

The ISO received comments on the topics discussed at the February 28, 2018 stakeholder call from the following:

1. [Bay Area Municipal Transmission \(BAMx\)](#)
2. [Bonneville Power Administration \(BPA\)](#)
3. [California Public Utilities Commission – Staff \(CPUC-Staff\)](#)
4. [GridLiance](#)
5. [ITC Holdings Corp](#)
6. [NextEra Energy Transmission West \(NEET West\)](#)
7. [The Nevada Hydro Company](#)
8. [Office of Ratepayer Advocates \(ORA\)](#)
9. [Pacific Gas & Electric \(PG&E\)](#)

#### Economic Study Requests

1. [Alliance \(PG&E and TransCanyon\)](#)
2. [LS Power \(LSP\)](#)

Copies of the comments and economic study requests submitted are located on the 2018-2019 Transmission Planning Process page at:  
<http://www.caiso.com/planning/Pages/TransmissionPlanning/2018-2019TransmissionPlanningProcess.aspx>

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

1. Bay Area Municipal Transmission (BAMx) Submitted by: Kathleen Hughes		
No	Comment Submitted	CAISO Response
	<p>Similar to the previous planning cycle, there continues to be much uncertainty in the current planning environment. System loads are forecast to decline and the time of peak demand is shifting, gas fired resources are facing early economic retirement, the expansion of Community Choice Aggregation (CCA) may change resource procurement patterns, the outcome of regional expansion efforts is still unknown, and impacts of efforts such transportation electrification are only just starting to come into view. In such an environment, maintaining flexibility and careful consideration of long-term investments are critical. As such, BAMx strongly supports the CAISO efforts identified on slide 28 of the stakeholder presentation to identify corrective action plans that include lower cost alternatives to the construction of transmission facilities.</p>	<p>The comment has been noted.</p>
	<p><b>Previously Approved Projects</b>            BAMx applauds the significant progress that the CAISO made in the prior three planning cycles in evaluating previously approved transmission projects. However, some projects still remain on hold. While the draft study plan affirms that such projects on hold will not be included in the system model used in the reliability assessment (Section 3.5.1), it is silent as to analysis to resolve the fate of these projects. While the work on three of the projects is linked to the further assessment of alternative to the Midway-Andrew Project, the fate to the Gates-Gregg 230 kV Project was linked to a detailed renewable integration assessment to be conducted in the 2018- 2019 TPP. However, we find no such assessment identified in the draft Study Plan.</p> <p>While much work has been done to evaluate previously approved projects as a one-time effort, part of the Study Plan should include a formal process to continually monitor such previously approved projects. This monitoring should include at least two aspects. First, until the project starts construction it would be monitored as to whether there have been changes that would impact the project necessity and scope. While all approved projects should be monitored, special emphasis should be targeted for those that have been delayed beyond their initially proposed online dates as well as those with on-line dates during the second half of the planning horizon. Second, stakeholders are seeing tremendous and chronic cost escalation after a transmission project is approved by the CAISO, at times up to 900%. Such cost increases can</p>	<p>The ISO will continue to assess the need for the Gates-Gregg 230 kV project in the 2018-2019 transmission planning cycle.</p> <p>The ISO will continue to review the scope of projects on a case by case basis based on material changes in circumstances identified by the ISO or stakeholders. Such review can only practically take place during the annual transmission planning cycle, or, as necessary, when information needs to be updated to support permitting process applications. Regarding the escalation BAMx refers to as times to 900%, the ISO is only aware of the proposed Riverside supply proposal experiencing that level of cost increase – due to extremely unique circumstances and as discussed below.</p>

No	Comment Submitted	CAISO Response															
	<p>materially impact the selection of the preferred alternative or overall scope of work. During the post approval transmission project monitoring, BAMx recommends that the CAISO monitor cost escalation for both scope creep in the event that work unnecessary to the project objectives may have been added to the project and whether any such cost increase should trigger a project review as has been performed by the CAISO for the past several planning cycles.</p> <p>While the CAISO's work to date has focused on projects in the PG&amp;E area, BAMx notes that the issue of cost escalation goes beyond the PG&amp;E area. For example, projects approved in SCE's service territory show large cost escalation as demonstrated in the table below:</p> <table border="1" data-bbox="281 673 1110 938"> <thead> <tr> <th style="text-align: center;">Project Title</th> <th style="text-align: center;">Approval Year</th> <th style="text-align: center;">Approval Cost Estimate</th> <th style="text-align: center;">2018 Q1 AB 970 Report Cost Estimate</th> <th style="text-align: center;">Cost Increase</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Riverside Reliability Transmission Upgrade (Jurupa 230/66kV Sub)</td> <td style="text-align: center;">2007</td> <td style="text-align: center;">&lt;\$50M</td> <td style="text-align: center;">\$401M-\$500M</td> <td style="text-align: center;">900%</td> </tr> <tr> <td style="text-align: center;">Eldorado-Lugo-Mohave Upgrade</td> <td style="text-align: center;">2013-2014</td> <td style="text-align: center;">\$106M</td> <td style="text-align: center;">\$250.1M-\$300M</td> <td style="text-align: center;">183%</td> </tr> </tbody> </table> <p>BAMx encourages the ISO to monitor the projects in all the PTO's service territories for potential cost escalation followed by a review in the scope of the project if a cost escalation has been identified. The results of such monitoring activities should be included in the annual Transmission Plan.</p> <p>Also recommended for further review in this TPP cycle is the Ten West Link Project (<i>aka</i> Delaney-Colorado River Transmission Project). This project was approved in the 2013-14 TPP as an economically driven project with a benefit-to-cost ratio of 0.87 to 1.17. The project energy benefits were based upon the differential marginal fossil generation cost in Arizona versus California with an assumed capacity benefit of 200 MW to 300 MW. Some ancillary benefits associated with Imperial Valley deliverability were also identified, but were not the primary driver and may actually lower the quantified benefit-to-cost ratio. Again, the planning environment has changed since this project was initially approved. SB 350 has since been approved by the California legislature that increases the RPS and energy requirements, thereby reducing the need for</p>	Project Title	Approval Year	Approval Cost Estimate	2018 Q1 AB 970 Report Cost Estimate	Cost Increase	Riverside Reliability Transmission Upgrade (Jurupa 230/66kV Sub)	2007	<\$50M	\$401M-\$500M	900%	Eldorado-Lugo-Mohave Upgrade	2013-2014	\$106M	\$250.1M-\$300M	183%	<p>Previously approved projects will continue to be reviewed on a case by case basis where circumstances warrant, as noted above.</p> <p>Regarding the Riverside Reliability Transmission Upgrade, which is essentially a "load" interconnection as opposed to a system reinforcement, SCE is continuing to work with the City of Riverside and the CPUC in the siting and permitting process.</p> <p>The Delaney –Colorado River project is proceeding through the permitting process, and the ISO will update the supporting information for that project in keeping with the CPUC-established schedule in the proceeding.</p>
Project Title	Approval Year	Approval Cost Estimate	2018 Q1 AB 970 Report Cost Estimate	Cost Increase													
Riverside Reliability Transmission Upgrade (Jurupa 230/66kV Sub)	2007	<\$50M	\$401M-\$500M	900%													
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	<p>accessing the out-of-State fossil fuel based generation. There have also been a number of announced coal plant retirements in the Southwest that can be expected to significantly impact the previously identified energy benefits. Furthermore, generation is exiting the California market due to the surplus of generation capacity, calling into question the attribution of capacity value to the Ten West Link Project. These factors indicate that the 2013-2014 analysis supporting the project should be revisited. As the project is currently undergoing a licensing proceeding at the CPUC, to be timely, this analysis needs to be completed early in the planning cycle.</p>	
	<p><b>Loading Conditions and Applicable Equipment Ratings</b>            With the availability of hourly loads from the CEC, the CAISO is advancing its definition of the Base Scenarios to reflect the intent to model a specific day and hour. For example, the Summer Peak 2023 and 2028 models are to reflect August 14 hour ending 19:00.8 The evening peak hour identified is generally consistent with previous identification of the shift of the peak load to the evening hours. With the shift in the time of peak load, the ambient conditions which impact equipment ratings also change. For example, PG&amp;E's standard summer conductor ratings are based upon mid-day conditions reflecting an ambient temperature of 109.4° F (98.6° F in the coastal area) with full sun. As the ambient temperature falls and the sun becomes less intense, conductor capabilities rise. BAMx believes that the CAISO should lead an investigation by transmission owners of appropriate line ratings for the shifting peak hours. And, in the absence of such a wide investigation, BAMx recommends that before a capital expansion is approved using these summer peak models, a more detailed review of the area load profile and equipment ratings be undertaken for the specific area being studied for a capital addition.</p>	<p>The ISO will be using the hourly profiles of the CEC 2017 IEPR Energy Demand Forecast in the 2018-2019 transmission planning process and applying the facilities ratings of the transmission owners in the planning assessments. The ISO also notes that reductions in solar output in late afternoons generally precede temperature reductions during high temperature events in many areas.</p>
	<p><b>Local Capacity Requirement (LCR) Studies</b>            BAMx supports the CAISO plan to perform an analysis of existing local capacity areas. The suddenly announced plans in 2017 for the economic shut down of three gas plants necessary for local reliability is a harbinger for a potential wave of such shut downs as the State moves towards its higher RPS targets. It is important to anticipate such announcements in the planning environment to the extent possible. While BAMx fully supports the need for such work, we question some of the methodological points identified in the stakeholder meeting,</p>	<p>The ISO will provide more clarity regarding the consideration of mitigations to reduce local capacity requirements and will consider hybrid solutions such as those being advanced in Moorpark and Oakland to the extent they are feasible.</p>

