



March 11, 2021

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California Independent System Operator  
250 Outcropping Way, Folsom, CA 95630

Dear CAISO Transmission Planning:

Western Grid Development LLC (“Western Grid”) appreciates the opportunity to comment on the CAISO’s 2021-2022 Draft Study Plan and submit this economic study request **for the Pacific Transmission Expansion Project (“PTE” or “PTEP”)**.

The PTEP is a 2,000 MW controllable HVDC subsea transmission cable that the CAISO has found will allow existing supply available to the Diablo Canyon 500 kV switchyard or new sources of Offshore Wind (OSW) or other new clean energy to be delivered to the West LA Basin and reduce Local Capacity Requirements (LCR) need in the West LA Basin by 1,993 MWs, thereby displacing the need for the same capacity of local natural gas fired power plants. PTE is described in Section 4.8.8 of the CAISO’s draft Transmission Report dated February 1, 2021 (“Draft 2020-2021 Report”)<sup>1</sup>. The PTEP was studied in the 2019-2020 and 2020-2021 Transmission Planning cycles. For the 2021-2022 Transmission Planning Process (TPP), Western Grid again requests consideration of our “Option 1” configuration which includes Voltage Source Converter (VSC) stations as follows:

- one 2,000 MW, 500 kV DC/500 kV AC converter station located at the northern terminus of the project near the Diablo Canyon 500 kV switchyard,
- one 500 MW, 500 kV DC/220 kV AC converter station connected to SCE Goleta substation via a 3-mile underground AC cable,
- one 1,000 MW, 500 kV DC/220 kV AC converter station connected at Redondo Beach, and
- one 500 MW, 500 kV DC/220 kV AC converter station connected at Huntington Beach.

We also ask that CAISO consider an alternate configuration (Option 1a) which interconnects to either (a) La Fresa 220 kV or (b) El Nido 220 kV substations instead of Redondo Beach. Western Grid will provide updated project cost estimates for one or both alternatives during Phase 2 of the 2021-2022 TPP.

As more fully described in our comments below, Western Grid requests that CAISO study the PTEP as a transmission solution that will address State Public Policy needs, provide essential reliability and

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<sup>1</sup> <http://www.caiso.com/Documents/Draft2020-2021TransmissionPlan.pdf>



other economic benefits to ratepayers for achieving a decarbonated future. As described fully below there are several areas of significant economic benefits that PTE Project will provide that should be recognized under the CAISO economic assessment.

In addition to PTEP specific study requests described in detail below, Western Grid also requests that CAISO develop a comprehensive Grid Improvement Roadmap to inform the State of “no regrets” transmission solutions that will be needed to achieve State policies in 2030 and beyond. The Grid Improvement Roadmap should comprehensively identify new transmission that is needed and corridors that should be expanded to efficiently integrate the renewable resources that will be needed to meet SB100 goals, including promoting resource diversity, lowering GHG and benefitting disadvantaged communities. No regrets transmission upgrades that are identified in the Grid Roadmap study and perform well under a variety of resource futures should be approved in this 2021-2022 TPP. Western Grid urges the CAISO to lead this effort, perform the needed studies, propose and approve new transmission critical to the grid of the future in this 2021-2022 TPP.

The studies we are requesting should address the following critical assumptions and adopt the described methodologies in the CAISO 2021-2022 Final Study Plan.

**1. We request CAISO study the PTE as a solution for the CPUC Offshore Wind (OSW) Policy-Driven Sensitivity Portfolio**

The California Public Utilities Commission (CPUC) February 11, 2021 Decision in Rulemaking 20-05-003 TRANSFERRING ELECTRIC RESOURCE PORTFOLIOS TO CALIFORNIA INDEPENDENT SYSTEM OPERATOR FOR 2021-2022 TRANSMISSION PLANNING PROCESS includes a request that CAISO study transmission solutions for approximately 8.3 GW of OSW. We expect that OSW will require large transmission upgrades and reliability improvements to ensure deliverability of the OSW to load centers, including the LA Basin. The PTE should be considered as a solution to enabling OSW as envisioned in the CPUCs OSW Portfolio.

