue units in operation."[157] The CAISO disagrees. As DRA correctly points out in the same discussion, most of the generation resources on existing RMR contracts

[155] CAISO/Sparks, Tr. at 1994: 12- 1995: 20.
[156] DRA Opening Brief at 65.
[157] DRA Opening Brief at 62.

are old units nearing the end of their useful lives and thus have been fully depreciated for many years. It is not unreasonable to assume that the owners of these units will continue to operate their plants as long as the prices for capacity cover their incremental costs plus a reasonable return, as the CAISO assumed.

DRA next states that the CAISO has made a "grandiose assumption" that "RMR operating costs" will equal $60 million/year, citing portions of the CAISO initial testimony, Part II,[158] but this is an inaccurate characterization of the CAISO's testimony. The CAISO estimate of $60 million was what it paid these units in 2005, as described by Mr. Sparks on cross-examination. The CAISO subsequently scaled this figure down in proportion to the amount of generation capacity needed, as suggested by a number of parties in response to its 2nd workshop presentation in San Diego on March 27, 2007.[159]

Finally, DRA urges the Commission to adopt its study assumptions as being "substantially more reasonable than the CAISO or SDG&E's assumptions." DRA used SDG&E's cost model, with certain changed assumptions, and developed "an estimated LCR cost reduction benefit of $56.5 million in levelized annual millions of 2010 dollars."[160] While the CAISO confesses to not fully understand the DRA's calculation or logic, this estimate of reliability benefits seems to be unreasonably low, even using the most conservative assumptions for the following reasons.

First, DRA argues that many of the older generating units in San Diego will retire in the near future and be replaced with CTs, thereby also creating an immediate need for and value of additional local capacity. Second, DRA asserts that the replacement costs of new generation are increasing at rates substantially higher than general inflation and the costs of new transmission.

[158] DRA Opening Brief at 63.
[159] CAISO Ex. I-2 at 26
[160] DRA Opening Brief at 65-66.

Third, DRA argues that the cost and value of capacity starting in 2010 should be equal to costs higher than used by the CAISO that are consistent with SDG&E's RFO. How these assumptions can decrease the value of capacity in San Diego is bewildering. If one were to ignore any impact of Sunrise on the price paid to existing generation, which is an extremely conservative assumption, the lowest reasonable estimate of capacity or reliability value would seem to be the amount of capacity provided by Sunrise, which DRA does not dispute is 1000 MWs of increased import capability, times the value of that capacity. The CAISO used a conservative cost of new capacity for CT's of 85 $/kW per year, which would produce a minimum capacity value of $85 million per year. Therefore, if the SDG&E RFO price were 10% higher than the CAISO's conservative cost of new capacity, the capacity value would increase by $8.5 million per year, and Sunrise would provide more benefits than the CAISO estimates.

In sum, DRA has provided no valid basis upon which the Commission could reject the CAISO LCR analysis and adopt DRA's recommendations.

TNHC

One of the fundamental differences between the CAISO's analysis of the TE/VS line (whether as a standalone project or in combination with the other projects) and TNHC's study of the line is the import capability ascribed to the line. Early on in the process, the CAISO conducted an import limit analysis for the Green Path + LEAPS alternative and concluded that "without substantially increasing the costs of the LEAPS related transmission, the LEAPS project would only increase the import capability of SDG&E by 500 MW…"[161] TNHC's witness Depenbrock, on the other hand, conducted an analysis purportedly based on the CAISO's LCR methodology set forth in its 2009-2011 Local Capacity Technical Analysis Study

[161] CAISO Ex. I-2 at 76.

(LCR Study), and argued that his study showed that the TE/VS import capability would be the same as Sunrise-1000 MW.[162]

In its Rebuttal Testimony, the CAISO explained that TNHC incorrectly applied the criteria for the SDG&E area described in the LCR Study, rendering his results invalid.163 On cross-examination, Mr. Sparks attempted to explain the criteria and study methodology set forth in the LCR Study in comparison with the WECC/NERC reliability criteria:

> Q. [Thompson] Okay. Am I correct that when local generation plus transmission import capability for, let's take SDG&E as an example of a utility system, under G-1/N-1 conditions equals or exceeds the expected 1-in-10 peak load, the system is in compliance with WECC and NERC transmission planning criteria?
>
> A. [Sparks] The LCR methodology is based on the WECC and NERC criteria.
>
> Q. Is that a yes?
>
> A. I think the more accurate way to describe an LCR analysis is to ensure that we follow the LCR criteria and the methodology which is…an articulated methodology and criteria on our website. And there's various 10 years of history doing those studies. But if you read the methodology, it's based on the WECC and NERC criteria.[164]