No	Comment Submitted	CAISO Response
	<p>First, we recommend that for each local area to be studied that the CAISO identifies both transmission and preferred resource options for maintaining reliability. This would be modelled similar to the recent Moorpark analysis prepared by the CAISO. The CAISO would further facilitate the consideration of preferred resources by having the study identify the characteristics necessary to meet the reliability needs of the area. This could include a discussion of the capacity and energy requirements of an energy storage alternative and whether solar resource profiles would meet the reliability need.</p> <p>While we agree that the second step includes an economic analysis of local generation versus transmission/preferred resources, we question the structure whereby the CAISO has the sole role in such an analysis in the planning environment. The CAISO proposal would have the CAISO evaluating the long-term cost of maintaining an existing local resource in comparing to the transmission/preferred resources. While the CAISO at times must enter into Reliability Must Run (RMR) contracts to maintain system reliability, such contracts are stop gap measures rather than long term planning tools. As such, during the planning environment we believe that the other energy agencies (CPUC and CEC) should be involved, likely driving the decision process. These agencies are best equipped to look at resource needs, policy objectives and customer costs in an integrated fashion. CPUC Energy Division and several other party proposals are being discussed in the CPUC Resource Adequacy (RA) proceeding (R.17-09-020) that address RA program reforms necessary to maintain reliability while reducing potentially costly backstop procurement. As such BAMx recommends that while the CAISO assist in developing the options, the other energy agencies should drive the decision. An exception could be for very low cost transmission alternatives such as were identified in the 2017-2018 Transmission Plan for the <i>South Bay-Moss Landing</i> enhancements. These enhancements, with an expected cost of \$14 million that would reduce the LCR by 400 MW (\$35/kW) in an area with specific identified needs is such an example. However, such a process should not be the general case. The CAISO should work with the other energy agencies to establish criteria and thresholds before proceeding directly with such low cost, high value projects.</p>	<p>BAMx’s comments regarding “driving the decision” are somewhat misplaced. The ISO’s analysis considers comprehensively the various issues including reliability, policy, and economic drivers. In this regard, input from the state agencies is critical in these planning decisions. At this time, there are no specific policy objectives provided by legislation or state agencies to reduce reliance on gas-fired generation in local capacity areas beyond obligations on once-through-cooling generation, so the study is focusing on the potential for economic benefits in examining alternatives.</p> <p>Further, hybrid solutions relying on conventional transmission and preferred resources require the active support of the load serving entities and the state agencies in acquiring those resources. As the ISO has made clear in numerous transmission plans, it does not have the authority to approve preferred resources. Resource substitutions – replacement of conventional generation solely by preferred resources – are in the purview of the CPUC.</p>

No	Comment Submitted	CAISO Response
	<p>Additionally, BAMx recommends an additional step that would involve a risk assessment of the local area. This could be done, in part, during the process to select the areas for study. BAMx supports a more formal process that considers the capacity margins in an area, the presence of rate based generation as well as the size and ownership concentration of independent generation, the current Power Purchase Agreement expiration dates, and the lead time for implementation of transmission/preferred resources alternatives, etc. Again, this effort is larger than the one CAISO should undertake and would involve all the energy agencies in developing a risk mitigation plan.</p> <p>BAMx also requests that the CAISO identify all areas where the LCR is driven by the LCR criteria of:</p> <p style="padding-left: 40px;"><i>"No voltage collapse or dynamic instability shall be allowed for a Contingency in Category D – extreme event (any B1-4 system readjusted (Common Mode) L-2), as listed in Section 40.3.1.2."</i></p> <p>This criterion reflects an Extreme Event that is beyond the NERC/WECC/CAISO Planning Standards. BAMx questions its applicability beyond identification of LCRs and whether it is appropriate to use this criterion in the expansion of the system capabilities. While BAMx supports a stakeholder process to address this question, identification of local capacity areas where this is the binding criterion would inform the assessment of the criticality of the issue. Lastly, BAMx seeks clarification of the CAISO's intended reliance on the concept of "grid resiliency" such as was used in the Moorpark area assessment in defining LCRs. This concept is not defined in the planning standards and both the metric as well as the acceptable threshold is unknown. If grid resiliency is anticipated to be part of the evaluation of local capacity needs, further foundation development of the concept with stakeholders is necessary.</p>	<p>Please refer to each year's local capacity technical studies, the most recent of which are available on the ISO's web site at:</p> <p><a href="http://www.caiso.com/planning/Pages/ReliabilityRequirements/Default.aspx">http://www.caiso.com/planning/Pages/ReliabilityRequirements/Default.aspx</a></p> <p>Both the local capacity criteria in section 40.3.1.1 of the ISO tariff and the consideration of local capacity needs in considering transmission upgrades in the transmission planning process set out in section 24.4.6.7 of the ISO tariff have been in place for many years. The ISO anticipates a larger discussion regarding local capacity requirements in the CPUC proceedings and will participate in those proceedings.</p>

**2. Bonneville Power Administration**  
**Submitted by: Young S. Linn**

No	Comment Submitted	CAISO Response
2a	<p>The Bonneville Power Administration (BPA) appreciates the opportunity to comment on the 2018-2019 Transmission Planning Process (TPP). BPA markets zero-carbon electricity from 31 Federal hydroelectric projects and one nuclear power plant in the Columbia River Basin. BPA also owns and operates over 15,000 circuit miles of high voltage transmission in the Pacific Northwest with interconnections to California.</p> <p>BPA enjoys a constructive and collaborative relationship with the California Independent System Operator (CAISO) in coordinating intertie operations. Our comments today are in the spirit of that collaboration, by endorsing the significance of the proposed scope of the TPP study plan and identifying some initial considerations.</p> <p>BPA supports several specific aspects of the study plan for the 2018-2019 TPP, specifically, those special studies identified on page 6 of the Overview (CAISO Presentation - HERE) targeting opportunities for increasing transfers of low carbon electricity with the Pacific Northwest. Those studies include evaluating potential upgrades to the Pacific Direct Current Intertie (PDCI) and performing compatible studies south of the California-Oregon Border (COB) to increase COI capability.</p> <p>BPA believes that a number of emerging issues warrant including these considerations in the TPP study scope. Significantly, continued collaboration between BPA and the CAISO will be necessary for achieving efficiencies that benefit the entire Western region, which include efficient use of flexible carbon-free hydro resources and enhanced opportunities for integrating new renewable electricity generation. The day-ahead market enhancements contemplated in the CAISO's 2018 policy initiatives catalog address market design approaches. The complementary transmission capability expansions study in the TPP will help address the infrastructure opportunities.</p> <p>BPA is also following California's initiatives to address electricity reliability implications of constrained operations of the Aliso Canyon gas storage facility as well as for the broader natural gas-electricity interactions in the Western</p>	<p>The comment is noted, and the ISO looks forward to coordinating with BPA on this special study.</p>

No	Comment Submitted	CAISO Response
	<p>Interconnection. The PDCI is one of the important transmission connections for the southern California area most affected by constraints on natural gas storage for electricity. In 2016, BPA completed a \$370 million upgrade to the northern terminus of the PDCI at the Celilo Converter Station and on BPA's portion of DC transmission line allowing the PDCI to operate reliably at a maximum capacity of 3,210 megawatts. In 2017, LADWP, on behalf of all of the southern owners, completed line work to the southern portion of the PDCI in order to operate the PDCI to the higher capacity of 3,210 megawatts. Expanding that capacity to 3,800 megawatts is feasible with: (i) investments at the Sylmar Substation and on the DC transmission line south of the Nevada-Oregon border and (ii) upgrades (which are expected but not yet determined) to the parallel AC transmission network needed to support a PDCI upgrade. BPA supports the CAISO's inclusion of such upgrade studies in its TPP.</p> <p>Coordination among the path operators and owners of the interties is essential. Studies addressing capabilities of the COI and Northwest AC Intertie (NWACI) requires coordination with BPA and its NWACI partner asset owners Portland General Electric and PacifiCorp, as well as the BPA's Capacity Owners.</p> <p>The PDCI sensitivity case studies require coordination with BPA and its southern asset owners, Los Angeles Department of Water &amp; Power, Southern California Edison, the City of Pasadena, the City of Glendale, and the City of Burbank.</p>	
	<p>Finally, BPA would like to make a specific comment with regard to the CAISO's study assumption on slide 18 of the Reliability Assessment section of its presentation, listing the COI as limited to 4,800 megawatts. BPA requests that the CAISO work with COI and NWACI owners to identify system conditions for when north to south transfers on COI can be increased above 4,800 megawatts (to 5,100 to 5,200 megawatts target) without any upgrades to the existing transmission facilities. The system conditions need to encompass variables on both sides of the COB – e.g., Northern California hydro, Klamath Falls gas generation, Summer Lake – Hemingway flow, Reno-Alturas Transmission, Central Oregon load, etc. The assessment would then inform COI and NWACI owners of the benefits of proceeding with a formal path rating increase process.</p>	<p>Reviewing existing system capabilities will be a part of this assessment.</p>

**3. California Public Utilities Commission – Staff (CPUC Staff)**  
**Submitted by: Karolina Maslanka**

No	Comment Submitted	CAISO Response
	<p><i>1. CPUC Staff appreciates the CAISO's continued effort to reevaluate previously approved projects and cancel or down-scope projects when appropriate. CPUC staff requests that the CAISO monitor project cost increases to the extent possible. CPUC staff suggest two potential thresholds that can be implemented to trigger project cost reevaluation.</i></p> <p>CPUC Staff appreciates the CAISO's continued effort to reevaluate previously-approved projects and cancel or down-scope projects when appropriate. The 2017-2018 Draft TPP demonstrated that transmission project estimates can increase significantly overtime, often doubling in cost before construction.</p> <p>CPUC Staff support a request a stakeholder made during the February 28, 2018 stakeholder meeting for the CAISO to monitor project cost increases to the extent possible. It may be prudent for CAISO to put in place a threshold that triggers reevaluation. Following are two options for CAISO's consideration.</p> <p>One option is for the CAISO to reevaluate a transmission project's costs if the project has not yet completed the CEQA process, yet the cost estimate of that project has increased by \$50 million or by 50 percent since its initial estimated cost at approval. At least ten projects were identified in the 2017-18 TPP cycle fitting the above threshold, and often significantly surpassing it. Reevaluation of these projects and revision of each projects scope saved ratepayers an estimated \$1.7 billion.</p> <p>A second option is for the CAISO to reevaluate a transmission project's costs if the project has not yet completed the CEQA process and the cost estimate of the project has increased to at least 10 percent above the cost of previously identified alternatives that met reliability requirements.</p>	<p>The ISO will continue to review the scope of projects on a case by case basis based on material changes in circumstances identified by the ISO or stakeholders.</p>
	<p><i>2. The CAISO is undertaking a review of the existing local capacity areas in the 2018-2019 planning cycle. CPUC Staff requests that stakeholders be provided the opportunity to participate in the determination of which areas are prioritized.</i></p>	<p>The ISO will be holding a stakeholder meeting regarding the scope of the economic assessment of the Local Capacity Requirement study.</p>