We request that the CAISO compare the economic costs and benefits of OSW with and without the PTE Project. Other benefits of the PTEP should also be included in the CAISOs analysis, such as reducing congestion on Path 26 and reducing LCR need in the LA Basin. Further, we request that CAISO properly model and consider the benefits of using PTE’s VSC for frequency support and for injecting VARs or absorbing VARs to and from the LA Basin to ensure deliverability (FCDS) of the OSW and offset the interconnection-related transmission upgrades that will be needed in the absence of the technology provided by PTE that is not achievable with traditional AC transmission solutions. Western Grid believes that PTE is an essential ingredient for OSW or any renewable resource serving the LA-area market, and for reducing reliance on local gas fired generation. Studying PTE in this TPP cycle will



position CAISO well when it receives further policy guidance and direction with respect to the need for changes in the LA resource mix to meet State policies.

Preliminary engineering performed by Western Grid has identified a logical and efficient way to connect OSW to the PTEP and CAISO Grid for delivery of OSW to the LA Basin. Western Grid can provide high level engineering and cost information to the CAISO if needed for its analysis.

**2. We request CAISO study the PTE as a cost-effective solution for reducing curtailments, avoiding inefficient overbuild in the Base Portfolio Policy-Driven Assessment and, significantly reducing costs to customers.**

The State is embarking on developing thousands of MW of renewable energy projects at a cost significantly exceeding \$30 billion. Yet, due to inadequate transmission, much of the renewable energy may not be able to meet System RA and certainly not LCR requirements. The State is not on an optimal resource expansion path and is instead heading toward “inefficiently over-building resources” while “under-building transmission”.

At the February 25<sup>th</sup> stakeholder meeting, the CAISO presented the CPUC-provided Base Portfolio as shown in Figure 1.

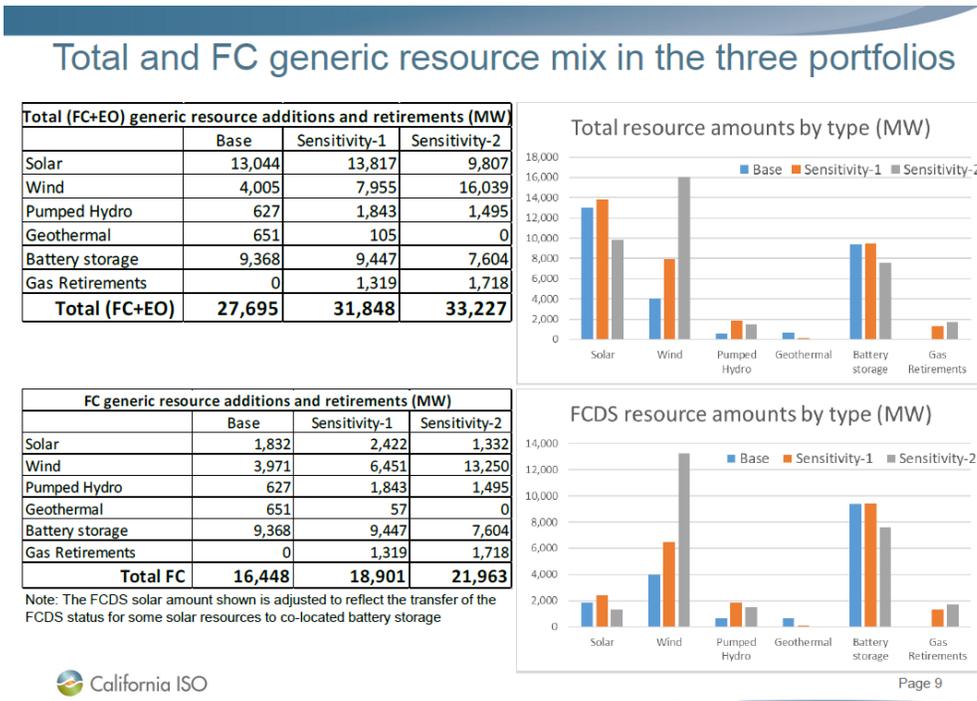


Figure 1. CPUC Base and Sensitivity Portfolios to be Studied in the 2021-2022 Transmission Planning Process



