

The ISO received comments on the topics discussed at the February 28, 2020 stakeholder meeting from the following:

1. [Bay Area Municipal Transmission group \(BAMx\)](#)
2. [California Public Utilities Commission – Staff \(CPUC-Staff\)](#)
3. [EDF Renewables North America](#)
4. [GridLiance West \(GLW\)](#)
5. [Imperial Irrigation District \(IID\)](#)
6. [Public Advocates Office \(PAO\)](#)
7. [Pacific Gas & Electric \(PG&E\)](#)
8. [Smart Wires](#)
9. [Silicon Valley Power \(SVP\)](#)
10. [South Western Power \(SWPG\)](#)
11. [TransWest Express LLC](#)

Economic Study Requests

1. [Calpine](#)
2. [conEdison](#)
3. [GridLiance West \(GLW\)](#)
4. [LS Power Development LLC \(LS Power\)](#)
5. [SmartWires](#)
6. [Western Grid Development \(Western Grid\)](#)

Copies of the comments and economic study requests submitted are located on the 2020-2021 Transmission Planning Process page at:
<http://www.caiso.com/planning/Pages/TransmissionPlanning/2020-2021TransmissionPlanningProcess.aspx>

The following are the ISO's responses to the comments.

1. Bay Area Municipal Transmission group (BAMx) Submitted by Paul Apolinario		
No	Comment Submitted	CAISO Response
1a	<p>The Bay Area Municipal Transmission group (BAMx) appreciates the opportunity to comment on the California Independent System Operator (CAISO) Draft 2020-21 Transmission Planning Process (TPP) Unified Planning Assumption and Study Plan (Study Plan). The comments and questions below address the Study Plan posted on February 21, 2020, and as discussed during the February 28, 2020 stakeholder meeting. We continue to see positive enhancements being made to each year's plan and look forward to continuing to work with the CAISO to continuously improve the planning process.</p> <p>Similar to what we have observed in the previous planning cycle, there continues to be much uncertainty in the current planning environment. While system loads are forecast to decline and the time of peak demand is shifting, major issues are also being discussed including (1) what is the impact of the purposeful interruption/clearing of transmission lines that leads to the interruption of load (2) State policy to reduce the use of gas-fired resources which can cause early economic retirement, (3) increasing potential for storage development to fulfill a system-wide resource need, and (4) the impacts of efforts in transportation electrification - and these issues are only just starting to come into view. In such a changing environment, maintaining flexibility and careful consideration of long-term investments is critical.</p>	The comment has been noted.
1b	<p>Urgent Need for a Comprehensive Wildfire Impacts Analysis</p> <p>The California IOUs are utilizing Public Safety Power Shutoff (PSPS) procedures as a preventive measure in order to keep the powerlines from causing additional wildfires. When asked at a California Public Utility Commission (CPUC) meeting in October 2019, PG&E stated it could take ten years before such outages are "really ratcheted down significantly" and therefore are likely to happen throughout the planning horizon. BAMx would urge the CAISO to conduct planning studies on transmission-related PSPS events in advance of the 2020 fire season. We urge the CAISO to include PSPS planning studies in its 2020-2021 transmission planning cycle which provides a well-established process for stakeholder engagement, review and feedback. Although the CAISO indicates they study extreme events as part of their normal planning process, they usually do not share results of these</p>	The CAISO will be undertaking in the 2020-2021 transmission planning process analysis related to wildfire risks as a part of the reliability assessment.

No	Comment Submitted	CAISO Response
	<p>analyses with stakeholders. So those potentially impacted by these extreme events are not sufficiently informed. Any critical infrastructure information used in the studies could also be protected by the CAISO's confidentiality and security arrangements as was done in the CAISO's San Francisco Peninsula Extreme Event Analysis.</p> <p>A good way to truly understand the full scope of impacts that can result from temporary (?) de-energization of transmission lines is to conduct studies based on likely de-energization scenarios. We understand the IOUs conduct planning studies just before an actual PSPS event to guide their actions. However, "just-in-time" studies are simply reactionary in nature and are ineffective in actuating large-scale improvements. While wildfire transmission risk assessment may be non-traditional in the CAISO's TPP, the CAISO is in a unique position to provide the leadership, knowledge and stakeholder process to accomplish this needed work. Coordination and collaboration on studies of this type would have far-reaching benefits and further the State's objective of preparing for and mitigation of the adverse impacts of catastrophic wildfires.</p>	
1c	<p>BAMx Supports Evaluating the Storage Potential</p> <p>With a large amount of energy storage expected to interconnect to the CAISO network within the foreseeable future, it is very important to identify locations where these storage resources will provide the most cost-effective siting by taking into account the reliability needs of the CAISO operated transmission system. The storage projects will require a large amount of capital investment. The simplest ways for the developers to interconnect storage projects may be in the proximity of the existing generation. These locations might not coincide with locations where the storage could provide the most benefits, such as reducing the need for new transmission, LCR reduction, etc. It is critical that, in addition to providing the updated zonal transmission capability estimates, the CAISO needs to play a key role in helping the CPUC and the California Energy Commission (CEC) in identifying appropriate locations and types of storage resources.</p> <p>BAMx supports the study of storage as a potential LCR reduction mechanism. Through such studies, the CAISO should be able to determine where the local</p>	<p>The CAISO is continuing to provide the required support to the CPUC in order to map storage identified in the sensitivity portfolios for the 2020-2021 TPP.</p> <p>The CAISO has performed energy storage local capacity assessment in some areas as part of the 2021 and 2025 Local Capacity Technical Study. The findings will be used to assist the storage mapping exercise.</p>

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	<p>storage challenges are, and how much storage can be sited in certain local areas and sub-areas taking into account any charging restrictions</p>	
1d	<p>BAMx Supports not using the full Capital Cost of Storage when considering it as a Potential Mitigation Option CAISO notes the resource mix shown in the CPUC base portfolio includes 1,157 MW of 1.3-hour storage and up to 1,000 MW of 4-hour storage. However, the CPUC staff has not mapped the generic storage resources to specific locations for the base portfolio and therefore the CAISO intends to consider these resources as potential mitigation options for reliability needs identified in the TPP.</p> <p>As recommended by both the CPUC and the CAISO, BAMx supports studying the use of storage as a mitigation measure without including the full capital cost. As reflected in the Commission-provided base portfolio, the Load Serving Entities (LSEs) are expected to procure a very large amount of storage to serve the system resource needs. We assume that at least a part of that procurement will be in local areas and sub-areas. Since the LSEs are expected to bear the cost of such procurement, there is no need to consider its full capital cost while comparing it with other mitigation alternatives. Having said that, BAMx understands that the CAISO should include the incremental costs² associated with the candidate energy storage options.</p>	<p>The comment has been noted.</p>
1e	<p>BAMx Supports Mapping of Energy Storage in the Sensitivity Portfolios Identifying the proper storage locations and types of storage could maximize the economic benefits from each storage resource by minimizing the additional network upgrades required to incorporate storage and renewable resources. During the February Stakeholder call the CAISO has notified the stakeholders that the “CPUC staff is in the process of mapping generic storage to specific locations for the sensitivity portfolios.”³ BAMx encourages the CAISO to work with the CPUC staff in order to identify the most optimal storage locations for each sensitivity portfolio.</p>	<p>The comment has been noted. The CAISO plans to map and model energy storage selected in the sensitivity portfolios as part of the 2020-2021 TPP policy assessment.</p>

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1f	<p>Verify the Transmission Project Needed to Accommodate OOS Wind CAISO has indicated that the policy-driven sensitivity portfolio #1 based upon the reference system portfolio in the CPUC 2019-2020 Integrated Resource Planning (IRP) process includes ~600 MW of Out-Of-State (OOS) wind resources.⁴ It is not clear if these wind resources require new transmission or whether such could be accommodated on existing transmission. BAMx requests the CAISO to provide additional information on how these wind resources will be accommodated and modeled as part of the policy-driven sensitivity portfolio #1. We believe the CAISO has correctly indicated that new transmission to accommodate OOS resources should be part of the CPUC IRP process. Please clarify what the CAISO assumptions are with respect to this 600 MW of OOS wind resources.</p>	<p>606 MW of OOS "Mew_Mexico_Wind" resource in the reference system portfolio is categorized as "Wind OOS New Tx" in the latest RESOLVE Results Viewer indicating that it required new transmission based on the RESOLVE assumptions.</p> <p>The CAISO plans to represent this amount of wind resources near Palo Verde. The CAISO will not make any assumptions or evaluation of the OOS transmission required to deliver this resource to Palo Verde.</p>
1g	<p>Identify Maintenance Projects During the 2019-2020 TPP cycle, the CAISO has identified maintenance projects as mitigation measures for various thermal violations⁵. These maintenance projects do not go through the traditional CAISO approval process; however, it would be beneficial for stakeholders and market participants to be aware of all modifications regardless of whether they resolve an identified network violation. BAMx suggests the CAISO include a single table or other means of identifying all maintenance projects that involve changes to the CAISO operated transmission system.</p>	<p>The participating transmission owners are responsible for the capital maintenance projects with mechanisms in place for reporting their projects. The CAISO has reviewed specific projects for concurrence if the required capital maintenance projects have potential impacts to the long-term transmission plans.</p>

