UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

The Nevada Hydro Company, Inc.	**)**	
	)	
v.	**)**	**Docket No. EL19-81-000**
	)	
California Independent System Operator Corporation	**)**	

MOTION FOR LEAVE TO FILE ANSWER AND ANSWER OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION TO ANSWER

Dated: August 21, 2019

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The California Independent System Operator Corporation ("CAISO") hereby submits this limited answer to the Motion for Leave to Answer and Answer filed by The Nevada Hydro Company, Inc. (Nevada Hydro) on August 6, 2019 (Nevada Hydro Reply).[1] In its Reply, an answer to the CAISO's answer to Nevada Hydro's June 17 complaint ("Complaint"), Nevada Hydro largely reiterates its assertions that the CAISO failed to fairly study the LEAPS pumped storage project as part of the 2018-2019 CAISO transmission planning process due to the CAISO's alleged unwillingness to recognize storage as a transmission asset. The CAISO fully rebutted these arguments in its answer to the Complaint, and they are rendered no more convincing by virtue of repetition. Moreover, apparently recognizing the fatal weaknesses in its Complaint, Nevada Hydro attempts to rehabilitate it with new arguments and analyses in support of its pre-

[1] The CAISO files this answer pursuant to Rules 212 and 213 of the Commission's Rules of Practice and Procedure, 18 C.F.R. §§ 385.212, 385.213. For the reasons explained below, the CAISO respectfully requests waiver of Rule 213(a)(2), 18 C.F.R. § 385.213(a)(2), to permit it to answer certain comments filed in the proceeding.

conceived determination that the CAISO's planning studies were flawed because, according to Nevada Hydro, the only acceptable outcome was for the CAISO to include LEAPS in its transmission plan, regardless of whether LEAPS meets an actual transmission planning need. As explained below, none of these new claims have any merit whatsoever.

I. MOTION FOR LEAVE TO FILE ANSWER

Pursuant to Rules 212 and 213 of the Commission's Rules of Practice and Procedure,[2] the CAISO respectfully requests waiver of Rule 213(a)(2), 18 C.F.R. § 385.213(a)(2), to the extent necessary to permit it to answer the answer filed by Nevada Hydro in the proceeding. Good cause for the waiver exists because the answer addresses new assertions, arguments, and analyses that were not included in Nevada Hydro's Complaint. The CAISO's answer will therefore provide additional information to assist the Commission in the decision-making process, and help to ensure a complete and accurate record in the case.[3]

II. INTRODUCTION AND SUMMARY

Nevada Hydro reveals the central conceit of its complaint against the CAISO on the very first page of the August 6 Reply. There, Nevada Hydro reiterates once more its claim that the CAISO did not select LEAPS in the 2018-2019 transmission planning cycle based on an alleged belief that "storage is a generating resource that should be procured through state planning procedures,

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[2] 18 C.F.R. §§ 385.212, 385.213.

[3] *See, e.g., Equitrans, L.P.,* 134 FERC ¶ 61,250 at P 6 (2011); *Cal. Indep. Sys. Operator Corp*., 132 FERC ¶ 61,023 at P 16 (2010); *Xcel Energy Servs., Inc.,* 124 FERC ¶ 61,011 at P 20 (2008).

no matter what the Commission may think about using it as a transmission asset."[4] Oddly, Nevada Hydro purports to support this assertion by referring to its petition for a declaratory order, in which the Commission rebuffed Nevada Hydro's allegations of discriminatory treatment of storage in the CAISO transmission planning process and agreed with the CAISO that there was no controversy or uncertainty regarding the CAISO's treatment of LEAPS.[5] The Commission further found that Nevada Hydro's claims that LEAPS was a transmission facility entitled to recover its costs through transmission rates were too general in the absence of "specific, transmission planning process-identified needs" and whether "LEAPS will meet identified transmission needs in the CASIO TPP."[6]

As the CAISO explained at length in both the declaratory order proceeding and in its answer to the Complaint, the CAISO has no objection to the notion that storage resources, including pumped storage projects such as LEAPS, can be selected as transmission assets, *if they meet an identified transmission need and satisfy the requirements to be selected as a reliability or economically driven project*. This is precisely the construct that the Commission endorsed in its order on Nevada Hydro's petition for declaratory order.[7] And it is more than merely rhetoric -- the CAISO has selected several storage projects to meet transmission

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[4] Nevada Hydro Reply at 1.

[5] *Nevada Hydro Company, Inc.*, 164 FERC ¶ 61,197, at P 23 (2018) (Order Dismissing Declaratory Petition).

[6] *Id*. at 23-24.

[7] *Id*.

needs in previous transmission planning cycles. Consistent with both its statements and established practice, and as explained in its answer to the Complaint, the CAISO fully and fairly studied LEAPS in the 2018-2019 transmission planning cycle as both a potential reliability and economic transmission solution utilizing the Commission-approved process in Section 24 of the CAISO Tariff. Based on the results of those analyses, the CAISO appropriately concluded there were no identified reliability needs requiring LEAPS or any other new transmission project, and LEAPS had a benefit-to-cost ratio far below 1:1, rendering it ineligible to be a needed, economically-driven transmission solution.

Nevada Hydro claims that its Complaint "is not merely about differences among experts over planning results."[8] The CAISO agrees wholeheartedly. Ironically, after much ado regarding the CAISO's alleged preference for a particular outcome, the August 6 Reply makes abundantly clear that Nevada Hydro's quarrel with the CAISO has less to do with the propriety of the CAISO's transmission planning studies and instead derives from Nevada Hydro's insistence that including LEAPS in the transmission plan was always a fait accompli. Stated another way, whether or not the CAISO's transmission planning analyses actually showed that LEAPS meets a specific, identified transmission need or produces net economic benefits to ratepayers, the only legitimate outcome, according to Nevada Hydro, was for the CAISO to include LEAPS in the transmission plan. The only rationale that Nevada Hydro provides

[8] Nevada Hydro Reply at 3.

for this pre-determined outcome is that the CAISO has, in other contexts, found benefits to including pumped storage projects such as LEAPS in the mix of resources on the CAISO system and that LEAPS is capable of providing some transmission services, albeit ones for which the CAUISO found no specific need. However, mere capability does not equate to a transmission need or net economic benefits. In its Answer to the Complaint, the CAISO explained in considerable detail the difference between the informational bulk storage studies that Nevada Hydro relies on, which were performed to inform resource procurement processes, and the CAISO's transmission planning studies, and hence, why the results of the former do not dictate the outcome of the later.

In its Reply, however, Nevada Hydro ignores these explanations and offers no specific rebuttal, instead doubling down on an inappropriate and unsupported attempt to conflate resource procurement decisions with transmission planning. Nevada Hydro goes as far to argue that by not including all resource adequacy and procurement functions in its transmission planning process, the CAISO is abdicating its responsibility as a transmission planner under the Federal Power Act. Not only is this argument unsupported by any precedent, granting it would effectively eviscerate any reasonable distinction between transmission planning and resource adequacy/procurement functions. Nevada Hydro explicitly admits its goal to see the CAISO use its transmission planning process to override resource procurement decisions to the benefit of LEAPS when, in the conclusion to its Reply, it contends that the "flaw" in the CAISO's transmission planning analysis was that it failed to identify LEAPS as *a*

necessary transmission facility based on the CPUC's decision not to include pumped storage such as LEAPS in its resource procurement mix.

Nevada Hydro devotes the remainder of its Reply attempting to rehabilitate its Complaint by either repeating variations of some of its original arguments or proffering new erroneous arguments to support its claim that the CAISO's transmission planning analysis must have been flawed because its results did not correspond with Nevada Hydro's pre-conceived assumptions. Notably, Nevada Hydro fails to meaningfully respond to the CAISO's debunking of numerous prominent claims made by Nevada Hydro in its Complaint including: (1) LEAPS produces significant economic benefits by providing ancillary services, flexible ramping capacity, and energy arbitrage; (2) the CAISO's inclusion of a 2,000 MW export limit greatly diminished LEAPS' benefits, (3) claiming the CAISO violated TEAM by keeping benefits flat after 2028 even though that is what TEAM requires, (4) the CAISO failed to reconcile its transmission planning results with the results of its bulk storage studies,[9] and (5) LEAPS was a more cost-effective solution to addressing reliability needs than an existing remedial action scheme (RAS) and the already operational or under-development storage resources and demand response.

[9] In its Reply, Nevada Hydro suggests, in conclusory fashion, that the CAISO's response to this allegation was merely a "quibble" over the purpose of those respective studies. Nevada Hydro Reply at 6. This is a breathtaking misrepresentation of the CAISO's Answer, which provided a detailed and thorough explanation of not only the different purposes of the bulk storage studies relative to the CAISO's transmission planning studies, but the substantial differences in methodology between the two. *See* CAISO Answer at 73-85. Nevada Hydro fails to provide any meaningful response whatsoever to these explanations.

Instead, Nevada Hydro drastically changes course and now makes new (and even bolder) claims in its Reply: (1) the CAISO's existing and under-development solutions fail to meet the reliability needs the CAISO initially identified (although Nevada Hydro admits that LEAPS fails to meet the entire reliability need the CAISO initially identified); (2) the CAISO did not measure congestion costs in its economic planning study; and (3) the CAISO's transmission planning process does not comply with Order No. 1000. If Nevada Hydro truly believed the CAISO's process suffered from these significant and fatal flaws, it is perplexing that Nevada Hydro did not first raise them in its Complaint. In any event these claims are baseless.

The CAISO encourages the Commission to accept Nevada Hydro's invitation and decide this complaint on the merits of the parties' respective legal and policy arguments regarding the appropriate conduct of and compliance with the CAISOs planning process, rather than "differences among experts." But even if the Commission agrees to entertain Nevada Hydro's newly-minted arguments, the Commission should reject them:

- Nevada Hydro's new analysis that purports to show the inadequacy of measures identified by the CAISO as addressing potential reliability needs in the SDG&E area is flawed due to two key errors: (1) a failure to take into account all of the resources available in the area to mitigate overloads and (2) an incorrect limit on generation re-dispatch.

- The CAISO is not abdicating its responsibilities under the Federal Power Act by declining to attempt in the transmission planning process to appropriate the CPUC's resource procurement authority, and Nevada Hydro's arguments to the contrary rely on mischaracterizations of the CAISO's comments made in CPUC proceedings.
- Nevada Hydro's claims that the CAISO's ratepayer benefit calculations were flawed are based on fundamental misunderstandings of the CAISO's economic assessment methodology (TEAM). Consistent with TEAM the CAISO properly performed its analysis based on benefits to the ratepayers that would actually pay for any upgrade, rather than WECC-wide customers.
- Nevada Hydro's new arguments regarding its claim that the CAISO used an incorrect price for local capacity misrepresents the CAISO's answer on this issue and is based on an incorrect assumption that the CAISO is obligated to use the CPM soft offer cap to price local capacity.
- Contrary to Nevada Hydro's claim that the CAISO's is violating Order No. 1000 by "segregating" reliability and economic analyses, the Commission has approved the CAISO's separate processes for reliability, economic and public policy driven upgrades. Moreover, the CAISO re-assesses the relative cost effectiveness of reliability

and public policy solutions as part of its economic analysis.

- The CAISO did not, as Nevada Hydro asserts, reject LEAPS as a transmission asset because it is a storage project that would obtain wholesale market revenues. The CAISO included all of LEAPS' benefits in its analysis, including those benefits related to market participation. But LEAPS highest benefit-to-cost ratio was 0.32:1. Just because LEAPS might provide some limited benefit to the transmission system does not mean it must be selected in the CAISO's transmission planning process regardless of need or costs.

As explained in the CAISO's Answer to the Complaint, Nevada Hydro failed to show by a preponderance of evidence that the CAISO did not comply with the transmission planning provisions of its tariff in evaluating LEAPS in the 2018-2019 transmission planning cycle. Even if the Commission is inclined to consider Nevada Hydro's second bite at the apple, the Reply remedies none of the Complaint's flaws or provides a convincing case for relief. The Commission should therefore dismiss the Complaint in its entirety.[10]

[10] As explained below, even if the Commission were to conclude that there is some merit to Nevada Hydro's arguments regarding the CAISO's evaluation of LEAPS, there is no justification for the relief that Nevada Hydro requests beyond requiring the CAISO to re-do its studies. The additional relief that Nevada Hydro requests, particularly the request that the Commission direct the CAISO to include LEAPS in its transmission plan, would require the CAISO to contradict or ignore outright key elements of its transmission planning process such as its competitive solicitation process.