The Base Portfolio includes 27,695 MW consisting of new Full Capacity (FC) plus Energy Only (EO) generic resource additions. However, as CAISO displays in the second table of their presentation, only 16,448 MW of that capacity is expected to interconnect with Full Capacity Deliverability Status (FCDS) and count towards the State's Resource Adequacy (RA) needs before discounting for Effective Load Carrying Capability (ELCC). This means that the difference of 11,246 MW of the State's procurement target will be interconnected as Energy Only (EO) resources that cannot contribute to the system or local reliability RA needs and are subject to curtailments during all hours of day. If these EO resources attempt to interconnect as FCDS projects, they will be required to pay for costly network transmission upgrades in order to gain FCDS and be able to count towards system or local RA. An incremental amount of transmission will be needed to make these new projects deliverable to the load pockets. Absent the addition of new transmission, the state will continue to be overly dependent on fossil-based resources to maintain the reliability of capacity-constrained regions such as the LA Basin. State policy calls for the transition away from fossil-based resources. The additional targeted procurement of EO resources to reach the State's RPS and emissions target without detailed consideration of the benefits of added transmission capacity will lead to a costly resource overbuild / transmission underbuild situation wherein the EO resources have to be curtailed or sold off out-of-state. Further, the State will not be able to reduce the need for fossil-based resources in California's capacity constrained regions. Since transmission has a 10 year or more lead-time, the CAISO has repeatedly warned that transmission planning must start immediately. And, this detailed cost-benefit analysis needs to be addressed by CAISO in the 2021-2022 TPP Policy-driven studies.

The current Policy study method of the TPP, as we understand it, will be to evaluate the transmission needed to accommodate the CPUC Base Portfolio by treating the CPUC Portfolio as fixed and not subject to modification or improvements. This begs the question; What if there is another cost-effective solution that results in lower overall costs? We ask the CAISO to analyze the PTE in the context of achieving lower overall costs by investing in transmission solutions and avoid overbuilding generation that does not provide full value to customers. Western Grid believes that CAISO's Policy assessment should study and identify ratepayer net benefits for transmission investments that can make more capacity fully deliverable and avoid costly overbuild.

We illustrate our request through a hypothetical but realistic example:

1. The CPUC portfolio targets procurement of FC + EO of 13,044 MW of new Solar resources paired with 9,368 MW of Battery Storage to achieve the Base Portfolio criteria. Per Figure 1, this translates into 1,832 MW of Solar and 9,368 MW of Battery Storage with FCDS. Assume that the ELCC for Solar is ~30% and for Battery Storage is ~95%. This translates into 550 MW of Solar and 8,900 MW of Battery Storage counted towards system RA needs (9,450 MW total or about 42.2% of the 22,412 MW of Solar plus Battery Storage built can be counted towards RA.)



2. Assume that the cost of the CPUC renewable portfolio is \$1,000 per kW, and
3. 22,412 MW of Solar plus Battery Storage needs to be built to get 11,200 MW of FCDS and the cost for transmission upgrades needed for FCDS interconnection is \$250 per kW.

With the current TPP study process (“Status Quo”):

- (a) The total Solar plus Battery Storage build cost of the CPUC portfolio is 22,412 MW x \$1,000/kW x 1,000 kW/MW = \$22.4 billion.
- (b) The total interconnection cost for transmission upgrades is 22,412 MW x \$250/kW x 1,000 kW/MW = \$5.6 billion. This is the transmission cost to interconnect 9,450 MW of RA.
- (c) The total cost to ratepayers would equal to (a) + (b) = \$28 billion or \$3 million per MW of RA.
- (d) An additional unknown consequence from this option are curtailments during solar hours and confirmation of whether the excess solar energy will be able to be stored in the paired battery energy storage system.
- (e) Furthermore, as CAISO found in last year’s TPP, 3,287 MW (out of 4,252 MW) of battery energy storage systems may not be deliverable during on-peak deliverability hours. And, after CAISO re-mapped the 3,287 MW of battery storage, it only resulted in 2% decrease in renewable curtailments (21,534 MWh vs. 23,686 MWh).