2. California Public Utilities Commission – Staff (CPUC-Staff) Submitted by: David Withrow		
No	Comment Submitted	CAISO Response
2a	<p>Overview of IRP resource portfolios to be utilized for this 2020-2021 TPP Because of the close timing of the CAISO's first stakeholder meeting for this TPP and the release of the CPUC's Proposed Decision on the 2019-2020 Reference System Plan¹, the CAISO's posted Draft TPP Study Plan includes an editorial note which explains that the CPUC will soon transmit a base portfolio of resources for the purpose of being studied as part of the reliability assessment, policy-driven and economic assessment in the 2020-2021 TPP. The CAISO's presentation deck for this February 28, 2020 meeting briefly identifies the base portfolio. CPUC Staff welcomes this opportunity to clarify the nature of this portfolio, as well as the purpose of two other resource portfolios to be studied as information-only sensitivities.²</p> <p>The CPUC Proposed Decision adopts the updated 2017-2018 Preferred System Portfolio (PSP) for analysis in this 2020-2021 TPP, which is similar to the base case portfolio used in the 2019-2020 TPP but updated appropriately. This is different from the proposed Reference System Plan recommended by CPUC staff in November 2019³ and the more recently developed Reference System Portfolio (RSP) which is proposed to inform the formation of individual LSE integrated resource plans to be filed this summer</p> <p>The Proposed Decision⁴ explains why: <i>The CAISO suggested not using any of the new scenarios at all for the base cases for this TPP. Instead, they suggested utilizing the 2017-2018 PSP, with some adjustments. They gave two primary reasons. First, the 2,000 MW of generic capacity would have unknown locations on the grid, because the actual type of capacity is unknown. Therefore, this assumption cannot be utilized for TPP purposes. Second, the amount of battery storage in this portfolio in all the RSP scenarios for 2019-2020 is very large compared to the 2017-2018 PSP, and a detailed methodology for mapping the battery storage to busbars has not been developed and vetted. Thus, the CAISO is very uncomfortable with the prospect of using this portfolio as a base case, potentially leading to certain transmission</i></p>	<p>The comment has been noted.</p>

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	<p><i>investment, when the locations of such a large amount of resources would be completely uncertain.</i></p> <p><i>Therefore, we will continue to utilize, as recommended by the CAISO, the 2017-2018 PSP as the reliability and policy-driven base case for this cycle of the TPP.</i></p> <p>CPUC Staff is actively working with CAISO staff to overcome the challenges that the new RSP might present for TPP modeling, particularly the mapping of large amounts of storage to specific substations, a critical step for the CAISO to be able to comprehensively study transmission needs.</p> <p>In this regard, CPUC Staff notes that a methodology for mapping storage to busbars is being developed and will be posted within the next few weeks. This will be especially useful since the Proposed Decision also adopts the 2019-2020 Reference System Portfolio (RSP) as a policy-driven sensitivity for the CAISO to analyze. <i>This will allow for a comprehensive transmission impact analysis of the high quantity of storage included in the 2019-2020 RSP. The storage in the portfolio was selected by RESOLVE to meet the 2030 GHG target at least cost, while ensuring reliability. Although it is impossible to predict exactly where on the transmission system this amount of storage will be built by 2030, due largely to the high mobility and flexibility of storage, analysis of the 2019-2020 RSP as a policy-driven sensitivity will help identify the potential implications of the storage for the transmission system. Commission staff will provide a full description of the methodology used to map storage to busbars in the updated version of the busbar mapping methodology to be released in March 2020.5</i></p> <p>As a second policy-driven sensitivity, the Proposed Decision adopts a portfolio based on the 30 million metric ton scenario to test the impact of energy-only deliverability status for some generators on congestion.</p> <p><i>This sensitivity should give us additional information on co-optimization of generation and transmission to support the next round of IRP analysis. This sensitivity should help test whether there are areas in which the benefits of</i></p>	

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	<p><i>inexpensive transmission solutions can outweigh their costs, by reducing curtailment of renewables.</i></p> <p><i>Depending on the results of this sensitivity, the CAISO may test upgrade options to mitigate renewable curtailment in certain zones in order to provide the upgrade information back to the IRP process in the next cycle.⁶</i></p> <p>CPUC Staff appreciates the CAISO's efforts throughout 2020 to share useful information from their analysis of these two scenarios, which should be highly informative for the development of future TPP base case portfolios.</p>	
2b	<p>Detailed Comments</p> <p>1. Generation Modeling</p> <p>Section 2.7.3 of the Draft Study Plan notes that new thermal generation projects in construction or pre-construction phase that will be modeled in the base cases. In the 2019-2020 Final Study Plan, the CAISO identified five levels of guidelines that are used to model new generators in the base cases for each study, ranging from "under construction" to "press release only."</p> <p>It would be helpful if the 2020-2021 Final Study Plan more fully explains how these guidelines are used to determine inclusion in the TPP, and whether this criterion pertains only to thermal generation or includes other resource types.</p>	<p>Generally the five levels of generation projects status used for modeling in base cases are applicable to all resource types. There are also some criteria specific to conventional (thermal) resources, like modeling of conventional resources with pre-construction status in 2-5 year base cases.</p>
2c	<p>2. Generation Retirements</p> <p>Section 2.7.5 of the Draft Study Plan points to Table A3-1 of Appendix A for the list of generator retirements as applicable to TPP modeling. It would be helpful if Section 2.7.5 also specifically clarified the CAISO's retirement assumptions for thermal generation as they compare to the retirement assumptions used by the CPUC's IRP process which are explained in Section 7 of the "CPUC Staff Report: Modeling Assumptions for the 2020-2021 Transmission Planning Process Release 1 (Base Portfolios)"⁷.</p>	<p>Announced generation retirements are consistently modeled in the CAISO TPP and the CPUC IRP processes. Additional retirement scenarios are considered beyond that in both processes as documented.</p>
2d	<p>Base Case Modeling Results</p> <p>Looking ahead to September 2020 when the CAISO presents preliminary results of the base case assessment, the CPUC Staff suggests it would be helpful to summarize the results both before and after storage resources are considered. This information could be helpful for all participants to understand</p>	<p>The comment has been noted.</p>

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	<p>where potential constraints are on the grid, and to quantify the value of locating storage in these locations and the value of storage in mitigating any transmission issues that are identified</p>	
2e	<p>4. Methodology for Potential Mitigations to Transmission Constraints Section 2.8 of the Study Plan discusses the CAISO's previous analysis of potential mitigations to transmission constraints using demand response, energy efficiency, renewables and storage. This section cites examples of the methodology explained in a 2013 White Paper as well as a 2017 evaluation of local capacity solutions for the Moorpark area. It would be helpful to update this section, specifically to include more details about the methodology for studying storage as a mitigation option.</p> <p>CPUC Staff further suggests including within the TPP Study Plan the distinct steps to be used for this analysis of potential mitigation using storage resources, like the level of detail provided in the Moorpark evaluation. This could include where cost and other assumptions are needed, and how they are made. This kind of clarity and transparency would be greatly valued by many stakeholders, especially considering the amount of storage that could be available as possible solutions.</p> <p>Also, Section 2.8.1 of the draft Study Plan suggests that "in some situations the storage could be approved as a transmission asset" though the footnote explains that the CAISO's "SATA" stakeholder engagement remains on hold. It would be helpful to clarify with greater detail how and when the CAISO will consider storage as a transmission asset for the purposes of this TPP</p>	<p>Energy storage, along with other mitigation alternatives, are considered as potential alternatives for identified reliability constraints. The level of detail as in the Moorpark evaluation is performed for hour-by-hour validation after the energy storage alternative is found to be feasible and economic compared to other alternatives.</p> <p>In general, for the purpose of the transmission planning process, an energy storage alternative could be considered as a transmission asset to mitigate a transmission constraint if it provides and does not function as a market resource. The SATA initiative is currently on hold, pending policy development of broader market design issues.</p>
2f	<p>5. Scenario Modeling Results CPUC Staff further suggests that CAISO consider creating a preferred format for displaying results of the base case and policy-driven scenarios later in this TPP cycle that are particularly pertinent to the integrated resource planning process. An expanded dashboard-like summary of results of the studies of the mapped storage in specific regions – including potential costs of mitigation options -- would be useful as a high-level explanation of the study scenarios and would improve the accessibility of the information for all stakeholders.</p>	<p>The comment has been noted and the CAISO will look into ways of enhance presenting the study results of the analysis.</p>

3. EDF Renewables North America Submitted by: Justin Radl		
No	Comment Submitted	CAISO Response
3a	<p>Near term economic model development (2-5 year horizon): Given the large resource transition that CAISO has experienced, EDFR feels strongly that CAISO should be evaluating economic transmission constraints on a near-term basis, such as 2-5 years out. In doing so CAISO would be better suited to address underlying economic constraints that may arise from the proposed Deliverability Methodology and understand the Benefit/Cost tradeoff between new infrastructure and congestion and curtailment costs. A near-term model is reflective of status quo. By having a near term economic model CAISO and its members will have a better understanding of the impacts due to the current resource transition and be able to identify transmission issues that may require a more near-term solution. Failure to identify and address areas of high congestion and curtailment as they develop will negatively impact the development of new resources as well as cause customers to bear increased costs of unmitigated market constraints</p>	<p>The production cost model (PCM) for the transmission planning study is a WECC-wide system model that uses the WECC-wide ADS PCM as a starting point. Currently, every two years the planning regions in coordination with WECC develop the 10-year ADS PCM.</p>
3b	<p>Frequency of the Stakeholder Process: The current process has limited stakeholder involvement during the planning study; therefore, CAISO should consider holding additional stakeholder meetings between now and September 2020 to share preliminary results and issues, respond to stakeholder comments, and request additional feedback on potential solutions. This could possibly happen in Mid-Late April after the initial project screening and model development has been completed. Such approach is the norm in most if not all other Independent System Operator (ISO) markets.</p> <p>a. Transmission Solutions Adjustments window: Currently transmission solutions are submitted prior to identifying system constraints and issues, this leads to ineffective solutions because transmission developers are not able to validate and test their proposals in the models that will be used. CAISO should publish an identified list of transmission needs for which proposals will be sought. At minimum, CAISO should allow stakeholders a review window to revise proposals based on identified needs. This procedural change would result in much better results.</p> <p>Transmission Model Review: CAISO should make the transmission models available for review and analysis prior to a revision window for the proposed</p>	<p>The CAISO will be holding an additional stakeholder meeting on June 3 to provide an update on transmission planning process activities and approaches to studies.</p> <p>As per the CAISO tariff, the reliability assessment results are posted on August 15 that initiates the Request Window, which closes on October 15, for alternatives to address the reliability constraints identified in the August 15 posted results. The base cases used in the reliability assessment are posted on the CAISO Market Participant Portal approximately a week after the results are posted on August 15.</p>

