The ISO received comments on the topics discussed at the November 16, 2015 stakeholder meeting from the following:

1. Bay Area Municipal Transmission group (BAMx)
2. California Wind Energy Association (CalWEA)
3. California Public Utilities Commission (CPUC)
4. Imperial Irrigation District (IID)
5. ITC Holdings Corp. (ITC)
6. LS Power Development (LS Power)
7. Natural Resources Defense Council (NRDC)
8. Office of Ratepayers Advocates (ORA)
9. Pacific Gas & Electric (PG&E)
10. Transmission Agency of Northern California (TANC)

Copies of the comments submitted are located on the 2015-2016 Transmission Planning Process Page at: http://www.caiso.com/planning/Pages/TransmissionPlanning/2015-2016TransmissionPlanningProcess.aspx.

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

No	Comment Submitted	CAISO Response
1	**Bay Area Municipal Transmission group (BAMx)** **Submitted by: Joyce Kinnear**	
1a	**Reliability Projects < $50 Million** ***Panoche – Oro Loma 115kV Reconductoring*** The Panoche – Oro Loma 115kV circuit reconductoring was originally proposed during 2014-2015 Transmission Planning Process (TPP) cycle. BAMx members have previously submitted a comment requesting CAISO analysis be completed using a series reactor to address this overload instead of reconductoring the circuit.2 The comment was never addressed by the CAISO. BAMx would like to see this option analyzed before CAISO management approves this project.	The ISO addressed the comment in the response to comments from Stakeholder Meeting #2. The series reactor on the 115 kV system in the area would re-direct flow under certain conditions which could result in operation limitations and as such the Panoche-Oro Loma reconductoring project provides a more robust transmission solution for the area. In addition the cost for the series reactor installation would be reasonably similar to the cost of the reconductoring project.
1b	**Consideration of Canceling Previously CAISO Approved Projects** BAMx applauds the CAISO's efforts in reviewing the continued need for previously approved projects. If construction has not started on it, it is entirely appropriate for the CAISO to reconsider whether a previously approved project is still needed and if it is still needed, whether the originally proposed solution is the most appropriate. Some of the previously approved projects were approved many years ago and potential solutions, such as the installation of preferred resources to defer or eliminate the need for a proposed project, may not have been considered. BAMx would appreciate more information on the process the CAISO uses to evaluate the need for previously approved projects. The CAISO should provide some analysis results to show why some previously approved projects were recommended for cancellation and why some were retained at this time.	The overall methodology was explained at the November Stakeholder Meeting #3, and the results will be documented in the draft and final Transmission Plan. (See 3b)
1c	**Policy Driven Assessment** ***Reliability Analysis of 2015-2016 Portfolios*** Since there is no change in the Renewable portfolio for Northern California in 2014-15 TPP, we agree that the reliability assessment should concentrate on Southern California. We applaud the CAISO for finding lower cost measures to address the potential Lugo-Victorville 500kV line overload and the convergence issue upon loss of the Eldorado 500/230kV transformer bank.	The comments have been noted. Full Capacity Deliverability Status is a necessary and reasonable requirement for the renewable generation portfolios provided to achieve the 33 percent renewable portfolio standard. Energy-only service is not sufficient for these resources. The CAISO's policy driven transmission analysis and the Commission-developed renewable portfolios for achieving the 33 percent renewable portfolio standard were designed on the basis that renewable

No	Comment Submitted	CAISO Response
	Delivery Assessment for 2015/2016 Base Portfolio BAMx continues to be concerned that the CAISO has continued to perform the deliverability assessment assuming that all the renewable portfolio resources need to be fully deliverable and that all CAISO ratepayers should pay for deliverability upgrades. Rather than designating transmission projects as policy-driven solely to allow intermittent renewable projects to be built to provide system RA when no such need exists, the CAISO should undertake a cost-benefit analysis to justify the deliverability and/or envisioned congestion decrease of any proposed new transmission project. Furthermore, the CAISO should determine whether all new proposed transmission is both necessary and the most economical alternative to meeting the State's resource adequacy needs. If Full Capacity Deliverability Status (FCDS) is not in the CAISO ratepayer's interest, deliverability should not be provided as part of the Policy Driven analysis. Of course, nothing should prevent such projects that desire deliverability from paying for the required upgrades, without reimbursement, if they find it in their interest to do so. RPS Calculator v.6.1, which is used to develop the renewable portfolios for the 50% RPS Special study as part of the 2015-16 TPP, includes additional functionality that allows the model to select resources with Energy Only (EO) deliverability status, subject to the limitations of the existing transmission network. The RPS Calculator also allows for selecting FCDS resources in a manner that triggers transmission upgrades and assigns FCDS status only when including the upgrade is economical; otherwise, it assigns EO status. While considering any policy-driven transmission in the current planning cycle, we encourage the CAISO to look at upgrades to minimize ratepayer impact. This strategy for the current transmission plan will allow for more economically efficient outcome going forward in meeting the 50% RPS goal. Despite our reservations about the whole process of approving deliverability additions to the grid that must be paid for by all CAISO ratepayers, it appears that the mitigation measures proposed for deficiencies in providing full capacity deliverability for the base portfolio are all likely to be justified based upon a full economic study as recommended above. This level of analysis includes the potential to recommend flow control devices if a rating increase for the Lugo-Victorville line is not feasible. We question whether a major expenditure would	generation projects would be able to achieve Full Capacity Deliverability Status. Power purchase agreements approved by the Commission for purposes of meeting RPS goals overwhelmingly require renewable generators to provide resource adequacy capacity, which, in turn, requires Full Capacity Deliverability Status as a prerequisite. As a result, renewable generators have correspondingly requested Full Capacity Deliverability status in the CAISO generation interconnection process. Because virtually all renewable generation procured to meet the 33 percent goal are specified as deliverable and the portfolios have been developed with that expectation, the CAISO policy driven transmission analysis ensures that the generation in the Commission-developed renewable portfolios will be deliverable. Since the revised transmission planning process was approved and beginning within the CAISO's 2011/2012 transmission planning cycle, the Commission has communicated its resource planning priorities to the CAISO through delivery of renewable portfolio scenarios that the CAISO uses in each annual transmission plan to identify needs for policy-driven transmission projects consistent with the MOU. The Commission develops these portfolios through the use of the RPS Calculator. *Every* RPS Calculator portfolio submitted by the Commission into the CAISO's transmission planning process for the identification of policy-driven transmission to achieve 33 percent RPS has assumed FCDS for new renewable energy projects. (RPS Calculator User Guide, Version 6.1, p. A-17. ("The RPS Calculator allocates scarce transmission supply to renewable resources to deliver energy to load. In prior versions of the RPS Calculator (v.1.0 – v.6.0), all new renewable resources were assumed to have full capacity deliverability status (FCDS)."))