III. ANSWER

A. Nevada Hydro's New Arguments Regarding the CAISO's Reliability Analysis Fail

1. The CAISO's Mitigation Solutions Fully Address the Reliability Need in the San Diego Area, and the CAISO is not Capacity Deficient During the Planning Horizon

Nevada Hydro alleges that the CAISO's identified mitigations for contingencies in the San Diego area do not address overloading concerns.[11] Nevada Hydro claims that Mr. Alaywan's analysis shows "CAISO is forecast to be capacity deficient in 2023 by 50 MW, and by 484 MW in 2027, in the SDG&E zone*."*[12]

Nevada Hydro's allegations are wrong. Mr. Alaywan's analysis contains several errors that, when rectified, align with the results in the CAISO's 2018-2019 Transmission Plan and the local capacity technical study as referred to in the CAISO's Answer and Mr. Millar's Declaration. As an initial matter, however, a correction is necessary regarding Mr. Alaywan's statements regarding the steps the CAISO must take post-contingency to resolve overloads. Mr Alaywan states:

> "To resolve the overloads, CAISO relied on five steps **that must be implemented simultaneously and within 30 minutes:**
> 1. **Obtain 30-minute emergency re-rating of major bulk transmissions facilities from SDG&E.**
> 2. Drop generation in the Imperial Valley Area under an automated 'Remedial Action Scheme' or 'RAS.'
> 3. Use the Imperial phase shifter to divert electricity through Mexico.

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[11] Nevada Hydro Reply at 9-10; Exhibit NHI-10 at 5-9.

[12] Nevada Hydro Reply at 10.

4. Call on 16 MW of 'fast' demand response in San Diego load pocket to curtail electricity usage.
5. Manually increase generation output in San Diego and the Southern California Edison area."[13]

The 30 minute emergency ratings Mr. Alaywan refers to in his step 1 are already in place, and therefor need not be obtained by the CAISO "simultaneously" with other operational steps. As Mr. Millar explained in his Declaration:

> [i]n the 2017-2018 CAISO transmission plan the CAISO requested and SDG&E provided 30 minute emergency ratings for the two Suncrest 500/230 kV transformers. These emergency ratings were included in the model and relied upon in the simulation.[14]

The Suncrest transformer 30 minute ratings were established in 2017 and entered into the CAISO Transmission Register by San Diego Gas & Electric Company (SDG&E) for the CAISO's operation of the system,[15] as required by Section 4.2.3 of the CAISO's Transmission Control Agreement.[16] The 30 minute ratings for the Sycamore-Suncrest lines were established around the time the facilities went into service in 2012 and were entered into the CAISO Transmission Register at that time.[17] Mr. Alaywan's testimony therefore incorrectly makes the operational steps appear more complex than they actually are.

More fundamentally, however, several critical errors in Mr. Alaywan's analysis result in him identifying false overloads – and thus erroneous capacity

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13 Exhibit NHI-1 at 4 (emphasis added).

14 Exhibit CAISO-1 at 12.

15 Exhibit CAISO-4 at 3.

16 *Id.*

17 *Id.*

shortfalls. First, Mr. Alaywan's analysis fails to take into account all of the storage resources available to mitigate potential thermal overloads in the San Diego area. Mr. Alaywan states in his rebuttal that:

> I note that CAISO assumed 40 MW out of 201 MW of Batteries are dispatchable under cases B2 and B3, and that 16 MW of "fast" demand response is available under all of its scenarios. I adopted these assumptions.[18]

This misrepresents the information in the 2018-2019 Transmission Plan and the CAISO's Answer. The 2018-2019 Transmission Plan expressly stated that it assumed 201 MW of energy storage in the San Diego area, 161 MW of planned and operational batteries, and 40 MW of other energy storage.[19] Mr. Alaywan misreads Table 2.9-1 of the 2018-2019 Transmission Plan and wrongly assumes that it means only 40 MW of the 201 total MW were dispatchable. Instead, the reference to 40 MW in that table is to 40 MW of storage that the CAISO *dispatched* in the base cases, before considering the need to redispatch other available MW following the first contingency.[20] All 201 MW of storage are fully dispatchable, and can be relied upon as part of the post-contingency redispatch that the CAISO would undertake in the first 30 minutes after the first contingency if not already dispatched on in the base case.[21] Thus, Mr. Alaywan significantly undercounts the resources available to the CAISO to address potential overloads in the San Diego area.

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18 Exhibit NHI-10 at 3.

19 2018-2019 Transmission Plan at 183, Table 2.9-1; CAISO Answer at 42.

20 Millar Rebuttal Testimony, Exhibit CAISO-4 at 4.

21 *Id.*

Second, Mr. Alaywan's analysis did not fully optimize the redispatch of resources. As Mr. Millar explained in his Declaration:

> After the first contingency, the IV phase shifting transformers were adjusted and generation was re-dispatched in the simulation to prepare for the second contingency to eliminate the overload concerns identified in the baseline scenarios.
>
> Further assessment concluded that up to 16 MW of the existing fast response demand response and up to 201 MW of the existing or already procured energy storage resources in the San Diego area, along with the mitigation described above, were also needed and included in the simulation after the first contingency to prepare for the second contingency to mitigate the overload concerns identified in the summer peak sensitivity scenarios.[22]

Mr. Alaywan incorrectly limited generation redispatch in the 30 minute window only to increasing generation in the San Diego and Southern California Edison (SCE) areas.[23] He failed to correspondingly reduce the output of the specific generation contributing to the overload.[24] The combined effect of increasing generation inside the area, and reducing the specific generation that contributes to the overloads is much more effective than only increasing generation in the area.[25]

Third, Mr. Alaywan's analysis does not appear to take full advantage of the capability of the Imperial Valley phase shifting transformer to contribute to reducing flows on the potentially overloaded circuits.[26] The phase shifting transformer is a flow control device that can be adjusted to divert more flow, as needed, away from

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22 Exhibit CAISO-1 at 11.

23 Exhibit CAISO-4 at 4.

24 *Id.* at 4-5.

25 *Id.* at 5.

26 *Id.*

potentially overloaded circuits.[27] It is a key component in alleviating overloads such as the P6 overloads in the San Diego area.[28]

Accounting for these errors and omissions addresses and eliminates the purported deficiencies Mr. Alaywan identified and produces results that align with the CAISO's.[29] This shows that the combination of existing and under-development resources and existing operational measures fully address any potential thermal overloads in the San Diego area during the planning horizon the CAISO studied. Also, it is important to note than Mr. Alaywan admits that LEAPS itself would not fully resolve the thermal overloads the CAISO initially identified[30] – but which the existing RAS and operational and under-development resources fully resolve.

Nevada Hydro's suggestion that the CAISO would willfully have adopted solutions that fail to meet identified reliability needs is a serious accusation. As a NERC registered Planning Coordinator, the CAISO must comply with the transmission planning requirements of NERC Reliability Standard TPL-001-4. Failure to do so not only can jeopardize reliability, it can cause the CAISO to be sanctioned and penalized by NERC. If Nevada Hydro or other stakeholders believed the CAISO's specified solutions did not resolve the identified P6 reliability needs, they had every opportunity to raise the issue in the planning process. That they did not is telling. It is irresponsible and inappropriate for Nevada Hydro to carelessly bandy about erroneous accusations that the CAISO is failing to meet its NERC requirements in a belated attempt to

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27 *Id.*

28 *Id.*

29 *Id.*

30 Exhibit NHI-10 at 10.

rehabilitate its fatally flawed complaint.

2. The CAISO's Reliance on an Existing RAS in the San Diego Area Was a Prudent and Cost-Effective in Addressing Potential Reliability Concerns

The CAISO explained in the 2018-2019 Transmission Plan and its Answer that potential reliability concerns in the San Diego area "can be mitigated by previously approved projects and operational mitigations including RAS."[31] Relying on these facilities and operational measures is consistent with the CAISO tariff, which requires the CAISO to consider lower cost solutions. After accounting for (1) the existing, operational solutions and the RAS, and (2) the existing and CPUC-approved demand response and storage in development, the reliability concerns in the San Diego area were completely obviated.

Nevada Hydro now argues that the CAISO's findings "countermand[] the advice of the asset owner," SDG&E.[32] To support this claim, Nevada Hydro cites SDG&E's comment on the 2018-2019 Transmission Plan reliability assessment that "it is SDG&E's philosophy that reliance on SPS and RAS scheme [sic] to address issues on the transmission system that are permanent and likely to worse over time is acceptable only in the short term."[33]

The CAISO did not ignore SDG&E comments in the transmission planning process; it reviewed and carefully considered them. The CAISO has robust RAS guidelines in its Planning Standards that it follows. These guidelines set forth the

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31 CAISO Answer at 44 (quoting 2018-2019 Transmission Plan at 184).

32 Nevada Hydro Reply at 11.

33 *Id*.

considerations and limitations on using RAS.[34] The WECC Remedial Action Scheme Reliability Subcommittee has also reviewed the use of RASs in the San Diego and Imperial Valley area.[35] The Subcommittee reviews RASs for which failure would cause unacceptable performance levels outside of WECC performance limits. RAS the CAISO is relying on in mitigating potential reliability concerns in the San Diego area. These safeguards ensure that RASs do not introduce unintentional or unacceptable reliability risks to the Bulk Electric System.

Nowhere does SDG&E find fault with using the existing RAS and operational measures to mitigate the specific concerns identified in the 2018-2019 Transmission Plan. In fact, SDG&E only advocates that "the CAISO should strive to minimize the addition of *new* RAS schemes and eliminate existing ones *where feasible and cost-effective*."[36] Despite Nevada Hydro's assertions, neither situation applied here. The 2018-2019 Transmission Plan reasonably relied upon an *existing* RAS, and it would not be cost effective to build a $2 billion pumped storage facility in lieu of existing facilities that will be in place regardless of whether LEAPS is built and impose no incremental capital costs on transmission ratepayers.

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[34] CAISO Planning Standards at 10-14 available from the CAISO's Transmission Planning Homepage, available at the following link: http://www.caiso.com/planning/Pages/TransmissionPlanning/Default.aspx

[35] Exhibit CAISO-4 at 6.

[36] Exhibit NHI-11 at 53 (emphases added). In the 2018-2019 transmission planning process, SDG&E proposed five new reliably projects to address reliability needs in the San Diego area. CAISO 2018-2019 Transmission Plan at 184-85.

SDG&E admits in the comment quoted by Nevada Hydro that SDG&E, as a transmission developer itself, "has presented several [new transmission] options for mitigating overloads."[37] SDG&E was not alone in advocating that the CAISO select new transmission facilities instead of relying on existing operational measures. Transmission developers frequently advocate that the CAISO build new transmission instead of relying on existing or otherwise free measures. This position is understandable for transmission developers because they do not earn new revenues unless the CAISO approves new transmission facilities and selects them as the Project Sponsor. But the CAISO tariff only allows CAISO to do so when a new transmission facility is needed to meet reliability, and it is the "more efficient or cost-effective" solution. Neither condition applied regarding the new transmission projects proposed for the San Diego area in the 2018-2019 Transmission Plan.

3. The CAISO Has Fully Satisfied its FERC-Jurisdictional Transmission Planning Activities

Nevada Hydro claims the CAISO, because it has not attempted to duplicate and override the CPUC's generation procurement decisions in its transmission planning process, is somehow shirking its responsibility to address "critical reliability concerns" and "shuffling this obligation off to a state regulator that has no jurisdiction or responsibility for transmission reliability."[38] Nevada Hydro claims that the CAISO's comments in the CPUC's Integrated Resource

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37 *Id*.

38 Nevada Hydro Reply at 27.

Planning (IRP) proceeding recommending the CPUC consider procuring short- and long-duration storage somehow proves that large-scale pumped storage is necessary to meet identified transmission reliability needs.[39] In particular, Nevada Hydro claims that the CAISO's comments stating that the CPUC should consider storage resources to address reliability concerns that can arise when load is high but solar production is reduced storage resources.[40]

These assertions are explicit acknowledgement that Nevada Hydro envisions the CAISO using the transmission planning process to second-guess or end-run the CPUC's resource procurement decisions. Nevada Hydro continues to conflate procuring sufficient resources to serve load with approving transmission solutions to "ensure System Reliability, consistent with Applicable Reliability Criteria."[41] The former is a resource procurement function; the latter is a transmission planning function. Nevada Hydro is inappropriately seeking to inject the resource procurement function into the transmission planning process.[42]

The CAISO does not always agree with every aspect of the CPUC's resource procurement decisions, but it does not – and under the tariff cannot – use the transmission planning process to make different resource procurement decisions and undermine the CPUC's generation procurement authority. Instead,

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39 *Id.* at 26.

