

The ISO received comments on the topics discussed at the February 23, 2015 stakeholder meeting from the following:

1. Alameda Municipal Power (AMP)
2. Bay Area Municipal Transmission group (BAMx)
3. Blythe Energy Inc. (Blythe)
4. California Energy Storage Alliance (CESA)
5. California Public Utilities Commission (CPUC)
6. Duke-American Transmission Company (DATC)
7. LS Power Development, LLC (LS Power)
8. Natural Resources Defense Council (NRDC)
9. Northern Tier Transmission Group (NTTG)
10. Office of Ratepayers Advocates (ORA)
11. Pacific Gas & Electric (PG&E)
12. San Diego Gas & Electric (SDG&E)
13. Southern California Edison (SCE)
14. Southwest Transmission Partners, LLC (STP)
15. Terra-Gen Power, LLC (TGP)
16. TransCanyon LLC
17. TransWest Express LLC
18. Western Area Power Administration (WAPA)

Copies of the comments submitted are located on the 2015-2016 Transmission Planning Process Page under the *2015-2016 study plan* subheading 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	<p>Alameda Municipal Power (AMP) Submitted by: Lindsay Battenberg</p>	
1a	<p>Additional Special Study – East Bay 115 kV</p> <p>Now that there is greater clarity concerning the direction of the San Francisco Peninsula Extreme Event mitigation and with the recent revision of the CAISO Transmission Planning Standards, this is an opportune time for an in-depth review of the East Bay 115 kV electric system and the development of a focused long-term plan. AMP recommends that a focused study of the Oakland-East Bay area be included in the Study Plan for the following reasons:</p> <p>1. The current assessment is likely overestimating the relief that will be provided by the East Shore-Oakland J 115 kV Reconductoring Project.</p> <p>The East Shore-Oakland J 115 kV Reconductoring Project, approved in the CAISO’s 2012 Transmission Plan, is designed to provide relief for the transmission lines serving the southern Oakland/San Leandro/Alameda area by re-establishing a 115 kV source from East Shore Sub to Station J to relieve potential heavy flows on the four 115 kV circuits from Moraga to Stations U and J. However the relief identified in prior transmission assessments is likely overstated.</p> <p>The overstatement of relief is due to the contingency modeling of the Russell City Energy Center connected to East Shore Substation. As per Section V of the CAISO Planning Standards,</p> <p>“A single module of a combined cycle power plant is considered a single contingency (G-1) and shall meet the performance requirements of the NERC TPL standards for single contingencies (TPL002). Supporting information is located in Section V of this document. Furthermore a single transmission circuit outage with one combined cycle module already out of service and the system adjusted shall meet the performance requirements of the NERC TPL standards for single contingencies (TPL002) as established in item 1 above.</p> <p>A re-categorization of any combined cycle facility that falls under this standard to a less stringent requirement is allowed if the operating performance of the</p>	<p>The ISO will perform a sensitivity study with varied generation dispatch in the East Bay area. This will include potential unavailability of Oakland and Alameda peakers in the long-term base case.</p> <p>The contingency modeling of Russell City Energy Center will be corrected consistent with the ISO Planning Standards in this cycle.</p>

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	<p>combined cycle facility demonstrates a re-categorization is warranted.”</p> <p>In the above text, “a single module” would constitute the 2x1 combined cycle power block. However, the contingency files for this area (sample pasted below [see original comments]) continue to model the loss of a single machine (i.e. one combustion turbine or one steam turbine) at Russell City combined cycle plant for the G-1 contingency event.</p> <p>The result is that under critical contingency conditions, the planning models show too much generation at Russell City. This makes East Shore a stronger source thereby providing greater relief to the Moraga 115 kV circuits by the East Shore-Oakland J 115 kV Reconductoring Project than should be assumed per the Planning Standards.</p>									
1b	<p>2. Implementation of the revised CAISO Planning Standards for load dropping in high-density urban load centers.</p> <p>There are multiple Special Protection Schemes in the East Bay designed to drop load in order to comply with TPL002 and TPL003 contingency events. The 2015-2016 Transmission Planning Process Unified Planning Assumptions Study Plan identifies the following SPS in this area:</p> <table border="1" data-bbox="424 954 928 1295"> <tbody> <tr> <td data-bbox="424 954 676 1040">Greater Bay Area</td> <td data-bbox="676 954 928 1040">Moraga-Oakland J 115kV line OL RAS</td> </tr> <tr> <td data-bbox="424 1040 676 1127">Greater Bay Area</td> <td data-bbox="676 1040 928 1127">Grant 115kV OL SPS</td> </tr> <tr> <td data-bbox="424 1127 676 1213">Greater Bay Area</td> <td data-bbox="676 1127 928 1213">Oakland 115 kV C-X Cable OL RAS</td> </tr> <tr> <td data-bbox="424 1213 676 1295">Greater Bay Area</td> <td data-bbox="676 1213 928 1295">Oakland 115kV D-L Cable OL RAS</td> </tr> </tbody> </table> <p>A special study of the Oakland/East Bay Area is needed to bring this area into compliance with the recent revisions to the Planning Standards that no longer allows “non-consequential load dropping in high density urban load areas in lieu of expanding transmission or local resource capability to mitigate NERC TPL002 and TPL003 standards and impacts on the 115 kV or higher voltage systems.”</p>	Greater Bay Area	Moraga-Oakland J 115kV line OL RAS	Greater Bay Area	Grant 115kV OL SPS	Greater Bay Area	Oakland 115 kV C-X Cable OL RAS	Greater Bay Area	Oakland 115kV D-L Cable OL RAS	<p>Within the sensitivity study focused on East Bay 115 kV system, the ISO will evaluate reliance on these SPS under the various levels of available local generation. In the near-term, the ISO will continue to rely on the existing SPS as evaluations continue for potential transmission planning needs and long-term solutions for this area.</p>
Greater Bay Area	Moraga-Oakland J 115kV line OL RAS									
Greater Bay Area	Grant 115kV OL SPS									
Greater Bay Area	Oakland 115 kV C-X Cable OL RAS									
Greater Bay Area	Oakland 115kV D-L Cable OL RAS									

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	<p>This is especially relevant in that the relief expected by the East Shore-Oakland J 115 kV Reconductoring Project to mitigate the need to drop load for single contingency events may not materialize as expected due to the above concerns with the modeling.</p>	
1c	<p>3. Continued and increasing reliance on the Oakland CTs to meet the Planning Standards.</p> <p>In the recently completed TPP cycle, the Oakland CTs were initially modeled as being off-line (or retired) in the 2024 Summer Peak base case. As these units were installed in the 1970s, this is consistent with the planning in other areas where fossil generation units over 40 years old are not to be relied upon in planning for the long-term reliability of a local area. Furthermore, the Oakland CTs are the last of the RMR generating units on the CAISO system. Unfortunately, annual RMR contracts do not provide for a business model where large capital investments can be made to insure the long-term availability of a generating plant.</p> <p>Furthermore, as part of the 2014-2015 Transmission Planning Process a long-term Local Capacity Requirements (LCR) study was done for this area. This study showed a strong dependence on the Oakland CTs in the 2024 planning horizon despite the units being modeled off-line in the base case.</p> <p>Both the Oakland CTs and the NCPA CTs in Alameda have severe limitations on their hours of operation due to environmental restrictions. These limit the annual operation hours to 877 hours (10%). While the Oakland CTs are RMR units, the NCPA CTs are not and are typically dispatched to meet the NCPA resource portfolio needs. Therefore they may not have the availability necessary to also be relied upon for extensive local capacity needs. Lastly, in addition to meeting the planning requirements, it is our understanding that this local generation is needed to accommodate maintenance outages on the transmission system. This also consumes available operating hours of the generating units. Despite these various demands for these units, we are not aware of any assessment of the ability to need these demands within the available operating hours.</p>	<p>Consistent with generator modeling criteria outlined in the Study Plan, the CAISO will model offline generators of age 40 years or more to assess the potential impacts if the generation retires; however the CAISO has not received formal retirement notice for this generation or repowering for this site.</p>

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	<p>This gap between the initial planning assumption that these units would be off-line in 2024 and the long-term plan to rely on these units was not addressed in the 2014-2015 Transmission Plan.</p>	
<p>1d</p>	<p>4. High Seismic Risk</p> <p>Similar to San Francisco, the Oakland/East Bay Area has a high seismic risk profile with transmission lines/cable that span major a major fault as well as critical stations that are located on or near the fault. Geography and urban development limit access to the area. Similar to what was performed for the San Francisco Peninsula, an assessment of the seismic risk and viable mitigation options could also be part of a special study of the Oakland/East Bay Area.</p>	<p>While the Oakland/East Bay area has potential for high seismic risk the unique characteristics of the San Francisco Peninsula are different that warranted the detailed analysis. The ISO may in future planning cycles consider detailed analysis on areas of the system based upon extreme event assessments.</p>

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2	Bay Area Municipal Transmission group (BAMx) Submitted by: Barry Flynn, Pushkar Wagle and Robert Jenkins	
2a	<p>Scope and Schedule for the 2015-2016 Planning Cycle</p> <p>Table 2-1 of the Study Plan should be enhanced. The table does not appear to delineate when the CAISO responds to each round of Stakeholder comments. BAMx believes that stakeholder review and comments and the CAISO's resulting responses and changes to the Study Plan are integral to creating this ever improving process, but that this important aspect has not received as much attention in the past as it should have. BAMx requests that CAISO acknowledge the improvements to the process that this ongoing feedback provides and that Table 2-1 should be expanded to identify when such responses would be available.</p> <p>It is not apparent from the draft study plan that the CAISO will continue to develop a forecast of the CAISO High Voltage TAC. BAMx believes this forecast is crucial to stakeholder understanding and planning for upcoming TAC increases and should become a formal part of the transmission planning process. It is also important that the CAISO update this forecast in a timely basis for meaningful stakeholder input. We encourage the CAISO to continue to improve TAC forecast methodology and develop the forecast earlier in the annual planning cycle. It should be available no later than at the publication of the draft plan The CAISO should include its intentions in the 2015-2016 Study Plan. We suggest the timing for such an activity also be included in Table 2-1.</p> <p>It is also important that stakeholders understand the options for solutions to reliability deficiencies that have been identified in the assessment. An important source for potential alternative solutions is the project submittals made through the Non-PTO Request Window. Therefore, BAMx requests that Table 2-1 be expanded to specifically identify a timely posting of Non-PTO Request Window projects.</p>	<p>Footnote 2 of Table 2-1 sets out the ISO's intention to target responses to comments ideally within three weeks of the close of comment periods, and no later than the next public stakeholder event relating to the Transmission Plan. The ISO appreciates the need to provide meaningful responses to the comments, and responds to all comments received. However, it would not be appropriate to be more definitive on schedule as the emphasis must be on the consideration of the comments and incorporation into the next phase of the planning process rather than focusing on the responses to comments.</p> <p>The intention to continue developing and updating the regional (high voltage) transmission access charge and include it in the transmission plan is set out in Section 1, Introduction of the study plan. We do not see that it is possible to advance the timing of the forecast, as the forecast relies in part on year-end information from the PTOs that is only available towards the end of January. This includes the data necessary for the year end reconciliation of the transmission access charge for the beginning of the forecast period, and updated forecasts for capital costs remaining to be capitalized for projects underway.</p> <p>The ISO seeks to post received comments and submissions through the non-PTO window as quickly as possible. A specific date has not been established, as the ISO must frequently revisit with non-PTOs the confidentiality of certain material contained in the proposals.</p>
2b	<p>Special Studies – 50% Renewable Energy Goal for 2030</p> <p>BAMx supports the effort in this planning cycle to better understand the potential impacts that a California 50% renewable energy goal may have on the electric transmission infrastructure needs. The effort can provide valuable information as to where infrastructure improvements may be required, but also provide guidance to the procurement process as to how such potentially costly</p>	<p>The comment has been noted. The ISO plans to post the base cases. However, we are not sure how they will be organized at this time, but will consider the comment in the preparation of the cases.</p>

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	<p>transmission upgrades may be avoided.</p> <p>The CAISO identified an important distinction in the manner in which this study will differ from past studies of a 33% RPS goal. This study plan will assume the incremental renewable generation beyond the 33% RPS will be energy-only resources. BAMx further applauds the manner in which the CAISO clarified that the 50% RPS goal is not State Policy at this time, nor is the assumption of 50% level for RPS resources, as opposed to a expanded definition of renewable resources, a necessary part of the Governor’s proposal. BAMx encourages the CAISO to continue to make this clear to stakeholders as it performs this extra scenario. Furthermore, the study is to estimate the expected amount of congested related curtailment associated with the renewable portfolios. The CAISO indicated in the February 23rd stakeholder meeting that “the (special) study will also consider what transmission could then be rationalized based on cost effectively reducing renewables curtailment (from a customer perspective).” BAMx fully supports this study approach for the following reasons:</p> <ul style="list-style-type: none"> • To date there has been little need identified for additional system capacity. Therefore, assuming more robust transmission requirements associated with an incremental energy obligation may place unnecessary impediments toward meeting this enhanced RPS goal in addition to any increased consumer costs. • In addition to transmission costs, the environmental consequences that new transmission infrastructure creates puts this new infrastructure at odds with the environmental benefit of new generation. • Identification of areas of potential congestion as well as its magnitude and duration provides important information to the procurement function in evaluation of renewable energy offers from such areas. • Recognition that there may be some level of economical congestion on the grid will allow better accommodation of the associated costs between the renewable energy developers and LSEs. <p>BAMx requests that the base cases for the incremental 50% RPS portfolio be included in the materials made available to stakeholders. To facilitate understanding of these cases, the resources making up the 33% RPS base portfolio should be distinguished from the incremental resources necessary for the 50% renewable portfolio.</p>	

