BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue Electric Integrated Resource Planning and Related Procurement Processes	Rulemaking 20-05-003 (Filed May 7, 2020)

CALIFORNIA WIND ENERGY ASSOCIATION REPLY COMMENTS ON ORDER INSTITUTING RULEMAKING TO CONTINUE ELECTRIC INTEGRATED RESOURCE PLANNING AND RELATED PROCUREMENT PROCESSES AND COMMENTS ON RULING SEEKING COMMENTS ON PROPOSED PROCEEDING SCHEDULE

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On behalf of the California Wind Energy Association

July 6, 2020

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I. INTRODUCTION AND SUMMARY

Pursuant to the Order Instituting Rulemaking to Continue Electric Integrated Resource Planning and Related Procurement Processes issued on May 14, 2020 ("OIR") and the Administrative Law Judge's Ruling Scheduling Prehearing Conference and Seeking Comments on Proposed Proceeding Schedule ("ALJ Ruling") issued on June 15, 2020, the California Wind Energy Association ("CalWEA") submits these reply comments on parties' opening comments on the OIR, as well as comments on the proposed Integrated Resource Plan ("IRP") proceeding schedule contained in the ALJ Ruling.

In summary, taken together, the Commission should interpret the parties' opening comments – and particularly the stark comments of the California Independent System Operator ("CAISO") – as strongly urging the Commission to immediately take a more proactive role in planning for the achievement of the state's greenhouse-gas goals, addressing gas-fired plant retirements, the retirement of Diablo Canyon, and the diverse resources necessary to replace these facilities, including transmission. CAISO underscores the fact that, given long lead-times for transmission projects, it requires an "actionable plan immediately if the Commission wishes to consider transmission-dependent resource buildouts such as out-of-state resources, offshore wind, or efforts to reduce local capacity needs. In these comments, CalWEA underscores the value of transmission solutions by documenting that gas-fired plants in the Los Angeles ("LA")

Basin can be most cost-effectively replaced with a combination of a subsea transmission cable that provides access to lower-cost resources in Northern California, potentially including offshore wind resources.

Regarding the Proposed IRP Proceeding Schedule included in the ALJ Ruling, CalWEA emphasizes that any IRP reforms should not delay action on the urgent planning decisions just noted. However, we wholeheartedly agree with suggestions by the CAISO and others that the current process of producing both a Reference System Plan ("RSP") and a Proposed System Plan ("PSP") may not be necessary or advisable. The most important objective in rethinking the IRP process is for the Commission to set proactive planning direction; individual planning and procurement by load-serving entities ("LSEs") should then conform to that direction.

Lastly, CalWEA responds to various other points in parties' opening comments.

II. STRONG AND BROAD PARTY SUPPORT EXISTS FOR MEANINGFUL PLANNING, INCLUDING GAS-FIRED PLANT RETIREMENTS AND RESOURCE DIVERSITY

An overwhelmingly large and broad array of parties, representing a diversity of LSEs, ratepayer advocates, environmentalists and the CAISO, as well as CalWEA and other generation and storage trade groups, commented that long-term local reliability needs should be addressed in the IRP proceeding, an issue almost entirely overlooked in the OIR.[1] Many of these parties expressed this need as a priority, specifically supporting planning to enable gas-fired plant retirements and several recommending retirements in the LA local reliability area specifically, in order to achieve the state's greenhouse gas ("GHG") goals and legislative priorities to address local air quality benefits for disadvantaged communities.[2]

More broadly, many of these parties – none more strongly than the CAISO – called on the Commission to conduct planning more urgently and proactively. CAISO repeatedly underscored the "lack of policy direction" provided by the Commission and called for

[1] See California Environmental Justice Alliance, Sierra Club, Natural Resources Defense Council and Union of Concerned Scientists ("CEJA et al.") at p. 3; TURN at pp. 2-3; California Community Choice Association ("CalCCA") at p. 4; Pacific Gas & Electric Company ("PG&E") at p. 7; CAISO at p. 6; Southern California Edison Company ("SCE") at p. 16; California Energy Storage Alliance ("CESA") at p. 6; Vote Solar, Large-scale Solar Association and the Solar Energy Industries Association ("Solar Parties") at p. 6; and Western Grid Development Company ("Western Grid") at p. 12. Also see CalWEA opening comments at section II.