40 *Id.*

41 CAISO tariff section 24.4.6.2.

42 It is ironic that Nevada Hydro relies on CAISO comments to the CPUC recommending the CPUC consider including some storage resources in the CPUC's generation portfolios, yet objects that the CAISO refers to the market services LEAPS provides and seeks to have the CAISO approve LEAPS as a transmission resource.

the CAISO respects the CPUC's generation planning and procurement decisions to minimize the risk of stranded transmission investment and maximize the efficiency of the grid.

The CAISO's comments urging the CPUC to consider renewable integration and reliability goals simultaneously does not support Nevada Hydro's claim that the CAISO should evaluate how to change the CPUC's generation portfolio. The CAISO seeks to inform CPUC generation planning and procurement by providing the CPUC and stakeholders with detailed information regarding and the economic and reliability benefits of particular generation portfolios. The CAISO's July 22, 2019 comments to the CPUC provide such information, but they do not provide evidence that large-scale pumped storage resources are necessary to maintain transmission reliability.

The notion that the CAISO, by simply discussing the concept of future system "reliability" in a general fashion in its comments to the CPUC, could somehow trigger the finding of a transmission reliability need in its planning process is patently absurd. The CAISO conducts its transmission planning process under the Commission-approved provisions of Section 24 of its Tariff and its associated business practices. Based on applying these rules, the CAISO determined for the 10-year planning horizon considered in the 2018-2019 Transmission Plan there was no transmission reliability need that LEAPS was needed to meet. Nevada Hydro points to no Tariff provision or other rule by which the CAISO could simply select LEAPS absent such a finding. And Nevada Hydro makes no allegation (and provides no substantial evidence) that the

CAISO's Commission-approved transmission planning provisions are now unjust and unreasonable. In short, it is Nevada Hydro, not the CAISO, that is advocating violation of the Federal Power Act.

Moreover, Nevada Hydro mischaracterizes the CAISO's July 22 comments to the CPUC. First, the CAISO suggested storage resources as an option to help meet generation supply needs and serve load when load is high and solar production reduced.[43] In other words, the CAISO's comments suggested procuring storage in this context as a generation/supply resource, not a transmission resource.

Also, the CAISO's July 22 comments recognize there are a variety of generation options available to meet near-term and long-term reliability needs. In recent CPUC filings, the CAISO specifically mentioned increased firm imports,[44] existing but uncontracted thermal generation,[45] out-of-state wind,[46] geothermal,[47] and large-scale pumped hydro[48] as potential options to increase generation resource diversity and improve reliability. By mentioning these generation options, the CAISO has not indicated that any one particular generation option is necessary to meet system needs and not a specific generation project. Rather,

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43 July 22, 2019 CAISO IRP Filing, at 12, available at: http://www.caiso.com/Documents/Jul22-2019-Comments-PotentialReliabilityIssues-R16-02-007.pdf

44 *Id.* at 9.

45 *Id.at* 6-7.

46 January 31, 2019 CAISO IRP Filing, at 14.

47 *Id.*

48 *Id.*

this highlights that the CPUC has to make important policy decisions regarding generation procurement that will ultimately inform system needs and future iterations of the CAISO's transmission planning process.

Nevada Hydro also mischaracterizes the July 22 comments by stating that the CAISO "went on to explain why battery storage lacks key reliability attributes" that long duration storage such as pumped storage can provide.[49] To the contrary, the July 22 Comments explained why certain battery technologies are not well-suited to daily cycling, but the comments did not discount battery storage resources entirely. Nevada Hydro conveniently assumes the CAISO's comments lumped together all battery storage technologies, but the CAISO specifically noted in its comments that the CPUC should diversify the storage fleet and explore new technologies—including new battery technologies—to provide renewable integration benefits.[50] In fact, due to the near-term system needs highlighted in the July 22 Comments, new battery storage technologies have the potential to play a more important role in meeting the near-term reliability issues than long-lead team projects such as LEAPS.

Finally, Nevada Hydro cites a Commission order in a New York Independent Operator, Inc. (NYISO) proceeding for the proposition that the CAISO is solely responsible for resource adequacy.[51] The cited order, however, fails to support Nevada Hydro's argument that the CAISO is ceding its jurisdiction

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[49] Nevada Hydro Reply at 26.

[50] July 22, 2019 CAISO Comments at 12.

[51] Nevada Hydro Reply at 28, citing *New York Indep. Sys. Operator, Inc.,* 150 FERC ¶ 61,116 at P 9 (2015).

to the CPUC. The Commission's order directed the NYISO to place rates and terms on file for Reliability Must Run (RMR) service because *deactivating* resources, which had been identified as necessary for continuing grid reliability pending transmission upgrades were seeking approval of agreements to remain in operation and recover their costs, and the NYISO was not a party to these agreements and had no rates, terms, and conditions of service on file for RMR service.[52] The verbiage cited by Nevada Hydro merely recognized that omitting such RMR provisions rendered the NYISO tariff unjust and unreasonable and inadequate to prevent undue discrimination against similarly situated resources. The Commission also found that the lack of such terms might exacerbate the very concerns RMR should address, such as ensuring the continued reliable and efficient operation of the grid.

This decision requiring the NYISO to have RMR provisions in its tariff has no bearing on or relevance to the complaint.[53] This order has nothing to do with transmission planning. Nothing in this order suggested that NYISO was solely responsible for resource adequacy, resource procurement, or that it should

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[52] *New York Indep. Sys. Operator, Inc.,* 150 FERC ¶ 61,116 at PP 1-9.

[53] Nevada Hydro also stated that the Commission approved the CAISO's backstop capacity procurement mechanism to prevent gaps "between (1) reliability needs and market price distortions such as negative peak pricing, and (2) the resources needed to relieve these problems." Nevada Hydro Reply at 28, citing *Cal. Indep. Sys. Operator, Corp,* 134 FERC ¶ 61,211 at P 1 (2011). Contrary to Nevada Hydro's representations, the cited language says nothing about market price distortions and negative peak pricing. It merely states that "The CPM is a backstop mechanism that authorizes CAISO to procure capacity to address a deficiency or supplement resource adequacy procurement by load serving entities, as needed, in order to maintain grid reliability." This example also directly contradicts Nevada Hydro's argument insofar as the CPM mechanism is entirely distinct from the CAISO's transmission planning process. The Commission has never stated or suggested that the CAISO should engage in backstop resource procurement in its transmission planning process.

identify particular resources as necessary for meeting reliability needs. As the Commission is well aware, the CAISO has had provisions in its tariff for RMR service for some time. Finally, citing an RMR decision is an odd choice for Nevada Hydro, insofar as while the Commission has recognized the need for such cost-of-service arrangements under certain circumstances, it has strongly encouraged ISOs and RTOs to limit the use and duration of these arrangements as much as possible, including by exploring alternatives such as market-participating generation and operating procedures.[54]

B. The CAISO Properly Conducted its Economic Analysis and Nevada Hydro's Arguments to the Contrary Are Without Merit

In response to Nevada Hydro's allegation that the CAISO failed to credit LEAPS with WECC-wide benefits, the CAISO explained in its Answer that (1) the TEAM methodology requires that economic planning focus on CAISO ratepayer benefits and (2) the WECC-wide calculation only accounted for a limited range of general benefits (*i.e.*, production costs).[55] The CAISO also explained that LEAPS was not submitted as an interregional project.[56] In its August 6 Reply, Nevada Hydro makes numerous arguments to rehabilitate its claim that the CAISO was required to credit LEAPS with WECC-wide benefits. None of them have any merit.

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[54] *New York Indep. Sys. Operator*, 150 FERC at P 16 ("This last requirement reflects our belief that RMR filings should be made only to temporarily address the need to retain certain generation until more permanent solutions are in place and that all alternatives should be considered to ensure that designating a generator for RMR service is a last resort option for meeting immediate reliability needs.")

[55] CAISO Answer at 64-65, 67.

[56] *Id.* at 66.

Nevada Hydro also presents two entirely new claims that were nowhere to be found in its Complaint regarding the CAISO's ratepayer benefits calculations: (1) that the CAISO's calculations "did not measure congestion costs at all"; and (2) that the CAISO's calculations failed to properly reflect curtailment costs and benefits.

As an initial matter, it is remarkable that Nevada Hydro would have omitted from its Complaint a foundational claim that the CAISO's economic planning studies failed to measure congestion costs because that is the fundamental purpose of such studies under the CAISO tariff and TEAM. Regardless, neither of these new claims are any more convincing than Nevada Hydro's previous allegations. The moving target nature of Nevada Hydro's arguments makes clear that Nevada Hydro's case is little more than an exercise in shooting in the dark in a hope to find some explanation to fit its pre-determined outcome.

1. The CAISO Properly Applied TEAM and Based its Economic Planning Studies on CAISO Ratepayer Benefits Rather Than WECC-Wide Benefits.

Nevada Hydro continues to object that the CAISO did not use WECC societal benefits as the basis to assess the economic need for LEAPS as opposed to CAISO ratepayer benefits.[57] Nevada Hydro alleges that TEAM does not obligate the CAISO to use CAISO ratepayer benefits.[58] This argument ignores the plain language of TEAM that the CAISO will "primarily rely on ISO

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[57] Nevada Hydro Reply at 30-32.

[58] *Id.* at 31.

ratepayer perspective when evaluating the economic viability of a potential transmission upgrade since cost covering of transmission upgrades is collected from ratepayers by the TAC."[59] The CAISO demonstrated in its Answer its consistent and longstanding practice in using CAISO ratepayer benefits – not WECC societal benefits -- to evaluate the economic need for transmission projects, including projects located outside of the existing CAISO grid.[60] In neither its Complaint nor its August 6 Reply does Nevada Hydro provide any compelling rationale for the CAISO to simply disregard TEAM and long-standing practice.[61]

Nevada Hydro also argues that it was inappropriate for the CAISO to consider cost allocation in the project selection stage suggesting that the CAISO can simply "seek to allocate a portion of the costs to CAISO's neighbors through the inter-regional planning process."[62] The argument that the CAISO is inappropriately considering cost allocation in the project selection stage is incorrect. As provided by TEAM, the CAISO is simply determining project

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[59] Exhibit CAISO-2 at 1, 4, 10.

[60] CAISO Answer at 64-66.

[61] Nevada Hydro claims the fact that export transactions pay the CAISO's transmission access charge supports using the WECC societal benefit test in this instance. Nevada Hydro Reply at 16. If that were the applicable standard, there would be no need for the CAISO ratepayer test because the costs of all regional transmission projects are reflected in the TAC (and the wheeling charge). Further, the Transmission Access Charge is the primary mechanism for recovery of transmission owners' transmission revenue requirements, and the wheeling rates charged to exporters are not associated with any long term obligation on behalf of those parties to fund transmission upgrades into the future. Exhibit CAISO-4 at 6. Nevada Hydro also ignores that the CAISO ratepayer benefit test already accounts for export transactions because exports pay the wheeling charge. *Id.* at 6-7; TEAM Document, Exhibit CAISO-2 at 20. In any event, LEAPS does not increase export capacity on existing transmission lines or create a new intertie.

[62] *Id.* at 30.

benefits based on the ratepayers that will ultimately pay those costs. As TEAM recognizes, the "'ratepayer' perspective has been relied on consistently since the methodology was introduced."[63] The CAISO is hardly unique in this respect; other independent system operator and regional transmission organizations similarly conduct their economic transmission studies based on the benefits accruing to the entities that will bear the costs of such upgrades.[64]

Nevada Hydro's claim that the CAISO can simply allocate a portion of LEAPS' costs to its neighbors through the interregional planning process is contrary to the CAISO tariff and Order No. 1000. First, LEAPS does not qualify as an inter-regional transmission project under the CAISO tariff and the tariffs of the CAISO's neighbors because it is located solely within the CAISO planning region.[65] Second, under Order No. 1000, costs for an interregional transmission

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[63] Exhibit CAISO-2 at 1.

[64] *See, e.g.*, PJM Operating Agreement, Schedule 6, Section 1.5.7(d) (explaining that PJM calculates benefits with respect to potential economic transmission projects based on changes in total energy production costs for resources in the PJM Region, considering purchases and sales outside the PJM Region "if appropriate," and changes in load energy payment "for each [PJM] Zone"); ISO-NE Transmission, Markets and Services Tariff, Attachment N, Section II.B ("Proposed Market Efficiency Transmission Upgrades shall be identified by the ISO where the net present value of the net reduction in total cost to supply the system load, as determined by the ISO, exceeds the net present value of the carrying cost of the identified transmission upgrade."); NYISO Open Access Transmission Tariff, Attachment Y, Section 31.3.1.3.4 ("The principal benefit metric for the CARIS [Congestion Assessment and Resource Integration Studies] analysis will be expressed as the present value of the NYCA [New York Control Area]-wide production cost reduction that would result from each potential solution."); MISO FERC Electric Tariff, Attachment FF, Section II.B.1.a ("The Transmission Provider shall utilize a weighted futures, no loss ('WFNL') metric to analyze the anticipated annual economic benefits of construction of a proposed Market Efficiency Project to Transmission Customers in each of the Cost Allocation Zones, as defined in Attachment WW, based upon adjusted production cost ('APC') savings.").

