

The ISO received comments on the Draft 2014-2015 Study Plan February 27, 2014 Stakeholder Meeting from the following:

1. Alton Energy
2. Bay Area Municipal Transmission group (BAMx)
3. California Public Utilities Commissions
4. Calpeak Power LLC
5. Duke-America Transmission Company and Hunt Power
6. Duke-America Transmission Company, Path 15, LLC
7. Duke Energy
8. Eagle Crest Energy
9. EnerNOC, Inc.
10. LS Power
11. Natural Resources Defense Council
12. Nexans
13. Office of Ratepayers Advocates of the CPUC
14. Pacific Gas and Electric
15. Powers Engineer
16. San Diego Gas and Electric
17. Southern California Edison
18. The Nature Conservancy
19. Transmission Agency of Northern California
20. TransWest
21. Westlands Solar Park
22. Radback Energy

Copies of the comments submitted are located on the *2014-2015 Transmission planning process* page at: <http://www.caiso.com/planning/Pages/TransmissionPlanning/2014-2015TransmissionPlanningProcess.aspx> under the 2014-2015 study plan heading.

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

No	Comment Submitted	ISO Response
1	Alton Energy, Inc. Submitted by: Hal Romanowitz	
1a	Alton Energy comments were related to their project and indicated that they offer the Bison Peak Pumped Storage Project as a Non-Transmission Alternative for the CAISO Study process for 2014-2015.	The ISO appreciates the comment and information on the project. At this time the ISO is developing and finalizing the study plan for the 2014-2015 TPP. After the ISO has completed and posted the Reliability Assessment results on August 15, 2014 the ISO encourages Alton Energy to review these results and resubmit the project into the Request Window to address any reliability constraints identified. The Request Window will be open from August 15-October 15, 2014.

No	Comment Submitted	ISO Response
2	Bay Area Municipal Transmission group (BAMx) Submitted by: Barry Flynn, Robert Jenkins and Pushkar Wagle	
2a	<p>Scope and Schedule for the 2014-2015 Planning Cycle</p> <p>Table 2-1 of the document should be enhanced. The table does not appear to delineate when the CAISO responds to each round of Stakeholder comments. BAMx believes this is an integral part of the annual transmission process that has not received as much attention in the past as it should have. BAMx requests that CAISO provide such feedback on a timely basis 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 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 comment. We encourage the CAISO to continue to improve forecast methodology and include its intentions in the 2014-2015 Study Plan.² 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 are 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>The ISO has been targeting providing responses to comments received on the preliminary reliability results (stakeholder meeting 2) and preliminary policy/economic results (stakeholder meeting 3) no later than the release of the draft transmission plan. To address the concerns expressed, we will target providing responses earlier in the process, aiming for a more typical 3 weeks for ISO consultation processes following the close of the comment periods. It should be noted that responding in that time frame may limit the depth of the response to specific comments, due to the nature of the analysis in the comprehensive plan.</p> <p>The ISO has expressed its commitment in this regard to its Board of Governors in numerous briefings, and notes that these efforts are not part of an ISO tariff obligation – and in particular, are not an obligation of the PTOs to provide the necessary supporting information – so we do not think it is necessary or appropriate to further codify this in the study plan. Regarding schedule, the goal is to update the TAC model with a new “end of year” PTO data, which precludes including the draft results in the draft transmission plan. However, we do target providing the draft results in the presentation of the draft transmission plan (stakeholder meeting 4) and again in the revised draft transmission plan that is presented to the Board of Governors for approval in March. Also, we consider that the May to September time frame is reasonable to publish the model itself, and receive comments on the model for inclusion in the next year’s transmission planning cycle.</p>
2b	<p>Review of the CAISO Planning Standards</p> <p>At the February 27th stakeholder meeting, CAISO indicated that it will launch a review of the CAISO Planning standards during this planning cycle to address consideration of load shedding for Category C (N-1-1) contingencies, address the unique conditions of San Francisco Peninsula,</p>	<p>The ISO has initiated the stakeholder process for the ISO Transmission Planning Standards update with a stakeholder meeting is scheduled for April 3, 2014.</p> <p>http://www.caiso.com/informed/Pages/StakeholderProcesses/TransmissionPlanningStandards.aspx</p>

No	Comment Submitted	ISO Response
	<p>and prepare for new <i>TPL-001-4</i> NERC Standard. BAMx encourages stakeholder vetting of such important planning considerations and requests that within these topics, the following be considered:</p> <ul style="list-style-type: none"> • Within the context of load shedding and the new <i>TPL-001-4</i> NERC Standard, the CAISO Planning Standards should address how non-consequential load shedding under footnote 12 for single contingencies as well as <i>G-1, N-1</i> events will be managed within the CAISO. • In addressing the unique conditions of the San Francisco Peninsula, consider how planning for major seismic events in the Greater Bay Area outside of San Francisco will be considered. • Assess whether the distinction in <i>TPL-001-4</i> between EHV and HV stations provides guidance on the design of station switchyards. For example, an important question to address is under what circumstances should consideration be given to rebuilding an existing switchyard to a different arrangement for the purposes of improved reliability. 	
2c	<p>RPS Portfolios BAMx is concerned that the recent discovery of the loss of all deliverability in the Imperial zone may initiate additional transmission expansion into an area where billions of dollars have already been spent to enhance the transmission system to access renewable generation. The CAISO identified a path whereby up to 1,000 MW of the previous 1,710 MW may be restored, depending on which transmission projects in the draft 2013-2014 Draft Transmission Plan are approved and constructed. Before considering additional expansion, consideration should be given to areas where renewable generation may be accessed at much lower TAC customer costs. We understand that the Joint letter sent by the CEC and the CPUC Commissioners to the CAISO CEO included an additional sensitivity scenario that explores additional deliverability from the Imperial zone.³ As indicated below, BAMx is not aware of any State Policy to assure the deliverability of intermittent resources. We highly encourage the CAISO to take a broad and critical look as to whether any additional policy-driven upgrades are truly needed for California to reach its 33% RPS goal.</p>	<p>For clarity, the changes in forecast deliverability from the Imperial zone were triggered by the unanticipated early retirement of SONGS, and affected incremental forecast deliverability, not existing deliverability. The ISO will study the need for transmission to support the renewable portfolios provided by the CPUC and CEC. The CPUC and CEC utilized a portfolio review process that allowed for robust stakeholder participation. Initial versions of the portfolios were subject to review and comment through the CPUC’s Long Term Procurement Plan proceeding. The CPUC and CEC hosted a workshop on December 18, 2013 to present the portfolios to stakeholders, who subsequently had an opportunity to file opening and reply comments regarding the portfolios. Many stakeholders participated in the workshop and filed written comments. The final recommended portfolios reflect the careful consideration of these comments. As noted, due to the material change in circumstances affecting forecast deliverability, the portfolios provide a sensitivity scenario to ensure the situation is appropriately studied and considered.</p> <p>Regarding the deliverability issue for renewable resources, please refer to the response to “2014-2015 ISO 33% RPS Transmission Assessment” question</p>

No	Comment Submitted	ISO Response
		<p>below.</p> <p>Please see the attached letter for more information about the portfolios.</p> <p>http://www.aiso.com/Documents/2014-2015RenewablePortfoliosTransmittalLetter.pdf</p>
2d	<p>Generation Assumptions <u>New Generation</u> In Section 4.9 of the Study Plan, the CAISO states its practice of assuming new generators are online for the study period if they are currently under construction or have their major permits for siting. In Table 4-3, the CAISO identifies the Once-Through-Cooling (OTC) generation units in the CAISO BAA. As many of these projects have not completed their permitting processes which are necessary to achieve compliance with SWRCB requirements, will the CAISO be modeling them off-line in the years beyond their compliance dates? The statement following Table 4-4 suggests that they will be modeled off-line except as needed to meet the CPUC Track 1 decision and Track 4 proposed decision. It would be helpful to provide clarity and describe which OTC replacement generation that are not currently on-line or authorized in these decisions are assumed to be off-line in the transmission planning base cases.</p>	<p>The ISO will generally assume that the most effective conventional generation resource locations expected to be available will be developed in order to fill the Track 1 and 4 authorized amounts. If there are no details available in regards to generation development at most effective locations at this time, proxy resources will be assumed with the assumptions that the cooling system will meet the SWRCB's Policy on OTC plants.</p>
2e	<p>Generation Retirements The Study Plan identifies that "Other Retirements" will include, unless otherwise noted, retirement of resources with an age of 40 years or more (excluding renewable and hydroelectric resources). That appears to be an arbitrary number, as many units on the CAISO grid that are over 40 years old continue to provide support to the CAISO grid. BAMx encourages the CAISO to provide further clarification which characteristics of older units, beyond a pronouncement by the owner, put them at risk of retirement.</p> <p>In addition, it is difficult to determine from Table A3-1 whether this assumption results in any changes in the modeling of resources in the</p>	<p>The ISO will provide this information with our study results, but we have not prepared this information yet. This detail is not available at this time for publication in the study plan.</p>

No	Comment Submitted	ISO Response
	<p>planning process. Therefore, BAMx would appreciate the addition of a table in Section A3 that includes the age of specific resources that are subject to this consideration and their assumed status in the transmission planning base cases. BAMx is concerned that in the event that reliability issues are identified resulting from any assumed retirements, sufficient notification should be given to the CPUC regarding the cost of alternative transmission solutions so that the CPUC may consider the extension of procurement contracts under the Long Term Procurement Plan (LTPP) proceeding.</p> <p>Table A3-1 also identifies three San Diego resources totaling 187 MW that may potentially retire within the planning horizon, but with the retirement date listed as "TBD." Given the recent resource gap in the area and the large effort being undertaken to address this need, please include more detail including the driver(s) for the these retirements and when the timing for this change in status may be known.</p>	
2f	<p>Major Path Flows</p> <p>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 south-to north on Path 15 under Summer Off-peak conditions may very well 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 well 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</p>	<p>The ISO practice is to consider congestion management as an option to manage transmission constraints providing reliability concerns are mitigated. The congestion may result in excessive uneconomic dispatch, which then warrants analysis as an economically driven study. Stakeholders have raised concerns about the ISO may overly rely on congestion management. However, we rely on congestion management in situations where reliability, policy and economic needs have all already been met.</p>

No	Comment Submitted	ISO Response
	alternatives.	
2g	<p>Long-Term LCR Studies</p> <p>BAMx is very supportive of the inclusion of long-term LCR studies in this transmission planning cycle. Such studies will be extremely valuable in supporting any decision to address projected reliability deficiencies through expanded transmission or local resource procurement as driven by the CPUC Long Term Procurement Plan (LTPP) process. The near-term LCR studies, however, merely focus on the generation solutions. BAMx recommends that the long-term LCR studies also include planning level estimates of the costs to address reliability deficiencies through transmission upgrades so that the CPUC LTPP can compare these with the cost of local resource solutions based upon generation capacity costs and production cost studies performed by the CAISO and other factors.</p> <p>We urge the CAISO to consider employing its modeling expertise to perform integrated generation and transmission analysis based upon a reasonable set of assumptions in the 2014-15 TPP for the following reasons. First, the production cost simulation models are very effective in comparing the effectiveness of competing alternatives such as local generation, new transmission and preferred resources. Second, the CAISO already plans to deploy the production cost simulation tool directly to perform congestion analysis and to evaluate economic planning study requests. The CAISO also plans to use the generation profiles from the production cost studies in their policy-driven as well as the new “over-generation” studies. Therefore, we believe that the CAISO’s incremental resources and the cost of using the production cost simulations model to inform the 2014-15 TPP in this area is likely to be minimal. BAMx encourages the CAISO staff to consult with CPUC Energy Division staff on appropriate assumptions. If desired, BAMx would provide its recommendations on assumptions for such studies.</p>	<p>The ISO plans to identify transmission upgrade and preferred resource alternatives for meeting any reliability needs identified in the long-term LCR studies.</p> <p>For Local Analysis: The production cost simulation model is built for the purpose of predicting congestion on major transmission paths. It is a highly complex model but continues to rely on many simplifying assumptions. For example, load profile modeling done on a zonal level, lower voltage transmission facility ratings are not enforced, and only a small set of contingencies are actually included in the analysis. These simplifying assumptions are necessary to ensure that localized inaccuracies do not distort the global solution. At the same time, these simplifying assumptions result in the production simulation tool as not appropriate for performing analysis to compare the effectiveness of competing alternatives such as local generation, new transmission and preferred resources, on a local level.</p> <p>For overall system analysis we do use production simulation models.</p>
2h	<p>San Francisco Peninsula Extreme Events Assessment</p> <p>BAMx continues to be very interested in the assessment and potential recommendations associated with extreme system events impacting the</p>	<p>The ISO has initiated the stakeholder process for the ISO Transmission Planning Standards update with a stakeholder meeting is scheduled for April 3, 2014.</p>

No	Comment Submitted	ISO Response
	San Francisco Peninsula. BAMx is especially interested in the assessment methodology and the potential modifications to the CAISO Planning Standards that may be applicable to other urban areas with high seismic risk. We look forward to working with the CAISO and learning how this process may be applied more broadly.	http://www.caiso.com/informed/Pages/StakeholderProcesses/TransmissionPlanningStandards.aspx
2i	<p>Potential Risk of Over-Generation</p> <p>This new special study focuses on system performance at times of limited generation flexibility. BAMx sees this work as being invaluable in understanding the system's ability to meet certain performance metrics related to frequency excursions. However, if the issue is the lack of flexible system capacity, it is not clear how such a study may impact the annual transmission plan and whether transmission improvements are even capable of relieving any issues found. Therefore, BAMx requests that the Study Plan be more specific as to what types of solutions may be considered in the event that the studies indicate system deficiencies.</p>	The system flexibility is being studied as a part of the LTPP process. Risk of over-generation is becoming more of a concern due to the large amount of variable (wind and solar PV) generation in the system. In regards to potential mitigations, it is too early to speculate what mitigation may be required until the studies have been performed. The ISO will assess the risk of over-generation and present the results to the stakeholders along with potential mitigations based upon the results of the assessment. Depending on the study results, mitigation solutions may include measures such as non-transmission alternatives such as certain requirements to new renewable generation projects or additional frequency-responsive reserve requirements, as well as transmission improvements.
2j	<p>2014-2015 ISO 33% RPS Transmission Assessment</p> <p>As part of its assessment of the 33% RPS portfolios, the Study Plan identifies that the CAISO will conduct a production simulation for each of the developed portfolios using the ISO unified economic assessment database. These results will be used to inform the development of power flow scenarios for the power flow and stability assessments. BAMx requests that these production simulations be expanded very modestly to include looking at the potential change in congestion costs both with and without any policy driven upgrades recommended, as needed to support the 33% RPS program. This would allow stakeholders to better understand whether any such recommended upgrades could be expected to improve the economic efficiency of the grid or are for the purpose of accessing the RA capability of renewable generators.</p>	The 2014-2015 policy driven transmission analysis and the associated renewable portfolios are part of a framework that includes ISO Generation Interconnection and Deliverability Allocation Process (GIDAP). Since virtually all generation in the GIDAP process and therefore all generation procured to meet the 33% goal are specified as deliverable generation, the ISO policy driven transmission analysis has the objective of ensuring that the generation in the portfolios will be deliverable. The ISO economic analysis is then performed sequentially and includes the identified policy driven upgrades. In past plans, the policy driven upgrades have been incremental in nature and did not merit additional sensitivity studies. However, if there are major policy driven upgrades identified in the sensitivity portfolios beyond those assumed in the development of the portfolios, the ISO can consider performing sensitivity analysis in the economic studies with and without major upgrades identified as needed in the sensitivity portfolio. This work would be aligned with the CPUC and CEC request for the ISO to consider a sensitivity portfolio.
2k	Deliverability Assessment Methodology	