No	Comment Submitted	CAISO Response
	be justified economically and request further information on the details and cost of the flow control devices if the rating increase is not acceptable. We also question the need for the installation of an SPS to mitigate loadings on the ECO-Miguel 500kV line, as the studies done by the CAISO do not indicate any overloads for the contingencies studied. And since there is a level of uncertainty in regards to the load forecasts, generation additions, and generation retirement, we would encourage the CAISO to only approve projects based on loadings above 100 percent. Furthermore, BAMx notes that some of these same loading issues were found in the reliability studies reported in the November 16th stakeholder meeting. We reiterate our desire to see these same low cost solutions be implemented to mitigate the potential overloads identified in those studies.	
1d	**Congestion and Economic Assessments** The CAISO's presentation on the congestion studies was very informative. BAMx requests the CAISO to provide the limiting contingencies that are causing the most congestion for each one of the interfaces. The POE-Rio Oso circuit is an existing circuit and the topology around that area has not gone through any changes. What changes in the production cost model caused this interface to be identified as one of the top congested interfaces on the system? In the past transmission planning cycles, the CAISO had identified Path 26 and Path 15 to be congested zones. The CAISO had considered several candidate mitigation measures to address congestion in these areas and found them not to be justified. BAMx supports performing similar assessments for the newly identified congestion areas of Exchequer and POE-Rio Oso.	The detail information of all congestions including the limiting contingencies has been included in the draft transmission plan. The high priority congestions to be further studied were mainly selected based on their congestion costs. The POE- Rio Oso line congestion has been observed in previous cycles, and has a relatively high congestion cost among all congestions identified in this planning cycle. Detail assessments were performed as a part of the high priority studies.
1e	**Overview of the 50% Special Study** We are very encouraged to see the continued commitment of the CAISO to perform the 50% RPS Special Study. This study takes on added importance since the adoption of the 50% RPS goal. We are disappointed that there have been no reported results from the study at this time. We encourage the CAISO to place a high priority in completing the initial study, reporting initial results and accepting comments before the issuance of the 2015-16 draft transmission plan. We hope the CAISO can also report on further progress soon with respect to the following studies undertaken under the 2015-16 TPP:	The results have been shared in the draft Transmission Plan released at the end of January in keeping with the previously communicated schedule.

No	Comment Submitted	CAISO Response
	1. Continuation of frequency response study; 2. Gas/electric reliability in Southern California; and 3. Large scale energy storage study. However, even if the above studies are not yet ripe for stakeholder review, we encourage the CAISO report on the 50% initial study and any results found to date.	

No	Comment Submitted	CAISO Response
2	**California Wind Energy Association** **Submitted by: Nancy Rader**	
2a	The California Wind Energy Association (CalWEA) offers the following comment on the CAISO's planned 50% RPS Special Study as part of its 2015-16 Transmission Planning Process (TPP) as presented at the CAISO TPP stakeholder meeting on November 16, 2015. We understand that the main goal of the Special Study is to identify the magnitude of renewable generation that could theoretically be developed in various Competitive Renewable Energy Zones (CREZs), in and out of state, on an Energy Only basis without incurring significant curtailments due to reliability issues (transmission congestion). CalWEA broadly agrees with the basic steps of the methodology that CAISO intends to use for its 50% RPS Special Study. However, as we also noted at the stakeholder meeting, we emphatically recommend that the CAISO methodology account for the complementary generation profiles of wind and solar resources when studying reliability/congestion-related renewable resource limits in CREZs that contain both wind and solar resources. We assume that CAISO shares our intuitive and logical understanding that both snapshot reliability studies and long-term production simulation studies, when properly performed, will reveal that the availability of wind and solar resources in a CREZ will raise the total renewable resource capacity limit over that of a CREZ with only wind or solar resources from a transmission reliability/congestion perspective. So, it is only befitting that this intuitive understanding should be translated to actual results based on CAISO's planned studies. Appropriately evaluating the complementarity of wind and solar resources will further the objective of ascertaining how much renewable energy could be obtained without triggering the need for additional transmission.	The ISO agrees that resource and geographic diversity can have a material impact on reducing the costs of achieving California's renewable energy objectives, and that consideration will need to be given in future cycles. The first iteration of this "energy only" analysis in considering moving beyond 33% RPS is very approximate, and expected to produce results that can be used in future cycles to further refine results, however and we expect future studies to provide sufficient granularity to consider the issues raised in the comments.