[2] CEJA et al. at p. 3; Defenders of Wildlife at p. 5; TURN at pp. 2-3; CAISO at p. 6; CESA at p. 5; Solar Parties at p. 4; and Western Grid at p. 12. Also see CalWEA opening comments at section II.

"actionable policy guidance" regarding Diablo Canyon replacement resources and the CAISO's 2021-22 Transmission Planning Process ("TPP"), both of which will "have reliability consequences that impact the CAISO's ability to plan and operate the grid."[3]

CalWEA strongly agrees with the CAISO's urgent call for "(1) actionable IRP plans for the CAISO to use in the transmission planning process to successfully accommodate long lead-time transmission projects and plan for grid reliability needs: (2) actionable policy guidance that meets state goals and maintains reliability; and (3) actionable procurement guidance for LSEs."[4] CAISO underscores the fact that, given long lead-times for transmission projects, the TPP requires an "actionable plan immediately if the Commission wishes to consider transmission-dependent resource buildouts such as out-of-state resources, offshore wind, or efforts to reduce local capacity needs," or even smaller-scale transmission resources required to integrate battery resources.[5] The CAISO warns that inaction could "potentially endanger[] reliability and other state goals."[6]

As many other parties also call for, the CAISO calls specifically for policy guidance on gas-fired resource retention and retirement, in consideration of broader metrics such as whether resources negatively impact disadvantaged communities and other policy goals.[7] The CAISO also specifically calls for the Commission to "intentionally pursue resource diversification that can address energy needs, especially after sunset, rather than focus narrowly on RESOLVE modeling inputs and outputs, specifically highlighting out-of-state and offshore wind resources.[8] Addressing resource diversification is essential, in part, because of the enormous implications that resource diversity has for storage requirements. In opening comments, CalWEA highlighted a study conducted for the Energy Commission that demonstrated the substantial ratepayer value of a portfolio that is balanced with wind energy, rather than being solar-dominated; such a portfolio requires far less storage resources.[9] Therefore, the Commission must first address resource diversity before assuming that vast quantities of storage capacity – including nearly 10

[3] CAISO opening comments at pp. 3-6 and elsewhere.

[4] *Id.* at p. 3.

[5] *Id.* at p. 4. Emphasis added.

[6] *Ibid.*

[7] *Id.* at p. 6.

[8] *Id.* at p. 8. Emphasis added.

[9] CalWEA opening comments at p. 15 and footnote 42.

GW of incremental battery storage capacity by 2030 – will be required to meet the state's goals.[10]

CalWEA underscores the point made in our opening comments that the Commission can simultaneously address many of these goals if it focuses on making a decision regarding LA-area gas-fired plant retirements and replacement resources accessed with major transmission upgrades that provide for greater resource diversity.[11] A process aimed at the LA area can then be replicated for other areas in the next IRP cycle.

III. THE COMMISSION MUST CONSIDER BOTH TRANSMISSION AND LOCAL SOLUTIONS FOR LCRA GAS-FIRED PLANT RETIREMENTS

Several parties echoed CalWEA's opening comments on the importance of the Commission providing direction to the CAISO and LSEs on how they can comply with a 38 MMT portfolio.[12] As the SCE argues, both SCE's Pathway 2045 whitepaper and Commission staff's 2045 Framing Study show that, to achieve the longer-term decarbonization goal feasibly and affordably by 2045, a lower electricity sector GHG target ranging from 30-38 MMT is needed."[13] If the Commission does not immediately focus on planning solutions for gas-fired plant retirements needed to achieve a 38 MMT target (whether achieved in 2030 or immediately ensuing years), the only option available will be local battery solutions that may be insufficiently reliable, as underscored in the CAISO's opening comments.[14] While several parties correctly note the importance of considering transmission solutions,[15] others call solely for immediate procurement of storage, particularly battery storage, in local areas. As discussed and documented below, the Commission must consider all viable options prior to directing local storage procurement.

[10] See additional discussion of this point in section V, below.

[11] CalWEA opening comments at section III.

[12] *Id.* at p. 3; CEERT at p. 2-3; LDESAC at PDF-p.6, and CESA at p. 6.

[13] SCE at pp. 14 and 16.

[14] CAISO at pp. 2-3 and 7.