No	Comment Submitted	ISO Response
	<p>In Section 3.1.1 (Achieving 33% renewable energy on an annual basis) of the 2014-15 Study Plan, the CAISO states the following: <i>“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 ISO performs to address this question, the ISO could identify policy-driven transmission additions or upgrades that are necessary in order to achieve the 33% renewable share of annual consumption by 2020.”</i></p> <p>BAMx agrees with the above paragraph. However, BAMx strongly disagrees with the CAISO’s interpretation that it is the State Policy that “all” renewable projects needed to meet the 33% RPS goal should provide Resource Adequacy. For instance, the CAISO’s 2014-15 Study Plan in Section 3.1.2 (Supporting RA deliverability status for needed renewable resources outside the ISO balancing authority area) states the following: <i>“Deliverability for the purpose of a resource providing RA capacity is a distinct requirement and is integral to achieving the 33% RPS policy goal.”</i></p> <p>Rather than designating transmission projects as policy-driven solely to allow intermittent renewable projects to satisfy the State’s system RA needs, the CAISO should undertake a cost benefit analysis to show that any proposed new transmission project to assure deliverability of new resources and/or to decrease envisioned congestion is justified. Further the CAISO should determine whether the new proposed transmission is both necessary and the most economical alternative to meet the State’s resource adequacy needs.</p> <p>BAMx is even more concerned with the proposal in this year’s plan to expand upon the assumption that there is a need to provide deliverability from intermittent resources to resources that are outside the CAISO grid. BAMx considers this effort as likely to compound the existing problem</p>	<p>Please see response above.</p>

No	Comment Submitted	ISO Response
	<p>whereby major transmission projects are approved for deliverability reasons independent of the need for such RA resources or a cost/benefit determination.</p> <p>In our research, we have discovered that the annualized transmission cost is significantly higher than the RA value associated with the interconnecting renewable resources. The California Energy Commission (CEC) acknowledged this in their 2013 Integrated Energy Policy Report (IEPR)⁴, which states that <i>“Requiring full deliverability for future PPAs for renewable generators in the state may not be a cost---effective strategy and modification of deliverability requirements should be considered in light of the billions of dollars in transmission investments the requirement triggers.”</i></p> <p>BAMx believes that now is the time for the CAISO to work with the CPUC and the CEC to address this important issue.</p>	

No	Comment Submitted	ISO Response
3	California Public Utilities Commission Submitted by:	
3a	<p>1. The CAISO Should Clarify What Is Meant by Having Base Case Assumptions Include “Transmission Upgrades to Interconnect New Modeled Generation”, and by Having Such Transmission be Included in “Sensitivity Base Cases.”</p> <p>Page 9 of the section of the February 27 Draft Study Plan presentation addressing Reliability Assessment states that in addition to ISO-approved transmission projects, Base Case transmission assumptions will include “transmission upgrades to interconnect new modeled generation.” Section 7.3 of the Draft Study Plan, “Coordination with Phase II of GIP”, states that</p> <p><i>“...the ISO may need to model some or all of these generation projects [currently in a Phase II cluster study] and their associated transmission upgrades in the TPP base cases for the purpose of evaluating alternative transmission upgrades. However, the base cases will be considered sensitivity base cases in addition to the base cases developed under the Unified Planning Assumptions.”</i></p> <p>The CAISO should clarify</p> <ol style="list-style-type: none"> 1. What interconnection-related transmission upgrades that may need to be included “in TPP base cases” are being referred to above? Are these reliability upgrades identified in GIDAP Phase II studies? 2. Which generation is driving these network upgrades, and is that generation included in the TPP base case resources? For example, is this generation included in particular interconnection cluster studies, or in the CPUC/CEC-provided RPS portfolios? 3. Please explain the definition, composition and use of “sensitivity base cases” containing the generation and associated transmission described above, including how these base cases are differentiated from the main TPP Base Case, particularly with regard to what generation and transmission they contain. In addition - - will the sensitivity base cases be used to authorize transmission projects or only to further inform parties on any need identified in the main TPP base case? 	<p>Page 9 of the section of the February 27 Draft Study Plan presentation addressing Reliability Assessment which states that in addition to ISO-approved transmission projects, Base Case transmission assumptions will include “transmission upgrades to interconnect new modeled generation ” is unrelated to Section 7.3 of the Draft Study Plan, “Coordination with Phase II of GIP”.</p> <p>Page 9 of the section of the February 27 Draft Study Plan presentation addressing Reliability Assessment” is related to the reliability study base cases, and the transmission upgrades to interconnect new modeled generation are upgrades related to the commercial interest portfolio generation provided by the CPUC.</p> <p>Section 7.3 of the Draft Study Plan, “Coordination with Phase II of GIP” is related to potential policy driven transmission analysis required by the ISO Tariff to integrate the generation interconnection and transmission planning process. This Tariff section has not been applicable since the provision was first introduced because the conditions specified in this section for it to be applicable have never been met, and is not expected to be applicable in the next planning cycle.</p>

No	Comment Submitted	ISO Response
3b	<p>2. Local and System Reliability Study Assumptions Should be Coordinated with the Recent CPUC Ruling on 2014 LTPP Assumptions, and Differences Between the Basic and Preferred Resource/Storage Studies Should Be Clarified.</p> <p>This topic is of particular interest for the Los Angeles Basin and San Diego areas. It appears, and CPUC Staff agree, that for the basic reliability studies (not those emphasizing preferred resources and storage) the intent is to initially add resources in amounts and types representing the “default” assumptions identified in the Assigned Commissioner’s February 27 Ruling initiating the 2014 CPUC Long Term Procurement Plan (LTPP) Proceeding (“ACR”).¹ For the basic reliability studies, this would include 2012 LTPP Track 1 and 4 procurement authorization levels for conventional generation. It is unclear and should be clarified whether the LTPP studies would start with the minimum or maximum authorized conventional resource procurement levels, e.g., for the West Los Angeles Basin and for San Diego. Customer PV, customer CHP and non-event-based (non dispatchable) DR should be set at default LTPP levels (“embedded” in the CEC’s 2013 IEPR load forecast). Beyond that we understand, and recommend that as the starting point for the basic (not preferred resources/storage) reliability studies</p> <ol style="list-style-type: none"> 1. there would be no incremental exporting CHP; 2. wholesale PV (and other wholesale RPS resources) would be at levels and locations specified in the latest 33% RPS “trajectory” portfolio; 3. dispatchable DR would conservatively remain at the levels specified in Draft Study Plan Table 4-11 (equivalent to February ACR, Table 3) - - when converted from a 1-in-2 to a 1-in-10 load basis where appropriate for a particular study, and when scaled from service territory to local levels, also when appropriate; and 4. assumed storage additions would have the amounts and operational attributes (including capacity value) specified in ACR Table 2 (the Draft Study Plan Table 4-12 should be updated to match the ACR Table 2). <p>This is based on the procurement mandate established in CPUC</p>	<p>Reliability study assumptions will be coordinated with the CPUC Ruling on 2014 LTPP assumptions. Since Track 4 decision is now available, the ISO has included updated Track 4 assumptions in its studies.</p> <p>The ISO expects that the maximum authorized levels will be needed to meet reliability needs, so that will be the starting point.</p> <p>As indicated in the draft study plan, the assumptions in the basic reliability studies will be consistent with the assumptions from the ACR that are summarized in the comment. The preferred resource studies are intended to supplement the reliability studies for those local areas where preferred resources and storage are identified as potential mitigation. Unlike the main reliability studies, the preferred resource studies will take into account the characteristics of those resources. In the preferred resources study, the ISO does not intend to rerun reliability studies with the expanded preferred resource assumptions, although the expanded preferred resource amounts in a local area may be considered as potential mitigation for that local area.</p>

No	Comment Submitted	ISO Response
	<p>Decision (D.)13-10-040, which further allocates procurement by service territory. Storage should be modeled at the most effective grid locations. CPUC Staff may provide suggested refinements to the characterization of assumed procured storage in Table 4-12.</p> <p>CPUC Staff request verification that, similar to 2013-2014 TPP studies, any further “need” beyond initially modeled resources will, in the basic reliability studies, be modeled as conventional gas resources.</p> <p>For the special study of preferred resources and storage (contributing to local area resource needs), which CPUC Staff very much appreciate, the CPUC staff assume and request verification that the initially assumed preferred resources and storage levels will be consistent with assumptions for the “expanded preferred resources” scenario as specified in the ACR for the 2014 LTPP. This includes higher (“High-Mid”) additional achievable energy efficiency, high incremental customer PV, high incremental customer CHP, high incremental exporting CHP, the same initial levels of storage and dispatchable DR as in the basic reliability studies, and wholesale PV at levels and locations given by the “High DG 40% 2024 HighMid AAEE + Higher DSM” RPS portfolio.</p> <p>We request confirmation that in the preferred resources/storage reliability studies the level of conventional resources would be at the minimum authorized Track 1 + Track 4 levels, and that any further “need” identified beyond initially modeled conventional, preferred and storage resources will then modeled as additional preferred and/or storage resources, at the most effective locations - - with the mix of resource types to be determined, and probably with several mixes tested.</p> <p>CPUC Staff request clarification if preferred resources studies will be conducted for other areas besides the LA Basin and San Diego. We look forward to future discussion and determination of assumed preferred resource mixes, locations and operational characteristics, as well as</p>	<p>The ISO confirms the suggested approach will be used where appropriate. For example, the ISO may model the mandated storage resources, which will not be modeled in the initial basic reliability studies as negative load in those areas where need is identified.</p> <p>Please see the first paragraph above.</p> <p>The development and selection of the scenarios to be studied is part of the study which we have not completed. We plan to consider all available information regarding the scenarios to be studied.</p> <p>Preferred resources will be modeled throughout the system consistent with the ACR and considered as potential mitigation in the main reliability studies for other areas besides the LA Basin and San Diego. We plan to perform preferred resources studies for other areas besides the LA Basin and San Diego where preferred resources are identified as potential mitigation in the main reliability</p>

No	Comment Submitted	ISO Response
	how variable and limited energy (PV, DR, storage) resources will be modeled.	studies.
3c	<p>3. CPUC Staff Recommend That the CAISO Verify and/or Update Appendices A2 (Planned Generation) and A3 (Retirements) With the Latest LTPP Information.</p> <p>In particular, Oakley and Carlsbad should not be included as known generation additions, as they are not included in the adopted 2014 LTPP assumptions (ACR referred to above). Also, the two listed solar thermal plants likely need to be netted out with (precluded from double counting) amounts of solar thermal MW in the 33% RPS portfolios. The latest LTPP-assumed retirements, as described in the ACR, should be checked against Appendix 3. Also, the description “Study year in which addition is to be first modeled” does not clearly identify online years, and online years should be consistent with the ACR.</p>	<p>The ISO will be conducting the studies in the 2014-2015 TPP with Oakley and Carlsbad off-line in the base case. The ISO will also conduct sensitivity studies with the Oakley and Carlsbad generating station on-line.</p>
3d	<p>4. The Reliability Studies Should Evaluate and Report Quantitative Implications for Deploying Phase Shifter Versus Back-to-Back DC Flow Control at or Near the Imperial Valley Substation.</p> <p>The draft 2013-2014 Transmission Plan identifies the value of flow control equipment at or near the Imperial Valley (IV) substation to control loop flows to San Diego via the CFE system, to mitigate impacts of outages on the 500 kV lines from IV into San Diego. Back-to back DC control is described as being more effective but also more costly, and the apparent intent is to have a solicitation for proposals for flow control deployment illuminate the relative costs and benefits of the two kinds of options.</p> <p>CPUC Staff requests that the CAISO’s 2014-2015 TPP reliability studies examine and illuminate the differences in operational and reliability implications for the two different technologies, or else explain why this is not possible.</p>	<p>The work needed for the selection of the phase shifter or the Back to back DC is already underway as part of the continuation of the 2013-2014 transmission plan. The results of this analysis will be shared with stakeholders at the earliest opportunity.</p>
3e	<p>5. The CAISO Should Clarify the Derivation and Use of Renewable Generation Dispatch Assumptions Described for Reliability</p>	