No	Comment Submitted	CAISO Response
3	**California Public Utilities Commission** **Submitted by: Keith White**	
3a	1. ***The Draft Plan Should More Fully Describe the Role of Additional Achievable Energy Efficiency (AAEE) in Reliability Studies and Conclusions.*** The Draft Plan should indicate if, where and why any new infrastructure is identified as needed largely or solely based on violations occurring in study cases assuming no AAEE, and conversely should identify where assumed AAEE avoids infrastructure additions. This information helps the CPUC and other stakeholders understand the role of AAEE in the CAISO's reliability studies, and in avoiding or postponing infrastructure investments.	Specifics would be helpful, as the ISO is not aware of indicating projects would be recommended for approval assuming no AAEE. Sensitivities – as now required by the new TPL planning standards – have been performed that help indicate where AAEE is being relied upon. While this documentation is spread throughout the reliability analysis, the ISO is looking to summarize the reliance on preferred resources, including AAEE, for greater stakeholder visibility.
3b	2. ***The CAISO Should Provide Fuller Information in the Draft Plan Regarding all Previously Approved Transmission Projects Being Canceled and that Were Considered for Cancelation.*** The CAISO should post the full list of previously approved projects that have not begun construction and are being considered for cancellation in the present planning cycle. Additionally, for each project identified for cancellation whether identified in the November 2016 stakeholder meeting or subsequently, the Draft Plan should explain reasons for cancellation. This information will give the CPUC and other stakeholders useful insight regarding the potential for actual market and planning developments (such as regarding load growth, energy efficiency, demand response, local or other resources) to avoid need for transmission investments. It will also give insight into planning uncertainties inherent in reliability studies.	The overall methodology was explained at the November Stakeholder Meeting #3, and the results will be documented in the draft and final Transmission Plan. (See 1b)
3c	3. ***The Draft Plan Should Clearly Identify Load, Wind Dispatch and Solar Dispatch Conditions Assumed for Each Policy (RPS)-Related Reliability and Deliverability Study Case, as Well as Which of These Conditions Led to Modeled Violations.*** These assumptions should be compared to analogous assumptions for TPP reliability studies such as summarized on page 25 of the March 31 2015 Final Study Plan shown as Appendix 1 to these comments (with some assumptions	The draft plan identifies load, wind dispatch, and solar dispatch conditions for each policy related powerflow, stability, and deliverability study. Regarding differences in renewable dispatch in the policy versus the reliability base cases, curtailment of renewable generation is generally not considered a driver for reliability driven transmission

No	Comment Submitted	CAISO Response
	apparently not having been finalized by March 31). Reported assumptions should include assumed wind and solar dispatch levels for a study area in terms of percentage of nameplate capacity, in terms of percentage of the current (70% exceedance) QC level, and in absolute MW. This will clarify what conditions (locations, times, loads, resource dispatches) produce reliability or deliverability challenges for a given renewables portfolio. This in turn will aid consideration and appreciation of how these stresses might a. change under future renewables scenarios, b. interact with other challenges of integrating large amounts of additional renewables, such as regarding curtailments, or c. be studied differently (or not) if and when system resource adequacy (RA) and individual resource RA contributions are assessed using a stochastic methodology (e.g., Effective Load Carrying Capability or ELCC). Additionally, any difference between assumed dispatch levels in deliverability studies and dispatch levels (especially for solar) assumed for summer peak reliability studies (e.g., on page 25 of the Final Study Plan, shown in Appendix 1) should be explained.	projects. Therefore, the dispatch of renewable generation in summer peak load reliability studies is intended to focus on low renewable dispatch conditions which could reduce load serving capability.
3d	*4.* ***The Draft Plan Should More Fully Explain the Rationale and Consequences for the Economic Studies Enforcing Minimum Hourly Commitment of 4800 MW of Combined Cycle Plus 365 MW of (Storage) Hydro Generation for Frequency Response Purposes.*** The requested explanations should include explanation of whether various rationale (such as inertia, mitigation for transmission outages) previously given for modeling 25% "regional" (various load areas) minimum generation requirements are no longer applicable locally or system wide once the above frequency response-associated commitments are enforced. Furthermore, the anticipated section of the Draft Plan addressing frequency response studies should clarify the connection between frequency response studies (and studies such as economic studies that incorporate frequency response needs as modeling assumptions) and the CAISO's frequency response initiative including its market design considerations.	The following clarifies that the current modeling for Frequency Response Requirement in the production cost model includes: 1. Minimum 4800 MW committed capacity of ISO's combined cycle units 2. Minimum 388 MW headroom of ISO's combined cycle units instead of 365 MW of (storage) hydro as the stakeholder expressed in the comment. Also, please note that this modeling was based on the previous outcome of ISO's Frequency Response Requirement initiative in mid of 2015. This Frequency Requirement has been updated recently as described later, and the modeling in the 2016~2017 production cost model will also be updated accordingly to reflect the new requirement.

No	Comment Submitted	CAISO Response
	As an important part of the frequency response studies and frequency response initiative, the CAISO should evaluate, discuss and where appropriate pursue non-conventional sources of frequency response. Separately regarding the economic studies, CPUC staff request information on the number and timing of hours for which the net export constraint was binding, as well as the associated cost and curtailment consequences.	The previously modeled 25% minimum gen requirement was a proxy to make sure there were sufficient capacity and generation coming out from the UC/ED to maintain the system reliability. This proxy was incorporated in the TEPPC 2024 Common Case. For the 2015~2016 TPP, the ISO updated the minimum generation requirement within the production cost simulation model. The following reflects the changes: 1. The frequency response requirement to reflect the system-wide need. 2. Additional local constraints identified in reliability and LCR studies to reflect the need for voltage and thermal reliability. The Frequency Response requirement in the production model were taken input from the ISO's frequency response initiative, which is still ongoing. The requirement itself would also be changed based on the new study results. Therefore, the ISO will keep updating the model in the production database to be consistent with the new outcome of the Frequency Response Initiative. According to the NERC BAL-003-1 standard the CAISO needs to meet 752 MW frequency response requirement. Of the 752 MW total requirement, 50% of it, that is 376 MW, can be met by hydro resources. It will not be modeled explicitly. The other 376 MW requirement can be met by storage and online combined cycle resources. Of the 1,325 MW identified in the CPUC energy storage decision, the ones that can provide ancillary services, 600 MW of transmission connected and 213 MW of distribution connected as assumed in the 2014 LTPP ACR, can meet the frequency response requirement on a megawatt for megawatt basis, up to the available headroom. Each MW of online combined cycle capacity can meet 0.08 MW of the frequency response requirement given that the resource has at least 0.08 MW available head room. In the economic planning database with the 33% RPS portfolio zero net export limit is modeled. The number of binding hours of this constraint is 48 in 2025, and there is no binding hour in 2020. There are no curtailments related to this constraint in both 2020 and 2025 databases with 33% RPS portfolio.