[15] See, e.g., CalCCA at p. 4; CAISO at p. 5; Western Grid at p. 12.

A. The Commission Currently Lacks a Proper Basis for Directing Local Storage Procurement

CalWEA disagrees with a parties that suggest that the Commission should immediately identify areas where battery storage should be procured.[16] CEJA et al. suggest that the CAISO's completed local reliability studies provide sufficient information to enable the Commission to target procurement in local areas, citing a study of 700-MW of battery storage capacity in the El Nido and Western-LA sub-areas, as long as certain additional information, including charging limitations and related transmission solutions, are provided by the CAISO.[17] While a forthcoming CAISO study[18] is expected to provide very useful information on the necessary characteristics and charging requirements of battery storage to enable full or partial retirement of Local Capacity Reliability Area ("LCRA") gas-fired plants, the Commission must conduct additional analysis prior to directing any local procurement of battery storage for the following reasons.

First, the CAISO did not perform any "apples to apples" comparisons of local battery solutions vs. more comprehensive transmission solutions for gas-fired plant retirements, let alone for the scale of retirements that would be necessary to achieve a 38-MMT 2030 planning target (i.e., the retirement of 2-3.5 GW[19]) and is unlikely to perform such studies as part of its current effort. The solutions previously studied by the CAISO include a subsea transmission solution (the Pacific Transmission Expansion Project, "PTE Project") that would allow the retirement of nearly 2 GW of local capacity alongside various battery solutions and/or limited transmission solutions for under 1 GW of retirements. Comparing a partial-battery solution to a comprehensive transmission solution is incorrect because the findings for a partial-battery

[16] See CESA at pp. 4-5 and CEJA et al. at pp. 6-7.

[17] CEJA et al. comments at p. 6-7. ("This procurement cycle, which will focus on 2023 to 2026, should still be targeted to local areas, and CAISO has already completed an analysis that can help inform procurement. Specifically, in its transmission plan and local capacity technical report, CAISO has already analyzed the ability of other resources to reduce the need for gas in multiple local areas. … These LCR-specific analyses have not been used to inform procurement, but they should be." CEJA et al. then summarize the study findings for two 350-MW battery projects, citing CAISO's 2019-20 Transmission Plan, Appendix G at p. 164.) Note that the referenced data does not reflect CAISO's complete analysis of the project, which can be found in CAISO's "2019-2020 Transmission Planning Process Stakeholder Meeting November 18, 2019" at the slide on p. 204.

[18] *See* CAISO Presentation, "2020-2021 Transmission Planning Process Stakeholder Meeting" (June 3, 2020), starting at PDF-p.39.

[19] See CalWEA's opening comments at p. 10.

solution will not necessarily scale up proportionately to a comprehensive solution. In particular, the charging requirements are likely to increase exponentially as the magnitude of storage installation in the LCRA increases above a certain threshold.

Second, the studies that CAISO performed, for both battery and transmission solutions within the LA Basin LCRA, included inaccurate calculations and assumptions that substantially reduced the benefit-to-cost ratios ("BCRs") for these solutions. In the case of the storage solutions, the CAISO incorrectly assumed that the benefit of such measures would be to transfer the RA capacity location from inside the LCRA to outside of the LCRA (i.e., system-level RA capacity) as opposed to the fact that local storage can replace local RA capacity within the LCRA. Furthermore, the CAISO assumed that LA gas-fired plants would still be operating years after the transmission solution is in-service (around 2028), hence severely underestimating the savings in local-RA capacity costs for both solutions, especially for the PTE Project. In reality, if LA Basin gas-fired plants can reasonably be expected to retire by 2028 or shortly thereafter, then the reduction in LCRA capacity due to the PTE Project should result in saving nearly 2 GW of storage capacity that does not need to be added in the LA Basin. When CalWEA recalculated the BCRs using this appropriate assumption, the results show that the PTE Project has a BCR of more than 4, far higher than the BCR for the 700-MW battery partial-solution which, under the correct calculation and assumptions noted above, can rise as high as 1.3.[20] These calculations are presented and further explained in the Appendix.

For these reasons, LCRA procurement directives should not be made in piecemeal fashion by directing partial-battery solutions before considering more comprehensive solutions that fulfill the needs of major GHG-target milestones as well as other longer-term needs, as discussed next.