Proposed Comprehensive Approach (Study Transmission Alternatives to Overbuild):

In the last two cycles of TPP studies, CAISO concluded that the PTE could reduce the need for 1,993 MW of Local RA that is currently being served with fossil-based resources in the LA Basin. We conclude from this result that with the PTE, the HVDC transmission solution provides FCDS for 1,993 MW of the 9,450 MW compared to the “without PTE” case described above because flows on the DC cable can be controlled to flow MW for MW when needed. Thus, with PTE, the number of renewable energy projects that the State’s load serving entities would need to procure would be equal to 19,664 MW.

Calculation:

$$1993 \text{ MW} + (9450 - 1993) / 42.2\% = 1993 + 17,671 = 19,664 \text{ MW}.$$

This is 2,748 MW less compared to the ‘without’ PTE transmission solution. In other words, the PTE transmission solution reduces overbuild by over 2,700 MW.

The CPUC renewable portfolio from a resource procurement perspective is reduced from 22,412 MW to 19,664 MW. Thus, the cost of a solution with the transmission investment is \$26.1 billion compared



to \$28 billion or a savings of \$2.1 billion<sup>2</sup>. This results in a per MW cost of RA of \$2.5 million which is lower than the overbuild scenario where the per MW cost of RA was \$3 million.

Further, the PTE solution not only firms up system RA but will provide or replace local RA which is much more valuable and can save ratepayers a significant amount of money that should not be dismissed or ignored. Additional savings for the local RA reduction, reduced curtailment, emissions, and production costs are additional benefits that we request CAISO to include in its Policy-driven studies.

Using this comprehensive approach, we are asking CAISO to not treat CPUC's Base and Sensitivity Portfolio's as "givens" but rather to evaluate the cost-effectiveness that transmission solutions such as PTE can provide. We believe the State needs to earnestly look at transmission alternatives that can decrease the capacity procurement costs currently being paid by ratepayers and this will only happen if CAISO studies the benefits of increasing transmission capacity to replace the overbuild and EO capacity prone to curtailment provided in the transmitted CPUC portfolios. Western Grid posits that the PTE can reduce the amount of renewable energy projects required by the CPUC while satisfying the CAISO's System and Local RA requirements to prevent conditions similar to last summer that resulted in rotating outages at a lower overall cost to ratepayers-- especially if you consider the cost to ratepayers for the Emergency Procurement recently ordered by the CPUC<sup>3</sup>. To achieve an optimum outcome, the CAISO should not consider the CPUC portfolio as a sunk cost and should exercise some flexibility to study prudent and cost-effective solutions to ratepayers. It is not only conceivable, but highly probable that the PTE will reduce our dependency on fossil-based resources while at the same time reducing the overall procurement cost of renewable energy resources and RA. This study approach should be used as opposed to the current method of locking in the CPUC portfolio and the fossil-based resources as a fixed or sunk cost and then determining the additional transmission cost needed to achieve the policy. This sequential approach does not produce an optimum result and the current TEAM adopted by the CAISO TPP provides for studying the benefits of transmission alternatives as we describe herein. We provide further explanation in item #4 below.

### **3. We request the CAISO use realistic capacity values when calculating PTEP LCR Reduction Benefits**

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<sup>2</sup> This is derived as: PTE cost + renewable energy projects build cost + transmission and interconnection cost = \$2 billion + (19,664 MW x \$1,000/kW x 1,000 kW/MW) + (17,671 MW x \$250/kW x 1,000 kW/MW) = \$2 billion + \$19.7 billion + \$4.42 billion = \$26.1 billion or \$2.5 million per MW of RA.