No	Comment Submitted	CAISO Response
	<p>As indicated on slide 44 of the presentation presented at the February 28, 2018 stakeholder meeting, the ISO is undertaking a review of the existing local capacity areas in the 2018-2019 planning cycle with the objective of identifying potential transmission upgrades that would economically lower gas fired generation capacity requirements. CAISO will assess only half of the areas this cycle. CPUC Staff requests that stakeholders be involved in the determination of which areas are to be reviewed this TPP cycle.</p>	
	<p><b>3. CPUC Staff would like to highlight that the CAISO's approach of only counting capacity from demand response programs with a response time of 30 minutes or less, as described in the Draft 18-19 Study Plan, does not correspond with current CPUC resource adequacy policy.</b></p> <p>According to the Draft 2018-2019 Study Plan only capacity from demand response (DR) programs that can be relied upon to mitigate "first contingencies" (30 minutes or less response time), as described in the 2012 LTPP Track 4 planning assumptions, are counted. This is not in alignment with CPUC resource adequacy policy.</p> <p>The CAISO can model a response time for local DR that is less than 30 minutes. However, CPUC staff would like to clarify that the standard of a minimum response time of 30 minutes does not reflect CPUC resource adequacy (RA) policy which does not place a response time requirement on local RA resource. The CPUC Resource Adequacy proceeding will ultimately determine what types of DR programs can count for local RA and meet local capacity needs.</p>	<p>The ISO is adjusting the final study plan to address an inadvertent inconsistency in the documentation. The ISO intends to consider resources that require longer than 30 minutes based on the methodology established over the last several years for transmission planning purposes; local capacity technical studies will continue to be performed not considering slower resources in assessing whether there are deficiencies, and the ISO will then consider whether there are slow response resources before making a decision to backstop to address the deficiencies.</p>
	<p><b>4. CPUC Staff commends the CAISO on identifying innovative solutions to transmission needs and local capacity requirements in the 2017-2018 TPP. CPUC Staff strives to better understand what new technologies the CAISO plans to investigate or consider in the 2018-2019 Transmission Planning Process.</b></p> <p>CPUC Staff is frequently receiving new information on technologies, such as superconductor AC power cables, which may potentially be utilized to meet reliability needs or local capacity requirements at a lower cost than other alternatives. Has the CAISO investigated this technology or other newer</p>	<p>At this time, the Transmission Plan represents the most comprehensive narrative.</p>

No	Comment Submitted	CAISO Response
	<p>technologies? If so, is there one centralized location where stakeholders can access information about the innovative technologies that the CAISO is considering?</p> <p>Additionally, at the November 16, 2017 stakeholder meeting during which the 2017- 2018 TPP reliability assessment results were presented, the CAISO introduced a proposal to add Phasor Measurement Units (PMUs) to all CAISO interties. CPUC Staff included in its comments a request for the CAISO to provide additional information on how installation costs were estimated, as well as information on the estimated benefits of the PMU installations. The CAISO did not provide any additional information during the February 8, 2018 stakeholder meeting during which the 2017-2018 Draft TPP was presented. Instead CAISO stated that more information would be provided during the 2018-2019 TPP cycle. CPUC Staff did not see any mention of PMUs in the 2018-2019 TPP Study Plan. When will the CAISO provide additional information regarding its original proposal to add PMUs to all CAISO interties?</p>	<p>The recommendation for approval of the Phasor Measurement Units (PMU) was included in the Revised Draft 2017-2018 Transmission Plan.</p>
	<p><b><i>5. CPUC Staff looks forward to collaborating with the CAISO on the sensitivity case requested by CEC Chair Weisenmiller and CPUC President Picker per their letter regarding increased capabilities for transfer of low carbon electricity between the Pacific Northwest and California.</i></b></p> <p>CEC Chair, Robert Weisenmiller, and CPUC President, Michael Picker, sent a letter to the CAISO regarding a "Request for Sensitivity Case in the California Independent System Operator 2018- 2019 Transmission Planning Process – Increased Capabilities for Transfers of Low Carbon Electricity between the Pacific Northwest and California." Specifically, this letter requested a specific sensitivity case be included in the 2018- 2019 California ISO transmission planning process (TPP). For additional detail, please refer to the attached letter.</p> <p>CPUC Staff believes that this work will require collaboration with CPUC staff working on integrated resource planning, and staff working on resource adequacy. CPUC staff looks forward to collaborating with the CAISO on this effort.</p>	<p>The comment is noted. The ISO looks forward to the continued collaboration with CPUC staff.</p>

**4. GridLiance**  
**Submitted by: Jody Holland**

No	Comment Submitted	CAISO Response
	<p>Gridliance West Transco (GWT) appreciates the opportunity to submit comments on the 2018-2019 Transmission Planning Process Draft Study Plan. We commend the CAISO draft plan for addressing both the California's mandate for 50% renewable energy and greenhouse gas (GHG) reduction by 2030 as described in Senate Bill (SB) 350. However, GWT encourages the CAISO to act more quickly than outlined in the Draft Study Plan in two respects. First, while we understand there are reasons for not driving any policy projects out of the 2018-19 TPP, there should be some consideration to projects that have already been studied and offer strong potential to meeting CAISO reliability needs yet have been waiting on policy guidance. Additionally, the ISO should take policy objectives into consideration when there are identified reliability and economic benefits; any project with sufficient multi-pronged benefits should be approved in this TPP cycle.</p> <p>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 is free from relying on Remedial Action Schemes to 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. The CPUC's 42MMT case shows over 3000 MWs of solar renewable energy in the vicinity of GWT's service area.</p>	<p>The comment has been noted; consideration will have to be based on case by case specifics. However, the ISO's consideration of state, federal, and municipal policy needs to be based on clear direction.</p>
	<p>GWT also resubmits earlier comments that are very pertinent to the public policy objectives in the 2018-19 TPP, as follows.</p> <p>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</p>	<p>The CAISO considers transmission upgrades such as new transmission lines and transformers as well as Remedial Action Schemes before recommending a particular mitigation plan. Available information regarding the benefits of each alternative is considered during our analysis.</p>



No	Comment Submitted	CAISO Response
	<p>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 provide 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.</p>	

**5. ITC Holdings Corp**  
**Submitted by:**

No	Comment Submitted	CAISO Response
	<p>As an initial matter, we echo the comments of other stakeholders encouraging the CAISO to solicit input on the assumptions and methodology to be used in planning studies, rather than limiting stakeholder input to the focus areas for these studies. As a case in point, the draft study plan includes a review of existing local capacity areas to identify potential transmission upgrades that would economically lower gasfired generation capacity requirements in local capacity areas or sub-areas. We applaud the CAISO's consideration of reductions in Local Capacity Requirements as an economic benefit of investment in transmission facilities, and strongly support the CAISO's proposal to conduct this local capacity area review. Following on from the comment above, the CAISO should solicit stakeholder input on which local capacity areas are the top priorities for review, and what assumptions and methodology should be used in conducting this study.</p>	<p>The ISO will be holding a stakeholder meeting regarding the scope for the economic assessment of the Local Capacity Requirement study.</p>
	<p>The draft study plan provides for interregional projects to be studied using tariff defined processes, and does not include any special studies focused on outlet or deliverability of out-of-state renewables. However, we note that certain projects submitted for interregional evaluation, such as the North Gila Imperial Valley No. 2 (NGIV2) project, may provide for the integration and full outlet of in-state renewable generation resources. Using "tariff-defined processes" to review these projects may not be sufficient to study and account for the full range of benefits they provide to the state of California and its customers, including, in the case of NGIV2: increasing the transfer capability of WECC Paths 46 and 49; and relieving congestion in the Imperial Irrigation District area, thereby allowing the interconnection and the import and export of additional renewable generation capacity and energy from that area.</p>	<p>The ISO considers that the last two years of extensive special study analysis on these issues provides a sound body of material to inform the current cycle of the CPUC's Integrated Resource Plan proceeding, and there is insufficient new information to base additional studies in the 2018-2019 transmission planning cycle that would warrant the studies. The ISO will continue to participate in the IRP process and assess the situation for the 2019-2020 planning cycle.</p>
	<p>In response to a question posed by ITC on 2/28 regarding investigation of ramping capacity requirements, as well as frequency response and headroom needs, the CAISO responded that these are being addressed by the CPUC's Integrated Resource Plan IRP proceeding. While the implication is that ramping and frequency response will be addressed through resource planning and generation-based products, we note that storage technologies can serve both generation and transmission functions. Further, we encourage the CAISO to</p>	<p>As noted above, the ISO will continue to support the CPUC's IRP process regarding resource development. In addition to considering storage as potential transmission mitigations – where warranted – the ISO will consider if updating previous benefits analysis of large storage is feasible in this cycle.</p>

No	Comment Submitted	CAISO Response
	<p>consider how large storage solutions should be evaluated in the CAISO's Transmission Planning Process to meet these needs – as resources, as transmission assets, or both.</p>	
	<p>On the topic of the economic assessment study methodology, we observe that while a 2000 MW Net Export Limit is assumed for baseline study purposes, the CAISO appears willing to evaluate the benefits of a proposed project without the Net Export Limit, as a sensitivity case. While we fundamentally believe that the 2000 MW limit is unnecessarily detrimental to the interests of CAISO customers, we do support using a sensitivity case in lieu of increasing the Net Export Limit in the baseline study. The CAISO should further clarify their intentions regarding how this sensitivity case will be performed and evaluated.</p>	<p>It should be clarified that the 2000 MW ISO net export limit is not a physical transmission capability constraint, but a market operation constraint. Sensitivity studies may be conducted for projects on which the import/export assumption would have material impact, for example, the projects that cross the border of the ISO footprint.</p>