No	Comment Submitted	CAISO Response
	transmission solution ideas. Ideally this would be after the initial screening to allow stakeholders to review their proposals with the study model and modify their proposals to address perceived shortcomings.	
3c	<p>2000MW Net Export Limit: In the 2019-2020 planning study results the CAISO made a significant point to show the results of system curtailment with and without the net export limit applied. However, it is not explained in either the 2019-2020 draft report or the 2020-2021 system plan the significance of this limitation, if it will be implemented, why it is implemented, and specifically the analysis that the CAISO uses to determine why 2000MW is the appropriate limit to use. <i>Can CAISO explain within the 2020-2021 TPP study plan or via a white paper address the use of this limit in their transmission plan?</i> Additionally, if policy initiatives such as the Extended DA market would affect the use of this limit it would be appreciated if CAISO could clarify how the export limit would change.</p>	The comment has been noted.
3d	<p>CAISO should provide a mapping of new generation in the models: In order to ensure that stakeholders are understanding the buildout used in the transmission plans CAISO should clarify how CAISO planning regions and the CEC resource mapping regions overlap and clearly identifying these resources in the models. Currently it is very difficult to determine the relationships between CEC resource zones and CAISO planning zones. As with the other points above, sharing the siting plan of future resources for stakeholders 'review and feedback is a standard practice in other ISOs.</p>	<p>The CEC's busbar mapping results for all three portfolios are available at the following link:- https://caenergy.databasin.org/galleries/eab0ce3a5be447ce928a310e80c65c8d#expand=208848</p> <p>The portfolios indicate the MW amounts modeled at each substation and lists the transmission zone (Tx zone) for each substation. These transmission zones do not perfectly align with the CAISO reliability assessment planning areas as the transmission zones are mostly based on known transmission constraints that limit deliverability of generation in the GIDAP studies while the study areas in transmission planning process reliability assessment are mostly based on the load serving areas.</p>

4. GridLiance West LLC (GLW) Submitted by: Jody Holland		
No	Comment Submitted	CAISO Response
4a	<p>Encouragement to Include Necessary Transmission Elements in Base Case Model to Accommodate Renewable Buildout on GLW System GLW encourages the CAISO to include any transmission elements necessary to accommodate renewable buildout in the GLW system as part of its reliability base case model. In the 19/20 TPP, GLW noticed that the CAISO considered RAS and other non-wires solutions to manage flows from GLW-area renewables, but that in the course of the economic study the CAISO included phase angle regulators to ensure that flows on the adjacent NVE system would not have significant adverse impacts. If the CAISO believes phase angle regulators or other similar transmission equipment is required, then GLW requests that the CAISO includes these elements as part of its base case model for the reliability, policy and economic studies.</p>	<p>The 2020-20201 transmission planning process Study Plan sets out the transmission assumptions for the reliability, policy and economic assessments of this year's planning cycle. The Gamebird Transformer Upgrade project was the only project approved in 2019-2020 transmission planning process in the GLW area. No other project were identified as being required in the GLW area in the policy and economic assessment to accommodate resources in the baseline portfolio. With this, transmission upgrades other than the Gamebird Transformer Upgrade project will not be included as part of the starting transmission assumptions for base cases of the 2020-2021 transmission planning process. The CAISO will evaluate alternatives as required to mitigate transmission constraints as a part of the reliability, policy and economic assessments of the 2020-2021 transmission planning process.</p>
4b	<p>Comment on Mapping of CPUC Resources to GLW Footprint The CAISO has identified sensitivities in the GLW footprint to the mapping of the CPUC's Southern Nevada portfolio resources. GLW is pleased to continue to work with the CAISO in whatever forms are most effective to ensure the mapping of CPUC resources to GLW busses allows for productive TPP studies.</p>	<p>The comment has been noted</p>
4c	<p>Request for Clarification of CAISO's Assessment Plans for the Expanded Energy-Only Case For the Policy Sensitivity Case 2, regarding Energy-Only (EO) expanded limits in TPP, GLW requests that the CAISO clarify how it will assess the acceptability of the expanded limits based on the congestion and curtailment the CAISO observes when conducting the expanded EO case. GLW encourages the CAISO to share ideas and consult with stakeholders regarding reasonable courses of action for possible outcomes. For example, GLW sees it unreasonable that at some arbitrary level of curtailment the full EO expansion would be deemed unacceptable. The tradeoffs of higher levels of siting and resulting curtailment should be economically based and thereby should not be all-or-nothing. Further the CAISO should consider various options to alleviate</p>	<p>The CAISO plans to evaluate renewable curtailment in Sensitivity Portfolio #2. The CAISO will consider identifying renewable zones with high amounts of curtailment for evaluation of potential mitigation options (including but not limited to transmission solution and energy storage) to reduce curtailment. The results will also be available for the CPUC to incorporate in the IRP. The CAISO will provide updates on the scope of this study during the September stakeholder meeting.</p>



No	Comment Submitted	CAISO Response
	<p>the curtailment and recognizing that lower EO limits change the renewable portfolio build out costs, the CAISO should not base the economic choices on congestion benefits alone. The CAISO providing resultant information to the CPUC on various possible increases in the EO limits and the estimated transmission buildout costs of each would allow RESOLVE to then incorporate both upgrade costs and buildout costs into the siting optimization. GLW looks forward to providing input to the CAISO as its expanded EO sensitivity study is conducted.</p>	
4d	<p>Comment on CPUC Portfolio Resource Siting As a general note, GLW appreciates the CAISO encouraging the CPUC to produce portfolios that are not radically changing because of extreme sensitivities. GLW has observed that very small changes in input assumptions in the RESOLVE model can drastically change the presumed buildout. The CAISO has encouraged the CPUC to ensure resilient, diverse generation sources. GLW has done the same in its comments with the CPUC and encourages the CAISO to continue to support improvements in the CPUC portfolios that better reflect rational resource siting.</p>	<p>The comment has been noted.</p>

5. Imperial Irrigation District (IID) Submitted by: Jamie Asbury		
No	Comment Submitted	CAISO Response
5a	<p>IID understands that Smart Wires will submit comments in this stakeholder process to propose installation of a modular power flow technology, the SmartValve, to the Imperial Valley – El Centro 230 kV line (S-Line). Smart Wires is a provider of modular power flow technology worldwide, and IID welcomes the discussion of innovative solutions to power delivery systems. Upgrades to the S-Line have been identified as an economic upgrade in prior instances of the TPP, and IID is committed to a solution consistent with the concept approved previously in the CAISO's TPP and is disinclined to alter that path.</p> <p>IID is and will remain the exclusive owner of the S-Line. IID is governed by a locally constituted and elected board of directors and is not subject to the planning direction or ratemaking authority of state or federal regulatory agencies. Whether before or after the S-Line upgrades are completed, IID's express consent would be required for placement of SmartValve devices on IID's Imperial Valley-El Centro 230 kV line.</p> <p>Even if the concept proposed by Smart Wires were further explored, the proposal raises further questions that IID and the CAISO would need to resolve prior to entertaining the kind of project proposed. For example, how would Smart Wires seek to recover the costs of its investment? Is recovering its costs even possible when the infrastructure sought to be placed on a third party's system is one that is non-jurisdictional for Federal Energy Regulatory Commission ratemaking purposes and Smart Wires is a third-party unaffiliated with an existing Participating Transmission Owner? Reactive devices appear to have been considered in other TPP cycles. For example, IID is aware of the Gates reactive power proposal</p> <p>1 and Round Mountain 500 kV Area proposal,2 each of which involved reactive devices. However, both projects involved Pacific Gas and Electric Company's ("PG&E") infrastructure, which is already under CAISO Operational Control. Other questions include, what kind of metering and visibility on the part of the CAISO would be required under Smart Wires' proposal, and would such metering and visibility be feasible or effective prior to the S Line upgrades being</p>	<p>For clarity, the CAISO has not received an economic study request of this nature in the 2020-2021 transmission planning process. The CAISO expects the previously approved S-Line upgrade project that has been coordinated with IID to proceed. The concept of adding reactance to the S-Line as a further upgrade has been studied in previous planning cycles, in the form of a reactor installed at Imperial Valley inside CAISO-controlled facilities, and any such addition would have to be coordinated with IID.</p> <p>As the S-Line is not under CAISO operational control, the CAISO would expect that any addition of SmartWires technology to the S-Line can only be considered in the context of IID seeking to pursue that modification to their existing system. Any submissions to the CAISO, whether in the form of economic study requests in the CAISO regional process, or as an interregional transmission project would accordingly be coordinated with IID. Further comment will depend on the details of any request or proposal.</p>



No	Comment Submitted	CAISO Response
	completed? IID submits that it is critical for the CAISO to analyze these questions before considering the proposal in the context of criteria used in the TPP.	

6. Public Advocate Office Submitted by: Lina Khoury		
No	Comment Submitted	CAISO Response
6a	<p>Discussion and Recommendations</p> <p>1. The CAISO should include incremental costs of energy storage as part of comparing it to competing transmission reliability mitigation alternatives.</p> <p>The CAISO indicated it would follow the ED staff's suggestion to not include the full capital cost of energy storage in the assessment of alternatives when considering portfolio-selected storage as a mitigation option for reliability issues. The Public Advocates Office supports using energy storage as a mitigation measure without including the full capital cost in such assessments because storage costs will be paid for by load-serving entities (LSEs). The Commission provided portfolio includes more than 2,000 MW of energy storage that would be procured by LSEs. Some of this storage will be sited in local areas as part of the procurement mandate. Therefore, it is reasonable to assume that the cost of energy storage will primarily be borne by the individual or group of LSEs. However, the Public Advocates Office recommends that the CAISO include the incremental costs⁴ of energy storage when comparing it with competing reliability mitigation alternatives to understand the impact of the additional cost of storage to ratepayers.</p>	The comment has been noted.
6b	<p>2. The CAISO should conduct studies on the potential use of energy storage in local capacity areas and provide its findings to stakeholders.</p> <p>The CAISO plans to evaluate the potential use of energy storage to address transmission reliability issues in all local capacity requirement (LCR) areas.⁵ The Public Advocates Office supports the CAISO's proposed evaluation of energy storage in LCRs. New studies would enable the CAISO to determine the location and level of local energy storage challenges, as well as how much energy storage CAISO can site in local areas and sub areas if there are no challenges. Therefore, the Public Advocates Office recommends that the CAISO obtain relevant information from ED staff to conduct these studies and to provide its findings, conclusions, and recommendation to stakeholders.</p>	The comment has been noted
6c	<p>3. The CAISO should explain the methodology of how it will model approximately 600 MW of out-of-state wind resources in its sensitivity analysis.</p>	