[65] CAISO Tariff, Appendix A, Definitions – Interregional Transmission Project: Means a transmission project that would directly interconnect electrically to existing or planned transmission facilities in two or more Planning Regions and that is submitted into the regional transmission planning processes of all such Planning Regions in accordance with Section 24.18.4.

facility can only be assigned to transmission planning regions in which the transmission facility is located.[66] Because LEAPS is only located in the CAISO footprint, its costs cannot be involuntarily assigned to any other planning region. Third, the interregional planning process requires the proponent of the interregional project to submit it to the relevant planning regions for study and cost allocation, and sets forth a two-year study process for the project. None of these steps has occurred, and Nevada Hydro, the proponent of the project, has not even submitted the project for study as an interregional project.[67] Finally, even if LEAPS qualified as potential interregional solution, the CAISO Tariff is clear that it must still be evaluated "on the basis of the need for the entire proposed facility as the CAISO *regional* solution."[68] This language would make no sense if, as Nevada Hydro contends, the CAISO was required to determine all needs on a WECC-wide (*i.e.,* interregional) basis.

Nevada Hydro also states the WECC societal benefits perspective predates the Order No. 1000 inter-regional planning process; therefore, it is unreasonable for the CAISO to look at WECC production costs only on an informational basis.[69] That the WECC societal benefit perspective has been

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[66] *Transmission Planning and Cost Allocation by Transmission Owning and Operating Pub. Util.*, Order No. 1000, 136 FERC ¶ 61,051, at P 657 (2011).

[67] CAISO tariff section 18.3 and 18.4.

[68] CAISO tariff Section 24.13. *See also* Section 24.2 (describing the functions of the transmission planning process, including to "[c]oordinate and consolidate in a single plan the transmission needs of the CAISO Balancing Authority Area for maintaining the reliability of the CAISO Controlled Grid in accordance with Applicable Reliability Criteria and CAISO Planning Standards, in a manner that *promotes the economic efficiency of the CAISO Controlled Grid* . . . .") (emphasis added).

[69] Nevada Hydro Reply at 31.

included in TEAM since 2004 (*i.e.*, before Order No. 1000) does not, however, support Nevada Hydro's argument. The TEAM document itself expressly states that the CAISO has relied on the "ratepayer" perspective consistently since it introduced the methodology. Nevada Hydro also ignores that interregional coordination at the CAISO was occurring well before Order No. 1000. The CAISO's Order No. 890 compliance filing in 2007 demonstrates the CAISO's extensive regional and sub-regional coordination, including planning and economic studies that affect more than one "control area."[70]

Nevada Hydro also suggests it would serve no purpose to mention the WECC societal benefit in TEAM if the CAISO would not apply it.[71] TEAM expressly states that "[i]f preliminary economic feasibility studies show the proposed upgrade to be strongly economic from CAISO ratepayer perspective, *and no negative impacts to the WECC system,* the uncertainty analysis may be unnecessary."[72] Thus, the CAISO considers whether otherwise beneficial projects might have significant adverse impacts on the WECC. Also, as discussed in the CAISO's Answer, the CAISO assesses WECC societal benefits for informational purposes, to inform potential interregional coordination efforts, to determine whether any potential CAISO projects would have adverse impacts on neighboring regions, and to inform resource procurement efforts at the CPUC.

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[70] CAISO Order No. 890 Compliance Filing, Docket No. OA08-62, at 27, Attachment C at 48-50 (Dec. 21, 2007).

[71] Nevada Hydro Reply at 31.

[72] TEAM Document, Exhibit CAISO-2 at 4 (emphasis added).

Finally, Nevada Hydro states that "CAISO's argument that it uses the WECC perspective only for projects located outside of California is irrelevant" and "Tellingly, CAISO does not claim that the costs of those projects have been allocated only to customers outside of California."[73] Nevada Hydro misrepresents the CAISO's Answer. The CAISO never stated that it uses the WECC perspective only for projects located outside of California. Indeed, as the CAISO indicated in its Answer, it used the CAISO ratepayer benefit test, not the WECC benefits test, to assess the need for the Delaney-Colorado River and Harry Allen-El Dorado projects, both of which are located entirely outside of California.[74]

2. CAISO's Ratepayer Benefit Calculation was Correct

In its August 6 Reply, Nevada Hydro presents two entirely new allegations regarding the CAISO's ratepayer benefits calculations. First, Nevada Hydro claims that the CAISO's ratepayer benefits calculation was wrong because the CAISO "did not measure congestion costs at all, but instead measured curtailment payments."[75] Second, Nevada Hydro claims that the CAISO's calculation was flawed because it did not correctly estimate the curtailment costs associated with LEAPS.[76] In particular, Mr. Alaywan argues that the CAISO's ratepayer benefit calculation is flawed because it failed to take into account the

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[73] Nevada Hydro Reply at 31-32, citing page 66 of the CAISO Answer and referring the Delaney-Colorado River and Harry Allen-El Dorado projects.

[74] CAISO Answer at 65.

[75] Nevada Hydro Reply at 17; Exhibit NHI-10 at 13-14.

[76] Nevada Hydro Reply at 17.

impact of prices under power purchase agreements (PPAs).[77]

As discussed below, both of these assertions are incorrect, but Nevada Hydro's argument suffers from an even more fundamental flaw because it assumes a false dichotomy between calculating congestion costs and curtailment-related costs.[78] The CAISO's analysis did not calculate one at the expense of the other. Rather, the CAISO appropriately accounted for both. The CAISO's economic planning studies accounted for *all* benefits to CAISO ratepayers associated with a proposed economic project, including any congestion and curtailment-related benefits.

As Mr. Millar explains, the CAISO conducts a production cost simulation that comprehensively models the results of including a proposed transmission project on the CAISO system, and then tallies the cumulative results of the simulation to assess the incremental benefits to CAISO ratepayers with and without the transmission project.[79] Specifically, the CAISO's calculates net CAISO ratepayer savings associated with a transmission project under TEAM by summing:

1. Reductions in gross load payments resulting from the proposed project
2. Increases in generator revenues for generators whose benefits accrue to CAISO ratepayers (either by being utility-

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[77] Exhibit NHI-10 at 14-18.

[78] Nevada Hydro Reply at 18 ("CAISO's switch from congestion costs to curtailment payments was a significant, material and unexplained change to the CAISO ratepayer perspective method.")

[79] CAISO Exhibit-4 at 7-9.

owned or through a PPA) resulting from the proposed project; and

3. Increases in transmission revenue accruing to ratepayers, including congestion revenues and wheeling revenues, resulting from the proposed project.[80]

Regarding LEAPS, the CAISO's simulation showed these results of including LEAPS on the CAISO system:[81]

1. An increase in CAISO load payments of $132 million per year;

2. An increase in generator and pumped storage revenues of $172 million revenues accruing to the benefit of CAISO ratepayers ($99 million for generation excluding LEAPS plus $73 million for LEAPS); and

3. A decrease in CAISO transmission revenues accruing to CAISO ratepayers of $1 million.[82]

These summed to a total CAISO ratepayer benefit of $39 million. When factoring in the costs associated with LEAPS, the resulting benefit-to-cost ratios were all well below 1.0.[83]

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[80] *Id.* at 9-10.

[81] As discussed in its Answer, the CAISO studied LEAPS in three different configurations. CAISO Answer at 36. These are the results for what the CAISO-termed "Option 2," which appear to be the results that Mr. Alaywan relies on in his discussion of this issue in his rebuttal testimony. *See* Exhibit NHI-10 at 16.

[82] CAISO Exhibit-4 at 6-10.

[83] Under the most favorable result, associated with Option 2, the benefit-to-cost ratio ranged from 0.30 to 0.32.

a. The CAISO's Ratepayer Benefit Calculation Properly Accounts for Congestion Cost Savings.

Nevada Hydro's assertion that the CAISO failed to calculate congestion costs is unimaginable given that the 2018-2019 Transmission Plan both describes how the CAISO assessed congestion and congestion costs,[84] and then specifically provides the congestion changes associated with the three LEAPS options.[85] The CAISO's production cost simulation takes transmission constraints and congestion into account in performing an economic dispatch to minimize production costs.[86] The impact of congestion, and any benefits of alleviating congestion throughout the period being studied in a production cost simulation, result in changes to generation dispatch and flows over the entire network and changes in production costs and locational marginal prices.[87] The nodal production cost modeling also captures any other effects adding LEAPS has on nodal prices, in particular the inter-temporal price impacts from its charging and discharging. These pricing and dispatch impacts result in changes to total load payments, generation revenues, and transmission revenues.[88]

Besides showing the impact LEAPS would have on load payments, generation revenues (including its own), and transmission revenues, the 2018-2019 Transmission Plan also explicitly discussed the impact that all three

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84 2018-2019 Transmission Plan at 234-246.

85 *Id*. at 346-354.

86 Millar Rebuttal Testimony Exhibit CAISO-4 at 8.

87 *See id.*

88 *Id.*

configurations of LEAPS would have regarding relieving congestion. For Option1a, the 2018-2019 Transmission Plan explained that "both thermal and renewable generation dispatch in the San Diego and IV areas increased, and the congestion in the same area decreased. SCE area generation decreased and Path 26 congestion from north to south increased."[89] Under Option 1b, "transmission congestion was not mitigated outside of the congestion in the SDG&E area."[90] And finally, the analysis regarding LEAPS Option 2 showed "similar" results to Option 1b.[91]

As Mr. Millar discussed in his Declaration, the CAISO also performed sensitivity studies in the 2018-2019 Transmission Plan for informational purposes to assess the locational impact of the LEAPS project on production cost results.[92] Specifically, the CAISO modeled the LEAPS project (Option 2) at a relatively unconstrained 500 kV bus in southern California. At such a location on the CAISO system, LEAPS would be expected to have very little effect on congestion. The CAISO found cumulative production cost savings for this location to be very similar to the production cost savings associated with modeling LEAPS in its proposed location. This sensitivity further confirmed that resolving local congestion played an immaterial role in the benefits LEAPS provides, and the bulk of the LEAPS' benefits arise from market participation

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89 2018-2019 Transmission Plan at 348.

90 *Id.*

91 *Id.*

92 Millar Declaration at 48; *see also* 2018-2019 Transmission Plan at 352-354.

rather than alleviating congestion.[93] Nevada Hydro's claim that the CAISO failed to assess congestion costs for LEAPS is thus demonstrably false.

b. The CAISO's Analysis Appropriately Considered Benefits and Costs from the CAISO Ratepayer Perspective.

Nevada Hydro's claim that the CAISO miscalculated "curtailment costs" fares no better. Nevada Hydro's argument is not based on any review of the CAISO planning model,[94] but rests on the assumption that the CAISO's analysis *must* have been wrong because "a project like LEAPS that will reduce the need for curtailments cannot possibly cause curtailment costs to increase."[95] In the attached Rebuttal Testimony, Mr. Millar explains why this assumption is incorrect.

First, Mr. Alaywan's assumption is based on a undercounting of the benefits that the CAISO calculated for LEAPS. In his rebuttal testimony, Mr. Alaywan states that "generator revenue benefitting ratepayers is not equal to how

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93 2018-2019 Transmission Plan at 354-355; Exhibit CAISO-4 at 8-9.

94 In his testimony, Mr. Alaywan states that he "did not have the CAISO's transmission planning model to see what input led to the results" so he concocts his own analysis. Exhibit NHI-10 at 15. However, Ziad is a signatory for the Non-Disclosure Agreement for his company, ZGlobal, to have access to the market participant portal to access this information, effective March 2, 2009. Nevada Hydro is listed on the Consultant Rider since at least December 21, 2010. Another ZGlobal employee also executed an individual agreement under that corporate agreement on July 29, 2013. The CAISO's records also indicate that the same employee, Christine, downloaded the 2018-2019 transmission planning production cost models on February 2, 2011 and February 22, 2019**.** Although Mr. Alaywan states that he did not have the CAISO's transmission planning model**,** his reliability analysis uses the CAISO's power flow base cases (*see* Exhibit NHI-10 at 6-8) that were in the same market participant portal site as the models for the economic planning studies; so, if he had access to one, he necessarily had access to the other.