Consistent with this discussion, the CAISO quoted verbatim the LCR Study criteria implementation description in its Rebuttal Testimony at pages 29-30, explaining that the G-1/N-1 condition for the purposes of the study is worse than the N-1-1. Nonetheless, in its Opening Brief TNHC still stubbornly argues that the differences between the study criteria clearly set forth in the LCR Study (that must be used when performing an LCR evaluation) and the WECC/NERC reliability planning criteria upon which the LCR Study is based should be ignored, and that the "CAISO did not and cannot justify this approach to its import analyses."[165]

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[162] TNHC Ex. N-9 at 8 - 9.
[163] CAISO Ex. I-6 at 28 - 30.
[164] CAISO/Sparks, Tr. at 2130.
[165] TNHC Brief at 22.

TNHC even goes so far as to claim that "[t]he CAISO's written testimony on its reliability evaluations never purports to apply any criteria other than G-1/N-1", followed up by the completely contradictory assertion that "[b]ecause there is no justification for the CAISO's application of unduly strict, unstated criteria in its assessments for this case, the Commission should disregard the CAISO's claim at page 76 of Exhibit No. I-2 that more than 500 MW of incremental imports from TE/VS would overload the San Luis Rey-Mission #1 and # 2 lines."[166]

Such statements are mischaracterizations of the CAISO's reliability benefits analysis in this case. There is absolutely no basis in the record for TNHC's statements that the CAISO did not describe or justify the LCR methodology used in evaluating TE/VS and the other alternatives. Furthermore, it is simply nonsensical for TNHC to argue that there is "no justification" for the CAISO to use the LCR Study criteria that is publicly available (and in the possession of TNHC), developed through continuous stakeholder evaluations and required for all CAISO LCR studies.[167] The LCR Study criteria is far from being "unstated" and if TNHC believes that it is "unduly strict", that matter should be taken up through the CAISO's stakeholder process and not vetted before this Commission.

To provide additional clarity on this point, the CAISO would again direct the Commission's attention to the LCR Study criteria implementation description set forth in the Rebuttal Testimony at pages 29-30, which includes an analysis of the SDG&E system with Sunrise in service. The criteria requires that following a G-1/N-1 event that all lines, transformers and established path ratings must be below their thermal and voltage limits. In the LCR Study there are at least two examples where the G-1/N-1 event overloads a path and local

[166] TNHC Brief at 23-24.
[167] The LCR Study can be found at: http://www.caiso.com/18d8/18d8ce1118390.pdf

generation capacity is required to mitigate the overloaded path. These two a paths are the South of SONGS path into San Diego and the South of Lugo Path into the LA Basin.

Under 2009 system conditions without Sunrise, the LCR Study shows how the LCR Criteria is applied to the San Diego system. After the loss of SWPL and Otay Mesa, there must be enough local capacity to reduce the flow on the South of SONGS import path into San Diego to below its "non-simultaneous import capability rating of 2500 MW." Under 2011 conditions this same analysis is provided with Sunrise in-service. After the loss of SWPL and Otay Mesa, there must be enough local capacity to reduce the flow on the import path into San Diego to below its import capability rating of 3500 MW. Both the 2500 MW import capability rating and the 3500 MW import capability rating are determined by finding the maximum import level which can withstand the next single contingency with SWPL and Otay Mesa already out of service and the system readjusted.

For the purposes of determining the LCR reduction that would be realized after TE/VS is in-service, the CAISO performed the same analysis described above with respect to Sunrise. First the CAISO determined that the import capability rating into San Diego with TE/VS in-service and with SWPL and Otay Mesa out of service was approximately 3000 MW. Then it was determined how much local generation capacity would be needed in order to stay within the 3000 MW import capability rating. The results of this process were described in the CAISO Initial Testimony, Part II, and also described by Mr. Sparks on redirect examination at Tr. 2154 - 2155. TNHC certainly has provided no reason to deviate from the LCR Study criteria for the purposes of analyzing the TE/VS project.

