The ISO received comments on the topics discussed at the September 21-22, 2017 stakeholder call from the following:

1. Alameda Municipal Power (AMP)
2. American Wind Energy Association California Caucus (ACC)
3. Bay Area Municipal Transmission group (BAMx)
4. California Energy Storage Alliance (CESA)
5. California Public Utilities Commission – Staff (CPUC-Staff)
6. City of Lodi
7. Defenders of Wildlife
8. GridLiance
9. Imperial Irrigation District (IID)
10. LS Power Development, LLC (LS Power)
11. NextEra Energy Transmission, LLC (NEET West)
12. Northern California Power Agency (NCPA)
13. Office of Ratepayer Advocates (ORA)
14. Pacific Gas & Electric (PG&E)
15. Port of Oakland (Port)
16. San Diego Gas & Electric (SDG&E)
17. Silicon Valley Power (SVP)
18. Smart Wires Inc. (Smart Wires)
19. TransWest Express
20. Valley Electric Association (VEA)

Copies of the comments submitted are located on the 2017-2018 Transmission Planning Process page at:

http://www.caiso.com/planning/Pages/TransmissionPlanning/2017-2018TransmissionPlanningProcess.aspx

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

1. Alameda Municipal Power (AMP)
Submitted by: Alan Hanger

No	Comment Submitted	CAISO Response
1a	Issue Summary The existing Downtown/West Oakland Area is made up of two sub-areas, each fed by separate 115 kV networks. Each sub-area is primarily fed from Moraga Substation, though with support from Sobrante Substation in the northern sub-area and Eastshore Substation in the South subarea. The stations served in each of these sub-areas are identified in Table 1. AMP's Cartwright Substation is normally served from PG&E Station C and AMP's Jenny Substation from PG&E Station J, so AMP has load served from each of the sub-areas. AMP also has the ability to transfer load so that all load is temporarily served from either Stations C or J, however this is an unreliable operational state as a single contingency can black out all the service to the island. **Sub-area** / **Northern** / **Southern** **Stations** / Stations K, X, D, C, L, Cartwright (AMP) Port of Oakland and Schnitzer Steel) / Stations L, J, Edes, Grant, Jenny(AMP). To meet the Planning Standards, the northern sub-area depends on aging local generation and Special Protection Systems (SPSs) that drop load. The southern area, while not dependent on local generation, does also have a SPS to drop load. For the northern sub-area SPSs, AMP load is the *only* load at risk of being dropped. For the southern sub-area, AMP was initially the only load to be dropped, though this SPS was recently modified to add three PG&E loads such that each of the four loads would be rotated into the SPS. The CAISO Planning Standards were recently revised to no longer allow the long-term reliance on load dropping to meet the Planning Standards in high density urban areas such as Oakland. Also, both the Dynegy CTs and NCPA CTs will have reached their 40-year planning life within the TPP planning horizon. AMP has experienced a number of operating issues with the existing SPS and load transfer arrangements that have reduced the reliability of service specifically to the AMP load. AMP anticipates that this expected loss of local generation will further adversely impact the quality of service that AMP receives	The ISO expects that the reliance on SPSs in both northern and southern sub-areas will not be necessary following the implementation of the long-term mitigation plan. Regarding the load transfer, it appears to be a feasible system readjustment following the first contingency for N-1-1 contingency events that results in overloading of facilities in northern sub-area. The ISO recommends AMP and PG&E work out any outstanding issues or concerns for the arrangements within the operating agreement. The ISO is working with PG&E to address the approved project backlog and will follow up with PG&E for implementation of projects found to be needed including the East Shore – Oakland J 115 kV Reconductoring Project.

No	Comment Submitted	CAISO Response
	and has repeatedly requested that a long-term transmission plan be developed to reliably serve the East Bay area. In the 2011-12 Transmission Planning cycle, the CAISO approved PG&E's proposed East Shore - Oakland J 115 kV Reconductoring Project with a forecast completion date of May 2015. With this upgrade, the CAISO and PG&E assert that the southern area will comply with the Planning Standards without reliance on a load dropping SPS. This project has been repeatedly delayed and is currently forecasted to be complete in 2021. <u>PG&E's Oakland Reliability Proposal</u> At the September 22 Stakeholder Meeting, PG&E presented its Oakland Reliability Proposal to address the reliability deficiencies in the northern sub-area. The Proposal includes limited transmission upgrades (circuit breaker additions in Moraga and Station X substations and rerating the Moraga-Station K 115 kV circuits). The remainder of the reliability need is to be met by Distributed Energy Resources (DERs) such as additional Energy Efficiency (EE), Distributed Generation (DG) and Energy Storage (ES) as well as post-contingency transferring of AMP load from Station C to Station J.	
1b	<u>AMP's Concern</u> While AMP generally supports the consideration of using local resources to help mitigate the CAISO and PG&E's rapidly increasing Transmission Access Charge costs, AMP has many concerns with the Proposal. Foremost, the PG&E Proposal disadvantages municipal wholesale customers in Alameda and at the Port of Oakland from a reliability perspective, relative to PG&E's own retail customers. 1. AMP would carry a disproportionate share (100%) of the proposed operational load transfers. Such transfers place the AMP load at risk during the initial transfer process, following the transfer by having AMP reduced to a single source, and during the transfer to return the service to its normal configuration. This initial transfer must be done with no warning and completed with 30 minutes.1 AMP is not aware of any other transmission planning effort that relies on a customer transferring load in the middle of contingency as meeting transmission reliability planning criteria. While PG&E and AMP have a working draft of an operating agreement to allow for such actions to take place, the agreement was not created in the	The load transfer appears to be a feasible system readjustment following the first contingency for N-1-1 contingency events that results in overloading of facilities in northern sub-area. The ISO recommends AMP and PG&E work out any outstanding issues or concerns for the arrangements within the operating agreement.

No	Comment Submitted	CAISO Response
	context of addressing transmission planning requirements, nor has PG&E created procedures as to how this load transfer would be accomplished during an emergency or practiced how this would be accomplished.	
1c	2. There has been no assurance that either the proposed project or the East Shore – Oakland J 115 kV Reconductoring Project will result in the removal of the SPS equipment. Discussions with PG&E have suggested that such equipment may remain in place as a "safety net." This concerns AMP in that the mere presence of a SPS requires regular testing and maintenance, which historically has created reliability issues experienced primarily by AMP. Secondly, the need to maintain such equipment as a safety net indicates a lack of confidence in the veracity of the Proposal. Again, these SPSs disproportionate impact the service to AMP and under the CAISO Planning Standards should be removed.	The ISO expects that the reliance on SPSs in both northern and southern sub-areas will not be necessary following the implementation of the long-term mitigation plan. The ISO will evaluate the need for SPS to remain in place as a "safety net" following the implementation of the long-term mitigation plan.
1d	3. The current proposal lacks critical operational detail as to how the Proposal would be implemented. While PG&E proposes a portfolio of options to reduce the critical facility loading, AMP is concerned that, as the most rapid and easily implemented solution, the tendency will be to call on load transfers first. This again would place disproportionate burden on AMP to mitigate this PG&E transmission reliability deficiency.	The load transfer appears to be a feasible system readjustment following the first contingency for N-1-1 contingency events that results in overloading of facilities in northern sub-area. The ISO recommends AMP and PG&E work out any outstanding issues or concerns for the arrangements within the operating agreement.
1e	4. AMP lacks the operational visibility into the PG&E system to understand when it may be at risk for operator action or even at risk of load interruption. This lack of situational awareness makes AMP unnecessarily exposed to the need for sudden action and endangers the efficacy of the Proposal's dependence on AMP load transfers.	The ISO recommends AMP and PG&E work out any outstanding issues or concerns for the arrangements within the operating agreement.
1f	5. The Proposal lacks mandatory quarterly reporting on the performance of all nontraditional Proposal components. Such reporting should include, but not limited to: a. Specific identification of the preferred set of resources that will be used to implement the Proposal and attestations that the supporting contracts have been executed b. Completion status of operational procedures associated with each preferred resource needed to implement the Proposal	The ISO has not developed at this time performance monitoring requirements for load modifying DER that is incorporated into the CEC energy and demand forecast or additionally procured through the CPUC procurement authorization process beyond the forecasted preferred resources. The need for monitoring will be considered as part of implementation. The storage component is proposed as a transmission asset and will be managed consistent with other transmission facilities.

No	Comment Submitted	CAISO Response
	c. Performance reporting i. The frequency of preferred resource use to address transmission contingencies serving the sub-area. ii. Numbers of successful and failed deployments iii. Hours and magnitude of emergency overload conditions incurred iv. Customer load hours interrupted due to failures of preferred resources or failures of operational practices developed as part of the Proposal. Note: customer loads should be calculated as the number of customers within Alameda, the Port of Oakland and Schnitzer Steel. d. Procurement status of the front of the meter preferred resources that will be used in the Proposal e. Development of a project schedule that identifies the removal of all SPSs associated with the sub-areas, along with an attestation that the SPSs have been removed	

2. American Wind Energy Association California Caucus (ACC)
Submitted by: Caitlin Liotiris

No	Comment Submitted	CAISO Response
2a	The American Wind Energy Association California Caucus (ACC) appreciates the CAISO's efforts to continue studying potential transmission solutions to facilitate potential future generation portfolios that include significant wind from high-quality, and low cost, regional wind resources. The results of the 2016-17 ITP Evaluation and 50% RPS Out-of-State Portfolio Assessment, presented during the CAISO September 22nd Transmission Planning Process (TPP) stakeholder meeting, represent a significant step forward for the CAISO in assessing the benefits of different transmission projects to better enable delivery of high-capacity factor wind. ACC greatly appreciates the CAISO's effort on this front. As the CAISO is aware, the CPUC issued an ALJ Ruling Seeking Comment on Proposed Reference System Plan (RSP) and Related Commission Policy Actions within the Integrated Resource Plan (IRP) proceeding (R.16-02-007) on September 19, 2017. One of the Proposed Commission Policy Actions pertains to Out-of-State Wind. The Ruling states "it appears as though some ratepayer cost savings, as well as resource diversity benefits for renewable integration, could be achieved by procuring more out-of-state wind resources in the near term. Achieving this outcome would require targeted examination of options for accelerating the development of transmission to support delivery of additional wind from out of state [emphasis added]." Procurement in the near term is associated with the California consumer savings that can be achieved with Wyoming and New Mexico wind resources that are eligible to secure 100% of the Production Tax Credit (PTC). The AJL Ruling outlines two procedural options for the CPUC and CAISO to perform this targeted examination to accelerate the development of transmission and requests comments from parties within the proceeding. Regardless of which procedural option is ultimately contained within the Final Ruling, the CAISO should use this informational study process, and build upon it. to position itself for the 2018-19 TPP, such that the CAISO is capable of approving the necessary regional, public-policy driven transmission additions to enable LSE procurement of their preferred resources, which may include regional wind.	The ISO considers the analysis we have conducted to date to be a good foundation for input into the IRP process and to move forward to support load serving entities' efforts when further direction from the IRP process is forthcoming.

No	Comment Submitted	CAISO Response
	Some of ACC's comments are focused on additional work the CAISO should do as part of the information-only study effort, while others focus more on appropriate preparations for analysis of public policy-driven transmission needs in the 2018-19 TPP. ACC's comments on the CAISO's study results focus on four areas: 1. The significant economic benefits and time sensitive nature of obtaining regional wind resources that are 100% PTC qualified require the CAISO to prepare to make decisions on necessary transmission additions to access regional wind in the 2018-19 TPP. 2. The CAISO should coordinate with the CPUC to determine the appropriate level of granularity of CPUC-provided policy direction regarding potential out-of-state resources and the information, analysis, and transmission solution recommendations the CPUC would like to have from the CAISO. 3. The CAISO should focus on its regional public policy-driven transmission assessment for studying transmission solutions to Wyoming and New Mexico wind that might be identified as part of the IRP. 4. The CAISO should move expeditiously to implement the next steps it has identified, as well as to conduct additional analysis of other advanced development transmission projects and to develop a methodology for comparing the relative costs, planned in-service dates and economic benefits of different transmission alternatives to access out-of-state wind.	The ISO does not agree that there is the level of specificity for further study at this time, but will continue to participate in the IRP process and support the efforts of LSEs to consider out of state procurement.
2b	<u>Near-Term Wind Procurement to Secure Ratepayer Savings May Require a CAISO Decision on Transmission Solutions in the 2018-19 TPP</u> As the CAISO and CPUC are aware, there is a limited opportunity for California's LSEs to include energy and capacity that qualify for the PTC and Investment Tax Credit (ITC). The IRP analysis has highlighted the significant ratepayer savings that can be achieved with near-term procurement, including procurement of Wyoming and New Mexico wind resources. The time-sensitive nature of these opportunities will require fast action on the part of the CAISO and the CPUC. The CPUC process is moving forward rapidly, and, as currently drafted, includes recommendations to further consider regional wind opportunities. ACC anticipates that the CPUC will be able to provide discrete	As noted above, the ISO will continue to monitor and participate in the CPUC's IRP process and work to coordinate our planning efforts with the progress of the IRP.

No	Comment Submitted	CAISO Response
	recommendations regarding procurement portfolios in the context of the final IRP Ruling later this year. Should LSEs seek to procure regional wind resources, the ISO should be prepared to help the LSEs achieve their desired resources in time to secure PTC benefits. This will require the ISO to study necessary transmission solutions as part of the 2018-19 TPP and utilize the flexibility inherent in the TPP (i.e., between the publication of the draft TPP and the final TPP) to provide the LSEs information on these solutions. The CAISO can and should be prepared to conduct the necessary, regional public policy-driven transmission planning during the upcoming TPP cycle. The RETI 2.0, the earlier in-state assessments by the CAISO as part of the 50% Special Study and the IRP preliminary results have all indicated that renewable resource additions anticipated to be needed inside of California will not require significant transmission additions. Furthermore, given the results of the ISO's Available Transfer Capability (ATC) analysis, it is reasonable to expect a transmission build-out will be required for California to access Wyoming and New Mexico wind resources. Therefore, should regional wind resources be procured by LSEs, the transmission necessary to reach those resources would likely be the appropriate focus of the ISO's 2018-19 public regional policy-driven transmission assessment. The ISO should position itself to conduct significant analyses of out-of-state transmission solutions to regional wind as part of the 2018-19 TPP to ensure LSEs are not precluded from considering out-of-state wind resources that can secure the full PTC.	
2c	<u>CAISO Coordination with CPUC on Out-of-State Resource Portfolios Should Continue</u> During the September 22nd stakeholder meeting, the CAISO indicated that it was unclear what "policy direction" it might receive from the CPUC as a result of the IRP process. ACC encourages the ISO to continue to coordinate with the CPUC staff to better understand the appropriate level of granularity that is required to analyze these potential multi-state transmission projects. The CAISO should focus on the appropriate level of granularity that will be provided for any out-of-state portfolios and should seek to understand the role the CPUC would like to have the CAISO play in any out-of-state wind analysis, including	The ISO is continuing to coordinate with the CPUC and participate in the IRP process.

No	Comment Submitted	CAISO Response
	any assessments, studies or decisions that the CPUC envisions being provided by the CAISO. Additional coordination with the CPUC may also indicate the CPUC's envisioned role for the CAISO in ensuring that LSEs are able to procure the desired set of resources necessary to achieve the IRP's GHG targets.	
2d	<u>CAISO Should Focus on its Public Policy-Driven Regional Planning Processes for Assessing Transmission to Regional Wind Resources</u> In conducting information-only studies, and in any assessments that are part of the 2018-19 TPP, the CAISO should conduct the analysis under its own regional, public policy-driven transmission assessments. The CAISO's current tariff requires it to evaluate transmission solutions needed to meet state policy requirements such as those provided by the CPUC. The CAISO must conduct this assessment regardless of the location of the generation resources that will be used to meet public policy goals. Therefore, should the CPUC provide a portfolio of resources to the ISO which includes Wyoming and New Mexico wind, the ISO needs to study transmission solutions for those resources in its regional planning process. The CAISO must study these transmission solutions in the regional planning process, even if the CAISO later considers those projects in the context of Interregional Transmission Coordination. In fact, the consideration of project alternatives in the Interregional process requires the CAISO to have first evaluated regional transmission solutions in the context of its regional planning process. ACC urges the CAISO to conduct all future information-only and formal TPP analyses of out-of-state wind in the context of the CAISO's current, regional, policy-driven planning process. The CPUC and CAISO should coordinate on whether additional regional economic-driven assessments should be conducted for these multi-state transmission projects to augment the IRP analysis.	The comment appears to be considering only the cost allocation component of the interregional transmission planning process contained in the ISO tariff. The interregional planning process also provides the information sharing and coordinated study framework necessary to explore projects outside of the ISO footprint, so we do not see it viable to completely decouple projects outside of the ISO footprint from the interregional planning processes developed with our neighbors.
2e	<u>The Recommended Next Steps Should Be Implemented Expeditiously and Should Be Expanded to Assess Additional Transmission Projects and to Compare Project Costs and Benefits</u> While the CAISO may be called upon to utilize its regional planning process to conduct significant transmission planning as part of the 2018-19 TPP	Next steps in the ISO's interregional studies will depend largely on the results of the IRP process, and it is premature in our view to make

No	Comment Submitted	CAISO Response
	associated with these out of state resources, it still has an opportunity to continue to improve its capabilities and processes to assess transmission to reach Wyoming and New Mexico wind in the context of the 2016-17 information-only study. The CAISO should fully utilize this opportunity by expeditiously completing the next steps identified in the September 22nd presentation. The CAISO should also conduct a comparable assessment of the other transmission solutions, which were not submitted as ITPs, but which could be online in time to support 100% PTC qualified wind. ACC has suggested that the CAISO study the projects identified as "Advanced Development" in the RETI 2.0 Plenary Report and other projects that have sufficiently progressed with permitting to be online or under construction by 2020. These projects include several projects included in the analysis to date such as Gateway South and West, SWIP North, SunZia and TransWest Express plus additional "Advanced Projects" that have not been analyzed by the ISO to date, including Southline and Western Spirit. The inclusion of these Advanced Development projects will enable the CAISO to study the potential projects and the relative benefits offered by different project options that can help facilitate capture of the benefits associated with the PTC. Furthermore, the CAISO should work to develop a framework for addressing the transmission attributes that it identified as requiring further consideration. Specifically, ACC encourages the CAISO to focus on assessing the relative costs, development status, and benefits of the different transmission solutions it has studied (and those ACC is suggesting it add to the analysis). The CAISO should also engage with the various transmission developers and out-of-state utilities to understand the potential for arrangements with non-CAISO transmission owners for capacity to fully connect these advanced development projects to the CAISO footprint. ACC encourages the CAISO to commence this work immediately, and to release a subsequent set of results to inform various regulatory and procurement processes.	decisions about what further analysis in 2018 would be helpful. The ISO will continue to coordinate with the CPUC and participate in the IRP process – and keep stakeholders informed through routine transmission planning stakeholder sessions.