No	Comment Submitted	ISO Response
	<p>Studies in Section 4.9 of the Draft Study Plan (Tables 4-5 Through 4-8).</p> <p>The Draft Study Plan refers to quantitative and qualitative assessment of hourly GridView renewable output [presumably input hourly wind/solar profiles] for stressed conditions during hours and seasons of interest, and also to cataloguing of the data by renewable technology and location. To clarify and inform stakeholders regarding the important linkage between load and renewable generation profiles in production simulation on the one hand, and reliability study (PSLF) assumptions on the other, the CAISO should provide tables showing, for each load condition and LSE territory depicted in Draft Study Plan Tables 4-5 through 4-8 (e.g., Summer Off-peak for PG&E), the following:</p> <ol style="list-style-type: none"> 1. what hours are included in that load category (e.g. June-September 2 PM-8 PM, etc), 2. the average output level (fraction of nameplate) for each technology (e.g., wind) for those hours, and 3. the overall range (or other meaningful range such as 5th to 95th percentile) of the output level for each technology (e.g., wind) for those hours. <p>This would give stakeholders a better understanding and appreciation of how the modeling of wind and solar generation is being handled for reliability study purposes. It would also provide a better bridge (common understanding and linkage) between the transmission planning studies and the operational flexibility studies (including over-generation issues) that are being pursued separately but which we assume (and request CAISO's confirmation of this) are based on the same underlying database of wind and solar generation variability.</p> <p>The CAISO should clarify if the renewable generation output levels shown in Tables 4-5 through 4-8 are used for both bulk system and local area reliability studies, and also for the 33% RPS portfolio</p>	<ol style="list-style-type: none"> 1. The ISO has update the study plan to include definition and examples of hours that were included in the qualitative and quantitative assessment of renewables output vs load profile in the areas of interest, immediately below Tables 4-5 through 4-8. 2. The reliability studies are used in bracketing the system performance under stressed conditions, any system conditions found in between extremes are deemed less severe and do not require a specific or outstanding reliability study. For example a local load area that includes renewables would be heavily stresses in the import conditions when loads are at peak and renewables are low during the peak load hour. And they are stressed in the export direction when loads are low or minimum and renewables are high. Since the ISO is not planning to study mid stresses conditions, deemed to have lower level of reliability needs, it did not catalogued and it does not see the need to catalogue the average output level for each technology during those same hours. 3. Please refer to the above response. <p>Both the reliability assessment and the operational flexibility studies are based on the same underlying database of wind, solar and other renewable resources provided through the CPUC portfolios. However the is a major difference in what they try to accomplish. The reliability studies try to bracket the impacts to the transmission system during times of stress; whereas the operational flexibility study tries to find out what needs are there for other type of resources required to mitigate the impacts of minute by minute renewable variability as well as potential inertia requirements in order to maintain frequency at 60 Hz. The most critical conditions for risk of over-generation are when the system load is low and generation from the renewable resources is high, which may be in spring or summer off-peak hours.</p>

No	Comment Submitted	ISO Response
	<p>reliability studies. In particular, are there any differences between the 33% RPS portfolio reliability studies and the bulk system and local area reliability studies, regarding assumed generation (especially wind/solar) and/or loads?</p> <p>Continuing from the three listed information items requested above, CPUC Staff have more specific questions regarding wind and solar output assumptions for reliability studies as presented in Tables 4-5 through 4-8, as follows.</p> <p>4. The CAISO should explain, for Tables 4-5 through 4-8, what “stressed case” refers to. What levels of wind and solar output are assumed, and what are stressed cases used for (e.g., deliverability studies)?</p> <p>5. Table 4-5 lists a PG&E summer partial peak scenario regarding renewable output levels, yet Table 4-1 (Summary of Study Scenarios in the ISO Reliability Assessment) does not identify summer partial peak but does identify summer light load. Please explain.</p> <p>6. Similarly, Tables 4-5 through 4-8 identify summer minimum load scenarios while Table 4-1 does not. Please explain.</p> <p>7. Tables 4-5 through 4-8 indicate that modeled solar output for different conditions (e.g., summer peak) is as follows:</p> <ul style="list-style-type: none"> o summer off-peak - - ranges from 76% of NQC for SDG&E up to full NQC for PG&E, o summer peak - - ranges from 25% of NQC for PG&E up to 55% of NQC for SDG&E, o assumed solar output is zero for other reliability study scenarios (summer min load and, for PG&E only, winter peak and summer partial peak). <p>The CAISO should clarify what drives the above differences in assumed solar output level among the service territories (such as using</p>	<p>The renewable generation output will be used for all reliability studies, including local area, system and 33% RPS portfolios.</p> <ol style="list-style-type: none"> 4. See answer to question 2 above. As explained above the renewable generation output will be used for all reliability studies, including local area, system and 33% RPS portfolios. It will not be used for deliverability studies, they have they own methodology posted at: http://www.caiso.com/planning/Pages/GeneratorInterconnection/Default.aspx 5. Not each scenario is studied every year it is a good practice to rotate certain scenarios every few years. If this year’s study, scenarios do not call for a Partial-peak case, so that information from Table 4-5 will not be used. 6. Same answer as 5 above. 7. The percent output difference between areas is driven mainly by the load profile for that area and it’s hours of peak or stressed system conditions and the renewable profile for the same area of study. Additional scenarios were studied for same PG&E areas because the stressed conditions were not fully bracketed without the extra scenarios whereas the rest of the areas bracketing the stressed conditions were achieved through a smaller number of scenarios. <p>We will take your comment under advisement as future improvements are made to the data or its presentation.</p>

No	Comment Submitted	ISO Response
	<p>different hours of the day to represent summer peak in different areas), and why additional scenarios were examined for PG&E only.</p> <p>Also, it appears that for solar (but not wind) generation the Pmax output level is being defined as NQC, and yet solar NQC is substantially less than maximum output. As previously noted in CPUC Staff comments on the CAISO's technical paper discussing deliverability assessment methodology, it may be clearer for reporting purposes to use some term other than Pmax in this context.</p>	
3f	<p>6. The Policy Driven 33% RPS Analysis Should Clarify Derivation of the Dispatch Assumptions, and Should Also Report Amounts of RA Deliverability and Annual Energy Delivery Absent Deliverability Upgrades.</p> <p>The assumed dispatch scenario is a major driver of reliability and deliverability study results for the policy-driven 33% RPS studies and can be complex and nontransparent for variable wind and solar generation. The CAISO should</p> <ol style="list-style-type: none"> 1. explain, analogous to Tables 4-5 through 4-8, what dispatch assumptions were used for the policy driven 33% RPS deliverability studies; 2. report not only what additional transmission would be needed (if any) to make the 33% RPS portfolios fully RA deliverable, but also what amount of RA deliverability (by resource area) would be available without such deliverability upgrades; and 3. report the annual 8760-hour energy (not RA capacity) delivery for the 33% RPS portfolios with and without deliverability upgrades. <p>The above information is especially important when considering that the 33% RPS policy is based on energy not capacity delivery, and when also considering that at some point it may not be desirable that transmission be planned to make all RPS resources fully deliverable for RA purposes.</p>	<p>Table 4-5 through 4-8 provide generic assumptions for renewable resource dispatch in the reliability base cases. These assumptions are not expected to be a driver in any reliability driven transmission needs, so generic assumptions are adequate. In the 33% RPS analysis the renewable resource dispatch assumptions are the primary driver, so more precise assumptions are necessary. The policy power flow and stability analysis base cases are posted on the ISO Market Participant Portal which show the unit by unit dispatch assumptions. The deliverability study tools create numerous unit by unit dispatch assumptions, as described in the posted methodology document.</p> <p>Regarding item 2, the ISO provided this information in the most recent transmission plan and plans to do so in this next plan.</p> <p>Regarding item 3, as described in the response to BAMx above, the ISO will consider producing this information for major upgrades driven by the sensitivity portfolio.</p>
3g	<p>7. Economic Studies Should Provide Full Rationale and</p>	

No	Comment Submitted	ISO Response
	<p><i>Robustness Tests for All Significant Value (Not Just Energy Value) Attributed to Economic Projects.</i></p> <p>For the 2013-2014 Draft Transmission Plan, capacity value made a substantial contribution to the overall calculated value for one project likely to be approved on an economic basis and for another project still under consideration for approval. In fact, substantial capacity value was necessary to drive these projects' benefit/cost ratios above 1.0. Yet, as CPUC Staff and others commented, the rationale for how capacity value was computed was not fully convincing or complete, and there was little sensitivity (robustness) analysis of the impact of uncertainties on computed capacity value. Thus, for the 2014-2015 TPP, the CAISO should provide a more complete rationale and sensitivity analysis for capacity or any other non-energy (not locational energy price-based) value attributed to projects studied for economic benefits.</p>	<p>As explained by the ISO in its responses to the related comments in the 2013-2014 Draft Transmission Plan, the purpose of the sensitivity studies in the production simulation results is because the model is highly complex and some of the results are difficult to predict. Therefore sensitivity analysis is needed to determine how sensitive the results are to certain assumptions as well as to validate the operation of the very complex modeling. The capacity analysis model is much simpler and sensitivity studies are not needed to determine how sensitive the results are to certain assumptions.</p>
3h	<p><i>In the San Francisco Peninsula Extreme Event Study, "Scenario Analysis" and "Relative Qualitative Assessment of Risks" Should be Accompanied by a Chain of Effect from Physical Events to Electrical and Socioeconomic Consequences that is Sufficiently Clear and Quantitative to Support any Proposed Major Investments for Mitigation.</i></p> <p>The Draft Study Plan (Section 6.1) and the February 27 presentation indicate that the CAISO intends to conduct a scenario analysis of events and system performance, examining selected mitigation measures. The February 27 presentation also states that it is "<i>not practical to do a conventional probabilistic assessment or cost benefit analysis to develop detailed and precise quantitative analysis due to the nature or cause of extreme events, potential extent of damage and restoration times, and the potential interdependencies of events and consequences.</i>"</p> <p>The presentation then states that the CAISO is "<i>considering looking at the relative likelihood of different scenarios and the potential effects of such events to determine a relative qualitative assessment of the risks</i>"</p>	<p>The ISO will continue the extreme event assessment and looks forward to your comments on the results of the further assessment. The ISO will give consideration to your suggestions and explore any specific industry examples of your suggestions as the analysis is conducted.</p>

No	Comment Submitted	ISO Response
	<p>CPUC Staff appreciate the challenges posed by analyzing and planning for extreme events impacting the electric system, especially when those events have a substantial likelihood of impacting multiple, not necessarily contiguous system components. However, to support informed and objective consideration of risks and mitigation measures, and to test the sensitivity of assessment to uncertainties, alternative assumptions and new information, it is essential to construct and discuss a clear chain of effect from physical events to estimated electrical consequences (contingencies) to estimated socioeconomic consequences including dollars of damages - - with and without key mitigation alternatives. Without such a full, explicit causal framework, indicating probabilities but recognizing uncertainties (via ranges or otherwise), we have insufficient basis for rational discussion or conclusion regarding what risk-reducing investments are warranted, including the implications of “what we don’t know”. It is difficult to see how a purely “relative qualitative assessment of the risks” is sufficient to inform large investment decisions if not grounded in some absolute (if imprecise) information regarding probabilities and damages. Such probabilities and damages should include the possibilities of credible events causing multiple consequences, some of which may impact the viability or benefits of mitigation measures themselves.</p>	
3i	<p>9. The CAISO Should More Fully Describe Over-Generation Study Assumptions Regarding Dispatch Scenarios, Relationship of Studied Contingencies to Typical Reliability Study Contingencies, and Operational Measures Assumed to be Available to Address the Contingencies.</p> <p>In conducting and reporting on over-generation studies, the CAISO should provide a clear and comprehensive explanation of the dispatch scenarios used to represent system overgeneration, including clear explanation of how the scenarios are based on</p>	<p>The risk of over-generation may occur with large amount of variable (wind and solar PV) generation in the system at the times when the load is low and the output of variable generation is high. The previous studies showed that the most critical conditions for over-generation are off-peak spring or off-peak summer hours. The generation dispatch assumptions for the over-generation study will be based on the results of Market Simulations. The hours when renewable generation is high, load is low and output of the conventional resources is low will be selected for the study. The generation dispatch and load assumptions in the over-generation study will be the same as in the Market Simulations for selected hours. These assumptions will be described in the study report.</p> <p>Contingencies selected for the over-generation study will include those that involve large loss of generation resources, since such contingencies have the highest impact on frequency, with the loss of two Palo Verde units being the most critical. Other contingencies that involve large loss of generation will be also studied. Same contingencies are also studied in the Reliability</p>

No	Comment Submitted	ISO Response
	<p>or related to hourly dispatch results from economic (production simulation) studies.</p> <p>Additionally, the CAISO should explain how the contingencies applied to the overgeneration scenario(s) arise from and compare to those contingencies considered in reliability studies. There should also be description of what specific system operational or other measures are assumed to be available and used to mitigate the impact of the contingencies.</p>	<p>Assessments, but the system assumptions in the Reliability Assessment are different. Reliability studies model stressed conditions on the transmission system (for example, summer peak load conditions), and the over-generation study models the most critical cases for frequency response. Reliability studies evaluate transmission facilities' thermal loadings, system voltages and voltage deviations and the system dynamic performance. Over-generation study will evaluate the WECC and CAISO frequency response and frequency response of individual units and such metrics as frequency nadir, settling frequency, governor headroom and others that are not evaluated in the Reliability Studies.</p> <p>All remedial action schemes (RAS) applicable for the contingencies studied will be modeled in the over-generation study. If the study results show unacceptable performance, mitigation measures will be developed.</p>
3j	<p>10. CPUC Staff Appreciate the Announced “Concurrent Review of Planning Standards”, Which Should Address Both Allowable Load Shedding and Planning for Extreme Events in a Fundamental Manner Not Restricted to, Respectively, N-1-1 Contingencies or the San Francisco Peninsula.</p> <p>The CAISO's stated intent to open a process on “Concurrent Review of Planning Standards” is both timely and welcome. Resource and transmission planning issues, including dramatic changes, have brought sharper focus on questions of what is required and what is desirable, to maintain sufficient electric reliability. Two important areas of concern are:</p> <ul style="list-style-type: none"> □ Under what conditions (and to what extent) is controlled load shedding acceptable? □ What depth and breadth of analysis, and what characterization of risk, are required to justify major investments to protect against extreme but unlikely events? <p>The CAISO's announced “Concurrent Review of Planning Standards” should address the load shedding question in a fundamental manner constructively informing stakeholders and infrastructure planning. Regarding controlled load shedding, this review should include but not be limited to “historical consideration” and N-1-1 contingencies. Similarly, the Planning Standards review should consider the appropriate fundamental criteria and</p>	<p>The ISO has initiated the stakeholder process for the ISO Transmission Planning Standards update with a stakeholder meeting scheduled for April 11, 2014.</p> <p>http://www.aiso.com/informed/Pages/StakeholderProcesses/TransmissionPlanningStandards.aspx</p>

No	Comment Submitted	ISO Response
	<p>framework for assessing risks from extreme events and for justifying investments to reduce such risk. This would certainly be focused on and informed by the specific situation in the San Francisco Peninsula. However, it is important to consider and discuss an overall framework and criteria for assessing this and potentially other extreme event situations.</p>	