No	Comment Submitted	CAISO Response
	<p>The CAISO presented policy driven-sensitivity portfolio #1 in the TPP, which is a reference system portfolio of the 2019-2020 IRP that includes approximately 600 MW of out-of-state wind resources.⁶ The CAISO presented this sensitivity portfolio in general terms and did not provide information on whether the out-of-state wind resource will connect to the CAISO's existing transmission line or to a new transmission line.</p> <p>The Public Advocates Office requests that the CAISO provide additional information on how it will access this out-of-state wind resources. Specifically, the CAISO should clarify whether it will model the out-of-state wind resources by "injecting" the resources at one of the existing CAISO tie-points or whether the CAISO plans to model the new transmission upgrade required to access the wind resource.</p>	<p>The 606 MW of out-of-state wind selected in Sensitivity Portfolio #2 will be assumed to be injected at Palo Verde based on the portfolio mapping data posted by the CEC staff. The CAISO cannot comment on the point of interconnection of a specific out-of-state resource/s. The CAISO will not model out-of-state upgrades that may be required to deliver 606 MW to CAISO boundary.</p>
6d	<p>4. The CAISO should work with ED staff to model and map energy storage in the IRP sensitivity portfolios.</p> <p>In the TPP, the CAISO presented the concept of generic energy storage mapping⁷ and modeling based on the Commission's base and sensitivity portfolios in the IRP.⁸ While the CAISO indicated that the ED staff has not mapped the generic storage resources to specific locations,⁹ it states that, per the Commission's recommendation,¹⁰ the CAISO will consider energy storage mapping and modeling as potential mitigation options for transmission reliability needs as identified in the TPP.¹¹ Furthermore, the CAISO indicated that ED staff is in the process of mapping generic storage to specific locations for the sensitivity portfolios.¹²</p> <p>The Public Advocates Office encourages the CAISO to coordinate with the Commission's ED staff to model the entire storage capacity mapped at specific locations in the sensitivity portfolios. The Public Advocates Office requests that the CAISO update stakeholders regarding the initial and adjusted mapping of the storage resources.</p>	<p>The CPUC staff has posted the storage mapping data at the following link: ftp://ftp.cpuc.ca.gov/energy/modeling/BusbarMapping-Results-Battery-2020-03-30.xlsx</p>
6e	<p>5 The CAISO should include sensitivity analysis in its economic assessment studies.</p> <p>The CAISO indicated that it would perform its typical economic planning study as part of the 2020-2021 transmission planning cycle to identify potential congestion and related economic transmission projects. Also, the CAISO stated that it will apply its transmission economic assessment methodology (TEAM) to</p>	<p>The comment has been noted.</p>



No	Comment Submitted	CAISO Response
	<p>assess congestion analysis, study request evaluations, and economic assessments and will use the same assumptions to conduct reliability assessment and policy driven transmission analyses.¹³</p> <p>The Public Advocates Office recommends that the CAISO include sensitivity analyses in TEAM to evaluate how transmission congestion patterns and the transmission project's economic viability are impacted by inherent risk and uncertainties.</p>	

7. Pacific Gas and Electric (PG&E) Submitted by: Mike Pezone		
No	Comment Submitted	CAISO Response
7a	<p>PG&E appreciates the opportunity to provide comments in the 2020-21 Transmission Planning Process. PG&E has learned lessons in procuring and developing two transmission battery storage projects – Dinuba and Oakland projects. Based on our experience, PG&E recommends that the CAISO initiate a stakeholder discussion to develop a process by which to incorporate an appropriate margin for determining the MW and MWh needs of approved storage projects in the future.</p> <p>After these two projects were approved in the 2017-18 TPP, new information presented in subsequent TPPs led to an increase in procurement scope. For example, the Dinuba 7MW battery was increased to 12MW. In contrast to a traditional wires project that builds long-term capacity additions, battery projects are sized to the exact need specified which may change from year to year based on load forecasts, etc. The changing need and increasing scope present a challenge for the commercial process of procuring and contracting such a project.</p> <p>PG&E does not have a specific recommendation to remedy this situation. However, one idea might be to incorporate a procurement margin based on the historical statistical variation in the inputs that determine storage project scope.</p>	<p>The CAISO will look to provide further stakeholder discussion on these issues in the 2020-2021 transmission planning process during the assessment of alternatives to mitigate identified constraints.</p>

8. SmartWires Submitted by: Chris Ariante		
No	Comment Submitted	CAISO Response
8a	<p>Smart Wires appreciates the opportunity to provide input for the 2020-2021 TPP assessment and is encouraged by the potential this process enables for ensuring reliability while increasing efficiency of the system for the benefit of California's ratepayers. Smart Wires sees considerable opportunity to reduce energy and capacity costs with flexible and targeted power flow control solutions, many of which are presented in the comments below. Smart Wires asks that the CAISO leverage their expertise to further explore opportunities to not only increase grid efficiency but create a more flexible network designed to accommodate future uncertainty.</p> <p>Transmission Planning is an evolving process which must account for the increasingly dynamic and unpredictable trends of climate change driven policy and market changes. Smart Wires believes modular power flow control technology, namely the SmartValve™, is uniquely positioned to help transmission systems accommodate these uncertain long-term planning assumptions. The comments below provide potential methods and locations where Smart Wires' sees current opportunity for leveraging this technology to increase grid efficiency and reduce costs for ratepayers.</p>	<p>The CAISO will continue to assess and consider flow control devices as alternatives in the development of mitigation plans.</p>
8b	<p>1. Ensure Consideration of Power Flow Control Alternatives Smart Wires requests that the CAISO evaluate power flow control solutions, (PFC), as an alternative for all reliability, economic, or public policy needs identified within meshed areas of the network.</p> <p>Smart Wires believes CAISO's adoption of such a practice has the potential to yield significant cost savings and enhance grid flexibility. The exact location of new generation additions, associated dispatch profiles, and load forecasts have become increasingly difficult to predict. Flexible power flow control solutions provide an alternative for efficiently managing the network amidst these uncertain planning assumptions. PFC solutions can resolve long term planning needs at significantly lower costs when compared to traditional fixed infrastructure investments while minimizing impact on the environment and reducing permitting requirements.</p>	<p>The CAISO will continue to assess and consider flow control devices as alternatives in the development of mitigation plans.</p>



No	Comment Submitted	CAISO Response
	<p>Smart Wires recognizes that power flow control is not a “one-size-fits-all” solution, but recommends that the CAISO consider it as part of their evaluation for all thermal constraints identified in meshed areas of the network. In doing so, Smart Wires believes that the CAISO may identify additional opportunities to provide ratepayer savings and implement solutions with the greatest societal benefits.</p>	