3. Bay Area Municipal Transmission (BAMx) Submitted by: Alan Hanger		
No	Comment Submitted	CAISO Response
3a	<u>Stakeholder Comment Period and the Volume of Material Presented</u> While BAMx supports the improved documentation included in the CAISO presentation, this contributed, in part, to a large number of technical slides (555 slides) over the two-day meeting. Posting of the slides so shortly before the stakeholder meeting and then only having two weeks to review and providing meaningful comments is too brief a period. BAMx recommends the posting of slides at least a week before the meeting so that the material can be studied and questions be prepared for the meeting. Also, the TPP timeline needs to allow more time following the stakeholder meeting to investigate the proposals and develop comments.	The aggressive schedule set out in the transmission planning process does not allow for earlier posting of results, especially with the additional documentation adding to the ISO effort in preparing the material. The ISO appreciates efforts by stakeholders to review and provide comments, and considers that the most important contribution the ISO can make is to provide schedules well in advance – and meet those schedules, so that stakeholders can plan their activities accordingly.
3b	<u>Non-Wires Solutions and Integrating the IRP and TPP</u> Substantial progress is occurring in multiple fronts on valuing potential non-wires solutions to transmission issues. BAMx believes that the IRP process is close to being able to test optimize the selection of system resources that includes resources that can easily be sited in locations that will provide loading relief for the transmission system. We know the CAISO is committed to integrating the IRP and the TPP and has initiatives to incorporate demand response products into its markets. BAMx strongly encourages efforts to pursue cost effective non-wires solutions to transmission issues. We believe that such efforts can achieve a reliable grid w/o unnecessary cost impacts. We believe the substantial work by PG&E in its study of a transmission solution for the East Bay is an example of the type of analysis that should be performed for all projects where local resources can provide all or a portion of the relief needed to accomplish our reliability goals. While more study is still needed to understand the extensive work by PG&E to solve reliability issues in the East Bay, BAMx is generally supportive of the type of analysis performed. The load duration curves indicate that expansion of the transmission system in this area could lead to highly underutilized transmission assets.	The comment has been noted.
3c	<u>Project Assessment Formats</u> BAMx supports the format used in the PG&E area of the assessment presentation. The structure documents the assumptions for the planning area	The comment has been noted.

No	Comment Submitted	CAISO Response
	followed by project specific slides stating the reliability need, mitigation, alternatives and conclusion. This structure improves the documentation and made following the multiple presentations easier. BAMx encourages the CAISO to adopt a similar approach for its other areas.	
3d	PG&E's Previously Approved Project Analysis – General Comments BAMx strongly supports the CAISO's efforts to review previously approved projects in light of the significant changes in the planning environment, especially in the load forecasts due to both increasing energy efficiency and BTM generation. The CAISO has appropriately revisited a number of previously approved reliability transmission projects in light of developments and updated expectations regarding electricity demand and distributed resources. In the next decade, further and probably more striking developments can be expected in these areas, as the goals of SB 350 are pursued and are reflected in demand forecasts and resource plans. In particular, significantly increased penetration of energy efficiency measures will probably further reduce demand forecasts. As indicated above, demand response and distributed storage will be further studied in the IRP process and its cost and impacts will be further defined. Such an anticipated future is largely not reflected in adopted assumptions for the 2017-2018 TPP. However, we can expect that recalibrated expectations will be appearing in future TPP cycles, perhaps starting next year. In evaluating need, and appropriate timing and scope, for reliability solutions identified in the current TPP cycle the CAISO should thus take into account the direction in which we are headed. This is especially important wherever potential solutions involve scope and cost beyond what is needed to address near-term issues, and which could be revisited in future TPP cycles. The construction of additional transmission upgrades contributes to an already increasing rate of transmission costs associated with past approvals and are adversely impacting BAMx customers. Therefore, it is very encouraging to see the CAISO re-evaluate transmission projects in areas where planning assumptions have changed. Furthermore, BAMx would encourage the CAISO to eliminate that portion of a project scope that provides reliability that exceeds federal, regional and CAISO requirements in non-urban areas unless accompanied by a cost/benefits analysis that supports the added scope. BAMx	The comment has been noted.

No	Comment Submitted	CAISO Response
	believes the Northern Fresno and Midway-Andrews projects,as discussed below, are good examples.	
3e	<u>Midway-Andrews Transmission Project</u> Previously implemented "Los Padres Transmission Project" installed a SPS at both Mesa and Santa Maria 115kV Substations to address the Mesa area transmission standards violations by dropping approximately 230 MW of load. The Divide SPS Project installed a SPS to mitigate standards violations in the Divide 115kV area by dropping approximately 145 MW of load following loss of Mesa-Divide #1 & #2 115kV lines. These solutions are acceptable under the applicable Planning Standards as the Los Padres area is a non-urban area and both the CAISO and NERC planning standards allow for post contingency load dropping for higher level of contingencies. Therefore, the Midway-Andrew 230 kV Project is designed to provide a level of service above that required by the Planning Standards. The originally proposed project is estimated to cost up to $150 million.2 While BAMx is encouraged that the CAISO is considering lower cost options that would repurpose existing assets, this misses a fundamental point. As a reliability project, whether the Midway-Andrew 230 kV Project or an alternative such as described in the stakeholder meeting, such project justifications should include a cost/benefit assessment as described in the CAISO Planning Standards (Section 5.4). To date, nothing more than vague statements about the amount of load being armed have been used to justify providing reliability in excess of the Standards. This project justification should follow the framework set out in the CAISO Planning Standards.	The ISO is continuing the assessment of the Midway-Andrew 230 kV Project and will be including the assessment into the draft ISO 2017-2018 Transmission Plan that will be posted by January 31, 2018.
3f	<u>Northern Fresno Reinforcement Project</u> Northern Fresno Reliability Project was originally approved by the CAISO during the 2011-2012 TPP. The proposed scope of the project would install a new 230/115 kV substation in the Fresno area with four terminals connecting to existing 230 kV circuits as well as new 230 kV circuit from the new substation to McCall. There would also be extensive 115 kV upgrades. The total cost of the project is estimated at $300-$381 million.	The ISO is looking at options of sectionalizing the Herndon and McCall buses as discussed in the 09-21-2017 stakeholder meeting. Any additional incremental reliability concerns after the sectionalizing option can be potentially mitigated using preferred resources/potential transmission upgrades such as SPS, reconductoring, etc.

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	Based on the latest assessment results that were presented during the latest stakeholder meeting, NERC category P2 (Bus Tie Breaker) fault is the only remaining driver for the project. As Bus Tie Breaker fault is an extremely rare type of contingency, BAMx supports CAISO evaluating potential alternatives to the proposed project. BAMx would propose that alternatives such as substation upgrades (such as sectionalizing Herndon and McCall 230kV buses) or possibly local preferred resources such as demand response should be investigated as potentially more cost effective ways to mitigate P2 violations than the proposed project.	
3g	<u>Fresno Projects Missing Information</u> During CAISO's presentation on the preliminary results for the Fresno area, the CAISO presented a table on slide 6 showing seventeen (17) projects that were not modeled in the case due to their scopes being re-evaluated: CAISO presented its preliminary conclusion on every project from the table except for the following six projects:4 • Kearney-Caruthers 70kV Line Reconductor ($10M - $20M) • Reedley-Orosi 70kV Line Reconductor ($6M) • Gates-Gregg 230kV Line Reconductor ($200M) • Gates No. 2 500/230kV Transformer ($60M) • Kearney-Herndon 230kV Line Reconductor ($13M) BAMx members would encourage the CAISO to provide the results of analysis for the six projects listed above.	The ISO will be providing updates on the projects either at the November 16 stakeholder or in the draft 2017-2018 Transmission Plan that will be posted by January 31 for stakeholder comment as the assessments are finalized.
3h	<u>Need to Correct High Voltages on The PG&E System</u> PG&E has proposed a series of nine projects to install a total of 1,275 MVARs of shunt reactors at a combined cost of $156 million to $231 million. Most common causes of high voltages during low load periods are the addition of new, lightly loaded transmission circuits, transmission reconfigurations, or significant changes in generation dispatch, especially unit commitment.5 Natural load growth can provide some mitigation of high system voltages. More investigation is needed as to the cause of the trend in high voltages to better understand as to whether such causes are temporal or indicative of a long-term change.	Out of the nine reactor projects proposed by PG&E during the project request window of the 2015-2016 TPP, the ISO approved six projects through the TPP process which included stakeholder meetings and comment periods. Given the severity of high voltage issues observed in real-time operation, the ISO's position documented in the 2015-2016 Transmission Plan was to work with PG&E to potentially expedite the implementation of these projects. High voltages continue to cause operational issues in PG&E's system and ISO's preliminary conclusion on reactor projects in 2017-2018 Transmission Plan is to proceed with the projects as approved. As presented during the stakeholder meeting, the approved projects will not address all the voltage issues in PG&E

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	BAMx supports PG&E's use of an Optimal Power Flow (OPF) tool to identify size and location of the proposed installations. However, like most tools, the inputs assumptions are critical. For example, PG&E notes that its distribution substation power factors have been leading, thereby contributing to the high voltage problem. The CAISO tariff includes load power factor requirements so that distribution systems do not overly burden the transmission system. PG&E should maintain the distribution power factors within the CAISO tariff requirements. and it should be verified that the optimal power flow base case assumptions are consistent with the CAISO tariff and whether further improvements to the distribution voltage control can serve as an alternative. Secondly, the generation unit commitment should be reviewed to assess whether the commitment reflects expected conditions. Committing fewer generation units reduces the voltage control on the system and can result in high off-peak voltages. Although past Request Window proposals by PG&E have documented that operational studies indicate a high voltage problem exists, as indicated above BAMx believes the CAISO should complete a comprehensive study that proposes a system wide mitigation to the problem. Although we believe that shunt reactors in appropriate locations will likely end up being proposed, the current method of proposing particular installations as stand-alone projects is insufficient. All reasonable solutions should be investigated and reported to stakeholders and needed mitigations should be approved as a package of projects to relieve the high voltage problem. A partial list of mitigation measures that should be investigated are operational changes, altered tap settings on 500/230kV and 230/115kV transformers, requiring increased voltage control capability for new generators connecting to the system, and installing shunt reactors at various substations. Assuming multiple reactor locations are feasible, combinations of locations should be studied for both performance and cost effectiveness. There is nothing available now to stakeholders to indicate this has been done.	system. A reassessment of the system with power factor corrections and reactor projects in service will determine the remaining voltage issues and potential mitigation measures such as the ones recommended by BAMx. ISO will undertake such a reassessment in future transmission plans.
3i	Interregional Transmission Project (ITP) Evaluation and 50% RPS Out-of-State (OOS) Portfolio Assessment BAMx appreciates the effort in this planning cycle to test the system outside of CA using OOS portfolio of resources and leverage the findings to gain insights	This comment has been noted. The ISO is following the IRP proceedings and will keep monitoring the progress of renewable portfolios that the ISO will be required to study for purposes of policy-

No	Comment Submitted	CAISO Response
	about ITPs. This effort has provided valuable information as to where infrastructure improvements may be required, but it has also provided guidance to the procurement process as to how some potentially costly upgrades may be avoided. BAMx acknowledges the commendable efforts of the CAISO in performing the production cost modeling (PCM) analysis as well as power flow studies to provide valuable information on the extent of curtailment of OOS renewables, identification of transmission constraints outside of California and comparison of the performance of the candidate ITPs, etc. BAMx supports the CAISO's plans to utilize the results obtained from this study for future OOS RPS portfolio creation. BAMx sees these continued CAISO efforts as further indication of its desire to integrate its work with that occurring as part of the CPUC's Integrated Resource Planning (IRP) process (Rulemaking 16-02-007). As the CAISO knows, this proceeding is currently contemplating whether the out-of-state wind should continue to be studied as a special study or included as a policy-driven scenario for the 2018-19 TPP. The RESOLVE model currently utilized in the IRP proceeding indicates that cost associated with the OOS wind scenario are significantly higher than the default and recommended reference system plans. And this is occurring even though the RESOLVE model is not allowed to select energy efficiency measures or demand response as part of the optimum portfolio of resources. Even with this limitation, any resource portfolio that forces OOS wind that requires new major transmission to deliver results in overall cost increases except under the most stringent GHG targets. Given this result, BAMx believes it would be premature for an ITP or OOS transmission project to be considered for approval as a policy-driven transmission as part of the 2018-19 TPP, as it is not a least-cost best-fit solution in meeting the State's GHG reduction and RPS goals. Any future transmission needed to import OOS renewables should be part of the LSE procurement plan that justifies its cost as part of the total resource costs. Based upon the above, any study of the OOS transmission in the 2018-19 TPP should purely be an information only special study. The CAISO should be comfortable with this proposal because, as stated in the September 21-22 TPP meeting, an alternative to the CAISO potentially recommending an OOS project as a TPP policy-driven transmission is for the	driven transmission. At this time, the ISO agrees with BAMx that it is premature to approve any ITP as a policy-driven upgrade.

<table>
<tr><th>No</th><th>Comment Submitted</th><th>CAISO Response</th></tr>
<tr><td></td><td>LSE's to include the cost of OOS resources and any corresponding upgrades needed as part of its resource plan.</td><td></td></tr>
<tr><td>3j</td><td><u>PTO Request Window Project Applications</u>
California High Speed Rail Interconnections
In response to an interconnection request for the California High Speed Rail Interconnection (CHSR), PG&E has proposed ten interconnection sites in addition to the two interconnection sites associated with the CALTRAIN electrification project presented in the 2016-2017 Transmission Planning Process. Eight of the ten interconnection sites entail building new stations or rebuilding existing stations with a new breaker and a half substation configuration. The total cost for the ten sites is estimate at ~$500M or ~$50M/site on average. The value of building the extra reliability/redundancy associated with a breaker and a half configuration is unjustified. All of these stations have 2023 load forecasts of 7 MW or less and four have a 2087 load forecast of under 10 MW. Furthermore, each interconnection appears to include redundant interconnections such that loss of a single element would not interrupt service to CHSR. Therefore, the reliability value of such a substation design appears excessive on its face.8 Further justification is needed to support the costlier design for these interconnections. If this design was requested by the CHSR, PG&E should describe amounts that will be funded by the CHSR because of its selection. If such configurations have been specified by PG&E and PG&E proposes to include any of these facilities in the TAC, PG&E should provide its reliability and cost analysis that supports such a design.</td><td>PG&E has identified that the breaker and a half (BAAH) configuration is proposed as per PG&E's standards. For new (greenfield) transmission substations, (Sites 4, 9, 10, 12, and 13), all buses are to be designed as BAAH. For conversions and upgrades of existing (brownfield) substations (Sites 5, 6, 7, 8, and 11), the preferred bus arrangements to support system needs are shown in the table below.

<table>
<tr><th>Site</th><th>Point of Interconnection</th><th>Current Bus Configuration</th><th>Proposed Bus Configuration</th></tr>
<tr><td>Site 5</td><td>Quinto SW STA 230 kV</td><td>BAAH</td><td>BAAH expansion</td></tr>
<tr><td>Site 6</td><td>El Nido 115 kV</td><td>Double-Tap on Wilson – Oro Loma 115 kV Line. No bus</td><td>Re-build into BAAH (Re-build starting with no bus is considered as greenfield)</td></tr>
<tr><td>Site 7</td><td>Wilson 230 kV</td><td>Two-bay BAAH operated as Ring Bus</td><td>BAAH expansion</td></tr>
<tr><td>Site 8</td><td>Storey 230 kV</td><td>Double-Tap on Wilson – Borden and Wilson - Gregg 230 kV Lines, respectively. No bus</td><td>Re-build into BAAH (Re-build starting with no bus is considered as greenfield)</td></tr>
<tr><td>Site 11</td><td>Alpaugh 115 kV</td><td>Double-Tap on Corcoran – Olive SW STA 115 kV Line. No bus</td><td>Rebuild into BAAH (Re-build starting with no bus is considered as greenfield)</td></tr>
</table></td></tr>
<tr><td>3k</td><td>Oakland Reliability Proposal
A very extensive analysis conducted by PG&Es engineering staff was presented to prepare the East Bay transmission network for the potential retirement of the Dynegy Oakland Power Plant without dependence on the NCPA's Alameda combustion turbines. The project objective would also eliminate reliance on Special Protection Systems (SPS) per new ISO planning standards. The proposed project would make breaker additions within existing East Bay substations and fill the remaining reliability need with Preferred Resources and load transfers to manage the peak load within the expanded system capability.</td><td>The comment has been noted.</td></tr>
</table>

No	Comment Submitted	CAISO Response
	While still working to fully understand the proposal, BAMx is generally supportive of non-wires solutions such was presented for the East Bay. The load duration curves indicate that expansion of the transmission system in this area could lead to highly underutilized transmission assets. BAMx is supportive of PG&E's effort to implement preferred resource alternatives as a solution to network planning standard violations. Moreover, in alignment with CAISO's previously stated policy of favoring preferred resources, BAMx encourages the CAISO to explore this approach for resolving network deficiencies in other areas.	
3l	*General Comment on the high voltage SDG&E Request Window Submission* The CAISO assessment of the San Diego area identified several internal 230 kV reliability constraints. The CAISO identified options that included both preferred resources and flow control devices. SDG&E however has only proposed projects for flow control devices consisting of two series capacitor projects and a phase shifter project as well as 230 kV system upgrades. While BAMx questions the need for some of these projects as described below, if it is determined that mitigation is necessary, selection of Preferred Resources would have the additional benefit of reducing San Diego's reliance on imports that could eventually trigger a multi-billion transmission upgrade to increase the San Diego import capability. A better understanding of these impacts is needed before deciding what type of mitigation, if any, is needed.	This comment has been noted.
3m	*SDG&E Request Window Submission: HVDC Conversion* Based on the scope of the project, the SDG&E proposed HVDC Conversion Project is the same Renewable Energy Express project proposed during last year's Transmission Planning Process. No cost estimates for this project were provided during this presentation but SDG&E provided a cost estimate of $700-$1000 Million last year. SDG&E's objective of the project would be to reduce congestion, increase the SDG&E import capability and reduce SDG&E Local Capacity Resource (LCR) requirement. No economic analysis has been presented to support the value of reducing the local generation requirement and nothing of this scope has been identified as needed for reliability mitigation in the preliminary Reliability Assessment Results for the SDG&E area. In fact, we would have concerns that importing 3,000 MW over this project would create	The ISO is reviewing the project and is working with SDG&E as the NERC registered transmission planner to evaluate the need for the project.

No	Comment Submitted	CAISO Response
	new reliability issues for P7 contingencies involving the bipole DC line outage in both the San Diego and SCE areas. Such a project is more properly considered in the CAISO Order 1000 process where the project can be considered along with other alternatives as to the benefits of increasing the CAISO import capability or considered by way of the CPUC portfolios for the 50% RPS, when they become available.	
3n	*SDG&E Mission-San Luis Rey 230 kV lines Compensation* SDG&E proposes to install thyristor-controlled series compensation on the two Mission-San Luis Rey 230kV circuits. The driving factors for the project are P1 violations of Encina-San Luis Rey 230kV circuit for the loss of Palomar Energy Center-Encina 230kV circuit and Palomar Energy Center-Encina Overload for the loss of Encina-San Luis Rey 230kV circuit. The CAISO assessment only identifies such criteria violations for a spring off-peak case and a sensitivity case forcing a high northbound flow. Given the conditions under which these violations occur, SDG&E needs to demonstrate that this a reliability issue that cannot be addressed by re-dispatching the generation.	The ISO is reviewing the project and is working with SDG&E as the NERC registered transmission planner to evaluate the need for the project along with other alternatives as reliability, policy, and/or economic driven addition to the ISO controlled grid.
3o	*SDG&E Miguel-Mission 230 kV lines Reconductor and Compensation* The scope of the Miguel-Mission 230kV line Reconductoring and Compensation project is to install 50-70% series compensation on the Miguel-Mission 230kV circuits as well as reconductor portions of Miguel-Mission 230kV Circuits. The reliability justification for this project are two P6 (N-1-1) level overloads on Bay Boulevard - Silvergate 230kV circuit. However, based on CAISO's assessment, these two overloads only appear in the summer peak 2019 case and are not observed in the later years.	The ISO is reviewing the project and is working with SDG&E as the NERC registered transmission planner to evaluate the need for the project.