95 Nevada Hydro Reply at 19.

much more the load is getting charged."[96] He points to what he believes is a $33 million "difference" between generator revenues and load ($132 million in incremental gross load payments minus $99 million in incremental generation revenue).[97] However, Mr. Alaywan ignores the $73 million in market revenues associated with LEAPS, which must also be counted as a CAISO ratepayer benefit.[98] Although for the sake of transparency the CAISO reported the market revenues from LEAPS separately from market revenues associated with other generators whose benefits would accrue to CAISO ratepayers, all of these market revenues were counted by the CAISO in its calculation of LEAPS total benefits.[99] As shown in Table 4.9-44 in the 2018-2019 Transmission Plan, the total generation revenue accruing to ratepayers is more than the increase in gross load payments ($39 million), resulting in an overall net benefit to load.[100] Omitting LEAPS' market revenues from the assessment of the total credit to load makes no more sense than omitting the incremental benefits to any other existing generator whose benefits accrue to ratepayers. Including these revenues eliminates the "inflated credit" that Mr. Alaywan claims, and because all of his hypothetical examples proceed from his failure to properly account for these revenues; they are irrelevant and flawed.[101] In particular, his overly simplified

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96 Exhibit NIH-10 at 15.

97 *Id*.

98 Exhibit CAISO-4 at 11.

99 *Id.*

100 2018-2019 Transmission Plan at 359.

101 Exhibit CAISO-4 at 11.

one-generator-to-one-load scenario fails to account for how alleviating congestion affects other generation in a load- or generation- pocket, and how the benefits or costs seen by those resources accrue to ratepayers.[102] That is why it is necessary to tabulate all benefits and costs accruing to ratepayers to assess the overall effects of a proposed transmission project.[103]

Second, the $132 million increase in gross CAISO load payments, which Mr. Alaywan believes is "counterintuitive," resulted from LEAPS triggering a steep increase in locational marginal prices (LMPs) when LEAPS charges (moving LMPS from a very large negative number to a smaller negative number), but conversely causing a relatively small decrease in LMPs when discharging (from the price set from one gas-fired generator to a slightly lower price established by other gas-fired generators).[104] This outcome was not typical before negative prices were a regular feature in the CAISO markets, but is now much more common due to the significant amount of renewable generation connected to the grid and the lost earnings potential created by production tax credits during periods of renewable generation curtailment.[105] In traditional, non-negative price scenarios, cost curves are generally steeper as one moves to higher volumes of generation, *i.e.,* not only does each MW of output cost more than the previous, but the size of the step-change also increases. In such a

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102 *Id.* at 11-12.

103 *Id.* at 12.

104 Exhibit CAISO-4 at 12.

105 *Id.*

paradigm, one might expect the increase in LMPs associated with charging a pumped storage facility when prices are low (as charging drives up prices) to be smaller than the decrease in LMP resulting from the discharging of the pumped storage facility when prices are high.[106]

However, the presence of negative prices has created a new reality, in which cost curves are relatively steep during periods of curtailment, then flatten out as the market software moves through prices of relatively similar resources, and then climb again as they reach the maximum supply range.[107] Because of the steep slope of the curve in the negative pricing range, the incremental price increase resulting from charging can be substantially larger than the incremental price decrease resulting from discharging. The cumulative effect of this is higher gross load payments, which occurred in the 2018-2019 transmission planning process.[108] The increase in gross load payments is offset to some extent by increases in generation revenue to those generators whose benefits accrue to CAISO ratepayers. However, it is not a one-for-one offset because not all generators (in particular merchant generators) return their benefits to load serving entities. Thus, it cannot be expected that the increase in gross load payments will always be entirely offset by benefits generators return to load serving entities.[109]

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106 *Id.*

107 *Id.* at 13.

108 *Id*.

109 *Id.*

Despite this, as noted above, for LEAPS the increased gross load payment was more than offset by increases in net generation revenues that accrued to the benefit of ratepayers, resulting in an overall net benefit to load of $39 million. Mr. Alaywan conveniently ignores this fact (*i.e.*, that the increased load payment was more than offset by increases in net generation revenues returned to CAISO ratepayers) in erroneously claiming that TEAM produced a $33 million benefit shortfall for LEAPS.[110] Nevada Hydro's decision to leave LEAPS' market revenues out of the assessment makes no more sense than leaving out incremental benefits to any other existing generator whose benefits accrue to ratepayers. This basic flaw in Mr. Alaywan's interpretation of the intermediate stages of the TEAM calculation provides no evidence that there is an "inflated credit" to load in negative LMP hours. As a result, there is no basis for proceeding with Mr. Alaywan's subsequent over-simplifications of the benefits LEAPS would provide.

c. PPA Prices Do Not Impact TEAM Benefits

Mr. Alaywan also errs in claiming that PPA prices need to be factored into the TEAM benefits calculation.[111] Although it is important to track which generators have a PPA with a load serving entity so benefits earned by those resources can be accounted for as accruing to the benefit of ratepayers in the TEAM calculation, the PPA prices themselves do not factor into the CAISO's ratepayer benefit calculation under TEAM, either now or in previous planning

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110 Exhibit NHI-10 at 15.

111 *Id.* at 19-22.

cycles.[112] TEAM's purpose is to determine the *incremental* impact of adding a new transmission facility.[113] As Mr. Alaywan acknowledges in his rebuttal testimony, PPA prices and commitments at the PPA price are essentially "sunk costs."[114] They do not create differences in the production simulation results before and after introducing the new transmission project.[115] The irrelevance of the PPA prices to the benefits of a new transmission project is evident through the following example of a benefits calculation for a proposed transmission project (tx) alleviating congestion out of a generation pocket and allowing the LMP in the pocket to increase:

Benefit = volume * [(Price with tx – PPA strike price) – (Price without tx – PPA strike price)], or,

Benefit = volume *[Price with tx – PPA strike price – Price without tx + PPA strike price], or,

Benefit = volume *[Price with tx – Price without tx]

This example shows that when the benefits accruing to ratepayers are properly considered, the PPA price nets out and does not impact the benefits associated with the proposed transmission project.[116]

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112 Exhibit CAISO-4 at 13-14.

113 *Id*. at 14; *see also* Exhibit CAISO-2 at 1, 10.

114 Exhibit NHI-10 at 19-21.

115 Exhibit CAISO-4 at 14.

116 *Id.*

d. Nevada Hydro's Reference to a "Transmission Access Charge balancing account" Is Unclear and Irrelevant

Mr. Alaywan states that the CAISO payments to generators to curtail output are recovered from load through market settlements not the TAC balancing account.[117] Mr. Alaywan argues that this further shows the CAISO did not properly study LEAPS as a transmission facility because it has not accounted for the benefits of LEAPS through the transmission account.

Mr. Alaywan ignores that TEAM expressly contemplates the impact on CAISO ratepayers changes in LMPs and generator profits.[118] These benefits are reflected in market settlements. Mr. Alaywan's claim is particularly perplexing given Nevada Hydro has stressed the significant economic benefits that LEAPS will produce by providing energy, regulation, flexible ramping, ancillary services, and decreased LMPs, all of which clear through the CAISO markets and market settlements.

e. The CAISO Appropriately Considered All Ratepayer Benefits Associated with LEAPS in the 2018-19 Transmission Plan.

Finally, Mr. Alaywan seems to imply that the CAISO should have only considered benefits of LEAPS that can be assessed through changes in congestion costs and that to do otherwise arise from LEAPS providing other services. This would drastically reduce the value of the LEAPS project to CAISO ratepayers compared to the benefit-to-cost ratio the CAISO calculated. As

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117 Exhibit NHI-10 at 14.

118 TEAM Document, Exhibit CAISO-2 at 20.

discussed in Mr. Millar's Declaration, the CAISO assessed and credited to LEAPS all relevant potential benefits LEAPS could provide CAISO ratepayers. The CAISO did not limit the benefits attributable to LEAPS based on whether they were congestion benefits arising in changes in transmission revenues or from market benefits.

3. Nevada Hydro Mischaracterizes the CAISO's Unified Planning Assumptions and TEAM Provisions

Nevada Hydro asserts that the CAISO's 2018-2019 Unified Planning Assumptions require the CAISO to model only generation under construction or that has received regulatory approval in its initial power flow case.[119] Nevada Hydro is incorrect and relies on the wrong section of the 2018-2019 Unified Planning Assumption to support its positon. Nevada Hydro erroneously points to Section 3.7.1 of the 2018-2019 Unified Planning Assumptions, which describes general assumptions for individual "Generation Projects" to be used in the transmission plan.[120] However, subsequent section 3.7.2 of the 2018-2019 Unified Planning Assumptions—entitled "Renewable Generation"— specifies how the CAISO would model new renewable resources in the transmission planning process. This section expressly states that the CPUC would transmit the Default Scenario to the CAISO to be used in the CAISO's transmission planning assessment.[121] Thus, the 2018-2019 Uniform Planning Assumptions clearly describes the CAISO's intent to use the Default Scenario for renewable

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[119] Nevada Hydro Reply at 35.

[120] 2018-2019 Unified Planning Assumptions, p. 18-19.

[121] Unified Planning Assumptions, p. 19 (Section 3.7.2).

generation resources.

Nevada Hydro also continues to assail the CAISO's use of the Default portfolio without determining how much of that generating capacity can be avoided.[122] Nevada Hydro claims that the CAISO failed to use its independent judgement and to estimate the cost savings to consumers that would arise if LEAPS reduces the need for renewable generating resources. In particular, Nevada Hydro claims that the CAISO inappropriately used the CPUC's default portfolio for its transmission planning process and fails to "evaluat[e] how that portfolio should change based on the transmission plan."[123]

The CAISO's role, and the issue in this proceeding, is transmission planning not resource procurement. Nothing in Section 24 of the CAISO tariff states or suggests the CAISO's transmission planning process involves second guessing or reversing the CPUC's resource procurement decisions or dictating what resources CPUC-jurisdictional entities can or cannot procure. Indeed, as discussed in the CAISO's Answer, the CAISO tariff and supporting documents support the opposite.[124] TEAM expressly recognizes this distinction by stating that data such as renewables portfolios used in the additional benefits calculations "may not be from the ISO's transmission planning process" and that such data may come from the CPUC.[125] Consistent with TEAM and the 2018-2019 Uniform Planning Assumptions, the CPUC provided the CAISO with the

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122 Nevada Hydro Reply at 34-35.

123 *Id.* at 35.

124 CAISO Answer at 26-29, 93-96.

125 Exhibit CAISO-2 at 21.

renewables portfolios to use as inputs into the transmission planning process. As the CAISO discussed in its Answer, in its IRP proceeding the CPUC considered whether to include any pumped storage in its Default Portfolio and decided against it.[126] Nevada Hydro's argument also overlooks that that lack of coordination between the CAISO and the CPUC almost certainly would increase costs to ratepayers, among other things, due to difficulties in attempting to permit and certificate transmission projects that are inconsistent with or redundant of resource procurement decisions.

Nevada Hydro also ignores recent filings that show CPUC jurisdictional entities have already begun procurement that aligns with the CPUC's Default Portfolio. For example, on July 22, 2019, an association of California community choice aggregators filed comments in the CPUC's integrated resource planning proceeding indicating that its members had contracted for 1,597 MW of additional capacity to come online before 2021. This includes 1,047 MW of new solar resources and 505 MW of new wind resources.[127] The community choice aggregators also "expect several hundred additional megawatts of capacity to be under contract with CCAs by the end of 2019, much of which will be online before August 2021."[128] This new procurement, which is largely consistent with the CPUC's Default Portfolio, underscores the importance of the CAISO coordinating with local regulatory authorities regarding expected generation procurement

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126 CAISO Answer at 95-97.

127 July 22, 2019 CalCCA Comments in CPUC IRP, p. 11, available at http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M310/K224/310224703.PDF.

128 *Id.*

because this generation procurement can and will occur whether or not the CAISO identifies a transmission upgrade to access a more cost effective generation mix.

4. LEAPS is not Entitled to a Deliverability Benefit Under TEAM

Nevada Hydro alleges that LEAPS is entitled to a deliverability benefit under TEAM because LEAPS can partially mitigate transmission reliability needs in the San Diego area, and there is a capacity deficiency in the area.[129] Nevada Hydro also continues to claim (in a conclusory manner) that installing LEAPS would increase deliverability to import an additional 311 MW of renewables into San Diego.[130]

As discussed above and in the CAISO's Answer to Complaint,[131] there is no capacity deficiency in the San Diego area. Both the CAISO's five- and ten-year planning horizon studies show there is no capacity deficiency.[132] Under TEAM, the deliverability benefit is only available if there is a capacity deficiency in the local area; so, even if LEAPS adds deliverability as Nevada Hydro claims, Nevada Hydro fails to meet the basic requirement for a deliverability benefit.[133]

Nevada Hydro also makes no effort to address the other points the CAISO made in its Answer. First, LEAPS would not increase the physical capacity of the

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129 Nevada Hydro Reply at 38.