Indeed, TNHC did not conduct its own analysis of the LCR benefits/reliability cost savings attributable to TE/VS, but rather took the reliability benefits calculated by the CAISO for the TE/VS+LEAPS+Green Path North scenario and doubled it to account for TNHC's

(erroneous) assumption that the import capability of TE/VS should be 1000 MW and not the 500 MW determined by the CAISO.[168] Given TNHC's use of the CAISO's LCR analysis in its own calculation of the TE/VS benefits, it is surprising that TNHC would assert that "[t]here are a number of flaws and questionable assumptions underlying the CAISO's evaluation of the reliability cost benefits of Sunrise and alternatives" and "[t]hough presented authoritatively, the CAISO's analysis is in many respects based on assumptions that are unexplained and, in some instances, seemingly illogical."[169] On the contrary, the CAISO notes that TNHC's potshots at the CAISO studies, while "presented authoritatively", are unsubstantiated and have no merit.

For example, TNHC characterizes the CAISO assumption that a reduction in San Diego LCR requirements due to the addition of a transmission line would cause an equivalent amount of generation to be mothballed as "simply arbitrary" and "illogical", but offers no real basis for this characterization.[1] Indeed, TNHC sets forth the CAISO's reasoned explanation of this assumption, as provided in response to a TNHC data request, on page 32 of its brief, as well as identifying the portion of the transcript where Mr. Sparks had a discussion of the topic with UCAN. As correctly noted by TNHC, the CAISO assumed that with the reduction of LCR requirements in San Diego, an equivalent amount of generation would be temporarily mothballed and not available to be dispatched by the CAISO for reliability needs.

The CAISO is not sure what in particular is "arbitrary" and "illogical" to TNHC. Perhaps they are unfamiliar with the Commission's RA and the CAISO MRTU processes. The simple fact is that if a generator is not under contract or owned by a load serving entity, then it cannot be counted towards meeting local or non-local resource adequacy needs, and is not obligated to provide its capacity to the CAISO to reliably operate the transmission system. Given this lack of

[168] TNHC Ex. N-9 at 31 - 32.
[169] TNHC Brief at 30, 34.

obligation, the CAISO believes it would be illogical to assume that these uncontracted generation would provide these reliability services for free. The CAISO also assumed that the vast majority of this generation which currently is receiving a local capacity payment, could not cover their costs if they only received a non-local capacity payment, but that they could temporarily be shutdown until the local capacity needs and local capacity prices increased enough for them to cover their costs.

TNHC also appears to misunderstand the CAISO analysis. For example, the CAISO is accused of "favoring any resource (transmission) plan that can access Imperial Valley" by assuming that "each megawatt of IV generation that qualifies as RA capacity qualifies as LCR capacity for the LA area."[170] According to TNHC, there are two "questionable aspects" to the CAISO's approach.

First, TNHC opines that in order for IV generation to reduce the LCR for the LA Basin, the LA Basin and IV must be in the same LCR area, and so the CAISO's assumption seems "counterintuitive." However, TNHC is simply incorrect in this regard. The CAISO's LCR analysis is performed on a full network model of the entire WECC. Generation dispatch in nearby areas can have a significant impact on LCR constraints. The renewable generation is assumed to be must-take generation so there is no question that it would be dispatched to its full availability. The CAISO explained in its initial testimony that this renewable generation has a 75% effectiveness factor on reducing flows on the South of Lugo path relative to a 100% effectiveness factor for generation located in the LA Basin.[171]

[170] TNHC Brief at 33.
[171] CAISO Ex. I-5 at 9.

The second "questionable aspect"-- the weighted average RA- qualifying capacity factor applied to IV renewable generation--is similarly without merit.[172] First of all, the CAISO is puzzled by TNHC's reference to a .75 MW benefit for LA for each 1 MW of IV generation. As explained on page 26, the CAISO assumed that 1 MW of solar thermal generation capacity would provide .7 MW of RA-qualified capacity, while IV geothermal would be 100% RA capacity.[173] Then, TNHC criticizes the CAISO for basing its 70% factor applied to solar thermal on technology that differs from the "unproven" dish-Stirling technology for which SDG&E has contracted, thus implying that the RA capacity factor should be lower.[174] However, the IV area contains an amount of solar resource potential that is significantly in excess of the 900 MW assumption used by the CAISO. It is reasonable to assume that these resources will eventually be developed by one of several solar thermal technologies being developed today. Moreover, given the relatively high value of capacity in San Diego in particular, it is also reasonable to assume that the technology will have a sufficient level of storage to provide a relatively high capacity value. Thus, the capacity factor assumptions developed by the CAISO are not "questionable" at all but well-reasoned and conservative.