22430 SILVERGT 230 22771	P1L-23014_ 22464 MIGUEL 230 22504 MISSION 230 1 1 and P1L-23033_ 22532 SYCAMORE 230 22652 PENSQTOS 230 1 1	P6	N-1-1	106.5	96.1	91.7		103.1	100.8	103.0	91.7	90.9	125.8

-O/MID/RI August 15, 2017

ISO Reliability Assessment - Preliminary Study Results

SDG&E Main

revised

Overloaded Facility	Worst Contingencies	Category	Category Description	Loading (%)									
				B1: 2019 Summer Peak	B2: 2022 Summer Peak	B3: 2027 Summer Peak	B4: 2019 Spring Light Load	B5: 2022 Spring Off-Peak	S1: 22SP High Load & Peak Shift	S2: 19SP Peak Shift	S3: 27SP Peak Shift	B4:22SP High Renewables Output	S5: 22SP Heavy Northbound Flow
BAY BLVD 230 1 1	P1L-23015_ 22464 MIGUEL 230 22504 MISSION 230 2 1 and P1L-23033_ 22532 SYCAMORE 230 22652 PENSQTOS 230 1 1	P6	N-1-1	106.4	96.0	91.6		103.0	100.7	102.9	91.6	90.8	125.7

No	Comment Submitted	CAISO Response
	SDG&E also stated that the proposed project would reduce congestion on multiple circuits within their system. If critical to the project justification, the value of reducing this congestion should be quantified. BAMx would encourage the CAISO defer any action on the proposed project since neither the reliability value nor economic value of the proposed project has been demonstrated.	
3p	SDG&E Penasquitos Phase Shifting and the associated Four-Breaker Scheme Transformer The proposed SDG&E project would construct a Phase shifting transformer on the Old Town-Penasquitos 230kV circuit. The reliability benefits for the project provided by SDG&E were to mitigate a P2.1 overload on the Silvergate - Old Town 230kV circuit and P1 overload on Polamar Energy Center - Encina 230kV substation. Based on CAISO's preliminary assessment result, these overloads are only observed for a spring off-peak case and a sensitivity case forcing a high northbound flow. Again, given the conditions under which these violations occur, SDG&E needs to demonstrate that this a reliability issue that cannot be addressed by redispatching the generation.	The ISO is reviewing the project and working with SDG&E as the NERC registered transmission planner to evaluate the need for the project.

4. California Energy Storage Alliance (CESA)
Submitted by: Jin Noh

No	Comment Submitted	CAISO Response
4a	Preliminary Study Results In the September 21-22, 2017 stakeholder meetings, CESA was encouraged to see that the California Independent System Operator ("CAISO") and the Participating Transmission Owners ("PTOs") are increasingly considering preferred resources and energy storage solutions as potential mitigation solutions to address several reliability issues. In particular, CESA was encouraged to see that Pacific Gas and Electric Company ("PG&E") submitted a request window proposal to competitively solicit preferred resources such as in-front-of-the-meter energy storage, behind-the-meter energy storage, and other distributed energy resources to address their remaining thermal overload need after the proposed substation upgrades. CESA believes that PG&E proposing an actual non-wires alternative for a transmission need represents an important advancement that other PTOs should consider and propose. The next step for PG&E is to structure the competitive solicitation to provide clearly defined needs and data to support the consideration of non-wires alternatives over a traditional wires solution. Detailed information on the nature and timing of the thermal load will be important to help preferred resource providers the tools needed to structure a competitive bid to meet the transmission need. This type of information is critical to allow resources to provide and be compensated for other services (*e.g.*, wholesale market revenue, retail services) to maximize the utilization and cost-effectiveness of the preferred resource while clearly setting the parameters to ensure that the transmission need is met reliably and consistently. These discussions should also address cost recovery issues for non-wires reliability alternatives.	The ISO expects that PG&E will address these issues in its procurement process for the preferred resources.
4b	Special Studies CESA was encouraged to see the CAISO continue the Bulk Storage Special Study with updated 2016 Long-Term Procurement Plan ("LTPP") assumptions and scenarios in the 2016-2017 planning cycle, which demonstrated that bulk storage resources, pumped hydro storage ("PHS") in this particular study, reduced renewable curtailment, greenhouse gas ("GHG") emissions, and production costs, although it did not produce sufficient net market revenue to cover its levelized annual revenue requirements and it produced reduced levels	The comment has been noted.

No	Comment Submitted	CAISO Response
	of these benefits from the 2015-2016 special study due to certain changes in assumptions. Notably, rather than using a -$300/MWh price for all renewable curtailment, the CAISO created a step function for renewable curtailment prices that "mimics the CAISO market mechanism to curtail renewable generation with economic bids and self-schedules." In this 2017-2018 study update, further adjustments were made to the load forecast, availability and dispatchability of Combined Heat and Power ("CHP"), hourly profiles of energy efficiency measures, among others. Together, these changed assumptions further reduced the benefits shown in the study results, even though the overall results showed overall reductions in renewable curtailment, GHG emissions, and production costs. An additional default scenario was run with a four-tier curtailment price scale, which creates a more gradual step-down function of curtailment prices.	
4c	First, on the study approach, CESA requests clarification on the meaningfulness of the four-tier curtailment price scale. While the 2016-2017 special study justified the change for renewable curtailment prices as mimicking market mechanisms, it is unclear what this four-tier curtailment price scale is intended to simulate, and whether this is supposed to reflect real-world market operations or a potential future scenario. Furthermore, CESA notes that, while the 2016-2017 renewable curtailment price step function mimics the CAISO market mechanism, they may not necessarily reflect the actual cost of curtailment, which may be informed by the cost of avoided Renewable Energy Credits ("RECs") and other non-market factors.	The 4-tier curtailment price structure was developed based on the review of renewable bidding prices in the ISO market in recent years. It more accurately reflects the bidding behavior of the renewable resources participating the market. The bidding behavior affects the value of the pumped storage resources.
4d	Second, on the key conclusions to be drawn from this special study, CESA suggests that the CAISO and stakeholders use caution in interpreting these study results as determining that bulk storage systems are not cost effective to pursue further as an energy, capacity, or transmission solution. As the CAISO importantly noted previously, "developing pumped storage resources would need other sources of revenue streams, which could be developed through policy decisions."3 CESA agrees and recommends that the CAISO, the California Public Utilities Commission ("CPUC"), and PTOs address the cost recovery issue for bulk storage resources serving as a market resource and a non-wires transmission alternative. A transparent methodology that considers	The suggestion has been noted.

No	Comment Submitted	CAISO Response
	specific benefits of non-wires alternatives and allocates costs accordingly is needed to determine whether partial rate recovery and/or market participation are appropriate for non-wires alternatives that may function as both a reliability solution and a market resource. Until these cost recovery issues are resolved, bulk storage resources will be unfairly evaluated in these studies and may not be submitted in actual project proposals as a result despite the significant benefits that they can provide.	
4e	Finally, CESA recommends that this special study be re-run again in the 2018-2019 TPP cycle to incorporate the latest inputs, assumptions, and scenarios from the Integrated Resources Plan ("IRP") proceeding at the CPUC. These special studies already determined that a solar overbuild case would produce relatively more benefits in terms of reduced renewable curtailment, GHG emissions, and production costs, and therefore, in light of the Proposed Reference System Plan economically selecting more than 9,000 MW of solar and 1,100 MW of wind through 2030, there may be significant value in re-conducting this special study with updated inputs and assumptions.4 California likely faces a high-solar Renewable Portfolio Standard ("RPS") future, which may be procured early before 2022 to take advantage of expiring federal tax credits, indicating a potential need for PHS and other bulk storage resources such as compressed air energy storage ("CAES") earlier as well. Furthermore, in the aggressive 30 million metric ton ("MMT") GHG emissions scenario by 2030, approximately 1,200 MW of PHS was economically selected as part of the optimal portfolio. The re-run of the special study in the next TPP is justified and prudent based on the combination of demonstrated benefits in previous TPP special studies of bulk storage in a high-solar RPS future with the updated inputs and results showing benefit of long-duration bulk storage in a 30 MMT future. This study re-run will greatly inform the CPUC and stakeholders on the best path forward without overlooking a potential cost-effective and diverse grid integration resource that supports the state's GHG and renewable policy goals.	The comment has been noted. The ISO has not begun developing its 2018-2019 transmission plan study plan, and will continue to coordinate with and participate in the IRP process.

5. California Public Utilities Commission - Staff (CPUC-Staff) Submitted by: Justin Hagler		
No	Comment Submitted	CAISO Response
5a	1. CPUC Staff commends the efforts of the CAISO transmission planning staff in their work to clarify the baseline assumptions which drive findings of reliability need, and the accompanying tables showing which sensitivities produce overloads above the baseline scenarios. CPUC Staff have been collaborating with CAISO staff over the past several months to develop a standard format for presentation of baseline and sensitivity assumptions, to better understand the drivers behind CAISO transmission recommendations. CPUC Staff also greatly appreciates the work of the CAISO staff to integrate the tables of assumed load/load modifiers and generation assumptions into the presentation of reliability results. Use of these tables allows stakeholders to quickly reference which base cases cause reliability needs, and the assumptions used therein. CPUC Staff also encourage the consistent usage of a single data template across regions and to consistently provide the table of sensitivity overloads at the end of each region's section. Lastly, the CPUC staff view the 2018-2019 Study plan as a next step in the implementation of planning data transparency; arraying the base case assumptions tables at the beginning of the annual modeling exercise will allow stakeholders to track how data is updated over the course of the planning process.	This comment has been noted.
5b	2. CPUC Staff appreciate the CAISO's efforts to re-evaluate previously approved projects for their continued reliability need. CPUC Staff requests additional information regarding which baseline scenarios presented in the assumptions tables cause a continued reliability need. CPUC Staff again commend the CAISO for its diligent efforts to reexamine previously approved projects. Staff believes that removing the projects entirely from the base case, studying the effects, and potentially re-scoping or cancelling the project based on an updated assessment is a prudent strategy. When the CAISO is presenting the results of analysis of previously approved projects, CPUC Staff requests the CAISO clearly indicate for each project examined –which- baseline scenario of those outlined in the respective regional table was used to develop a preliminary conclusion. As an example, on Slide	The detailed analysis of the contingency analysis was provided in the tables posted on August 15, 2017 which indicates the base case scenario, the overloaded facilities, contingencies and the magnitude of the overload.

No	Comment Submitted	CAISO Response
	32/289 of CAISO's Day 1 presentation, Ravenswood- Cooley Landing 115kV Reconductor is presented. The CAISO notes that "NERC Category P2, P6, and P7 thermal overloads in baseline". It would be helpful to know exactly which baseline scenario is being referenced so stakeholders can easily refer back to the provided table to see the time frame in which an upgrade will be needed, and the resource assumptions which drove the need for mitigation.	
5c	3. The CAISO should coordinate with the CPUC's environmental permitting team as closely as possible, to keep CPUC staff aware of scoping updates to previously approved projects, which impacts when consulting contracts for California Environmental Quality Act (CEQA) work should be procured. In the presentation of reliability results, the ISO indicates that several projects held for re-scoping in last year's TPP cycle remain under review for further analysis of alternatives. Given the legal requirements of the CEQA environmental review process, it would be most beneficial for all parties involved if the CPUC's CEQA team were made aware of any scoping developments on the CAISO held projects as soon as they become available.	The ISO is conducting the review of projects as a part of the 2017-2018 transmission planning process and will provide stakeholders with updates of the status of the review during the stakeholder meetings with final recommendations being incorporated in the draft transmission plan that will be posted for stakeholder comment on January 31, 2018.
5d	4. CPUC Staff notice that the Vaca Dixon- Lakeville 230kV lines have resurfaced in this cycle's reliability results after being cancelled last cycle. The CAISO should elaborate on the methodology used to determine that no behind the meter solar is available during the 2019 peak winter hours of 16:00-18:00 when approving a reliability solution for the area. On page 102 of the CAISO's board approved 2016-2017 Transmission Plan, the CAISO notes that the Vaca Dixon- Lakeville 230kV Reconductoring project has been cancelled "based on reliability and local capacity requirements and deliverability assessments". On slide 74 of CAISO's Day 1 presentations, the CAISO notes that upgrades to the same corridor may be needed in 2019 to mitigate NERC P2 and P6 overloads in the 2019 winter peak baseline scenario. Using the newly available table of load and load modifier assumptions, CPUC staff notes that the 2019 Winter Peak Baseline Scenario assumes 0 BTM-PV between the hours of 16:00 and 18:00. Staff requests the CAISO explain its reasoning and source for this assumption. In addition, could the ISO explain	Yes, and the ISO is considering a range of relatively low cost mitigation options in the event mitigation is found to be required.

No	Comment Submitted	CAISO Response
	whether the assumption of no BTM- PV is a driving factor in finding a need for reliability mitigation, given a project in the area was cancelled due to lack of need in the previous cycle.	
5e	5. CPUC Staff support the proposal verbally requested at the stakeholder meeting to list the original TPP vintage in the presentation of assessments of previously approved projects not modeled in base cases. At the most recent stakeholder meeting, a participant requested that the analysis of previously approved projects being re-scoped indicate the original TPP approval vintage for each project being presented. This will help stakeholders to more efficiently analyze how shifting planning inputs used in previous TPPs compared with the current planning inputs affect findings of transmission need. CPUC staff support this request.	The ISO will review this request for future planning cycles when the information is presented as a part of the stakeholder process.
5f	6. The CAISO did not present the Gates No. 2 Transformer in the list of Fresno area projects not modelled in the base cases. CPUC Staff requests clarification on why this project was not presented. CPUC Staff commends the CAISO on its detailed presentation of projects removed from the base case and re-examined based on updated load and resources data. However, CPUC staff note that in the presentation of the Greater Fresno Area, projects were removed from the base case for additional analysis but were not documented in the presentation slides. CPUC staff is specifically interested in the documentation of the Gates No. 2 500/230kV Transformer, as the CPUC is aware of utility scale Solar PV projects in that area which are dependent on the transformer upgrade coming online for a full capacity deliverability date no later than 2022. The CAISO should make clear the status of the Gates transformer project (as well as the Kearney – Herndon 230kV line) to provide certainty to interested stakeholders, and explain why the projects were not presented even though they had been removed from the base cases.	As indicated at the stakeholder meeting the ISO is continuing the evaluation of the projects that were approved in the Central California Area study in the 2012-2013 transmission planning process separately and would be providing updates at future stakeholder meetings in the 2017-2018 transmission planning process.

No	Comment Submitted	CAISO Response
5g	7. PTOs' proposals of new reliability driven transmission projects do not make clear the baseline assumptions which drove the PTOs' requests. When the CAISO studies the PTOs' requests, the baseline resource assumptions should be fully documented using the same load/modifier/generation table format the CAISO used for presentation of the preliminary reliability results. The PTOs' presentations of proposed reliability solutions showed that the justifications for proposed transmission investments assumed a high load forecast by assuming a low level of AAEE, or did not provide forecast assumptions in their presentations. The load and generation assumptions used for these studies, including BTM PV output levels and CEC IEPR forecasts were not fully provided. It was also unclear whether the PTOs ran additional studies using the same assumptions as used in the CAISO's base scenarios, and what the results were. Thus, justification of proposed transmission investments requires additional clarity regarding what specific scenarios were studied and for what years. This could be achieved by documenting study scenarios/results in the same manner that the CAISO already did in their presentation of project re-scoping and reliability analysis, i.e. by providing the load and load modifiers, as well as generation tables when presenting the results of the CAISO's analysis. In future CAISO TPP cycles, PTOs should be required to document and provide study assumptions in the standardized table format for ease of stakeholder review.	The PTOs utilize the ISO reliability results posted on August 15, 2017 along with their own analysis of the planning area. The ISO reviews the PTOs' submissions based upon the assumptions of the ISO 2017-2018 transmission planning process to determine the need for the projects submitted in the PTO Request Window and presented at the stakeholder meeting by the PTOs.
5h	8. CPUC Staff look forward to seeing CAISO's analysis of PG&E's proposed Oakland area reliability projects making use of preferred resources in combination with transmission upgrades CPUC Staff was encouraged by PG&E's use of a blend of preferred resource procurement in combination with transmission upgrades to mitigate a potential reliability issue if both Oakland area generators were out of operation. CPUC Staff look forward to discussions with PG&E and the ISO to better understand the risk of retirement and/or maintenance outage of the Oakland thermal generators which would necessitate reliability upgrades, as well as the time frame for when such upgrades would reasonably be needed in correlation with gas plant retirement.	The comment is noted.

No	Comment Submitted	CAISO Response
5i	9. CPUC Staff appreciate the coordination taking place between PG&E, The CAISO, and the CHSRA in developing the transmission needs for the CA HSR Project. When the analysis of required network upgrades is completed, CPUC staff request that the CAISO indicate under which baseline scenarios a need was found for network upgrades. Staff appreciates the efforts of PG&E and the ISO to examine the extensive network upgrades that will be necessary to support both the California High Speed Rail Project (HSR). Staff requests that when the analysis of PG&E's proposed network reliability upgrades is conducted by the CAISO, the CAISO provide similar tables of load/modifier/generation assumptions used and to list alternatives considered to determine the appropriateness of the PG&E's proposed network upgrades. CPUC Staff will coordinate with SCE and SDG&E to conduct similar transmission planning exercises in future TPP cycles when more details of the HSR project have been established. In addition, CPUC Staff requests the CAISO clarify that the $737 million cost estimate for CHSRA interconnection work at -30% to +50% equates to $515.9 million to $1.1 billion. The high-end cost estimate should be considered during the transmission planning process. The Caltrain interconnection cost estimates, when added with a similar error margin would equate to substantially higher potential costs. CPUC staff request that the CAISO ensure that the full scope of the necessary upgrades is analyzed and that cost allocation be addressed to identify which costs will be borne by ratepayers and which will be borne by CHSRA, and the reasons for such cost allocation.	The ISO is currently assessing the load interconnections for the California High Speed Rail Project. The review ensures that the proposed facilities align with the long-term plans for the areas where the interconnections are located. The ISO will be providing details of the review in the draft 2017-2018 Transmission Plan that will be posted for stakeholder comment on January 31, 2018. The cost allocation will be based on PG&E's tariffs, not the ISO's, so cost allocation concerns will be managed by PG&E.

6. City of Lodi
Submitted by: Elizabeth A. Kirkley

No	Comment Submitted	CAISO Response
6a	<u>Lockeford-Lodi Area 230 kV Development Project</u> The Lockeford-Lodi Area 230 kV Development Project approved by the CAISO Board in the 2012-13 Transmission Plan was put on hold earlier this year for reassessment. At the September 21-22, 2017 Stakeholder Meeting for the 2017-18 TPP, this project was discussed with a preliminary conclusion that further analysis is required. The City of Lodi is providing additional information as described below for inclusion in the analysis. Although the Lodi CT is listed as a Generating Plant in the TPP Study Plan, this plant was commissioned in 1986 and will be 40 years old during this TPP planning period. This plant is located on the load side of the Industrial bus and should not be considered as load support for the City of Lodi or the surrounding area. The 10-year peak load forecast for the Industrial bus, as submitted by NCPA on behalf of the City of Lodi, is flat for the planning period of this TPP and does not reflect recent economic developments in the area spurred on by the growing wine industry in the region. Future developments through 2025 include over 1600 residential units with existing development rights; 418,000 square feet of retail space; 260,000 square feet of office/medical space; and 862,000 square feet of industrial space. Lodi Electric Utility is scheduled to meet with NCPA to update this load forecast to reflect the new developments. The revised 10-year load forecast will be made available to the ISO for further analysis of the Lockeford-Lodi Area 230 kV Development.	As reflected in the study cases, the Lodi CT is modelled off in the study cases. The ISO will perform the further analysis for the Lockeford-Lodi Area 230 kV Development using the revised forecast if it is provided on a timely basis.