9. Silicon Valley Power (SVP)
Submitted by: Jeewan Valath

No	Comment Submitted	CAISO Response																																																																																																																		
9a	<p>SVP believes the CAISO should, as part of the 2020-2021 TPP process, develop a long-term plan to reliably serve the Santa Clara/San Jose area. As noted in SVP's October 10, 2019 comments, the Preliminary Assessment Results identify multiple planning criteria violations serving the Santa Clara/San Jose load area for the baseline cases as well as the sensitivity case that models the load forecast provided by SVP. The later-published 2019-2020 Draft Transmission Plan continues to identify the same multiple violations. Within the Preliminary Assessment Results for the Greater Bay Area (GBA), the CAISO has identified "Continue to Monitor Load Growth" as the mitigation measure for these overloads¹. SVP does not believe this mitigation measure is adequate. Specifically, SVP is concerned that identified transmission upgrades will not be constructed before the load growth forecasts become actual, as history has shown that CAISO-approved projects in the GBA fail to be constructed within expected time frames.</p> <p>As identified in the table below, a lead-time of 6 to 15 years is common, even for projects of limited scope:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #D3D3D3;"> <th style="width: 35%;">PROJECT NAME</th> <th style="width: 10%;">ISO Approval</th> <th style="width: 10%;">CONSTRUCTION STATUS**</th> <th style="width: 10%;">Year the Project Expected to be in Service</th> <th style="width: 10%;">DATE IN SERVICE per 2020Q1 AB970</th> <th style="width: 15%;">Project Lead Time (Years)</th> </tr> </thead> <tbody> <tr><td>Kearney-Healdton 230 kV Line Reconnector</td><td>2013</td><td>Operational</td><td>2019</td><td>Jan-19</td><td>6</td></tr> <tr><td>NRS-Scott 115 kV Line Reconductoring</td><td>2013</td><td>Operational</td><td>2019</td><td>Feb-19</td><td>6</td></tr> <tr><td>Wheeler Ridge-Weedpatch 70 Line Reconductoring Project</td><td>2013</td><td>Operational</td><td>2019</td><td>Mar-19</td><td>6</td></tr> <tr><td>Metal-Elvert 115 kV Lines</td><td>2002</td><td>Operational</td><td>2019</td><td>Apr-19</td><td>17</td></tr> <tr><td>Kearney-Caruthers 70 kV Reconductoring</td><td>2013</td><td>Operational</td><td>2019</td><td>May-19</td><td>6</td></tr> <tr><td>San Bernard-Tejon 70 kV Line Reconductoring Project</td><td>2014</td><td>Construction</td><td>2020</td><td>Jan-20</td><td>6</td></tr> <tr><td>Fulton-Fitch Mountain 60 kV Reconnector</td><td>2009</td><td>Construction</td><td>2020</td><td>Apr-20</td><td>11</td></tr> <tr><td>West Point - Valley Springs 60 kV Line Reinforcement</td><td>2007</td><td>Construction</td><td>2020</td><td>Aug-20</td><td>13</td></tr> <tr><td>Pittsburg 230/115 kV Transformer Capacity Increase</td><td>2006</td><td>Engineering</td><td>2021</td><td>Jan-21</td><td>15</td></tr> <tr><td>Moraga - Castro Valley 230 kV Line Capacity Increase Project</td><td>2011</td><td>Engineering</td><td>2021</td><td>Mar-21</td><td>10</td></tr> <tr><td>Semitropic-Midway 115 kV Line Reconnector</td><td>2012</td><td>Construction</td><td>2021</td><td>Mar-21</td><td>9</td></tr> <tr><td>Morgan Hill - Watsonville Area Reinforcement</td><td>2014</td><td>Engineering</td><td>2021</td><td>Jul-21</td><td>7</td></tr> <tr><td>Clear Lake 60 kV Reinforcement</td><td>2009</td><td>Engineering</td><td>2022</td><td>Feb-22</td><td>13</td></tr> <tr><td>Table Mountain 115 kV SFS</td><td>2011</td><td>Engineering</td><td>2022</td><td>Mar-22</td><td>11</td></tr> <tr><td>South of Palermo 115 kV Reinforcement</td><td>2011</td><td>Construction</td><td>2022</td><td>Nov-22</td><td>11</td></tr> <tr><td>Estrella Substation</td><td>2013</td><td>Engineering</td><td>2023</td><td>Nov-23</td><td>10</td></tr> <tr><td>Bellota - Warnerville 230 kV Line Reconductoring</td><td>2013</td><td>Engineering</td><td>2024</td><td>Mar-24</td><td>11</td></tr> <tr><td>SF 115 kV Cable Upgrades</td><td>2015</td><td>Engineering</td><td>2024</td><td>Sep-24</td><td>9</td></tr> </tbody> </table> <p>The CAISO preliminary assessment shows overloads on the Newark-Northern Receiving Station (NRS) #1115kV circuit as early as 2024, and the Newark-NRS #2 115kV circuit in the 2029 Summer Peak Assessment² for the "base"</p>	PROJECT NAME	ISO Approval	CONSTRUCTION STATUS**	Year the Project Expected to be in Service	DATE IN SERVICE per 2020Q1 AB970	Project Lead Time (Years)	Kearney-Healdton 230 kV Line Reconnector	2013	Operational	2019	Jan-19	6	NRS-Scott 115 kV Line Reconductoring	2013	Operational	2019	Feb-19	6	Wheeler Ridge-Weedpatch 70 Line Reconductoring Project	2013	Operational	2019	Mar-19	6	Metal-Elvert 115 kV Lines	2002	Operational	2019	Apr-19	17	Kearney-Caruthers 70 kV Reconductoring	2013	Operational	2019	May-19	6	San Bernard-Tejon 70 kV Line Reconductoring Project	2014	Construction	2020	Jan-20	6	Fulton-Fitch Mountain 60 kV Reconnector	2009	Construction	2020	Apr-20	11	West Point - 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For these concerns, the CAISO will continue to monitor in future cycles due to uncertainty of load growth and potential development of distribution connected resources. The Newark-Northern Receiving Station (NRS) #1115kV overload identified in 2024 are addressed either by SVP's breaker upgrade project or an operating solution of increasing SVP local generation following the first contingency.</p>
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No	Comment Submitted	CAISO Response
	<p>summer peak forecast. The overloads are much greater in the sensitivity case, which SVP believes is more realistic.</p> <p>SVP is concerned that even if the CAISO starts to develop plans to mitigate the above-mentioned overloads in this year's planning cycle, the required transmission upgrades may not be built in time to reliably serve the expected future loads in the Santa Clara/San Jose load area. The statewide effort to minimize the operation of gas-fired generation could further enhance the need for earlier mitigation of identified overloads, given the amount of gas-fired generation in the south Bay Area.</p> <p>In summary, SVP believes it is important for the CAISO to develop a plan to serve the long term needs of the Santa Clara/San Jose load area in this year's planning cycle.</p>	

10. South Western Power (SWPG) Submitted by: Ravi Sankaran		
No	Comment Submitted	CAISO Response
10a	<p>Significant Out of State Deliveries Expected to Southern California; SWPG Supports the CAISO Study of These Resources in the Base Case</p> <p>Based on the CPUC's February 2020 Integrated Resource Plan (IRP) portfolio release², SWPG expects that significant imports of renewable resources will be studied as part of the 2020/2021 reliability and policy base case. These renewable resources include approximately 600 MWs of New Mexico wind as base resources and another 600 MWs of presumed New Mexico wind build out by 2030. Additionally, significant levels of other renewable resources are expected to be delivered to the Riverside East/Palm Springs transmission zone as well as projects to be built elsewhere in the greater Southern California region. SWPG is encouraged that by including New Mexico wind and these other resources in the base case, the CAISO will ensure that the grid has the necessary upgrades to accept New Mexico's cost-effective and portfolio-diversifying wind energy that the CPUC's IRP process has continually shown to be productive toward meeting California's carbon goals. To delay any upgrades required by this portfolio beyond this cycle will simply raise costs as a result of higher levels of expected curtailment.</p>	<p>The comment has been noted.</p>
10b	<p>CAISO's study of the Energy-Only Sensitivity Portfolio Will be Key for Southern California Deliveries</p> <p>SWPG also supports the CAISO's study of the anticipated Energy-Only (EO) IRP portfolio from the CPUC as one of the CAISO policy sensitivity cases. The CAISO has previously established the EO limits to ensure portfolios do not create excessive congestion. The Riverside East / Palm Springs zone is the import zone for New Mexico wind, Arizona solar, and both Baja solar and wind. Additionally, this area contains significant desirable California renewable potential. It is often the EO limit for Riverside East, or its surrounding (parent) transmission area – Southern California Desert Southern Nevada (SCASN) – which is binding in the CPUC's RESOLVE model renewable siting. When this area is binding it increases the build cost in the CPUC's IRP buildout by forcing capacity expansion to occur in more expensive areas. In short, this area warrants careful attention during the upcoming TPP.</p>	<p>The renewable portfolios provided by the CPUC will be studied in the 2020-2021 TPP.</p>

No	Comment Submitted	CAISO Response
	<p>Further, the CAISO's 2019-2020 TPP draft plan shows that while renewable portfolios create congestion throughout much of the grid Riverside East did not show significant reliability issues, and the congestion from the economic study of this area was lower than that of other adjacent areas such as Greater Imperial. In fact, when the CAISO relaxed the export limit and studied Sensitivity Case 2 – the one with New Mexico wind – essentially no congestion resulted, an outcome SWPG would question due to the high volume of anticipated imports to this zone (refer to Draft 2019/2020 TPP Plan, Table 3.9 - 1). The CPUC has asked the CAISO to study a portfolio where the EO limits for Riverside East / Palm Springs and for the greater parent area are significantly expanded. SWPG supports this study, encouraging the CAISO to consider enacting that expanded limit for the next IRP cycle. In fact, SWPG encourages the CAISO to study in detail a Riverside East EO expansion and potential SCASNV EO expansion, given the high volume of expected renewable imports to the area.</p>	
10c	<p>SWPG Requests Clarification Regarding CAISO Study of WestConnect High Wind Export Case SWPG understands that WestConnect will be studying a high wind export case which includes 4,000 MWs of wind exported from New Mexico. SWPG presumes the CAISO will be studying this case in addition to cases based on the CPUC's IRP portfolios. SWPG requests that the CAISO clarify whether this case will be studied as part of the 2020/21 TPP or as part of the CAISO's Inter-regional study process.</p>	<p>The CAISO will coordinate with WestConnect to provide the appropriate data related to the CAISO system as required for them to undertake the study identified that WestConnect will be conducting. The CAISO will not be studying the same case as part of the CAISO 2020-2021 transmission planning process. The CAISO will study the amount of New Mexico wind selected in the three renewable portfolios transmitted by the CPUC as part of the policy assessment.</p>

11. TransWest Epress LLC Submitted by: Martin Walicki		
No	Comment Submitted	CAISO Response
11a	<p>A. Evaluation/Identification of Category 1 and Category 2 Policy-Driven Transmission Solutions TransWest recommends that Section 3 of the Draft Study Plan be amended to include Slide 5 of the presentation from the stakeholder meeting, entitled “Key objectives of the policy-driven assessment in the 2020-2021 TPP.” These key objectives include:</p> <ol style="list-style-type: none"> 1. Study the transmission impacts of the base and sensitivity portfolios transmitted to the CAISO by CPUC 2. Evaluate transmission solutions (Category 1 and Category 2) needed to meet state, municipal, county or federal policy requirements or directives 3. Test the CAISO-provided transmission capability estimates used in CPUC’s integrated resource planning (IRP) process and provide recommendations for the next cycle of portfolio creation 4. Support and test the framework based on CPUC-provided objectives for siting generic storage selected in CPUC IRP process <p>These key objectives - study impacts, evaluate solutions, test capacity estimates and support the CPUC IRP process - are all reasonable and should be included in the Draft Study Plan to articulate clearly the goals and assumptions for the various public policy and technical studies in Phase 2.</p>	<p>These are the goals of the policy-driven assessment and the assumptions primarily comprise of the renewable portfolios transmitted by the CPUC and the busbar mapping provided by the CEC for each portfolio. Links to these have been provided in the final study plan.</p>
11b	<p>B. Relationship between the policy-driven analysis for the base case portfolio and the sensitivity portfolios TransWest recommends the ISO update the Draft Study Plan to clearly articulate the relationship between the policy-driven analysis for the base case portfolio and the sensitivity portfolios, and the evaluation/identification of Category 1 or Category 2 policy-driven solutions. TransWest believes the simplest relationship between the portfolios and the transmission solution criteria is as follows:</p>	<p>The CAISO Tariff Section 24.4.6.6 articulates the relationship as follows:</p> <p>“Category 1 transmission solutions are those which under the criteria of this section are found to be needed and are recommended for approval as part of the comprehensive Transmission Plan in the current cycle. Category 2 transmission solutions are those that could be needed to achieve state, municipal, county or federal policy requirements or</p>