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	<p>Communication of the study results will be highly important. There are many aspects associated with the safe and reliable operation of the California electric system. While electric infrastructure is a critical component necessary to integrate higher levels of renewable generation, other aspects such as resource integration, disturbance performance (including governor response, inertia, short circuit current, etc.) and cost are similarly important. Therefore, communication concerning the results of the transmission study in this TPP cycle must be carefully crafted so that the audience is aware that this analysis addresses only a fraction of the considerations necessary for an electric system to be sufficiently flexible to accommodate a higher level of renewable generation.</p>	
<p>2c</p>	<p>Generation Assumptions <u>Once-Through Cooling (OTC) Units</u> While there has been much focus on the retirement/repower of the OTC units in Southern California (along with the early retirement of SONGS), previous cycles have not identified significant system reliability issues with the remaining OTC units in the San Francisco Bay Area. BAMx urges the ongoing monitoring of the potential reliability impacts if these facilities were shut down with short notice. As was seen most recently in the case of the Coolwater Power Plant, current owners can make quick decisions to shut down existing power plants if there is no longer a viable business case for them going forward. With these consideration in mind, BAMx supports modeling the Bay Area OTC as off-line once their compliant dates are reached. Also, unlike the modeling in the 2014-15 Transmission Planning cycle, Pittsburg Unit 7 should also be modeled as shut down once Units 5 and 6 are shut down. The linkage in the operation between these units has been discussed at several recent stakeholder meetings. While the Study Plan indicates that the owner has a possible plan to use the Unit 7 cooling tower for Units 5 and 6, it is predicated on obtaining a long-term Power Purchase and Tolling Agreement (PPTA). There is no indication that such an agreement is imminent. Therefore, it is important to understand potential impacts to the system sufficiently in advance to allow consideration of a full range of options whether the absence of the power plant may lead to reliability issues.</p>	<p>The comment has been noted. OTC resources will be modeled as described in the study plan, as for Pittsburg unit 7 it will be modeled off-line and be turned on only as mitigation measure to found reliability concerns, if necessary.</p>
<p>2d</p>	<p>Qualifying Facility (QF) Generation Retirements In the last planning cycle, certain transmission upgrades were justified in part due to potential QF retirements. QF plants to be modeled as off-line in the reliability assesment need to be fully identified in the Study Plan as well as the</p>	<p>Known QF retirements will be listed in the study plan. It is not apparent what QF retirements the comment relates to.</p>

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	<p>criteria for assuming that they will no longer operate once their current power purchase agreements expire. In the event reliability issues are identified associated with a QF shut down, the findings should be presented sufficiently in advance for a full range of options to be considered, including targeted procurement within the CPUC Long Term Procurement Plan (LTPP).</p>	
2e	<p>Preferred Resources BAMx is highly supportive of the major strides made by the CAISO in the 2013-2014 Transmission Plan in identifying the likely impact of preferred resources on the transmission grid in the LA Basin and San Diego area following the shut down of SONGS. While the CAISO continued this important work in the 2014-2015 TPP, it has not expanded beyond its original limited geographic area. For example, we have not found any evidence of preferred resources being considered as the mitigation solutions considered by the CAISO in the PG&E area. We encourage full recognition by the CAISO of the ability of funded preferred resources to offset the need for transmission and to support the further development of these resources when their expected benefits, including offsetting the need for additional transmission projects, exceeds their expected ratepayer costs in the 2015-16 TPP cycle.</p>	<p>The ISO assessments have considered preferred resources in the PG&E area as identified in the study plan. The nature of the current preferred resources are more applicable to system events. The ISO will continue assess potential preferred resource needs when considering alternatives to address reliability needs.</p>
2f	<p>Other (non-QF) Generation Retirements The Study Plan continues to identify that “Other Retirements” will include, unless otherwise noted, retirement of resources with an age of 40 years or more (excluding renewable and hydroelectric resources). BAMx requests that Table A3-1 in the Study Plan be expanded to include all generators that will reach a life of 40 years during the planning horizon, identifying specifically which will be assumed to retire and which will be assumed to remain operational. Similar to the discussion of QF retirements above, BAMx recommends that in the event reliability issues are identified associated with any such retirement assumptions, the findings should be presented sufficiently in advance for a full range of options to be considered, including targeted procurement within the CPUC Long Term Procurement Plan (LTPP).</p>	<p>Table A3-1 reflects retirement of generation based upon announcements from the generators. The ISO will document generators assumed to be retired as a result of assumptions identified in Section 4.9 as a part of the based case development with the reliability results.</p>
2g	<p>Major Path Flows The Study Plan identifies major path flow assumptions. While we understand the need to study stressed system considerations to understand system limitations, capital upgrades to maintain such transfer capabilities under stressed system conditions may not be cost effective. For example, transmission upgrades to maintain the capability to reliably flow 5,400 MW</p>	<p>The assessment of major paths at the higher flow levels may identify transmission constraints. The assessment may identify if the system can be operated reliably with seasonal nomograms. If necessary and available generation re-dispatch is an appropriate mitigation measure for any reliability criteria concerns including Path 15. The ISO will also</p>

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	<p>south-to-north on Path 15 under Summer Off-peak conditions may not provide a sufficient benefit to justify the cost. We assume that redispatch of generation could be used to address any criteria violations. If the system lacks sufficient flexibility to redispatch around such limitations, it may be more symptomatic of a resource issue rather than a transmission capacity limitation. We are encouraged that the Study Plan also identifies that the CAISO will consider lower cost alternatives to the construction of transmission additions or upgrades in action plans to address any violations of criteria that are identified due to the path flow assumptions. However, we urge caution that these assumptions do not also drive the need for transmission solutions in other studies, such as the GIDAP, without a similar consideration of lower cost alternatives.</p>	<p>run production cost simulation to better predict the frequency and expected future flows on Path 15. If necessary and viable, economic upgrades could be considered.</p>

No	Comment Submitted	CAISO Response
3	Blythe Energy Inc. Submitted by: Seth D. Hilton and Stoel Rives	
3a	<p>I. Background</p> <p>Blythe owns the Blythe Energy Project (“BEP”), a 520 megawatt generating facility located in the City of Blythe in Riverside County. When it originally commenced commercial operation in December 2003, BEP interconnected to the WAPA system. Subsequently, however, BEP financed and constructed a 67-mile 230 kV generation tie line to the Southern California Edison/Metropolitan Water District Julian Hinds substation.</p> <p>Though the gen-tie line enhanced BEP’s ability to deliver its full capacity to the ISO system, reliability issues involving voltage control and overloads at the Mirage and Julian Hinds substations exist under certain operating conditions and contingencies.</p> <p>Southern California Edison’s (“SCE”) 2014 Annual Transmission Reliability Assessment identified that exceedingly high voltages could result in circumstances where Metropolitan Water District (“MWD”) pumps and BEP are both off-line. To address this contingency, SCE developed GCC Operating Procedure No. 128. Under the current version of the Procedure, the Buck Blvd. breaker would be opened at Julian Hinds to take the BEP gen-tie off-line to address the high voltage issue.</p> <p>SCE’s implementation of the Operating Procedure has significant operational and financial impacts on BEP. SCE has taken the position that BEP is not available when it opens the Buck Blvd. breaker at Julian Hinds. While not conceding the point, if BEP is deemed unavailable when the breaker is opened, it would result in significant financial consequences to BEP under its power purchase tolling agreement with SCE.</p> <p>To address the high voltage and other issues, Blythe submitted the Loop-In Project into the Request Window for the 2014-2015 TPP. The Loop-In Project consists of segmenting Blythe’s existing gen-tie line and connecting each segment to the Colorado River Switching Station, creating a “loop” between the Colorado River Switching Station 500 kV system and the 230 kV system to the Devers substation, and a new BEP gen-tie that would interconnect at the</p>	<p>Please refer to the responses to these comments in the 2014-2015 Draft Transmission plan comment matrix. The ISO has indicated our intention to complete the analysis of the proposed system project through further study associated with the 2014-2015 planning cycle.</p>

No	Comment Submitted	CAISO Response
	<p>Colorado River Switching Station.</p> <p>Reliability studies conducted in the 2014-2015 TPP confirmed the existence of high voltage issues when MWD pumps and BEP are both off-line. However, the draft 2014-2015 Transmission Plan recommends that Operating Procedure No. 128 be used to mitigate that issue. (Draft Transmission Plan at 2.7.4.4, p. 117.) The draft 2014-2015 Transmission Plan concludes that because the Operating Procedure will address the high voltage issue, the Loop-In Project does not address any reliability need. (Draft Transmission Plan at 2.7.4.3, p. 117.)</p> <p>However, the Loop-In Project provides additional reliability benefits not considered in the draft 2014-2015 Transmission Plan, including supporting MWD pumping operations by eliminating the need for the Julian Hinds RAS, which in certain circumstances would drop MWD pump load; and improving the stability of SCE's 230 kV system east of Devers by mitigating overloads and voltage issues occurring during N-1 and N-2 conditions. Recently, the ISO has been forced to rely on exceptional dispatch to address high voltage issues on SCE's 230 kV system.</p> <p>In addition to the reliability benefits, the Loop-In Project also provides significant economic benefits, and also supports public policy goals identified in the draft 2015-2016 Study Plan. Blythe requests that, in the event that the Loop-In Project is not approved in the 2014-2015 Transmission Plan, that the ISO include the Loop-In Project in its Economic Planning Study to confirm the economic benefits of the Loop-In Project, and approve the Loop-In Project in the 2015-2016 TPP.</p>	
3b	<p>II. The Loop-In Project Would Provide Significant Economic Benefits</p> <p>As part of Blythe's Request Window submission, ZGlobal conducted an analysis of the expected economic benefits for the Loop-In Project, using the same Transmission Economic Analysis Methodology ("TEAM") used by the ISO to conduct its own economic planning studies in the TPP. That analysis showed that the total reliability and economic benefits would be approximately \$33.7 million, with production cost benefits of over \$15 million.</p> <p>ZGlobal also calculated the transmission revenue requirement ("TRR") for the Loop-In Project, using the methodology provided in the FERC Cost-of-Service</p>	Please refer to the above response.

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	<p>Manual. The annual TRR for the Loop-In Project is expected to be \$18.9 million. The expected net benefit of the Loop-In Project is therefore more than \$14.3 million in the first year alone, with a cost-benefit ratio of 1.8. By comparison, the cost-benefit ratio for the Delaney-Colorado River Project, approved by the ISO Board last year after the adoption of the Final Transmission Plan, had a maximum cost-benefit ratio of 1.17. The fact that the vast majority of the Loop-In Project is already constructed also provides significant benefits, and cost certainty, to customers, as well as minimizing the environmental impacts and permitting timelines associated with constructing new transmission lines.</p> <p>Overall, the expected present value of the net benefits from the Loop-In Project would be approximately \$278 million.</p>	
3c	<p>III. The Loop-In Project Supports State Policy Goals</p> <p>In addition to the economic benefits it provides, the Loop-In Project also supports achievement of both public policy goals identified in the draft 2015-2016 Study Plan: (1) achieving the 33% RPS on an annual basis, and (2) supporting RA deliverability status for needed renewable resources outside the ISO balancing authority area.</p> <p>Currently, the Eastern Riverside County 500 kV transmission corridor from Devers to Palo Verde is constrained due to overload on the North Gila-Imperial Valley-ECO 500 kV corridor. Any additional renewable generation located in Eastern Riverside County may require major and expensive transmission upgrades. The RPS portfolios prepared by the California Public Utilities Commission (“CPUC”) for the 2014-2015 TPP identified between 1,400 to 3,800 MWs of renewable generation to be developed in Eastern Riverside. Though the CPUC has not yet submitted its RPS portfolios for the 2015-2016 TPP, they will contain the same numbers for Eastern Riverside. (Mar. 4, 2015 Assigned Commissioner Ruling in R.13-12-010, Attach. 1 at 45.) The Loop-In Project would increase deliverability from and through SCE’s Eastern Bulk system, thereby allowing additional deliverability from renewable projects in both Eastern Riverside and western Nevada.</p> <p>The draft 2015-2016 Study Plan also includes a proposal to conduct a special study to evaluate the potential transmission needs to meet a 50% renewable</p>	Please refer to the above response.

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	<p>energy goal. As the plan notes, Governor Brown recently announced a 50% renewable energy goal, though it is not yet a formal state requirement. In fact, in addition to the Governor’s announcement, on February 26, 2015, the CPUC opened a new RPS proceeding that will, among other things, evaluate whether the CPUC should increase the current 33% RPS, pursuant to the authority granted it in AB 327 (R.15-02-020).</p> <p>The draft 2015-2016 Study Plan states that it would be premature to approve any projects associated with a higher RPS in the 2015-2016 TPP in part because the 50% goal has a target date of 2030, outside of the planning horizon for the next TPP. It is worth noting, however, that a 50% goal would require significant increases in RPS generation well before the target date of 2030, including increases well within the study horizon of this TPP. A linear increase of the RPS from 33% in 2020 to 50% in 2030 would require an RPS of over 40% by 2025.</p> <p>Given the likely growth in RPS generation in California, it becomes that much more important that the CAISO give serious consideration to projects like the Loop-In Project, which will support California’s efforts to achieve the 33% RPS in 2020.</p>	
3d	<p>IV. Conclusion</p> <p>Blythe’s Loop-In Project would provide significant reliability and economic benefits, and supports the State policy goals that the ISO identified in the 2015-2016 draft Study Plan. The Project will eliminate voltage issues and overloads in SCE’s 230 kV system east of Devers, and will provide net economic benefits of \$14.3 million in the first year alone. The net economic benefits over the 40 year life of the Project are likely to be over \$755 million. In light of these benefits, Blythe requests that the ISO conduct an economic study to confirm the benefits of the Loop-In Project, should the ISO fail to approve the Loop-In Project in the 2014-2015 Transmission Plan.</p>	Please refer to the above response.