7. Defenders of Wildlife Submitted by:		
No	Comment Submitted	CAISO Response
7a	Our comments focus on the Interregional Transmission Project (ITP) Evaluation and 50% RPS Out-of-State Portfolio Assessment, presented on Day 2. This presentation summarized CAISO's review of potential transmission projects to deliver out of state wind resources to California for the 50% RPS. We respectfully submit that high-level environmental policy review is needed before CAISO proceeds with further planning for out of state wind. In July 2016, the CAISO SB350 study was released, analyzing potential impacts of grid regionalization. The environmental analysis in this study indicated that developing out of state wind resources would likely reduce avian impacts in California known important bird areas, but would greatly increase avian impacts in Wyoming and New Mexico important bird areas. See SB350 Study, Environmental Volume, Section 4.2.5 Biological Resources. The proposed New Mexico and Wyoming wind resources and associated transmission projects should at least be reviewed again more closely with the latest WECC Environmental Data Viewer, last updated March 2016. Ideally these projects would be reviewed with the higher level of additional functionality and higher resolution available in the CEC Environmental Report Writer tool, but this tool needs to be finalized and publicly released, and inter-state jurisdiction issues need to be addressed. It is important to note that the California environmental data tool has higher resolution and functionality than the WECC-wide environmental data viewer. The lower level of environmental information available outside of California may result in less well-informed decisions, and potential environmental damage due to information gaps. The lower level of environmental protections for certain species outside of California should also be noted and addressed when considering these out of state renewable resources for California RPS eligibility.	This comment has been noted. The ISO encourages Defenders of Wildlife to engage with the appropriate agencies with regards to the environmental policy review, and to participate in the CPUC IRP process. The ISO relied upon the 50% RPS out-of-state portfolio provided by the CPUC as part of the 2016-2017 TPP. The focus of this study was to capture the impact on the transmission system and technical feasibility of the various options the ISO is aware of.

8. GridLiance Submitted by:		
No	Comment Submitted	CAISO Response
8a	Gridliance West Transco (GWT) appreciates the opportunity to submit comments on the public stakeholder meeting #2 material. GWT has a strong 230 kV grid that can be leveraged to maximize reliability and generation deliverability, provide low cost interconnections, and minimize curtailment of a balanced portfolio of renewable resources that can be connected to the only portion of the CAISO transmission system located outside of California. GWT transmission facilities are located in a renewable rich area of the CAISO system that currently has no functional Remedial Action Schemes that address issues on the GWT transmission system. Currently the GWT system supports minimal renewable generation. However, there is significant activity in the generation interconnection process and the potential is high for development of a balanced portfolio of low cost renewable resources in the range of 2500 to 3000 MW. The Western Interconnect is unique in that it relies heavily on Remedial Action Schemes as long-term solutions to address transmission constraints and reliability issues. Our experience in the Eastern Interconnect and ERCOT points to the use of Remedial Action Schemes as short-term solutions to bridge to long-term reliable resilient transmission solutions. While we understand the rationale and the development for Remedial Action Schemes in the West to address generation that is remote from load centers, the move to renewable types of generation resources demands a change in thought and application of Remedial Action Schemes to a more proactive recognition that reliability and resiliency of the grid requires further transmission development. GWT believes that the long-term benefits of transmission are discounted in many situations for the short-term cost benefit of Remedial Action Schemes. The cost of avoiding future Remedial Action Schemes over the life of a line as well as reliability and resiliency benefits along with market flexibility provides for lower cost generation solutions. These quantifiable benefits provide value to customers within CAISO and should be factored into the calculation of costs when considering installation of a Remedial Action Scheme versus the investment in new transmission infrastructure. For these reasons we believe CAISO should focus first on long-term robust transmission solutions that bring value to CAISO.	The ISO Planning Standards describe the risks and benefits of utilizing Special Protection Systems (SPS) or RAS, and they also provide guidelines for ensuring that reliability is maintained. These guidelines are applied consistently across the ISO controlled grid.

9. Imperial Irrigation District (IID) Submitted by:		
No	Comment Submitted	CAISO Response
9a	IID comments are focused on the "SDG&E Main System Preliminary Reliability Assessment Results". 1. IID appreciates CAISO engineers' analysis in which CAISO has identified one IID facility overload caused by four CAISO contingencies. IID will be happy to work with CAISO in mitigating this overload such that it provides a superior technical and economic solution for the benefit of all California ratepayers.	This comment has been noted.
9b	2 On slide # 23 of the above presentation, CAISO has identified IID's Imperial Valley – El Centro line (aka "S" line) as overloaded under one contingency condition. Although the details of overload levels are not on this slide, those are found in the Preliminary results posted on the CAISO website. These details indicate four contingencies would overload the "S" line in the range of 101% to 174%. The proposed mitigation offered by CAISO is to "rely on the ISO market congestion management and Operation procedure." Did CAISO consider any other mitigation measures to select the best from reliability and economic perspective?	As noted in the ISO's presentation material, operating procedures can mitigate the reliability issues. The ISO is continuing to explore other possible mitigations as possible policy-driven or economic-driven options.
9c	3. S" line emergency rating is 407 MW, meaning an overload of 174% would load this line to 726 MW (an increase of 319 MW above emergency rating). The protective relays will immediately trip this line if this loading was to occur in real time, thus initiating cascading events. IID understands the CAISO operating procedure which in fact, would require decreasing the pre-contingency flow on the N.Gila-Imperial Valley 500 kV line (NG-IV) to avoid this kind of overloading and consequent cascading events. Also, since the overload occurs under P3 and P6 contingency conditions, CAISO has 30 minutes to curtail flow on the NG-IV line by about 1270 MW. Can you elaborate on how this large curtailment can be accomplished within 30 minutes?	The S-Line overload concern could be eliminated by operational mitigation re-dispatching the generation in the SD-IV area within 30 minutes without curtailing large amount of the CAISO import. The amount of generation that would need to be redispatched depends on the particular generation that is selected and the effectiveness of that generation. In this particular case, the ISO grid does not need to curtail its import level but to re-dispatch generation that are under the ISO control. After the first contingency of either of the Suncrest-Sycamore 230 kV lines, the ISO operation procedure can reduce about 1000 MW of generation output in the greater IV area so that the remaining 230 kV line remains within its applicable rating, while increasing generation output by about 1000 MW in the San Diego area in order to bring down flow on the NG-IV line. In fact, there are about 3900 MW of conventional generation available in the SD-IV area by 2022, most of

No	Comment Submitted	CAISO Response
		them are gas turbine and combined-cycle power plants that can respond quickly within 30 minutes.
9d	4. CAISO is well aware of the devastating impact the loss of the Southwest Power Link (SWPL) had on the grid on 9/8/11. IID is very concerned that similar impact may occur again if CAISO's congestion management fails to fully mitigate the "S" line overload which may trigger cascading. IID encourages CAISO to explore other alternatives including upgrading the "S" line.	Please refer to the above response.

10. LS Power Development, LLC (LS Power)
Submitted by: Sandeep Arora

No	Comment Submitted	CAISO Response
10a	Economic Planning – Production Cost Model Development: Comments previously submitted by LS Power (at the Study Plan stage of the 2017/18 Transmission Plan1 and Study Findings stage2 of the 2016/17 Transmission Plan) noted certain deficiencies in CAISO's economic study models that result in significantly under-estimated Day Ahead Intertie Congestion on major CAISO Intertie paths. In particular, congestion on the Malin & Nevada-Oregon Border (NOB) paths has been reported in CAISO's Department of Market Monitoring (DMM) annual reports for the last four years in the range of $49 million to $149 million per year. In contrast, CAISO's economic studies as a part of the previous transmission plans show congestion costs on CAISO's California-Oregon Intertie (COI) and Pacific DC Intertie (PDCI) paths at less than $1 million per year. As previously noted in LS Power's comments, there are several reasons for this discrepancy -- but there are ways this discrepancy can be minimized if certain modelling enhancements are made to CAISO's economic study model. While CAISO has made some modelling enhancements in the 2016/17 TPP, there are several additional ones that still need to be made in order to more accurately capture intertie scheduling constraint congestion. LS Power recently worked with The Brattle Group ("Brattle") to model some of the enhancements it had previously proposed to CAISO as an attempt to analyze their ability to represent actual Intertie Congestion, especially on the Malin & NOB intertie scheduling constraints. A brief summary of this work is provided below and a Brattle slide deck report documenting this work is also being submitted along with these comments. The Brattle Group Study – September 2017: LS Power recently contracted with Brattle to conduct an economic planning study. The purpose of the study was to implement modeling enhancements to CAISO's 2016/17 production cost model and to perform production cost simulation studies to estimate the likely impact of these enhancements on congestion on the Malin & NOB intertie scheduling constraints. Benchmarking the Study:	While the ISO agrees that the day ahead congestion represents real costs, these are issues best explored at the market level rather than assuming that infrastructure solutions are appropriate and attempting to fully incorporate these factors into transmission planning analysis. Therefore, the transmission planning analysis will continue to focus more on physical congestion – generally experienced in real time – and will continue to track progress on improved market efficiencies in addressing the day ahead congestions and other issues identified by LS Power.

No	Comment Submitted	CAISO Response
	The Brattle work started from the CAISO's 2016/17 planning model database3 which was used for the economic planning studies in the 2016/17 TPP cycle. The Brattle analysis converted that case from the native GridView data format for use in the Power System Optimizer (PSO), another commercially available production cost simulation model. PSO was used because it has the capability to simulate contract-path transactions and congestion on scheduling constraints, which apparently is not possible with the GridView model. The PSO simulation tool has been previously used for CAISO-sponsored studies, including the SB350 study. As a first task, after converting the database to PSO, Brattle benchmarked this case against the CAISO's 2016/17 TPP economic planning study results. The outcomes of this benchmarking exercise are shown in the Brattle slide deck report which is being submitted with these comments. Although perfect benchmarking was not achieved, the amount of congestion noted using the PSO replication of the GridView case was lower than what was reported for a number of limiting constraints in CAISO's economic study. The differences relate to the fact that the models have different unit commitment algorithms (GridView uses a heuristic algorithm while PSO uses mixed-integer optimization) and how hurdle rates between balancing areas are imposed (GridView imposes hurdle rates on physical flows while PSO imposes hurdle rates on contract path transactions). However, the physical COI congestion in the Brattle benchmarking case was very close to what CAISO had identified in its TPP GridView case. Modelling Enhancements: After completing the benchmark simulation, Brattle analysis modelled the following enhancements: (a) added Intertie scheduling constraints to create a more accurate representation of WECC-wide scheduling and congestion, and (b) updated hurdle rates to better reflect the trading frictions that exist in bilateral scheduling, using assumptions from the SB350 study. In addition, Brattle simulations included a case with preliminary assumptions about existing contract paths and reduced hurdle rates for hydro resources from BC Hydro's system to reflect the reality that PowerEx (a) likely has long-term transmission reservations to reach the CAISO's Malin and NOB scheduling points, and (b) faces very low CO2 costs for at least a portion of its hydro imports into	

No	Comment Submitted	CAISO Response
	California based on its Asset Controlling Supplier emissions rate filed with the California Air Resources Board As a result of these enhancements, the simulated flows on Malin and NOB paths increased and were noted to be comparable to historical flows in some periods of similar net load and hydro conditions. The simulated 2026 power flows were lower than historical flows during the daytime hours due to the incremental solar generation that is projected to be online by 2026. However, the predicted flows and associated congestion on intertie scheduling constraints, such as Malin & NOB, remained high during the evening and night hours when solar generation is offline suggesting that solar buildout in California doesn't help reduce this congestion. Study Findings: The key findings of this modelling effort include: (1) The simulation of intertie scheduling constraints shows ~$10 million in annual congestion on the Malin and NOB intertie scheduling constraints, which is over 10 times more congestion than what has been found in CAISO studies for COI and the PDCI for the last several TPP cycles but still lower than historical congestion. (2) With the reduced PowerEx import hurdles, the simulated congestion on Malin and NOB increases to $14 million, or more than 15 times higher than in the 2016/17 TPP studies. (3) The Brattle simulations show approximately 2,000-2,300 binding hours on Malin and NOB. While this result is still lower than the historical 2,800-4,700 hours, it is significantly greater than the 120 hours on COI and the PDCI predicted in the 2016/17 TPP. (4) n addition to the Intertie scheduling congestion, the Brattle case also shows approximately $1 million in of physical congestion on COI, similar to what CAISO found. (5) Additional modelling enhancements, as recommended in the Brattle slide deck report, should be implemented which will likely bring the congestion in Brattle simulations much closer to the historical $49 mm to $149 mm congestion. Conclusion:	

No	Comment Submitted	CAISO Response
	The Brattle study concluded that implementing select modelling enhancements that reflect contract path scheduling and intertie scheduling constraints significantly improves the realism of simulated congestion of these paths, partially resolving the large discrepancy between recorded historical congestion and congestion predicted by TPP studies. The study also showed that the increasing magnitude of California's installed solar capacity is not a major driver in terms of reducing ITC congestion on paths such as Malin & NOB since this congestion typically occurs during periods of no/low Solar output in California. Not all potential enhancements were modelled in this Brattle study, but if they were, they would be expected to further reduce the discrepancy between simulated congestion in economic planning models and the actual congestion that is occurring in the CAISO market. The Brattle slide deck makes specific recommendations on what additional enhancements should be considered to simulate realistic levels of congestion on Malin & NOB. Next Steps: LS Power recommends that CAISO adopt these modeling enhancements for its 2017/18 TPP Economic Studies. Further, CAISO should simulate some sensitivities, such as various Hydro output assumptions for the Pacific Northwest and California, which can have substantial implications on power flows and disproportionately affect congestion over the Malin and NOB import paths, but were not explored in this study.	
10b	Interregional Transmission Project Evaluation: LS Power has the following comments on this section of CAISO's presentation: Robinson Summit to Harry Allen transmission capacity: As part of its Interregional project submittal, LS Power had proposed that approximately 1000 MW of new transmission capacity will be dedicated for CAISO use after SWIP North project is built. This transmission capacity will be from Midpoint to Eldorado5 500 kV substations, approximately 575 miles. Pursuant to a Transmission Use and Capacity Exchange Agreement (TUA)6 with NV Energy, once SWIP North is built there would be an exchange of capacity between Great Basin, a LS Power affiliate, and NV Energy. NV Energy would get a share of the capacity between Midpoint and Robinson Summit 500	This comment has been noted.

No	Comment Submitted	CAISO Response
	kV and Great Basin would get a share of capacity between Robinson Summit and Harry Allen 500 kV (ON Line), without either party having to pay any amount for this capacity exchange to the other. As a result of this capacity exchange, LS Power would have bidirectional transmission capacity on the entire path from Midpoint to Harry Allen, estimated at approximately 1000 MW (subject to the terms of the TUA). This was recognized as a footnote in CAISO's presentation and we recommend that this assumption continue to be used for any future work to be done in this area. Given this, SWIP N project should not need to procure 1000 MW of transmission capacity between Robinson Summit & Harry Allen substation. Any additional transmission capacity on Robinson Summit to Harry Allen, as required to count WY wind resources as fully deliverable, can potentially be procured through NV Energy OATT.	
10c	<u>Coal Shutdown can potentially create new Available Transmission Capacity on the existing system from WY to Midpoint:</u> As coal power plants east of Midpoint substation in Idaho retire, transmission capacity will likely become available on the existing transmission lines that connect wind locations in Wyoming to Midpoint in Idaho. Table 1 below shows potential coal retirements as shown for Preferred Portfolio of PacifiCorp's 2017 Integrated Resource Plan. These coal retirements can potentially make more existing transmission capacity available thereby allowing wind resources in WY to deliver to Midpoint. We recommend that CAISO analyze this further and not draw ATC availability conclusions by only looking at transmission availability on OATI OASIS.	Thank you for providing the data about potential coal retirements. The ISO also recognized this during the September stakeholder presentation. The ISO will follow the developments pertaining to potential retirement of these resources and will consider this information in future assessment of ITPs through our coordination with our neighboring planning entities.

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Table 1: Potential Retirement of Coal Generation

Unit	Pmax (MW)	Dispatch level in NTTG 2016/17 base case	Potential Retirement Year[7]
Colstrip 1	330	retired	2022
Colstrip 2	330	retired	2022
Naughton 3	350	retired	2018
Bridger 1	578	531	2028
Bridger 2	578	500	2032
Dave Johnston 1	106	106	2027
Dave Johnston 2	106	106	2027
Dave Johnston 3	220	220	2027
Dave Johnston 4	330	330	2027
Naughton 1	163	122	2029
Naughton 2	201	0	2029

</td><td></td></tr>
<tr><td>10d</td><td><u>Cost estimate for new transmission from Wyoming to Midpoint, ID</u>

CAISO studies suggest that new transmission will be needed to bring wind resources from WY into Midpoint. CAISO used the plan of service and cost estimate for Gateway West, a transmission project proposed by PacifiCorp. This cost estimate was taken from the RETI 2.0 Project Western Outreach report. However, the full build out of Gateway West should not be required to enable deliveries of wind from WY to Midpoint in light of (i) Gateway West is designed to serve PacifiCorp load (including OR and WA) as opposed to delivering to CA, (ii) the coal retirements referenced above and (iii) favorable wind resources are under development in western WY which will significantly reduce the transmission to Midpoint. The required build out should be further studied by CAISO including an examination of opportunities to re-conductor lines as opposed to building new lines. Including the full build out of Gateway West artificially inflates the cost of the SWIP N option and will skew the results.</td><td>The ISO used the cost range for Gateway West as specified in the RETI 2.0 Project Western Outreach Report. Table 7 of this report does specify the combined cost of Gateway West and SWIP-N as $ 3.3 billion to $3.7 billion. This cost is within the range assumed by the ISO. The ISO did not have access to information regarding reconductoring options at this time and would need to rely on information available from the transmission owner for such options.</td></tr>
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No	Comment Submitted	CAISO Response
10e	Other attributes to be analyzed: Similar to comments made in previous section on economic studies, CAISO should implement modelling enhancements to its production cost model for ITP evaluation as well such that intertie scheduling congestion is correctly captured on CAISO's ITC interfaces. CAISO's ATC analysis shows that ~300 MW ATC is available south of Central OR towards COI. As the Brattle study shows, if modelling enhancements are implemented in CAISO economic study models, the intertie congestion that routinely gets recorded to CAISO's Malin & NOB paths does get captured in the studies. Given this historical congestion on this path, an additional value of SWIP North project is that it will make 1000 MW of new scheduling capability at Midpoint for Hydro and other energy schedules from Pacific Northwest that typically get curtailed due to congestion issues on Malin & NOB. These will now have an alternate path to get to California from Central OR to Central ID (as shown on Page 37 of CAISO's Sep 22, 2017 TPP presentation).	Please refer to the above response.
10f	Reliability impacts of projects - When analyzing reliability impacts of ITP projects, in addition to the metrics CAISO developed, consideration should also be given to the following metrics for ITP comparison: (1) Is the line outage of an ITP itself posing any reliability risks to the Bulk Electric System? Will a SPS be required that would trip several generators for loss of the ITP line? If so, what is the impact of the SPS on grid reliability and are there any operational & market implications from this SPS in terms of the need for CAISO to procure additional operating reserves to protect against loss of the ITP line? (2) Does the ITP project bring any benefits to the WECC system as a whole? For instance is the ITP project a network line (vs a long gen tie line) that could help further reinforce the WECC network and protect against a potential blackout that could be caused by WECC NE-SE separation8?	The ISO did take into account the reliability risk of an outage of an ITP. By looking at the thermal loading relief provided for the entire WECC system, the ISO did seek to capture the reliability benefits to the WECC system as a whole. The ISO did not test for extreme contingencies that would trigger NE-SE separation. This could be considered as part of any future evaluation of ITPs.
10g	EIM benefits – When comparing ITP projects CAISO should also look into whether projects are helping increase EIM benefits. If an ITP is helping increase EIM transfer capability between multiple EIM regions, this should be a huge benefit to all regions and should be noted accordingly for ITP comparison	The comment has been noted and will be an issue needing further consideration in future analysis.