No	Comment Submitted	ISO Response
4	<p>CalPeak Power, LLC Submitted by: Clifford D. Evans, Jr.</p>	
4a	<p>As the CAISO has recognized, there is ample justification for adding reactive power support to meet reactive margin requirements and to partially replace the inertia and dynamic reactive capability of retiring the San Onofre Nuclear Generating Station (“SONGS”) and once-through-cooling (“OTC”) generation. Adding reactive power support also furthers the renewable integration objectives of the State of California and the CAISO by providing dynamic reactive capabilities that wind and photovoltaic solar generation cannot provide while at the same time reducing the risk of voltage collapse during high import conditions.</p> <p>Since the CAISO has recognized a need for adding reactive power, during the 2013-2014 Transmission Planning Process request window CalPeak submitted requests to study a change in the way the CalPeak units are used. CalPeak plans to resubmit its proposals again the 2014-2015 Transmission Planning Process. The CalPeak units all utilize Pratt & Whitney, Model FT8 (DLN), Twin-Pac industrial gas turbine packages which enable the plants to operate not only as generators, but also as synchronous condensers to provide voltage support, and, with minimal capital investment, the ability to toggle between being generators and synchronous condensers. Currently, the ability of these units to provide voltage support (outside of what is provided when operating as a generator) is not being utilized. CalPeak believes enabling the units to run as either generators or synchronous condensers is a fast, low-cost way to provide additional voltage support with no environmental impact. Since the units are already constructed and permitted, the solution is available almost immediately and without construction and permitting risks. The recommended solution provided by the CAISO will not be available for years and still needs to cross the hurdles related to developing the sites/projects (acquiring site, permitting, construction, etc.). To support its request, CalPeak submitted information regarding the existing units, power flow study results prepared by its consultant, Navigant, and our proposal for providing this product. The power flow studies showed that</p>	<p>The ISO will continue to monitor the need for utilizing existing generation like the CalPeak power facilities in the synchronous condenser mode from a reliability perspective. As noted in the 2013-2014 transmission planning process, the ISO also intends to review ISO processes to remove any potential barriers for this capability to be considered from an economic and environmental perspective in the resource procurement process.</p>

No	Comment Submitted	ISO Response
	<p>each of the CalPeak units can provide significant voltage support, particularly in SDG&E's service territory where, with the shutdown of SONGS, the need for voltage support is most acute.</p> <p>Unfortunately, it appears from the Draft 2013-2014 Transmission Plan that the CAISO did not properly evaluate CalPeak's proposal to provide synchronous condenser capability. For the 2014-2015 Transmission Planning Process, CalPeak requests that CAISO evaluate CalPeak's dual-use synchronous condenser/synchronous generators under varying load conditions that are representative of anticipated future conditions. For example, CalPeak suggests that the following scenarios be studied with consideration of the capability of the CalPeak units to dynamically switch between synchronous condenser mode and synchronous generator mode.</p> <p>During the Flexible Resource Adequacy Criteria and Must-Offer Obligation working group session held on December 13, 2013 regarding the Flexible Resource Adequacy Criteria and Must-Offer Obligation, CAISO outlined its flexible capacity needs using a slide entitled: "The flock of ducks (forecasted March 2016 below)" Please refer to Figure 3 on the next page. There are days that will have evening-only needle peak ramp requirements and other days where there are both morning and evening needle peak ramp requirements. Karl Meeusen, Ph.D., CAISO, pointed out that the "duck slides" are "smoothed" and do not adequately depict the very jagged and highly variable spikes that can occur throughout the day on cloudy days and days where wind is intermittent, etc. Therefore, there is a need for multiple start-ups per day from flexible resources (not just to meet the morning and evening ramps). (See CalPeak's comments for Figure)</p>	
4b	<p>For any given grid condition, including those in the above Figure, CAISO will have the flexibility to dispatch the Facility in whichever mode of operation it deems most appropriate for the situation; power generation or synchronous condensing. If the situation calls for flexible ramping to meet the morning and evening peak load conditions, the Facility can be</p>	<p>Please see response above.</p>

No	Comment Submitted	ISO Response
	<p>dispatched to deliver in excess of 50 MW of real power. Under other conditions, for example a sudden loss of a major transmission line, such as the Imperial Valley-ECO 500-kV line, the Facility can be dispatched to deliver upwards of 60 MVAR of reactive power. Adding the synchronous condenser capability to the existing generator resource will give CAISO significant added flexibility to adjust the conditions on the electric power transmission grid. The California ISO will be able to call on CalPeak's flexible hybrid resource to either generate or absorb reactive power (megavars, or MVARs) as needed to adjust the grid's voltage, improve power factor, or generate real power (MW). Additionally, synchronous condenser capability is a far superior solution to other voltage support options available to the California ISO. For example, synchronous condensers can continuously adjust the amount of reactive power they produce while also being capable of increasing reactive current as voltage decreases. By comparison, capacitor banks cannot continuously adjust the amount of reactive power they produce and when grid voltage decreases so does their reactive power delivery.</p> <p>Operationally, once the upgrades are completed, the CalPeak units can be dispatched in either synchronous condensing mode or power generation mode. Following are operational descriptions of the various operating modes of the Facility:</p> <ol style="list-style-type: none"> 1) Dispatched for synchronous condensing from an offline condition: One of the two FT8 engines will be started to accelerate the generator to speed, the generator is synchronized to the grid and the FT8 engine will then be shut down. The generator remains on-line producing VARs as required by the system. 2) Dispatched for power generation from an offline condition: The FT8 engines, either one or two as required by the dispatch order, are started and loaded in the same way as they were prior to the upgrade. 3) Transition from a power generation mode to a synchronous 	

No	Comment Submitted	ISO Response
	<p>condensing mode: The generator is on line producing power. The FT8 engine(s) are simply shut down but the generator remains online producing VARs as required by the system.</p> <p>4) Transition from a synchronous condensing mode to power generation mode: The generator breaker is closed and the generator is at speed, The FT8 engine(s) are started and once they accelerate to speed, the generator will produce Watts and VARs as required by the system.</p> <p>CAISO System and Local Area Emergencies Caused by Natural Gas Supply Shortages</p> <p>CAISO should study scenarios similar to the recent System and Local Area Emergencies Caused by Natural Gas Supply Shortages similar to the one that occurred on December 9, 2013 and February 6, 2014. Included in these scenarios, CAISO should model the CalPeak Units in synchronous condenser mode to determine what benefits could be achieved by having reactive power and voltage support to the grid in the absence of significant gas-fired generation. Since the CalPeak units do not consume natural gas to remain online as synchronous condensers, CAISO would not have been required to issue Exceptional Dispatch notices to these units as they did in December and February when the need arose for significant gas curtailments of generation facilities in the Southern California Gas Company (SoCalGas) and San Diego Gas and electric Company (SDG&E) service areas (especially the Southern portion of the system). To re-iterate, instead of issuing exceptional dispatches to the Border and Enterprise units to come offline and shut-down, CAISO could have instructed the units to remain online providing voltage support by having them switch to synchronous condenser operating mode. Because CAISO lacked the flexibility to dispatch the units as synchronous condensers, the shut-down instructions only added to the escalating System Emergency.</p>	

No	Comment Submitted	ISO Response
	<p>Because CalPeak's existing generators can provide synchronous condensing when not generating, the need to dispatch additional units can be reduced. In addition, based on our understanding that some existing generators are currently dispatched in order to provide MVARs, making use of units like CalPeak avoids what is currently a very expensive and environmentally harmful way to address the situation.</p> <p>Although the CAISO did not model the CalPeak proposals in the 2013-2014 TPP, it did find a need for synchronous condensers to provide voltage support. In particular, the Draft Transmission Plan indicates that the CAISO has identified the need for an additional 450 - 700 MVAR of dynamic reactive support at future SONGS Mesa Substation or electrically equivalent location in the vicinity. Draft TP at 103. To address this need the ISO recommends installing two synchronous condensers at the San Luis Rey substation totaling 450 MVAR and notes there is a potential need for 250 MVAR of additional dynamic reactive support at SONGS Mesa or an electrically equivalent location which will be reviewed in future planning cycles. Id. The cost of the synchronous condensers at the San Luis Rey substation is estimated to be \$80 million and they would not be in service until June of 2018. Draft TP at 284. The synchronous condensers would be constructed by SDG&E rather than being subject to competitive solicitation process. Draft TP at 288.</p> <p>The CAISO's determination to not study the CalPeak proposal, even though CAISO found a need for synchronous condensers, is not in ratepayer interests. CalPeak believes that the possible use of existing units to provide voltage support should be studied before ratepayers are asked to pay the bill for synchronous condensers that may be larger than necessary and will not be available for many years. Making the changes needed to enable the CalPeak units to run as both generators and synchronous condensers is desirable because:</p> <ul style="list-style-type: none"> • Making changes to the existing units is much less expensive than building new synchronous condensers. 	

No	Comment Submitted	ISO Response
	<ul style="list-style-type: none"> • Voltage support can be available almost immediately from the units, rather than waiting many years for new synchronous condenser units to be built (and taking the risk that the new units can't be permitted/constructed as proposed). • There is no environmental impact associated with the enabling the units to run as synchronous condensers. <p>Allowing the peakers to earn some additional income for providing voltage support also helps to address the so-called "missing money problem" which is being experienced by many owners of units that do not have power purchase agreements. Earning extra income for providing voltage support helps ensure that the peakers meet the revenue requirements necessary to stay in operation and, thus, to be available to provide power or voltage support to the grid.</p> <p>Even if the CAISO is not able to evaluate the CalPeak proposals and thus make them part of the 2013-2014 Final Transmission Plan, CalPeak believes that the CPUC may well be interested in further evaluation of the proposal as part of the 2014-2015 Final Transmission Plan.</p>	

No	Comment Submitted	ISO Response
5	Duke-America Transmission Company and Hunt Power Submitted by: William A. Hazelip and Bill Bojorquez	
5a	<p>We agree with CAISO that the project warrants continued study in future planning studies, and that the NGIV2 line holds the promise of providing additional economic benefits. We further agree with CAISO that completion of NGIV2 will create numerous benefits, including facilitating increased use of efficient generation, decreasing LMPs, and ultimately reduced load payment for the ISO ratepayers.</p> <p>CAISO further states, however, that the capacity benefits of NGIV2 are determined to be zero. According to CAISO:</p> <ul style="list-style-type: none"> - System RA benefit is zero because of downstream bottleneck, and - LCR benefit is zero <p>If this is the case, there was no clear definition of the condition (and associated outages) reviewed by the CAISO and the results from the CAISO simulations. We request more detailed information with respect to the limiting outages and the downstream bottlenecks be provided during the 2014-2015 Transmission Planning Process.</p> <p>We also note that the NGIV2 project was studied prior to the inclusion of projects CAISO has recommended for approval in the 2013-2014 planning cycle, including, Delaney-Colorado River, and installing a phase shifter or back-to-back HVDC flow control device on the path to CFE. As both projects have the potential to directly impact NGIV2, we further request that NGIV2 is restudied inclusive of these two projects.</p>	<p>The ISO will continue to consider the need for a second line between North Gila and Imperial Valley, using updated information, in the determination of the economic studies undertaken in the 2014-2015 planning cycle.</p>

No	Comment Submitted	ISO Response
6	Duke-America Transmission Company, Path 15, LLC Submitted by: Deric Wittenborn	
6a	<p>DISCUSSION</p> <p>I. Prudent Transmission Planning Should Be Flexible to Accommodate an Uncertain Future.</p> <p>An essential element of any critical infrastructure planning process should be the recognition that the future is uncertain. This is especially true for electricity—a commodity essential to the public welfare that must be delivered in real time. The price of failure to hedge for uncertainty is particularly great in the context of transmission planning. Major transmission additions take many years to plan and permit; this is particularly true in California. Thus, needed but unplanned transmission cannot be built quickly as circumstances change. The opposite is not the case. Transmission that is planned, but later determined to be unnecessary, can easily be suspended prior to construction. Because the vast majority of transmission costs are incurred in the construction phase, stranded-cost risks are limited during the first 70-80% of the preconstruction portion of a typical transmission project schedule.² Stated simply, transmission planning risks are asymmetric: a transmission plan is much more flexible downward than upward.</p> <p>There is another fact about transmission planning that highlights the need for flexibility. Transmission costs—even assuming construction—are a small percentage of the customer’s overall bill, typically less than 10 percent.³ The biggest component of the customer’s total bill is generation. As DATC has repeatedly noted in comments filed at the CAISO and at the CPUC, minimizing transmission costs does not necessarily result in lower overall costs, as lack of transmission can raise generation costs that far outweigh the costs of building transmission. A transmission plan that guesses wrong on generation portfolio planning can force reliance on generation that is costly, environmentally harmful, or unreliable, leading to much larger ratepayer costs than the costs of planning for contingency transmission that is ultimately deemed unnecessary. Simply put, a myopic planning focus on a narrow range of scenarios aimed at reducing transmission costs is akin to choosing to fight</p>	<p>The ISO generally takes a least regrets approach to transmission planning on a scenario approach, as this is the approach that is supported by our general stakeholder population. Flexibility is one of the considerations taken in selecting solutions to identified needs. While the 33% Renewables Portfolio Standard has been the only public policy driving additional transmission since the ISO’s tariff changes enabled approval of policy-driven transmission, the ISO is open to reviewing and considering other policy needs and responding to suggestions of policies that should be taken into account on a case by case basis as set out in the ISO’s tariff.</p>

No	Comment Submitted	ISO Response
	<p>fires, rather than invest in long-term fire prevention measures. The myopic focus can easily prove “penny-wise and pound foolish.”</p> <p>In sum, prudent transmission planning strives for flexibility. As discussed in the next section, the CAISO should create a more flexible transmission plan by recognizing certain federal and state public policies that guide transmission development and address a broader range of planning and generation scenarios.</p>	
6b	<p>II. The Draft Study Plan Should Be Revised to Account for a Broader Range of Policy Objectives</p> <p>The Draft Study Plan identifies only two policy objectives: the 33% RPS and Resource Adequacy. This narrow view of “public policy” requirements is not what was envisioned in FERC Order No. 1000, which requires transmission providers to consider “Public Policy driven” projects.⁴ Order No. 1000 directed transmission providers to:</p> <p>...establish procedures for identifying those transmission needs driven by Public Policy Requirements for which potential transmission solutions will be evaluated in the local or regional transmission planning processes... As part of the process..., such procedures must allow stakeholders an opportunity to provide input, and offer proposals regarding the transmission needs they believe are driven by Public Policy Requirements.</p> <p>These reforms were intended “to ensure that local and regional transmission planning processes support the development of more efficient and cost effective transmission facilities to meet the transmission needs driven by Public Policy Requirements.”⁵ In response to this directive, the CAISO codified Tariff Section 24.4.6.6, which requires the CAISO to evaluate transmission solutions needed to meet state, municipal, county or federal policy requirements or directives.⁶ The tariff states that the CAISO “will determine the need for, and identify such policy driven transmission solutions that efficiently and effectively meet policies under alternative resource location and integration assumptions and scenarios, while mitigating the risk of stranded investment.”</p>	Please see response above.