**6. NextEra Energy Transmission West, LLC (NEET West)**  
**Submitted by: Edina Bajrektarevic**

No	Comment Submitted	CAISO Response
	<p><b>NEET West requests the CAISO commence an in-depth Economic Planning and 50% Renewable Portfolio Standard (RPS) Public Policy Study for a new Mira Loma – Red Bluff 500 kV Transmission System.</b></p> <p>In the past TPP's, NEET West has suggested project proposals to improve reliability, mitigate thermal overloads of the existing 230 kV transmission network in the West of Devers area1, and address the Desert Area Constraint deliverability issues. By using a combination of in-depth Economic Planning and Public Policy (i.e. modelling the system using the 50% RPS), NEET West proposes the Red Bluff - Mira Loma 500 kV transmission system ("Red Bluff – Mira Loma") would resolve multiple issues on the network, and should be considered for FERC Order 1000 competition.</p> <p>The Red Bluff - Mira Loma project includes the following facilities:</p> <ul style="list-style-type: none"> <li>• New ~140 mile 500 kV transmission line between the Red Bluff 500 kV substation and Mira Loma 500 kV substation (Line ratings: 3,421 MVA Normal, 3,880 MVA Emergency).</li> <li>• 50% Series Compensation with an optimal location in the line to be determined from further studies (Line ratings: 3,291 MVA Summer Normal, 3,949 MVA Summer Emergency).</li> </ul> <p>Red Bluff – Mira Loma would provide a multi-value (reliability, economic, policy) long-term solution that:</p> <ul style="list-style-type: none"> <li>• Addresses the Desert Area Constraint that was identified as one of the more robust conclusions of the California Energy Commission (CEC) Renewable Energy Transmission Initiative (RETI) 2.0 Final Plenary Report (February 2017) to emerge as a serious issue prior to 2030, which affects deliverability of resources from a broad area of southeastern California, and should be a priority for further planning.</li> <li>• Will eliminate and/or minimize the congestion management costs which are used to mitigate thermal issues on the existing 500 kV transmission network. Depending on the amount of congestion that occurs as a result of the Desert Area Constraint, the congestion management costs could be</li> </ul>	<p>The ISO will perform a reliability, policy and economic transmission need assessment. To the extent that we identify a transmission need that a new line from Red Bluff to Mira Loma could mitigate, then the ISO will consider this proposed solution, and the necessary analysis will be performed to determine the need for this particular alternative.</p>



No	Comment Submitted	CAISO Response
	<p>significant. Construction of Red Bluff – Mira Loma would reduce the amount of congestion management necessary (including generation curtailments) to alleviate the thermal issue and, consequently, create economic savings. Further analysis would be required to quantify the congestion management cost savings from the project.</p> <ul style="list-style-type: none"> <li>• Minimizes generation curtailment, reliance on existing SPSs (specifically Inland SPS and West of Devers SPS), and reliance on operating procedures for voltage and thermal control.</li> <li>• Complements integration of CAISO-approved participating transmission owner’s projects and the approved FERC Order 1000 competitive transmission projects.</li> <li>• Supports Eastern LA Basin Local Capacity Requirement (LCR) Sub-Area process and 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 approximately 2,230 MW, which is expected to be met by available and new resources in the Eastern LA Basin sub-area.</li> <li>• Improves voltage profile in the local 230 kV transmission system by providing a new source for the area and offloading the existing network, while enabling the additional renewable generation in the Eastern area. Further analysis may be required to establish optimal voltage support for the area, under various operating conditions, including additional steady state and/or transient voltage support at Red Bluff, Colorado River, and Serrano substations.</li> <li>• Continues to support integration of existing and new renewable generation in the CAISO. The most recent Cluster 10 Phase 1 Interconnection Study Report, SCE Eastern Bulk Area Report (January, 2018), identified numerous thermal overloads and low voltages conditions with all facilities in-service and divergence and severe overloads and low voltages under contingent conditions.</li> </ul> <p>In the current 2017-18 TPP cycle, the CAISO studied Red Bluff – Mira Loma as “economic” and “reliability” only. CAISO’s study, which was based upon a 33% RPS, observed limited economic and reliability benefits of the project. The primary driver for Red Bluff – Mira Loma is to enable the integration of a</p>	

No	Comment Submitted	CAISO Response
	<p>renewable generation that reflects the Public Policy mandate requiring a 50% RPS.</p> <p>While the primary need for Red Bluff – Mira Loma is to ensure compliance with the 50% RPS, it is important for the CAISO to recognize that the project can also help address other challenges in Southern California including early retirement of gas generation and other conventional generation that is at the risk of early retirement. This project offers an important opportunity to avoid inefficiencies and future costs and will provide important policy-driven transmission that is clearly consistent with the future needs of the system as identified by both the CPUC RETI 2.0 and CAISO generation interconnection process.</p>	
	<p><b>NEET West encourages CAISO to identify and to approve public policy-driven transmission projects in the 2018-19 TPP based on the CPUC’s recommendation to use the Reference System Plan portfolio, the “42 Million Metric Tons (MMT) Scenario”.</b></p> <p>In 2018, the CPUC developed a new/additional Greenhouse Gas (GHG) reduction target of 42 million metric tons (MMT) by 2030, known as “Reference System Plan” (the “42 MMT Scenario”). NEET West recommends that this “42 MMT Scenario” be used as the base case for policy-driven transmission projects for the CAISO’s TPP in 2018-19. The CPUC identified that using the 42 MMT Scenario was the planning target for Load Serving Entities (“LSEs”) pursuing their integrated resource planning (“IRP”). Therefore, NEET West believes the 42 MMT Scenario is the appropriate target for policy-driven cases in the 2018-2019 TPP. Importantly, the RESOLVE model estimates that the 42 MMT Scenario will require approximately 9,000 additional MW of solar, 1,200 MW of wind, and 2,000 MW of storage resources.<sup>5</sup> This will also enable the CAISO to address the Desert Area Deliverability Constraint which was identified as one of the more robust conclusions of the RETI 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. Utilizing the 42 MMT scenario will also align the CAISO with the CPUC’s comment in RETI 2.0 assessment that the Desert Area Deliverability Constraint should be a priority for further planning.</p>	<p>The comment contradicts the specific policy direction from the state agencies at this time. In the CPUC’s recent Integrated Resource Planning decision (D.18-02-018), it adopted an approach to study the 42 MMT Scenario as a sensitivity in the TPP to identify Category 2 transmission based on the Reference System Plan. Once the Preferred System Plan is adopted, it is expected to be utilized as a policy-preferred portfolio in the subsequent TPP to identify Category 1 transmission.</p>

No	Comment Submitted	CAISO Response
	<p>The CAISO's 2018-2019 draft study plan describes the handling of the "42 MMT Scenario" as follows:</p> <p>"Based on the proposal voted on and adopted by the CPUC, a statewide electric sector GHG reduction target of 42 million metric tons (MMT) by 2030 was selected. In order to provide a general planning direction to the electric sector, the CPUC adopted a portfolio of energy resources to meet this 2030 GHG reduction target. This 42 MMT Scenario portfolio will be transmitted to the CAISO to be used as a sensitivity in the 2018-2019 TPP policy-driven assessment to identify Category 2 transmission based on the Reference System Plan."</p> <p>The CAISO's policy-driven analysis is typically performed to recognize the transmission impacts of meeting California's RPS goals, particularly the 50% RPS and GHG reduction by 2030. Based upon the results of the policy-driven analysis, transmission projects can help to achieve RPS objectives.</p> <p>However, per the CAISO's 2018-2019 draft study plan assumptions, no baseline portfolio will be transmitted to the CAISO as part of the 2018-2019 TPP policy-driven assessment. Because the CPUC has adopted the 42 MMT Scenario portfolio to be assessed as a "sensitivity" and for "informational purposes only" in the 2018-2019 TPP policy-driven assessment, the CAISO will not recommend approval of any policy-driven transmission projects as part of the 2018-2019 TPP. NEET West requests the CAISO consider the following:</p> <ul style="list-style-type: none"> <li>• What is the CAISO's rationale for not conducting a baseline Policy-Driven Analysis in the 2018-19 TPP cycle? NEET West views the 2018-19 TPP cycle as a transitional process where the base case assumptions should be more certain to reflect on the current CPUC's Integrated Resource Planning (IRP) process.</li> <li>• Sensitivity studies are typically conducted to measure the impact of an assumption change. Without a baseline reference (versus a "sensitivity analysis"), how will CAISO measure the difference caused by the 42 MMT assumptions? In other words, what should/will the 42 MMT Scenario's performance be compared to?</li> </ul>	

No	Comment Submitted	CAISO Response
	<ul style="list-style-type: none"> <li>• Please provide further details on the 42 MMT Scenario. Specifically, how much renewable generation will be required and where does CAISO assume the renewables will be located? If these assumptions are not yet available, when will CAISO be able to provide this information to stakeholders?</li> <li>• The reliability analysis in the 2018-19 TPP will use the 50% RPS assumptions to develop the reliability cases. Do these reliability cases also represent a “policy-driven” baseline analysis?</li> </ul> <p>Finally, if the CAISO does not incorporate the 42 MMT Scenario into the 2018-29 base case reliability and policy assessment, then the 2018-19 mitigation plans and recommendations will be premised on the 33% RPS requirements starting in 2020, rather than the 50% RPS required in 2030. While NEET West appreciates that the CPUC has not yet provided to the CAISO the “Preferred Plan” data and assumptions to integrate 50% renewables by 2030 and therefore CAISO has not yet identified or approved a policy-driven transmission plan to achieve the 50% RPS, the CAISO should study the 42 MMT Scenario and incorporate the 42 MMT Scenario into appropriate base case reliability, policy, and economic evaluations. This would facilitate a full assessment of the transmission needs in this cycle and determine the value of transmission with respect to the increased RPS standard.</p>	
	<p><b>The CAISO should continue to assess High Voltage Reactive Voltage Support necessary to address existing issues on the 500 kV network in Northern California, and to address voltage stability concerns resulting from the Diablo Canyon Nuclear Power Retirement in 2025.</b></p> <p>The CAISO's <i>2017-18 Reliability Assessment - Preliminary Study Results</i> document voltage stability concerns (insufficient reactive margin) at Round Mountain 500 kV under anticipated 2022 summer peak conditions with high renewable integration. The contingencies tabulated within the CAISO's preliminary results are:</p> <ul style="list-style-type: none"> <li>• 2-Diablo Canyon Unit Trip (<i>Extreme Event</i>)</li> <li>• 2-Palo Verde Unit Trip (<i>Extreme Event</i>)</li> <li>• Pacific DC Intertie (PDCI) Bipole (<i>NERC Category P7</i>)</li> </ul>	<p>The ISO will continue to assess the reactive requirements in the 2018-2019 transmission planning process.</p>