No	Comment Submitted	CAISO Response
	purposes. For the RETI 2.0 Project Western Outreach report9 this attribute of ITP projects was accounted for. The report said that "*A number of the projects would enhance the efficiency of the existing (or expanded) EIM as well as a future regional energy market. The SWIP North project is an excellent example of this. The project would increase transfer capability between NV Energy and PacifiCorp, which is currently limited to 430 MW (see Figure 10)".* CAISO's analysis similarly should account for this benefit of ITPs as well.	

11. NextEra Energy Transmission, LLC (NEET West)
Submitted by: **Edina Bajrektarević**

No	Comment Submitted	CAISO Response
11a	NEET West Recommends CAISO Develop a comparative evaluation of all submitted solutions and to develop ranking for the best Long-Term Reliability Solution for the Pacific Gas & Electric (PG&E) Oakland Area in 2017-2018 TPP In the 2017-2018 TPP cycle (as done in prior TPP cycles) the CAISO indicates that they will continue to consider transmission, generation or non-transmission solutions as they revisit the assessment of Oakland area needs. To improve reliability and mitigate thermal overloads within the Oakland area, NEET West plans to re-submit two new transmission solutions that consist of a new 230 kV transmission source connecting Sobrante 230 kV substation or Moraga 230 kV substation to a new Oakland C 230 kV substation. NEET West requests that the CAISO's 2017-2018 TPP cycle include a special assessment of the Oakland/East Bay area and to evaluate the NEET West project alternative against all other transmission and non-transmission alternatives being considered to determine the most reliable and cost effective solution. Due to its characteristics, long-term planning for the Oakland/East Bay Area should incorporate an approach similar to the San Francisco Peninsula Extreme Event Reliability Assessment previously performed in the CAISO's 2015-2016 TPP cycle. The Oakland/East Bay assessment should explore all viable mitigation options that address the special circumstances for this area; some of these circumstances include: • A high-density urban area consisting of over 400 MW of load. • Retirement of Oakland area combustion turbine (CT) generation. • Elimination of the reliance on Special Protection Systems (SPS) or Remedial Action Schemes (RAS) per the CAISO's new High Density Urban Load Area planning standard, which no longer allows "non-consequential load dropping in high density urban load areas in lieu of expanding transmission or local resource capability" to mitigate NERC TPL standard contingencies and transmission system impacts (for facilities ≥115 kV). NEET West recognizes there are multiple existing SPSs in the East Bay (including but not limited to, the Oakland 115 kV C-X Cable OL RAS, Oakland 115 kV D-L Cable OL RAS); these	Your comment has been noted.

No	Comment Submitted	CAISO Response
	schemes are designed to drop load in order to comply with NERC TPL contingency events. • The environmental restrictions and economic impacts of the Oakland combustion turbines (that are Regulatory Must Run (RMR) units) and the Northern California Power Agency (NCPA) combustion turbines in Alameda have on the system and how these restrictions and economics may be impacted with the addition of the NEET West Oakland Project. • Exposure and restrictions of transmission system topology. Existing critical overhead transmission sources (Moraga-Claremont, Moraga-Station X, and Moraga Station J 115kV circuits) are confined to multiple-circuit corridors and traverse heavily-wooded areas, foothill ridges and canyons. These conditions limit accessibility, and expose these facilities to causes of common-corridor outages (such as fire). Likewise, downtown Oakland's aging network of 115 kV underground cables (gas-filled pipe-type cables constructed in the 1960s) offer limited access due to heavy urban development, and are also exposed to seismic considerations (proximity and orientation to the Hayward Fault). All these factors complicate the timely restoration and/or reinforcement of existing circuits, and likewise present routing challenges for new facilities. Planning studies should consider the implications of multiple-circuit/extreme outages, and the potential for sustained unavailability of one or more circuits.	
11b	Finally, NEET West would appreciate if CAISO can provide clarification to the following questions that would help support better comparative evaluation of different project solutions: 1. NEET West respectfully requests that the CAISO establish/confirm specific assumed retirement dates for both the Dynegy Oakland and Alameda Municipal Power (AMP) CTs. Unavailability of this generation directly impacts the required timing and magnitude of potential long-term solutions. The Dynegy Oakland CTs are shown as out-of-service/retired in for all three cases spanning the 10-year Planning Horizon (2019-2027). It is noted	The ISO has not been notified by the generator owners as to retirement plans; however based on the age of the facilities required for RMR in the area the ISO is planning for mitigation plans to operate the system without the generation in the area.

No	Comment Submitted	CAISO Response
	that the Alameda CTs (total of ~50MW, installed in 1986) are on-line for the 2019 and 2022 Heavy Summer cases, but off-line in the Year Ten 2027 Heavy Summer case (presumably retired due to age ≥40 years per Section 4.7.5 of the CAISO 2017-18 TPP Study Plan). In AMP's March 9, 2015 comments to the CAISO's 2015-16 TPP Assessment, AMP expressed concern regarding the operating restrictions and potential unavailability of the Alameda CT units. a. The prior 2016-17 TPP Assessment indicated that the ISO was "working with the Oakland generator owner to assess the expected life of the existing generation". Has CAISO concluded its assessment and made a final decision on the retirement assumption for the Oakland CTs? b. Has the ISO conducted further assessment of, and made any changes to, the dispatch or retirement assumptions for the AMP CTs?	
11c	2. The Assessment identifies "system upgrade or preferred resource" as the recommended mitigation solution to address contingency overloads of the Oakland 115 kV underground cables. Can you please provide more information on these proposed solutions?	This could include upgrading existing cables, bringing new 115 kV or 230 kV sources or a portfolio of preferred resources and operating solutions.
11d	3. The CAISO 2017-18 TPP Greater Bay Area preliminary results tables identify high normal and contingency voltages in the East Bay Area, especially for the 2019 cases. There may be a need to verify and potentially correct the assumptions for load power factor, as well as the Moraga 230/115kV transformers' variable transformer tap settings: a. Load power factor assumptions are noticeably different for the 2019 versus 2022 GBA Summer Peak Cases. Looking at the East Bay non-conforming loads (Zone 307) only, the 2019 Summer Peak GBA case shows a total non-EE load 655.5MW, - 54.6MVAR (0.996 leading PF) versus the 2022 case's non-EE load of 672.8MW, +95.8 MVAR (0.990 lagging PF). b. The 2019 Summer Peak GBA case shows unbalanced/circulating MVARs among Moraga 230/115kV transformers #1, 2, and 3 with -	The suggestion has been noted. Regarding the power factor, the 2019 cases reflect actual load power factor and the 2022 and 2027 cases reflect power factor within tariff required range. PG&E is assessing options to address the load power factor to bring it within or as close as feasibly possible to the tariff requirements.

No	Comment Submitted	CAISO Response
	329.5, -91.8, +169.3 MVARs respectively. Transformer #1's variable tap (TCUL) setting may require modification/update.	
11e	4. The CAISO's 2018 Local Capacity Technical (LCT) Requirements Study (published May 2017) indicated that the Oakland Area load modeled in the LCT Greater Bay Area cases differed from 2015 and 2016 real-time operations data and showed a "discrepancy in load forecast distribution among substations in the area", which resulted in the extension of additional Reliability Must Run (RMR) contracts. The CAISO further indicated that it would work with PG&E and the California Energy Commission to correct this discrepancy in future studies. In the CAISO's 2017-18 TPP cases, were the Oakland Area load levels and/or load distribution adjusted to reflect these identified changes? What consideration will the CAISO be giving to each of the proposed Oakland area project alternatives to determine which projects that will require ongoing RMR contracts versus those that eliminate this need/cost?	The Greater Bay Area peak cases used to study Oakland Area include coincident peak load for Greater Bay Area. Therefore, there will be some mismatch between the load level in base cases verses the actual peak load. However, actual load level is always considered in developing mitigation plans. As such, any alternatives considered for long-term mitigation plan won't require ongoing RMR contracts.
11f	5. What are the 2017 peak loads (Summer, Winter) to date for the overall East Bay Area (Zones 307, 337), and how do these values compare to the load forecast assumptions in recent TPP Assessments?	Please refer to the response to the next question (#6) for comparison of "Oakland Load Pocket" load between actual and base case numbers. In regards to the 2017 peak loads in TPP Assessments, 2017 is not year studied as part of this year's assessment. Overall East Bay Area loads in the years studied can be obtained from the base cases posted.
11g	6. A the 9/21-22, 2017 CAISO TPP Stakeholder meeting, PG&E indicated that the 2017 Peak load for the "Oakland Load Pocket" was 174.3MW. Can you please confirm: a. Is this value correct? b. What substations/loads comprise this value? c. Does this load value recognize the gross demand of Alameda's Cartwright substation (is not netted by potential output from the Alameda CTs)? d. What were the 2015 and 2016 Summer Peak load values for this same load pocket? e. Were the Winter Peak values for 20152017 lower than the Summer Peak values?	a. Yes, based on the available PI data. b. Oakland C, Station L, SS Steel, Port of Oakland, Cartwright are included. c. Yes. d. 188MW and 181MW respectively. e. 2015 was higher and 2017 was lower.

No	Comment Submitted	CAISO Response
11h	7. NEET West requests the CAISO and PG&E to consider an alternate/additional "Oakland Area" load definition to the Oakland Load Pocket which also includes the loads at Stations Claremont/K, D, and X. For this broader definition can you please confirm: a. Can distribution loads be transferred between K, D, or X and Stations C and L? b. What are the 2015, 2016, and 2017 (to date) Summer Peak load values for this larger Oakland Area load definition (includes K, D, L, C, and X plus Alameda Cartwright, Port of Oakland, and Schnitzer Steel)?	The comment has been noted. However, the current definition of the "Oakland Area Load" seems adequate based on the worst constraint in the area.
11i	8. Do the 2022 "High CEC Forecast" sensitivity cases account for (or have you considered an additional sensitivity study of) potentially significant load growth associated with the Port of Oakland's redevelopment of the Oakland Army Base, further redevelopment at the former Navy Base, increased electricity use by ships while at berth, electrification of port equipment, and Alameda Municipal Power's development of Alameda Point?	The "High CEC Forecast" case accounts for overall increase in the net load by not counting on the AAEE and considering shifting of net peak load hour. This would compensate for some of the potential load increase.
11j	NEET West Recommends CAISO Develop a Long-Term Reliability Transmission Solution for the Desert Area 2017-2018 TPP To improve reliability, mitigate thermal overloads of the existing 230 kV transmission network in the West of Devers area1, and address the growing deliverability constrained Desert Area, NEET West plans has submitted a proposal to construct a new 500 kV transmission system from Mira Loma 500 kV substation to Red Bluff 500 kV substation with 50% compensation. A new Mira Loma – Red Bluff 500 kV Transmission System would provide a multi-value (reliability, economic, policy) long term benefit solution that: • Addresses the Desert Area Constraint (DAC) which was identified as one of the more robust conclusions of the California Energy Commission (CEC) Renewable Energy Transmission Initiative 2.0 Final Plenary Report (February 2017) to emerge as a serious issue prior to 2030, that affects deliverability of resources from a broad area of southeastern California, and should be a priority for further planning. • Will eliminate and/or minimize the congestion management costs which are used to mitigate thermal issues on the existing 500 kV	The ISO will review this request window submittal through the normal process when it is received.

No	Comment Submitted	CAISO Response
	transmission network. Depending on the amount of congestion that occurs as a result of the Desert Area Constraint, the costs could be significant. Construction of a new Mira Loma – Red Bluff 500 kV transmission system would reduce the amount of congestion management necessary (including generation curtailments) to alleviate the thermal issue and consequently economic savings could be realized. Further analysis would be required to quantify the economics of congestion management costs expended annually in order to maintain system reliability for this transmission line. • Minimizes generation curtailment, and also continued reliance on the existing SPS, specifically Inland SPS and West of Devers SPS, and continued reliance on operating procedures for voltage and thermal control. • Complements integration of CAISO-approved participating transmission owners' projects and the approved competitive transmission solicitation projects. • Supports Eastern LA Basin Local Capacity Requirement (LCR) Sub-Area process. The LCR need for the Eastern LA Basin sub-area is based on the need to mitigate post-transient voltage instability that is caused by the loss of the Alberhill – Serrano 500 kV line, followed by an N-2 of Red Bluff-Devers #1 and #2 500 kV lines. The LCR need to mitigate this post-transient voltage instability concern is determined to be approximately 2,230 MW (source: CAISO TPP 2015-2016), which is to be met by available resources in the Eastern LA Basin sub-area. • Addresses a reactive power deficiency. With the continued load growth and addition of renewable generation in the Eastern area, there is voltage degradation to the system that was observed at the Red Bluff, Serrano, and Colorado River substations. With the inclusion of the new proposed Mira Loma - Red Bluff 500 kV transmission system, as required to mitigate thermal overload problems, the base case voltage issues identified at the previously mentioned substations were improved. • Continues to support integration of the renewable generation in CAISO. NEET West's proposed project will support the integration of renewable generation. The most recent Cluster 9 Phase 1 Interconnection Study Report, SCE Eastern Bulk Area Report	

No	Comment Submitted	CAISO Response
	(January, 2017), identified numerous thermal overloads and low voltages conditions with all facilities in-service. This constraint is commonly referenced as the "Desert Area Deliverability Constraint". This constraint is of primary importance to California renewable integration because it affects the deliverability of generators in several energy zones, including Riverside East, Tehachapi, Imperial, San Diego South and other non-CREZ areas. In closing, NEET West requests that the 2017-2018 TPP evaluation by CAISO include the reliability evaluation of the NEET West Mira Loma – Red Bluff 500 kV transmission project. The comprehensive evaluation should also consider economic and public policy benefits of the project in order to properly measure and compare the NEET West project alternative against other alternatives considered when determining the most cost effective long-term solution.	
11k	Consideration of Preferred Resources Solutions Furthermore, NEET West is encouraged to see that preferred resources and energy storage solutions were highlighted as potential mitigation solution to address several reliability issues in the system during the 2017-18 TPP cycle. NEET West recognize that while energy storage has sometimes been classified as a generation resource, the operational characteristics of advanced storage technologies and their use as transmission assets are worth exploring. Storage resources could potentially provide substantial benefits to improving transmission grid reliability and congestion. However, it is important to create a transmission planning process where energy storage will be enabled to provide multiple services (including both cost-based and market-based services) and tested as this will ensure full capability of the resource, thereby maximizing their efficiency and value for the system and to the customers. To this point, and recognizing that CAISO is welcoming energy storage as potential mitigation solution to solving reliability issues in the current 2017-18 TPP cycle, NEET West may propose energy storage projects as an alternative or subset of a comprehensive mitigation solution for a new infrastructure. To properly examine energy storage as non-wires alternative and compare it against all considered transmission solutions, NEET West encourages the CAISO to work with the appropriate agencies to identify the methodology and the process on how non-	The comment has been noted.

No	Comment Submitted	CAISO Response
	wires reliability solutions can be selected in place or as part of the transmission projects. NEET West would also like to see the methodology that CAISO will apply and to test an energy storage resource (non-wires solution) and how that resource will be compared in a cost/benefit analysis to other transmission alternatives that could provide the same type of service.	

12. Northern California Power Agency (NCPA)
Submitted by: David Dockham

No	Comment Submitted	CAISO Response
12a	<u>Lockeford-Lodi Area 230 kV Development Project</u> The Lockeford-Lodi Area 230 kV Development Project approved by the CAISO Board in the 2012-13 Transmission Plan was put on hold earlier this year for reassessment. At the September 21-22, 2017 Stakeholder Meeting for the 2017-18 TPP, this project was discussed with a preliminary conclusion that further analysis is required. The City of Lodi is providing additional information as described below for inclusion in the analysis. Although the Lodi CT is listed as a Generating Plant in the TPP Study Plan, this plant was commissioned in 1986 and will be 40 years old during this TPP planning period. This plant is located on the load side of the Industrial bus and should not be considered as load support for the City of Lodi or the surrounding area. In support of its members, NCPA prepares and submits individualized 1in2, 1in5 and 1in10 year load forecasts for use in the CAISO Transmission Planning Process on behalf of each of the 10 interconnected members in the NCPA power pool, including the city of Lodi. Forecasts are based on an econometric model that takes into account a variety of factors, including weather, real GDP growth, unemployment rates for the relevant employment area, and energy efficiency savings. The load forecast for Lodi has been flat for the last several years, and no exogenous adjustments have been made to the current load forecast to account for the expected development outlined by Lodi in its comments on this same project. NCPA is working with Lodi to update the load forecast to include the new loads represented in Lodi's comments. NCPA will remain ready and willing to assist both Lodi and the CAISO in support of CAISO's further analysis of the Lockeford-Lodi Area 230KV Development.	As reflected in the study cases, the Lodi CT is modelled offline in the study cases. The ISO will perform the further analysis for the Lockeford-Lodi Area 230 kV Development using the revised forecast if it is provided on a timely basis.

13. Office of Ratepayer Advocates (ORA)
Submitted by: Joseph Abhulimen

No	Comment Submitted	CAISO Response
13a	1. The Interregional Transmission Project (ITP) Evaluation Did Not Support Use of Out of State Resources to meet the State's 50% Renewable Portfolio Standard (RPS) Target The CAISO made an assumption that out of state wind and solar resources are less expensive and have higher capacity factors than in-state resources. With this assumption, the CAISO evaluated the potential for current proposed ITPs to provide 4,000 megawatts (MW) of wind from Wyoming and New Mexico to California to meet the state's 50% RPS target. However, this evaluation revealed that this target cannot be met with just one ITP.1 This evaluation, along with the CPUC's Integrated Resource Planning (IRP) study findings, 2 confirms that California can meet its current 50% RPS target with in-state resources at lower costs than with the inclusion of out of state wind resources. ORA supports continued consideration of ITPs to meet future state RPS targets, along with in-state resources to determine the most cost efficient procurement method. To further assess the costs and benefits of proposed ITPs, ORA recommends further study on the following items: *A. Firm Available Transfer Capacity (ATC) of Resources:* The ITP evaluation revealed that only the TransWest Express (TWE) ITP would "create sufficient long-term, firm available transmission capacity from the renewable resource areas [located in Wyoming] all the way to the CAISO without relying on other transmission not owned by the project sponsor" 3 in the amount of 1,500 MW. The CAISO should provide additional information to support this assertion, such as all the costs associated with getting wind from Wyoming to the CAISO. *B. Renewable Curtailment Market Factors:* The ITP evaluation revealed that additional transmission would not result in greater exports of California renewables.4 The export of California renewables beyond the current CAISO 2,000 megawatts (MW) export limit is impacted more by market dynamics than by transmission constraints. ORA requests further evaluation and information on the market barriers to	The ISO did not make any assumptions about the out-of-state wind and solar resources being less expensive or with higher capacity factor than in-state resources in the course of this special study. The 50% portfolio that included out of state resources was provided by the CPUC as part of a set of portfolios that also contained in-state portfolios to explore a range of sensitivities. This evaluation does not suggest that the 50% RPS *"cannot be met with just one ITP"*. With a sufficient capacity build, the target can be met. This evaluation does not suggest that *"California can meet its current 50% RPS target with in-state resources at lower costs than with the inclusion of out of state wind resources."* A. The ISO included the planning level cost estimates for the ITPs. The expectation is that this data along with the data provided as part of RETI 2.0 initiative will be considered in the CPUC's IRP proceeding. B. The study did not reveal if additional transmission would or would not result in greater exports of California renewables. The ISO net export limit was an assumption used to test the impact of exports on renewable curtailment.