<sup>3</sup> Administrative Law Judge's Ruling Seeking Feedback on Mid-Term Reliability Analysis and Proposed Procurement Requirements, <https://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&docid=367037415>



We appreciate that in the Draft 2020-2021 Report, the CAISO again determined that the PTEP will provide net 1,993 MW's of Local Capacity Requirement (LCR) reduction benefits by reducing the LCRs in the LA Basin and, ultimately, reducing the need for 1,993 MW's of existing gas plants in the West LA Basin and Big Creek/Ventura area with PTE in service. *Draft 2020-2021 Report at page 327.* Given the CAISO's analysis, the PTE could also fill the shortage of RA capacity in Southern California because PTE will enable delivery of new RA capacity from outside the region. This need was recently demonstrated on August 14 and 15, 2020 when the region was short of local capacity and drove the marginal cost of energy to skyrocket levels for the entire CAISO.

In the 2020-21 TPP, the CAISO applied a very conservative value to the LCR benefits quantified in the planning assessments. In this regard, the CAISO stated that:<sup>4</sup>

*While future IRP efforts are expected to provide more guidance and direction regarding expectations for the gas-fired generation fleet at a policy level, without that broader system perspective available at this time, the CAISO has taken a conservative approach in assessing the value of a local capacity reduction benefit when considering a transmission reinforcement or other alternatives that could reduce the need for existing gas-fired generation providing local capacity. In this planning cycle, the CAISO therefore applied the differential between the local capacity price and system capacity price to assess the economic benefits of reducing the need for gas-fired generation when considering both transmission and other alternatives.*

A critical shortcoming of the CAISO's Draft 2021-2022 Study Plan is that it will continue to undervalue the LCR benefit for PTE and other transmission solutions. Based on the publicly available FERC EQR data reflected in Table 1, the weighted average price of local capacity contracts in the Western LA Basin is about \$16.68/kW-month<sup>5</sup>. Even if the contract prices for the three Once Through Cooling ("OTC") units planned for retirement and shown in Table 2 are included, the average weighted price for gas-fired generation in the Western LA Basin is about \$9.80/kW-month (Table 3). This is based on an analysis of the publicly available FERC EQR data for existing LCR contracts totaling roughly 3,313 MW's of existing gas plants in the LA Basin. By way of comparison, the LCR contract price needed to cover the PTE cost is approximately \$7.35/kW-month<sup>6</sup>. Obviously, our dependence on fossil-based resources and the corresponding price of LCRs will only rise in the future as the CPUC starts to plan for the retirement of the non-OTC gas units, particularly since there is no clear resource that can

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<sup>4</sup> *Id.* At 252

<sup>5</sup> This excludes the rate-based Western LA Basin gas-fired units owned by City of Anaheim, City of Vernon, City of Pasadena and Southern California Edison which have total NQC of around 537 MWs.

<sup>6</sup> Calculated based on using the \$2.405 billion estimated total capital cost used by CAISO in the Draft TPP Report on page 330.



replace the reliability and flexibility currently provided by the gas plants other than an HVDC VSC circuit like PTE’s with its associated converter stations.

Table 1. 2020 Average Capacity Cost for Western LA Basin Gas-fired Resources (not including retiring OTC units)

Western LA Basin Generators (natural gas-fired)	2020 Avg Capacity Cost (\$/kW-Month)	NQC (MW)	\$/YEAR
El Segundo Energy Center	19.98	522.34	\$125,238,602
Malburg power plant	27.30	134	\$43,892,611
Walnut Creek Units	17.08	478.8	\$98,112,519
Long Beach Peakers (Hinson)	4.49	202	\$10,894,800
Harbor	5.00	100	\$4,500,00
<b>Total</b>	<b>14.77</b>	<b>1437.14</b>	<b>\$282,638,532</b>
<b>Weighted Average Cost</b>	<b>16.68</b>		

Table 2. 2020 Average Capacity Cost for Western LA Basin Gas-fired Resources (retiring OTC units)