No	Comment Submitted	CAISO Response
4	California Energy Storage Alliance Submitted by: Mark Higgins	
4a	<p>50% Renewable Energy Goal for 2030 (Special Study) CESA recognizes that considerable detail remains to be resolved in the methodology that will be used to complete the ISO’s special study on the Governor’s 50% renewable energy goal. CESA also recognizes that the special study is information only, and will not be used to approve any new transmission projects. This study, however, is likely to be one of the most scrutinized and critical informational studies that the ISO has completed in recent history. It will be a tool that both critics and advocates of the goal could theoretically use to exert significant influence over the direction of state renewables policy.</p> <p>The stakes, therefore, couldn’t be higher that the study is conducted thoroughly, that the appropriate portfolios are analyzed, and that the appropriate level of sensitivity analysis be conducted on the results. While CESA recognizes that the portfolios are to come from the CPUC, we caution that portfolios used as an input into the study process are a static snapshot of but one of a nearly infinite spectrum of portfolio outcomes, some of which will likely be far less optimal than others in terms of minimizing ratepayer impact and maximizing system reliability.</p> <p>CESA therefore urges the ISO to think holistically about the process, and the appropriate feedback loops needed to inform the CPUC and state policymakers on the implications of a higher renewables goal. For example, the ISO’s static results of the analysis may lead policymakers to assume a certain cost requirement in upgrading the transmission system to accommodate new renewables on the grid, but the ISO could provide significant value to the policymaking process by taking the analysis further. For example, CESA recommends that the ISO analysis not just evaluate the transmission implications of the portfolios provided by the CPUC, but also look at:</p> <ul style="list-style-type: none"> (1) what changes to the portfolio (within the constraints of a 50% renewables target) could be made to maximize reliability and minimize the need for new transmission (2) what theoretical changes to existing contractual constraints could also contribute to the goals of maximizing reliability and minimizing cost (for 	<p>The Special Study in the 2014-2015 ISO planning cycle will focus on transmission issues in order to provide information for refining the development renewable portfolios and for other policy discussions. This study will explore the potential impact on the transmission system of increased grid-connected renewable generation, to the extent additional grid connected renewable generation is called for in achieving the 50% energy goal. Future studies and larger policy discussions will include the consideration of the items CESA proposes to be explored.</p>

No	Comment Submitted	CAISO Response
	<p>example, import/export limitations, path ratings, etc.)</p> <p>(3) what modifications to other system resources could be made to achieve the lowest cost / most reliable 50% renewables scenario (e.g., conventional resources, energy storage, electric vehicles, other distributed energy resources, etc.). For example, energy storage or grid interactive electric vehicles can and should have a tremendous impact on the system's ability to reliably and cost effectively integrate increasing levels of renewables into the grid, and the ISO's study should seriously consider the implications of how other state policy goals (such as AB2514 and the governor's 1.5 million ZEV in 2025 goal) could contribute to a more reliable and cost effective grid</p> <p>(4) What are the best tools to address certain system reliability issues under a higher renewables scenario (such as reactive power)? For example, could energy storage be used as a way to manage these issues by making more renewables dispatchable and grid responsive?</p> <p>These sensitivities are a critical component in crafting a truly informative study that results in concrete steps that policymakers can take to ensure successful implementation of the 50% renewables goal.</p>	

No	Comment Submitted	CAISO Response
5	California Public Utilities Commission (CPUC) Submitted by: Keith White	
5a	<p>1. The CAISO Should Clearly Identify Where and How the New Reliability Standards Result in Significantly Different Identification of Transmission or Local Capacity Needs Versus What Would Result Under Standards Applied in Prior TPP Cycles.</p> <p>In the Draft Study Plan and elsewhere the CAISO has indicated that new NERC reliability standards for transmission planning will require changes in reliability studies, with uncertain implications for identification of infrastructure needs. When the new reliability standards are applied in the 2015-16 TPP, the CAISO should clearly point out any transmission or local capacity needs that are identified specifically as a result of moving to the new standards, as well as the mechanism by which the new standards drive this additional need identification.</p>	<p>The NERC standards are mandatory reliability standards. Constraints on the system will be identified based upon the applicable system condition and contingency that is resulting in the constraint.</p>
5b	<p>2. Reliability Studies Should Clearly Identify the Impacts of Renewable and Preferred Resources in Both Contributing to and Mitigating Reliability Problems.</p> <p>Page 28 of the CAISO's Reliability Assessment presentation at the February 23 stakeholder meeting indicates that in conducting reliability studies the CAISO will consider lower cost alternatives to transmission including demand side management, special protection systems, generation curtailment, interruptible loads, storage facilities, or reactive support. It is essential to consider the full ability of planned, authorized, and in-procurement resources, particularly preferred resources, to avoid reliability transmission investments. This includes identifying the required timing, locational and operational characteristics of the resources, building on the CAISO's efforts in the previous planning cycle. Furthermore, for planning and procurement purposes it is important to identify where realistic amounts of local resources could avoid transmission upgrades <i>even if such resources are not specifically planned or in procurement at this time.</i></p> <p>Page 6 of the February 23 Reliability Assessment presentation identifies the intent to study high renewable output sensitivity cases, and at both the February 17 and February 23 TPP stakeholder meetings CAISO staff indicated a need for future LCR studies to consider not only peak hours but also shoulder peak hours (when solar generation is falling). Increasing penetration of variable renewable resources may affect what key operational scenarios should be</p>	<p>The comment has been noted. The ISO will continue to look at these effects.</p>

No	Comment Submitted	CAISO Response
	<p>addressed by reliability studies, and may complicate identification of those scenarios. <i>Thus, for the 2015-16 TPP we look forward to increased emphasis and clarification regarding how variable generation penetration affects (positively or negatively) projected magnitudes and locations of reliability needs, whether met by transmission or local resources.</i></p>	
5c	<p>3. Proactive Assessment of Southern California Transmission Options Under Planning Contingencies Regarding Local Capacity and Imperial Valley Exports Should Continue, Should Emphasize the Latest Resource Planning and Procurement Information, and Should Clearly Express Capacity Value of Potential Transmission Additions in Terms of Specific Amounts, Locations and Types of Local Capacity That Would Substitute for the Transmission.</p> <p>The 2014-2015 TPP assessed efficacy of certain transmission options under future planning contingencies such as underperformance of local resource deployment or higher Imperial Valley renewable energy exports. Such proactive studies should continue, and it is important that they be based on updated assumptions and information regarding local capacity planning and procurement. These studies should clearly identify what the local capacity value attributed to any transmission option actually represents in terms of avoided amounts and locations of local capacity, as well as whether that local capacity is already included in resource planning/procurement assumptions. We support the CAISO's intent to study two levels of "existing DR repurposing" as mitigation options.</p>	<p>The ISO will perform this type of analysis as needed. Regarding providing local capacity values of "any" transmission options, we must caution that any estimate provided for a specific facility is heavily dependent on the specific assumptions regarding other upgrades occurring in the area, and the specific locations of the capacity assumed to be offset by transmission reinforcement.</p>
5d	<p>4. The CAISO Should Clarify the Intent to Study Additional Import Capability Into San Diego.</p> <p>Page 26 of the Reliability Assessment presentation at the February 23 stakeholder meeting indicates San Diego import "target flows" in the 2400-3500 MW range for study purposes, whereas the current transfer capability is listed as 2850 MW. CAISO staff indicated that this reflects intent to study expanded San Diego import capability. The CAISO should clarify what study scenarios may involve higher San Diego import capability.</p>	<p>The ISO is required to establish system operating limits, including San Diego import capability, in the planning horizon for NERC compliance.</p>
5e	<p>5. CPUC Staff Appreciate Extension of Last Year's Over-generation Studies to Consider a Wider Range of Assumptions and Mitigation Options, and This Extension Should Clarify How Frequency Response Issues Being Studied Relate to the Broader Range of System Flexibility Needs and Solutions, Including Issues Being Considered via the LTPP.</p>	<p>The comments have been noted. In the 2015-2016 TPP, we plan to consider a wide range of mitigation options to resolve the issues caused by over-generation conditions. Developing realistic models will also be a part of this study.</p>

No	Comment Submitted	CAISO Response
	<p>As stated in comments on the CAISO’s Draft 2014-2015 Transmission Plan, CPUC Staff appreciate the CAISO’s introduction of over-generation/frequency response studies into the planning cycle. We look forward to the CAISO’s planned extension and refinement of these studies in the 2015-16 TPP to examine a wider range of stress scenarios regarding outage contingencies, generator operation, and composition of loads. We strongly support the stated intent to evaluate a range of mitigation options such as system operational changes (commitment and dispatch re-optimization), effective use of storage and demand-side resources, frequency responsive capabilities for nonconventional resources including those using inverters, and increased exports under over-generation conditions. The CAISO should identify where (and what) information is needed to realistically model particular nonconventional or emerging sources of frequency response.</p> <p>Whether through studies or via policy, procurement and market reform processes, we are repeatedly (and sometimes confusingly) reminded that we face a mix of varied but interrelated flexibility challenges. These challenges are characterized by varying degrees of urgency, certainty and granularity, both temporal and geographic (topological). Ultimately we need to address <i>all</i> flexibility related challenges in an integrated manner. This means deploying a suite of solutions that is efficient, integrated, flexible, and sufficiently timely to address the most urgent needs. Thus, we look to the CAISO for assistance in providing additional clarity and context regarding how the frequency response challenges and solutions being studied interact with the <i>broader range of system flexibility challenges and solutions</i>.</p> <p>On the flexibility requirements side, we are ultimately interested in the relative magnitudes (e.g., MW), response times, geographic granularity, urgency, and physical interaction of requirements regarding inertia, governor/primary frequency response, regulation response, dispatch/load following response, hourly and day-ahead commitment and startup flexibility, four-hour (or similar) ramping, and likely other dimensions of “flexibility”. On the flexibility supply side, we are interested in sources of different kinds of flexibility including new resources or programs, retrofits, and market/operational changes, as well as where particular measures or investments can simultaneously address multiple kinds of flexibility needs. (E.g., inverter-based technology might be designed or</p>	<p>We will take in account your comments while performing this study.</p>

No	Comment Submitted	CAISO Response
	<p>retrofitted to simultaneously provide multiple kinds of flexibility including some dispatchability.)</p> <p>Thus, while it is unrealistic to expect the CAISO to address the broad range of flexibility needs within the over-generation study or the TPP, it would be helpful to clarify (1) how other kinds of system flexibility complement primary frequency response in addressing overgeneration, (2) how investing in and deploying primary frequency response capability would reduce needs for other kinds of flexibility, and (3) how procedures, designs and investments to provide primary frequency response may also inherently support <i>other</i> kinds of flexibility (more bang for the buck).</p>	
5f	<p>6. CPUC Staff Understand that Economic Studies Will Include “EIM” Features Including Flexible Reserves Sharing and Reduced Hurdle Rates, and It is Important to Clearly Describe These EIM Modeling Methods and to Test Sensitivity Cases With Versus Without Them.</p> <p>The EIM is a new development that over time could experience greater participation and could have impacts beyond real-time operations. The CAISO should clearly describe how flexible reserve sharing, low/zero hurdle rates and any other EIM-specific modeling features are to be implemented, as well as whether EIM-specific features will be included in any other kinds of studies besides the economic studies. The CAISO should present the basis and actual numeric amounts (and what kinds of resources qualify as providers) for flexible reserves commitment requirements, both with and without modeling “EIM.” The CAISO should also clearly explain the basis for any modeled hurdle rate changes, especially since EIM directly deals with real time markets only. Finally, it is important to test, and for stakeholders to understand, the impact of the EIM modeling on key results such as dispatch, power flows and prices, by running sensitivities with EIM modeling features being applied versus not applied.</p>	<p>The limitations of current market modeling and production simulation software make analysis switching different systems “in and out” of the energy imbalance market challenging, and these focused comparisons are undertaken on an as-needed basis only. It is not currently practical to attempt generalized analysis of comparing results based on a broad range of combinations of participation.</p>

No	Comment Submitted	CAISO Response
6	Duke American Transmission Company (DATC) Submitted by: Christopher T. Ellison	
6a	<p>The 2015-16 Study Plan identifies only one “overarching public policy objective”, California’s 33 percent Renewables Portfolio Standard (“RPS”), to guide consideration and identification of new transmission “needed to support state or federal public policy requirements and directives.” In identifying the need for new transmission solutions, DATC encourages the CAISO to ensure that the 2015-16 Study Plan: (1) analyzes other, vital state policies and directives such as the 50 percent renewable goal and greenhouse gas emission reduction efforts and (2) analyzes light load and off peak conditions in 2025 to assess the impact of transmission on overgeneration. DATC also encourages the CAISO to be more flexible in its planning process to identify and evaluate projects that have long-term value and benefits beyond the 2015-2016 planning horizon.</p>	<p>Other federal, state or municipal policies besides the 33% RPS can be considered in the transmission planning process. Other policies can be proposed, and the ISO provides explanations on a case by case basis as to why those policy proposals are not accepted for transmission planning purposes if that is the case.</p> <p>In selecting the best solution to an ISO-identified need, the ISO can consider issues beyond the 10 year planning horizon. However, the ISO’s need must be identified within the planning horizon.</p>
6b	<p>DISCUSSION</p> <p>1. The CAISO Tariff does not limit the types of state and federal policies and directives that can be considered in the 2015-16 Study Plan to “formal state requirements”.</p> <p>Section 3.1 of the 2015-16 Study Plan discusses the public policy objectives that were considered for the purposes of the TPP study process. DATC agrees with the inclusion of RPS and deliverability of renewable energy resources to support resource adequacy (“RA”) requirements, but questions the relegation of Governor Brown’s announced 50 percent renewable penetration goal to an energy-only “special study”, the results of which “will not be used to support a need for policy-driven transmission in the 2015-2016 planning cycle.” The 2015-16 Study Plan states that the 50 percent renewable goal is not being considered to determine the need for policy-driven transmission additions or upgrades because “it is not yet a formal state requirement, so in accordance with the ISO tariff the ISO cannot use it as a basis for approving policy-driven transmission.” However, Section 24 of the CAISO tariff does not limit consideration of transmission solutions needed solely to meet “formal state requirements.” Rather, Section 24.1 broadly provides that:</p> <p style="padding-left: 40px;">24.1 The CAISO will develop a comprehensive Transmission Plan and approve transmission solutions using the Transmission Planning Process set forth in this Section 24. The comprehensive Transmission</p>	<p>The ISO is working with the state energy agencies to better understand how the 50% energy goal may be achieved – this work and anticipated legislation is expected to ultimately form the basis for future policy-driven analysis in the transmission planning process. The ISO is also undertaking preliminary informational analysis as input into the broader industry discussions on these issues. However, this work cannot form the basis for approving policy driven transmission projects until this work is further advanced and the specifics of government policy are made clear.</p> <p>Further, the anticipated studies also intend to explore the amount of congestion that would occur assuming incremental resources beyond 33% are added on an energy-only basis, and also explore what transmission could be rationalized to economically reduce this congestion.</p>

No	Comment Submitted	CAISO Response
	<p>Plan will identify Merchant Transmission Facilities meeting the requirements for inclusion in the Transmission Plan and transmission solutions needed . . (5) to meet state, municipal, county and federal policy requirements and directives, including renewable portfolio standards policies;***</p> <p>Thus, the range of public policy objectives to be considered in the TPP are not just “formal state requirements”, but policies relating to RPS, and other state, municipal, county and federal policy requirements <i>and</i> directives. The directive to evaluate transmission solutions needed to meet state or federal policy requirements or directives is repeated throughout Section 24 of the CAISO tariff, including when considering transmission solutions that are needed to meet policy needs in either current or future planning cycles.</p> <p>The inclusion of other identified policy objectives- such as the 50 percent renewable goal and greenhouse gas emission reductions goals- is necessary to allow the CAISO flexibility in the transmission planning process, and allows greater planning for uncertainties. For example, the 2015-16 Study Plan states that it “would be premature and unnecessary to approve any [] transmission projects in the current or even the next TPP cycle” associated with the 50 percent renewable goal as a basis for addressing the RPS policy in a special study, rather than the 2015-2016 Study Plan. However, the purpose of the transmission plan is not just to identify and approve transmission solutions that meet policy needs, but also to identify those “transmission solutions [] that could be needed to achieve state, municipal, county or federal policy requirements or directives but have not been found to be needed in the current planning cycle based on the criteria set forth in this section.” Consideration of a broad range of known policy objectives will provide the CAISO with more flexibility to consider a broad range of projects, and to more accurately determine the benefits and value of each project in addressing policy needs, even if it ultimately determines that a transmission solution for the policy objectives are warranted in future planning cycles, rather than the current one.</p> <p>Given the importance of California’s renewable generation and greenhouse gas emissions reduction goals, the 50 percent renewable goal should not be analyzed only as part of a special study, but as part of the broader set of policy</p>	