No	Comment Submitted	CAISO Response
	increasing the export of California renewables beyond 2,000 MW in item 2 of these comments. ORA provides more specifics on its recommended future RPS procurement studies in item 9 of these comments.	
13b	2. The CAISO Should Reevaluate the Benefits in the Senate Bill 350 Regionalization Studies Based on its TPP Special Study Findings During the 2017-2018 TPP presentations,[5] there was a discussion on the CAISO's export limits that raised questions on the reported regionalization benefits in the Senate Bill 350 (SB 350) study. This discussion revealed that the CAISO is not able to sell more than 2,000 MW of its surplus solar energy in the regional market even without transmission constraints. The SB 350 study assumed that with regionalization, the CAISO's export capacity would increase from 2,000 MW to 8,000 MW.[6] The SB 350 study benefit analysis assumed that California's renewable exports would be sold at a value no less than $0/MWh ($0 per megawatt-hour).[7] The analysis also considered a sensitivity in which California renewable exports would be sold at a negative price (-$40/MWh) during oversupply conditions.[8] Based on the 2017/2018 TPP special study findings, the CAISO has new information on California's ability to sell its excess renewable resources in a regional market. It would be good to continue this discussion with a review and an evaluation of the barriers to selling California's excess renewable supply in the regional market, and if these barriers could be addressed through a day-ahead regional market. One of the barriers discussed in the September 22, 2017 CAISO TPP meeting was the predictability of California's renewable oversupply. This oversupply may not be known until an hour before the market starts.[9] This short market transaction time frame makes it difficult for California's excess renewable supply to supplant existing scheduled resources. These scheduled resources would have to shut down then ramp up again to serve load following the renewable output at short notice. Given this new information, it would be helpful to understand the benefits and costs of selling more than 2,000 MW of California's renewable supply in the regional market. It also would be helpful to know the expected market price for	The comments and suggestions have been noted. The benefits of net exporting more than 2,000 MW may be explored in the future studies. For EIM data release, please submit the request to the ISO EIM initiatives.

No	Comment Submitted	CAISO Response
	any additional renewable energy export and the amount that could be sold at $0/MWh, -25/MWh, or -40/MWh. This discussion also would benefit from data on the current amount of California renewable resources sold in the regional market, and their market settlement price. This information is not currently provided in the CAISO's quarterly Energy Imbalance Market (EIM) benefit reports; however, this information would assist with understanding the reported EIM benefits.	
13c	3. The Next Bulk Energy Storage Study Should Include A Scenario that Utilizes Surplus Solar Power The CAISO's "Bulk Energy Storage Resource Case Study" assumes that new pumped storage would procure energy based on the least cost best fit criteria, and for this reason it would import cheaper energy from out of state rather than in-state.[10] This study assumed a variation in renewable curtailment prices based on market factors. It concluded that additional bulk energy storage would not reduce renewable curtailment or carbon dioxide (CO2) emissions in the state. To study how energy storage may reduce renewable curtailment, ORA recommends that the next study scenario evaluate the costs and benefits of new bulk energy storage that relies on in-state solar power when it has a negative value as an input. During the day, solar power is in oversupply and has a negative value. For this study scenario, the storage output could serve evening peak load.	A large pumped storage resource reduces renewable curtailment in all cases. It always absorbs as much in-state solar as possible when there is curtailment, as out-state energy cannot be cheaper than the negative price solar in the hours with curtailment. When there is no curtailment of in-state solar, the pumped storage will use the low-cost energy to pump. In some hours the out-state energy has the lowest cost, even including the wheeling and CO2 emission charges, which is how a pumped storage unit would be expected to operate in the market.
13d	4. Preferred Resources Not Considered in San Diego Gas & Electric Company's (SDG&E) Reliability Solutions The CAISO's reliability assessment of the San Diego area identified several internal 230 kilovolts (kV) reliability constraints. The CAISO identified solutions for these reliability constraints included both preferred resources and facility upgrades.[11] In response, SDG&E proposed only facility upgrades to address reliability constraints in its service area.[12] Reliability solutions should consider possible outcomes such as higher transmission costs from solutions that require reliance on imports for future energy resources. Solutions that include	This comment has been noted.

No	Comment Submitted	CAISO Response
	preferred resources could have additional benefits of reducing reliance on imports for future energy need. For these reasons, ORA supports the CAISO identified solutions for the San Diego service area which included preferred resources. These solutions respond to internal transmission limitations, reduce the dependency on imports, and reduce future transmission costs. Going forward, ORA recommends consideration of the solution trade-offs before selecting one solution method over another.	
13e	5. Expand CAISO Review of Previously Approved Projects to the Entire CAISO Region The CAISO appears to have expanded its review of previously approved reliability projects in response to reduced load forecasts. ORA supports this critical review and recommends that it not be limited to the PG&E service area, but include all reliability driven CAISO-approved transmission projects in all of the CAISO-grid control areas.	This comment has been noted. Projects have been considered in other service areas as well, where warranted.
13f	6. Justification Needed for GridLiance Valley-Innovation 230 kV Project GridLiance has proposed a new 230 kV circuit and 230/138 kV transformer at Valley Substation with an estimated cost of $50 million[13] to support the Valley Electric Association system. While some potential reliability benefits have been identified, GridLiance did not demonstrate that the existing system design fails to meet the planning standards. The CAISO's current system assessment also did not support GridLiance's proposal.[14] Should GridLiance's seek to have this project considered as a reliability improvement project, then a formal cost and benefit analysis as envisioned in the CAISO Planning Standards, Section 5.4 must be provided.	This comment has been noted.
13g	7. Pacific Gas and Electric Company (PG&E) Should Provide the Funding Sources for California's High Speed Rail (CHSR) Load Interconnection and Network Upgrades PG&E gave a presentation on their CHSR network upgrades; however, they did not provide information on how the project will be financed. PG&E has proposed connection configurations[15] estimated to cost approximately $500 million (M) (an average cost of $50M per site[16]) with potentially another $165M in upstream system improvements.[17] The presentation did not explain whether	The cost allocation will be based on PG&E's tariffs, not the ISO's, so cost allocation concerns will be managed by PG&E.

No	Comment Submitted	CAISO Response
	such connection configurations were per CHSR's requests or based on PG&E's determination. If CHSR has requested these connection configurations, PG&E should identify the CHSR funding commitments for these selected upgrades. If PG&E has specified these connection configurations, PG&E should provide its reliability and cost analysis that supports the presented designs. ORA recommends a follow-up presentation on the CHSR project that responds to these information requests and describes the funding resources for the identified upgrades.	
13h	8. The CAISO and PG&E Reliability Assessments Illustrate the Role of Distributed Energy Resources in Transmission Planning The CAISO's reliability assessment presentations provided the load and "load modifier" assumptions for all the service areas evaluated in the CAISO TPP. The load modifier assumptions included output from energy efficiency, behind the meter-photovoltaics (BTM-PV), and demand response. The BTM-PV output was assumed from all sources of BTM-PV i.e. wholesale and retail net energy metering.[18] ORA supports the inclusion of this information, which demonstrates the capacity of the BTM-PV to serve load and load peaks. ORA notes that the CAISO's reliability assessments assumed that BTM-PV has no output that would reduce winter peaks between 4 p.m. and 6 p.m. in four planning areas. These planning areas are Humboldt, North Coast and North Bay Areas, the Greater Bay Area, and Central Coast/Los Padres Area.[19] ORA requests additional information on any operational issues that occur as a result of the performance of BTM-PV during winter peak time-frames, and confirmation on the months included in the winter peak time-frames. PG&E presented a reliability assessment solution for the East Bay that included distributed energy resources (DER) to replace local generation at risk of retirement and to eliminate the reliance on Special Protection Systems. The solution included a combination of substation upgrades and distributed energy resources, energy storage and operational solutions to provide the least-cost best-fit solution program.[20] ORA supports the continued consideration of cost effective renewable resources for reliability needs.	From the planning perspective, the net load in the winter months will essentially increase, due to not having output from BTM-PV during the peak load hour. As the installation of BTM-PV increases, this may cause some areas to peak in the winter time. Winter months generally include November to March, historically peaking in the month of December.

No	Comment Submitted	CAISO Response
13i	9. Responses to the CAISO's Questions on the Next Steps for the ITP The CAISO requested responses from stakeholders on four questions regarding the next steps for the ITPs discussed during the September 22, 2017 CAISO TPP meeting. These ITPs are (1) Southwest Intertie Project North; (2) PacifiCorp Gateway West and South, Cross Tie; (3) TransWest Express; and (4) the Renewable Energy Express ("REX") transmission and SunZia projects. The following are the CAISO's questions as stated,[21] and ORA's responses. *A. "How the transmission project would be procured – interregional project, regional project, or component of generation procurement?"* At this time, ORA does not recommend procuring out of state wind resources because the ITP's evaluation demonstrated that existing in-state resources can meet the state's current 50% RPS target. [22] The CPUC's Integrated Resource Plan for 2017-2018[23] had the same conclusion as the ITP. The TPP presentations also show that the generation and transmission cost differences for in-state and out-of-state wind are not as significant as previously assumed.[24] For RPS assessments for targets greater than 50%, ORA recommends the CAISO continue to evaluate in-state versus out of state RPS procurement cost. This evaluation should consider the following: i. In-state resources identified in the Renewable Energy Transmission Initiative (RETI) 2.0 studies. ii. Possible capacity factor increases for in-state wind resources with new wind turbine technology. iii. Status of the in-state and out-of-state RPS projects and their related transmission connections to the CAISO including expected completion date, and remaining approvals. This information should include wind resources in Sacramento River Valley and Lassen. iv. Total cost per MW to develop in-state and out-of-state projects to achieve California's RPS goals, including transmission costs to connect to the CAISO grid. This information should include wind resources in the Sacramento River Valley and Lassen.	These comments have been noted.

No	Comment Submitted	CAISO Response
	iv. The expected economic benefits of the proposed RPS transmission projects. The CAISO's 50% RPS Out-of-State Portfolio Assessment did not consider the economic benefits of in-state RPS resources. ORA requests the economic benefits of RPS projects be part of the TPP discussion through independent analysis similar to the analysis conducted for the Senate Bill 350 Economic Impact Analysis for regionalization.25 This analysis should estimate the economic impact of new RPS driven transmission projects on new job and tax revenue generation in sub-regions. This analysis will assist in determining if a regional transmission project falls under the economic category or the policy category or all project categories. For reference, the TransWest project, a project included in the ITP study, will generate significant property and sales tax revenue in the states of Wyoming and Nevada, as well as new employment in these states.	
13j	B. *"Arrangement with other non-ISO transmission owners for capacity, and for development of non-ISO transmission."* Without further justification that convincingly shows benefits to California ratepayers, ORA does not recommend pursuing an arrangement with other non-ISO transmission owners for capacity and for development of non-ISO transmission at this time because current RPS targets can be meet with in-state RPS resources.	This comment has been noted.
13k	*C. "Costs and Cost responsibilities"* ORA recommends that the allocation of transmission cost be based on benefits received, consistent with Federal Energy Regulatory Commission (FERC) Order No. 1000.[26] ORA also recommends that the CAISO recalculate transmission project benefits at least every three years to confirm that the project cost allocation is reasonable. This reassessment policy would be consistent with Pennsylvania-New Jersey-Maryland (PJM) and Southwest Power Pool (SPP) regional transmission cost allocation policies.[27]	This comment has been noted.
13l	D. *"Staging and sequencing of transmission and generation resources"* As explained above, ORA supports the procurement of in-state resources to meet the state's RPS targets. The presented evaluation of existing resources and transmission capacity did not conclude that new transmission is needed to secure out of state wind resources from New Mexico and Wyoming to meet the	This comment has been noted.

No	Comment Submitted	CAISO Response
	state's current 50% RPS target. For state RPS targets greater than 50%, ORA recommends continuing to consider out-of-state resources along with identified RETI projects.	

14. Pacific Gas & Electric
Submitted by: Matt Lecar

No	Comment Submitted	CAISO Response
14a	Day 1: Reliability Results <u>Assessment of Previously Approved Projects</u> PG&E continues to appreciate and support the CAISO's efforts to re-evaluate previously approved projects in the PG&E service territory. The evaluation undertaken in this TPP cycle is especially challenging as the work includes reassessing the scope of projects not modeled in the basecases, in order to identify projects that -- due to changing current and projected needs --could potentially be adjusted with a reduced or modified scope. PG&E is also supportive that the CAISO, as part of this effort and as necessary, is including evaluation of nontraditional alternatives such as storage, flow control devices, preferred resources, etc. PG&E will continue to support the CAISO as requested in evaluating the alternatives identified, including providing cost and feasibility information for identified alternatives. PG&E also looks forward to completion of this extensive effort during this TPP cycle.	The comment has been noted.
14b	<u>Additional Mitigation Requirements</u> With regards to the newly identified issues in various PG&E areas, many of them have been identified in the longer term horizon or solely in studies of sensitivity scenarios. PG&E will continue to work with CAISO to identify and evaluate the best solutions to address each situation. For instance, this year's assessment shows high voltages related to the retirement of the Diablo Canyon Power Plant and the rapid changes occurring on the transmission system. PG&E will work with CAISO to perform the necessary studies and identify effective voltage mitigation solutions to address this unique circumstance. For the issues that have been identified in the near term, PG&E will develop corrective action plans as short term, interim solutions.	The comment has been noted. The ISO agrees with the need for the corrective action plans as short term interim solutions.
14c	<u>PG&E Bulk System Results</u> There is a modest mislabeling issue for 500kV P7 contingencies. All PG&E 500kV circuits have their own tower/structure. P7-1 is for circuits with a common structure and, as such, PG&E has no eligible P7-1 contingencies for the 500kV system. These contingencies should be labeled category P6.	Technically the comment is correct that according to the NERC TPL-001-4 Standard, Category P7 contingencies are those that involve multiple outages on common structures, and 500 kV lines in PG&E are not located on the common structures even if they are in the common rights-of-way. Category P6 contingencies are those that involve overlapping outages of two transmission facilities with the system

No	Comment Submitted	CAISO Response
		adjustment between the outages. These contingencies were shown in our results as a separate category because it was assumed that there were no adjustments between the outages. Going forward, we may call them P6 to be consistent with the criteria.
14d	Day 2: PTO Project Submissions and Special Studies PG&E Proposed Reliability Solutions PG&E appreciates the collaboration with CAISO staff and the opportunity to provide extensive stakeholder presentations of both the High Speed Rail load interconnections and proposed Oakland Reliability solution. We are happy to provide additional information to interested parties and look forward to addressing any additional questions raised in comments.	The comment has been noted, and the ISO will look for continued coordination on these issues.
14e	GridLiance Proposed Reliability Solutions PG&E notes that GridLiance's proposed Valley-Innovation 230 kV is being represented as a reliability project. However, the project is largely driven by the impacts on GridLiance's transmission of generator interconnections within the Valley Electric Area, and the interest to integrate additional renewable resources for procurement to meet California policy goals. The question of what new transmission investment provides the least-cost access to the best sources of renewable generation for 50% RPS is already the subject of extensive study. CAISO should evaluate GridLiance's proposal in this context, rather than as a stand-alone reliability project. As PG&E has repeatedly pointed out in past comments, full deliverability for RPS renewables may not be the most cost-effective solution for renewable procurement, as compared to energy-only contracting, in particular where significant investment in new transmission is required to provide additional deliverability capacity.	This comment has been noted.
14f	50% RPS Special Study and Interregional Coordination Update PG&E appreciates the CAISO's information-only study to assess the interregional transmission projects and the available transfer capacity for out-of-state RPS resources. Through past TPP Special Studies and other efforts, the CAISO has provided important feedback to the CPUC's planning models used to estimate future generation resource mixes and inform the transmission planning process (in the past this task was done via the RPS Calculator). This study provides useful information that should be provided to the CPUC and	This comment has been noted. The ISO will follow the developments pertaining to potential retirement of resources in WECC and will consider this information into future assessments of ITPs, in cooperation with the other western planning groups.

No	Comment Submitted	CAISO Response
	their consultants to update the new Integrated Resource Planning model RESOLVE. Specifically, this study provides greater depth of understanding into the amount of out-of-state renewable energy resources that can deliver to the CAISO on existing transmission paths. This information can be used to update the 2,000 MW assumption RESOLVE currently uses for out-of-state wind potential on existing transmission, which has not been backed by rigorous study. PG&E suggests future work on this topic should consider how retirements throughout the WECC, including planned coal plant retirements, may free up existing transmission capacity that could be used to import out-of-state renewable energy into the CAISO at lower cost than new transmission.	
14g	<u>Economic Early Retirement of Gas Fired Generation Special Study</u> In the risk of early economic retirement of gas-fired generation special study, the CAISO evaluated Regulation Up, Spinning Reserve, Non-Spinning Reserve, and Load Following Up shortages. PG&E asks that the CAISO clearly describe what a shortage in each of these categories means so that all stakeholders can have a complete understanding of what the retirement scenario means for reliability. In the default scenario, the CAISO used six cases that varied between 3,958 MW and 7,885 MW of gas-fired resources retiring. However, in the sensitivities provided, the CAISO used six cases that varied between 525 and 3,433 MWs. The CAISO should explain why the sensitivity used different retirement cases and how the different MW thresholds were determined.	The Default Scenario was defined in the CPUC Assigned Commissioner's Ruling regarding the 2016 LTPP Assumptions and Scenarios. The Default Scenario assumes to double the mid-Additional Achievable Energy Efficiency (AAEE) in the CEC 2015 IEPR forecast by 2030. The sensitivity case assumes the doubling won't happen. It uses the 2015 IEPR mid-AAEE forecast. With less AAEE, the sensitivity needs to retain more gas generation resources. The retirement MW thresholds were determined based on the system needs for the resources.

15. Port of Oakland
Submitted by: Basil Wong

No	Comment Submitted	CAISO Response
15a	Issue Summary The existing Downtown/West Oakland Area, which includes the Port's Seaport area is made up of two sub-areas, each fed by separate 115 kV networks. Each sub-area is primarily fed from Moraga Substation. The stations served in each of these sub-areas are identified in Table 1. The Port's Maritime Substation is normally served from PG&E Station C. The Port and its tenants also have significant loads from PG&E Station L through PG&E's retail service. Table 1 **Sub-area** | **Northern** **Stations** | Stations K, X, D, C, L, Cartwright (AMP), Maritime (Port of Oakland) and Schnitzer Steel To meet the Planning Standards, the northern sub-area depends on aging local generation and Special Protection Systems (SPSs) that drop load. The CAISO Planning Standards were recently revised to no longer allow the long-term reliance on load dropping to meet the Planning Standards in high density urban areas such as Oakland. Also, both the Dynegy CTs and NCPA CTs will have reached their 40-year planning life within the TPP planning horizon. The Port and its tenants currently primarily uses electricity to power cranes, temperature controlled cargo, lights, and ships. The loss of electricity service in the Port's seaport would result in the loss of perishable goods that are waiting to be loaded onto a ship or waiting to be picked up, decrease in air quality from ships relying on ship engines and trucks waiting to get into the terminal, and complete stoppage of port activity. The Port anticipates that the expected loss of local generation will further adversely impact the quality of service that the Port receives and has repeatedly requested that a long-term transmission plan be developed to reliably serve the East Bay area.	The ISO doesn't anticipate any adverse impact to the service to Port due to loss of local generation as it will be replaced with adequate mitigation to meet the required performance.