SBRP

SBRP had little to say about the reliability benefits analysis conducted by the CAISO except for a very puzzling statement on page 14 of its Opening Brief: "[t]he CAISO's analysis does not consider SDG&E's need for local capacity to meet the Local RA requirement." Obviously, this is not correct; the CAISO explicitly considered LCR in its determination of the

[172] Specifically, TNHC states that "…the CAISO asserts that each megawatt of IV generation capacity provides a .75 MW LCR benefit for LA because the CAISO assumed that 1 MW of solar thermal generation capacity would provide .7 MW of RA-qualified capacity, while IV geothermal would be 100% RA…" TNHC Brief at 33.
[173] The CAISO can only surmise that TNHC became confused by the 75% effectiveness flow factor, which is also applied to the IV generation in addition to the capacity factor. By way of example, for solar generation the product of the two factors (.7 and .75) is .525. *See* CAISO Initial Testimony, Part V, 9 -10.
[174] TNHC Brief at 34.

impact of each alternative. Such an apparent misunderstanding of the CAISO's entire analysis calls into question all of SBRP's recommendations.

3. Renewable Cost Savings

The CAISO's RPS procurement cost studies and the renewable cost savings produced by those studies were discussed extensively at pages 27 - 33 of the CAISO's Opening Brief. In those portions of the brief, the CAISO also addressed the concerns raised by the interveners regarding the study findings, as well as specifically responding to UCAN's criticisms that the CAISO did not consider an RPS portfolio scenario wherein the mix of generation developed in the IV area would be predominately wind rather than predominately solar and geothermal.

For the most part, the interveners' opening briefs contain arguments that the CAISO anticipated and addressed in its opening brief. Other issues that merit a response are set forth below.

UCAN

At pages 60-62 of its brief, UCAN takes issue with what it calls "SDG&E's Field of Dreams argument ('if we don't build it, they won't come')". According to UCAN, SDG&E concedes that up to 2700 MW of renewable generation in the IV area could be imported into San Diego, but without Sunrise the cost of purchasing and delivering these renewables will be so high that they won't be developed. Specifically, UCAN states that:

> SDG&E may have an argument that there is an economic penalty for renewable generators if STP is not built and the generators are paid based on spot prices. But if renewable generators are paid based on long-term contracts that cover their fixed costs, as is the norm in California, then small changes in spot prices due to STP cannot possibly affect the economics of future renewable generation in the Imperial Valley from the point of view of the generators.[175]

[175] UCAN Opening Brief at 61 -62.

> . . . . The Commission and SDG&E should thus be more than willing to accept renewables delivered over existing lines, even if that costs SDG&E customers a few million dollars per year, in order to save ratepayers the $150+ million per year cost of [Sunrise] (footnote 251).[176]

Footnote 251 (page 62) contains the basis for UCAN's statement that ratepayers would pay only "a few million dollars per year" more if Sunrise is not built:

> …SDG&E estimates that to reach a 30 (not 20) percent RPS goal by 2015, it will need an additional 1994 gwh of renewable energy that is not yet under contract…If all of that came from the Imperial Valley, and if ratepayers and not generators paid for all of the transmission costs, the additional cost to ratepayers for transmission without STP would be $2.47/Mwh per the ISO….The incremental cost to ratepayers would be at most 1994 gwh x 1000 Mwh/gwh x $2.47/Mwh = 4.9 million, about 3 percent of the annual savings from not building STP.

There are three errors in UCAN's analysis. First, as discussed above at Section, the CAISO continues to believe that adding more than 700 MWs of resources to the existing transmission infrastructure will create reliability criteria violations that will limit the physical interconnection of new resources. Second, even if one were to assume that the new resources could be interconnected, the loss in value is a loss in both energy and capacity values. The CAISO estimates that the capacity value is approximately $129 million,[177] which should be added to UCAN's loss in energy value of $4.9 million per year. The combined loss in value to almost $134 million per year, which is more than 86 percent of the full cost of Sunrise. Finally, to the extent that the full value of capacity is lost from IID resources, the capital intensive geothermal resources will be very difficult to develop. Developers and utilities are unlikely to invest substantial amounts of capital in projects that do not provide capacity. In turn, the loss of this substantial amount of geothermal resources would have a material impact on the cost of integrating more wind for example into the grid.

[176] UCAN Opening Brief at 62.

To demonstrate the importance of this last point, the CAISO has developed a hypothetical example. Suppose the 1600 MW of geothermal resources estimated to be developable in the IID area were to be replaced with approximately 4800 MW of wind. If the integration costs were $8/Mwh, which is a conservative estimate for the levels being discussed to comply with AB 32 and or RPS requirements beyond 2010, the integration cost alone would amount to more than $100 million dollars per year.[178] This cost would be in addition to the loss of LCR and energy values described above, and drive UCAN's incremental cost calculation far in excess of the levelized yearly costs of Sunrise.