130 *Id*. at 22

131 CAISO Answer at 102-105.

132 *Id.* at 103, citing 2018-2019 Transmission Plan, Appendix G at 1-2.

133 *Id.*

lines extending from Imperial Valley to San Diego; it would only replace power flowing on these lines with power flowing on the LEAPS transmission lines.[134] Second, in the 2018-2019 transmission planning process the CAISO found no reliability or policy need to free up additional capacity on this corridor.[135] Again, that LEAPS might be capable of providing some transmission service (*e.g.*, provide voltage support) or provide some generic benefit (*e.g.*, inertia) is not the same thing as the CAISO having identified a specific transmission need for those services that requires a new transmission solution.

5. The CAISO Tariff Does not Require the CAISO to Value Local Capacity Reductions Based on the CPM Soft Offer Cap Price

Nevada Hydro raises additional arguments to support its claim that the CAISO erred in not valuing local capacity in the San Diego area at the Capacity Procurement Mechanism (CPM) soft offer cap price of $6.31/kW-year. First, Nevada Hydro claims that the CAISO recognizes its rationale for using a different price is weak and essentially concedes that using the CPM soft offer cap price "would be acceptable."[136] Second, Nevada Hydro states that the CAISO has not conducted a study to change the level of the CPM soft offer cap, as required by the tariff.[137] Nevada Hydro argues there is no basis for the CAISO to change capacity prices it has used in the transmission planning process from the one its

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134 CAISO Answer at 104.

135 *Id*.

136 Nevada Hydro Complaint at 37-38.

137 *Id.* at 37.

tariff contemplates.[138] Nevada Hydro also states that there have been contracts with prices higher than the CPM soft offer cap.[139]

Nevada Hydro misrepresents the CAISO's Answer. The CAISO did not concede that using the CPM soft offer cap is appropriate for valuing local capacity. The CAISO merely pointed out that even if the Commission accepted Nevada Hydro's local capacity values, the benefit-to-cost ratio of the LEAPS project would still be far below 1:1.

Nevada Hydro also continues to misrepresent the CAISO's valuation of local capacity reductions in its 2017-2018 Transmission Plan. As discussed in the CAISO's Answer, the CAISO employed a range of potential annual local capacity benefits using the CPM soft offer cap as the high end of the range and half that level as the low end of the range.[140] The CAISO did not solely consider the single high value as Nevada Hydro suggests. Nevada Hydro continues to ignore the low end of the range.

That the CAISO has presented no study to change the CPM soft offer cap is irrelevant. The CAISO tariff does not require the CAISO to use the CPM soft offer cap when determining the value of local capacity in the transmission planning process. The CPM soft offer cap is just that -- a cap on bids suppliers can submit into CPM competitive solicitations without having to cost justify such

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138 *Id*.

139 *Id*.

140 CAISO Answer at 86-87.

bids at the Commission.[141] No CAISO tariff language or Commission order states that the purpose of the CPM soft offer cap is also to establish the value of capacity in a Local Capacity Area for transmission planning purposes.[142] Nevada Hydro would have the CAISO use a constant value for Local Capacity regardless of the conditions. This proposed approach ignores that capacity prices change over time as conditions and needs change. In approving the CAISO's CPM tariff provisions, the Commission recognized that compensating CPM capacity based on the results of a competitive solicitation process allows compensation to driven by competitive factors that reflect both changing market conditions and fluctuations in capacity prices.[143]

The CAISO used a different pricing approach for local capacity valuations for all projects in the 2018-2019 transmission planning cycle than it did for the one project in the 2017-2018 planning cycle precisely because of changing conditions. As the CAISO explained in its Answer and in the 2018-2019 Transmission Plan, there was greater uncertainty regarding the value of local gas-fired capacity in this planning cycle.[144] The CPUC is considering the future

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141 CAISO tariff sections 43A.4.1.1 and 43A.4.1.1.1.

142 The CAISO also notes that in the 2017-2018 Transmission Plan it used a range of local capacity prices in studying the economic need for a single project. 2017-2018 CAISO Transmission Plan at 253. The CAISO had not used such methodology previously and did not state or suggest that this approach would be treated as a general standard to be applied in all future transmission planning cycles.

143 *Cal. Indep. Sys. Operator Corp.,* 153 FERC ¶ 61,001 at P 28 (2015); *see also Cal. Indep. Sys. Operator Corp.,* 134 FERC ¶ 61,211 at P 58 (2011) (finding a fixed CPM price was not shown to be just an reasonable because as market conditions change the price of capacity can change and that resource adequacy compensation too has the potential to fluctuate over time based on system conditions)

144 2018-2019 Transmission Plan at 231-233, 257-258; CAISO Answer at 87-90.

role and need for gas-fired generation. As the CAISO stated in its Answer, in its Integrated Resource Planning (IRP) proceeding the CPUC is assessing the long-term need for gas-fired generation for purposes other than local capacity requirements, *i.e*., as system or flexible capacity resources, which would affect the value of such capacity.[145] The CPUC recognized that more analysis was needed to identify the gas plants, or plant attributes, that are most needed for reliability and directed its staff to continue to work with the CAISO to study the important attributes of a natural gas fleet and work in coordination with the resource adequacy proceedings.[146] Because a broader policy perspective and resource-specific directives were not available, the CAISO took a conservative approach, which it acknowledged. This was prudent and reasonable given the conditions and uncertainty that existed at the time and the fact the CAISO was attempting to project the long-term need for and value of local gas-fired resources in circumstances where state policy is to replace gas-fired resources with other resource types. That the approach was conservative given the circumstances does not make it unjust and unreasonable, especially given that the CAISO will assess local capacity values in future planning cycles based on the circumstances that exist at such times. Also, as the CAISO stated in its Answer, Nevada Hydro is not prejudiced by the decision because it can seek to have LEAPS studied again in future planning cycles.[147]

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[145] CAISO Answer at 88, citing CPUC Decision 18-02-018, *Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements*, pp. 143-146, Feb. 13, 2018 (IRP Decision).

[146] IRP Decision at 144-45.

[147] CAISO Answer at 90.

Nevada Hydro claims the rationale for the CAISO using a different local capacity reduction pricing methodology in the 2018-2019 planning process is the CAISO's "fear that gas-fired generating plants may retire and create uncertainty with the portfolio mix absent guidance from the CPUC."[148] Nevada Hydro argues that such fear supports higher prices not lower prices." Nevada Hydro again misrepresents the CAISO's position, which has nothing to do with the "fear" of gas-fired units retiring.[149] As discussed above and in the CAISO's Answer, the CAISO's rationale was based on uncertainty regarding the appropriate value for gas-fired resources in the planning horizon. Resources used to meet Local Capacity Area needs tend to have values higher than resources used to meet system and flexible capacity needs. The CAISO's approach recognizes that even if the CPUC replaces gas-fired resources to meet Local Capacity needs, such resources might still be needed to meet system and flexible capacity needs. However, their value will be different depending on whether such resources are used to meet local needs or system needs.

Finally, Nevada Hydro states that contracts filed with the Commission reflect prices higher than the CPM soft offer cap,[150] but only refers to one particular contract, a 25-year tolling agreement for the newly built Pio Pico power plant. However, if gas-fired resources in the San Diego area are being replaced it will not be a brand new unit that has a 25-year tolling agreement. Thus, using

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148 Nevada Hydro Reply at 37.

149 *Id.*

150 The CAISO has never issued a CPM designation to a resource at a price higher than the CPM soft offer cap.

the price in the 25-year Pio Pico tolling agreement to value Local Capacity Requirement reductions for other older, existing units would be unjustified. The CAISO notes that the CPUC's 2018 Resource Adequacy Report shows these prices for resource adequacy capacity in the San Diego/Imperial Valley Local Capacity Area for the years 2018-2022: an average price of $3.39/kW-year; a minimum price of $1.00/kW-year; an 85th percentile price of $4.50/kW-year; and a maximum price of $6.25/kW-year.[151]

C. The CAISO's Transmission Planning Process Complies with Order No. 1000

Nevada Hydro erroneously claims that by "segregating" the reliability analysis and economic study requests and not counting economic benefits in the reliability analysis, the CAISO violates Order No. 1000's principle that transmission planners must approve the more efficient or cost-effective solution.[152]

As an initial matter, the CAISO notes that the Commission previously rejected protests that the CAISO's transmission planning process violates Order No. 1000 because it establishes separate transmission planning processes for reliability, economic, and public policy driven transmission.[153] The Commission recognized that although the CAISO studies these different categories of

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[151] 2018 Resource Adequacy Report at 31 (Aug. 2019), available from the CPUC Resource Adequacy Homepage at the following link: https://www.cpuc.ca.gov/RA/.

[152] Nevada Hydro Reply at 12.

[153] *Cal. Indep. Sys. Operator, Inc,* 143 FERC ¶ 61,057 at P58 (2013).

transmission needs in a sequential manner, it does not study them in isolation.[154] Rather, the Commission noted that the CAISO subsequently evaluates whether a particular transmission solution would also solve other transmission needs and replace a previous identified transmission solution.[155]

Nevada Hydro not only ignores this precedent, it ignores that in the economic study process, the CAISO reassesses reliability (and public policy) solutions it initially identified in its reliability planning analysis and can replace them with projects that are more cost-effective once economic benefits are considered.[156] Thus, contrary to Nevada Hydro's claims, the CAISO does consider the reliability and economic benefits of a single project; it performs that analysis serially rather than during the reliability stage so all economic benefit studies are conducted in the same step rather than splitting them up throughout the annual planning process.

A simple example illustrates how this operates: Assume the CAISO identifies a $100 million project (Project #1) rather than a $150 million project (Project #2) as the more cost-effective solution during its reliability assessment; the CAISO's subsequent economic assessment shows that Project #1 provides no economic benefits, but Project #2 provides $60 million in economic benefits from congestion savings; the CAISO would ultimately approve Project #2 instead of Project #1 because its net benefit combining reliability and economic benefits

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154 *Id.*

155 *Id.*

156 CAISO Answer at 18, 23-24; TEAM Document, Exhibit CAISO-2 at 2, 23. Under TEAM, if a reliability or policy project can be avoided because of the economic project under study, the avoided cost contributes to the benefit of the economic project.

($100 million avoided project cost plus $60 million congestion benefits) exceeds 1:1 and is the more cost-effective project overall.

The $2 billion LEAPS project simply does not provide sufficient economic benefits to be selected solely as an economic project or as a more cost-effective option relative to solutions that will be in place regardless of whether LEAPS is built (and thus have no incremental capital or O&M cost). Nevada Hydro alludes there might be some re-dispatch or curtailment related costs associate with the operational solutions, but does not quantify them either in its Compliant or its August 6 Reply.[157] As the CAISO stated, any such costs would be *de minimis* because the contingencies are P6 and therefore uncommon.[158] Nevada Hydro does not contradict this.

D. The CAISO Duly Considered LEAP's Transmission and Generation Benefits

Nevada Hydro claims the CAISO "reject[ed] LEAPS as a transmission asset just because it will convert stored energy to electricity for sale in the wholesale market."[159] Nevada Hydro then states that the CAISO has argued "that it did not have to evaluate how LEAPS will operate."[160]

Both claims are not true. The CAISO has not argued that it did not have to evaluate how LEAPS will operate. As the CAISO detailed in its Answer, the CAISO studied every possible permutation of LEAPS' operation, and counted

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157 Nevada Hydro Reply at 13.

158 CAISO Answer at 107, citing Exhibit CAISO-1 at 46.

159 Nevada Hydro Reply at 39.

160 *Id*.

every potential benefit those permutations could provide. The CAISO did not reject LEAPS "just because it will convert stored energy."[161] The CAISO has approved other energy storage projects in previous transmission cycles. The CAISO rejected LEAPS because there is no reliability transmission need for it and because LEAPS' costs overwhelmingly outweigh even the most optimistic projection of its benefits.

Nevada Hydro states that "FERC precedent does not categorically disqualify storage facilities from classification as transmission based on the amount of market revenues earned by the owner from the services it provides, regardless of how those services are characterized."[162] Nevada Hydro then claims the CAISO has argued that Nevada Hydro "should seek revenues from the market," and has ignored Commission precedent on storage as transmission.[163] But nowhere does Nevada Hydro cite *where* the CAISO has made such claims. Nevada Hydro states that CAISO "concedes," "argues," maintains," "characterizes," "further claims," "conten[ds]," "recently put," "claim[s]," and "find[s]" different assertions about the ability of energy storage to provide transmission services ten times in section III(C) of its Reply,[164] while only citing to CAISO documents three times, all of which concern whether LEAPS physically increases transfer capability (which it does not).[165]

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161 *Id*.