B. Transmission Solutions, in Combination with Local Storage, Offer the Greatest Long-Term Benefits

Before directing or authorizing any local procurement to replace gas plants or to reduce gas-plant operations, the Commission should evaluate complete transmission solutions, such as the PTE Project. Complete solutions provide numerous comparative benefits to battery-only solutions:

[20] Note that these results do not include the potential added cost of any charging capacity that may be needed for battery solutions.

- As noted above, partial-battery solutions are unlikely to scale up to full-scale solutions at a proportionate cost. A comprehensive solution, such as the PTE Project, may be far more cost-effective, as demonstrated above.

- A comprehensive transmission solution makes system-RA resources (including a greater diversity of long-duration storage resources that are not feasible in the LA Basin) available to meet local capacity needs while also providing the transmission infrastructure needed for charging local storage additions that will inevitably be required to address the lumpiness of the transmission solution and to enable further LCRA gas-plant retirements.[21] In other words, a hybrid solution consisting of LCRA storage plus transmission is more ideal than either solution individually.

- Electrification of loads will place further demands in LCRAs in the near-term. For example, the California Air Resources Board recently adopted a plan to require manufacturers to produce more electric trucks, which would put 100,000 zero-emission trucks on roads by 2030 and 300,000 by 2035.[22] These loads will put further strain on battery-charging limitations, warranting more comprehensive, long-term solutions.

- The PTE Project would, in addition, provide southern California loads with potential access to offshore wind resources, which could provide substantial additional ratepayer benefits.[23]

- Relying on local storage solutions alone may perpetuate market power issues for these resources. The current uncompetitive market for local RA has led to high costs, resulting in many requests for RA compliance waivers.

C. The Commission Must Immediately Focus on Planning Solutions for Gas-Plant Retirements Needed to Achieve a 38-MMT Target

As CalWEA stated in opening comments, no purpose will be served in producing a PSP until more system-level planning is accomplished.[24] Rather than spending another eight months preparing the PSP, the Commission should first conduct planning aimed at gas-plant retirement benefitting disadvantaged communities, resource diversity and cost minimization, and provide

[21] In addition to the PTE Project's 2-GW peak-capacity rating to supply LCR needs, capacity is available during shoulder and off-peak times to charge storage resources.

[22] See https://www.capradio.org/articles/2020/06/25/california-passes-the-nations-first-electric-truck-standard/.

[23] CalWEA opening comments at pp. 15-16.

[24] *Id.* at p. 6.

direction to the LSEs to finalize their individual IRPs accordingly. That planning should include following CalWEA's recommended process to determine one or more LCRAs in which gas plants should be retired and where resources should be planned to replace those resources – the two elements that must be included in the Commission's 2021-22 TPP recommendations in order to make progress on this front.[25]

IV. COMMENTS ON PROPOSED IRP PROCEEDING SCHEDULE

Many parties commented on how the IRP process should proceed in this and future cycles in their opening comments on the OIR. Therefore, CalWEA will combine our comments on the Proposed IRP Proceeding Schedule included in the ALJ Ruling with reply comments on this aspect of the parties' opening comments.

At the outset, CalWEA wishes to emphasize that any IRP reforms should not delay near-term planning decisions on gas-plant retirements and near-term procurement needs discussed above and in CalWEA's opening comments.[26] While we support SCE's suggestion that a comprehensive review of the current IRP process be undertaken, including stakeholder participation,[27] we would not want to see such a process delay the immediate actions that are urgently needed.

Second, CalWEA wholeheartedly supports suggestions by the CAISO, PG&E, SCE, and possibly others, that the current process of producing both an RSP and a PSP may not be warranted.[28] We also agree with the CAISO and SCE that the two-year cycle should not be extended in length because, as CAISO stated, "the emerging reliability issues associated with the transitions taking place in generation resources, [make it] critical that the Commission provide updated and actionable information to the CAISO as frequently as possible."[29] Therefore,

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[25] *Id.* at section IV.

[26] *Id.* at sections IV and V.

[27] SCE opening comments at p. 6.

[28] *See* CAISO at p. 8 ("A clearer and more streamlined approach may even eliminate the need for a Preferred System Plan and help maintain the current two-year cycle"); PG&E at pp. 5-6 ("if the PSP process is eliminated, the IRP planning process can still be guided based upon the aggregation of the individual IRPs and modeling results from the RSP"); and SCE at p. 6 ("The stakeholder process should consider, among other issues… whether both an RSP and PSP are needed – individual planning should conform to overall plan"). Also see CalWEA's opening comments at p. 6-7.