No	Comment Submitted	ISO Response
	<p>The process outlined in Section 24 of the CAISO Tariff is data-driven and analytical, but also allows the CAISO to exercise discretion in order to align its prioritization of policy-driven transmission projects with the resource planning processes of regulatory agencies, and to use its judgment and experience in making decisions about public policy-driven project priorities.⁷ This flexibility and discretion is important, because for the reasons discussed above, efficient and effective transmission planning requires both pragmatic consideration of a spectrum of planning assumptions <i>and</i> the ability to balance long and short term options and priorities.</p> <p>In Section 3.1 of the Draft Study Plan, the CAISO reiterates the Public Policy Objectives it relied on in previous TPP cycles: “the state’s mandate for 33% renewable energy by 2020” as the “overarching public policy objective” in the current planning cycle.⁸ DATC believes there are multiple policy objectives that the CAISO must take into account during its planning process. Specifically, the Draft Study Plan should specifically address two additional policy objectives, as discussed below.</p>	
6c	<p>The Efficient Use of Rights-of-Way and Assets Should Be An Explicit Policy That May Support The Selection of Policy-Driven Transmission Projects.</p> <p>Both federal and California law clearly articulate policies supporting the most efficient use of transmission rights-of-way. As noted above, FERC Order 1000 requires ISOs and RTOs to support “more efficient and cost effective transmission facilities.” Similarly, the Bureau of Land Management’s Corridor Policy states that “in order to minimize adverse environmental impacts and proliferation of separate ROWs, the utilization of rights-of-way in common (corridors) shall be required to the extent practical . . .”⁹</p> <p>At the state level, California Public Utilities Code Section 399.26(b)(1) requires the CAISO to “work cooperatively to integrate and interconnect eligible renewable energy resources to the transmission grid <i>by the most efficient means possible with the goal of minimizing the impact and cost of new transmission needed to meet both reliability needs and the renewables portfolio standard procurement requirements</i>” (emphasis added). In addition, when the California State Legislature adopted SB</p>	<p>The ISO considers these policies in its planning analysis. We note that these parameters affect more the selection of particular solutions to meeting identified needs for system reinforcement, as opposed to driving the need for new solutions themselves.</p>

No	Comment Submitted	ISO Response
	<p>1059, the legislature found and declared that “to promote the efficient use of the existing transmission system, the state should do both of the following: (1) encourage the use of existing rights of way, the expansion of existing rights of way, and the creation of new rights of way in that order [and] (2) promote the efficient use of new rights-of-way <i>when needed</i>, to improve system efficiency and the environmental performance of the transmission system (emphasis added).”</p> <p>In sum, federal and state policies mandate the efficient use of transmission Rights-of- Way (“ROW”). The CAISO should cite to these policies in Section 3 of the Draft Study Plan and explicitly recognize that these policies may support the selection of a policy driven transmission project where a planned transmission project can be expanded to more efficiently make use of limited right-of-way resources.</p>	
6d	<p>B. Long Term Greenhouse Gas Policies Should Also Be Explicitly Recognized in the List Of Policy Objectives.</p> <p>The Draft Study Plan does not address what is likely to be one of the key policy drivers for transmission development: California’s greenhouse gas reduction goals.¹⁰ Assembly Bill 32 (or “The California Global Warming Solutions Act of 2006”) declared that global warming posed a serious threat to the economic well-being, public health, natural resources, and the environment of California. AB 32 set an initial target of reducing California’s GHG emissions to 1990 levels by 2020. It further tasked the California Air Resources Board (“CARB”) with “monitoring and regulating sources of emissions of greenhouse gases that cause global warming in order to reduce emissions of greenhouse gases.”¹¹ Pursuant to Executive Order S-3-05, California has a longer term GHG goal of 80% below 1990 levels by 2050. CARB is currently developing a broad framework for measures to meet this goal.¹² CARB calls for significant energy-related emission reductions, coupled with electrification of the transportation sector. Moreover, a recent study by Lawrence Berkeley National Laboratory (and supported by CARB’s Research Division) showed that in order to reach California’s 2050 GHG goal, the state would need to achieve greater than 40% renewable generation by 2020, or 51% by 2030.¹³ Thus, rather than a singular focus on California’s 33% RPS, the CAISO should consider the policy-driven impacts of the much higher levels of renewable generation required to achieve California’s long term GHG goals. The</p>	<p>The ISO considers these policies in its planning analysis. We note that these parameters affect more the selection of particular solutions to meeting identified needs for system reinforcement, as opposed to driving the need for new solutions themselves.</p>

No	Comment Submitted	ISO Response
	CAISO should cite to these policies in Section 3 of the Draft Study Plan and explicitly recognize that achieving the State’s GHG goals may support the selection of a policy driven transmission project.	
6e	<p>III. The Draft Study Plan Should Be Revised to Account for a Broader Range of Planning Scenarios</p> <p>A. The CAISO Should Improve the Analysis of Reliability Needs in the Draft Study Plan by Studying Long-Term Drought Conditions and a PG&E Fall Peak Scenario for the PG&E Bulk Transmission System.</p> <p>There is no question that the drought in the Western United States will severely impact California’s ability to rely on hydro power. As noted by Mr. Berberich in his recent report to the CAISO Board of Governors, “[w]e are monitoring drought conditions closely . . . the northern Sierra has a snowpack that’s only 8% of normal . . . the central Sierra is at 16% of normal [and] the southern Sierra is at 22% of normal.¹⁴ If these conditions continue, many of the assumptions that the CAISO is making about the future availability of hydro resources will prove incorrect. Therefore, the CAISO should include a new scenario that specifically accounts for long-term severe drought conditions and addresses transmission needs that result from an inability to rely on hydro resources.</p> <p>In addition, The Study Scenarios in the ISO Reliability Assessment should include a fall peak scenario for the Northern California Bulk System and Central Valley.¹⁵ The Draft Study Plan’s focus on summer peak scenarios do not capture the full range of reliability issues facing the electricity system. These additional fall scenarios would represent a lightly loaded fall morning with high wind and morning solar generation. The case would simulate high south to north flows on Path 15 & 26 that are typical of historical fall morning values.</p>	The ISO considers drought conditions in its planning analysis when it is considered a major factor in the analysis.
6f	<p>B. To Create a More Flexible Plan, the CAISO Should Broaden The Generation Scenarios Considered in the Draft Study Plan.</p> <p>Pursuant to a May 2010 Memorandum of Understanding (“MOU”), the CAISO relies upon input from the CPUC and the CEC to develop the generation portfolios that the CAISO uses in the TPP. On February 27, 2014, the CPUC and the CEC transmitted the Base Case and Alternative Renewable Resource Portfolios for the CAISO 2014-2015 TPP. As the CAISO noted in the previous 2013-2014 TPP, “there continues to</p>	The ISO coordinates its resource assumptions with the CPUC Long-term procurement process. Proposals for additional resource assumptions need to be considered in that process.

No	Comment Submitted	ISO Response
	<p>be a great deal of uncertainty about which areas of the grid will actually realize most of this new resource development.”¹⁶ In order to address this uncertainty, the CAISO applies what it refers to as a “least regrets” principle, in order to balance the development of needed transmission in time to meet public policy requirements, while at the same time avoiding stranded cost risks.</p> <p>Despite the CAISO’s recognition of uncertainty regarding future development of generation resources, it appears that the CAISO will continue in the 2014 – 2015 TPP to rely on a very limited number of generation scenarios.¹⁷ The February 27, 2014 letter only recommends four scenarios.¹⁸ Use of a small number of scenarios, with little variability, will result in the development of a less flexible transmission plan that runs the risk of failing to provide transmission access to preferred least cost generation resources.</p> <p>To provide for a more flexible 2014-2015 Transmission Plan, the CAISO should broaden the Draft Study Plan generation scenarios in two ways. First, there should be a new scenario that addresses long-term GHG system needs. This scenario should account for higher degrees of renewable penetration (i.e., greater than 33%) in the 2024 time horizon that will be necessary to fulfill the State’s GHG goals discussed above.</p> <p>Second, there should be a new scenario that assumes a high reliance on out-of-state renewable resources. This scenario would help address the risks of over-generation discussed in Section 6.3 of the Draft Plan. One of the largest integration challenges is over generation (consistent with concerns that the CAISO has raised through its ubiquitous “duck curve”). A recent study by E3 explored various methods of addressing projected over-generation, including studying the effects of various RPS resource portfolios. The study considered four RPS portfolios under a 50% RPS: portfolios emphasizing large solar, small solar, rooftop solar, and a diverse resource portfolio. Integration costs were lowest under the diverse resource portfolio (including 3,966 MW of out-of-state wind), even though the transmission costs associated with that portfolio were higher than for the other three portfolios.¹⁹ The study emphasizes the need for enhanced regional coordination to allow for access to out-of-state</p>	

No	Comment Submitted	ISO Response
	<p>renewable resources that can reduce integration costs and provide lower rate impacts than overreliance on in-state solar resources.</p> <p>In sum, broadening the Draft Study Plan as discussed above will allow the CAISO to effectuate a more balanced, flexible, and prudent transmission plan. The CAISO will be able to more clearly recognize the benefits of new transmission projects and create new opportunities to minimize costs for ratepayers. Two examples of projects whose benefits would be recognized in a broader transmission plan are discussed in the next section.</p>	
6g	<p>IV. By Broadening the Study Policies, Scenarios and Planning Assumptions, the CAISO Will Be Able to Recognize the Benefits of Transmission Projects Such as the Zephyr Project and San Luis 500 kV Alternative.</p> <p>A. A Broader Study Plan Would Enable the CAISO to Address the Benefits of Projects Such as the Zephyr Project.</p> <p>The Zephyr Project is an HVDC transmission line, which will run from southeast Wyoming and interconnect to the CAISO balancing authority area at the Eldorado substation. It will deliver wind generation being developed in southeast Wyoming by Pathfinder Renewable Wind Energy, LLC to communities in the Southwestern United States. In the previous TPP cycles, the CAISO declined to study the Zephyr Project.²⁰</p> <p>In light of this history, DATC continues to have serious concerns about the development of the RPS portfolios at the CPUC and the CAISO's determination to rely exclusively on those portfolios in developing its transmission plans. As noted above, the CAISO should consider either on its own, or in conjunction with the CPUC's development of the RPS portfolios, a wider range of potential resources to meet California's RPS, including out-of-state wind that can ameliorate costs of renewable integration. In addition, as discussed above, the CAISO should consider higher levels of renewable penetration that will be necessary to meet the State's greenhouse gas objectives. The Zephyr Project would satisfy both of these needs.</p>	<p>The ISO coordinates its resource assumptions with the CPUC Long-term procurement process. Proposals for additional resource assumptions need to be considered in that process.</p>
6h	<p>B. The 2014-2015 Draft Plan Should Include Expansion of the San Luis Transmission Project.</p> <p>DATC Path 15 provided comments in the 2013-2014 TPP urging the CAISO to take</p>	<p>The ISO will monitor potential needs and requirements in this</p>

No	Comment Submitted	ISO Response
	<p>advantage of a fleeting opportunity to support a 500 kV Alternative to Western’s proposed 230 kV transmission line between Western’s Tracy and San Luis Substations. The comments described the Western project, and noted that Western had initiated environmental review of both the 230 kV San Luis Transmission Project and a 500 kV alternative that would allow the CAISO to address a weak link in the 500 kV backbone of the CAISO grid between Tracy-Tesla and Los Banos (“San Luis 500 kV Alternative”). DATC’s comments in the 2013 – 2014 TPP provided a detailed discussion of why the San Luis 500 kV Alternative can and should be designated a public policy-driven transmission solution. Specifically, DATC called on the CAISO to approve the additional capacity (approximately 1000 MW of transfer capability between Los Banos and Tracy) created by the San Luis 500 kV Alternative. Given the timing of the environmental review for the San Luis 230 kV Transmission project, if California is to realize the benefits of this fleeting opportunity, the 500 kV Alternative must be studied by the CAISO in this iteration of the TPP. By explicitly recognizing state and federal policies for the efficient utilization of transmission rights-of-way in the Draft Study Plan, the CAISO will be able to more clearly recognize the benefits of a project like the 500 kV alternative to the San Luis Transmission Project.</p> <p>The long term value of the 500 kV alternative to the San Luis Transmission Project may be highlighted in a fall study scenario. As discussed above, the CAISO study scenarios should more fully account for system reliability needs by including scenarios other than summer peak cases where directional flow biases can reach levels that mimic historical congestion patterns. For example, the previous 2011 California Transmission Planning Group (“CTPG”) study effort included a scenario with high “South-to-North” flow from the LA Basin toward the Bay area.²¹ The study scenario was supportive of projects that would raise Path 15 and Path 26 transfer limits. Specifically, the CTPG “South-to-North” Scenario 5 “was developed to identify any potential reliability standard violations during a lightly loaded fall morning with high wind and morning solar generation in southern California. . . . The South to North Flow scenario examined the foundation case where flows on Paths 15 and 26 in central California are south to</p>	<p>corridor. Transmission solutions are considered in response to addressing potential identified needs on the transmission system.</p>