No	Comment Submitted	CAISO Response
	<p>objectives governing consideration of transmission solutions needed in the 2015-2016 planning cycle or beyond. At a minimum, the study plan should allow for the likelihood that the 50 percent renewable penetration goal will be formalized this year and develop a study that can be actionable promptly. Given the long lead time of many transmission upgrades that may be needed to achieve the 50 percent goal, and given the substantial amounts of new renewable generation that the goal requires, delaying the needed upgrades that are feasible by even one year can be costly.</p> <p>Regardless of whether consideration of the 50 percent renewable goal is done as the base case or as a special study, the analysis should not be limited to the assumption that the incremental renewable generation will be energy-only.⁸ Due to the issues of congestion-related curtailment of renewable resources that already exist, California’s greenhouse gas emissions reduction goals, and RA requirements, it would benefit all stakeholders to have a full view of the transmission solutions that will be needed to address the 50 percent renewable goal, particularly if the incremental renewable generation requests the full capacity deliverability status needed to serve as RA resources.</p>	
6c	<p>2. The CAISO should ensure that the 2015-16 Study Plan includes an analysis of light load and off- peak conditions in 2025 to assess the impact of transmission on overgeneration.</p> <p>On March 3, 2015, DATC submitted comments addressing points raised at the 2014-2015 Transmission Planning Process February 2015 stakeholder meeting. In those comments, DATC demonstrated how studies using the CAISO’s off peak conditions illustrated a need for a transmission solution, such as that provided by the “right-sizing” of San Luis Transmission Project, which was not identified in the 2014-2015 Study Plan. Therefore, DATC recommends that the 2015-16 Study Plan include an analysis of light load and offpeak conditions in 2025 to determine the transmission solutions that might be an effective way to mitigate reliability concerns during those times.</p>	<p>The draft study plan identified in Table 4-1 for the northern California bulk system assessment a Spring Off-Peak scenario for 2025 in addition to Spring Off-Peak in 2017 and Spring Light Load in 2020.</p>

No	Comment Submitted	CAISO Response
7	<p>LS Power Development, LLC Submitted by: Sandeep Arora</p>	
7a	<p>(1) Economic Study Request: LS Power is hereby submitting an economic study request for CAISO for the 2015/16 Transmission Plan. The request is to study congestion on CAISO's intertie interface with the Pacific Northwest and evaluate the economic, reliability, and incremental Energy Imbalance Market (EIM) benefits of the transmission solution proposed below.</p> <p>CAISO's 2014/15 Transmission planning studies for the Bulk System showed reliability concerns due to Category B and Category C contingencies on major 500 kV lines in the Pacific AC Intertie (PACI) transmission interface in Northern California. These issues are partly driven by CAISO's inability to trip CDWR generation and load beginning Jan 1, 2015 (CDWR has stopped participating in this RAS as of Dec 31, 2014). Further, the economic studies done under CAISO's 2014/15 Transmission Planning Process showed congestion on the California Oregon Intertie (COI) interface, although not significant. CAISO Management did not recommend a transmission upgrade in the 2014/15 Draft Transmission Plan to address this issue, and instead relied on use of Operating Nomograms (which limit flows on COI). LS Power encourages CAISO to take a closer look at this recommendation and address these reliability and congestion issues in the 2015/16 Transmission Planning process. We note that the amount of congestion shown in the CAISO studies is very small as compared to the congestion seen on this path in last few years, based on real time data from CAISO's OASIS and Market Update reports¹. CAISO's 2014/15 TPP Economic study projected congestion of only \$3000 for 2019 and no congestion in 2024 for COI. In contrast, congestion witnessed on CAISO's interties with Pacific Northwest (NOB and PACI) was \$144 mm in 2012 and \$63 mm in 2013, based on CAISO's DMM Annual Market update report for 2013. We understand that some of these differences can be attributed to scheduled outages in the area for 2012 and 2013, but even if this was discounted, remaining differences between studied congestion and actual congestion still appear to be significant. We recommend that CAISO investigate the discrepancies and complete additional modelling, as needed, to benchmark "projected" vs "actual" congestion. The studies should be conducted to accurately quantify congestion in future years and the need for a transmission solution to address reliability</p>	<p>The request for an economic study has been noted, and the request will be considered as a candidate in the selection of economic studies to be performed in this cycle.</p>

No	Comment Submitted	CAISO Response
	<p>and congestion issues should then be considered. LS Power requests CAISO to study the Southwest Intertie Project - North ("SWIP North") as a long term transmission solution for this area. SWIP North is comprised of a 500 kV transmission line from Midpoint substation to Robinson Summit substation. LS Power's affiliate owns available transmission capacity on a 500 kV transmission line that connects Robinson Summit to Harry Allen ("ON Line"), which could be dedicated to CAISO. In addition, a new 500 kV line between Harry Allen & Eldorado substations was recently approved by CAISO Board and is to be built by 2020. Hence, if SWIP North were to be built, CAISO could have access to complete path from Midpoint to Eldorado. This will be a major parallel path to several CAISO interties including PACI intertie, interties with the Southwest, and CAISO's internal WECC path - Path 26. SWIP North is expected to reduce congestion on all major CAISO intertie paths, and in particular PACI, NOB and Path 26.</p> <p>An additional benefit that SWIP North project potentially brings is that it is expected to improve the Energy Imbalance Market (EIM) benefits to all EIM participants. SWIP North will provide improved access to the systems of NV Energy, PacifiCorp, Bonneville Power Administration and Idaho Power. SWIP North will potentially increase transmission capacity available for EIM between PacifiCorp West, PacifiCorp East, CAISO, and NV Energy. This increase in transmission capacity available for EIM should translate into increased EIM benefits to CAISO and the neighboring BAAs participating in the EIM. We encourage CAISO to evaluate the potential of increased EIM benefits from SWIP North, in addition to performing the economic analysis as part of 2015/16 Transmission Planning process.</p>	
7b	<p>(2) Diablo Offline sensitivity study: LS Power recommends that CAISO add a sensitivity study to its study plan with Diablo Canyon Nuclear Generation ("Diablo") offline for Year 2025 study case. CAISO notes in the Draft Study Plan that it intends dispatching Diablo online for all scenarios, despite the looming uncertainty over renewal of its license. We believe that adding this sensitivity should provide valuable insights into the state of the grid if a major base load unit such as Diablo isn't available. This study should inform stakeholders and policy makers on what steps may need to be taken if Diablo Canyon were to become unavailable. If Diablo does become inoperable in future, it is likely that the measures required to ensure reliability of</p>	<p>In the 2012-2013 TPP the ISO assessed the transmission system with a scenario of the Diablo Canyon Nuclear Generation facility offline. The results of that analysis are still valid.</p>

No	Comment Submitted	CAISO Response
	<p>the system with this unit offline, will involve building long lead time solutions (such as new transmission upgrades and/or new generation procurement through the LTPP process). We therefore believe that the recommended sensitivity study should be done under this year's planning process.</p>	
7c	<p>(3) Mid-term Flexible Capacity study: As per the Draft Study Plan, CAISO proposes to perform a Mid-term Local Capacity study for Year 2020. This study should inform the stakeholders and the policy makers about the local capacity needs in the mid-term. We agree that this should be a valuable study and concur with the CAISO that this should be conducted. In addition, we believe CAISO should also perform a mid-term flexible capacity study. As is evident, going forward the flexible capacity needs for the grid will be critical due to renewable integration and looming Once Through Cooling (OTC) retirements. Currently, CAISO performs a near term Flexible Capacity study and a 10-year out Flexible Capacity study. The near term study is unable to capture the impacts of OTC retirements on flexible capacity needs and the 10-year out study done by CAISO under the LTPP process is projecting significant over-generation and curtailments. We believe currently there is a gap in the process which is that no mid-term (Year 2020) Flexible Capacity study is being done. This study should provide an insight into any reliability issues posed due to the increased needs for flexible capacity in the mid-term and the study should help policy makers make appropriate decisions, as necessary.</p>	<p>Currently, the near term multi-year flexible capacity study is repeated each year and looks out three years into the future. The ISO believes the frequency of these near term flexibility studies would capture the impact of OTC retirements. Both the CAISO and the CPUC believe that a more durable flexible capacity product should be developed for the 2018 RA year. As such, the CAISO is in the process of conducting additional studies to determine what the flexible capacity needs are for 2018 and beyond.</p>

No	Comment Submitted	CAISO Response
8	<p>Natural Resources Defense Council Submitted by: Carl Zichella, Sierra Martinez, Pierre Bull and Julia S. Prochnik</p>	
8a	<p>The Natural Resources Defense Council (NRDC) is a national, non- profit organization of scientists, lawyers, and environmental specialists, dedicated to protecting public health and the environment. Founded in 1970, NRDC serves more than one million members, supporters and environmental activists with offices in New York, Washington, Los Angeles, San Francisco, Chicago and Beijing.</p> <p>NRDC has a long history of efforts to protect and conserve the nation’s natural systems that support human prosperity, including in particular the nation’s air, water, lands and other natural resources. NRDC has long promoted the reliance on cost-effective resources, like energy efficiency and renewable energy, in order to reduce costs and environmental impacts while meeting customers’ energy needs.</p> <p>CAISO: “As a result, areas outside the ISO that are rich in renewable energy potential and have been included in the ISO’s 33% supply portfolios, have raised concerns that they will be unable to develop their projects if they are unable to offer RA capacity to their potential LSE buyers. The ISO therefore also includes, in each TPP cycle, the policy objective of expanding RA import capability in those areas outside the ISO BAA where (a) renewable resources are needed in the 33% RPS base case portfolio meet the state’s 33% RPS target, and (b) the RA import capability is not sufficient to enable these resources to provide RA capacity.”</p> <p>Comment: This change to consider renewable resources outside the CAISO footprint is a welcome change. It is critical to look at the grid in both a local and regional perspective. As we learned from the study, <i>investigating a Higher Renewables Portfolio Standard in California</i>, conducted by the consulting firm Energy and Environmental Economics, Inc. climate solutions focusing on a single state, California, inhibit our ability to cost-effectively integrate renewable energy sufficient to meet long term climate goals absent coordination among states; taking advantage of diverse geographies and technologies; and, gaining access to new markets and market tools. We believe planning should be</p>	<p>The comments have been noted.</p>

No	Comment Submitted	CAISO Response
	<p>realigned to emphasize longer term system and climate mitigation needs and goals, respectively. Ideally this planning should be collaboratively and contemporaneously done by all three major California energy and transmission planning and regulatory entities (see attached comment on realignment).</p>	
8b	<p>CAISO: "During the 2015-2016 TPP cycle the ISO will seek to continue to work with the California Transmission Planning Group (CTPG) to coordinate with CTPG members as to their plans within their respective areas. While the CTPG has put further analytical studies on hold as the various regions establish their new roles and procedures to comply with FERC Order 1000 regional and interregional obligations, the ISO anticipates that CTPG will continue to play a role in the coordination and sharing of planning activities being conducted by CTPG members inside California."</p> <p>Comment: We believe this would be a very positive development as the CTPG is the main venue in which both public and private utilities look at the California electrical system together. If the CTPG reconstitutes itself, then NRDC believes that the meetings should be open and transparent along the lines of ISO protocol and regional Order 1000 transparency. This group and its reports should be made public in the greater interest of reliability.</p>	<p>As CTPG efforts have been suspended indefinitely, the ISO expects to coordinate more directly with the neighboring entities. The FERC Order 1000 interregional planning processes are being developed and implemented, and are expected to play a larger role in these issues in the future.</p>
8c	<p>CAISO: Section "4.6 Study Scenarios"</p> <p>Comment: Study scenarios should consider and where appropriate include study results emanating from WECC interconnection-wide planning, especially where out of state resources of interest and value to California are implicated.</p>	<p>The reliability and policy studies are based upon the CPUC portfolios. The ISO may consider as a part of the Special Study for information only an out of state renewable scenario.</p>
8d	<p>CAISO: Section "4.8 Base Case"</p> <p>Comment: NRDC is pleased to see CAISO using the WECC base case.</p> <p>As mentioned above, NRDC believes the portfolio-based planning process and transmission planning horizons at CAISO should be reformed to address longer-term policy goals and system needs.</p>	<p>Please refer to response to comment 8c.</p>
8e	<p>CAISO Table:</p>	<p>The ability of customer-side storage to provide capacity and flexibility carries uncertainty. Not only is the market new, but customer-side storage will likely not be dispatchable by either the CAISO or the IOUs</p>

No	Comment Submitted	CAISO Response																								
	<p style="text-align: center;">Table 4-15: Storage Operational Attributes</p> <table border="1" data-bbox="304 310 955 675"> <thead> <tr> <th>Values are MW in 2024</th> <th>Transmission-connected</th> <th>Distribution-connected</th> <th>Customer-side</th> </tr> </thead> <tbody> <tr> <td>Total Installed Capacity</td> <td>700</td> <td>425</td> <td>200</td> </tr> <tr> <td>Amount providing capacity/ ancillary services</td> <td>700</td> <td>212.5</td> <td>0</td> </tr> <tr> <td>Amount with 2 hours of storage</td> <td>280</td> <td>170</td> <td>100</td> </tr> <tr> <td>Amount with 4 hours of storage</td> <td>280</td> <td>170</td> <td>100</td> </tr> <tr> <td>Amount with 6 hours of storage</td> <td>140</td> <td>85</td> <td>0</td> </tr> </tbody> </table> <p>Comment: Since the assumption of storage attributes are “admittedly conservative”¹ we recommend that the transmission planning process also evaluate scenarios in which distributed and behind-the-meter storage is able to provide a fuller suite of electrical services similar to that of transmission-connected storage. This “advanced policy” scenario would provide information as to the potential of unlocking that remaining storage capacity through policy innovations.</p>	Values are MW in 2024	Transmission-connected	Distribution-connected	Customer-side	Total Installed Capacity	700	425	200	Amount providing capacity/ ancillary services	700	212.5	0	Amount with 2 hours of storage	280	170	100	Amount with 4 hours of storage	280	170	100	Amount with 6 hours of storage	140	85	0	<p>(absent significant policy and market changes) and it is unclear how much of customer side storage will charge from the grid or on-site generation, and according to what schedule. Therefore, none of the 200 MW of new customer-side storage described is assumed to provide capacity and flexibility as a default.</p> <p>Note that although there are limits on the amount of storage procurement assumed to provide capacity and flexibility as described above, all 1,325 MWs can provide energy services and will be modeled as such in studies involving production cost simulations. The capacity limitation described above applies to power-flow type studies conducted in the CAISO’s TPP.</p>
Values are MW in 2024	Transmission-connected	Distribution-connected	Customer-side																							
Total Installed Capacity	700	425	200																							
Amount providing capacity/ ancillary services	700	212.5	0																							
Amount with 2 hours of storage	280	170	100																							
Amount with 4 hours of storage	280	170	100																							
Amount with 6 hours of storage	140	85	0																							
8f	<p>CAISO: Section 4.17 Demand Response Programs and Energy Storage</p> <p>According to tariff Section 24.3.3(a), the ISO sent a market notice to interested parties seeking suggestions about demand response programs and generation or non-transmission alternatives that should be included as assumptions in the study plan. In response, the ISO received demand response and energy storage information for consideration in planning studies from the following:</p> <ul style="list-style-type: none"> • California Public Utilities Commission (CPUC) • Pacific Gas & Electric (PG&E) <p>Comment: Did the CPUC submission cover all the IOUs and PG&E submitted additional information? This needs to be clarified. Will they be required to submit data before the next study publication? It seems the study analysis will</p>	<p>The CPUC provided data for all three IOUs. PG&E provided additional information.</p>																								