No	Comment Submitted	CAISO Response
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3e	5. ***The November 16 TPP Presentation Indicated that Study Priorities for Identified Highest Congestion Areas and for Various Study Requests Have Yet to be Determined. CPUC Staff Request that the Draft Plan Clearly Explain the Rationale Used for Prioritizing These Studies.*** We anticipate that with a 50% RPS possibly involving out-of-state resources and energy only delivery, as well as FERC Order 1000-related interregional planning coordination plus possible expansion of the CAISO footprint - - the need to efficiently and transparently prioritize these kinds of studies may increase.	The comment has been noted.
3f	6. ***The November 16 TPP Presentation Briefly Outlined the 50% RPS Special Study Involving Energy Only Deliverability for Two Contrasting Portfolios. CPUC Staff Expect and Request that Results Presented in the Draft Plan Help Clarify How Associated Transmission Needs/Costs, Energy Delivery Constraints, and Possible Partial RA Delivery Can and Should Be Estimated.*** We understand that this study breaks new ground regarding the RPS level, energy only deliverability and the role of out-of-state resources. Thus, we do not expect complete or final resolution of the above or other questions, but do expect that this study will help clarify analytic issues, uncertainties and needs going forward.	The ISO will continue to coordinate with CPUC staff in 50% RPS special studies.

No	Comment Submitted	CAISO Response
4	**Imperial Irrigation District** **Submitted by: Nisar Shah**	
4a	1. In the Policy Driven Planning presentation, third bullet, slide 4 "Import Assumptions" it states that IID imports through IID-SCE and IID-SDGE branch groups is increased from 2016 MIC. What is this new value of MIC for IID moving forward from 2016?	702 MW is targeted for when the West of Devers upgrades and other necessary upgrades in the ISO or IID are completed. This will also be published in the draft TPP report.
4b	2. Further in this presentation it was mentioned that Imperial CREZ can accommodate up to 1750 MW of new generation. How is this 1750 MW determined? Can you provide a breakdown of where this generation is (or will be) located and how many MWs at each location?	As part of the 33% portfolio, the CPUC provided the list of resources in the Imperial zone. The base cases to be posted on the MPP will contain the masked resources showing location and MW for each resource.
4c	3. IID's internal studies have indicated that Imperial CREZ can actually accommodate up to about 2800 MW depending upon where generation is located while respecting the ECO-Miguel constrained path. Did CAISO consider the Locational Effectiveness Factor (LEF) while determining the 1750 MW?	The term "Locational Effectiveness Factor" typically applies to assessing the relative effectiveness of a resource at alleviating a constraint. The ISO agrees that the specific location of generation within the Imperial area can affect the total amount of generation that is deliverable given existing and planned reinforcements, but all of the resources, to a greater or lesser extent, contribute to loading on corridors that ultimately have finite capability. The concept IID raises in its comment appears to be more analogous to distribution factors. However, the ISO's analysis is more precise than relying on a "factor" – the ISO's analysis models resources at discrete locations within the Imperial area, which recognizes the full impact and benefit of locating the resources at those locations.
4d	4. A formal presentation was made to CAISO senior management in March 2015 to share the above IID findings through ZGlobal. CAISO subsequently, performed an internal study to verify ZGlobal's findings and came up with a draft discussion paper recommending further analysis. 5. To follow up on IID internal study and ISO's own study, IID is recommending that IID and ISO staff work together to identify the most promising locations for new renewables in the Imperial Competitive Renewable Energy Zone (CREZ) to maximize the use of available transmission capacity in IID and CAISO systems to provide an overall	The ISO agrees that the location of resources within the Imperial area is material in assessing the amount of deliverability available. The ISO does not endorse the specific results of the ZGlobal analysis, however. The comments have been noted, and will be considered in the development of the 2016-2017 study plan.

No	Comment Submitted	CAISO Response
	benefit to California ratepayers. IID and CAISO studies are attached for reference.	
4e	6. A discussion paper focusing on the efficient use of existing transmission system to optimize renewable resources from the Imperial CREZ follows:[See IID comments for Table]	The CAISO disagrees with Imperial Irrigation District's characterizations of the ISO's planning activities as set out in the IID discussion paper. Please refer to the above responses.

No	Comment Submitted	CAISO Response
5	**ITC Holdings Corp.** **Submitted by: John Kopinski**	
5a	The Policy Driven Assessment Results based on the 33% RPS identified several violations that are being addressed by Special Protection Schemes (SPS). It also appears that when considering the 50% RPS that was recently passed into law the use of SPS will be heavily relied upon again. Although the use of SPS might be a lowest cost approach to addressing the issues, ITC notes that these solutions limit the flexibility of the grid and harm the deliverability of resources. Traditional transmission solutions offer significant advantages to maximize the reliable and robust operation of the transmission system. ITC recommends the CAISO consider transmission alternatives that would eliminate or mitigate Remedial Action Schemes (RAS) that include SPS. This could be done for each individual violation currently identified in the 2015-2016 studies. This could also be addressed on a broader scale as all the SPSs throughout a given area, either planned or existing, are assessed for potential replacement by a transmission project or transmission projects. For reference see the attached slides for the SPSs identified by CAISO [See ITC Comments for slides].	The ISO considers SPS as well as transmission project alternatives to mitigate reliability issues. We take into account the complexity of SPS and any impact these may have on operational flexibility while recommending mitigations. ISO planning standards also describe guidelines for evaluating whether SPS is an acceptable mitigation or not. In addition, a properly designed SPS improves the deliverability of resources.

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<tr><td>6</td><td>LS Power
Submitted by: Sandeep Arora</td><td></td></tr>
<tr><td>6a</td><td>1. <u>CAISO should validate intertie congestion on transmission path connecting CAISO to Pacific Northwest:</u>
CAISO's preliminary analysis shows very little congestion on the California Oregon Intertie (COI) path for Years 2020 & 2025. CAISO is projecting COI congestion of $0.25 mm for 2025 and approx.
$.72 mm for 2020. In contrast, historical congestion on this intertie path has been significantly higher in last few years. Per CAISO's Department of Market Monitoring (DMM) report for Year 20141, congestion on this intertie path was approximately $147 mm in 2014, $61 mm in 2013 and
$141 mm in 2012.