No	Comment Submitted	CAISO Response
	<p>Category 1 policy-driven transmission solutions:</p> <ul style="list-style-type: none"> a.) Identified in the TPP policy-driven assessment of the “base” portfolio as needed, b.) Verification that the approximate or representative cost of the identified transmission solution was included within the CPUC RESOLVE model used to develop the optimal “base” portfolio provided by the CPUC, and c.) Determination that other TPP Category 1 criteria contained Section 24.4.6.6. are met. <p>Category 2 policy-driven solutions:</p> <ul style="list-style-type: none"> a.) Identified in the TPP policy-driven assessment of the “base” portfolio as needed but either not included in the CPUC RESOLVE model used to develop the “base” portfolio or falls short of meeting other criteria in Section 24.4.6.6, or b.) Identified in the TPP policy-driven assessment of one or more of the “sensitivity” portfolios as needed.¹ <p>The TransWest Express Transmission Project (“TWE Project”), is an example of the potential Category 2 transmission projects that should be evaluated in Phase 2.</p>	<p>directives but have not been found to be needed in the current planning cycle based on the criteria set forth in this section.”</p> <p>“Any transmission solutions that are in the baseline scenario and at least a significant percentage of the stress scenarios may be Category 1 transmission solutions. Transmission solutions that are included in the baseline scenario but which are not included in any of the stress scenarios or are included in an insignificant percentage of the stress scenarios, generally will be Category 2 transmission solutions, unless the CAISO finds that sufficient analytic justification exists to designate them as Category 1 transmission solutions.”</p>

ECONOMIC STUDY REQUESTS

E1 Calpine Submitted by: Li Zhang		
No	Comment Submitted	CAISO Response
E1a	<p>Below is a transmission study request to alleviate the congestion of the Doublet Tap – Friars 138kV line constraint. This constraint has historically been one major constraint driven by different factors and has bound for significant hours and shadow prices. Calpine appreciates the CAISO's efforts and insights on this matter.</p> <p>Calpine appreciates the opportunity provided by the CAISO asking for comments and economic transmission study requests. Per CAISO's February 07, 2020 Transmission Plan presentation (http://www.caiso.com/Documents/Presentation-2019-2020TransmissionPlanningProcess-Feb072020.pdf), the transmission congestion of Doublet Tap – Friars 138kV line is one of the top constraints in San Diego area. Calpine would like to request that the CAISO conducts an economic study to identify cost effective solutions to relieve the transmission congestion on Doublet Tap – Friars 138kV line in SDGE area. Transmission congestion can increase production costs because it prevents lower cost energy from serving customers. Calpine appreciates the CAISO's efforts and insights on this matter."</p>	<p>The CAISO has carried all study requests forward as potential high priority study requests, mainly based on the previous cycle's congestion analysis. The congestion results in the 2020-2021 planning cycle will be considered in finalizing the high priority areas.</p>

E2 conEdison Submitted by: Paulo Ellen Jandt		
No	Comment Submitted	CAISO Response
E2a	<p>The Fresno Avenal area (Gates-Tulare Lake 70kV line) congestion was selected for the final list of high priority economic planning studies in the 2019-2020 planning cycle. The analysis found that reconductoring of the Kettleman Hills Tap to Gates 70 kV line can mitigate the congestion of the line, but consistent with CAISO's Transmission Economic Analysis Methodology (TEAM), the benefit to cost ratio of 0.4 was not sufficient for the ISO to find the need for reconductoring the line. The CAISO reported that Fresno Avenal area congestion will be monitored and investigated in future planning cycles.</p> <p>We're writing to submit the Fresno Avenal area for study in the 2020-2021 planning cycle for the purpose of minimizing congestion on the Gates-Tulare Lake 70 kV line, and delivery of a Location Constrained Resource. In addition, the TEAM framework explains that the value of a transmission upgrade may also hinge on who will ultimately bear the cost of the project. Depending on who ultimately funds the transmission project the applied discount rate could be different. We'd like to discuss with CAISO the use of a private discount factor for this project.</p>	<p>The CAISO has carried all study requests forward as potential high priority study requests, mainly based on the previous cycle's congestion analysis. The congestion results in the 2020-2021 planning cycle will be considered in finalizing the high priority areas.</p>

E3 GridLiance West LLC-Economic Study Request (GLW) Submitted by: Judy Holland		
No	Comment Submitted	CAISO Response
E3a	<p>In the 2019-20 TPP, CAISO identified congestion on the Pahrump – Sloan Canyon 230 kV line. However, reconductoring the Pahrump – Sloan Canyon 230 kV line to mitigate the identified congestions increases congestion on the neighboring NVE system. In the reliability study portion of the TPP study, GLW recalled that the CAISO considered RAS and other non-wires solutions to manage flows from GLW area renewables onto NVE's system, but that in the course of the economic study the CAISO included phase shifting transformers to ensure that flows on the adjacent NVE system would not have significant adverse impacts. If CAISO believes phase shifting transformers or other similar transmission equipment is required, GLW requests that CAISO revisit the congestion in the area with the base case alternatives indicated later in this request.</p> <p>Also, in the latest CPUC portfolio that was posted in February 2020, the CPUC indicated its intent to study an expanded energy-only base case scenario. GLW conducted its own RESOLVE analysis on the expanded energy-only case. The results showed there were 1462 MW of solar generation sited to the GLW footprint.</p> <p>Based on this information, GridLiance requests CAISO to consider the CPUC renewable portfolio with the expanded energy-only scenario with 1462 MW sited to GLW's system as well as the 802 MW generation with FCDS allocated to the GLW/VEA service area. GLW fears California will lose a clear opportunity to access the low-cost renewable resources available in the other parts of Southern Nevada.</p> <p>GLW conducted its own analysis with the 802 MW and 1462 MW solar generation mapped to the GLW/VEA service area in Southern Nevada. GridLiance requests that the CAISO, as part of its 2020-21 TPP, conduct a detailed study of the need for transmission upgrades on its system as a result of the modification to the CPUC's renewable portfolio. The CAISO has indicated that the additional generation siting on the GridLiance system could be accommodated by cost-effective upgrades. Studying those upgrades in this</p>	<p>The CAISO has carried all study requests forward as potential high priority study requests, mainly based on the previous cycle's congestion analysis. The congestion results in the 2020-2021 planning cycle will be considered in finalizing the high priority areas.</p>

No	Comment Submitted	CAISO Response																		
	<p>2020 – 21 TPP would avoid a delay that could be costly to California LSEs wishing to satisfy their renewable requirements.</p> <p>2020-2021 CPUC Portfolio Analysis</p> <p>GridLiance West has identified transmission upgrades that, based on the CPUC’s renewable portfolios, will (1) enable CAISO-connected renewable generation in Southern Nevada to meet California carbon goals, (2) mitigate thermal overloading, (3) improve reliability, and (4) improve the resiliency of GLW’s system. Our analysis determined the best project solutions based on the CPUC’s portfolios that include 802 MW and 1,462 MW of renewable generation in Southern Nevada. In addition, these solutions are all upgrades to existing facilities—this means significantly lower risk in implementation.</p> <p>GridLiance modeled the renewable portfolios in accordance with the following assumed siting taken from the 2020-21 CPUC renewable portfolio in southern Nevada.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><i>Southern Nevada substations</i></th> <th style="text-align: center;"><i>MW mapped</i></th> <th style="text-align: center;"><i>MW mapped</i></th> </tr> </thead> <tbody> <tr> <td>Innovation 230 kV (GLW)</td> <td style="text-align: center;">152</td> <td style="text-align: center;">277</td> </tr> <tr> <td>Desert View 230 kV (GLW)</td> <td style="text-align: center;">118</td> <td style="text-align: center;">215</td> </tr> <tr> <td>Eldorado 230 kV (SCE)</td> <td style="text-align: center;">102</td> <td style="text-align: center;">186</td> </tr> <tr> <td>Trout Canyon 230 kV (GLW)</td> <td style="text-align: center;">430</td> <td style="text-align: center;">784</td> </tr> <tr> <td>Total</td> <td style="text-align: center;">802</td> <td style="text-align: center;">1462</td> </tr> </tbody> </table> <p>As CAISO continues the important work of planning for the state’s 2030 objectives, we are confident these projects should be a part of reaching the state’s goals. We propose the following projects on the GLW system:</p> <ol style="list-style-type: none"> 1. Pahrump – Sloan Canyon (\$91.46M): Upgrade the existing Pahrump – Sloan Canyon 230 kV line to 926/1195 normal/emergency rating and connect to the new Gamebird 230 kV bus and Trout Canyon 230 kV switching station. 2. Innovation – Desert View (\$21.12M): Add second Innovation – Desert View 230 kV circuit. 3. Desert View – Northwest (\$2.34M): Add a second 230 kV circuit Desert View – Northwest at 926/1195 normal/emergency rating. 	<i>Southern Nevada substations</i>	<i>MW mapped</i>	<i>MW mapped</i>	Innovation 230 kV (GLW)	152	277	Desert View 230 kV (GLW)	118	215	Eldorado 230 kV (SCE)	102	186	Trout Canyon 230 kV (GLW)	430	784	Total	802	1462	
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No	Comment Submitted	CAISO Response
	<p>4. Pahrump – Innovation (\$30.4M): Upgrade Pahrump – Innovation 230 kV to 926/1195 normal/emergency rating.</p> <p>As mentioned in the introduction, GLW encourages CAISO to consider the phase shifting transformers or any alternatives in its base case model. In its analysis, GLW showed the problems as issues appearing in the base case as a reliability issue. Below is the project, along with alternatives, that GLW plans to submit in the reliability window.</p> <p>5. Innovation and Lathrop Wells Phase Shifting Transformers (\$7.6M): Add 138 kV phase shifting transformers at Innovation and Lathrop Wells stations.</p> <p>GLW also requests that CAISO consider the following alternatives to the phase shifting transformers:</p> <p>a. Jackass Flats – Mercury – Northwest (\$60.42M): Rebuild the Jackass Flats – Mercury (DOE) and Mercury – Northwest (NVE) 138 kV lines at 207/285 normal/emergency rating.</p> <p>b. Innovation and Lathrop Wells Line Reactors (\$3M): Add 138 kV line reactors at Innovation and Mercury Switch.</p> <p>c. 138 kV Line Reconfiguration (\$0): A previously proposed line reconfiguration included the following: i. Jackass Flats – Mercury taken out of service ii. Mercury Switch – Indian Springs and Lathrop Wells – Jackass Flats operating normally open. These lines could be closed for emergencies.</p> <p>Our analysis indicates that the solutions we propose will provide important cost-effective reliability benefits that address the future needs of the system, including an expanded energy-only generation scenario and mitigation of congestion on the GLW system and adjacent NVE lines.</p> <p>Conclusion This transmission solution set will resolve issues and support the development of cost-effective renewable generation for much more than 802 MW in the GLW/VEA area. GridLiance appreciates CAISO's consideration in studying the economic and policy benefits of the submitted solution in the 2020-21 TPP. We</p>	



No	Comment Submitted	CAISO Response
	are therefore submitting this Economic Study Request for consideration in the 2020-21 TPP.	