[29] CAISO at p. 5.

CalWEA fundamentally disagrees with the three-year schedule proposed in the ALJ Ruling, which is based on continued production of both an RSP and a PSP.

The essential point is that the CPUC must set proactive planning direction; individual planning and procurement should then conform to that direction in the overall plan. As CAISO suggested, there should be specific consequences for deviating from procurement guidance.[30] As reflected in CalWEA's opening comments, we strongly agree with PG&E and SCE that this guidance should be based on a need-based allocation mechanism that provides a link between planning and operationalization of LSEs' IRPs and reduces inequitable cost-shifting among LSEs and their customers.[31] While some flexibility can be provided to LSEs in their planning and procurement, LSEs must be held responsible for satisfying the essential characteristics of the Commission's optimal resource plan that ensures system reliability, reduces overall long-term costs, and meets other public policy objectives.

V. RESPONSES TO OTHER POINTS IN OPENING COMMENTS

Lastly, CalWEA wishes to briefly comment on various other aspects of parties' opening comments not addressed above.

- **Adding wind resources to the portfolio dramatically reduce the need for storage.** We note that some parties suggest that storage is required to "overcome[e] wind and solar power's variability,"[32] arguing that long-duration energy storage "allow[s] for more least-cost resources like wind and solar power to be integrated into the electric grid."[33] These arguments overlook the fact that a roughly equal balance of wind and solar resources dramatically reduces the need for storage in the first place, compared with a solar-dominated portfolio.[34] Therefore, as noted in section II, above, addressing resource diversification prior

[30] CAISO at p. 8; also see SCE at p. 7.

[31] SCE at p. 4; also see PG&E at p. 4 and CalWEA at p. 17.

[32] CEERT at p. 3 (emphasis added).

[33] Long Duration Energy Storage Association of California ("LDESAC") at PDF-p. 6 (emphasis added).

[34] CalWEA opening comments at pp. 15-16. (LDESAC cites the 2018 study that E3 performed for the Energy Commission – the same study that CalWEA cited to validate the value of a balanced wind-solar portfolio. With regard to long-duration storage, that study primarily concluded that long-duration storage will be critical to addressing the high cost of entirely eliminating dependence on gas resources.

to planning large volumes of storage is essential because of the enormous implications that resource diversity has for storage requirements. (This is not to say that long-duration storage resources are not needed or desirable to meet remaining storage requirements under a diversified renewable resource portfolio.)

- **Wind energy reduces the need for "clean firm" resources.** Similarly, the Environmental Defense Fund ("EDF") emphasizes the role of "clean firm" resources (such as geothermal technologies, biomass or natural gas with carbon capture and storage, and nuclear energy) in eliminating the need for new fossil generation and balancing the electric grid.[35] This emphasis, while appropriate, should be regarded in conjunction to the substantial role that wind energy has to play in balancing the grid because, in complementing the generation profile of solar energy, wind energy partially address the need for clean firm resources.
- **Resource shuffling should be addressed.** CalWEA agrees with TURN that the OIR scope should address resource shuffling, consistent with the Commission's D.20-03-028.[36] Specifically, the proceeding scope should include the development of a method for identifying and addressing resource shuffling because this practice has the potential to undermine meaningful achievement of the state's greenhouse-gas-reduction goals.
- **Gas-infrastructure costs should be accounted for.** CalWEA agrees with EDF that IRP modeling should account for any regulatory policy changes that impact the cost-effectiveness of natural gas-fueled resources due to the allocation of gas-infrastructure costs resulting from reduced gas usage.[37]
- **A long-term planning horizon should be used.** CalWEA agrees with parties who advocate a longer-term planning horizon, looking to the achievement of 2045 greenhouse-gas goals.[38] A long-term view will more fully recognize the value of resources whose economic benefits are realized at a large scale.

[35] EDF at p. 3.

[36] TURN at pp. 1-2.

[37] EDF at p. 7.

[38] *See*, e.g., Solar Parties at p. 4; American Wind Energy Association of California at p. 4; CESA at p. 2.