No	Comment Submitted	CAISO Response
15b	PG&E's Oakland Reliability Proposal At the September 22 Stakeholder Meeting, PG&E presented its proposed Oakland Reliability Proposal to address the reliability deficiencies in the northern sub-area. The Proposal includes limited transmission upgrades (circuit breaker additions in Moraga and Station X substations and rerating the Moraga-Station K 115 kV circuits). The remainder of the reliability need is to be met by additional Distributed Energy Resources (DERs) such as Energy Efficiency (EE), Distributed Generation (DG) and Energy Storage (ES) as well as post-contingency transferring of AMP load from Station C to Station J.	Agreed.
15c	Port's Concern While the Port generally supports the consideration of using local resources to help mitigate the CAISO and PG&E's rapidly increasing Transmission Access Charge costs, the Port has some serious concerns with the Proposal. Foremost, the PG&E Proposal fails to address the local capacity needs of the local area and hinges its reliability on assumptions that a set of DERs will be fully available to meet local needs and a transfer of AMP load from Station C to Station J. This Proposal disadvantages municipal wholesale customers in Alameda and at the Port of Oakland from a reliability perspective, relative to PG&E's own retail customers. 1. The current Proposal lacks critical operational detail as to how the Proposal would be implemented. While PG&E proposes a portfolios of options to reduce the loading, the Port is concerned about the availability of the DERs when they are called on and thus lack assurances that our loads would be met by the existing transmission system.	The concern is noted. If the DER becomes part of the ultimate long-term mitigation plan for Oakland Area, adequate consideration will be given with the operational aspect of the DER and required attributes to support the area.
15d	2. The Proposal lacks mandatory quarterly reporting on the performance of all nontraditional Proposal components. Such reporting should include, but not limited to: a. Specific identification of the preferred set of resources that will be used to implement the Proposal and attestations that the supporting contracts have been executed b. Completion status of operational procedures associated with each preferred resource needed to implement the Proposal c. Performance reporting	Please refer to the ISO response to comment 1f above.

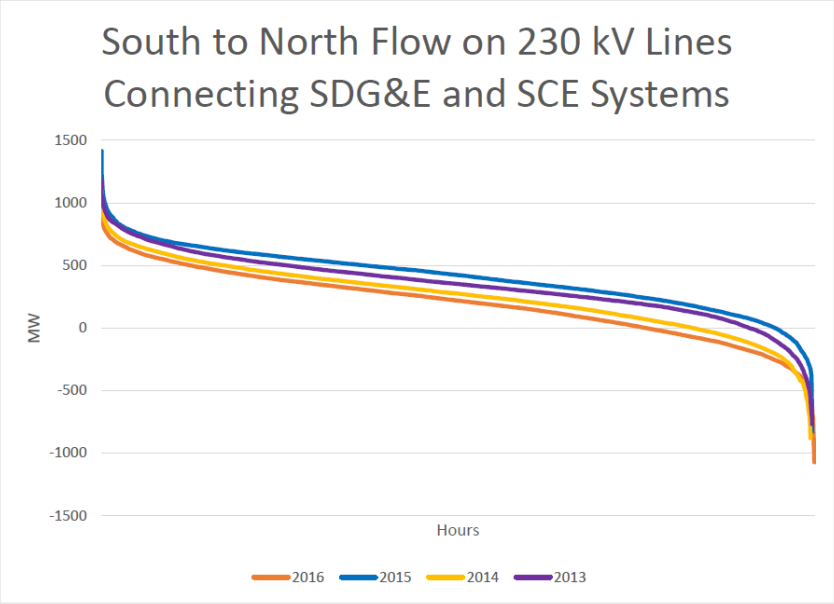
No	Comment Submitted	CAISO Response
	i. The frequency of preferred resource use to address transmission contingencies in the sub-area. ii. Numbers of successful and failed deployments iii. Hours and magnitude of emergency overload conditions incurred iv. Customer load hours interrupted due to failures of preferred resources or failures of operational practices developed as part of the Proposal. Note: customer loads should be calculated as the number of customers within the Port of Oakland, Alameda, and Schnitzer Steel. d. Procurement status of the front of the meter preferred resources that will be used in the Proposal e. Development of a project schedule that identifies the removal of all SPSs in the load pocket, along with an attestation that the SPSs have been removed f. Development of a critical path back up plan that identifies how design, permitting and construction will be accomplished by 2022 in the event the experimental Proposal is terminated based on preferred resource cost (making the project uneconomic) or unavailability, thus rendering the Proposal infeasible.	
15e	In addition to the above concerns on the reliance on DERs, AMP load transfers and AMP load dropping, the Port has additional concerns such as: 1. Lack of a coherent publically available substation design criteria. NCPA has filed an order 890 complaint against PG&E because some 60% of PG&E's transmission projects, where costs are recovered through the CAISO TAC charge, were not undergoing any type of external stakeholder review. While efforts to develop a transmission planning process for these projects is still in development, the Port understands that NCPA staff remain concerned that substation design criteria for rehabilitation projects being performed outside of the CAISO TPP are significantly upgraded over what PG&E has proposed in this project, providing greater reliability and resiliency for PG&E's retail customers as opposed to what has been proposed here for PG&E's municipal wholesale customers.	The comment has been noted.

No	Comment Submitted	CAISO Response
15f	2. The Port is concerned that the load forecast driving the quantity of Preferred Resources procured is understated. PG&E has indicated that it expects the load served from Stations L and C to peak in 2022 and decline thereafter. Considering only the non-PG&E load within this sub-area, one needs to look no further than vast amount of undeveloped ex-military property, or to the types of energy uses/transportation electrification potential at the Port of Oakland to be concerned that the PG&E load forecast has not fully considered the load potential of these non-PG&E loads. In recent filings with the CPUC, both Southern California Edison and San Diego Gas and Electric included in their proposed transportation electrification plans specific elements for ports in their service areas. PG&E has nothing planned for any ports in the Bay Area.	It is the net load that decreases from 2022 to 2027. The gross load is actually increasing from 2022 to 2027. This, however, may not capture the extent of potential non-PG&E load increase in future as mentioned. Furthermore, the ISO is obligated by tariff to use load forecast provided by CEC in its annual assessment.
15g	3. The preferred portfolio contains extremely ambitious DG and EE targets. The preferred portfolio relies on base case DG and EE increases of approximately 25-30 MW installed during the next 5-year period *over and above* the targets built into the base load forecast. In addition, with the launch of the Alameda County CCA, East Bay Clean Energy, it is unclear who will have ultimate responsibility to achieve these results and as such PG&E should not be making commitments at this time.	The concern has been noted.
15h	Port Position on the PG&E's Oakland Reliability Proposal While the Port generally encourages efforts to mitigate the rising pressure on the TAC and is generally supportive of the Oakland Clean Energy concept, the Port is concerned the Oakland Clean Energy Proposal fails to adequately address the transmission needed to support California's mandate on increasing electrification, especially in the Oakland area. The Port recommends that the CAISO consider "wired" alternatives in addition to the Oakland Clean Energy Proposal that will provide appropriate Transmission Service for the anticipated loads from increasing port and transportation electrification and to provide reliability and resiliency levels to the municipal wholesale customers in the Downtown/West Oakland Area and PG&E's retail customers including the Port of Oakland and our tenants.	The comment has been noted.

16. San Diego Gas & Electric (SDG&E)
Submitted by:

No	Comment Submitted	CAISO Response
16a	1 Baseline Case Comments: a Thermal overloads for P1 contingencies are a major concern. The mitigations described in the CAISO's results tables is vague. b For large numbers of contingencies, including P1, Suncrest voltage issues are a known issue. The status of the CAISO-approved mitigation in the CPUC approval process is not clear. c Previously, the CAISO requested that SDG&E mitigate for P6 contingency (N-1-1) violations. Now, there are a significantly larger number of P6 contingencies that trigger overloads. Mitigation for these overloads is unclear. d Assuming operational redispatch would mitigate all those issues would not necessarily be sufficient to meet TPL standard requirement.	a. Two overload concerns were identified in the Encina-San Luis Rey 230 kV path for P1 contingencies driven by heavy northbound flow north of SONGS switchyard in the 2022 spring-off peak case. The ISO is still reviewing the options for mitigating this overload. b. The status of the Suncrest SVC project and its CPUC hearing process can be referred at a link, http://www.cpuc.ca.gov/environment/info/horizonh2o/suncrest/index.html. It remains unclear when the project is expected to be in service. However, the Suncrest voltage issues can be avoided by not by-passing the 500 kV series capacitor banks under system normal condition until the Suncrest SVC project is in service. c. SDG&E is encouraged to identify the specific contingencies and overloads that the comment relates to, and the ISO will respond in a subsequent comment window. d. Operational redispatch is sufficient to meet TPL standard requirements once the recommended operational mitigation has been evaluated to ensure it is feasible and practicable.
16b	2 Sensitivity cases Comments: a Most of the TPL-001-4 violations get amplified in the sensitivity cases; mainly for two reasons: i Root cause one: High through-flow from the Imperial Valley and south-central Arizona through the SDG&E system to the rest of the CAISO system. SDG&E's existing system was designed to accommodate around 1200 MW of north-to-south flow from the SCE system. Historically, this level of imports helped to serve SDGE load during normal heavy summer peak conditions. Now there is often 1500 MW of south to north flow from the SDG&E system to the SCE system. Unsurprisingly, the significant change in flow pattern is creating contingency-based overload conditions that did not previously exist. ii Root cause two: A significant amount of San Diego in basin area gas-fired generation has been, and will be, removed from service, such as the South Bay and Encina boiler plants. Much of the new	This comment has been noted.

No	Comment Submitted	CAISO Response
	generation is renewable resources outside of the San Diego area in the Imperial Valley or in south-central Arizona.	
16c	b The higher north-bound flow is becoming normal. In California, GHG reduction goals continue to push retirement of fossil-fueled generation. Obtaining regulatory approvals and permits to build new fossil-fueled generation is almost impossible. Higher RPS goals and the saturation of roof top Solar's growth will result in more utility-scale renewable projects installed east of Miguel and Suncrest leading to more power flowing westward into the San Diego area and north into the large California load centers. This will exacerbate overloads that are already listed in the CAISO results tables. The change in flow patterns is also related to the San Onofre nuclear power plant shut down. Northbound flow from the SDG&E system into the SCE system is now normal, not just "occasional." The graph below shows for the years 2013, 2014, 2015, and 2016, the south-to-north flow on the 230 kV lines connecting the SDG&E and SCE transmission systems (retired Path 44).	The ISO modeled high northbound flows in the 2022 Spring Off-Peak base case and the 2022 summer peak heavy northbound flow sensitivity case. The thermal overload concerns identified in the analysis of this case were described in our presentation, along with the mitigations under consideration.
16d	c In the higher northbound flow cases, overloads appear under many contingencies including P1. SDG&E is very concerned about the potential risk of reliability criterion violations for a significant number of hours in a year as shown in the duration curves.	Please see response above.

No	Comment Submitted	CAISO Response
		
16e	3 Comments to a discussion between several stakeholders regarding SDG&E's proposed Phase Shifting Transformer (PST) mitigation project in comparison to a "Smart Wires" solution. a SDG&E transmission planning as a matter of standard practice always performs studies to verify system reliability and the effectiveness of possible mitigations. If reliability issues are identified, we use our best efforts to find the most cost-effective mitigation. b The original reliability issues were: i The final CPUC-approved 230 kV Sycamore-Penasquitos project design has a lower impedance than SDG&E's original plan. The lower impedance is due to the CPUC-required shorter path and the use of underground cables. The lower impedance results in P1 contingency overloads when there is high south-to-north flow through the San Diego area.	This comment has been noted.

No	Comment Submitted	CAISO Response
	ii Suncrest -> Sycamore -> Penasquitos path becomes more congested due to higher northbound flow. Such high northbound flows are observed very frequently in real-time operations. iii Quite often, Miguel -> Bay Blvd -> Silvergate – Old Town path is also congested. There are thermal overloads under various contingency conditions. Iv Outages of the 230 kV SX-PQ and OT-PQ lines push the flow to the parallel underlying sub- transmission system and cause overloads. c SDG&E's proposed PQ-OT PST has the following advantages compared to other alternatives evaluated by SDG&E: i PST would direct its flow to counter congestion and/or eliminate overloads on elements of the Suncrest -> Sycamore -> Penasquitos path. ii PST angle adjustments control MW flows to fit system conditions. iii Most critically, when needed, the range of PST angle controls will allow grid operators to reverse PST flow. This will counter congestion and/or eliminates overloads on the Miguel -> Bay Blvd -> Silvergate -> Old Town 230 kV path. iv With a proper breaker switching scheme, the PST can be switched from the 230 kV to the 138 kV system to counter the overloads on the 138 kV sub-transmission system. SDG&E presented a detailed proposal along these lines at the stakeholder meeting on September 22, 2017. d What Smart Wire equipment can do, and cannot do: i Smart Wire 2nd generation equipment can adjust magnitude of MW flow (as phrased by a stakeholder in the meeting: "push and pull") by varying the apparent impedance of a line. This is similar to the PST features mentioned in 3. c. i and 3.c.ii above. However, unlike a PST, the Smart Wire equipment does not control flow by varying the angle difference between the sending end and the receiving end of a line. ii Because of the lack of phase angle control, contrary to the PST solution, the Smart Wire equipment would not be able to reverse	

No	Comment Submitted	CAISO Response
	its own flow under certain system conditions to mitigate the issues highlighted in 3.c.iii and 3.c.iv above, which is the other half of the reliability issues that needs to be resolved. e The stakeholder(s) in the meeting suggested that SDG&E is proposing a PST instead of Smart Wires because SDG&E planners prefer to stay within their "[technology] comfort zone." SDG&E strongly disagrees with this misleading and baseless comment. i SDG&E's transmission planners performed extensive studies for the first generation ("clamp-on") Smart Wires equipment. SDG&E later evaluated the second generation of Smart Wire equipment. SDG&E's transmission planners are compelled to evaluate Smart Wires equipment, versus other technologies, in order to identify the most efficient solution for our ratepayers. SDG&E's evaluations are not done simply for the sake of supporting newer technologies. ii SDG&E is comfortable with using new technologies. This can be seen through (i) the installation of the first new generation of rotational synchronous condensers at various substations, (ii) the installation of the newest PSTs with largest angle range in California, (iii) the lead role SDG&E has in microgrid deployment and electric vehicle (EV) adoption efforts nationwide, and (iv) the proposed first HVAC to HVDC conversion project in the US to support higher state RPS requirements. SDG&E's planners never lack creativity and an adventurous desire to explore the most cost-effective solutions for our ratepayers. iii This is in no way a criticism of SmartWires technology; SDG&E continues to evaluate this technology as a possible mitigation for identified system issues where it is both effective and efficient.	
16f	Economic Study -Assumptions; and Special Study Section 1 General Comments on the Inter Regional Transmission Project (ITP) / Economic Planning -Production Cost Model / ATC package a CAISO has asserted that evaluation of an ITP requires a bulk deliverability component from a hypothetical out of state resource	The ISO's view is that accessing out of state renewables could be a significant source of value for an ITP, and realistically needed to be evaluated to demonstrate the range of value an ITP could provide. So, it is the logical thing to do. However, an ITP could

No	Comment Submitted	CAISO Response
	portfolio as well as barriers to the flows under study. Thus, to study the value of SDG&E's proposed AC-to-DC conversion project, the SunZia transmission project has been assumed and 2000 MW of New Mexico wind has been added. The 2000 MW of export limit for CAISO (based on historical records, not from a study) remains. The CAISO's 50% RPS special study in the (2016-2017 TPP) is completed with this stakeholder report. According to the CAISO the measure of the AC-to-DC conversion project's benefits is its ability to mitigate overloading on circuits near the New Mexico wind turbines and congestion around Imperial Valley substation. CAISO's Slide 40 indicates that one necessary ingredient of a proposal is that it provides firm Available Transmission Capacity (ATC) from resources to the CAISO balancing authority (presumably via dynamic scheduling for resources that do not have a direct physical connection to the CAISO system) without relying on transmission resources out of the control of the sponsor. It is true that a continuous path under full control by the contracting parties would increase scheduling success. So, "Sun-Zia plus REX HVDC" might be improved with some firm transmission rights from Pinal Central to Hassayampa. Regardless of whether a firm transmission path between Pinal Central and Hassayampa is assumed to exist, the results of the production costing analysis will not change. In any event, SDG&E suggests that the CAISO assume that a firm transmission path between Pinal Central and Hassayampa will exist. Power flow analysis indicates that absent SunZia, typical power flow is from Hassayampa towards Pinal Central. Adding SunZia and New Mexico wind will create counter-flow. Accordingly, it is reasonable to assume firm transmission service will be available. Although the CAISO has not suggested that its ITC analysis is exhaustive, SDG&E notes that that the "benefits" of transmission projects includes reductions in congestion-related costs, increased Maximum Import Capability (MIC) for system Resource Adequacy	be evaluated without looking at potential benefits of bringing in out of state renewables but with less likelihood of demonstrating adequate benefits. The general comment *"According to the CAISO the measure of the AC-to-DC conversion project's benefits is its ability to mitigate overloading on circuits near the New Mexico wind turbines and congestion around Imperial Valley substation."* is not entirely accurate. Thermal loading relief is one of many measures used to gauge the benefits of each ITP and can act as a significant source of value. Slide 40 does not indicate that providing firm ATC is a "necessary" ingredient of a proposal. Slide 40 merely documents the conclusions of ATC assessment. These comments have been noted. The ISO will examine the availability of firm transmission as reflected by the Transmission Provider (TP) in any future ITP assessment.

No	Comment Submitted	CAISO Response
	(RA), and decreases in Local Capacity Requirements (LCRs) (which reduces the cost that Load Serving Entities incur to meet the remaining LCRs). A comprehensive assessment of any proposed transmission, including an ITP such as SDG&E's proposed AC-to-DC conversion project, requires that all potential benefits be assessed. For reasons not clear to SDG&E, SDG&E's earlier comments on the CAISO's ITP study plan -- which recommended that the CAISO augment its planned assessment with an evaluation of potential LCR-related benefits – were not incorporated or addressed. SDG&E hopes that this deficit will be rectified in the steps that CAISO next takes.	The ISO's evaluation documented in the CAISO's 2016-2017 Transmission Plan indicated that the local capacity requirement in the San Diego and Imperial Valley subarea would not be significantly reduced, due to the bipole DC line outage between North Gila and Imperial Valley. The ISO's preliminary evaluation also indicated that some downstream thermal overload concerns in the San Diego 230 kV system, including the 230 kV transmission corridor from Bay Boulevard to Old town and the Miguel-Mission 230 kV lines, would be a concern with the project in-service.
	The study of Power Flow impacts was limited to measuring overloads near the new wind resources in New Mexico and on two 230 kV lines in the San Diego area (Silvergate-Bay Boulevard and San Luis Rey SC-Mission). It thus does not amount to a full reliability test of the effects of the AC-to-DC conversion project. SDG&E suggests that in connection with future studies , the CAISO encourage its fellow Regional Transmission Groups (RTGs) to study the beneficial effects of transmission and related investment to the citizens and ratepayers within each RTG.	The study of power flow impact was not limited to measuring overloads near the new wind resources. All relevant areas were monitored and contingencies recommended by the WPRs were tested. The resulting overloads were limited to the areas near the new wind resources.
	The analytical clarification in the CAISO's Transmission Economic Assessment Methodology (TEAM) Documentation Review Initiative (August 10, 2017) is instructive here. In particular, SDG&E notes the documentation's assertion that a "Full assessment will be made on a case-by-case basis." (Slide 16) The CAISO's ITP assessment should include such a "full assessment."	As clarified during the stakeholder meeting, TEAM was not fully employed as part of this assessment.
	Finally, it should be noted that production cost models using de-coupled ("DC") solution techniques have limited capability to model the operational characteristics of DC systems. Production cost modeling is not capable of capturing the full range of benefits that modern DC technology provides. This applies not only to SDG&E's proposed AC-to-DC conversion project, but also to the TransWest Express DC transmission line (another ITP).	These comments have been noted. The ISO will need to consider these issues in future analysis.