No	Comment Submitted	CAISO Response																
8g	<p>be inaccurate if the data from the entire CAISO footprint is not included.</p> <p>CAISO: The 2012 LTPP Track 4 planning assumptions estimated that approximately 200 MW of DR would be available to mitigate first contingencies within the combined LA Basin and San Diego local reliability areas by 2022. The 2014 LTPP planning assumptions, however, estimates that approximately 1,100 MW would be available to mitigate first contingencies within the combined LA Basin and San Diego local reliability areas by 2024. CPUC staff developed this latter estimate by screening DR projections in the Load Impact reports for programs that deliver load reductions in 30 minutes or less from customer notification. The table below identifies for each IOU the programs and capacities that meet this criteria.</p> <p>CAISO: Table 4-13: Existing DR Capacity Range in Local Area Reliability Studies</p> <table border="1" data-bbox="277 773 1062 1011"> <thead> <tr> <th data-bbox="277 773 680 846">"Fast Response" DR Program MW in 2024</th> <th data-bbox="680 773 810 846">PG&E</th> <th data-bbox="810 773 951 846">SCE</th> <th data-bbox="951 773 1062 846">SDG&E</th> </tr> </thead> <tbody> <tr> <td data-bbox="277 846 680 878">BIP API</td> <td data-bbox="680 846 810 878"></td> <td data-bbox="810 846 951 878"></td> <td data-bbox="951 846 1062 878"></td> </tr> <tr> <td data-bbox="277 878 680 911">AC Cycling Residential</td> <td data-bbox="680 878 810 911">287 n/a 82</td> <td data-bbox="810 878 951 911">627 69 298</td> <td data-bbox="951 878 1062 911">1 n/a 12</td> </tr> <tr> <td data-bbox="277 911 680 943">AC Cycling Non- Residential</td> <td data-bbox="680 911 810 943">1</td> <td data-bbox="810 911 951 943">76</td> <td data-bbox="951 911 1062 943">3</td> </tr> </tbody> </table> <p>Given the uncertainty as to what amount of DR can be relied upon for mitigating first contingencies, the CAISO's 2014-2015 TPP Base local area reliability studies examined two scenarios, one consistent with the 2012 LTPP Track 4 DR assumptions and one consistent with the 2014 LTPP DR assumptions. The ISO will examine the same two scenarios in the 2015- 2016 TPP.</p> <p>DR capacity will be allocated to bus-bar using the method defined in D.12-12-010, or specific bus-bar allocations provided by the IOUs. The DR capacity amounts will be modeled offline in the initial reliability study cases and will be used as potential mitigation in those planning areas where reliability concerns are identified.</p>	"Fast Response" DR Program MW in 2024	PG&E	SCE	SDG&E	BIP API				AC Cycling Residential	287 n/a 82	627 69 298	1 n/a 12	AC Cycling Non- Residential	1	76	3	<p>The comment has been noted.</p>
"Fast Response" DR Program MW in 2024	PG&E	SCE	SDG&E															
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AC Cycling Non- Residential	1	76	3															

No	Comment Submitted	CAISO Response								
	<p>Comment: This allocation methodology sounds reasonable, and NRDC looks forward to more dialogue describing the scenarios in the next report.</p>									
8h	<p>CAISO: 6.1 50% Renewable Energy Goal for 2030</p> <p>During the current planning cycle the ISO will perform a special study to provide information regarding the potential need for public policy- driven transmission additions or upgrades to support a state 50% renewable energy goal. The ISO is performing this study for information purposes only; its results will not be used to support a need for policy-driven transmission in the 2015-2016 planning cycle. As of the date of this draft study plan, the 50% renewable energy goal has been announced by Governor Brown but is not yet a formal state requirement, so in accordance with the ISO tariff the ISO cannot use it as a basis for approving policy-driven transmission.</p> <p>Comment: NRDC applauds the ISO for taking the initiative to conduct a special study analyzing the needs of a 50% RPS. While it is an informational study, we support the ISO taking these first steps in collaboration with the CPUC. We look forward to discussing the preliminary results in November 2015.</p>	<p>The comment has been noted.</p>								
8i	<p>CAISO:</p> <p>Table A1-4: Existing generation plants in VEA planning area</p> <table border="1" data-bbox="289 959 1024 1117"> <thead> <tr> <th>Planning Area</th> <th>Generating Plant</th> <th>Maximum Capacity</th> </tr> </thead> <tbody> <tr> <td rowspan="2">VEA</td> <td>Not Applicable</td> <td>0</td> </tr> <tr> <td style="text-align: right;">VEA Area Total</td> <td>0</td> </tr> </tbody> </table> <p>Comment: Why are there no existing generation plants in the VEA area in the current ISO model?</p>	Planning Area	Generating Plant	Maximum Capacity	VEA	Not Applicable	0	VEA Area Total	0	<p>No existing generation plants currently exist in the VEA area.</p>
Planning Area	Generating Plant	Maximum Capacity								
VEA	Not Applicable	0								
	VEA Area Total	0								

No	Comment Submitted	CAISO Response
9	Northern Tier Transmission Group Submitted by: Sharon Helms	
9a	<p>The CAISO 2015-2016 Study Plan is well written, easy to read and understand. As a suggestion for improvement NTTG offers the following comments.</p> <p>First, the Study Plan section 3.2, last paragraph, should be updated to include a discussion on the FERC Order 1000 regional and interregional planning coordination requirements. This update may be appropriate at this time since FERC has accepted the regions regional planning compliance filings and a substantial portion, if not all, of the planning compliance for interregional coordination. The interregional coordination will be implemented by all planning regions this year. Even though the details underlying interregional coordination are under construction at this time, the Study Plan would benefit from a general discussion of the Attachment K framework/obligations that will be implemented in 2016 by all planning regions. This is important since the outcome from interregional coordination may influence the results in CAISO final transmission plan.</p> <p>Second, Order 1000 requires that the potential impacts on neighboring regions due to CAISO transmission additions be part of the decision matrix for selecting new transmission into the regional transmission plan. Perhaps this is already part of the CAISO decision matrix, but it doesn't appear to be discussed in the Study Plan.</p> <p>NTTG recognizes that the timing difference between when FERC responded to the regions' Order 1000 regional and interregional compliance filings and the time when CAISO drafted the 2015-2016 Study Plan likely influenced this draft of the Study Plan. However, it may be appropriate for CAISO to bridge this timing gap and update the Study Plan with additional information regarding implementation of FERC Order 1000.</p>	<p>The interregional planning process is not expected to have a material impact on the 2015-2016 planning cycle or its recommendations. The 2015-2016 planning cycle will provide input into the interregional process, and the ISO notes that 2016 will be the first year in which interregional projects may be proposed to address previously identified regional needs. We consider it more appropriate to provide a response in this comment matrix than to provide narrative in the study plan that does not directly affect the study plan itself.</p> <p>We note that the ISO only seeks approval of regional planning solutions when the need to proceed has been identified. In cases where the regional solutions are identified, but that the anticipated time to develop the regional solution identified as the "best" does not require immediate approval, the ISO defers approval to subsequent cycles – this is anticipated to create the opportunity for interregional processes to also be explored.</p> <p>While progress is being made in refining implementation details with neighboring planning entities, we believe it is premature to include such information in this study plan because we are not expecting to perform any studies relating to interregional planning in this planning cycle. That said, documentation in the transmission plan would be appropriate where a broader communication coordinated with our planning neighbors will be more timely.</p>

No	Comment Submitted	CAISO Response								
10	Office of Ratepayers Advocates (ORA) Submitted by: Charles Mee									
10a	<p>1. Schedule of CAISO Responses the 2015-2016 Planning Cycle</p> <p><u>Background</u> Table 2-1 of the Study Plan provides the schedule for the 2015-2016 planning cycle. It does not appear to delineate when the CAISO responds to each round of Stakeholder comments.</p> <p><u>ORA Recommendations</u> ORA believes that stakeholders' review, the CAISO's resulting responses and changes to the Study Plan are integral to creating this ever improving process, but this important aspect has not received much attention in the past. ORA requests that Table 2-1 should be expanded to identify when such responses would be available. ORA proposes the following schedule (Table 1) for the CAISO's consideration.</p> <p>Table 1: Suggested CAISO Response Schedule</p> <table border="1" data-bbox="310 808 1033 1412"> <thead> <tr> <th data-bbox="310 808 508 841">Due Date</th> <th data-bbox="508 808 1033 841">2015-2016 Activity</th> </tr> </thead> <tbody> <tr> <td data-bbox="310 841 508 977">November 6, 2015</td> <td data-bbox="508 841 1033 977">CAISO responses to stakeholder comments on the 2014-2015 Conceptual Statewide Plan Update for the 2015-2016 Transmission Planning Cycle</td> </tr> <tr> <td data-bbox="310 977 508 1179">November 20, 2015</td> <td data-bbox="508 977 1033 1179">CAISO responses to stakeholder comments on the September 21 – 22, 2015 Stakeholder Meeting stakeholder meeting #2 to discuss the reliability study results, IOUs' reliability projects, and the Conceptual Statewide Plan with stakeholders.</td> </tr> <tr> <td data-bbox="310 1179 508 1412">January 16, 2016</td> <td data-bbox="508 1179 1033 1412">CAISO responses to stakeholder comments on the November 16 - 17, 2015 Stakeholder Meeting stakeholder meeting #3 to present the preliminary assessment of the policy driven & economic planning study results and brief stakeholders on the projects recommended as being needed that are less than \$50 million.</td> </tr> </tbody> </table>	Due Date	2015-2016 Activity	November 6, 2015	CAISO responses to stakeholder comments on the 2014-2015 Conceptual Statewide Plan Update for the 2015-2016 Transmission Planning Cycle	November 20, 2015	CAISO responses to stakeholder comments on the September 21 – 22, 2015 Stakeholder Meeting stakeholder meeting #2 to discuss the reliability study results, IOUs' reliability projects, and the Conceptual Statewide Plan with stakeholders.	January 16, 2016	CAISO responses to stakeholder comments on the November 16 - 17, 2015 Stakeholder Meeting stakeholder meeting #3 to present the preliminary assessment of the policy driven & economic planning study results and brief stakeholders on the projects recommended as being needed that are less than \$50 million.	<p>Please refer to the response to Comment 2(a) of the Bay Area Municipal Transmission group (BAMx).</p>
Due Date	2015-2016 Activity									
November 6, 2015	CAISO responses to stakeholder comments on the 2014-2015 Conceptual Statewide Plan Update for the 2015-2016 Transmission Planning Cycle									
November 20, 2015	CAISO responses to stakeholder comments on the September 21 – 22, 2015 Stakeholder Meeting stakeholder meeting #2 to discuss the reliability study results, IOUs' reliability projects, and the Conceptual Statewide Plan with stakeholders.									
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No	Comment Submitted		CAISO Response
	March 26, 2016	CAISO responses to stakeholder comments on the 2015-16 Draft Plan and stakeholder meeting #4 to discuss the transmission project approval recommendations, identified transmission elements, and the content of the Transmission Plan.	
10b	<p>2. ORA supports the CAISO’s 50% renewable portfolio special study approach that assumes the renewable generation to be energy-only resources</p> <p>Background Governor Brown’s announcement of a 50% renewable energy goal for California has a target date of 2030. Considerable detail about the goal and how it will be assessed remains to be resolved. It is not yet a formal state approved policy requirement, so in accordance with the CAISO tariff, the CAISO cannot use it as a basis for approving policy-driven transmission. The CAISO and the state energy agencies want to explore informational analysis to understand potential transmission implications of increased grid connected renewable generation – to the extent the goal ultimately calls for such generation. The CAISO is therefore coordinating with the California Public Utilities Commission (CPUC) to perform a Special Study in the 2015-2016 TPP. This Special Study will be for information purposes only and will not be used to support a need for policy-driven transmission in the 2015-2016 planning cycle. However, it will provide information regarding the potential need for public policy-driven transmission upgrades to support a state 50% renewable energy goal; and will help inform the state’s procurement processes about the cost impacts of achieving the 50% RPS goal.</p> <p>In going beyond 33%, the Special Study will explore a new approach and assume the incremental renewable generation to choose energy-only option. At the same time, this Special Study will estimate the expected amount of congestion-related curtailment of renewables that would likely result from the increase of renewable generation from 33% to 50%. The Special Study will also consider what transmission could then be rationalized based on cost effectively reducing renewables curtailment (from a customer perspective).</p> <p>ORA Recommendations</p>		<p>The comments have been noted. Further, the ISO agrees that it is necessary to examine the cause of any curtailment, and differentiate between transmission congestion-related curtailment and curtailments not related to transmission congestion.</p> <p>The base cases will be posted – the organization of the cases themselves has not yet been determined.</p>

No	Comment Submitted	CAISO Response
	<p>The CAISO identified an important distinction in the manner in which this Special Study in 2015-2016 TPP will differ from past studies for accommodating the 33% RPS generation. The Special Study will assume the incremental renewable generation as energy-only resources. ORA agrees with the CAISO's clarification that the 50% RPS goal is not a State Policy at this time, nor is the assumption of 50% level for RPS resources, as opposed to an expanded definition of renewable resources, a necessary part of the Governor's proposal. ORA encourages the CAISO to continue to make this clear to stakeholders as it performs this study. Furthermore, the study is to estimate the expected amount of congestion and curtailment associated with the 50% RPS. ORA supports this study's approach for the following reasons:</p> <ul style="list-style-type: none"> • With the energy-only transmission option, we can meet the 50% RPS requirement. Similar to the 33% RPS requirements, the 50% RPS requirement would require that 50% of the energy consumed to be supplied by renewable generation. A transmission grid that can meet the above requirement should be sufficient; there is no need for the transmission grid to ensure that all the renewable generation to be deliverable to load centers during peak hours. • Transmission needs should be identified based on load not generation capacity. The goal for transmission planning is to ensure load can be served. According to the North America Reliability Corporation (NERC), total generation capacity in California will be approximately 140% of the load capacity in 2024. Under this situation, transmission needs should be identified based on the load capacity. Planning for transmission based on generation capacity will lead to transmission over-build. • Identification of areas of potential congestion with respect to its magnitude and duration provides important information to the procurement function in evaluating renewable energy offers from such areas. <p>ORA understands that the CAISO is still in the process of developing the details of the Special Study methodology and approach. In terms of considering what transmission could then be rationalized based on cost effectively reducing renewables curtailment, it is important to determine whether the renewable curtailments is a result of lack of transmission. It is possible that renewable</p>	