Retiring OTC Generators in Western LA Basin	2020 Avg Capacity Cost (\$/kW-Month)	NQC (MW)	\$/YEAR
Alamitos*	12.17	349.75	\$51,062,916
Huntington Beach*	3.65	677.4	\$9,890,040
Redondo Beach	8.40	Variable	\$69,142,230
<b>Total</b>	<b>8.07</b>	<b>1876.15</b>	<b>\$106,896,806</b>
<b>Weighted Average Cost</b>	<b>4.82</b>		

Table 3. Summary 2020 Average Capacity Cost for Western LA Basin Gas-fired Resources

	2020 Avg Capacity Cost (\$/kW-Month)	NQC (MW)	\$/YEAR
<b>Total Table 1 and Table 2</b>	<b>12.26</b>	<b>3313.29</b>	<b>\$389,535,338</b>
<b>Weighted Average Cost</b>	<b>9.80</b>		

Western Grid submits the CAISO TPP will not achieve its objective of providing helpful information to State policy makers and regulatory agencies by continuing to use “conservative” (i.e. – unrealistic) values for local capacity and not addressing the host of reliability issues facing the State. A more



global perspective and evaluation of transmission benefits for all projects including the PTE is the underlying intent of the TPP. The TPP should evaluate the CPUC's Base procurement portfolio in the context of providing an overall lower cost solution to ratepayers while addressing *all* reliability issues and avoid the piecemeal approach currently in place. Otherwise at best, reliability issues will be resolved incrementally and at higher cost to ratepayers. For instance, it is widely known that California's RA requirement is inadequate and insufficient to adhere to SB 100, is subject to changes in the Planning Reserve Margin (PRM) and changes to rules for how imports and intermittent resources can fulfill requirements.

Western Grid believes that CAISO should continue to consider the PTEP as an economic alternative to local capacity including any policy objectives with or without actionable direction from the Commission. This is consistent with its current TEAM. CAISO's final 2021-2022 Study Plan should address how and when to begin planning for reduced reliance on fossil fuels. We agree with and support CAISO's previous comment to the Commission that transmission solutions can have long lead times and, therefore "planning for transmission-dependent projects should start as soon as possible."<sup>7</sup> Indeed, if the State is to reach its 2030 and 2045 GHG SB 100 requirements in a reliable and least-cost manner, the CAISO must begin planning now for transmission solutions that reduce LCRs currently provided by gas-fired resources. In order to do so, CAISO will need to change its conservative assumptions and use realistic capacity values for that replacement in its economic analysis.

**4. We request the CAISO include the other benefits of PTEP as described in the CAISO's Transmission Economic Assessment Methodology (TEAM).**

Per the CAISO's TEAM published in November 2017<sup>8</sup>, CAISO expanded the benefit framework of TEAM to other benefits but has not yet included such quantification in their economic assessments. Western Grid requests that CAISO include the expanded TEAM benefit framework in their economic study process, specifically:

**a) Deliverability Benefit**

Consistent with Section 2.5.3 of TEAM, *"Transmission upgrade can potentially increase generator deliverability to the region under study through the directly increased transmission capacity or the transmission loss saving."* As we illustrated in Section 2 above, the PTE increases the deliverability of existing and planned

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<sup>7</sup> See CAISO comments filed on March 12, 2020 with respect to the Administrative Law Judge's Proposed Decision on the "2019-2020 Electric Resource Portfolios to Inform Integrated Resource Plans and Transmission Planning" in R16-02-007 (CAISO Comments).

<sup>8</sup> [http://www.caiso.com/Documents/TransmissionEconomicAssessmentMethodology-Nov2\\_2017.pdf](http://www.caiso.com/Documents/TransmissionEconomicAssessmentMethodology-Nov2_2017.pdf)



renewables by allowing otherwise curtailed renewables to count for 100% qualifying capacity toward the Resource Adequacy. PTE can take system resources that are classified as “Energy Only” and deliver this energy between NP15 and SP15. PTE enables existing and future “Energy Only” resources to be fully deliverable RA capacity and avoids the cost of the overbuild and related transmission costs needed to procure the Base Portfolio. In effect, the PTE has the potential to reduce the procurement MWs needed in the Base Portfolio. It is clear that the CPUC does not address deliverability in the Portfolios provided to CAISO in the IRP process; therefore, it is only logical that CAISO illuminates deliverability within the TEAM analysis.