No	Comment Submitted	ISO Response
	<p>north, typical of historical fall morning values (prior to the addition of new renewable resources).”</p> <p>The CTPG South-to-North Foundation case included a 6,206 MW south to north flow on Path 15 (based on a 5400 MW Path rating) and a 2,517 MW south to north flow on Path 26.22 While that particular CTPG scenario included a Path 15 base flow that exceeded the Path rating, future CAISO models should include at least one scenario where Path 15 flow bias approaches the Path rating levels.</p> <p>The 2011 CTPG Study proposed a 500 kV Midway-Tesla Mitigation to address flow issues along Path 15 and Path 26. If the CAISO expands its analysis to address a Fall-peak scenario as requested above, the Study Plan will enable the CAISO to address the benefits of a 500 kV alternative to the San Luis Transmission Project line in the 2014-2015 TPP.</p> <p>CONCLUSION DATC’s comments focus on the need for the CAISO to expand its Draft Study Plan, <i>not necessarily the system</i>, in order to provide increased flexibility to meet future needs. By relying on a limited set of policies and planning / generation scenarios, the Draft Study Plan would create an inflexible 2014 – 2015 TPP. This approach is mutually exclusive to creating valuable options. As discussed above, DATC points out specific enacted policies that are excluded from the study plan. These include the efficient use of transmission rights-of-way and assets, and the State’s GHG goals. Explicit consideration of these additional policies will result in correctly approving additional facilities necessary to meet the policy goals. Our comments also call on the CAISO to broaden the Draft Study Plan to account for certain reliability based planning scenarios and additional generation scenarios that will help create a more flexible transmission plan. DATC appreciates the opportunity to provide these comments and looks forward to working with the CAISO on the 2014-2015 TPP.</p>	

No	Comment Submitted	ISO Response
7	Duke Energy Submitted by: Seth D. Hilton	
7a	<p>Consideration of Non-Transmission Alternatives for Local Capacity Needs</p> <p>The CAISO's September 4, 2013 white paper contemplated that consideration of non-conventional alternatives for local needs would involve three steps. First, the CAISO would develop a catalog of resource types and options that would provide the generic performance characteristics required to meet local need. (white paper at 8.) The catalog would include three primary characteristics: response time, duration, and availability. (<i>Id.</i>) The September 4, 2013 white paper contemplates that the development of the generic resource catalog would occur during Phase 1 of the TPP cycle, and would primarily involve "updating the generic resource catalog from the previous TPP cycle to reflect new information or new resource types." (<i>Id.</i> at 10.)</p> <p>The draft Study Plan states that the "ISO plans to continue the preferred resource analysis in the LA Basin and San Diego area as well as other parts of the ISO controlled grid to refine the evaluation of the effectiveness of preferred resources based on their particular characteristics." (draft Plan at 36.) The draft Plan goes on to note that "[i]n addition, the ISO is working with the utilities, and intends to consult with industry through the course of the summer, to establish the characteristics that demand response programs and storage need in order to be viable transmission mitigations." (<i>Id.</i>)</p> <p>The process laid out in the draft Plan appears to be somewhat similar to the process laid out in the September 4, 2013 white paper, but neither the white paper, nor the draft Plan provide any specifics concerning the schedule for development of a list of generic performance characteristics needed for energy storage or preferred resources to mitigate transmission constraints and provide for local capacity needs. Nor does the draft Plan provide any detail concerning stakeholder involvement either in the consideration of characteristics required for energy storage and demand response, or for the development of the generic resource catalog contemplated by the September 4, 2013 white paper. It is essential that stakeholders be permitted opportunities to provide input into this process. Duke requests that the CAISO consider providing a robust stakeholder process that would permit industry and others to participate in the</p>	<p>The ISO expected input on the preferred resource information to be considered as alternatives and studied as part of the comments on this study plan. As indicated in the February 27th stakeholder presentation the ISO will work with the PTOs and state agencies for information on existing and future preferred resources. Stakeholders will be given an opportunity to provide comments on this information and analysis.</p> <p>Much of the preferred resource amounts that will be analyzed were already authorized in Track 1 and Track 4. Further opportunities for preferred resources to address local needs will be explored in the transmission planning process.</p>

No	Comment Submitted	ISO Response
	<p>CAISO's continuing efforts to evaluate the potential for preferred resources and energy storage.</p> <p>The second step contemplated by the September 4, 2013 white paper was to “carry out a process of selecting, refining, and validating a potential mix of resources that could best provide the performance characteristics needed for a particular local area.” (white paper at 10.) Per the white paper, “[t]his consists of aligning the required characteristics for each local area with the catalog of generic resource types. Consultation with stakeholders and submitted comments could identify additional potential resource mixes, and the ISO would consider these in refining its initial proposal to arrive at the resource mix that best meets the need.” (<i>Id.</i>). The white paper contemplates that this process would take place during Phase 2 of the TPP cycle.</p> <p>This process seems to contemplate the development of various scenarios incorporating a diverse set of resources, to be evaluated to determine how well that resource mix would meet local needs. In the 2013-2014 TPP, the CAISO did a similar evaluation based on scenarios provided by Southern California Edison, but received no additional stakeholder input on those scenarios. In comments submitted on the 2013-2014 draft Transmission Plan, Duke urged the CAISO to provide opportunities for stakeholder input on the scenarios, and Duke reiterates that request here. Creating opportunities for dialogue between stakeholders, especially resource developers, and the CAISO is critical to the success of any process to allow consideration of non-conventional solutions. Resource developers need opportunities to convey the capabilities of their resources to the CAISO, while the CAISO needs to convey sufficient information regarding reliability needs that developers can create the solutions for those needs.</p> <p>The final step contemplated in the September 4, 2013 white paper consisted of monitoring the development of any non-conventional alternative approved in the transmission plan, to ensure that the non-conventional alternative will be in place in time to meet the required local need. The white paper contemplates that such resources would only be considered “in situations where the timeline for an identified</p>	

No	Comment Submitted	ISO Response
	<p>need allows time for monitoring the development of non-conventional alternatives <i>before</i> a conventional solution would be required to be approved.” (white paper at 3 (emphasis added).) If the CAISO determined the non-conventional resource is not developing in a timely manner, it would reinstate the conventional (i.e., transmission or generation) solution. Furthermore, the CAISO would not play a part in the development of the non-conventional solution. “To the extent an identified non-transmission solution constitutes the most prudent and cost-effective solution for meeting a need, the CAISO will simply decline to approve a transmission solution. The CAISO does not approve specific non-transmission solutions, nor does it have the tariff authority to do so.” (October 11, 2012 FERC Order 1000 Compliance Filing, Docket No. 13-103-000 at 81-82.)</p> <p>The timeline contemplated by the CAISO is problematic for several reasons. Transmission solutions take considerable time to permit and construct, far longer than many types of energy storage. Requiring the development of energy storage before a transmission solution would be required to be approved means that energy storage solutions would have to be developed well before they are actually required to meet reliability needs. While Duke understands that the CAISO does not have the tariff authority to approve specific non-transmission solutions, the CAISO should work in conjunction with the California Public Utilities Commission (“CPUC”) to create a process whereby any non-conventional solution could be pursued through the long-term procurement proceeding (“LTPP”) or other CPUC procurement mechanisms. By coordinating with the CPUC to create a process whereby non-conventional solutions can be selected and developed, the CAISO and the CPUC will increase the likelihood that such solutions are actually implemented. Duke appreciates the efforts of the CAISO and the CPUC to coordinate the LTPP and the TPP. However, such coordination should be expanded to consider specifically how non-conventional solutions selected by the CAISO can be further pursued through the LTPP.</p>	
7b	<p>Consideration of Energy Storage as Transmission Assets</p> <p>In addition to opportunities to utilize energy storage as a non-conventional alternative to transmission and generation, energy storage can also function as a transmission asset. The CAISO tariff permits the consideration of energy storage as a transmission facility. (See October 11, 2012 FERC Order 1000 Compliance Filing, Docket No.</p>	<p>Consistent with the ISO’s current transmission planning process and direction from the Federal Energy Regulatory Commission, storage facilities that function as transmission assets can be considered as such and are eligible for cost recovery through the</p>

No	Comment Submitted	ISO Response
	<p>ER13-103-000, at 81.) Pursuant to the CAISO's TPP, energy storage projects have been submitted in the Phase II request window for consideration as transmission solutions in both the 2010 and 2011 TPP. (October 11, 2012 FERC 1000 Compliance Filing, Docket No. ER12-103-000 at 81 n.210.) However, none were approved. In 2010, Western Grid Development, LLC submitted a total of eight projects. All eight were eventually rejected. Seven were rejected as unnecessary in the 2010 Transmission Plan. Evaluation of the eighth, Auburn 60 kV Energy Storage Project, was deferred until 2011, and then was rejected in the 2011/2012 Transmission Plan.</p> <p>Given this history, CAISO should also consider whether the current TPP process allows energy storage proposed as transmission assets to fully compete with more traditional transmission assets, and whether further refinements to the TPP would be appropriate to allow energy storage to be a viable alternative to traditional transmission assets, or to work in conjunction with such assets to augment the benefits provided.¹ Additional stakeholder processes may also be appropriate for the CAISO to further develop a process that fairly evaluates and takes advantage of the benefits provided by energy storage.</p>	<p>ISO's transmission access charge – however, they must perform only transmission functions and not market functions. While the ISO will continue to examine potential for such resources as purely transmission assets, the ISO considers that the market framework for storage to be acquired as a generation asset through the resource procurement process provides access to a much broader value proposition, including assisting in meeting local area needs and has also evaluated and commented on the effectiveness of storage in local areas in that context. The ISO intends to consider, with its stakeholders, how the dual characteristics of energy storage can be taken into account, but this will involve further policy development.</p>
7c	<p>Consideration of Energy Storage as a Solution to Over Generation</p> <p>The draft Study Plan also contemplates that the CAISO will conduct a study of the potential risk of over generation. The objective of the study will be to “quantify the potential risk of over-generation conditions that are expected to occur on the system by 2020.” (draft Plan at 36.) Duke suggests that the CAISO also consider the role that energy storage might play in mitigating over-generation risk both in 2020 and beyond as the state’s reliance on intermittent resources continues to grow.</p>	<p>Depending on the over-generation study results, mitigation alternatives will be considered. There may be mitigation solutions that include energy storage, but it is not clear since the studies were not performed yet.</p>

¹ Duke notes that it has substantial experience and expertise in electric transmission from many decades of ownership and operation of major transmission facilities in multiple states, and, along with its joint venture partner American Transmission Company, is developing the Zephyr Transmission Project, a high-voltage direct current line to connect wind resources to load centers in California and the Southwest.

No	Comment Submitted	ISO Response
8	Eagle Crest Energy Submitted by: Susan Schneider, Consultant	
8a	<p>ECE has two primary recommendations.</p> <ul style="list-style-type: none"> • Study time horizon and scope: The CAISO studies must look beyond the 10-year time horizon used in the past, and the current 33% Renewables Portfolio Standard (RPS), to produce the information needed for critical upcoming decisions about Greenhouse Gas (GHG) reductions and other environmental and structural issues. • Pumped-storage resources in TPP studies: The CAISO should add a special TPP study on the ability of large pumped storage resources to address the many operating challenges that the CAISO will face in the future. Alternatively, the CAISO should broaden the scope of several planned already-planned special TPP studies and integrate pumped storage more effectively into those studies. <p>Both of these recommendations are described further below.</p> <p>Study time horizon and scope The CAISO should broaden the horizon and scope of several planned TPP special studies in order to provide meaningful policy guidance to California decision-makers. The horizon should extend to 2030 and 2040, and the scope should include 40% and 50% RPS scenarios. These parameters are under active consideration by California policymakers as part of the planning to meet the carbon-reduction requirements defined by AB32, and information from the CAISO is urgently needed to guide those policy discussions. Potentially more effective and cost-effective longer-term solutions will essentially be precluded if the CAISO persistently retains the current 10-year timeframe in its studies and limits them to currently adopted policies.</p>	<p>The ISO coordinates its resource assumptions with the CPUC Long-term procurement process. Proposals for additional resource assumptions and over longer time horizons need to be considered in that process,</p>
	<p>Pumped-storage resources in TPP studies ECE continues to recommend that the CAISO include in its TPP studies a separate study on the ability of large pumped storage to address the many operating challenges that the CAISO will face in the future, in particular for a 2030-2040 timeframe and at 40% and 50% RPS levels. ECE recommended this study in its last comments and provided extensive locational and operating information on ECE's Eagle Mountain Project (a 1,300 MW pumped storage</p>	<p>The need for pumped storage to meet future operating challenges like renewable integration should be addressed in the renewable integration studies and initiatives that are ongoing at the ISO and in the CPUC long term procurement planning process. These needs can then find their way into the policy-driven portfolios developed by the CPUC. The</p>

No	Comment Submitted	ISO Response
	<p>project near Red Bluff Substation in the SCE area) for use in such a study. However, the CAISO dismissed these extensive comments in a brief sentence in the draft Plan, noting that ECE could submit the Eagle Mountain Project in the Request Window as proposed mitigation for any reliability issues identified in the other TPP studies.</p> <p>ECE believes that this summary dismissal is not justified and does not reflect the multiple purposes that such projects can serve. Pumped-storage resources could provide economic and policy-driven benefits as well by providing operating savings and helping the state more efficiently achieve its GHG and RPS targets. This combination of attributes is a primary reason why a separate storage study is warranted.</p> <p>The Study Plan is out of step with recent rulings by the CPUC. Commissioner Michael Picker's February 27th Assigned Commissioner's Ruling in the CPUC Long-Term Procurement Proceeding (LTPP) directs CPUC staff to prepare studies of pumped-storage projects specifically. The CAISO's input into these studies will be needed to meet this directive.</p> <p>ECE's proposal for a separate storage study would comply with the requirements of the CAISO tariff. CAISO Tariff Section 24.4.6.6 ("Policy-Driven Elements") states that, when the identifying policy-driven network upgrades:</p> <p>The CAISO will determine the need for, and identify such policy-driven transmission solutions that efficiently and effectively meet applicable policies under alternative resource location and integration assumptions and scenarios, while mitigating the risk of stranded investment. <i>(emphasis added)</i></p> <p>CAISO Tariff Section 24.4.6.6 (h) refers specifically to consideration of the following in determining classification of transmission solutions as "Category 1:"</p> <p>... the potential for a particular transmission solution to provide access to resources needed for integration, such as pumped storage in the case of renewable resources.... <i>(emphasis added)</i></p> <p>In fact, the CAISO justified the Gates-Gregg transmission project in its 2012-2013 Transmission Plan at least in part on the need to improve availability of the Helms pumped storage facility.</p> <p>Alternatively, if the CAISO does not proceed with a separate storage study, then in order to provide this information, ECE suggests below some modifications to two special TPP studies included in the Plan that would help the CPUC and other decision-makers in their</p>	<p>transmission planning process has taken into account in the past, and will take into account in the future, the transmission system needs to ensure renewable generation and enabling technologies are viable. The transmission plan therefore supports this larger industry dialogue.</p>