No	Comment Submitted	CAISO Response
	<p>curtailment can purely result from over-generation. In other words, such curtailments can occur even if transmission were completely unconstrained. Such curtailments can be solved by decreasing generation, increasing load, increasing energy storage charging, increasing exports, etc. Therefore, the CAISO's Special Study analysis, presumably based on a production-cost simulations tool, needs to recognize the complexities involved in identifying the causes and accordingly prescribe remedies associated with renewable curtailments. For problems caused by lack of transmission, solution should be transmission upgrade; however, for problems derived by other causes, using transmission as solution will be problematic.</p> <p>ORA requests that the base cases for the incremental 50% RPS portfolio be included in the materials made available to stakeholders. To facilitate understanding of these cases, the resources making up the 33% RPS base portfolio should be distinguished from the incremental resources necessary for the 50% renewable portfolio.</p>	
10c	<p>3. The CAISO should also assume energy-only for all generation resources</p> <p>Background</p> <p>As part of the annual TPP, the CAISO performs a deliverability assessment on the base renewable resource portfolio under the assumption that all the renewable generation projects in the base portfolio seek full capacity deliverability status and need to be delivered to the "aggregate of load" based upon a strict set of deliverability criteria.</p> <p>In Section 3.1.1 (Achieving 33% renewable energy on an annual basis) of the Study Plan, the CAISO states the following:</p> <p>"The state's mandate for 33% renewable energy by 2020 refers to the share of total electricity consumed by California consumers over the course of a year that is provided by renewable resources. In the context of the transmission planning studies, the question to be investigated is whether a specified portfolio of renewable supply resources, in conjunction with the conventional resource fleet expected to be operating, will deliver a mix of energy over all 8760 hours of the year that is at least 33% supplied by the renewable portfolio on an annual basis. Through the studies the [CA]ISO performs to address this question, the [CA]ISO could identify policy-driven transmission additions or upgrades that are necessary in order to achieve</p>	<p>The basis for the treatment of renewable generation developed to meet the 33% RPS has not changed from previous planning cycles, and the ISO therefore does not see it reasonable to shift the treatment of the 33% RPS portfolios provided to the ISO on the basis that the resources would be deliverable.</p> <p>Further, the ISO notes that no policy-driven project were identified in the 2014-2015 planning cycle, and the ISO does not expect that the approval of additional transmission projects will be necessary to ensure deliverability generation resources in the 2015-16 TPP base portfolio.</p>

No	Comment Submitted	CAISO Response
	<p>the 33% renewable share of annual consumption by 2020.”</p> <p>In Section 3.1.2 (Supporting RA deliverability status for needed renewable resources outside the ISO balancing authority area), the CAISO states the following: “Deliverability for the purpose of a resource providing RA capacity is a distinct requirement and is integral to achieving the 33% RPS policy goal.”</p> <p><u>ORA Recommendation</u> While ORA agrees with the above Section 3.1.1, ORA disagrees with the above Section 3.1.2. True, deliverability is a distinct requirement for RA capacity qualification, but the 33% RPS policy does not require RA capacity qualification and the associated deliverability. Also, under the energy-only option, the transmission grid without the “deliverability” capability can ensure that 33% of the renewable energy can be generated by renewable generators, delivered through the transmission grid, and consumed by load customers. Transmission upgrades in addition to the energy-only upgrades will possibly result in transmission over-build.</p> <p>With excess system capacity envisioned in the foreseeable future, spending monies to accommodate generator’s deliverability request will most likely not be cost effective. Furthermore, full capacity deliverability will not guarantee the renewable generation will not be curtailed due to the fact that more generation are competing for serving demand. Curtailment could still happen due to over-generation issues. Moreover, we have observed that the dependency on the delivery network upgrades resulting from the interconnection of the full capacity resources ultimately create artificial obstacles for the commercial viability of those generators. Due to all reasons described above, similar to the CAISO’s approach for the 50% renewables Special Study, ORA requests the CAISO to study the energy-only option for all generation resources in the 2015-16 TPP base portfolio.</p>	
10d	<p>4. Preferred resources such as distributed generation and energy storage should be modeled online in the initial base cases rather than purely using them as potential mitigation measures</p> <p><u>Background</u> The Study Plan indicates that the portion of authorized local capacity derived</p>	<p>Distributed generation and energy storage that currently exist or are known projects developing with certainty will be modeled in the base cases and operating as they are expected to operate. Resources that would only be called upon after one transmission contingency to</p>

No	Comment Submitted	CAISO Response
	<p>from preferred resources such as demand response and energy storage will be modeled offline in the initial base cases and will be used as mitigation once reliability problems are identified.</p> <p><u>ORA Recommendation</u> While Energy Efficiency (EE) is included in the load assumption, ORA observes that distributed generation (DG) and energy storage (ES) is not modeled in the 2015-2016 power flow cases. Although it may be understandable to use DR resources for the purposes of mitigating identified reliability problems only, we fail to understand why DG and ES resources are not modeled to be “online” in the power flow cases. For instance, the CAISO has the DG data based on the CPUC Commercial-Interest RPS Portfolio, but it chooses to model these generators to be “offline” and uses them only to mitigate identified reliability problems. DG and ES resources should be included in the generation/load assumption, rather than be merely used to mitigate problems identified under the assumption that these preferred resources do not exist. In other words, preferred resources should be given a similar treatment to the one given to conventional generation.</p>	<p>prepare for a second contingency are modeled off in base cases, but turned on in simulations after the first contingency is modeled.</p>
10e	<p>5. To the extent CAISO is only willing to use the preferred resources as potential mitigation measures, CAISO should consider the preferred resources in all the local areas in the three IOUs’ service territories.</p> <p><u>Background</u> The CAISO’s preferred resource approach in the 2014-2015 TPP integrated preferred resources -- such as Energy Efficiency (EE), Demand Response (DR), and energy storage -- into the reliability assessment. The CAISO’s stated intent for this assessment was to (1) exclude the preferred resources when developing resource assumptions, (2) identify reliability problems based on its assumptions, and (3) consider preferred resources as potential solutions to mitigate identified problems. While the CAISO has considered preferred resources as transmission alternatives in the Los Angeles Basin/San Diego area in the last planning cycle, it failed to do so in PG&E’s service area.</p> <p><u>ORA Recommendations</u> ORA appreciates the major advances made by the CAISO in the 2014-2015 Transmission Plan in identifying the likely impact of preferred resources on the transmission grid in the Los Angeles Basin/San Diego area following the shut-</p>	<p>The ISO has considered utilization of preferred resources in the assessment of the PG&E area in the 2014-2015 Transmission Plan. As indicated by the analysis, there were limited areas where constraints were identified requiring mitigation. Nonetheless, the ISO will continue to explore opportunities in the PG&E area in the 2015-2016 planning cycle. In addition, the ISO has identified that in the East Bay area a more detailed assessment will be undertaken in the 2015-2016 planning cycle.</p>

No	Comment Submitted	CAISO Response
	<p>down of SONGS. While the CAISO has continued this important work in the current plan, it did not expand this work beyond its original limited geographic area in Los Angeles Basin and San Diego area. ORA notes that the CPUC Energy Division (ED) has developed a methodology as part of Decision (D.)12-12-010, which assigns demand response to specific bus-bars for use in power flow and other modeling needs that require greater granularity. Following up on this methodology, the CPUC Energy Division (ED) staff has sent the resulting three spreadsheets for the three largest PTO service territories to the CAISO for use in modifying power flow base cases. Similar data for Energy Efficiency has been provided by the California Energy Commission (CEC) to the CAISO. Given that the CAISO has all the data that it needs to model the preferred resources in the three largest PTO service territories, ORA requests the CAISO consider preferred resources as transmission mitigation solutions in the three largest PTO service territories of the CAISO Balancing Authority Area.</p>	
10f	<p>6. The Study Plan should include the details of the CAISO Reliability Assessment involving the Qualifying Facility (QF) generation retirements in the PG&E local areas</p> <p><u>Background</u> Table 4-2 (Summary of Study Sensitivity Scenarios in the ISO Reliability Assessment) of the Study Plan indicates that a sensitivity study involving the “Retirement of QF Generations” will be conducted in the 2015-2016 TPP. However, no details are provided on this proposed study work.</p> <p><u>ORA Recommendations</u> In the last planning cycle, certain transmission upgrades were justified in part due to potential QF retirements. QF plants to be modeled off-line in the base case as well as sensitivity reliability assessment need to be fully identified in the Study Plan as well as the criteria for assuming that they will no longer operate once their current power purchase agreements expire. In the event reliability issues are identified and associated with a QF shut down, the findings should be presented sufficiently in advance for a full range of options to be considered, including targeted procurement within the CPUC Long Term Procurement Plan (LTPP). ORA requests the CAISO to provide details on their underlying assumptions and approach for their proposed sensitivity study involving the retirement of QF generation in the final Study Plan.</p>	<p>Please refer to the response to comment 2(d) from the Bay Area Municipal Transmission Group (BAMx).</p>

No	Comment Submitted	CAISO Response
11	Pacific Gas & Electric Submitted by: Justin Bieber	
11a	<u>Renewable Generation Dispatch assumptions</u> Table 4-7 of the study plan includes typical renewable generation dispatch assumption at the time of the system peak. While this assumption is relevant for the Bulk Transmission System base case, renewable dispatch assumptions for the local area cases should be based on the time of the local area peak. Therefore, PG&E recommends using typical renewable dispatch corresponding to the time of the local area peak for the local area cases.	The comment has been noted. Area base cases will consider local area peak load, as well as renewable, and other generation dispatch that is expected at the time of the local area peak.
11b	<u>Load Increase Sensitivity Study for Fresno Area</u> PG&E is undertaking several large load interconnection studies in the Fresno area (e.g., Merced Irrigation District interconnection and the interconnection of the High Speed Rail). Due to the size and the location of these loads, there is a need to conduct a sensitivity study for PG&E's Fresno area to evaluate the reliability impact of the addition of these two large loads to the system. Therefore PG&E recommends addition of a sensitivity study for the Fresno area that incorporates the Merced Irrigation District and High Speed Rail load in the Fresno area cases. The sensitivity studies should be conducted for Summer Peak, Summer Partial Peak, and Summer Off Peak system conditions.	The identified loads are currently under assessment as load interconnection projects by PG&E. The ISO will continue to work with PG&E as required on these load and will assess consistent other load interconnection projects.
11c	<u>Over Generation Frequency Response Assessment</u> PG&E echoes its earlier comments on the 2014-2015 TPP and appreciates the CAISO's attention to the matter of over generation and efforts to identify next steps for further evaluation. As suggested in CAISO's stakeholder meetings during the 2014-2015 TPP, the 2014-2015 TPP study related to the Over Generation Frequency Response Assessment was based on an optimistic view of resource capabilities. A more conservative set of assumptions could lead to worse result. The changes in study assumptions could significantly impact the outcome of the study. PG&E appreciates and supports CAISO's continued focus on improving the modelling assumptions to further evaluate the impacts of over generation in the next TPP cycle. PG&E also encourages the CAISO to work closely with PG&E and other WECC entities to review and update the modelling assumptions and expand the analysis.	Thank you for the comment. In the over-generation study of the 2015-2016 Transmission Plan, CAISO will develop the set of assumptions that will both conservative and realistic.
11d	<u>PG&E Local Area Generation Requirements</u> Minimum conventional generation requirements for large load centers may be needed to ensure the system has enough frequency response, voltage	ISO will be studying light load and off-peak conditions for all local areas and will strive to stress local area resource conditions during these

No	Comment Submitted	CAISO Response
	<p>regulation, VAR support, inertia and other electrical attributes to assure a stable and reliable system. The periods of particular concern are the periods of high renewable penetration and high hydro production when the system is stressed by over-generation conditions and conventional resources may be not be economically dispatched. PG&E would like to recommend studies to evaluate any minimum conventional generation requirement for the large load centers e.g, the San Francisco Bay area.</p>	<p>studies.</p>
<p>11e</p>	<p><u>High Voltage Sensitivity Study</u> PG&E recommends the CAISO incorporate a “High Voltage” Sensitivity study case to be included in the 2015-2016 TPP Study Plan. PG&E proposes that the High Voltage Sensitivity study be based on the light load base cases, which are intended to reflect system minimum load condition, with the goal of identifying and evaluating alternative solutions for mitigating High Voltage conditions in the PG&E area. The sensitivity case(s) should allow for varying of assumptions such as generation dispatch, load level, and path flows based on historical data. These cases should reflect the high voltages issues in the local area and identify the most efficient solution to high voltage conditions covering multiple locations within PG&E’s service territory.</p>	<p>The ISO will be assessing light load conditions; high voltage mitigation options will be considered for all areas that exert this behavior.</p>
<p>11f</p>	<p><u>DR Modelling Assumptions</u> PG&E recognizes the need for Demand Response programs in reliability studies to be reliable. Per the 2015-2016 Draft Study Plan, only Demand Response programs that can be relied upon to mitigate “first contingencies” as defined in the 2012 LTPP Track 4 will be counted. The Draft Study Plan indicates that participation in the CAISO market in sufficiently less time than 30 minutes is the requirement to mitigate “first contingencies.” However, other Demand Response programs that don’t meet the same criteria are still valuable. Demand Response programs that can provide day ahead and day of benefits provide some value and should be considered in the context of meeting needs for transmission planning.</p>	<p>The programs identified are assumed to be included within the load forecasts.</p>
<p>11g</p>	<p><u>Long-Term Local Capacity Requirement Assessment for LA Basin / San Diego Areas</u> PG&E supports the CAISO’s continued in depth analysis of local reliability needs in the LA Basin/San Diego Areas. PG&E recognizes that the 2014-2015 TPP determined that the local capacity requirements in these areas are met with the existing system and approved projects given certain assumptions for AAEE and DR. However, it is prudent for the CAISO to continue to monitor and</p>	<p>Thank you for your support, the ISO will continue to monitor and evaluate local reliability needs in both LA Basin and San Diego.</p>