DRA

DRA agrees that the biggest "likely" benefit of Sunrise is its role in the development of renewable resources in the Imperial Valley, and that the CAISO's general approach to the study of RPS development costs is preferable to the approach taken by SDG&E.[179] Indeed, DRA used the CAISO renewables procurement cost model to develop its own recommendation.[180] Nonetheless, DRA criticizes the CAISO's study as not being "conservative" and offering a "cherry-picking view of renewable resource benefits" by failing to "test many other equally reasonable and likely possibilities." Specifically, DRA states that "the CAISO provides no analysis of what impact wind generation would have in addition to, or in place of, solar thermal or geothermal on estimated [Sunrise] benefits."[181]

This is simply not a fair or accurate characterization of the CAISO study process. It bears repeating, once again, that almost every plausible change the CAISO could make to its estimates of renewable energy costs would increase the renewable energy procurement benefits

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[177] CAISO Ex. I-6 at Table 6, line 12.
[178] *CPUC GHG Modeling: Cost of Integrating Wind Resources*, prepared for the CPUC, November 2007. http://www.ethree.com/GHG/28%20Wind%20Integration%20Costs%20V2.doc

[179] DRA Opening Brief at 68.
[180] CAISO Opening Brief at 66.

of Sunrise. For example, the CAISO has already shown in its Opening Brief that additional wind development, either as a replacement or supplemental to solar thermal, increases the benefits for Sunrise.[182]

Furthermore, because the CAISO's base case estimates used an entire set of consistent but dated assumptions, the CAISO found it necessary to test the validity of its assumptions when faced with the suggestion by DRA that RPS benefits could range from 0 to $137M/yr.[183] In developing an alternative procurement cost scenario for the purposes of its Rebuttal Testimony, the CAISO continued to make reasonable assumptions based on updated cost information for wind, solar and geothermal technologies. For example, San Diego was the only party that produced any evidence suggesting that the CAISO's resource cost assumptions with respect to solar technology were too conservative. However, rather than adopt SDG&E's contract costs for Stirling, the CAISO reduced the solar thermal cost to 10 cents per kWh, producing a consistent set of updated numbers that provide another higher, but conservative, estimate of renewable energy procurement benefits. These updates to the assumptions led the CAISO to estimate that the high end of a plausible range of RPS benefits would be $220 million, making the appropriate range of estimated benefits $45-$220 million.

In light of the extensive amount of work undertaken by the CAISO in a very short period of time in order to develop a plausible estimate of renewable energy procurement benefits, it is certainly a stretch for DRA to argue that the CAISO has failed to consider equally plausible renewable resource procurement scenarios. Indeed, the CAISO's efforts to update its estimates with an alternative set of assumptions to be used as a bookend to mark the high case is exactly

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[181] DRA Opening Brief at 68-69.

[182] CAISO Opening Brief at 70-73. The CAISO admits that a portion of these additional benefits could be offset if less geothermal resources were developed than anticipated; however, no party (including DRA) presented evidence of this case nor did the CAISO find a plausible lower number.

[183] CAISO Ex. I-6 at 43 - 46.

the form of uncertainty analysis contemplated by the Commission in its Palo Verde-Devers Decision and suggested by DRA.

TNHC

TNHC describes the CAISO's RPS analysis as reflecting "assumptions heaped on assumptions" and questions whether the outcome of the analysis is "worthy of a decision-maker's confidence." In an attempt to support this bald assertion, TNHC finds it noteworthy that "when confronted with lower overall net benefits results for Sunrise after corrections to its analyses…the CAISO suddenly found it plausible that as much as 75% of out-of-state renewables would become unavailable…"[184]

As seems to be typical, TNHC apparently misunderstands (or mischaracterizes) the point of this adjustment. The change from 50% unavailability to 75% unavailability was made in response to DRA's suggested range of renewable benefits, discussed above. In order to develop a high end estimate of renewable procurement benefits, the CAISO assumed that 75% of the identified resources would be unavailable to California LSEs, which appeared to the CAISO to be much more likely than the 50% case used in its conservative assumptions. Given that every jurisdiction in the WECC (except 3) now has RPS standards and that there is mounting regional interest in regulating GHG emissions, it is quite reasonable to assume that increasing numbers of out-of-state renewables will not be available in California. The CAISO certainly did not contrive the higher assumption simply for the purposes of boosting the RPS benefits of Sunrise, as TNHC would have the Commission believe.