CAISO DMM noted…
"…Congestion increased substantially from the previous year on the two major inter-ties linking the ISO with the Pacific Northwest: the Nevada/Oregon Border (NOB) and the Pacific A/C Intertie (PACI).The latter inter-tie, PACI, is identified as PACI/Malin 500 in the table due to the PACI ITC constraint being replaced by the MALIN 500 inter-tie scheduling limit with implementation of the full network model on October 15. Total congestion on these two inter-ties increased from about
$61 million in 2013 to about $147 million in 2014…"

LS Power encourages CAISO to take a closer look at this intertie congestion issue. CAISO staff explained at the stakeholder meeting that most of the historical congestion for Years 2012 and 2013 can be attributed to scheduled outages. We ask CAISO to verify that this is correct, especially since this congestion also exists for Year 2014, when no significant transmission outages on these paths were scheduled. We recommend that CAISO investigate the discrepancies between historical congestion and congestion identified in the economic study and make adjustments to its economic study model, as needed, to benchmark "projected" vs "actual" congestion. The studies should be conducted to accurately quantify congestion in future years, and study of the need for transmission solutions to address congestion issues should be based on this updated projection of intertie congestion.</td><td>COI congestion has been closely monitored and studied in every planning cycles. The production cost model has been updated for COI and the related areas based on both the latest reliability study results in TPP and the historical data. In the 2015~2016 database, the planning COI nomogram developed in 2014~2015 planning cycle was implemented.

Also modeled in the 2015-2016 database were selected transmission outages and the associated derate of COI, based on the historical data from 2012, 2013, and 2014. The table below provides the outages and derates that were modeled in the 2025 database, and the same pattern was used in the 2020 database. With further examination of the congestion hours of COI in both 2020 and 2025, no congestion is observed during the hours when there are transmission outages.

<table>
<tr><th>From</th><th>To</th><th>Start Date</th><th>Start hour</th><th>End Date</th><th>End Hour</th><th>COI rating</th></tr>
<tr><td>CapJack</td><td>Olinda</td><td>3/24/2025</td><td>8</td><td>3/24/2025</td><td>20</td><td>2850</td></tr>
<tr><td>Olinda</td><td>Maxwell</td><td>9/17/2025</td><td>7</td><td>9/17/2025</td><td>17</td><td>3200</td></tr>
<tr><td>Table MT</td><td>Tesla</td><td>10/3/2025</td><td>7</td><td>10/4/2025</td><td>15</td><td>3600</td></tr>
<tr><td>Tesla</td><td>Metcalf</td><td>9/14/2025</td><td>5</td><td>9/14/2025</td><td>18</td><td>3750</td></tr>
<tr><td rowspan="3">Tracy</td><td rowspan="3">Los Banos</td><td>4/13/2025</td><td>7</td><td>4/14/2025</td><td>16</td><td rowspan="3">3750</td></tr>
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No	Comment Submitted	CAISO Response
		The historic congestions and the congestions observed in the economic planning studies are different for number of reasons. Mainly, 1. As indicated in the stakeholder comment and also as the ISO responded in the stakeholder meeting, the major outages were not modeled in the production cost models 2. The production cost models used the COI nomogram developed for the future year, which has taken into account of the approved transmission upgrades that help to mitigate local constraints along the COI corridor hence increase the transmission capability of the path. The approved transmission projects can be found in the TPP report. 3. Hydro modeling in the production cost model is based on the 2005 hydro condition, which is in the TEPPC common case 4. The ISO's planning production cost models include 33% renewable portfolio that has much higher renewable generation penetration than today and several years back. The high instate renewable generation essentially provide push back flow on the importing interfaces depending on the renewable modeling in other states. The ISO will continuously and closely monitor and study the COI congestions in the future planning cycles, including to update the COI nomogram for the future years based on the updated system conditions; to use improved hydro modeling provided in the new TEPPC common case; and to update the renewable modeling with the more clarity of the state 50% renewable energy goal and through inter-regional coordination process.
6b	2. **Additional economic benefits offered by transmission projects, such as increase in EIM benefits, should be captured as part of economic studies:** CAISO's economic studies typically capture the production cost simulation based energy saving benefits and the capacity benefits offered by new transmission projects. In addition to this, we recommend that CAISO should also look at other incremental economic benefits a transmission project proposal	The comment has been noted.

No	Comment Submitted	CAISO Response
	can typically offer. One such additional benefit is the incremental EIM benefits. CAISO & E3 EIM benefit reports suggest that there is a strong correlation between the amount of transmission capacity available for EIM transfers between two EIM entities and the total EIM benefits these entities can experience. Therefore, if a new transmission project increases the transfer capability between two EIM entities, this should increase EIM benefits for both entities. One such example is the PacifiCorp East to PacifiCorp West transmission path. Historically transfers across this path have been limited and any EIM transfers & benefits between PacifiCorp East and CAISO have been limited due to the lack of transfer capability available. If a new transmission project creates new direct transfer path between PacifiCorp East and CAISO this should unlock the EIM benefits PacifiCorp East & CAISO ratepayers can experience. Such additional benefits could be huge, and these should be accounted for. While LS Power understands CAISO's position that any EIM entity could decide to leave the CAISO EIM with a short notice and hence EIM benefits cannot be relied upon for a new transmission project approval, it is important for stakeholders and EIM entities to fully understand the economic value a new transmission project can bring. Therefore, we recommend that CAISO account for these benefits as part of its economic planning studies.	
6c	3. **CAISO's Economic Studies should not be just limited to evaluating new project proposals that solve a particular congestion issue**: As CAISO considers shortlisting which Request Window project it will study as an economic solution, it should consider the overall benefits a project can bring to CAISO ratepayers beyond reducing congestion. Some transmission projects may not directly target a specific congestion issue, but by virtue of opening a new transmission path between CAISO and its neighboring BAAs, there may be significant economic benefits to CAISO ratepayers related to transfers into CAISO from neighboring BAAs that should be quantified and realized in the studies. CAISO should study such high value projects to evaluate such economic benefits to ensure ratepayers do not miss out on additional benefits. In addition, if a new transmission project helps in meeting policy goals such as helping integrate 50% renewables and further enhancing the economic benefits of the planned CAISO/PAC integration, these should be considered and quantified.	The TEAM methodology does allow a broad range of benefits to be considered. However, for projects reaching into other balancing authority areas, thorough coordination is necessary and the ISO contemplates utilization of the interregional transmission planning processes as a vehicle for that coordination.