No	Comment Submitted	CAISO Response
	<p>evaluate local reliability in both the LA Basin and San Diego in this and subsequent planning cycles to ensure that reliability needs for the grid can still be met as study assumptions and inputs may change in the future.</p>	
11h	<p><u>Oakland Area Study</u> PG&E supports the CAISO's intention as stated during the stakeholder meeting to perform a study examining the local reliability needs in the Oakland area. PG&E suggests that non-transmission alternatives be considered to meet potential needs in the area.</p>	<p>The comment has been noted.</p>
11i	<p><u>Economic Study Requests</u> PG&E requests two economic studies be included as part of the CAISO 2014/15 TPP.</p> <p><u>Path 15 Study</u> PG&E requests that the CAISO conduct an economic assessment of Path 15 that (1) considers production costs and other costs utilizing PG&E's suggested study enhancements as described below, and (2) considers Path 15 upgrades to help minimize these costs. There are numerous alternative projects and combinations of minor upgrades that can potentially be designed to achieve a Path 15 rating increase in the range of 300-1000 MW.</p> <p><u>Path 26 Study</u> The 2014-2015 TPP showed that Path 26 would experience 297 hours of congestion in 2019 and 242 hours of congestion in 2024 based on the assumptions in the production simulations. PG&E proposes that a study be undertaken in the 2015-2016 TPP to re-estimate the congestions levels on Path 26 and other costs utilizing PG&E's suggested study enhancements as described below. To the extent Path 26 is congested in this study, PG&E suggests consideration of a Midway-Vincent 500 kV line, a Midway-Vincent 230 kV line, Big Creek-Helms interconnection or other alternatives as indicated by production simulations and power flow studies.</p>	<p>The requests for economic studies have been noted, and the requests will be considered as candidates in the selection of economic studies to be performed in this cycle.</p>
11j	<p><u>Potential Enhancements to the Economic Study Methodology</u> PG&E would like to propose the study enhancements described below to be considered as a method to more accurately assess potential congestion and economic project benefits.</p> <p><i>Gridview Model Validation and Calibration</i></p>	<p>The comment has been noted. The ISO develops production cost simulation database for ISO's economic planning study based on TEPPC common case in every planning cycle. Models in TEPPC common case would be modified to reflect the California ISO's system operation and forecast, including renewable, hydro, load, OTC,</p>

No	Comment Submitted	CAISO Response
	<p>PG&E encourages the CAISO to further validate and calibrate the Gridview model to address key questions being asked in the study cycle. For example, Gridview has a system constraint option for hydro that allows banking of curtailment and re-allocation of hydro energy in next days/ hours. The modelling of hydro using proportional load following and hydro-thermal co-optimization already accounts for the anticipated flexibility and therefore may be over-stated. Allowing the model to bank curtailment suggests perfect foresight and may significantly mask an over-generation problem.</p> <p>It is imperative that we gain a strong understanding of production cost model simulation and interaction between economic dispatch and system constraints (e.g. Transmission limits, reserve constraints, violations, energy not served). PG&E encourages the CAISO to develop for the model an overgeneration back-down protocol (wind/solar curtailment, spill hydro, dump power and energy not served) and define “hard” constraints such as transmission transfer limits and reserve requirements. In addition, PG&E encourages an investigation addressing the Duck Curve in the following aspects: (1) trade-off between managing belly (over-generation) and the evening ramp (energy not served) and (2) trade-off between meeting flexibility reserve requirement vs. curtailment of wind/solar. The end goal is to better understand and to interpret simulation results to identify and get insights into system stress.</p>	<p>transmission, nature gas price, etc. Transmission constraints and ancillary service requirements have been modeled and modified in ISO’s database in every planning cycle based on the study results in other planning processes and other ISO’s studies. The ISO will continue this work in this planning cycle. “Over-generation” issue will be closely monitored and evaluated in the process of the study.</p>
11k	<p>50% RPS Sensitivity Study</p> <p>PG&E supports the inclusion of a special sensitivity study to assess the potential impacts of a 50% renewable energy goal. This type of study can provide valuable information about the potential transmission impacts of further renewables penetration and the associated transmission needs to help inform California’s procurement practices in the future. However, PG&E emphasizes that the stated intent of this study is to be used for informational purposes only; the purpose is not to support a justification for policy-driven transmission upgrades in this cycle. Furthermore, PG&E would request that the CAISO to be clear when communicating the study results that any transmission cost estimates developed through this study do not necessarily capture all of the costs that may be associated with a 50% renewable goal. And there is potential for these results to change significantly as future studies and assumptions are refined.</p>	<p>The comment has been noted.</p>

No	Comment Submitted	CAISO Response
	<p>The value of this informational-only special study (Special Study) is highly dependent on the inputs and assumptions that are used. PG&E strongly agrees the CAISO should not assume that all generation in the portfolio is fully deliverable, and that the Special Study should instead focus on estimating the amount of congestion-related curtailment and what transmission could cost effectively reduce renewables curtailment. This methodology will examine the potential congestion-related curtailment and can provide more information about congestion than the standard deliverability assessment. Because the CPUC is providing a portfolio with the simplified assumption that all projects will be Energy Only (EO), the standard deliverability study would not be appropriate in this context.</p> <p>PG&E commends the CAISO for their work with the CPUC on developing functionality in the RPS Calculator to consider development of both EO and Full Capacity Deliverability Status (FCDS) renewable energy projects. The CAISO should work closely with the CPUC to ensure that the portfolio provided by the RPS calculator is realistic and properly considers the economic tradeoff between energy-only and FCDS projects. PG&E supports this improvement, and notes that the RPS Calculator output is highly dependent on this enhancement as well as other assumptions in the calculator. It would provide valuable information if different sensitivity portfolios for the higher renewable penetration could be considered. If this is not feasible in the 2015-2016 TPP Study timeline, the Special Study could be performed with the energy-only portfolio provided by the Calculator, with the Special Study used to identify useful future sensitivity runs that could be run in the 2016-2017 TPP cycle. For example, a portfolio that includes substantial wind generation development in Northern California would lead to substantially different impacts than solar development in the Southern California. The results could mean very different things for flows on the bulk power system, in particular Path 15 and Path 26. Consideration of the current CAISO interconnection queue can help inform potential considerations and sensitivities.</p> <p>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</p>	

No	Comment Submitted	CAISO Response
	<p>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.</p> <p>Additionally, PG&E encourages the CAISO to assess transmission system reliability/stability impacts associated with higher renewables penetration. With the expected retirement of large amounts of OTC units and large build out of inverter type resources, especially in Southern California, there is uncertainty as to the system frequency response and transient stability capability and if it will be sufficient enough for local and system-wide reliability. Transmission system enhancements (e.g. synchronous condensers) and potential resource or operating practices should also be considered along with their potential costs.</p>	

No	Comment Submitted	CAISO Response
12	San Diego Gas & Electric Submitted by: Fidel Castro and Jan Strack	
12a	<p>SDGE Comments to 2015/2016 Draft Study Plan</p> <ul style="list-style-type: none"> Page 22 of the 2015-2016 Study Plan. Carlsbad Energy Center is referred as 558MW, on the CAISO Presentation it shows 633MW. SDG&E is using 633MW. Page 30 of the 2015-2016 Study Plan. SDG&E imports is set at 2,850MW, SDG&E is assuming 3,500MW for all summer peak load cases. Page A-26 of the 2015-2016 Study Plan. Cabrillo II units (Kearny, Miramar and El Cajon) are assumed retired in 2017. SDG&E is assuming retirement in 2016. 	<p>The study plan has been edited to show Carlsbad Energy Center as nominally a 600 MW project.</p> <p>SDG&E target import flows are listed as 2,400 to 3,500 MW on that page</p> <p>The ISO has set the assumed retirement date of Cabrillo II to coincide with the in-service date of the planned Imperial Valley phase shifting transformer.</p>
12b	<p>Section 6.1 of the draft document states that the CAISO “will perform a special study to provide information regarding the potential need for public policy-driven transmission additions or upgrades to support a state 50% renewable energy goal.” (page 41) This study could be helpful in developing transmission expansion plans that would support long-term greenhouse gas (GHG) reduction goals.</p> <p>The CAISO states that this study will “help inform the state’s procurement processes about the cost impacts of achieving 50% renewable energy goal largely through the addition of new ISO grid-connected generating facilities.” It seems that the CAISO has already decided to limit this study to “ISO grid-connected generating facilities” and the basis for imposing this limitation is not stated, nor is it prudent. Existing state law allows renewable energy outside the state of California that is scheduled when produced to count towards California’s Renewable Portfolio Standard (RPS) requirement. Accordingly, even if it were necessary to schedule out-of-state renewable energy across non-CAISO transmission to reach a California balancing authority operator, such renewable energy should be considered eligible to count towards a 50% renewable energy goal.</p> <p>It is unclear whether, in exploring the cost impacts of achieving a 50% renewable energy goal, the CAISO will consider the construction of new CAISO-controlled transmission that reaches out-of-state areas of high quality renewable resource development potential. Whether CAISO-controlled or not,</p>	<p>The ISO is working with the CPUC to develop 50% renewable portfolios for the informational study. These studies will provide transmission study information for consideration in the development of recommendations regarding a vision to achieve the 50% goal. Scenarios exploring both in-state and out of state generation are considered to be useful for providing information regarding the ability of the transmission system to accommodate renewable development scenarios that would have a high stress on the transmission system. In turn, these studies are expected to better inform the CPUC’s methodology for developing portfolios in the future.</p>

No	Comment Submitted	CAISO Response
	<p>the CAISO should be interested in exploring all transmission expansion options that offer a low cost way of a 50% renewable energy goal. These options should include any transmission which opens up high quality out-of-state renewable resource development potential. For example, high quality wind development potential exists in Wyoming and New Mexico and consumers deserve a serious assessment of the cost-effectiveness of developing these resources as a way of achieving California's 50% renewable energy goal.</p> <p>The CAISO's draft document indicates that the study "will estimate the expected amount of congestion-related curtailment of renewables that would likely result" at the 50% RPS level. This is a useful exercise but it misses what could be a more significant impact: The increase in congestion-related costs that result not from physical curtailment of renewable energy, but rather from the difference in Locational Marginal Prices (LMPs) where higher cost thermal generation in the California load centers has to be dispatched upward, and lower cost thermal generation outside of the California load centers has to be dispatched downward, to mitigate congestion on the transmission system. In this regard, SDG&E supports the March 9, 2015 comments of TransWest Express which recommend the use of the CAISO's Transmission Economic Assessment Methodology (TEAM) to gain a complete view of net cost impacts on CAISO consumers. For any given study case, the TEAM identifies gross consumer costs, congestion rents, surplus loss revenues and producer surplus accruing to CAISO consumers. Comparing these results across study cases containing different mixes/locations of renewable resources and associated transmission additions, will provide information that will help stakeholders identify the lowest cost way of achieving a 50% renewable energy goal.</p> <p>The draft document does not explain how the 50% RPS portfolio will be developed. To date the CAISO has relied exclusively on renewable resource portfolios developed by the CPUC through use of the RPS Calculator model. The RPS Calculator model is currently undergoing needed enhancements but the upgraded model will not be available for use in the CAISO's 2015-2016 Transmission Planning Process (TPP). More importantly, even with enhancements, the spreadsheet model is simply not capable of the robust analysis that is required in order to determine whether a particular transmission upgrade would cost-effectively accommodate new out-of-state renewable</p>	

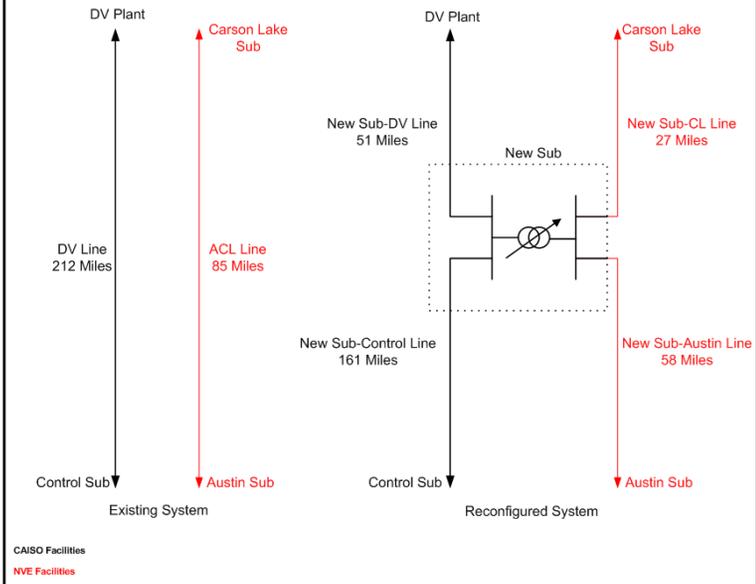
No	Comment Submitted	CAISO Response
	<p>resource development. Such development could materially change the composition of RPS portfolios used in the CAISO's annual TPP thus far. For example, to date, the RPS Calculator model has never selected a significant quantity of wind from Wyoming or New Mexico.</p> <p>SDG&E recommends that the CAISO's draft study plan be modified to also explore out of state renewables and not limit its consideration of the 50% renewable energy goal to renewable portfolios produced by the RPS Calculator model. By considering renewable resources, both in state and out of state, the CAISO will be in a position to make the most economic decision for consumers. Additionally, the CAISO's study plan should indicate that the CAISO will accept stakeholder input on whether there are renewable resource portfolios, other than that provided by the RPS Calculator model, that would achieve a 50% renewable energy goal at a lower overall cost.</p>	

No	Comment Submitted	CAISO Response
13	Southern California Edison (SCE) Submitted by: Garry Chinn, Daniel Donaldson and Karen Shea	
13a	<p>As part of the CAISO effort to consider generation or other non-transmission alternatives, SCE would like to request additional analysis be performed in the 2015/16 TPP which would inform utilities in developing Distribution Resource Plans (DRPs). This would be factored into the identification of optimal locations for the deployment of Distributed Energy Resources (DER). Part of this process includes analyzing the ability of a DER to provide a benefit to the transmission system.</p> <p>SCE proposes that the CAISO 2015/16 TPP include reporting of contingencies in the planning horizon which are approaching a performance violation and an analysis of existing Remedial Action Schemes and operating procedures for potential DER utilization. This additional analysis in the TPP would facilitate whether DER could improve, defer or prevent performance violations on the transmission system. The resulting information could be provided in the form of substation locations and megawatts required and would be needed on a biennial basis to inform the DRPs.</p>	<p>The ISO will identify locations where DRPs can meet identified reliability needs. We will also perform sensitivity studies with high forecasted load. These studies will in-effect identify contingencies approaching a performance violation.</p>

No	Comment Submitted	CAISO Response
14	Southwest Transmission Partners, LLC Submitted by: Mark L. Etherton	
14a	<p>Thank you again for the opportunity to provide comments on the CAISO 2015/16 Transmission Planning Process Draft Study Plan and to provide an update on the North Gila – Imperial Valley #2 (NGIV2) Project. We are coordinating closely with APS and IID as the participants in the Hassayampa-North Gila #2 (HANG2) Project, which is nearing completion, as well as with other transmission owners (including SCE and SDGE) in the southern WECC region to complete Phase 1 of the WECC Three Phase Rating Process in 2015. The permitting for the NGIV2 Project is progressing with the Environmental Impact Statement (led by the BLM as the lead federal agency) to be completed in 2016.</p> <p>We are supportive of the Draft Study Plan and are encouraged that the CAISO will continue to examine the economic benefits of NGIV2 and as a consideration of system Resource Adequacy (RA). If some capacity benefits are included in the 2015/16 analysis, the BCR should prove to be greater than shown in previous analysis.</p>	<p>The request for an economic study has been noted, and the request will be considered as a candidate in the selection of economic studies to be performed in this cycle.</p>