E4 LS Power Development, LLC Submitted by: Sandeep Arora		
No	Comment Submitted	CAISO Response
E4a	<p>Economic Study Request & Economic Project Submission</p> <p>LS Power is hereby submitting an economic study request to CAISO for the 2020/21 Transmission Plan. The request is to study congestion at CAISO's intertie interfaces with the Pacific Northwest, namely the California Oregon Intertie (COI), Pacific AC Intertie (PACI) and Nevada-Oregon Border (NOB). In addition to this request, LS Power is also hereby submitting its Southwest Intertie Project North (SWIP-North) as an Economic project, to be modelled as a 1000 MW path of new transmission capacity between Idaho Power (Midpoint) and CAISO (Harry Allen1), free of any wheeling charges. As a parallel path to existing major CAISO interties; COI, PACI, and NOB, SWIP-North provides an alternate path for economic energy from the Pacific Northwest into California, in addition to providing policy benefits for reducing GHG emissions and accessing out-of-state renewables</p> <p>LS Power's recommended approach for this Economic Study Request:</p> <p>(1) CAISO's congestion analysis for PACI, NOB, COI paths needs to also quantify financial congestion on these paths in addition to physical congestion that it has been quantifying over the last few planning cycles.</p> <p>(2) CAISO should investigate whether its Production cost simulation tool is suitable for capturing financial congestion. CAISO should investigate improving its existing tool or should make use of a different tool so it can correctly capture financial congestion.</p> <p>(3) For the SWIP-North economic study, CAISO should calculate all benefits of a 1000 MW transmission capacity from Midpoint to Harry Allen, free of any wheeling charges and in addition to production cost benefits should also quantify (a) GHG reduction benefits (b) Renewable curtailment reduction leading to capital cost savings. CAISO export limit is a very important assumption in quantifying these benefits. CAISO should not limit exports to 2000 MW as in previous cycles, rather should use consider higher limits such as 5000 MW to 7000 MW as utilized in Extended Day Ahead Market Feasibility Assessments Study.</p>	<p>The CAISO has carried all study requests forward as potential high priority study requests, mainly based on the previous cycle's congestion analysis. The congestion results in the 2020-2021 planning cycle will be considered in finalizing the high priority areas.</p>



No	Comment Submitted	CAISO Response
	<p>(4) For the SWIP-North economic study CAISO's model should assume that the existing transmission path from Robinson Summit to Harry Allen ("ON Line") is limited to 1000 MW without SWIP-North & is increased to 2000 MW with SWIP-North. As described below, SWIP-North will not only create a new 2000 MW path from Midpoint to Robinson Summit but a few terminal upgrades associated with the entire build out of SWIP will also increase transmission capacity of ON Line from 1000 to 2000 MW. A total of 1000 MW of transmission capacity from Midpoint to Harry Allen is offered for CAISO use as part of this economic study request. This will effectively move CAISO's BAA boundary station to Midpoint.</p> <p>(5) There are several large solar, wind & bulk storage projects in the Idaho Power interconnection queue at/near Midpoint. A new transmission line such as SWIP-North can provide these projects direct access to CAISO market, by virtue of a Pseudo Tie Agreement with CAISO. We recommend CAISO perform economic study for this sensitivity scenario as well by assuming 1000 MW Pseudo Tie projects at Midpoint being delivered to CAISO through SWIP-North.</p> <p>SWIP-North Project SWIP-North is comprised of a 500 kV transmission line from Midpoint substation to Robinson Summit substation. Additional details of SWIP-North are included in the submission of SWIP-North as an Interregional Transmission Project in March 2018 under the 2018/19 TPP. After SWIP-North is built, LS Power's affiliate will attain approximately 1000 MW of new2 transmission capacity that will become available on the existing 500 kV transmission line that connects Robinson Summit to Harry Allen substation ("ON Line"), as per the Transmission Use and Capacity Exchange Agreement ("TUA") among LS Power affiliates and NV Energy, which is further described below. LS Power hereby proposes this new additional ~1000 MW capacity to be dedicated for CAISO use. In addition, the new 500 kV line from Harry Allen to Eldorado was approved by CAISO to be in-service by 2020. Upon completion of the Harry Allen to Eldorado project, Harry Allen will be a CAISO delivery point. Hence, if SWIP-North was selected by CAISO, CAISO will have access to a complete 500 kV path from Midpoint to Eldorado, approximately 575 miles.</p>	

No	Comment Submitted	CAISO Response
	<p>Pursuant to the TUA with NV Energy, once SWIP-North is built there would be an exchange of capacity between LS Power affiliates and NV Energy. Upon completion of SWIP-North, NV Energy would get a share of the capacity between Midpoint and Robinson Summit and LS Power affiliate Great Basin Transmission would get a share of capacity between Robinson Summit and Harry Allen, without either party having to pay any amount to the other. As a result of this capacity exchange, LS Power's affiliate would have bidirectional transmission capacity on the entire path from Midpoint to Harry Allen, estimated at approximately 1000 MW. Therefore, LS Power's economic study request is that CAISO study the benefits of approximately 1000 MW of bidirectional transmission capacity between Midpoint and Harry Allen, which would be available to the CAISO market upon completion of construction of SWIP-North.</p>	

E5 SmartWires Submitted by: Chris Ariante		
No	Comment Submitted	CAISO Response
E5a	<p>Economic Study Request - Power Flow Control for Congestion Reduction on the California-Oregon Intertie (COI) Smart Wires requests that the CAISO study all options to relieve COI congestion and the previously reported reliability constraints, including Smart Wires' COI submission during the 2019-2020 TPP reliability window.</p> <p>Traditionally, CAISO has included "congestion management" as an alternative for resolving reliability problems such as potential overloads on COI. While Smart Wires supports using "congestion management" as a mitigation measure, given there is always a viable generation dispatch to resolve these overloads, such constraints then become an economic problem. As such, Smart Wires requests CAISO assess all solution options for the COI including the RAS to bypass the series capacitors, via the Transmission Economic Assessment Methodology (TEAM) framework. In the 2019-20 TPP, Smart Wires submitted the following solution:</p> <ul style="list-style-type: none"> • SmartValve installations on: <ol style="list-style-type: none"> a. Round Mountain – Table Mountain 500 kV Lines #1 and #2, b. Cottonwood E – Round Mountain 230 kV line #3, and c. Delevan – Cortina 230 kV • An alternative is to deploy a hybrid solution to include: <ol style="list-style-type: none"> a. SmartValve deployments on Round Mountain – Table Mountain 500 kV Lines #1 and #2, and b. reduced COI flow for the remaining constrains on the Cottonwood E – Table Mountain 230kV line #3 and Delevan – Cortina 230 kV line. <p>CAISO had concluded, in the draft 2019-2020 report, that "although the ISO agrees that the proposed project can mitigate the identified overloads, there is not a reliability need for such project, since the overload can be mitigated by bypassing series capacitors on the Round Mountain-Table Mountain 500 kV lines" without addressing the costs or feasibility associated with designing and installing the RAS.</p>	<p>The CAISO has carried all study requests forward as potential high priority study requests, mainly based on the previous cycle's congestion analysis. The congestion results in the 2020-2021 planning cycle will be considered in finalizing the high priority areas.</p>

No	Comment Submitted	CAISO Response
	<p>It is Smart Wires' belief that relying on congestion management for a reliability need is contradictory in nature and indicates that the need is purely economic. Furthermore, when base cases have N-1 overloads which can be secured via re-dispatch, the base case is then not in line with realistic operating scenarios. It's Smart Wires' belief that generation dispatch in reliability base cases should incorporate every attempt to secure N-0 and N-1 overloads as to not conflate economic problems for reliability problems.</p> <p>Given the modular nature of Smart Wires' proposed solution, Smart Wires is supportive and ready to engage in collaborative revisions to optimize the size of each deployment should CAISO's analysis show that scaling the deployments up or down would provide additional benefit.</p> <p>Smart Wires has not observed a proposed timeframe for implementation of the series capacitor bypass RAS in the 2019-2020 Transmission Plan. If that planned implementation is prior to completing the 2020-21 TPP, Smart Wires asks the CAISO consider all solutions through an economic lens before moving ahead with the RAS.</p>	
E5b	<p>Economic Study Requests to Reduce Local Capacity Requirements (LCR) Using Power Flow Control</p> <p>The Local Capacity Technical Studies for years 2020 and 2024 present several thermal constraints driving LCR requirements on meshed networks. In the 2019-2020 TPP cycle, Smart Wires provided a solution alternative to cost effectively reduce the LCR requirements in the Contra Costa sub-area by impeding flow on the Tesla – Delta Switchyard 230 kV constraint. Given the positive B/C ratio of the Smart Wires proposed Contra Costa Sub-Area solution, Smart Wires is hopeful that solution will be approved as part of the 2019-20 TPP. However, if the CAISO does not approve the Contra Costa sub area LCR solution in the 2019-20 TPP, Smart Wires requests the solution be studied in the 2020-21 TPP.</p> <p>In addition, Smart Wires believes similar LCR constraints can be mitigated via power flow control, and requests CAISO continue its efforts in reducing local capacity costs by assessing the following power flow control solutions via the TEAM framework in the 2020-21 TPP.</p>	<p>The CAISO has carried all study requests forward as potential high priority study requests, mainly based on the previous cycle's congestion analysis. The congestion results in the 2020-2021 planning cycle will be considered in finalizing the high priority areas.</p>