No	Comment Submitted	CAISO Response
	<p>To address the identified voltage stability concerns, NEET West proposed a new dynamic reactive power support project that consists of:</p> <ul style="list-style-type: none"> <li>• A new <math>\pm</math> 300 MVar Static Var Compensator (SVC) connected to a new 500 kV Bus through a single 500/23.2 kV step-up transformer, with a rating of approximately 340 MVA.</li> <li>• A new 500 kV tie line connecting the high-side bus of the SVC step up transformer to PG&amp;E's existing Round Mountain or Gates 500 kV substation. The ratings for this line will be approximately 330 MVA Normal/Emergency.</li> <li>• A new bay position at the Round Mountain or Gates 500 kV bus consisting of two new 500 kV breakers.</li> </ul> <p>The Round Mountain SVC proposal was evaluated by the CAISO in their 2017-18 TPP as a transmission solution to resolve the insufficient reactive margin with several contingencies and high renewable generation output, as well as to address the issues associated with high voltage in the 500 kV in Northern California under off-peak conditions. The CAISO concluded that the project is valid, but additional studies are required to determine the exact locations and the size of the devices. NEET West requests that the CAISO continue to assess the bulk system reactive needs for this region in their 2018-19 TPP.</p> <p>Reactive supply is a least cost option to mitigate voltage stability problems. The CAISO has undergone a very successful system analyses, by identifying and, consequently, approving a series of bulk power projects for voltage support to address San Onofre Nuclear (SONGS) retirement in Southern California. This included the approval of the Talega Synchronous Condenser (SC), SONG SC, San Luis Rey SC, Miguel SC, and Suncrest SVC. These projects provide voltage stability and fast variable control that is instrumental to prevent voltage collapse during normal and extreme system contingencies. Finally, NEET West respectfully requests additional data granularity including hourly recorded voltages on PG&amp;E Northern California buses to determine the proper SVC size and location.</p>	

No	Comment Submitted	CAISO Response
	<p><b>NEET West respectfully requests CAISO to develop off-peak cases which model any considered Energy Storage solution in charging (load) mode.</b></p> <p>As part of the reliability case input assumptions, CAISO's lead engineer for reliability assessment described that for the off-peak cases, Energy Storage would be modeled at 0 MW output. This is a very important assumption that could play a key role in CAISO's determining size, location, and the system's available capacity for Energy Storage proposals. NEET West recommends that instead of modeling Energy Storage at 0 MW output, that CAISO develop an off-peak case (cases) that models proposed Energy Storage facilities in charging (load) mode. This important assumption could further support CAISO's most recent initiatives and mandates to utilize electric storage resources for multiple services including the use of Energy Storage as transmission facility.</p>	<p>Energy storage being modeled as load requires appropriate off peak cases that represent the hour of charging based on the load profile. Energy storage projects are evaluated for both charging and discharging during the review process and if the TPP base case appropriately represents the hour that the energy storage is supposed to be charging, it will be modeled as a load.</p>

7. Nevada Hydro Company Submitted by: David Kates		
No	Comment Submitted	CAISO Response
	<p>Under the CAISO open access transmission tariff ("Tariff") §24.3.3, Nevada Hydro submitted its Lake Elsinore Advanced Pumped Storage ("LEAPS") project (FERC Project P-14227 and P-11858) to the CAISO and asked that it be considered for inclusion in the development of the Plan. In its filing, Nevada Hydro requested that LEAPS be studied and included in the Plan as a "transmission" resource that will provide reliability, public policy and economic benefits. To the extent the CAISO opted not to include LEAPS in the Plan on that basis, Nevada Hydro requested that the CAISO view LEAPS as a generation or other non-transmission alternative.</p>	<p>FERC has recognized that storage facilities can be transmission facilities. Storage facilities can also be treated as generation or non-transmission alternatives.</p>
	<p><b>1.0. The CAISO Tariff requires that LEAPS be treated as a transmission asset</b>            The Tariff § 24.3.3(a) provides an opportunity for stakeholder comment on the draft Plan to address three things: (1) demand response programs for inclusion in the base case, (2) generation and other non-transmission alternatives for consideration, and (3) Federal, state and local public policy requirements to be included in the plan. Tariff § 24.3.2 identify that the minimum requirements for the Plan include: (1) a description of the computer models, assumptions and criteria to be used in technical studies, (2) a list of each technical study to be performed, and (3) a description of the modifications to the planning data and assumptions to be included in the Plan. Importantly, Tariff §§ 24.3.1(g) and 24.3.2(i) identify that the Plan must address "[p]olicy requirements and directives, as appropriate, including programs initiated by state, federal, municipal and county regulatory agencies."</p> <p>As explained herein, to satisfy the Federal policy compliance requirement in the Tariff, CAISO's Plan must address the Federal policy implemented through an act of Congress to treat pumped hydroelectric storage as an "advanced transmission technology" under the Energy Policy Act of 2005, and must comply with the Federal Energy Regulatory Commission's ("FERC") policy directive providing for the treatment of electric storage as wholesale transmission facilities for planning and cost recovery purposes under the Tariff. CAISO should include a sensitivity case in its Plan that treats electric storage as an "alternative" to electric transmission for non-pumped hydroelectric</p>	<p>As indicated above, FERC has recognized that storage facilities can be transmission facilities. The CAISO has studied, and does study, storage facilities as transmission facilities in the transmission planning process. All provisions of CAISO tariff section 24 would apply to the LEAPS project. Consistent with Order No. 1000 and the CAISO tariff, for the CAISO to approve a transmission solution in the annual transmission plan, it must be the more cost-effective or efficient solution to meet a tariff-specified need identified by the CAISO in the planning process. Under the CAISO tariff, approved regional transmission solutions that are not upgrades to existing facilities are subject to the CAISO's competitive solicitation process.</p>

No	Comment Submitted	CAISO Response
	<p>storage facilities and projects that do not otherwise seek to qualify as wholesale transmission under FERC’s storage policy. The CAISO’s planning assumptions, inputs to the Plan and quantifications of benefits should build upon the CAISO’s studies and study sensitivities conducted as part of the 2016-2017 transmission planning cycle by applying a complete Transmission Economic Assessment Methodology (TEAM) analysis to electric storage included as a transmission or transmission alternative.<sup>1</sup> CAISO must apply all five TEAM cost-benefit categories and quantify the benefits of each. The Plan should further adapt the “CAISO Planning Standards” (as defined in the Tariff) to address the serious grid reliability and resiliency challenges that CAISO has identified in prior transmission planning studies and its recent comments to FERC in the Grid Resiliency docket (AD18-7-000) respecting the growing prevalence of non-dispatchable renewable energy resources under California’s 50% renewable portfolio standard (“RPS”), coupled with retirements and curtailments of baseload nuclear generating plants and fast-ramping natural gas fired generating resources due to retirements and natural gas supply constraints. Finally, to comply with the Federal Power Act’s prohibition against unduly discriminatory rates, terms and conditions, and FERC’s implementation of that law through FERC Order 1000’s transparency and comparability standards and the CAISO’s Tariff (e.g., Tariff § 24.3.3(e)), CAISO must provide a complete explanation to support the planning criteria and assumptions that it adopts in the Plan, and must provide a complete explanation of all the reasons for the selection or rejection of particular transmission solutions or transmission alternatives at the conclusion of the study process (e.g., one that addresses each element of the TEAM analysis or other selection methodology such as NERC reliability criteria violations and “least regrets” planning for policy upgrades).</p> <p>The CAISO has advised the CPUC through both letters and pleadings that large scale pumped storage is needed to protect California from the potential harm that could result from the existing impacts of the current 50% RPS requirement. And, the CAISO recently informed FERC in its comments on grid resiliency that California’s RPS requirement is “likely” to increase. The CAISO planning assumptions must address LEAPS ability to address the existing need for large scale pumped storage as well as the likely future need.</p>	

No	Comment Submitted	CAISO Response
	<p><b>2.0. The LEAPS Project</b></p> <p>LEAPS is identical in size, operating characteristics and location to the large scale pumped storage facility that CAISO has studied over the last several years. It is a proposed \$2 billion pumped hydroelectric storage transmission infrastructure facility with a planned power production capacity of 500 MW and a pumping capacity of 600 MW. It will be located in Riverside County California at Lake Elsinore, which will serve as the lower reservoir for the LEAPS facility. It will include two new 500 kV interconnecting transmission lines, two new 500 kV substations, three new 500/230 kV transformers, three new phase shifting transformers, and one new 230 kV transmission line. These facilities will be located approximately midway between Los Angeles and San Diego at Lake Elsinore, California, and will link the transmission systems of San Diego Gas &amp; Electric Company (“SDG&amp;E”) and Southern California Edison Company (“SCE”), thereby helping to relieve two of the largest transmission bottlenecks in California.<sup>2</sup> The total energy storage available will be approximately 6,000 MWh per day, potentially allowing for 12 hours of generation at the full plant generating capacity of 500 MW. Nevada Hydro has filed a hydroelectric license application with the Federal Energy Regulatory Commission (“FERC”) for LEAPS that is currently pending in Docket No. P-14227-003.</p> <p>The CAISO has recognized in its own analyses the potential benefits of adding 500 MW of pumped storage hydroelectric capability to southern California, a number of grid support services a facility identical to LEAPS can provide.<sup>3</sup> These services include reactive power (<i>i.e.</i>, VAR) support, load and generation balancing services (<i>i.e.</i>, regulation-up and regulation-down services), moment-to-moment load following service, spinning reserve service and black start service. LEAPS will be able to switch from providing one service to another almost instantaneously. Other grid support services that CAISO has recognized pumped storage facilities like LEAPS can provide include:</p> <ul style="list-style-type: none"> <li>• Renewable generation integration (<i>i.e.</i>, balancing variability and over-generation)</li> <li>• Frequency regulation</li> <li>• Power system stability</li> <li>• Load following</li> <li>• Contingency reserves</li> <li>• Inertial response</li> </ul>	<p>Please refer to the above comments.</p>