No	Comment Submitted	CAISO Response
15	<p>Terra-Gen Power, LLC Submitted by: Dinesh Salem-Natarajan</p>	
15a	<p>Section 8. Economic Planning Study TGP requests the CAISO to include the Bishop Area Reconfiguration in the 2015-2016 TPP study cycle.</p> <p><i>Bishop Area Reconfiguration Study</i> The transmission system in the Bishop, CA area within Southern California Edison’s (“SCE”) system has historically been subject to local congestion, voltage instability concerns, and operating conditions with very high system voltages. SCE manages these issues today via one or more RAS schemes that drop local generation to operate the system in a safe and reliable condition. Further, these local issues have prevented integration of even modest levels of new renewable generation.</p> <p>TGP, through its affiliate owns and operates the 212-mile long 230 kV radial Dixie Valley generator tie-line (“DV Line”) that provides the interconnection between TGP’s 60 (MW) small power production geothermal qualifying facility, located in Churchill County, Nevada, and SCE’s Control Substation, located near Bishop, CA. Along its mostly north-south path, the DV Line crosses NV Energy’s (“NVE”) 230 kV Austin-Carson Lake transmission line (“ACL Line”) approximately 35 miles ESE of Fallon, NV and two lines run parallel for 15 miles.</p> <p>The proposed Bishop Area Reconfiguration, detailed below, provides several systems benefits:</p> <p><i>Eliminates Local Congestion –</i> The new interchange substation allows a controlled new outlet for local generation in the Bishop area and provides a means to operate the system reliably without curtailing local generation, most of which are renewable and contribute to state RPS goals. Further, the upgrades allow the local generation to operate without curtailment during periods of extended maintenance outages on the SCE transmission system.</p>	<p>The request for an economic study has been noted, and the request will be considered as a candidate in the selection of economic studies to be performed in this cycle.</p>

No	Comment Submitted	CAISO Response
	<p>Mitigates Voltage Issues – The reconfigured system mitigates the voltage instability problem under contingency conditions and does so without the need to drop local generation. In addition, the historical high operating voltages in SCE’s local transmission would be addressed and have a positive impact on the life of existing transmission assets.</p> <p>Enables New Renewables – The reconfigured system opens transmission capacity in the local area enabling new renewable generation, both base load and intermittent. Further, if higher new local renewable resources are desired, the upgrade enables further expansion of transmission capacity via optimized use of existing SCE’s transmission easements at a much lower cost than otherwise could be implemented today.</p> <p>Provides Alternate Load Service Path – The reconfigured system provides an alternate path to serve load in the Bishop area and enables the opportunity, if needed, to revamp the ageing existing transmission and also supports increasing the existing system voltage (from 115 kV to 230 kV) while using SCE’s existing transmission easements.</p> <p>TGP proposes to reconfigure the system to Loop-In the DV and ACL Lines and build a new CAISO-NVE interchange substation. The substation would include a 100 MVA phase shifter to control the flow between CAISO and NVE. The radial DV Line would be split in two: a 51-mile radial gen-tie portion that connects generator to the CAISO bus at the new substation and a 161-mile transmission portion that connects the new substation to SCE’s Control substation.</p> <p>TGP’s analysis indicates that the proposed upgrade, if approved in the 2015-2016 TPP cycle, can be completed by the summer of 2019 with potential for schedule advancement, if needed, with budget estimate of under \$18 million, including new redundant communications facilities.</p>	

No	Comment Submitted	CAISO Response
	 <p>The diagram illustrates the transition from an existing power system to a reconfigured system. In the 'Existing System', a 212-mile DV Line connects the DV Plant to the Control Sub, and an 85-mile ACL Line connects Carson Lake Sub to Austin Sub. The 'Reconfigured System' introduces several changes: the DV Line is replaced by a 161-mile New Sub-Control Line; the DV Plant is connected to Carson Lake Sub via a 51-mile New Sub-DV Line; a new substation (New Sub) is added between Carson Lake Sub and Austin Sub, connected by a 27-mile New Sub-CL Line; and the connection between Carson Lake Sub and Austin Sub is now a 58-mile New Sub-Austin Line. A legend at the bottom left identifies CAISO Facilities in black and NVE Facilities in red.</p>	

No	Comment Submitted	CAISO Response
16	TransCanyon LLC Submitted by: Jason Smith, Robert Smith and Darrell Gerrard	
16a	TransCanyon is supportive of the overall Study Plan and in particular, would like to note four recommendations for consideration by the CAISO: <ul style="list-style-type: none"> • TransCanyon encourages the CAISO to study alternative ways to meet the proposed 50% renewable goal, including potential out of state resource alternatives in such analysis 	Out of state resources will be considered in the informational special studies being conducted in the 2015-2016 planning cycle.
16b	<ul style="list-style-type: none"> • TransCanyon encourages the CAISO to continue to evaluate and refine back-up plans for renewable development and associated deliverability of resources in the Imperial Valley renewable energy zone and the reliability issues that may occur in the LA Basin/San Diego area if preferred resources do not materialize according to CAISO planning assumptions 	The ISO will continue to monitor the development of resources and projects in the area and update back up plans as needed.
16c	<ul style="list-style-type: none"> • TransCanyon encourages the CAISO to continue to evaluate the North Gila to Imperial Valley #2 (NGIV2) transmission line project to determine the benefits NGIV2 may bring to the system and in particular what capacity benefits might be realized if planned upgrades within the CAISO transmission system are completed 	The request for an economic study has been noted, and the request will be considered as a candidate in the selection of economic studies to be performed in this cycle.
16d	<ul style="list-style-type: none"> • TransCanyon encourages the CAISO to further evaluate the CAISO system for compliance with latest approved additions of North American Electric Reliability Corporation's standard TPL4 for any reliability driven projects that may qualify for competitive solicitations via the Transmission Planning Process 	The ISO will conduct the 2015-2016 analysis on the basis of the new, applicable planning standards.

No	Comment Submitted	CAISO Response
17	TransWest Express LLC Submitted by: David Smith	
17a	<p>Introduction</p> <p>TransWest has requested the ISO in past TPP cycles to perform an economic analysis to consider the potential benefits of a new inter-regional transmission solution that would provide California consumers with access to Wyoming wind resources. Last Year TransWest furnished the ISO an In last year's request, TransWest provided the ISO forwarded an Economic Planning Study (CA/WT Study) performed by the National Renewable Energy Laboratory (NREL) that found significant economic benefits to consumers by accessing Wyoming wind resources through a new 730-mile, 3,000 MW high voltage direct current (HVDC) transmission solution.</p> <p>The ISO responded to last year's request directing TransWest to participate in the California Public Utilities Commission's portfolio development process. TransWest has participated in the CPUC's proceeding contemplating revisions to the RPS Calculator (CPUC Proceeding No. R-11-05-005) and has identified several shortcomings in the transmission data included within the RPS Calculator. TransWest applauds the CAISO in identifying the need for Special Studies to inform the CPUC process. However, we believe the study description in the Draft Study Plan is too narrowly focused on a single planning criteria and falls far short of what is needed to enhance the CPUC's process. Within these comments on the Draft Study Plan, TransWest re-states comments made to the CPUC on the required revisions to the RPS Calculator with respect to transmission data, outlines the required process enhancements to the CPUC and ISO planning processes for higher penetrations of renewable resources, and restates its request for the ISO to perform an Economic Planning Study as part of its Special Studies in the 2015-2016 Transmission Planning Process.</p>	<p>The comments are responded to individually below.</p>
17b	<p>Transmission Data Used within the CPUC Portfolio Development Process</p> <p>The CPUC's RPS Calculator which is used to inform the portfolio development process includes information on transmission projects and related transmission costs for a large number of potential resource areas. The CPUC relies on the ISO and other entities to populate the RPS calculator with accurate transmission data. The CPUC is in the process of revising the RPS Calculator to help inform renewable portfolios that exceed the current 33% level. Version</p>	<p>The ISO has provided updated transmission information for the RPS calculator to the CPUC annually. The information provided by the ISO as input data to the calculator is based on referencing previous transmission studies performed in the generation interconnection study process and the transmission planning process.</p>

No	Comment Submitted	CAISO Response
	<p>6.0 of the RPS Calculator was provided to parties for review and comment in October 2014.</p> <p>The CPUC's staff proposal outlines that the transmission data in Version 6.0 of the RPS Calculator is from 2010. The CPUC proposed a methodology to update the transmission data through coordination with the ISO. It is not clear whether the ISO has incorporated the methodology outlined by the CPUC to update transmission costs either through the formal TPP as Special Studies, or through another process. It would be helpful for stakeholders to have some visibility of the process the ISO uses to update the transmission data in the RPS Calculator.</p> <p>TransWest and several other parties⁴ provided comments to the CPUC on errors in the transmission data in version 6.0 of the RPS Calculator and interest in understanding how the ISO will update the information. This could be a time consuming effort depending on the amount of transmission data needed and may be a significant resource commitment by the ISO.</p>	<p>The ISO has not been made aware, by the CPUC or by TransWest, of any transmission data errors in the calculator.</p> <p>In any event, the renewable portfolios created by the RPS calculator are studied in the ISO transmission planning process to ensure that the transmission needed for the portfolios is identified.</p>
17c	<p>2015-2016 Special Studies Transmission Planning for Energy-Only Resources</p> <p>TransWest applauds ISO and CPUC for opening up an important discussion about a planning process that will result in a reliable and cost-effective transmission grid in a future where the resource capacity value of new intermittent resources is likely to be less than the cost of new transmission investments necessary to provide full capacity delivery service (FCDS). This has likely been the case for wind resources with a relatively low capacity value in the past. And this will likely be the case for solar PV resources in the future based on a growing body of work demonstrating the rapidly declining capacity value of solar PV as RPS levels increase above 33%.</p> <p>The Special Study called for in Section 6.1 of the Study Plan is only a very modest first step in developing planning procedures for energy-only resources. The transmission congestion and associated resulting resource curtailment that will result from the Special Study will provide part of the information needed to implement effective planning for energy-only resources. However, it is also necessary to develop a process for testing the economic merit of adding transmission to reduce congestion and curtailments. The curtailment</p>	<p>The ISO anticipates that the studies performed in the 2015-2016 planning cycle will inform not only future portfolios, but will also be helpful in identifying areas where study methodologies may be enhanced.</p>

No	Comment Submitted	CAISO Response
	<p>associated with the lack of transmission will need to consider whether the resources would be curtailed for other portfolio-based reasons such as over-generation. The ISO will need to track the incremental curtailments associated with lack of transmission capacity</p> <p>This will require multiple production cost model (PCM) runs with various transmission improvements and the application of an economic screening tool. TransWest recommends the ISO utilize its Transmission Economic Assessment Methodology (TEAM) to assess the associated benefits and costs of incremental transmission to relieve this congestion. TransWest recommends that CAISO begin immediately to develop the specifics of a process to assess the cost-effectiveness of new transmission investments for energy-only resources with appropriate stakeholder involvement. The development of this process ahead of conducting actual study work will lead to the most productive use of limited study resources.</p>	
17d	<p>Additional information needed from the 2015-2016 Special Studies The CPUC has identified a number of in state resource areas that require additional transmission costs. The 2015-2016 Draft Study Plan should be updated to provide clarity on whether the 50% Renewable Energy Goal for 20130 Special Study would be used to develop this transmission information to be used by the CPUC.</p>	<p>It is the ISO's expectation that the 50% informational studies will better inform future portfolio development. However, as that work has not been conducted, it is premature to be more specific as to how it will be incorporated.</p>
17e	<p>TransWest's Study Request relevance to ISO Special Study TransWest's Economic Planning Study Request should be included within the ISO's 50% Renewable Energy Goals for 2030 Special Study. Version 6.0 of the RPS Calculator includes transmission data for the Wyoming wind resource area that assumes the resources would request full Resource Adequacy deliverability. The CAWY Study included consideration of the Wyoming resources as energy-only resources and included production cost modeling analysis that examined whether the resources would need to be curtailed due to a lack of transmission upgrades on the existing ISO system down-stream from the Eldorado Valley. The ISO should review this analysis and conduct their own analysis to determine whether downstream upgrades would be economically justified to offset potential curtailments.</p>	<p>The ISO expects to explore an out of state resource scenario as part of the analysis.</p>
17f	<p>Study Request TransWest requests the ISO to review, consider and improve upon the California – Wyoming Grid Integration Study, Phase 1-Economic Analysis study</p>	<p>Please refer to the above comment.</p>

No	Comment Submitted	CAISO Response
	<p>conducted by NREL as an Economic Planning Study in the final 2015-2016 TPP Study Plan, 50% Renewable Energy Goal for 2030 Special Study. TransWest requests the ISO to analyze the potential network transmission facilities intended to access the out-of-state Energy Resource Area (ERA) in south-central Wyoming.</p> <p>TransWest is making this request for an information-only Special Study to inform the future revisions to the CPUC's RPS Calculator.</p>	
17g	<p>CA/WY Study Details</p> <p>The CA/WY Study examined both a 33% by 2020 RPS scenario and a 35% by 2020 RPS scenario and found very little material difference in the economic assessment between the two scenarios. TransWest's Study request involves a 50% by 2030 RPS scenario, which will require an update of the expected California portfolio. The NREL study utilized the LTPP RPS Calculator to develop these California portfolios including both resources and transmission projects used as the base case in the economic assessment.</p>	The comment has been noted.

No	Comment Submitted	CAISO Response
18	Western Area Power Administration Submitted by: Kirk Sornborger	
18a	Please include in the CAISO 2015-2016 Study Plan studies that show maximum COI flow allowed at Northern California Hydro generation levels at the 60, 70, 80, 90 and 100% levels. The studies should include limiting elements, most severe contingencies, acceptable post-contingency COI pick-up percentages, realistic spinning reserve levels in the CAISO BA, and proposed permanent mitigation beyond congestion management. The base cases should reflect the same assumptions as those in the proposed Operating season. Those assumptions include Colusa and Hatchett Ridge generation offline and any other equipment limitation. Please perform the studies utilizing heavy summer and heavy spring conditions in the 5 and 10 year planning horizon.	The comment has been noted. The CAISO 2015-2016 Transmission Plan will include studies of impact of the COI flow and Northern California hydro generation output, including different assumptions on the Colusa and Hatchet Ridge generation. As a result, COI nomograms for the planning horizon will be developed the same way as it was done in the 2014-2015 Transmission Plan. However, detailed seasonal COI nomograms are also developed by the CAISO Grid Operations for upcoming seasons.