- **DERs should be optimized in IRP.** CalWEA agrees with SCE's point that IRP modeling should be used to provide guidance to the Integrated Distributed Energy Resources ("IDER") proceeding and Distributed Energy Resources ("DER") programs.[39] The point of IRP is to compare all resources, both supply- and demand-side, to generate an overall least-cost portfolio that meets all IRP policy objectives. No purpose is served by the Commission's current plan to determine optimal DER levels by, as SCE states, "using a flawed counterfactual-based sensitivity such as the No New DER case to determine avoided costs of DERs." Instead, optimal levels of DERs should be determined directly in the IRP process.

Respectfully submitted,

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[39] SCE at p. 18.

APPENDIX
CALWEA COST-BENEFIT ANALYSIS FOR VARIOUS LCRA CAPACITY REDUCTION SOLUTIONS

This appendix shows CalWEA's calculations of the Benefit-to-Cost Ratios (BCR) of two solutions originally studied by the CAISO as part of its 2019-20 TPP "Local Capacity Requirements Potential Reduction Study."[40] The two solutions are:

1. Addition of 700-MW (two 350-MW projects) of battery storage capacity in the LA Basin LCRA; and
2. Addition of a subsea transmission cable (the Pacific Transmission Expansion Project "PTE Project") to connect the LA Basin LCRA to the larger CAISO-controlled system.

In our analysis, we used all the same assumptions and data that the CAISO used for its analysis, except that we corrected the following:

- An error in CAISO's evaluation of the economic benefit of adding 700 MW of storage in the LCRA, in which CAISO incorrectly evaluated the benefit of LCRA storage to simply be the replacement of the LCRA RA capacity with system RA capacity, hence underestimating the economic benefit of the LCRA storage addition. Instead, storage should be credited with providing local capacity value (i.e., the value it is providing itself). And,
- An incorrect assumption related to the PTE Project in which CAISO assumed that, for years after the in-service date of the PTE Project (around 2028), gas-fired resources within the LCRA would still be operating and providing RA capacity at a low average cost; hence, again, severely underestimating the economic benefit of the PTE Project. Instead, the PTE Project should be credited with obviating the need for adding storage resources in the LA Basin.

CAISO's previous statements calling upon the Commission to set direction on the retirement of gas facilities may explain these overly-conservative assumptions.[41]

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[40] See November 18, 2019, presentation of results available at: http://www.caiso.com/Documents/Presentation-2019-2020TransmissionPlanningProcess-Nov182019.pdf. All references are to this document.

[41] See, e.g., CAISO's March 12, 2020, Comments in response to the Commission's proposed decision on *2019-2020 Electric Resource Portfolios to Inform Integrated Resource Plans and Transmission Planning* at p. 6 ("the Commission should provide policy direction to … [s]et clear direction on how and when to

A.1: Economic Assessment of LCRA Storage Addition

In its 2019-20 TPP results, CAISO provides the following table when calculating the BCR for the addition of 700 MW of storage in the LA Basin LCRA;[42]

Alternative 3: Local Capacity Reduction Benefit Assessment

	Alternative 3: Install BESS in El Nido and Western LA Basin Subareas	
	Local versus System Capacity	Local versus SP 26
LCR reduction benefit (El Nido) (MW)	337	
Capacity value (per MW-year)	$16,680	$22,680
LCR Reduction Benefit ($million)	$5.6	$7.6
LCR reduction benefit (Western LA Basin) (MW)	670	
Capacity value (per MW-year)	$16,680	$22,680
LCR Reduction Benefit ($million)	$11.2	$15.2
LCR increase (Eastern LA Basin) (MW)	-42	
Capacity value (per MW-year)	$16,680	$22,680
LCR increase cost ($million)	-$0.7	-$1.0
LCR increase (San Diego-Imperial Valley) (MW)	-35	
Capacity value (per MW-year)	$13,080	$19,080
LCR increase cost ($million)	-$0.5	-$0.7
Net LCR Saving ($million/year)	**$15.6**	**$21.2**

- The benefit to cost ratio of this project is less than 1, indicating that this option is not economic based on local capacity benefits.