No	Comment Submitted	CAISO Response
	<p>a. Power Flow Control for LCR reduction in the South Bay - Moss Landing Sub-Area Smart Wires requests the CAISO study power flow control solutions to optimally divert power away from the Moss Landing – Las Aguilas 230 kV constraint. Smart Wires believes there is adequate transmission capacity on the parallel facility during the reported P6 contingency of Tesla – Metcalf 500 kV and Moss Landing – Los Banos 500 kV to reduce the LCR requirement. Potential for LCR reductions could be as high as ~1780 MW.</p> <p>b. Power Flow Control for LCR reduction in the Ames – Pittsburg – Oakland – Sub-Area Smart Wires requests the CAISO study power flow control solutions to optimally divert power away from the Ames-Ravenswood 115 kV and Moraga-Claremont 115 kV transmission constraints. Smart Wires believes there is adequate transmission capacity following the limiting contingencies reported in the most recent Local Capacity Technical Studies. Potential for LCR reductions could be as high as ~1560 MW.</p> <p>c. Power Flow Control for LCR reduction in the Fresno Area Smart Wires requests the CAISO study power flow control solutions to optimally divert power away from the Gates - Mustang 230 kV constraint. Smart Wires believes there is adequate transmission capacity following the limiting contingencies reported in the most recent Local Capacity Technical Studies. Potential for LCR reductions could be as high as ~1700 MW.</p> <p>d. Power Flow Control for LCR reduction in the Western LA Basic Sub-Area Smart Wires requests CAISO study power flow control solutions to optimally divert power away from the Mesa - Laguna Bell 230 kV constraint. Smart Wires believes there is adequate transmission capacity following the limiting contingency of Mesa - Redondo 230 kV and Mesa - Lighthipe 230 kV to cost effectively reduce LCR requirements.</p> <p>In the 2019-2020 TPP cycle, CAISO considered a solution alternative comprised of (1) a series reactor to reduce Western LA sub-area requirements and (2) reconductoring to reduce El Nido sub-area</p>	



No	Comment Submitted	CAISO Response
	requirements. Given the Western LA Basin and El Nido sub-area LCR deficiencies reported in the Local Capacity Technical Study for study year 2024 are 3783 MW and 393 MW respectively, Smart Wires believes a power flow solution, when studied alone, could dramatically reduce Western LA sub-area requirements.	

E6 South Western Power (SWPG) Submitted by: Ravi Sankaran		
E6a	<p>Path 26 Warrants Study in the TPP The CAISO's 2019/20 TPP showed (Table 4.7 - 1) that Path 26 was by far the most constrained path in the CAISO system with congestion at \$14M per year. As the Southern California area and adjacent import points are becoming more attractive for renewable build out, Path 26 is more constrained. The CAISO did not study possible Path 26 upgrades in its 2019/20 TPP and therefore SWPG strongly encourages that the CAISO study do so in its 2020/21 TPP economic studies.</p>	<p>The CAISO has carried all study requests forward as potential high priority study requests, mainly based on the previous cycle's congestion analysis. The congestion results in the 2020-2021 planning cycle will be considered in finalizing the high priority areas.</p>

E7 Western Grid Development (Western Grid) Submitted by: Martin Walicki		
No	Comment Submitted	CAISO Response
E7a	<p>Western Grid Development LLC (“Western Grid”) appreciates the opportunity to comment on the on the CAISO’s 2020-2021 Draft Study Plan and submit this economic study request for the Pacific Transmission Expansion Project (“PTE” or “PTEP”). As more fully described below, Western Grid also requests that CAISO study the PTEP as a transmission solution that will address State Public Policy Requirements. And, as part of the study, Western Grid requests that the CAISO consider the reliability and other benefits that the PTEP will provide. This is particularly appropriate in light of the recent requests made by a number of parties, including Western Grid and CAISO, for the California Public Utilities Commission (“CPUC” or “Commission”) to provide specific policy direction on issues that can affect the CAISO’s 2020-2021 Draft Study Plan and the CAISO’s ultimate conclusions in its Transmission Plan Report.</p> <p>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 to be delivered to the West LA Basin and reduce local capacity requirements in the West LA Basin thereby allowing 1,993 MWs of gas plant generating capacity to close. PTE is described in Section 4.8.2 of the CAISO’s draft Transmission Report issued January 31, 2020 (“Draft 2019-2020 Report”)². The PTEP was studied in the 2019-2020 Transmission Planning cycle and we request again that CAISO study the project’s economic, policy and reliability benefits to the State’s ratepayers under the updated 2020-2021 study assumptions and considering any further policy guidance from the Commission, specifically with regards to the following:</p> <p>1. PTEP LCR Reduction Benefits We appreciate that in the Draft 2019-2020 Report, the CAISO determined that the PTEP will provide net 1,993 MW’s of LCR reduction benefits by reducing the LCRs in the LA Basin and, thereby, allowing 1,993 MW’s of existing gas plants to close in the West LA Basin and Big Creek/Ventura area. <i>Draft 2019-2020 Report at page 339</i>. However, the CAISO applied a very conservative value to the LCR benefits. In this regard, the CAISO stated that:³</p>	<p>The CAISO has carried all study requests forward as potential high priority study requests, mainly based on the previous cycle’s congestion analysis. The congestion results in the 2020-2021 planning cycle will be considered in finalizing the high priority areas.</p>

No	Comment Submitted	CAISO Response
	<p>The [PTE] project provides other benefits for which the CAISO is valuing with conservative assumptions at this time, due to uncertainty regarding future reliance on gas-fired generation for system and flexible needs.</p> <p>The CAISO went on to explain that: The uncertainty regarding the extent to which gas-fired generation will be needed to meet those system and flexible capacity requirements necessitated taking a conservative approach in this planning cycle in assigning a value to upgrades potentially reducing local gas-fired generation capacity requirements. The CAISO accordingly placed values on benefits associated with reducing local gas-fired generation capacity requirements <i>primarily on the difference between the relevant local area capacity price and system capacity prices</i>. This conservative assumption was a key difference between the economic benefits calculated in this study, and the economic assessments stakeholders provided in support of their projects. <i>The ISO recognizes that the capacity value of many of these projects will need to be revised when actionable direction on the need for gas-fired generation for system and flexible needs is available</i></p> <p>Western Grid believes that CAISO should continue to consider the PTEP as an economic alternative to local capacity including any policy or “actionable direction” it receives from the Commission on how and when to begin planning for the eventual closure of the local gas-fired capacity currently providing LCR. We agree with and support CAISO’s 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.”⁵ Indeed, if the State is to reach its 2030 and 2045 GHG SB 100 requirements in a reliable and least-cost manner, the CAISO will need to 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.</p> <p>2. PTEP Public Policy Benefits With respect to the LCR studies performed in the 2019-2020 cycle CAISO states on page 264 of the Draft TPP Report:</p>	

No	Comment Submitted	CAISO Response
	<p>These studies were conducted under the economic analysis framework, <i>as there is currently not a basis for identifying solutions on a reliability basis or policy basis</i>. If there are sufficient local resources to maintain reliability, reducing the use of those resources is not necessary to meet NERC or ISO planning standards. Further, <i>there are no applicable federal or state policies at this time</i> that necessitate planning for reduced local capacity levels beyond state policies for generation relying on coastal waters for once-through-cooling, and those needs have been addressed in previous transmission plans.</p> <p>Western Grid believes that SB 100 creates a clear state public policy requiring all reasonable efforts to achieve zero-carbon portfolio including phasing out gas-fired generation. We have filed comments to the CPUC requesting they clarify public policy requirements. In this regard we have requested that an additional public policy sensitivity scenario be included in the 2020-2021 transmission plan which allows CAISO to identify transmission projects that will allow gas plants to close while providing other renewable integration and LCR reduction benefits.</p> <p>In studying a public policy transmission alternative, CAISO should also consider whether the transmission project alternative can provide enough grid support and operating flexibility while also addressing other State public policy requirements. In this regard, PTEP is a viable solution for achieving SB 100's zero-carbon portfolio goal. CAISO has already determined that the PTEP will provide net 1,993 MW's of LCR reduction benefits by reducing the LCRs in the LA Basin and, thereby, allow 1,993 MW's of existing gas plants to close in the West LA Basin and Big Creek/Ventura area. Moreover, the PTEP 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. In addition, PTEP can also deliver system flexibility to the locally constrained area.</p> <p>As presented at the February 28, 2020 stakeholder meeting, CAISO will receive from the CPUC an updated baseline and two sensitivity portfolios for study in the Policy-driven assessment. Western Grid requests the CAISO consider the PTEP as a transmission alternative which can support renewable integration by</p>	

No	Comment Submitted	CAISO Response
	<p>reducing expected curtailment of renewables in the CPUC portfolios and that will allow sharing of energy and ancillary services among multiple Balancing Area Authorities (BAAs). The PTEPs unique location off shore also offers California an option to interconnect and deliver up to 2,000 MW of economic offshore wind energy as well as support delivery of renewable energy between northern and southern California.</p> <p>3. Other Benefits of the PTEP</p> <p>The PTEP will allow the gas fired plants in the local capacity (coastal) areas to be replaced with renewable energy (including offshore wind) outside the local area. It will also improve air quality particularly in the LA area where the poor air quality falls disproportionately on disadvantaged neighborhoods.</p> <p>The PTEP 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. The proposed PTEP will mitigate this 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, several times over, for the Elwood generating station and eliminate the need for Elwood to be under a Reliability Must Run (“RMR”) contract.</p> <p>Finally, the PTEP reduces the risk of another wildfire cutting off electric service to the LA coastal area. The PTEP with its associated subsea cables would have allowed the lights to stay on in LA even without the local gas plants when service from the terrestrial lines from the east were cut off this past summer. With the vast number of MW’s in the CPUC resource portfolio assumed to come from solar and batteries that will be located in the interior part of the State and will need additional transmission to reach the coastal population, it makes good sense to have at least some capacity delivered by subsea cables that do not involve the same wild fire risks.</p>	