[184] TNHC Brief at 35.

4. Other Savings

5. Project Costs

6. Results

B. Risk and uncertainty

DRA criticizes the CAISO for not having conducted enough sensitivity studies to test the "impact of small changes in inputs… on the results of the CAISO's renewable resources portfolio spreadsheet."[185] Similarly, UCAN asserts that the CAISO has "picked and chosen" which costs to use for its low and high ranges of RPS benefits, and that "neither the [CA]ISO nor SDG&E has done any sensitivity analysis regarding either the level or composition of future Imperial Valley renewable resources."[186] DRA and UCAN misrepresent the CAISO's analysis in this proceeding. The CAISO has considered both uncertainty in its analysis of Sunrise and the impacts that changes in assumptions have on its study results.

As Dr. Orans explained during the evidentiary hearings, the entire iterative study process employed by the CAISO, in and of itself, produced sensitivity results that provide ample information as to effects of various input changes:

> Q [Como] I'm talking about uncertainty analysis. You haven't provided uncertainty analysis with regard to those variables in this case, have you?
>
> A [Orans] I would disagree. I looked at ranges of how those affect the results.
>
> Q Where is the document that you said that you would file?
>
> A In preparing my conservative case, I've looked at a range to be able to find out what the conservative assumption looks like. And I've looked at the ranges and whether they were sensitive. In the bid markup, for example, which was critical here [in the Devers Palo Verde 2 analysis], we have no bid markup in all of our analysis. Even though Palo Verdes said you can use bid markup case, we took it out.

[185] DRA Opening Brief at 79.
[186] UCAN Opening Brief at 304.

> Certainly if I were to do a full uncertainty analysis bid markup, I would have put in low hydro cases, and high hydro cases, and gas high and low, and load high and low. And I agree, it would be constructive to do it. I'm just saying what you are going to find on that low side, at least if I'm making the assumptions, you are going to get yourself back at 30 or $35 million of annual, levelized energy benefits for Sunrise. You could also find 90 and $100 million under some of these cases.
>
> Q We don't know that, do we, because you haven't presented that information. You are just giving me your conclusion based on what you did, but did not share?
>
> A No. That is not true, because we started out with CSRTP. And the process we went through from CSRTP was to remove assumptions where we didn't have a basis for it. And systematically we looked at the process we went through, and started with the second part of our testimony.
>
> And going all the way through to Part 5, also to our rebuttal, and then more work on Part 5 when we look at the LA Basin, it is a set of analysis that Mr. Sparks referred to as a historical record. We don't say those cases are all wrong. We say if you are moving towards the conservative assumption here, and you want to stake out the conservative low end of uncertainty, you get to a case like we got as Table 6, for example, in our rebuttal testimony, which is when we've gotten all the way to all the things that everybody told us over a six- or seven-month period, we think conservative low estimate.[187]

Although above exchange was focused on the CAISO's production cost savings analyses, the same approach was used for the CAISO's reliability cost studies and RPS benefits analysis. Indeed, the CAISO conducted a sensitivity analysis of the RPS portfolio mix, based on UCAN's recommendations during the hearing, and presented these results in its Opening Brief.[188] The CAISO has more than adequately addressed the uncertainty concerns raised by the interveners.

[187] CAISO/Orans Tr. at 2261-2263.
[188] CAISO Opening Brief at 77-78. The sensitivity run should dispel UCAN's notions that CAISO "cherry picks" its input assumptions.

VIII. CONSIDERATIONS UNDER PUB. UTIL. CODE § 1002 AND G.O. 131-D

- **A. Community Values**
- **B. Recreational and Park Areas**
- **C. Historical and Aesthetic Values**
- **D. Influence on the Environment**
- **E. EMF Measures**
- **F. Other Factors Relating to the Safety, Health, Comfort and Convenience of the Public**
- **G. Pub. Util. Code § 625 Concerning Eminent Domain.**

IX. OTHER ISSUES

X. CONCLUSION

As discussed above and in the CAISO's Opening Brief, the CAISO's analysis demonstrates that Sunrise is needed to meet SDG&E's reliability need, will provide significant net economic benefits, and is a critical component to SDG&E meeting RPS requirements. For these and other reasons discussed herein, the CAISO strongly supports the granting of the requested CPCN for Sunrise.

Respectfully submitted,

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Attorneys for the CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

Dated: November 30, 2007

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 November 30, 2007, I caused the following to be served:

PHASE 1 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)