No	Comment Submitted	CAISO Response
7	**Natural Resources Defense Council** **Submitted by: Sierra Martinez**	
7a	**A. NRDC applauds California ISO for relying on future energy efficiency to reduce transmission needs.** NRDC strongly supports and commends California ISO for its decision to rely on energy efficiency savings from future utility efficiency programs, appliance standards, and building code improvements in its forecast of electricity needs. The assessments provided continue the recent history of California ISO working together with the California Public Utilities Commission and California Energy Commission to rely on energy efficiency in resource planning processes. As noted in the workshop, 11 reliability projects are being cancelled, in part due to a lower forecast of demand, which is driven in significant part by new energy efficiency. These included numerous reconductoring and reinforcement projects, two lines, a transformer replacement, and a bus upgrade. We strongly support California ISO's decision to rely on energy efficiency as a transmission resource.	Your comment has been noted.
7b	**B. NRDC supports the proposal to *study* two scenarios that use different demand forecasts in this transmission planning process, one with and one without future efficiency savings, in order to better identify the work that efficiency is accomplishing.** California ISO proposed to study two scenarios using alternate forecasts in this transmission planning process: one with and one without Additional Achievable Energy Efficiency. We support this approach to studying transmission needs, as it will better indicate the avoided transmission resources due to energy efficiency savings. We, of course, strongly urge California ISO to continue *relying* on the scenario that includes the future energy efficiency. Failure to do actually rely on the results that include future energy efficiency results in duplicative resource investments.	Your comment has been noted.

No	Comment Submitted	CAISO Response
8	**Office of Ratepayers Advocates** **Submitted by: Charles Mee & Rajan Mutialu**	
8a	**1. ORA supports CAISO's Consideration for Cancelling Previously Approved Transmission Projects** **Background** The CAISO is considering cancellation of the following 11 previously approved transmission projects: • Bay Meadows 115 kV Reconductoring; • Cooley Landing - Los Altos 60 kV Line Reconductor; • Del Monte - Fort Ord 60 kV Reinforcement Project; • Kerckhoff PH #2 - Oakhurst 115 kV Line; • Mare Island - Ignacio 115 kV Reconductoring Project; • Monta Vista - Los Altos 60 kV Reconductoring; • Potrero 115 kV Bus Upgrade; • Taft 115/70 kV Transformer #2 Replacement; • Tulucay 230/60 kV Transformer No. 1 Capacity Increase; • West Point - Valley Springs 60 kV Line Project (Second Line); and • Woodward 115 kV Reinforcement. Many of these projects were approved well in advance of their needs in the earlier transmission planning cycles. The CAISO is now taking a fresh look at their need given changed circumstances. The CAISO is continuing to review additional 19 previously approved projects and may include a recommendation for any further project cancellations in light of changed circumstances and more recent information in the January 2015 draft transmission plan. **ORA's Recommendation:** ORA concurs with the CAISO for reviewing the need for previously approved projects. ORA supports the CAISO's efforts to cancel these previously approved projects that are no longer needed in light of multiple factors including updated load forecast. Some of the previously approved projects were approved many years ago and potential solutions, such as the procurement of preferred resources to defer or eliminate the need for a	Please refer to the responses to BAMx (1 b) and CPUC (3 b) above.

No	Comment Submitted	CAISO Response
	proposed project, may not have been considered at the time the projects were initially approved. ORA seeks more information on the study processes that determined a lack of need for projects recommended for cancellation and the continued need for previously-approved projects that are not recommended to be cancelled.	
8b	**2. Policy-Driven Projects Need to Take into Account Role for Energy Only Resources Going Forward** **Background:** Since there is no change in the Renewable portfolio for Northern California in 2014-15 TPP, the CAISO has not identified need for any policy-driven projects in Northern California. However, the Policy Driven Assessment did reveal new findings for policy-driven projects in Southern California. The CAISO has performed a deliverability assessment to determine the need for policy-driven projects in Southern California with a focus on the Imperial, Riverside and Kramer CREZs. Imperial and Riverside were studied together, whereas Kramer CREZ was studied as a stand-alone case. As shown below in Table 1 – 2014-2015 [see ORA comments for Table] and 2015-2016 RPS Portfolios, the 2015-2016 TPP RPS portfolios differed from the 2014-2015 ones for the following three CREZs: Kramer, Imperial and Riverside East. The capacity for each of these zones, which are highlighted in red, was changed to reflect transmission capability improvements, whereas the Coolwater – Lugo Transmission Project's removal resulted in the lower amount of RPS capacity selection in Kramer. For the several reliability and deliverability overloads identified under the reliability and deliverability assessment, the CAISO proposed mitigation measures such as Special Protection Schemes1 and rating increases. For example, the CAISO's proposed mitigation for a deliverability overload on the Lugo-Victorville 500kV line includes either increasing rating of the Lugo – Victorville 500kV line or installing flow control devices to reduce flow on Lugo – Victorville 500kV line. **ORA's Recommendation:** ORA remains concerned that the CAISO continues to perform the deliverability assessment assuming that all the renewable	Please refer to the response to BAMx (1 c) above.