No	Comment Submitted	CAISO Response
	<ul style="list-style-type: none"> <li>• Cycling and ramping protection of thermal generation</li> <li>• Relieving transmission congestion</li> </ul> <p>These services are all becoming increasingly critical as California continues to transition to its ambitious 50% (or more) renewable energy goal while at the same time retiring fossil-fueled and nuclear generating resources historically relied upon to maintain a harmoniously functioning power grid.</p> <p>LEAPS is designed to: (1) be used by the CAISO to resolve transmission and system reliability issues when the system is under over-generation conditions, (2) maintain reliability when other transmission facilities are out of service for maintenance, and (3) provide grid resiliencies as the grid is relying more and more on intermittent resources. In such situations, LEAPS would automatically come on-line and would prevent NERC reliability violations, or any interruption of electricity service to customers, and LEAPS would be able to provide reliability services throughout the requisite peak hours and during over-generation hours. LEAPS will perform transmission and reliability functions by providing the voltage control support or load reduction needed for the operation of the transmission system when called to do so. In all, LEAPS will provide ten identifiable and quantifiable transmission reliability support services:</p> <ol style="list-style-type: none"> <li>1. voltage support,</li> <li>2. thermal overload protection,</li> <li>3. frequency regulation,</li> <li>4. load following,</li> <li>5. balancing renewable generation,</li> <li>6. ramping/regulation services,</li> <li>7. black start service,</li> <li>8. mitigation of transmission outages/contingency reserves,</li> <li>9. inertial response,</li> <li>10. relief of transmission congestion between major load pockets, and cycling/ramping protection of thermal generation.</li> </ol> <p>Through these services, LEAPS can be used to mitigate over-generation conditions, overloads, line trips, lines taken off line for maintenance, and voltage dips of affected transmission line segments on the CAISO transmission system.</p>	

No	Comment Submitted	CAISO Response
	<p><b>3.0. The CAISO Unified Planning Assumptions Must Address Federal Policy to Treat Electric Storage like LEAPS as Transmission Facilities for Planning and Cost Recovery Purposes.</b></p> <p>Sections 1223 and 1241 of the Energy Policy Act of 2005<sup>4</sup> identifies pumped hydroelectric storage facilities as an “advanced transmission technology” to be encouraged for transmission reliability and efficiency purposes. FERC has found that LEAPS fits the statutory definition.</p> <p>Moreover, FERC’s Storage Policy Statement<sup>6</sup> issued at the outset of CAISO’s last transmission planning cycle in early 2017 treats electric storage as “wholesale transmission facilities” for transmission planning and cost recovery purposes, provided certain conditions are met. LEAPS has an application pending before FERC in Docket No. EL18-131-000 requesting a finding that it satisfies the Storage Policy Statement criteria.</p> <p>The Energy Policy Act of 2005 and the Storage Policy Statement establish “Federal policy” on the treatment of pumped hydroelectric storage for transmission planning and cost recovery purposes. Sections 24.3.1(g) and 24.3.2(i) of the CAISO Tariff require CAISO to account for Federal policy in its Plan, and section 24.3.3(e) requires CAISO to explain its reasons for not including any public policy requirement in its Plan. Therefore, to comply with its Tariff, CAISO’s Plan must treat pumped hydroelectric storage facilities as electric transmission facilities or explain its reasons for failing to comply with Federal policy.</p>	<p>Please refer to the above comments.</p>
	<p><b>4.0. The Plan Should Expand Upon the Assumptions and Sensitivities Included in its Prior Studies of Large-Scale Electric Storage During the 2016-2017 Transmission Planning Cycle.</b></p> <p>Section 24.3.2 of the Tariff specifies that the Plan must include, among other things, “potential generation capacity additions and retirements, and transmission system modifications,” and “[a] description of the computer models, methodology and other criteria used in each technical study performed in the Transmission Planning Process cycle.”</p>	<p>Please refer to the above comments.</p>

No	Comment Submitted	CAISO Response
	<p>The 2016-2017 transmission plan included the results of an analysis of benefits of largescale pumped hydroelectric storage facilities. That study found that “new pumped storage resources brought significant benefits to the system, including reduced renewable energy curtailment . . . lower CO2 emissions, emission costs and production costs, and the flexibility to provide ancillary services and load-following and to help follow the morning and evening ramping processes.” The CAISO performed sensitivities that it published on January 4, 2018, where it confirmed the initial findings. The CAISO has represented to the CPUC that its studies of large-scale storage demonstrate that:</p> <p><i>additional bulk energy storage with fast-ramping capabilities is essential to balance California’s rapid rise toward a 50% renewable grid. Not only would California benefit from additional bulk energy storage resources such as pumped storage, California could be harmed without them.</i></p> <p>The CAISO uses the TEAM analysis to assess the costs and benefits of transmission projects for selection in its TPP. TEAM examines five categories of benefits: (1) production cost savings, (2) capacity benefits through increased import capability into the CAISO balancing authority area, increased deliverability within CAISO, or relief of a known transmission constrained area within CAISO, (3) public policy benefits, such as the ability to lower the cost to integrate renewable energy resources, (4) the ability to relieve the over-supply and associated curtailment problems that arise from excess renewable energy production, and (5) reliability benefits and the ability to avoid other costly transmission upgrades. The analysis uses a full network computer simulation model, market prices for energy and ancillary services, an uncertainty analysis to account for the variability of input assumptions such as natural gas prices, and examines alternatives, such as adding generating facilities, to assess whether there are more economic means to achieve objectives.</p> <p>CAISO identified numerous grid benefits from large-scale storage facilities even though it omitted TEAM category 5 (reliability and avoided cost benefits), performed the analysis for just one year’s benefits (2026) instead of a life cycle analysis, and having left out quantifications of the benefits for each category of the analysis.</p>	

No	Comment Submitted	CAISO Response
	<p>The affidavit of Mr. Ziad Alaywan, the President and Chief Executive Officer of transmission consulting firm of ZGlobal Inc., identifies specific assumptions and modeling necessary to complete the analysis of large scale pumped storage. In fact, Mr. Alaywan has completed the analysis himself using CAISIO software, assumptions and data inputs. Given that Mr. Alaywan has already completed most of the necessary work, the CAISO can focus on confirming Mr. Alaywan's results. The result of that exercise will demonstrate significantly greater grid benefits from large-scale storage than the CAISO has already found.</p> <p>In any event, the Plan must include an analysis of the benefits LEAPS will provide to the CAISO grid using the 2016-2017 studies as a starting point, and incorporating the CAISO data inputs and assumptions that Mr. Alaywan has provided, consistent with the TEAM approach.</p>	
	<p><b>5.0. The Plan Should Specifically Evaluate the Grid Reliability and Resiliency Benefits of Large-Scale Pumped Storage</b>  <b>5.1. Reliability Benefits</b></p> <p>In its Draft 2018-2019 Transmission Planning Process Unified Planning Assumptions and Study Plan ("Study Plan"), the CAISO responded to Nevada Hydro with the suggestion that:</p> <p><i>the proponent considers submitting the project in the 2018 Request Window specifying the ISO-identified reliability constraints the project could mitigate. The submission will also be considered as an economic study request.</i></p> <p>This is a useful starting point, but Nevada Hydro submits that a narrow focus on relieving a specific reliability constraint is too narrow a definition of grid reliability that excludes reliability benefits that CAISO itself has identified in its large-scale storage studies. We note that section 24.2(a) of the Tariff contemplates that the Plan must maintain grid reliability in accordance with NERC criteria and CAISO Planning Standards, which the Tariff defines as "Reliability Criteria that: (1) address specifics not covered in the NERC and WECC planning standards; (2) provide interpretations of the NERC and WECC planning standards specific to the CAISO Controlled Grid; and (3) identify whether specific criteria should be</p>	<p>Under tariff section 24.4.6.2, the CAISO determines the need for reliability driven solutions based on whether they are required to ensure System Reliability consistent with all Applicable Reliability Criteria and CAISO Planning Standards. The CAISO approves solutions to ensure satisfaction of CAISO Planning Standards based on the specific standards expressly set forth in the CAISO Planning Standards.</p>

No	Comment Submitted	CAISO Response
	<p>adopted that are more stringent than the NERC and WECC planning standards." Given the numerous grid management and reliability challenges posed by California's 50% RPS standard, generating plant retirements and natural gas supply constraints identified by CAISO in past planning studies and reports to FERC and the CPUC, Nevada Hydro submits that "CAISO Planning Standards" as defined in the Tariff encompasses the essential service flexibility that only large-scale pumped hydroelectric storage facilities can provide.</p> <p>Moreover, as Mr. Alaywan's affidavit explains, LEAPS will provide other reliability benefits, including the addition of capacity to southern California's local capacity resource ("LCR") area, increased load following capability, frequency response service, black start service, inertia, and grid resiliency (discussed separately below)—meaning the ability to reduce recovery times from serious grid disturbances that otherwise might lead to blackouts such as that which occurred in September 2011 in Southern California.</p> <p>As LEAPS provides significant local capacity benefits to SDG&amp;E area (as the CAISO's special study last year pointed out) Nevada Hydro suggests that the CAISO evaluate LEAPS as a solution to the SDG&amp;E local capacity issue. This is particularly critical, as SDG&amp;E recently announced that it was seeking roughly 150 MW of new battery storage to help it meet the reliability challenges attributable to the loss of Aliso Canyon. Nevada Hydro believes that the CAISO should include in its analysis the costs and benefits of LEAPS providing these same services in place of SDG&amp;E's proposed battery proposal using its TEAM methodology.</p>	
	<p><b>5.2. Resiliency Benefits</b>            CAISO's recent lengthy response to FERC's questions about grid resiliency identify a number of challenges that are the subject of ongoing studies.<sup>13</sup> FERC has proposed to define resiliency as "[t]he ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event."<sup>14</sup> As Mr. Alaywan explains, the inertia provided by large-scale pumped storage resources like LEAPS can serve a critical role in supporting grid resiliency. LEAPS will provide several attributes of resiliency because of its ability to absorb excess energy, rapidly produce energy on demand, steady grid</p>	<p>Please refer to the above comments.</p>