No	Comment Submitted	ISO Response
	consideration of such resources in the LTPP and other forums.	
	<p>Potential Risk of Over-Generation Study According to the Plan and February 27th stakeholder presentation, this study will examine potential over-generation issues and related consequences at the 33% RPS level, assuming two main contingencies: (1) loss of two Palo Verde units (largest WECC units); and (2) loss of two Diablo Canyon units (largest CAISO-area units).</p> <p>The impacts studied will include negative Real-Time energy prices, Area Control Error (ACE), system frequency/inertia, ramping, resource curtailment, and transient stability concerns. Mitigation would be required if those effects would cause the CAISO to violate WECC criteria.</p> <p>ECE supports this study but is concerned that it does not appear to address: (1) congestion or other economic problems/solutions; or (2) potential impact on efficient state achievement of 33% or higher RPS. ECE recommends that CAISO consider at least three revisions to this study effort.</p> <p>First, and most critically, the study should include an extension of the horizon and scope beyond 2020 and 33% RPS, at a minimum as a sensitivity case, as discussed above. The horizon should extend at least to 2030 and the scope should include an RPS expansion to at least 40%. As noted above, these parameters are already being considered by California policymakers, and information from the CAISO is urgently needed to guide those policy discussions.</p> <p>ECE notes the recent release of a landmark study, <u>Investigating a Higher Renewables Portfolio Standard in California</u>, by Energy and Environmental Economics, Inc. (E3), ECCO International, and DNV KEMA, and sponsored by PG&E, SCE, SDG&E, LADWP, and SMUD. This study examines operational challenges of 40% and 50% RPS levels in a 2030 timeframe and finds high potential curtailment of renewable-energy resources, among other things, at these RPS levels.</p> <p>The renewable-energy curtailments in that study did not assume any transmission congestion. Therefore, further work is needed by the CAISO in the TPP so that policy-</p>	<p>We understand that there may be economic impacts of over-generation such as sub-economical operation by reserving headroom on governor responsive resources to meet frequency response obligations, need for additional regulation procurement, negative real-time energy prices and other, but the over-generation risk study that will be performed as a part of the 2014-2015 TPP is intended to evaluate technical and not economic issues of frequency performance. If the study identifies concerns related to over-generation, then economic consequences and mitigations will be considered, and the cost of these mitigations will be evaluated. Mitigations will depend on the study results and on which issues will be identified by the study.</p>

No	Comment Submitted	ISO Response
	<p>makers have accurate and complete information on this critical point.</p> <p>Second, the CAISO study should be broadened to consider local and regional congestion impacts and costs, in addition to system-wide over-generation and reliability problems. Congestion is already being observed in some areas and may worsen at 33% and higher RPS levels, especially if (as announced in two separate efforts) a new line is constructed from Palo Verde into California that does not include transmission reinforcements all the way into the LA Basin and/or San Diego.</p> <p>Third, the potential impacts examined in the study should be broadened to include RPS compliance (and associated costs) under different strategies to address identified problems. For example, renewable-resource curtailment, without higher levels of energy storage so that energy can be delivered in non-congested time periods, could either risk non-compliance or require procurement of additional renewable resources (and associated costs) so that higher production in those non-congested periods can make up for the curtailment. The CAISO may not be the entity that will decide the procurement options that will be selected, but policy-makers that will make those decisions need this information to make informed decisions.</p> <p>Finally, the study should not only identify problems and potential solutions but also assess those solutions. This assessment should also recognize other benefits offered by such solutions, if any. For example, large pumped-storage resources would address multiple problems identified in multiple CAISO studies and should be addressed specifically in the CAISO studies.</p> <p>ECE understands the CAISO's desire to specify technology-neutral "attributes" needed to mitigate these problems and avoid favoring different technologies. However, the CAISO should not ignore the fact that all mitigation solutions will, by necessity, have a combination of benefits and costs outside the scope of a particular narrowly focused study that should be considered in any comparison of those options.</p>	<p>The study of congestion impacts and costs that Eagle Crest Energy proposes is a part of the TPP that is not related to the over-generation study. CAISO performs economic studies within the TPP using production simulation tools and evaluates congestion in these studies. This will be done also as a part of the 2014-2015 TPP.</p>
	<p>Preferred Resources and Energy Storage Study The CAISO plans to consider "Preferred Resources and Energy Storage (PR&ES) options to identified conventional generation or transmission solutions, potentially expanding this</p>	<p>The ISO coordinates its resource assumptions with the CPUC Long-term procurement process. Proposals for</p>

No	Comment Submitted	ISO Response
	<p>approach to Local Capacity Areas (LCAs) beyond the LA Basin and San Diego. According to the Plan and stakeholder-meeting slides, the CAISO plans to maintain the focus on local PR&ES resources (i.e., those physically located inside LCAs).</p> <p>The CAISO will also incorporate “uncommitted energy savings” (CPUC assumptions of demand-side resources and energy efficiency programs that are not yet developed) and to incorporate “behind-the-meter” distributed generation as it is reflected in the CEC load forecast.</p> <p>This year’s study will attempt to: (1) establish characteristics that these resources should have in order to be viable transmission alternatives; (2) work with the utilities to identify those programs and resources with those characteristics; and (3) consider those programs/resources as mitigation alternatives once the reliability assessment is complete and options are being developed.</p> <p>The CAISO will be assessing the CPUC’s High Distributed Generation scenario reflecting grid-connected distributed generation provided by the CPUC, as a sensitivity case.</p> <p>As with the application of this framework last year, it appears that the CAISO would consider transmission options as a secondary tool to address LCA needs that are not met through existing or future local resources. The CAISO cited the same kinds of concerns with cost and lack of state policy guidance, as well as resource limitations that mean that it “can’t study all scenarios,” in explaining its focus on local PR&ES resources. ECE believes that this approach is short-sighted and excludes potentially cost-effective solutions. ECE recognizes that transmission solutions can be expensive, but this is only one part of the picture. The CAISO studies should recognize that the impact to ratepayers is not limited to transmission costs but includes the generally much-higher cost of resources sited within major load centers.</p> <p>Thus, transmission from identified high-potential renewables areas where utilities are already procuring resources that can meet the identified reliability LCA needs should be considered a PR&ES resource. Such resources can make more efficient use of the utility portfolios already planned, i.e., the net cost of generation resources needed to meet those</p>	<p>additional resource assumptions need to be considered in that process.</p>

No	Comment Submitted	ISO Response
	<p>needs would be zero.</p> <p>Since the incremental costs of generation are typically larger than transmission, there are likely viable cost-effective alternatives outside of LCAs (such as the LA Basin and San Diego) that could meet the reliability needs of loads located there. The Sunrise Powerlink is a perfect example of this concept.</p> <p>As with local renewable-resource procurement, some additional resources might be needed to firm up intermittent renewable resources meeting reliability needs. However, the selection of effective firming resources would also be much greater with the additional transmission, since resources outside the LCAs could be considered.</p>	

No	Comment Submitted	ISO Response
9	EnerNOC, Inc. Submitted by: Melanie Gillette	
9a	EnerNOC appreciates the opportunity to provide these comments on the February 20, 2014 <i>Draft 2014-2015 Transmission Planning Process Unified Planning Assumptions and Study Plan</i> (2014-2015 Study Plan). We continue to support the California Independent System Operator (CAISO) for attempting to integrate existing and authorized preferred resources into its reliability assessments and to consider them as mitigation alternatives for identified reliability concerns in support of California’s policy emphasis on the use of preferred resources—specifically demand response and energy efficiency, which are at the top of the state’s loading order. EnerNOC believes it is critical to incorporate these preferred resources into the planning assumptions to meet local reliability needs in order to appropriately represent the current and future potential of these resources.	Please see responses below.
9b	<p>As we have stated in previous comments on the 2013-2014 Transmission Plan, EnerNOC’s overarching concern is that the planning assumptions and scenarios being used by the California Public Utilities Commission (CPUC), the California Energy Commission (CEC) and CAISO do not adequately represent the demand potential. For example, they fail to incorporate any growth over current levels of demand response; do not include modifications to the load forecast to reflect increasing customer exposure to time-variant rates; do not include any demand response resources for local reliability purposes; and fail to define the attributes that would allow preferred resources to be included for local reliability going forward.¹</p> <p>Demand response is one of the preferred resources being promoted in the state’s policy context; however, it is being virtually ignored for planning purposes. This apparent lack of coordination among the agencies and their staffs conducting the studies is leading to an untenable situation. Parties, including EnerNOC, have to devote significant time and resources to continually advocate for the inclusion of</p>	<p>Consistent with the CPUC Ruling on 2014 LTPP-TPP assumptions, the ISO’s reliability assessment in the current planning cycle will include the fast-response, dispatchable demand resources described in Table 4.11 of the study plan as well as the impacts of the non-event based programs, critical peak pricing programs and peak time rebate programs that are embedded in the CEC forecast. These demand response programs account for about 80% of the total existing demand response programs in the SCE area, 71% in SDGE area and about 56% in the PG&E area. The ISO will work with the state agencies and PTOs to determine how the remaining demand response resources could be accounted for in future planning cycles.</p> <p>As described in Section 6.2 of the study plan, the ISO intends to perform additional preferred resource evaluations to identify the performance attributes needed from preferred resources such as demand response resources. The preferred resources study will supplement the main reliability studies and will focus on those areas where preferred resources are identified as potential solution to identified reliability issues.</p>

No	Comment Submitted	ISO Response
	<p>preferred resources into planning scenarios, when they should be included automatically, consistent with state policy.</p> <p>The 2014-2015 Study Plan includes one short page explaining how “fast-response” demand response programs will be considered to mitigate first contingencies under an N-1-1 condition. However there is not sufficient detail in this brief paragraph to understand how demand response programs were identified as “an acceptable assumption for local area studies.” The only definitions that are included are that the resources must be “fast-response” and located in the most effective areas for mitigating first contingencies under an N-1-1 condition.² “Fast-response” is defined as having an expectation that demand response would be “able to respond in sufficiently less time than 30 minutes from the CAISO dispatch, to allow ISO operators enough time to detect a non-response and dispatch an alternative resource if needed to mitigate a contingency.”³ The only additional detail about demand response included in the 2014-2015 Study Plan is a table that identifies the demand response programs for each investor-owned utility (IOU) that meet the “fast response” criteria.⁴ The demand response programs that are included in this table are BIP, API and AC Cycling.</p> <p>While EnerNOC is encouraged to see demand response included for local reliability in the Study Plan, it is unclear why these DR programs were selected for the study while other “Fast-Response” resources were not included. The February 27 presentation included additional slides for each of the three IOUs that included additional descriptors such as “advanced notification,” “frequency limitations,” and “duration limitations.”</p> <p>The “Fast Response DR Programs” included in the table had 30 minute advance notification, with the exception of SCE BIP, which indicates 15 or 30 minutes advance notification, and varied in their frequency limitation and duration limitations by IOU. In addition to the Base Interruptible Program, several supply-side demand response resources, including Aggregator-Managed Contracts, the Capacity Bidding Program, and the Demand Bidding Program are dispatchable by either local capacity area or sub-load aggregation point. However, this</p>	

No	Comment Submitted	ISO Response
	<p>capability does not appear to be captured in the Transmission Plan's scenarios.</p> <p>It is our understanding that CAISO requires that demand response resources must be fast response curtailment (20 minutes) in addition to meeting the resource adequacy requirement for four hour duration.⁵ Presumably this requirement is related to CAISO's need to stabilize the system within 30 minutes after a contingency event. CAISO interprets that requirement to suggest that demand response resources would need to be dispatched in advance of that 30 minute timeframe. To our knowledge this is not a requirement in other markets, however. The reality is that with 30 minute notification of an event, customers do start to drop load, so there is some amount of load drop that would definitely occur within the 20 minute window. However, resources that come on line within the 20-30 minute window still have some value for restoring the system, especially considering that most generation in a local capacity area cannot respond to a 30 minute dispatch signal and yet still counts toward meeting local reliability. The value for the 30 minute demand response is certainly not zero!</p> <p>It would be very helpful if the 2014-2015 Study Plan would address the issues outlined above. It is important for parties to have clear definitions of what qualifies for a resource to be considered to mitigate a local reliability constraint. It is also important that CAISO help stakeholders understand why there is a "California-specific" requirement for demand response to be considered to satisfy a NERC requirement. This is puzzling and challenging. EnerNOC appreciates the opportunity to provide these comments and respectfully requests CAISO's consideration.</p>	<p>For clarity, mandatory planning and operating standards call in certain circumstances for the system to be repositioned after a contingency to be properly positioned for the next contingency within 30 minutes from the initial contingency. As time is also required for dispatch instructions, the entire 30 minutes is not available for solely the load response. Where those circumstances apply, compliance is not optional or discretionary, and resources responding after the total 30 minute elapsed time do not help in meeting these mandatory standards.</p> <p>Other stakeholders have also suggested that this is inconsistent with the treatment of conventional dispatchable generation, which cannot be started and reach the required output level within 30 minutes. The fundamental difference is that non-use limited resources can be dispatched at the necessary levels (or within the range that they can respond to within 30 minutes) prior to the first contingency occurring. Demand response programs that could be called upon with this higher frequency (every time the local area load reaches into the range that action would be required following a first contingency whether the contingency occurs or not) could also meet that need. The ISO will look forward to input in the next planning cycles as to the possibility of demand response programs that can offer this more frequent dispatch service.</p>