Alternative 3: Install BESS in the El Nido and Western LA Basin Subareas		
Local Capacity Benefits		
Basis for capacity benefit calculation	Local versus System Capacity	Local versus SP 26
Net LCR Saving ($million/year)	$15.6	$21.2
Capital Cost		
Capacity (MW)	700	
Capital Cost Source	Lazard	Lazard
Capital Cost $/kW	$1,660	$1,660
Levelized Fixed Cost ($/kW-year)	$394	$394
Estimated Levelized Fixed Cost (screening) ($million/year)	$276	$276
Benefit to Cost		
Savings ($million/year)	$15.6	$21.2
Estimated Levelized Fixed Cost (screening) ($million/year)	$276	$276
Benefit to Cost	**0.06**	**0.08**

Based on the above table, CAISO calculates the BCR for the addition of 700 MW of storage in LCRA to be 0.06 – a truly dismal number. However, in calculating the above BCR, CAISO assumed that all the LCRA storage addition would do is to allow some of the local RA capacity needs (930 MW net) to be met with lower-cost system RA – ignoring the fact that the storage added in the LCRA actually provides RA capacity itself.

In the following, we first repeated the CAISO study in order to see whether we would calculate the same erroneous BCR, which we have done below:

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reduce reliance on the existing gas-fired generation fleet so that stakeholders can consider and implement concrete plans to ensure system and local area reliability…").

[42] Note 1 *supra* at p. 204.

CalWEA Table A.1

LCRA	LCRA Capacity Saved (MW)	LCRA Capacity Cost ($/MW-year)	Replacement System RA Cost ($/MW-year)	RA Capacity Benefit ($/year)	Cost of Adding BESS in LCRA ($/year)	BCR
El Nido & West LA Basin	1007	$41,760	$25,080	$16,796,760		
Big Creek / Ventura	0	$41,400	$25,080	$ -		
East LA Basin	-42	$41,760	$25,080	$(700,560)		
San Diego / Imp Valley	-35	$38,160	$25,080	$(457,800)		
Total	930			$15,638,400	$276,000,000	**0.06**

We then corrected for the error in the above BCR calculation by allowing the 700 MW storage to replace some of the LCRA capacity needs. Per the table below, this correction doubles the BCR that CAISO originally calculated from 0.06 to 0.12 (although the BCR is still far too low to justify adding storage in the LCRA):

CalWEA Table A.2

LCRA	LCRA Capacity Saved (MW)	LCRA Capacity Cost ($/MW-year)	Replacement System RA Cost ($/MW-year)	RA Capacity Benefit ($/year)	Cost of Adding BESS in LCRA ($/year)	BCR
El Nido & West LA Basin	1007	$ 41,760	$25,080	$34,352,760		
Big Creek / Ventura	0	$ 41,400	$25,080	$ -		
East LA Basin	-42	$ 41,760	$25,080	$(700,560)		
San Diego / Imp Valley	-35	$ 38,160	$25,080	$(457,800)		
Total	930			$33,194,400	$276,000,000	**0.12**

However, if we look at the LCRA storage addition in light of the fact that gas resources within the LCRA will eventually be retired and replaced with storage facilities, the BCR calculation rises to a respectable 1.31 as shown below:

CalWEA Table A.3

LCRA	LCRA Capacity Saved (MW)	LCRA Capacity Cost ($/MW-year)	Replacement System RA Cost ($/MW-year)	RA Capacity Benefit ($/year)	Cost of Adding BESS in LCRA ($/year)	BCR
El Nido & West LA Basin	1007	$394,000	$ 25,080	$389,058,440		
Big Creek / Ventura	0	$394,000	$ 25,080	$ -		
East LA Basin	-42	$394,000	$ 25,080	$(15,494,640)		
San Diego / Imp Valley	-35	$394,000	$ 25,080	$(12,912,200)		
Total	**930**			**$360,651,600**	**$276,000,000**	**1.31**

A.2: Economic Assessment of PTE Project

In its 2019-20 TPP results, CAISO provides the table shown on the next page when calculating the BCR for the PTE Project.[43] Based on this table, the CAISO calculates the BCR for the PTE Project to be 0.19 – a dismal number that could not justify the PTE Project. However, the CAISO calculated this BCR based on the incorrect assumption that the LCRA gas-fired resources will stay operational even long after the in-service date of the PTE Project (around 2028).

[43] Note 1 *supra* at p. 212.