162 Nevada Hydro Reply at 40.

163 *Id*.

164 *Id*. at 39-41.

165 *Id*. at 40 n. 82 and 41 n. 86 and 87. Nevada Hydro also cites to CAISO comments in AD16-25 completely unrelated to LEAPS.

Nevada Hydro provides no specific reference where the CAISO has made arguments consistent with Nevada Hydro's claim that the CAISO has refused to study LEAPS as a potential transmission project contrary to Commission precedent on storage as transmission. This is because Nevada Hydro's argument is a strawman.[166]

The CAISO's transmission planning process ignores the semantics Nevada Hydro tries to pin on it, and merely studies facilities as they will operate. The CAISO's transmission planning process assigned no meaning to whether the proposed facility is a "generator" or "transmission." Nor does the TEAM methodology ignore market benefits that would typically come from generators. Nevada Hydro alone creates these false dualities to portray the CAISO as having predetermined LEAPS could not qualify as a transmission project before even analyzing its potential benefits. But that is not the case. The CAISO studied all of LEAPS' potential benefits and credited LEAPS with them, but the total benefits could not justify an economically-driven project.

As the CAISO explained in its Answer, the CAISO's transmission planning process considers economic transmission solutions that relieve transmission constraints by improving access to cost-efficient resources.[167] The LEAPS pumped storage unit does not do this. The CAISO's economic planning study of LEAPS demonstrates that the LEAPS pumped storage unit would essentially

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[166] In one instance, Nevada Hydro states the "CAISO maintains that LEAPS is really a generator because its revenues will come from [market] services," but then cites to the California Municipal Utilities Association's comments to support its claim. *Id. at 39, n. 80.*

[167] CAISO Answer at 102.

operate and accrue its benefits in a manner similar to any other resource earning market revenues. By Nevada Hydro's logic, any generator could get its foot into the door of the transmission plan (and then cost-based rates) even if 99% of its benefits would come from the market.

The CAISO agrees that appearing like a traditional transmission facility is not a necessary condition to evaluation in the CAISO transmission planning process. But it does not follow that a pumped storage facility should be approved in the transmission planning process just because it can provide any slim benefit to the transmission grid, even if it is not needed for reliability, regardless of its costs. Numerous generators provide voltage support, reactive power, and ancillary services to help ensure general system reliability. That does not make them eligible to recover all their costs through the Transmission Access Charge. Numerous developers also finance the remedial action schemes necessary for them to interconnect new generators to the transmission grid. But this does not allow the developers to fold the entire costs of their generators into transmission rates. Those costs are recouped in the capacity and energy markets, as they should be.

Nevada Hydro also continues to conflate the capability to provide a transmission service or provide an economic benefit with transmission need. Just because a project might provide some "transmission benefit" does not mean it is the most effective solution to meet a specifically identified need. Nevada Hydro reiterates the same theory that the Commission rejected in ruling on Nevada Hydro's petition for a declaratory order that just because LEAPS might

be able to meet some identified need means it is automatically eligible to recover its costs through transmission rates.[168] The CAISO has demonstrated that LEAPS is not needed for reliability, and its economic benefits are far outweighed by its costs. Further, LEAPS' potential benefits are comparable with other storage and generation resources that recoup costs through the energy and ancillary services markets; not transmission rates. The LEAPS project as a whole provides minimal congestion relief benefits.

Finally, Nevada Hydro confuses Commission precedent in claiming that "[i]f the Commission does not believe that energy withdrawals are a 'market' service . . ., then it must be a transmission service."[169] Nevada Hydro states that "the two choices are 'generation' (*i.e.*, market) or 'transmission.'"[170] This is a false dichotomy. Charging an energy storage device can fall into a third category: neither. Charging inherently is demand, and usually increased demand neither lowers prices nor relieves congestion (often the opposite). For this very reason the Commission has consistently declined to find that charging pursuant to dispatch *necessarily* constitutes a service.[171]

In claiming that charging *must* be a market service or transmission service, Nevada Hydro cites the Commission's response to the CAISO's request

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168 *Nevada Hydro Company, Inc.,* 164 FERC ¶ 61,197 at PP 23-24 (2018)

169 Nevada Hydro Reply at 41.

170 *Id*.

171 *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 841-A, 167 FERC ¶ 61,154 at P 120 (2019).

for clarification in Order No. 841-A.[172] The Commission's finding does not support Nevada Hydro's argument. There, the CAISO sought clarification on whether charging pursuant to dispatch should not be subject to transmission access charges under Order No. 841.[173] The Commission responded: "we cannot conclude based on the record before us that an electric storage resource charging when it is economic to do so necessarily constitutes the provision of a service in the RTO/ISO markets."[174] Nowhere does the Commission even intimate it somehow follows that charging is therefore a transmission service.

In the same proceeding the CAISO also sought clarification on the treatment of energy storage resources charging specifically to provide transmission services under the Commission's Policy Statement (as LEAPS ostensibly would).[175] The Commission declined to do so, stating that it was premature because the CAISO (or any ISO/RTO) had yet to develop a framework for storage resources to recover cost- and market-based rates simultaneously.[176] Nevada Hydro grossly misconstrues the Commission's findings in Order No. 841-A. The Commission's finding that charging is not *necessarily* a market service does not mean the Commission must have

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172 Nevada Hydro Reply at 40 n. 85.

173 *See* Order No. 841-A at PP 111 *et seq.*

174 *Id*. at P 120. The Commission also clarified that its requirement to apply the "applicable transmission charges" "was intended to convey that an RTO/ISO may propose to apply its existing rate structure for transmission charges to an electric storage resource that is charging at wholesale but is not being dispatched by the RTO/ISO to provide a service in the RTO/ISO markets." *Id*. at P 121.

175 *Id*. at P 116

176 *Id*. at P 122.

concluded it was a transmission service.

IV. CONCLUSION

For the foregoing reasons and the reasons set forth in the CAISO's Answer to Complaint, the Commission should reject Nevada Hydro's Complaint.

Respectfully submitted,

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Dated: August 21, 2019

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon all of the parties on the official service list for the above-referenced proceeding, under the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California, this 21st day of August, 2019.

/s/ Grace Clark
Grace Clark

EXHIBIT CAISO-4

Rebuttal Testimony of Neil Millar

EXHIBIT CAISO-4

UNITED STATES OF AMERICA

BEFORE THE

FEDERAL ENERGY REGULATORY COMMISSION

The Nevada Hydro Company Inc.	**)**	
	)	
v.	**)**	**Docket No. EL19-81-000**
	)	
California Independent System Operator Corp.	**)**	

REBUTTAL TESTIMONY OF NEIL MILLAR

Q. Please state your name.

A. Neil Millar.

Q. Are you the same Neil Millar that submitted a declaration with the CAISO's answer to Nevada Hydro's complaint in this proceeding?

A. Yes. My background and qualifications are set forth therein.

Q. What is the purpose of your rebuttal testimony?

A. In this testimony, I respond to certain claims made by Nevada Hydro's witness Mr. Alaywan in his rebuttal testimony submitted with Nevada Hydro's August 6 reply to the CAISO's answer to Nevada Hydro's complaint. Specifically, I point out several flaws in Mr. Alaywan's analysis of the reliability issues in the San Diego area which causes him to incorrectly forecast capacity shortfalls in that area during the planning horizon associated with the 2018-2019 Transmission Plan. I also respond to several criticisms that Mr. Alaywan raises regarding the CAISO's economic planning studies of LEAPS.

Reliability Issues

Q. Beginning on Page 4, Mr. Alaywan provides testimony that the CAISO's mitigations for contingencies in the San Diego area do not in fact address overloading concerns. In particular, he states "*CAISO is forecast to be capacity deficient in 2023 by 50 MW, and by 484 MW in 2027, in the SDG&E zone.*" Is he correct?

A. No. Mr. Alaywan's analysis, which he claims demonstrates overloads – and resulting capacity shortfalls -- contains a number of errors that, when rectified, align with the 2018-2019 Transmission Plan results and local capacity technical study results that I referred to in my declaration. However, before discussing these errors, there is an additional correction needed to set the stage, and eliminate some confusion, regarding the steps the CAISO would need to take to address post-contingency overloads. Specifically, Mr Alaywan states:

> "To resolve the overloads, CAISO relied on five steps **that must be implemented simultaneously and within 30 minutes:**
>
> 1. **Obtain 30-minute emergency re-rating of major bulk transmissions facilities from SDG&E.**
>
> 2. Drop generation in the Imperial Valley Area under an automated "Remedial Action Scheme" or "RAS."
>
> 3. Use the Imperial phase shifter to divert electricity through Mexico.
>
> 4. Call on 16 MW of "fast" demand response in San Diego load pocket to curtail electricity usage.
>
> 5. Manually increase generation output in San Diego and the Southern California Edison area." (Emphasis added.)

The 30 minute emergency ratings Mr. Alaywan refers to in his step 1 are not obtained in a 30 minute window and simultaneously with other operational steps. They

are already in place. As I explained in my declaration:

> "In the 2017-2018 CAISO transmission plan the CAISO requested and SDG&E provided 30 minute emergency ratings for the two Suncrest 500/230 kV transformers. These emergency ratings were included in the model and relied upon in the simulation."

The Suncrest transformer 30 minute ratings were established in 2017 and were subsequently entered into the ISO Transmission Register by SDG&E for ISO operation of the system. The 30 minute ratings for the Sycamore-Suncrest lines were established around the time the facilities went into service in 2012 and were entered into the ISO Transmission Register at that time. This clarification is important because Mr. Alaywan's testimony incorrectly makes the operational steps appear more complex than is the case.

Q. Thank you. Please explain the errors that you referred to above with respect to Mr. Alaywan's analysis of capacity sufficiency in the San Diego area.

A. Mr. Alaywan's first error is that he undercounts the amount of resources available to address potential overloads in the San Diego area, thereby showing capacity shortfalls where none actually exist.

By way of background, as I explained in my declaration:

> "After the first contingency, the IV phase shifting transformers were adjusted and generation was re-dispatched in the simulation to prepare for the second contingency to eliminate the overload concerns identified in the baseline scenarios.
>
> Further assessment concluded that up to 16 MW of the existing fast response demand response and up to 201 MW of the existing or already procured energy storage resources in the San Diego area, along with the mitigation described above, were also needed and included in the simulation after the first contingency to prepare for the second contingency to mitigate the overload concerns identified in the summer peak sensitivity scenarios.

Mr. Alaywan's analysis fails to take into account all of the battery resources in the area to mitigate overloads. On page 3 of his rebuttal testimony, he states: "I note that CAISO assumed 40 MW out of 201 MW of Batteries are **dispatchable** under cases B2 and B3, and that 16 MW of "fast" demand response is available under all of its scenarios. I adopted these assumptions." (Emphasis added.)

Mr. Alaywan confuses the amount of resources that are **dispatchable** in order to address overloads with the amount resources that the CAISO assumed as **dispatched** in its planning base cases. To clarify, the 40 MW of energy storage that Mr. Alawyan refers to (which consists of pumped storage) represents the amount of storage that the CAISO **dispatched** in the base cases, before considering the need to re-dispatch other resources following the first contingency. The remaining 161 MW of energy storage referred to – 201 MW of energy storage less the 40 MW of pumped storage in the area - is battery storage that is also dispatchable, and was therefore relied upon by the CAISO as part of the post-contingency re-dispatch to be undertaken in the first 30 minutes after the first contingency. The CAISO's studies appropriately relied on the full 201 MW, with 40 MW dispatched in the base case, and the remaining 161 MW dispatched after the first contingency in preparation for the second.

Second, Mr. Alaywan's analysis did not fully utilize the benefit of generation re-dispatch of other resources. His analysis incorrectly limited generation re-dispatch in the 30 minute window to *only* increasing generation in San Diego and SCE. He failed to correspondingly reduce the output of the specific generation that is most heavily contributing to the overload, which the CAISO would do in such a situation. The combined effect of increasing generation inside the area, and focusing reductions on

the specific generation that contribute to the overloads is far more effective than just increasing generation in the area.

Finally, Mr. Alaywan did not appear to take full advantage of the capability of the Imperial Valley ("IV") phase shifting transformer to contribute to reducing flows on the potentially overloaded circuits. The phase shifting transformer is a flow control device that can be adjusted to divert more flow, as needed, away from the potentially overloaded circuits, and is a key component in alleviating overloads such as the potential P6 overloads in the San Diego area.