No	Comment Submitted	CAISO Response
	portfolio resources need to be fully deliverable. Rather than designating transmission projects as policy-driven solely to allow intermittent renewable projects to satisfy the State's system Resource Adequacy (RA) needs, the CAISO should undertake a cost-benefit analysis to show that any proposed new transmission project to assure deliverability of new resources and/or to decrease envisioned congestion is justified. Further, the CAISO should determine whether the new proposed transmission is both necessary and the most economical alternative to meet the State's RA needs. Given the key role Energy Only resources are expected to play in meeting the 50% RPS goal beginning in the 2015-2016 TPP, ORA recommends that the CAISO restrict any policy-driven upgrades in the current transmission plan to minimize ratepayer impact. For some assessments such as the ECO-Miguel 500 kV contingency overload, the CAISO has proposed a mitigation for 100% loadings. ORA notes that full loading of a facility is not an overload.2 ORA appreciates that the CAISO has identified several low cost solutions to loading issues. In the case of the Lugo-Victorville 500kV overload, ORA encourages the CAISO to pursue the rating increase option. If the rating modification is not possible, the CAISO should notify stakeholders and provide details of the flow control devices that the CAISO would install on the Lugo-Victorville 500kV line.	
8c	**3. The CAISO should further assess the need for mitigation measures to address potential congestion in the Exchequer and POE-Rio Oso areas so that mitigations measures are installed only where they are economically justified** **Background:** As shown below in Table 2 [see ORA comments for Table] – Summary of Congestion: Constrained Paths, Duration and Cost, CAISO has identified Path 26, Exchequer, POE-Rio Oso, Path 15 and COI areas as the top 5 candidate congestion zones for further study. **ORA's Recommendation:** In the past transmission planning cycles, the CAISO had identified Path 26 and Path 15 as congested zones. The CAISO had considered several mitigation measures to address congestion in these areas and ultimately determined that they were not economically justified. The CAISO should perform similar assessments for the newly identified congestion areas of	Please refer to the response to BAMx (1.d) above

No	Comment Submitted	CAISO Response
	Exchequer and POE-Rio Oso so that mitigations measures are installed only where they are economically justified.	
8d	**4. The CAISO should provide Stakeholders adequate Opportunity to Review Special Study Analysis and Findings** **Background:** The CAISO has not provided any preliminary findings associated with the 50% RPS Special Study yet. Rather, during the November 16th meeting, the CAISO merely presented the 50% RPS portfolios provided by the CPUC Energy Division using the RPS Calculator version 6.1. This Special Study is for information purposes only, and will not be used to support the need for policy-driven transmission projects in the 2015-2016 planning cycle. The CAISO has indicated that preliminary curtailment results are being looked at with different export limit assumptions. The Special Study production simulation results will be used to identify snapshots for stability and power flow simulations. **ORA Recommendation:** The CPUC RPS Calculator workshop to develop 2016-2017 TPP RPS portfolios is scheduled for December 9, 2015. It appears that the stakeholders will not have the opportunity to review the 50% Special Study findings until the end of January 2016 as part of the Draft Transmission Plan. ORA is concerned that the stakeholders will not have adequate opportunity to review the Special Study preliminary findings to provide a timely and meaningful input to the 2016-2017 TPP portfolios. Therefore, ORA recommends the CAISO to provide the Special Study analysis and findings in December 2015, in advance of the issuance of the 2015-2016 draft transmission plan.	Please refer to the response to BAMx (1 e) above. The results have been shared in the draft Transmission Plan released at the end of January on the schedule previously communicated. Work schedules did not permit a reasonable opportunity before then.

No	Comment Submitted	CAISO Response
9	**Pacific Gas & Electric** **Submitted by: Matt Lecar**	
9a	1) PG&E supports the CAISO undertaking a 50% RPS Special Study as part of the 2015-2016 TPP. In the CAISO's "Overview of the 50% Special Study", slide 3 lists as part of the Study Scope "Identification of renewable curtailment, congestion and transmission constraints that may limit renewable generation development." PG&E requests that the CAISO in its analysis clearly distinguish between renewable curtailment due to over-generation versus congestion and transmission constraints in the study results. As stated in PG&E's initial comments to the 2015-2016 TPP Study Plan: An important distinction should be made in this special study between curtailment from over-generation and curtailment from congestion. As described in E3's "Investigating a Higher Renewables Portfolio Standard in California" report, a higher penetration of renewables has been shown to potentially increase the amount of curtailment due to system over-generation. Therefore, localized transmission congestion may be a secondary effect when compared with system over-generation curtailment for some resources. The CAISO should seek to separately identify the amount of marginal congestion that occurs where there is not a system over-generation condition. It will be important to consider the impact of both of these types of curtailment and also to avoid double-counting curtailment. Additionally, the CAISO lists as one of the Special Study objectives to "Test the transmission capability numbers used in RPS calculator v6 and update these for the next release of RPS calculator" (Slide 2 of the "Overview of the 50% Special Study"). The CAISO should clarify how the transmission capability numbers will be defined (e.g., how any thresholds for congestion or curtailment are defined and measured). Additionally, the CAISO should define the transmission capability numbers with regard to the resource mix (e.g., wind, solar, baseload resources, etc.), as the generation profile of the different resources assumed may impact the results.	The ISO agrees that the intent of the 50% energy only special study was to focus on the transmission congestion. However, in a fully integrated production simulation analysis, the cause of particular curtailment of any resource is not clearly identified and delineated between transmission congestion and overall over-supply and renewable integration issues. While not precise, the impacts of oversupply versus transmission congestion on renewables curtailment can be approximated by considering a range of export limit assumptions, which affect oversupply curtailment in particular. These results have been provided in the draft Transmission Plan. The resource mix studied as part of the special study reflects the resource mix that was picked up as a result of the initial transmission capability estimates. Most of the renewable zones demonstrate only one predominant renewable resource potential, but the ISO is open to the idea of looking at a different resource mix in zones which have reasonably high potential for multiple resource types.
9b	2) While PG&E supports the CAISO's Policy Driven Planning Deliverability Assessment as part of the 2015-2016 TPP Study, PG&E does not believe there is a requirement that all generation procured to meet RPS targets needs to be	

No	Comment Submitted	CAISO Response
	fully deliverable. Partially deliverable and energy only contracts are currently a viable option for some renewable resources. PG&E encourages the CAISO to continue to work closely with the CPUC and CEC to clarify the intended state policies for the level of deliverability for resources within its portfolios. It is important to ensure that the cost of deliverability for resources driving policy driven upgrades is evaluated consistently among all the stakeholders and processes.	Please refer to the response to BAMx (1 c) above.