**b) Public-Policy Benefit**

Also described in Section 2.5.5 of TEAM, *“When there is a lot of curtailment of renewable generation, extra renewable generators would be built or procured to meet the goal of renewable portfolio standards (RPS). The cost of meeting the RPS goal will increase because of that. By reducing the curtailment of renewable generation, the cost of meeting the RPS goal will be reduced. This part of cost saving from avoiding over-build can be categorized as public-policy benefit.”* In prior studies, CAISO only counts the energy cost savings of the reduced curtailments between the with and without project cases. Western Grid believes that this aspect of TEAM is not properly counted as a benefit in CAISO’s economic assessments and as described in Section 2 above, can result in significant benefits that are entitled to be counted for the benefit of transmission solutions such as PTE.

**Compliance with SB100:** Western Grid also requests that CAISO evaluate the PTE as a transmission solution that enables the State to comply with SB 100. There are approximately 3,658 MW’s of gas fired plants in the Western LA Basin alone that will need to close by 2045 under the requirements of SB 100. The CAISO and major load serving entities have urged the CPUC to start deliberately planning for the shutdown of these gas plants as soon as possible. Therefore, using PTE to allow closure of 1,993 MW’s of gas plants in the LA basin by 2028 or 2029 is an appropriate start on this long overdue and challenging effort. The Draft 2021-2022 Study Plan fails to identify this benefit assessment as part of its TEAM or economic studies. PTE can not only displace LCR provided by existing gas-fired generation, but more importantly it is a viable transmission solution that enables the replacement of gas fired plants throughout the State (i.e. – system capacity benefit) and CAISO’s economic studies should quantify benefit of avoiding the significant continued operational and maintenance and other



costs to keep these plants running. The planning objective must be to provide reliable service at the lowest cost and that will never happen if large cost categories are ignored.

c) **PTEP provides transmission capability for the increased RA requirements ordered by the State.**

Several recent changes warrant a fresh look at the impacts on RA that can be addressed by PTE. These changes include: (1) the increase in the Planning Reserve Margin (PRM), (2) the changes in resource availability throughout the west combined with the reduced accounting of imports for Resource Adequacy, (3) the updated effective capacity or ELCC accounting, (4) the State's updated Demand forecasts, and (5) the planned retirement of the Diablo Canyon Nuclear Plant. These rule changes and events all have one commonality; they all increase the RA capacity need. The PTE is designed to access system resources from all WECC regions north of Path 26, including the northwest or from Nevada and other Balancing Authority Areas (BAAs) east of CAISO, and make them deliverable to California load pockets including LA Basin. PTE creates a parallel transmission highway to Path 26 which is a current bottleneck for energy to flow between the Southern and Northern regions of the State. *The CAISO's prior economic study demonstrates the congestion reduction benefits of PTE but has failed to properly value this benefit because the production cost results only quantify energy costs savings.* The current energy cost savings calculation is flawed because CAISO's basecase (with heavy curtailments in the Base Portfolio) begins with a negative or low-price energy cost for load. When projects such as PTE eliminate congestion and curtailments, the energy price to load increases because the system marginal energy costs now increase once the over-supply or congestion conditions are mitigated. This erroneous result provides a disincentive for the State to view transmission as a viable alternative to depressed market pricing. Ratepayers through their PPAs are likely still paying for curtailed energy as deemed delivered along with replacement energy at CAISO market prices and so the benefits of transmission will never be identified in the current application of TEAM. We request CAISO to re-evaluate the current application of its TEAM model to better account for the cost benefits from enhancing the grid and increasing import capability of Resource Adequacy, including the import capability between the Northern and Southern regions of the State.