Accounting for these errors and omissions addresses and eliminates the deficiencies Mr. Alaywan identified, and aligns with the CAISO's results, which show that the combination of existing resources and operational measures sufficiently address any potential overloads in the San Diego area for the relevant planning horizon.

Q. Do you have any other concerns with Mr. Alaywan's reliability analysis?

A. Yes. Mr. Alaywan claims on page 11 of his rebuttal testimony that "CAISO also argues that its operating plan and RAS eliminate the need for further mitigation, but it fails to mention that this plan countermands the advice of the asset owner whose customers are on the front line of this risky practice, as SDG&E cautioned in comments that CAISO ignored."

The CAISO did not ignore SDG&E comments; they were reviewed and carefully considered. Moreover, Mr. Alaywan's assertion that the use of a RAS constitutes a "risky practice" is hyperbole. The CAISO has specific RAS guidelines in its Planning Standards that it follows, setting out the considerations and limitations on the use of

RASs. The use of RASs, including the RASs in the San Diego and Imperial Valley area, have also been reviewed through the WECC Remedial Action Scheme Reliability Subcommittee which currently, among other responsibilities, reviews remedial action schemes for which failure would result in Bulk Electric System performance outside of WECC performance limits. The purpose of these requirements is to ensure that the use of RASs does not introduce unintentional or unacceptable reliability risks to the Bulk Electric System.

Production Cost and TEAM Calculation Issues

Q. On Page 13 of Mr. Alaywan's rebuttal testimony, he suggests benefits to parties outside of the CAISO, *e.g.,* all of WECC, should be considered in the cost-benefit analysis instead of the benefits seen by the parties from whom the Transmission Access Charge is ultimately recovered, because exporters also pay "their portion of TAC." Do you agree?

A. No. Mr. Alaywan is wrong for two reasons.

First, the Transmission Access Charge is the primary mechanism for recovery of CAISO transmission owners' transmission revenue requirements, and the wheeling rates charged to exporters are not associated with any long term obligation on behalf of those parties to fund transmission upgrades into the future. This is why the cost/benefit focus is on those who directly or indirectly pay the CAISO transmission access charge - which is separate and distinct from wheeling charges. Second, incremental wheeling revenues identified in the CAISO's production cost modeling are, in fact, counted as a benefit to CAISO ratepayers through the "transmission revenues" component of the

TEAM calculation, so contrary to Mr. Alaywan's assertion, the CAISO ratepayer perspective correctly takes into account the impact of proposed transmission projects on these wheeling revenues.

Further, one clarification is also necessary. Mr. Alaywan claims that I asserted in my declaration that "TEAM contemplates an evaluation **of the rate impacts** on California ratepayers as opposed to customers across WECC." (Emphasis added). Mr. Alaywan's characterization of my declaration is not accurate. TEAM contemplates an evaluation of the costs and benefits -- whether through rates or other mechanisms such as reduced energy costs -- from the perspective of ratepayers from whom the cost of the transmission project would be recovered. The benefits do not have to flow through "rates" and in particular, through Transmission Access Charge rates, in order to be considered, but do need to accrue to the benefit of those who pay the Transmission Access Charge.

Q. On Page 13 of Mr. Alaywan's rebuttal testimony, he states that the CAISO, in determining ratepayer benefits under TEAM, did not in fact do a congestion study, and rather considered "curtailment payments." Do you agree?

A. No. The CAISO fully considered congestion, and any benefits associated with congestion relief, in its economic planning analysis of LEAPS and all other proposed economic transmission projects. First of all, it is important to understand the holistic nature of the CAISO's economic planning analysis. Given the complex interaction between numerous constraints which are binding at various times of the day or year and in different combinations depending on load levels and generation dispatch across the

CAISO and the rest of the western interconnection, the cumulative impact of a facility such as LEAPS can only be assessed through the comprehensive modeling and comparing the results of a “with” and “without” simulation, which the CAISO implements through its nodal production cost model. The CAISO’s nodal production cost model takes transmission constraints and congestion into account in performing an economic dispatch to minimize overall production costs. The impact of the congestion, and the benefits of alleviating congestion throughout the entire period studied in a single production cost simulation, result in changes to generation dispatch and flows over the entire network and corresponding changes in production costs and locational marginal prices. However, the nodal production cost modeling also captures any other effects the addition of LEAPS has on nodal prices – particularly the inter-temporal price impacts from its charging and discharging. All of these pricing and dispatch impacts result in changes in the total load payments, generation revenues and transmission revenues. The impacts on these three components that accrue to CAISO ratepayers, *i.e.,* consumers who are ultimately responsible for the funding of the CAISO’s Transmission Access Charge, are tallied to assess the total CAISO ratepayer benefits.

As I discussed in my declaration, in addition to its other modeling, the CAISO performed sensitivity studies in the 2018-2019 Transmission Plan for informational purposes to assess the locational impact of the LEAPS project on production cost results, by modeling the LEAPS project (Option 2) at a relatively unconstrained 500 kV bus in southern California. The cumulative impacts were found to be very similar to the results of modeling LEAPS in its proposed location, suggesting that alleviating congestion played little role in the benefits that LEAPS demonstrated.

Q. Mr. Alaywan claims that the results the CAISO's ratepayer calculation are flawed because they show that "LEAPS will cost CAISO ratepayers $132 million a year" and asserts that this conclusion is "surprising" because LEAPS will reduce the need for generator curtailments. How do you respond?

A. Mr. Alaywan has confused a number of considerations, and failed to take into account the complete TEAM calculation of benefits from the CAISO ratepayer perspective. I will first recap the ratepayer benefit calculation used by the CAISO in the 2018-2019 Transmission Plan, as well as in past transmission planning cycles, for all economic-driven transmission project studies.

The CAISO calculated net CAISO ratepayer savings associated with the LEAPS Option 2 as a proposed transmission project in TEAM by summing:

- Reductions in gross load payments resulting from the proposed new project, which was an increase in CAISO gross load payments of $132 million per year,
- Increases in generator revenues for generators whose benefits accrue to ratepayers (either by being utility-owned or through a PPA) resulting from the proposed new project, which was an increase in revenues of $172 million of generator and pumped storage revenues accruing to the benefit of ratepayers ($99 million for generation excluding LEAPS plus $73 million for LEAPS), and,
- Increases in transmission revenue, including congestion revenues and wheeling revenues, resulting from the proposed new project, which was a decrease in transmission revenues of $1 million.

These sum to a total CAISO ratepayer benefit of $39 million. However, when factoring in the costs of the LEAPS project (approximately $2 billion), the resulting benefit-to-cost ratio was well below 1.

As I explain below in further detail, the intermediate steps of this methodology may appear more intuitive on a step by step basis when energy prices are positive, but even when energy prices are negative the CAISO's methodology is sound and produces overall correct results.

Q. Do you agree with Mr. Alawyan that the CAISO's analysis showed that LEAPS will "cost CAISO ratepayers $132 million a year in the form of increased generator curtailment costs" and that this result derived from an "inflated credit" to load?

A. No. As demonstrated above, the CAISO's analysis showed that LEAPS would have a total CAISO ratepayer benefit of $39 million. Mr. Alaywan erroneously claims this is not the case by first referring to the increase in CAISO gross load payments of $132 million per year as the "cost to CAISO ratepayers," which excludes benefits that accrue through generation or transmission revenues that accrue to CAISO ratepayers. Then, when Mr. Alaywan does consider generation benefits that accrue to ratepayers, he errs in excluding from ratepayer benefits the revenues expected to be earned by LEAPS itself. Specifically, Mr. Alaywan refers to a $33 million shortfall, being the difference between the $132 million in incremental gross load payments and the $99 million in incremental generation revenue *excluding LEAPS net revenues*. However, in order to arrive at an accurate calculation of CAISO ratepayer benefits, the market

benefits from LEAPS also need to be taken into account because as a transmission project any such market revenues would be credited to CAISO ratepayers.

Although the CAISO broke out and reported the net revenues associated with LEAPS separately from other generation whose benefits would accrue to CAISO ratepayers for the sake of transparency in the 2018-2019 Transmission Plan, *all* generation revenue accruing to the benefit of CAISO ratepayers was considered in both the "with" and "without" LEAPS cases. As I have shown above, the increase in generation revenue accruing to ratepayers as a result of LEAPS is significantly more than the increase in gross load payments. This was properly recognized in the 2018-2019 Transmission Plan, where the market benefits to other ratepayer-benefiting generators and LEAPS were *both* included in calculating benefit to cost ratios. Leaving LEAPS market revenues out of the assessment makes no more sense than leaving out incremental benefits to any other existing generator whose benefits accrue to ratepayers.

Given this flaw in how Mr. Alaywan interpreted the intermediate stages of the TEAM calculation, there is no "inflated credit" to load or error in the TEAM benefit calculation as Mr. Alaywan asserts. Consequently, there is no basis for Mr. Alaywan's subsequent flawed and over-simplified analysis and irrelevant examples. Further, his overly simplistic examples referring to one generator and one load value at a time do not take into account how alleviating congestion affects other generation located in either load pockets or generation pockets, and how the benefits or costs seen by those generators accrue to ratepayers. For this reason, it is necessary to tabulate *all* of the benefits and costs accruing to ratepayers to assess the impacts of a transmission

project.

Q. In addition to properly accounting for the full ratepayer benefits associated with LEAPS, is there anything else that might help explain Mr. Alaywan's "surprise" regarding the results of the CAISO's analysis of LEAPS?

A. Yes. The increase in gross load payments resulted from LEAPS triggering a steep increase in LMP when LEAPS is charging (from a very large negative number to a smaller negative number), but a relatively small decrease in LMP when discharging (from the price set from one gas-fired generator to a slightly lower price established by other gas-fired generators). This type of behavior was not typical before negative prices were a regular feature in the CAISO markets, but is now much more common due to the amount of renewable generation already connected to the grid and the lost earnings potential created by production tax credits during periods of renewable generation curtailment. This makes it even more important to consider all benefit impacts before making judgments about the benefits a new project may provide.

Traditional cost curves are generally steeper as one moves to higher volumes of generation, *e.g.*, not only does each MW of output cost more than the previous MW, but the size of the step change in cost also increases. Under this paradigm, the increase in LMP associated with charging a pumped storage facility when prices are low (as the charging itself drives price up) is smaller than the decrease in LMP resulting from discharging of the pumped storage facility when prices are high.

However, the presence of negative prices has created a new reality, where the cost curve is relatively steep during periods of curtailment, then flattens out as we move

through the prices associated with relatively similar resources, and then climbs again as we move into the maximum supply range. As a result of the steep slope of the curve in the negative pricing range, the incremental price increase resulting from charging can be larger than the incremental price decrease resulting from discharging, with the cumulative effect triggering higher gross load payments such as was the case in the 2018-2019 Transmission Plan. Of course, there is the offsetting impact on generation that is receiving the revenue. As I explained above, the net impact to load therefore has to take into account the impacts on generation whose benefits accrue to CAISO ratepayers, either by being utility-owned or being under a PPA with load serving entities. However, not all generators return their benefits to load serving entities, so it cannot be expected that the increase in load payments will always be equally offset by benefits returned by generators to load serving entities.

That said, in the case of LEAPS, the 2018-2019 Transmission Plan showed that increases in gross load payments were more than offset by increases in net generation revenues that accrued to the benefit of CAISO ratepayers, when considering *all* such revenues, including those for LEAPS itself.

Q. How do you respond to Mr. Alaywan's claim that the CAISO erred by not factoring PPA prices into its ratepayer benefits calculation?

A. Mr. Alaywan is incorrect. Although it is important to track which generators have a PPA with load serving entities, so that benefits earned by those resources can be accounted for as accruing to the benefit of ratepayers in the TEAM calculations, the PPA prices themselves do not factor into the CAISO's ratepayer benefit calculation

under TEAM, either now or in past planning cycles. This is because the purpose of that calculation is to examine the *incremental* impact of adding a new transmission facility. As Mr. Alaywan acknowledges, PPA prices and commitments at the PPA price are essentially a "sunk cost" – they do not create differences in the production simulation results before and after the introduction of a proposed new transmission project such LEAPS. The irrelevance of PPA prices to the benefits of a new transmission project is evident through the following simple example of a benefits calculation for a proposed "tx" project:

Benefit = volume * [(Price with tx – PPA strike price) – (Price without tx – PPA strike price)], or,

Benefit = volume * [Price with tx – PPA strike price – Price without tx + PPA strike price], or,

Benefit = volume * [Price with tx – Price without tx]

This demonstrates that, when the benefits accruing to ratepayers are properly taken into account, the PPA price itself "nets out" and does not impact the benefits associated with the new transmission project.

Q. Does this conclude your rebuttal testimony?

A. Yes.