No	Comment Submitted	CAISO Response
10	**Transmission Agency of Northern California** **Submitted by: Ann Czerwonka**	
10a	**Summary of TANC Comments** 1. TANC recommends that the CAISO Transmission Plan include proposals for PG&E to implement mitigation measures or make upgrades to the Delevan-Cortina 230-kV line, Round Mountain-Table Mountain 500-kV lines and the Round Mountain-Cottonwood 230-kV lines. 2. The CAISO economic assessment does not adequately account for the impact of routine and seasonal maintenance outages. The planning process should be informed by routine planned maintenance (insulator washings, breaker maintenance, etc.) and make allowance for unplanned outages affecting the system operating limits (SOLs) on major studied import and export paths. While it is desirable that most elective maintenance can be deferred to low usage periods, historic operating experience shows that this is not always possible. As noted below, the 2015 Operating Procedures show more outage scenarios that impact the COI transfer limit. 3. TANC requests that the CAISO quickly (before the January release of the next draft) make the study results of its 50% RPS special studies case available and provide additional study results supporting the removal of the 11 PG&E area projects already described and the 19 projects still under review, previously approved by the CAISO.	1. The ISO has not determined a reliability or economic need at this time. The ISO is working with PG&E with respect to a potential rerating of the Delevan Cortina 230 kV line. 2. Please refer to the responses to LSPower (6 a) 3. The 50% RPS special study results and the project identified for cancelation are included in the draft 2015-2016 Transmission Plan.
10b	**Economic Studies** The 2015-2016 CAISO economic studies shows a low level of congestion for the COI that is far removed from historical levels of congestion and its concurrent costs (although above levels shown in prior TPP studies). The presentation from the November 16, 2015 meeting indicated 266 hours of congestion in 2020 and 94 in 2025, with just $718,000 and $252,000 in respective costs. The following table shows the historical amount of congestion as indicated in the annual Market Monitoring Reports as well as this year-to-date as indicated from the CAISO Open Access Same-time Information System (OASIS). As shown below [see TANC comments for Table] the economic results presented at the TPP meeting differs significantly from the historical levels as reported by the CAISO's Department of Market Monitoring.	For the comments on COI congestion, please refer to the response to LS Power (6.a) For the comment on the consideration of capacity benefit in benefit assessment for transmission project, the TEAM methodology does allow a broad range of benefits to be considered including capacity benefit

No	Comment Submitted	CAISO Response
	TANC understands that the CAISO TPP modeling methodology used for the economic studies assumes that everything is online and all transmission facilities are operational. While we agree that this approach provides a "best case" scenario, and is appropriate for a potential planning horizon, history indicates that it is not a likely scenario for the COI. The following table [see TANC comments Table] shows the actual percentage of time that the transfer capability from North to South on the COI has achieved 4,800 MWs. TANC is also concerned that based upon the 2015 Operating Procedures for COI, outages on numerous facilities in northern California can have a major impact on the COI transfer capability. This may lead to more hours in the future where 4,800 MW cannot be achieved and lower transfer capability in general when different facilities are out for maintenance. TANC would note that this issue is not confined to COI, but is an issue with many of the most frequently congested and costly paths, such as Path 15, Path 26 and the Nevada-Oregon Border (NOB). As such it may be appropriate for the CAISO to consider some sensitivity studies on the major paths within its BAA that are more reflective of operating realities. Specifically, scenarios that would limit the amount of transfer capability based on both historical information as well as any known future restrictions that may occur for routine maintenance under the existing operating procedures. TANC notes that the WECC provides several variants to the base case that the CAISO uses for its economic studies that could be incorporated into these sensitivity studies. Recently approved economic projects such as the Devers-Colorado River Project and Harry Allen relied heavily on capacity value to make them economically viable, and not on the mitigation of congestion costs. The valuation of capacity should be given more consideration in the determination of which paths are to be considered. TANC believes that the CAISO should reconsider the methodology it employs in its economic studies in future study cycles that could look at historic performance and/or sensitivity studies. At congestion cost approaching $350 million over the past seven years on the COI alone, additional studies seem appropriate, warranted and necessary.	

No	Comment Submitted	CAISO Response
	At the meeting on November 16 the CAISO also presented preliminary information related to the 50% special studies case and mentioned nineteen previously approved PG&E projects that are currently under review for possible cancellation. TANC would urge the CAISO to release information related to these two topics as soon as possible and not wait until the late January release of the Draft Transmission Plan to allow stakeholders to better understand the results. With regard to the cancelled projects, TANC would recommend including more detail rather than less. With respect to previously approved projects in the PG&E area, it is TANC's understanding that the Table Mountain-Rio Oso 230-kV Line Project is to be completed by December 2019 (according to the CAISO's 2009 TPP report this Project was planned to be in-service in 2011). However, studies done as part of the 2015-2016 TPP show overloads on this line in both the 2020 and 2025 summer peak studies. TANC suggests that, in addition to taking steps to cancel "unneeded" projects, the CAISO should become more active in assuring that approved projects are completed on a timely basis. TANC also notes that the 2015-2016 TPP study results contain the following information [see TANC comments for Table] on impacted facilities and potential solutions for mitigating the noted impacts. Based on recent studies done by a joint study group involving the CAISO, PG&E, TANC, and numerous other parties, TANC recommends that the CAISO and PG&E: • Implement an SPS that would curtail the Colusa generation or upgrade the Delevan-Cortina 230-kV line • Implement an SPS that would bypass series capacitors to mitigate impacts on the Round Mountain-Table Mountain 500-kV lines • Initiate the activities to upgrade the Round Mountain-Cottonwood 230-kV lines	