No	Comment Submitted	CAISO Response
	<p>frequency disturbances, and provide black start service to assist with the rapid recovery of the grid from an outage event.</p> <p>The need for flexible fast-ramping resources like LEAPS with substantial mass has become particularly urgent in southern California where the 2,246 MW San Onofre nuclear plant with its massive 150-ton turbines has been taken out of service. Huntington Beach’s 452-MVAR synchronous condenser is planned to be offline starting in 2018. Encina will lose 950 MW of gas-fired generation, Morro Bay’s 650 MW gas plant was shut down in early 2014, and the Diablo Canyon 2,200 MW nuclear facility is scheduled to retire by 2026. These developments all significantly and adversely affect the frequency response capability of the power grid, thereby posing a threat to grid resiliency and ultimately its reliability.</p> <p>Mr. Alaywan provides several examples that illustrate how the transmission grid can benefit from resources with substantial rotating mass that can also respond quickly in the critical first few moments following a blackout such as the one that occurred in the Southwestern United States on September 8, 2011. In those critical moments the system requires large generating resources with the essential telecommunications and computer equipment coupled with a fast-reacting resource that operates under “automatic generation control” to help restore the grid to the harmony that exists when frequency is at (or very close to) 60 Hertz. Mr. Alaywan explains that “[i]f frequency deviation is not corrected in a few seconds, there is a risk for the grid to become unstable which leads to a catastrophic blackout.” LEAPS will provide this essential resiliency service to southern California where the availability of rotating machines equipped with AGC is diminishing and is being replaced mainly by wind and solar (both rooftop and utility scale).</p> <p>Mr. Alaywan illustrates the grid resiliency benefits that LEAPS can provide through three studies. The first study simulated frequency response for a generic 500 MW solar photovoltaic facility located at Lake Elsinore compared to LEAPS during a single large contingency—the loss of the 500 kV Southwest Power Link transmission line, which serves as the major import path for SDG&amp;E. Southwest Power Link is considered by CAISO to be one of the greatest threat contingencies for the area.<sup>15</sup> The September 8, 2011 blackout</p>	

No	Comment Submitted	CAISO Response
	<p>in Southern California began when that transmission facility tripped off-line. Mr. Alaywan's first study shows that with LEAPS, the frequency would deviate 77% less compared to the system with a new 500 MW solar photovoltaic facility.</p> <p>Mr. Alaywan's second reliability study compared the frequency response pre- and post- LEAPS upon the loss of the same 500 kV Southwest Power Link transmission line for three existing generators in the SDG&amp;E area: (1) a 500 MW solar photovoltaic facility connected to the Drew substation, (2) the 950 MW Encina combined cycle generating facility, and (3) the 45 MW El Cajon peaking gas turbines. As summarized in his Table 12, frequency excursions caused by the transmission line outage are 12% to 18% lower with LEAPS in service than without it. Also, with LEAPS, positive frequency deviation is 3% to 26% lower than without LEAPS. Importantly, with LEAPS the frequency settles at a value closer to the initial frequency and reaches the initial steady state more quickly.</p> <p>As a further illustration, Mr. Alaywan shows how LEAPS would help to stabilize the El Cajon power station from the loss of the Southwest Power Link line. His study shows the El Cajon gas turbine frequency dipped by 0.222 Hertz in the pre-LEAPS case, but in the post-LEAPS case its frequency dipped by just 0.192 Hertz or 14% less with LEAPS in-service, and the frequency of the natural gas generating plant stabilized in 8 seconds with LEAPS in service. Without LEAPS, El Cajon would take 20 seconds to stabilize. He found similar benefits for the Drew 500 MW photovoltaic generating station where the frequency dipped by 0.155 Hertz in the pre-LEAPS case, but just 0.136 Hz in the post-LEAPS case—a 12% improvement with 4% improved stabilization time. The frequency impact on the Ocotillo wind generation facility would also be lessened with improved stabilization time. All these examples of grid resiliency benefits underscore the critical relationship to reliability—faster recovery times equal reliability improvements that may avoid future blackouts.</p>	
	<p><b>6.0. CAISO's Plan Must Comply with FERC's Transparency and Comparability Principles.</b>            As CAISO is aware, FERC's transmission planning process places a premium on comparability and transparency. California Independent System Operator Corp., 143 FERC ¶ 61,057 (2013) ("The process used to produce the regional</p>	<p>FERC has approved the CAISO's transmission planning process as meeting the requirements of Order Nos. 890 and 1000. That process provides for comparability and transparency.</p>

No	Comment Submitted	CAISO Response
	<p>transmission plan must satisfy the following Order No. 890 transmission planning principles: (1) coordination; (2) openness; (3) transparency; (4) information exchange; (5) comparability; (6) dispute resolution; and (7) economic planning") (emphasis added). These principles are incorporated in CAISO's Tariff.</p> <p>Accordingly, Nevada Hydro anticipates that CAISO will fully explain its reasons for including, or not including, the Federal policy requirements, modeling methods, assumptions, and studies suggested in these comments. Likewise, CAISO must provide complete explanations giving its reasons for selecting or to declining to select LEAPS as offered into the 2018-2019 transmission planning process to address the reliability, public policy and economic transmission needs identified through that process and in this letter.</p>	
	<p><b>7.0. Conclusion</b></p> <p>The panoply of services LEAPS provides could be associated with a reliability, public policy or economic transmission upgrade. With LEAPS, all these services are provided by a single asset. CAISO's unified planning assumptions should identify reliability and resiliency issues that LEAPS can solve or mitigate, "least regrets" public policy transmission needs that LEAPS can satisfy—including the ability to reduce the amount of renewable generation that California will need to meet its 50% renewables portfolio target—and measure the value of LEAPS between the SDG&amp;E and SCE load pockets to relieve congestion and provide other benefits using the CAISO's "Transmission Economic Assessment Method," or "TEAM" approach. The CAISO should also study the "resiliency" type reliability benefits that LEAPS can provide to address the challenges that CAISO faces as described in its March 9, 2018, report to FERC in its <i>Grid Resiliency Comments</i>.</p>	<p>The CAISO evaluates potential solutions to meet needs identified in the transmission planning process in accordance with the CAISO tariff.</p>

**8. Office of Ratepayer Advocates**  
**Submitted by:**

No	Comment Submitted	CAISO Response
	<p><b>1. ORA Recommends Prioritization of Analysis to Address Costly Backstop Procurement</b>  ORA supports the CAISO's proposal to review local capacity areas to identify potential transmission upgrades that would economically lower gas-fired generation capacity requirements in local capacity areas or sub-areas. The CAISO states that it intends to prioritize review of half of the existing areas and sub-areas based on the attributes of gas-fired generation to provide other system benefits and gas-fired generation located in disadvantaged communities. ORA recommends that the CAISO also prioritize its analysis to minimize backstop procurement through its Reliability Must Run (RMR) and Capacity Procurement Mechanism (CPM) Year Ahead and CPM Risk of Retirement (ROR) processes.</p> <p>Recent RMR and CPM procurement of resources for 2018 (estimated annual cost of \$172.6 million) has increased costs for ratepayers from backstop procurement and demonstrates the market power of gas-fired generation in certain local areas and sub-areas. In the California Public Utilities Commission's (CPUC) current Resource Adequacy (RA) proceeding, ORA has proposed that the CAISO conduct analysis to identify which resources are essential for reliability and which can retire, if they choose to do so. ORA has proposed that the CAISO work with the CPUC to review current contracts and focus on resources not currently under contract and those with contracts expiring in the next two years to determine if they are essential for reliability.</p> <p>This analysis would determine the basis of the need for the resource, how long the need will persist and identify the resource characteristics and mix of alternative resources and transmission solutions that can address the reliability need.</p> <p>The CAISO's analysis for the RA proceeding would identify areas with constraints that could lead to costly backstop procurement. The proposed Economic Assessment of Local Capacity areas should prioritize review of such areas to identify potential solutions to their capacity constraints. This would</p>	<p>The ISO will provide additional stakeholder opportunities to provide input and comment on the scope of the study proposed in the Study Plan.</p> <p>At the same time, gas-fired generation requirements for system and local needs require more careful coordination on broader attributes. Further, as noted in the ISO's March 16, 2018 reply comments on resource adequacy proposals, in which the ISO responded to ORA's comments, determining the need for any specific generator often depends on a clear understanding of the rest of the portfolio being procured. The ISO's study will also explore economically-viable alternatives in areas that are perhaps more straightforward to address.</p>



No	Comment Submitted	CAISO Response
	facilitate timely consideration of cost-effective alternatives to potential backstop procurement.	