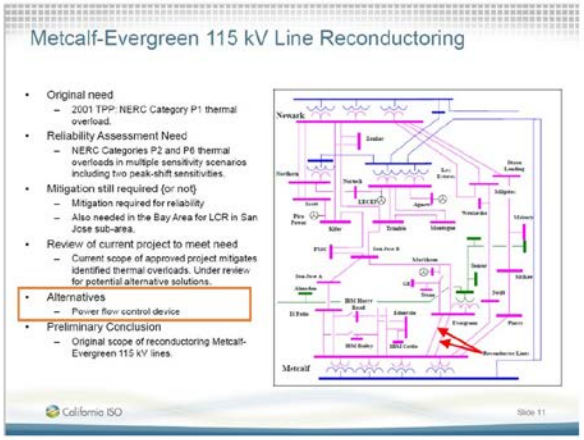
No	Comment Submitted	CAISO Response
16g	b Additional comments: On page 7, It is worth noting that of the four ITP's, only one project (SDG&E's AC-to-DC conversion project) allows access to both in-state and out-of-state renewables. Additionally, the AC-to-DC conversion project connects these renewables not simply to the CAISO BAA, but directly to major California load centers. On page 10, the CAISO states that its study identifies constraints outside of California. However, constraints from the California border to the California load centers should be evaluated and not overlooked. On page 12, do the costs for the SWIP North and Cross-Tie projects include the segments of the Gateway project discussed in the first footnote? On page 12, what portion of the cost estimate indicated for the AC-to-DC conversion project reflects the costs of the SunZia project (if any)?	This comment has been noted. Constraints from California border to California load center have already been exhaustively studied as part of the 50% RPS special study performed during 2016-2017 TPP and were presented to stakeholders last year. Yes. The cost estimate ranges for SWIP-N and Cross-Tie include the segments of corresponding Gateway projects. $1 billion to $2.1 billion is the cost range used for Sunzia project based on the data from RETI 2.0 Western Outreach Project.

17. Silicon Valley Power (SVP) Submitted by:		
No	Comment Submitted	CAISO Response
17a	<u>Contingency Modelling</u> SVP is concerned that the contingency files for the San Jose/De Anza sub-areas of the Greater Bay Area are not sufficiently complete to capture overlapping outages involving both SVP and Pacific Gas and Electric (PG&E) facilities. As we view the posted contingency files used in the assessment for this area, we only see contingencies on the PG&E system being modelled. The PG&E and SVP systems are operated in parallel in this area so that contingencies on one system can impact the power flows on the other. For example: • The current system operating limit for managing the flow on the PG&E NRS-SRS #11 115 kV circuit monitors the flows on both the PG&E and SVP systems. • While the preliminary assessment results show potential overloads on the PG&E NRSSRS #2 circuit starting in 2019 Summer Peak, our analysis shows even higher overloads when overlapping PG&E and SVP contingencies are considered. Therefore, SVP recommends that the contingency list be expanded to include SVP contingencies as well as PG&E contingencies to capture the full exposure on these parallel systems.	The ISO believes that the contingency list used for the Greater Bay Area assessment sufficiently includes contingencies in SVP system. The ISO encourages SVP to provide specific credible contingencies in the SVP system that were not included.
17b	<u>Load Trends and Local Activity</u> The heat wave on September 1 set all-time record demand of 587 MW in the SVP system. PG&E's demand in the local area may have also experienced a similar jump. Furthermore, SVP has become an area of interest for energy intensive industries such as data centers. This change is being driven by recent industry technology changes on data center design and location. As such, SVP anticipates a significant increase in its load forecast during the next planning cycle. Although SVP is still finalizing its updated forecasts for the next 10-year window, SVP expects the transmission constraints in this area to increase and shift forward in time. SVP therefore urges the CAISO to not delay in acting upon the transmission issues already appearing in this assessment.	The ISO is obliged by tariff to use load forecast provided by CEC in its annual assessment. In regards to the projects found to be needed, the ISO is working with PG&E to clean up the approved project backlog and will follow-up with PG&E for implementation of projects found to be needed.
17c	<u>Transmission Projects</u> <u>NRS-SRS #2 115 kV Line Upgrade</u> The CAISO Preliminary Assessment shows an overload of up to 110% in 2019 and 122% in 2027. This circuit is on the same structure as the NRS-Scott No. 1	As presented during the stakeholder session, the ISO assessment also identified need to upgrade the NRS-SRS #2 115kV line and is working with PG&E to potentially include that within the scope of the approved project to reconductor the #1 line.

No	Comment Submitted	CAISO Response
	115 kV circuit that the CAISO has approved for reconductoring. Once SVP completes it short circuit upgrades (including closing CB 392) at SVP's Northern Receiving Station (NRS) next spring, these two circuits will be electrically in parallel. We believe that the No. 2 circuit should be reconductored as soon as possible, hopefully at the same time as the No. 1 circuit and understand from the CAISO's response at the stakeholder meeting that the CAISO has approached PG&E about this plan. As such, this work should be explicitly included in the Transmission Plan. Whether this work is done at the same time as the No.1 circuit or not, it should be accomplished as soon as possible to minimize reliability issues with serving load in the San Jose/De Anza sub-areas. The No. 2 circuit issue is now a reliability issue and the issue will get worse over time. A mitigation plan needs to be in place to address reliability issues of serving SVP system, and surrounding PG&E system, area loads.	
17d	Trimble-San Jose B 115 kV This year's assessment shows a P2 contingency (115 kV bus tie breaker failure @ Metcalf) loading on the Trimble-San Jose B 115 kV circuit of 105% in 2019 and increasing to 111% in 2027. Also the posted assessment results indicate other contingencies begin to emerge as causing overload or near overload conditions. The presentation on the bulk system assessment indicates a P1 overload of 102% and a P6 overload of 147%. Last year the CAISO concurred with PG&E's proposal for the Caltrain Electrification Project in its approved Transmission Plan, which would not only add a large block load at PG&E's FMC Substation, but also upgrade this circuit. However, it appears that neither the load increase nor the upgrade have been modeled in the base cases. Therefore, it is difficult to discern whether the approved upgrades will be sufficient to address the issues identified in this assessment as well as accommodate the Caltrain load. Furthermore, as the assessment results indicate that there are capacity issues on this circuit irrespective of the Caltrain Electrification Project, the upgrade of this circuit should progress independently of the Caltrain project.	This is one of the areas identified for additional mitigation requirements. Preferred resources are one of the potential alternatives along with other conventional options. This also needs to be coordinated with the scope of upgrades to be included as part of the Caltrain electrification.

18. Smart Wires Inc. (Smart Wires)
Submitted by: Todd Ryan

No	Comment Submitted	CAISO Response
18a	Alternatives Smart Wires would like to commend CAISO on a small but important change to the provided stakeholder materials: the addition of alternatives for each proposed project (see Figure 1 below, emphasis added with an orange box). While this may seem like a small change or even trivial change, Smart Wires believes it is an important datum to help stakeholders understand what options are available. Smart Wires knows how committed CAISO is to providing transparency whenever it is appropriate and can help lead to better decisions; this is a perfect example of such commitment.	The comment has been noted.
18b	'Why' in addition to 'What' While providing what alternatives were considered is very helpful, it would be even more helpful if CAISO and the PTO's could provide additional details as to why the presented solution is preferred over the alternatives. The presented solution is, inherently by the fact that it is being presented, the default or preferred solution. Given no other data, stakeholders can only say 'yes, we like this project', or 'no, we don't like this project because…' Giving stakeholders more information as to the pros and cons of the presented project as well as one or two feasible alternatives allows for a deeper discussion of the solutions and will ultimately lead to better decision on behalf of Californians.	Further documentation in the presentations themselves is simply not feasible, and the presenters are able to respond to questions on a case by case basis. Also, additional documentation will be provided in the draft transmission plan released at the end of January.
18c	Metcalf-Evergreen 115 kV Line Reconductoring is a perfect example of where a little explanation of the why could prove tremendously valuable to stakeholders. Could the CAISO please provide stakeholders more information on the advantages and disadvantages of the two feasible options: line reconductoring and power flow control?	In the case of Metcalf-Evergreen 115 kV line reconductoring project, the power flow control alternative was found to be not feasible as it didn't mitigate all overloads identified on these lines.

No	Comment Submitted	CAISO Response
	 *Figure 1. This slide is an example of a transmission project presented in the CAISO September 21-22 Transmission Planning Process Stakeholder Meeting. Note that the slide includes what alternatives were considered to solve this reliability problem. This list of alternatives was provided for most, if not all, of the presented projects. To our knowledge, this was not the case for previous years. The addition of this datum provides stakeholders with a better understanding of from what options California has to choose.*	

19. TransWest Express Submitted by: David Smith		
No	Comment Submitted	CAISO Response
19a	TransWest Express LLC (TransWest) appreciates the opportunity to comment on the preliminary Interregional Transmission Project Evaluation and 50% RPS Out-of-State Portfolio Assessment. The California Independent System Operator (ISO) planning staff has done some very good work over the last few months with this study. However, TransWest remains concerned that the pace of progress and lack of a road map is continuing to place the ISO at risk of not being able to fully support California's Public Policy objectives. The PCM and Power Flow stability preliminary results presented provide very little meaningful information to help inform the relative "effectiveness" of the potential solutions analyzed. While the study work itself is impressive, the results have little to no meaning in informing the relative value of the projects. The curtailment results don't indicate significant difference between the projects and is marred by the ISO's modeling assumption that they should apply a 1,500 MW TransWest Express Project (when a 2,000 MW option is available) to accommodate a 2,000 MW Wyoming resource addition to serve California. In pragmatic terms, a 1,500 MW project could only deliver 1,500 MW of Product Content Category 1 resources so the actual curtailment (or non-procurement) would be much more significant than the figures described by the ISO.	The ISO acknowledges that the value the study work provides is largely as input into the CPUC's IRP process, rather than as a standalone analysis of the benefits of interregional transmission, due to the expected impact of renewable resource procurement decisions.
19b	The ISO also conducted extensive Power Flow and Stability analysis and found little to no difference between the projects. This should be expected as these studies test minimal reliability performance and all of the projects analyzed have been designed with the same reliability criteria. Further, most of these projects have undergone extensive WECC Path Rating analysis to test the same reliability performance. These Path Rating analyses are provided to ProjectReview Groups made up of planners from all the potentially affected utilities. The ISO should at a minimum review and provide summary information from these Path Rating Reviews for these projects. Other additional and relevant information such as total cost, total miles of new construction and planned in-service dates are missing from this informational study.	The ISO is participating in the WECC Path Rating processes for TWE and Cross-Tie Project. One of the objectives of the ISO's participation is be able to consider information from these studies in our evaluation in the interregional planning process. Total cost has been considered in the analysis and was included in the presentation slides. In-service dates can also be considered once we get actionable portfolios with expected build-out schedules.
19c	TransWest agrees that these four "attributes" listed on slide 43 of the presentation do require further consideration in the Special Study. TransWest	The comment has been noted and the additional input will be reviewed.

No	Comment Submitted	CAISO Response
	identified several of these attributes within its comments to the ISO on their proposed Study Plan on March 3, 2017. The March 2017 comments are attached to these comments for reference.	
19d	With respect to "transmission procurement" attribute, TransWest's Key Assumption and Sensitivity No. 4, "Project Participation" addresses two of the options outlined by the ISO namely whether the projects should be considered "Interregional Transmission Projects" or "Regional Projects". the ISO Tariff requires that the ISO's participation in the Interregional Planning Coordination process is informed by the ISO's Regional Planning process. In this way the ISO can assess whether any benefits associated with cost sharing with other regions would result in lower costs for the ISO through the cost avoidance mechanism. The ISO should consider the direction provided by the CPUC in the form of RPS portfolios or request for Special Studies to consider potential RPS resource areas as direction to the ISO to consider Regional projects as they do not have jurisdiction over the other Regional Entities. Consideration of the potential projects as Interregional Transmission Projects is dependent on the needs of the other Regional Entities. To date neither NTTG nor WestConnect have considered a similar Regional Need or Opportunity as outlined in the ISO's 50% RPS OOS Wind Study Plan within their respective Regional Planning processes.	While the interregional planning process's later stages of study and cost allocation analysis depend on findings in earlier stages, the ISO considers the data sharing and initial review aspects of interregional transmission planning coordination in place with our neighbors to be critical to the ISO's evaluation. For projects that reach between neighboring planning entities, the ISO sees the interregional process as a necessary first step in evaluating such projects regardless of where the process may lead.
19e	Further, the CPUC IRP process is being informed by a modified version of the RESOLVE model that was used in the CAISO's "Senate Bill 350 Study" to look at the benefits of the CAISO's network expansion to other areas of the WECC Grid. This model is an improved version of the "RPS Calculator" that was used to help inform the Public Policy-Driven analysis of past TPP's to achieve the 33% RPS. The assumption in all three of these models is that the transmission needed to provide the market with access to the renewable resource areas would be considered part of the Regional Network and not as Generator tie lines "procured" or funded directly as a "component of the generation procurement". Multi-state, high voltage transmission lines designed to be part of the Bulk Power System provide many benefits beyond serving one or more generator or purpose. Moreover, the Interregional Transmission Projects identified these benefits as requested within their project submittals and the CAISO has recognized the potential for both public policy and economic	Please refer to the above response.

No	Comment Submitted	CAISO Response
	benefits associated with multi-state transmission lines within the Senate Bill 350 Study and other related Stakeholder processes. These transmission projects may be included as a component of generation procurement thus requiring little or no action by the ISO. However, the CPUC IRP record, the CAISO's regional coordination advocacy and the Interregional Transmission Planning Coordination process all point to these lines being considered as an expansion of the Bulk Power System within WECC and therefore as either Regional or Interregional projects.	
19f	TransWest's suggested "Key Assumption and Sensitivity No. 6, Potential non-CAISO Existing Transmission Paths available capacity and costs" addresses the second item on slide 43 for further consideration. TransWest commends the CAISO for the work completed to research the amount and location of non-CAISO Available Transmission Capacity (ATC) between the CAISO system and the New Mexico and Wyoming wind resource areas. We also note that the TWE Project provides the only transmission solution to directly connect the CAISO grid to potential wind areas in either New Mexico or Wyoming. The ISO should develop a plan to consider the required arrangements to acquire non-ISO capacity for inclusion in the ISO Network to help meet the potential Regional Needs and also consider the risks and costs for capacity associated with the "development of non-ISO transmission" such as the Gateway projects as part of the Special Study.	These comments have been noted. This will need to be considered in future efforts as the IRP process unfolds.
19g	TransWest agrees that costs and cost responsibilities need to be considered as part of the Special Study as well as the potential staging and sequencing of transmission and generation resources.	These comments have been noted.
19h	The recommendations for "Next Steps" fall short of what needs to be considered by the ISO and Stakeholders to position the CAISO to provide the market and ISO Board with information and ultimately recommendations on whether investment is warranted and on what projects to meet California's Public Policy associated with SB350. TransWest suggests the ISO staff look at the entire process required to potentially approve Regional Public Policy-Driven transmission expansion solutions to access wind resources in New Mexico and Wyoming within the 2018- 2019 TPP. These New Mexico and Wyoming resources do not have access to the CAISO Generator Interconnection Process	These comments have been noted. The ISO will continue to reach out to project sponsors as well as appropriate entities to gather the latest information about respective ITP and relevant non-ITP projects, as needed.

No	Comment Submitted	CAISO Response
	to determine if Network Upgrades are required on a conditional basis as other resources within the present CAISO footprint have. In addition, all of the potential transmission projects have been developed for a number of years as sponsored projects where the developers have acquired substantial development rights in the form of permits, rights-of way and Path Ratings. The ISO needs to consider these sponsored projects that could help meet California's Public Policy with the potential inclusion of wind resource that qualify for the federal Production Tax Credit. The Project Sponsors have of the Interregional Transmission Projects (ITPs) and the non-ITPs the ISO found to be needed to assess some of the ITPs (e.g. Gateway and Sunzia) all have extensive information about their respective projects, the proposed project teams and development, construction and operational plans. The ISO staff should be assessing these attributes as well as the transmission infrastructure attributes to be in a position to select and award the appropriate projects as part of the 2018-2019 TPP.	

20. Valley Electric Association (VEA)
Submitted by: Ellen Wolfe

No	Comment Submitted	CAISO Response
20a	VEA's service area is one of the areas assessed by the CAISO in the reliability study each year. The 2017-2018 assessment results have identified potential reliability concerns on several VEA transmission elements. The ISO is proposing to mitigate these with existing remedial action schemes (RASs) and load shedding procedures. VEA is concerned with the ISO's over-utilization of RASs and load shedding procedures as mitigation solutions. VEA also is concerned that the ISO has not fully accounted for the costs and implications of relying on such schemes and procedures. The ISO does not seem to factor in the cost of shedding load in VEA's area, nor does it acknowledge that adding more RASs to the system increases the complexity of reliably operating the system while reducing the effectiveness of each RAS. VEA disagrees with the ISO's continued reliance on these temporary operational work arounds in lieu of more comprehensive solutions – solutions that could provide both immediate and long-term benefits to the transmission system. Addressing these reliability concerns through transmission upgrade projects will provide both immediate and long-term benefits. Upgraded transmission systems will contribute to grid resiliency. DOE in its recent NOPR finds that focusing on grid resiliency is vital. There are efficiencies to be had and additional benefits to gain with increased grid resiliency through transmission upgrades sooner rather than later. VEA requests that the ISO consider infrastructure-based solutions to the reliability concerns in the VEA service area, solutions which would also have the added benefit of strengthening the grid at a time and in a geographical area where there is substantial interest in development of renewable resources to meet California RPS requirements. VEA encourages the ISO to consider the Brattle Group's report "The Benefits of Electric Transmission". VEA respectfully requests the CAISO include the benefits of infrastructure-based solutions to all project alternatives examined by determining the costs and comparing costs to lifetime benefits of such projects.	The Under Voltage Loading Shedding (UVLS) scheme in the VEA area is not a RAS scheme. This UVLS scheme existed prior to VEA joining the ISO and is utilized to mitigate Category P6 issues only. The ISO has not identified the need to install any new load shedding schemes or to expand the existing one. The ISO Planning Standards describe the risks and benefits of utilizing RAS, and they also provide guidelines for ensuring that the reliability is maintained. These guidelines are applied consistently across the ISO controlled grid.