Alternative 7: Local Capacity Reduction Benefit Assessment

	Alternative 7: Pacific Transmission Expansion HVDC Project	
	Local/CPM versus System Capacity	Local/CPM versus SP 26
LCR Reduction Benefit (Big Creek/Ventura) (MW)	393	
Capacity value (per MW-year)	$16,320	$22,320
LCR Reduction Benefit ($million)	$6.4	$8.8
	Local versus System Capacity	Local versus SP 26
LCR Reduction Benefit (El Nido) (MW)	0	
Capacity value (per MW-year)	$16,680	$22,680
LCR Reduction Benefit ($million)	$0.0	$0.0
LCR reduction benefit (Western LA Basin) (MW)	1889	
Capacity value (per MW-year)	$16,680	$22,680
LCR Reduction Benefit ($million)	$31.5	$42.8
LCR increase (Eastern LA Basin) (MW)	-149	
Capacity value (per MW-year)	$16,680	$22,680
LCR increase cost ($million)	-$2.5	-$3.4
LCR increase (San Diego-Imperial Valley) (MW)	-140	
Capacity value (per MW-year)	$13,080	$19,080
LCR increase cost ($million)	-$1.8	-$2.7
Net LCR Saving ($million/year)	$33.6	$45.6

Alternative 7: Pacific Transmission Expansion HVDC Project		
Local Capacity Benefits		
	Local versus System Capacity	Local versus SP 26
Net LCR Saving ($million/year)	$33.6	$45.6
PV of LCR Savings ($million)	$463.8	$628.8
Capital Cost		
Capital Cost Estimate ($ million)	$1,850	
Estimated "Total" Cost (screening) ($million)	$2,405	
Benefit to Cost		
PV of Savings ($million)	$464	$629
Estimated "Total" Cost (screening) ($million)	$2,405	
Benefit to Cost	0.19	0.26

- The benefit to cost ratio will be updated once the production cost simulation results are available.

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In the following, we first attempted to repeat CAISO's evaluation to make sure that we can duplicate CAISO's BCR number (which we did):

CalWEA Table A.4

LCRA	LCRA Capacity Saved (MW)	LCRA Capacity Cost ($/MW-year)	Replacement System RA Cost ($/MW-year)	RA Capacity Benefit ($/year)	RA Capacity Benefit PV ($M)	Cost of PTEP ($M)	BCR
El Nido & West LA Basin	1889	$41,760	$25,080	$31,508,520			
Big Creek / Ventura	393	$41,400	$25,080	$6,413,760			
East LA Basin	-149	$41,760	$25,080	$(2,485,320)			
San Diego / Imp Valley	-140	$38,160	$25,080	$(1,831,200)			
Total	**1993**			**$33,605,760**	**$ 457.038**	**$2,405**	**0.19**

However, once we corrected for the CAISO's incorrect assumption regarding the infinite life of LCRA gas fired resources, which means the PTE Project allows system RA resources to replace storage additions in the LCRA, the correct BCR for the PTE Project rises to a very respectable 4.16, as shown below:

CalWEA Table A.5

LCRA	**LCRA Capacity Saved (MW)**	**LCRA Capacity Cost ($/MW-year)**	**Replacement System RA Cost ($/MW-year)**	**RA Capacity Benefit ($/year)**	**RA Capacity Benefit PV ($M)**	**Cost of PTEP ($M)**	**BCR**
El Nido & West LA Basin	1889	$394,000	$25,080	$696,889,880			
Big Creek / Ventura	393	$394,000	$25,080	$144,985,560			
East LA Basin	-149	$394,000	$25,080	$(54,969,080)			
San Diego / Imp Valley	-140	$394,000	$25,080	$(51,648,800)			
Total	**1993**			**$735,257,560**	**$9,999.503**	**$2,405**	**4.16**

VERIFICATION

I, Nancy Rader, am the Executive Director of the California Wind Energy Association. I am authorized to make this Verification on its behalf. I declare under penalty of perjury that the statements in the foregoing copy of "California Wind Energy Association Reply Comments on Order Instituting Rulemaking to Continue Electric Integrated Resource Planning and Related Procurement Processes and Comments on Ruling Seeking Comments on Proposed Proceeding Schedule" are true of my own knowledge, except as to the matters which are therein stated on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 6, 2020, at Berkeley, California.

/s/ *Nancy Rader*
Nancy Rader
Executive Director
California Wind Energy Association