9. Pacific Gas & Electric (PG&E) Submitted by: Matt Lecar		
No	Comment Submitted	CAISO Response
	<p><b>5. Economic Planning Study</b>  <b>5.2 Local Capacity Areas</b></p> <p>PG&amp;E supports the CAISO's effort for a review of existing local capacity areas in the 2018-2019 planning cycle to identify potential transmission upgrades that would economically lower gas-fired generation capacity requirements in the local capacity areas or sub-areas.</p> <p>PG&amp;E recommends that a comprehensive study should take into account both local and system level perspectives and should include at a minimum:</p> <ol style="list-style-type: none"> <li>1. A local area/sub area reliability assessment for the Greater Bay Area, Stockton and Sierra local capacity areas.</li> <li>2. Assessment of impact of retirement of local resources on CAISO system reliability.</li> <li>3. Assessment of impact of retirement of existing RMR resources.1</li> </ol> <p>To meaningfully perform 1 and 2 above, PG&amp;E requests CAISO work with the LSEs to reflect resource plans in the local area studies (i.e., model contract expiration date). In addition to identifying potential transmission upgrades that would economically lower gas-fired generation capacity requirements, PG&amp;E urges the CAISO to also consider cost effective alternatives (e.g., renewing existing contracts, storage, and other preferred resources) as potential solutions to mitigate local capacity issues created by generation wishing to retire.</p> <p>PG&amp;E recognizes that in order to develop a "least regret" alternative for local area resources, it is prudent to consider load growth sensitivity scenarios (such as load growth to higher level of penetration of EV or building electrification) and in some areas hydro generation sensitivity scenarios as well.</p> <p>In regards to the local capacity areas to focus on, since it will not be practical to include all local areas in the PG&amp;E System in this cycle, PG&amp;E requests the</p>	<p>The ISO will be holding a stakeholder meeting regarding the scope for the economic assessment of the Local Capacity Requirement study.</p>

No	Comment Submitted	CAISO Response																								
	<p>CAISO, at a minimum, perform this economic planning study for the Greater Bay Area, Stockton and Sierra local capacity areas and sub-areas. Examining the LCR needs in the latest Local Capacity Technical Analysis report, and the publically available PPA information for natural gas-fired facilities, these three local capacity areas appear to be exposed to high risk of generation deficiency in the event additional gas-fired generation in these local areas were to retire. The table below summarizes the total available generation in the three LCR areas, LCR needs, and the amount of MW of gas fired generation that could retire in the next 10 years. The table also shows the potential generation MW deficiency given the potential retirements.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">LCR Area</th> <th style="text-align: center;">Currently Available LCR Capacity (MW)</th> <th style="text-align: center;">2018 Minimum Area LCR Need (MW)</th> <th style="text-align: center;">At Risk Generation Name Plate Capacity (MW)</th> <th style="text-align: center;">At Risk Generation NQC (MW)</th> <th style="text-align: center;">Potential Deficiency (MW)<sup>2</sup></th> </tr> </thead> <tbody> <tr> <td>Greater Bay Area</td> <td style="text-align: center;">7103</td> <td style="text-align: center;">5160</td> <td style="text-align: center;">5527</td> <td style="text-align: center;">5143</td> <td style="text-align: center;">3200</td> </tr> <tr> <td>Stockton</td> <td style="text-align: center;">605</td> <td style="text-align: center;">719</td> <td style="text-align: center;">327</td> <td style="text-align: center;">299</td> <td style="text-align: center;">414</td> </tr> <tr> <td>Sierra</td> <td style="text-align: center;">2125</td> <td style="text-align: center;">2113</td> <td style="text-align: center;">290</td> <td style="text-align: center;">196</td> <td style="text-align: center;">184</td> </tr> </tbody> </table> <p>PG&amp;E encourages the CAISO to develop a comprehensive study plan for Local Capacity Areas with LSEs and other stakeholder inputs. PG&amp;E looks forward to working with the CAISO on developing this study plan and to participating in the evaluation of the above local capacity areas.</p>	LCR Area	Currently Available LCR Capacity (MW)	2018 Minimum Area LCR Need (MW)	At Risk Generation Name Plate Capacity (MW)	At Risk Generation NQC (MW)	Potential Deficiency (MW) <sup>2</sup>	Greater Bay Area	7103	5160	5527	5143	3200	Stockton	605	719	327	299	414	Sierra	2125	2113	290	196	184	
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	<p><b>9. Special Studies</b>  <b>9.2 Increased Capabilities for Transfers of Low Carbon Electricity with the Pacific Northwest</b></p> <p>On February 15, 2018, the CAISO received communication from the Robert B. Weisenmiller, Chair of the CEC and Michael Picker, President of the CPUC, requesting that the CAISO undertake specific transmission sensitivity studies within the 2018-2019 transmission planning process. These studies would focus on evaluating key options to increase transfer ratings of the AC and DC interties with the Pacific Northwest, and assess what role these systems can play in displacing generation whose fuel supply is tied to Aliso Canyon storage facility.</p> <p>To ensure an optimal assessment regarding the increase in transfer ratings, PG&amp;E requests the CAISO develop a study plan with stakeholder input that</p>	<p>The ISO will be holding a stakeholder meeting regarding the scope for the economic assessment of the Pacific Northwest study.</p>																								



No	Comment Submitted	CAISO Response
	<p>includes a process to determine the system conditions under which an increase in transfer ratings of the Pacific Northwest (PNW) AC and DC interties may be needed. The system conditions studied should consider coincident gas and electric system demand and supply. It is particularly critical to note that the Northwest is a winter peaking (energy) system and exports from that system are subject to wide variations in hydro production. Given such volatility in power availability, the effectiveness intertie upgrades should be studied under a range of wet and dry hydro and temperature conditions.</p>	

## Economic Study Requests

1. The Alliance (PG&E and TransCanyon) Submitted by: Sony Dhaliwal (PG&E) and Bob Smith (TransCanyon)		
No	Comment Submitted	CAISO Response
	<p>The Alliance (PG&amp;E and TC) appreciates the CAISO's efforts on the 2018-19 Transmission Planning Process (TPP) study plan and is generally supportive of the draft study plan. We agree with the CAISO plans to study the benefits of reducing LCR requirements in LCR areas over the next two cycles. Additionally the Alliance requests the CAISO to conduct an economic study of the transmission project described below.</p> <p><u>Economic Study Request: New Alberhill – Sycamore 500 kV Transmission Line, new Sycamore 500/230 kV transformer, new 500/230 kV transformer at Suncrest and a new double circuit 230 kV transmission line that loops the existing Miquel – Sycamore 230 kV line into Suncrest (Proposed Transmission Project).</u></p> <p>The Alliance has independently studied the various benefits of the Proposed Transmission Project as outlined in the following report and requests the CAISO to conduct an economic study of the Proposed Transmission Project by determining the following:</p> <ol style="list-style-type: none"> <li>1. Reduced LCR and associated contract costs in LA Basin and SDG&amp;E/Imperial Valley areas</li> <li>2. Reduction in production costs</li> <li>3. Reduction in curtailment of renewable resources</li> <li>4. Avoided cost associated with deferral or displacement of alternative reliability projects</li> <li>5. Ability to internally build and deliver increased renewable energy supporting future Policy initiatives</li> </ol> <p>The total qualifying capacity in the LA Basin Area in 2022 is projected to be 8,138 MW, with a margin of 2,181 MW above the 5,957 MW LCR category B need. The total qualifying capacity in the San Diego/Imperial Valley Area in 2022 is projected to be 4,572 MW, with a margin deficiency of 71 MW below the 4,643 MW LCR category B need. It can be expected that the margins in these</p>	<p>The economic study request and comments have been noted.</p>

No	Comment Submitted	CAISO Response
	<p>regions will reduce over time as future generation retirements and closure of the Aliso Canyon gas storage facility are considered.</p> <p><u>A Multi-Value Project:</u> The Proposed Transmission Project, in addition to the tightening LCR margin, also provides reliability benefits as detailed in the Alliance's request window project submission in October 2017 as a part of the 2017-18 CAISO Transmission Planning Process. Further, the Proposed Transmission Project may provide production cost and other strategic policy based benefits in support of increasing California Renewable Portfolio Standards and carbon free energy delivery to the major load centers of Los Angeles and San Diego. For these reasons, the Alliance team believes it would be prudent for the CAISO to perform an economic study of the Proposed Transmission Project.</p>	

**2. LS Power (LSP)**  
**Submitted by: Sandeep Auro**

No	Comment Submitted	CAISO Response
	<p>LS Power is hereby submitting an economic study request to CAISO for the 2018/19 Transmission Plan. The request is to study scheduling based congestion (such as recorded in CAISO Department of Market Monitoring reports) in addition to flow based congestion, on CAISO's intertie interfaces with the Pacific Northwest, namely the California Oregon Intertie (COI), Pacific AC Intertie (PACI) and Nevada-Oregon Border (NOB). In addition to this request, LS Power is also hereby submitting its Southwest Intertie Project North (SWIP-North) as an Economic project that would improve transfer capabilities between the Pacific Northwest and California.</p>	
	<p><u>Economic Study Request:</u>            LS Power hereby submits SWIP-North as an economic project and requests CAISO to study this in the 2018/19 planning cycle. SWIP-North is comprised of a 500 kV transmission line from Midpoint substation to Robinson Summit substation. Additional details of SWIP-North are included in the submission of SWIP-North as an Interregional Transmission Project in March 2016 under the 2016/17 TPP. This project will be submitted again in March 2018 under the 2018/19 TPP. After SWIP-North is built, LS Power's affiliate will attain approximately 1000 MW of new4 transmission capacity that will become available on the existing 500 kV transmission line that connects Robinson Summit to Harry Allen substation ("ON Line"), as per the Transmission Use and Capacity Exchange Agreement ("TUA") among LS Power affiliates and NV Energy, which is further described below. LS Power hereby proposes this new additional ~1000 MW capacity to be dedicated for CAISO use. In addition, the new 500 kV line from Harry Allen to Eldorado was approved by CAISO to be in-service by 2020. Upon completion of the Harry Allen to Eldorado project, Harry Allen will be a CAISO delivery point. Hence, if SWIP-North was selected by CAISO, CAISO will have access to a complete 500 kV path from Midpoint to Eldorado, approximately 575 miles.            Pursuant to the TUA with NV Energy, once SWIP-North is built there would be an exchange of capacity between LS Power affiliates and NV Energy. Upon completion of SWIP-North, NV Energy would get a share of the capacity between Midpoint and Robinson Summit and LS Power's Great Basin affiliate would get a share of capacity between Robinson Summit and Harry Allen,</p>	<p>The economic study request and comments have been noted.</p>



No	Comment Submitted	CAISO Response
	<p>without either party having to pay any amount to the other. As a result of this capacity exchange, LS Power's affiliate would have bidirectional transmission capacity on the entire path from Midpoint to Harry Allen, estimated at approximately 1000 MW. Therefore, LS Power's economic study request is that CAISO study the benefits of approximately 1000 MW of bidirectional transmission capacity between Midpoint and Harry Allen, which would be available to the CAISO market upon completion of construction of SWIP-North.</p> <p>In addition to the economic benefits that CAISO calculates from Energy Savings and Congestion reduction, CAISO should also estimate Capacity Benefits from the incremental import capability that SWIP-North will provide.</p>	