You do not have to look far to find a real-world example of how these benefits can play out in California. In 2008, the CPUC approved the need of the Sunrise Powerlink. At the time, the



proponent of the project had made a commitment to displace the need for fossil-based resources that satisfied the LCR of the region with renewable energy resources.

- a. Today, the Sunrise Powerlink has facilitated the development of over 1000MW of renewable energy in the Imperial Valley. The Sunrise Powerlink has enabled the renewable energy development in the Imperial Valley to be fully deliverable to the once capacity constrained region of San Diego.
- b. Today, the Sunrise Powerlink has furthered the state's Public-Policy objectives by facilitating the retirement of fossil-based OTC resources and lessening the states dependency on fossil fuel resources, while at the same time, facilitating the ability of the grid to deliver clean renewable energy resources.
- c. Today, the Sunrise Powerlink is also poised to facilitate the growing needs of resource adequacy in the region. As the state moves forward to decarbonize the transportation sector, there will be a growing need to be able to deliver clean carbon free resources such as wind and solar power.

Today, the Sunrise Powerlink is able to deliver all of these benefits while doing so at a significant cost savings to the State. At the time that the Sunrise Powerlink was approved by the CAISO, the CAISO took into consideration not just the energy related costs associated with avoidance of the fossil-based resources, but also the capacity related costs of keeping those fossil-based resources available to the region. The combination of the energy related costs and the capacity related costs associated with keeping the State dependent on the fossil-based resources must be looked at in their entirety when compared with new transmission solutions that provide access of clean renewable energy to be delivered into capacity constrained regions that are highly dependent on fossil-based resources.

## 5. Other PTE Benefits

- a. **Grid Reliability:** The PTE will provide reliability support to the Big Creek/Ventura area of SCE, specifically within the Goleta area. The Goleta area is subject to voltage collapse issues under a double line (N-2) outage of the two 220 kV lines feeding Goleta substation from Santa Clara substation. Western Grid suggests that CAISO did not properly evaluate or consider in its modeling the full capabilities of PTE's HVDC VSC technology. The proposed PTE will mitigate Goleta's voltage collapse issue by providing up to 500 MW into Goleta in the event of an outage. Further, as noted in the CAISO 2020 Local Capacity Technical Study, page 165, the Elwood generating station *"will only be allowed to retire after suitable replacement is in place at or near the same bus (Goleta)"*. The PTEP is proposed to have a direct connection to Goleta substation and would serve as a viable replacement for the Elwood generating station



and eliminate the need for Elwood to be under a Reliability Must Run (“RMR”) contract. With respect to the “flexibility” of gas fired plants, the PTE with its associated converter stations can provide greater grid support than gas fired generation. The PTE converters with their grid forming attributes, can respond much faster than the synchronous generators used on gas fired units. The faster response applies both in reaction time and impact for AC voltage control and frequency stabilization while providing effective short circuit capacity and system damping requirements.

- b. **Wildfire mitigation:** The PTE will reduce the risk of another wildfire cutting off electric service to the LA coastal area. The PTE with its associated subsea cables would have enabled CAISO to by-pass the problematic transmission areas interrupted by the wildfires. *With PTE, CAISO could have kept the lights on in the LA Basin even without the local gas plants being ‘on-line’ when service from the terrestrial lines from the east were cut off last summer.* With the vast number of MW’s in the CPUC resource portfolio assumed to be coming from solar and batteries that will be located in the interior part of the State and which will require additional terrestrial transmission to reach the coastal population, it makes economic and technical good sense to have at least some capacity delivered by subsea cables that do not involve dealing with the same wildfire risks. Therefore, we ask the CAISO to analyze and give due consideration to this important benefit. Avoiding service interruptions due to wildfires provides a benefit that cannot be over-valued.

We appreciate CAISO’s consideration of our comments and stand ready to discuss the PTEP’s benefits with the transmission planners.

Thank you for your consideration!

Sincerely,

A handwritten signature in blue ink that reads 'Christine Vangelatos'.

Christine Vangelatos  
on behalf of Western Grid Development, LLC