No	Comment Submitted	ISO Response
10	LS Power Submitted by: Sandeep Arora and Lawrence Willick	
10a	<p>CAISO's 2013/14 Transmission planning studies for the Bulk System showed reliability concerns due to loss of major 500 kV line in Northern California, such as loss of Table Mountain-Tesla 500 kV or Table Mountain-Vaca Dixon 500 kV lines. The suggested solutions included upgrading the impacted line or limiting California-Oregon Intertie (COI) transfers thereby limiting the amount of generation into northern California. CAISO should further study this reliability condition and also analyze the economic and reliability impact of any COI curtailments under these contingency conditions. CAISO's recent Market Monitoring reports show a significant amount of congestion on the COI path. LS Power recommends CAISO perform a study in this area and evaluate the benefits of a new 500 kV path from Midpoint 500 kV substation to Eldorado 500 kV substation. This line can potentially be the transmission solution for resolving reliability & congestion issues CAISO has identified. This project should significantly reduce (if not completely avoid) COI curtailments and provide economic, reliability and renewable integration/Energy Imbalance Market benefits to CAISO ratepayers.</p> <p>This project comprises of three segments: (a) a new 500 kV line from Midpoint to Robinson Summit, (b) a 500 kV line from Robinson Summit to Harry Allen, which recently became operational (the "ON Line") and (c) a new 500 kV line from Harry Allen to Eldorado substations. LS Power's affiliate owns capacity on these three segments that can be dedicated to CAISO creating a complete path from Midpoint to Eldorado. This combined project offers a major parallel path to CAISO's several existing paths such as Pacific DC Intertie (PDCI), Pacific AC Intertie, Path 26 and CAISO's Southwest intertie interfaces and enhances CAISO's renewable integration/Energy Imbalance Market initiatives providing improved access to the systems of NV Energy, PacifiCorp, Bonneville Power Administration and Idaho Power. The project has huge potential in alleviating several intertie constraints that CAISO BAA currently faces. CAISO had performed a study for this path in the 2012/13 Transmission Planning cycle. Since then CAISO's system and assumptions have changed (including PacifiCorp and potentially NV Energy joining the Energy Imbalance Market) and CAISO has made several modelling enhancements to its economic planning database, but it has not redone this study. In recognition of the potential economic, reliability and renewable integration/Energy Imbalance Market benefits this project could provide to CAISO ratepayers, we recommend CAISO perform the requested detailed study as part of 2014/15 planning cycle. If additional information is required to facilitate the study please contact us.</p>	<p>The ISO plans to analyze the need for a Harry Allen to Eldorado line.</p>

No	Comment Submitted	ISO Response
11	Natural Resources Defense Council Submitted by: Carl Zichella, Julia Souder Prochnik and Nicholas Jimenez	
11a	On page 3 - In addition to SWAT, which other sub-regional groups (such as SIERRA and regional organizations as ColumbiaGrid and Northern Tier Transmission Group) has CAISO consulted with? It would be useful to have a listing of all of the entities.	On February 28, 2014 the ISO hosted a WECC wide planning region coordination meeting. Below is a link to the agenda. http://www.columbiagrid.org/download.cfm?DVID=3447
11b	On page 3 and page 38 - CAISO referenced using WECC data, but that step is not mentioned in this schedule. Can you please note when WECC data was used in the planning activity cycle? We agree using WECC data is critical to transmission planning and support the work CAISO does with TEPPC.	Pages 3 and 38 have no reference to WECC data. As described in page 15 the WECC power flow base cases will be used as the starting point for the ISO Transmission Planning Base cases. Also the economic planning study uses the TEPPC data as the starting economic data set.
11c	On page 6 - NRDC appreciates broadening the review scope to include approaches to consider resources outside the BA for RA purposes.	Thank you for the input.
11d	On page 6 - CAISO received feedback from FERC regarding Order 1000, but this is not included or noted in the guidance for public policy new elements. Also, there were non-transmission alternative requirements and this should be noted.	The ISO will comply with the latest FERC Order 1000 feedback and requirements from FERC. There is already a section on non-transmission alternatives and preferred resources in the study plan.
11e	On page 6 - CAISO should clarify the timeline for the study plan is a 10-year horizon. Mention on page 10 for reliability study horizon, but should be for entire plan.	The study plan specifies the range of years that the study models will represent. These models are the primary tool for identifying transmission needs.
11f	On page 6 - Will CAISO add more scenarios such as studying a 40 or 50% RPS? Draft legislation in works at CA legislature	The ISO coordinates its resource assumptions with the CPUC Long-term procurement process. Proposals for additional resource assumptions need to be considered in that process.
11g	On page 7 - Glad to see CAISO including RA import capability outside the ISO BAA, NRDC is interested to learn whether additional policy-driven transmission needs arise.	The current results can be found at page 143-144 (section 3.2.2) of the draft 2013-2014 Transmission Plan: http://www.aiso.com/Documents/RevisedDraft2013-2014TransmissionPlan.pdf . Next year report will have a similar chapter.
11h	On page 8 - Glad to see CAISO working again with the CTPG, and look forward to public participation in discussions on their plans. CTPG is the only statewide process in which Investor and Publicly owned utilities can jointly plan. Please make information for meetings and calls available on websites. Both CAISO and CTPG. CTPG still mentions many attributes on hold and now should reopen with this initiative.	The ISO is seeking to continue working with CTPG once it become active again. In the interim the ISO will publish its own version of a state wide plan until such time as CTPG is active.

No	Comment Submitted	ISO Response
11i	On page 12 - Again, WECC should be mentioned here 4.4	The planning standards mentioned in 4.4 are NERC standards.
11j	On page 12 - Minor edit: Fix 4.1.9 to 4.19	Correction made to 4.9.
11k	On page 30 - Can CTPG also help with Post Transient Analyses? This would provide an entire statewide perspective.	The ISO performs Post-Transient Analyses in the Bulk system assessments using the full WECC model. All CAISO bulk system contingencies and selected neighboring system contingencies are studied.
11l	On page 30 - Mention outages, but what about planned outages...are these categorized differently? This should be clarified.	Planned outages are modeled as required for NERC compliance.
11m	On page 32 - Glad to see inclusion of lower cost alternatives to construction of transmission additions or upgrades and inclusion of demand side management and energy efficiency.	Thank you.
11n	On page 34 - In Section 5.2 is any behind the meter local capacity studied? We realize this is tough to do, but understand CAISO is developing new modeling capacities in this arena.	Behind the meter load is modeled explicitly for most co-generation facilities, and taken into account in all ISO studies (not just LCR).
11o	On page 35-36 - NRDC appreciates the inclusion of energy efficiency, demand response, renewable generating resources and energy storage as preferred resources.	Thank you.
11p	On page 36 - Minor edit: Fix 4.1.9 to 4.19	Correction made to 4.11.
11q	On page 36-37 - Over generation: NRDC recommends that CAISO consider ways other than curtailment to address the issue of overgeneration, including the recommendations on the recent E3 report on utilizing a strategy of regional coordination and a diverse resource portfolio to address these situations. In addition work by Jim Lazar (Teaching the Duck to Fly, February, 2014, Regulatory Assistance Project) emphasizes the importance of this multi-faceted approach involving a diverse portfolio of resources and geographies. See: http://switchboard.nrdc.org/blogs/czichella/coordination_is_californias_le.html http://www.raponline.org/featured-work/teach-the-duck-to-fly-integrating-renewable-energy	Depending on the over-generation study results and the identified concerns, mitigation measures will be proposed. All possible alternatives will be considered. Mitigation measures may not include generation curtailment.
11r	On page 38 - Which tariff (CPUC or FERC?) does section 24.4.6.6 relate to?	The ISO Tariff. Clarification has been added to the study plan.

No	Comment Submitted	ISO Response
11s	On page 40 - What is the Mid AAEE assumption? It is not spelled out here.	Additional Achievable Energy Efficiency (AAEE), definition now inserted in page 12 (load forecast) where it first appears. For additional details please go to the CEC web site at: http://www.energy.ca.gov/2013_energy_policy/documents/

No	Comment Submitted	ISO Response
12	Nexans Submitted by: Eric Hsieh	
12a	<p>Nexans recommends that the CAISO model the value of incremental increases in capacity for constraints due to thermal limitations of overhead transmission lines. Binding constraints that cause significant congestion costs may be alleviated through the addition of small (5%-10%) amounts of capacity. New technologies such as Dynamic Line Ratings typically provide this amount of capacity over 90% of the time. While reliability applications require deterministically available capacity, economic applications can make use of probabilistically available capacity. One possible modeling method is to add a new line parallel to the constrained line; the new line could be rated at 5% of the capacity of the original line and have a forced outage probability of 10%.</p> <p>For a preliminary cost estimate for the purposes of a cost-benefit calculation, other RTO documents have listed indicative costs. To determine how quickly the additional capacity can be brought online, DLR installation times range in the order of months. For example, ERCOT identified a need in January 2013, and new DLR systems were in place by May 2013, in time for the summer peak.</p> <p>A fully integrated DLR system, where dynamic ratings are integrated into the real time security constrained economic dispatch, has been implemented elsewhere.⁴ While DLR systems are not currently operational within the CAISO footprint, they are in use within the future EIM footprint.⁵ Development of an estimation methodology for the benefits of incremental capacity may facilitate future inter-regional planning efforts.</p> <p>Nexans believes that modeling the value of incremental thermal capacity will reveal many areas where new technologies can provide immediate and significant customer benefits.</p>	<p>Thank you for the input. The ISO supports increasing critical line ratings for a minimal cost. However, the transmission owners and market design details need to be considered. We have passed your comments on to our market design experts for future consideration.</p>

No	Comment Submitted	ISO Response
13	Office of Ratepayer Advocates Submitted by: Charles Mee, Zita Kline and Traci Bone	
13a	<p>DISCUSSION</p> <p>The CAISO should verify the status of new generation assumptions through the California Public Utility Commission’s (CPUC’s) long term procurement process (LTPP) rather than relying on the California Energy Commission (CEC) website.</p> <p><u>Background</u></p> <p>The CAISO performs reliability studies annually to assess the grid’s compliance with applicable National Energy Reliability Council (NERC) Standards and Western Energy Coordinating Council (WECC)/CAISO reliability criteria.² Generation is an input into the study scenarios.³ According to the CAISO, it relies on the “CEC website under the licensing section” to incorporate new thermal and solar thermal generation projects into its generation assumptions.⁴ New thermal and solar thermal generation projects incorporated into the CAISO generation assumptions for 2014-2015 include the Oakley Generation Station (Oakley) and the Pio Pico Energy Center (Pio Pico).⁵</p> <p><u>ORA’s Recommendations on Generation Assumptions for Reliability Studies</u></p> <p>The CAISO should adjust its model assumptions for planned generation to reflect the current status of generation project approval by the CPUC. For example, the CAISO should remove Oakley from its list of planned generation for thermal and solar thermal⁶ because the CPUC’s approval of Oakley was annulled by the California Court of Appeals.⁷ The appellate court’s decision represents the second time the CPUC’s approval of Oakley has been annulled.⁸ Without CPUC approval, construction of</p>	<p>Thank you for the input. We will update the study plan with the latest information.</p>

² CAISO, 2014-2015 Draft Transmission Planning Process Unified Planning Assumptions and Study Plan (Draft Study Plan), p. 9.

³ *Id.* at 12.

⁴ *Id.* at 16, *see* http://www.energy.ca.gov/sitingcases/all_projects.html.

⁵ *Id.* at A-24.

⁶ *Id.*

⁷ *The Utility Reform Network (TURN) v. PUC* (Feb. 5, 2014), Cal. Crt. of Appeal, First District, A138701, *et al.* (certified for partial publication).

⁸ *Id.* at 4-5, (The CPUC’s approval under D. 10-12-050 and D. 11-05-049 was annulled in March 2012).

No	Comment Submitted	ISO Response
	<p>Oakley is unlikely to be completed by 2016, the first year the CAISO plans to account for the generator in its modeling assumptions.⁹ Also, given that the CAISO assumes 624 Megawatts (MW) of capacity for Oakley, retaining this power plant in its generation study assumptions is likely to have a significant impact on transmission planning in northern California.</p> <p>The CAISO should also adjust its planning assumptions for Pio Pico to reflect the CPUC's final decision amending the San Diego Gas and Electric Power Purchase Tolling Agreement (PPTA) start date from May 27, 2014 to June 1, 2017.¹⁰ Based on this new start date, it is reasonable for the CAISO to begin accounting for Pio Pico in its model for 2017 rather than 2015, as stated in the Draft Study Plan. Further, the CAISO should adjust its model to reflect that Pio Pico is a 305 MW generating facility¹¹ rather than 300 MW, as is currently assumed.¹²</p> <p>The aforementioned discrepancies highlight the need for the CAISO to verify the final capacity and start dates for generation projects based on CPUC processes, rather than relying solely on the CEC's licensing webpage. A list of CPUC approved projects is available on the CPUC's Energy website.¹³ Therefore, ORA recommends that the CAISO verify generator assumptions in its Draft Study Plan based on the CPUC process in order to ensure that modelled generation resources reflect actual generation conditions as closely as possible.</p>	
13b	<p>ORA supports the CAISO's incorporation of energy efficiency (EE) in its Local Capacity Requirement (LCR) studies and recommends that the CAISO model those resources using a methodology similar to the one for load allocation to local areas.</p> <p><u>Background</u></p>	<p>The ISO study plan is consistent with the Assigned Commissioner's Ruling on assumptions scenarios and renewable portfolio standard for</p>

⁹ Draft Study Plan at A-24.

¹⁰ CPUC, Decision Granting San Diego Gas & Electric Company Authority to Enter into Purchase Power Tolling Agreement with Pio Pico Energy Center, LLC. (Feb. 5, 2014) D. 14-02-016, p. 16.

¹¹ *Id.* at 1.

¹² Draft Study Plan at A-24.

¹³ CPUC, Power Procurement Contracts, <http://www.cpuc.ca.gov/PUC/energy/Procurement/Procurement/PPA.htm>.

No	Comment Submitted	ISO Response
	<p>The CAISO's LCR assessment includes studies of both the Near-Term LCR and the Long-Term LCR.¹⁴ Historically, the CAISO did not consider preferred resources, such as EE, in its LCR studies. However, the CAISO's current LCR studies incorporate the CEC's Low-Mid Additional Achievable Energy Efficiency (AAEE) scenario while its system-wide studies use the CEC's Mid AAEE scenario.^{15,16} Using the Low-Mid AAEE scenario, which assumes less EE, has the effect of increasing the load levels relative to the Mid AAEE scenario, which in turn increases the need for new generation/transmission in the LCR studies.</p> <p><u>ORA's recommendation on LCR Studies</u></p> <p>ORA supports the CAISO's incorporation of EE in its LCR studies but suggests that the CAISO incorporate a higher level of EE in its study assumptions. ORA appreciates the CAISO's "difficulty of forecasting load and AAEE at specific locations and estimating their daily load-shape impacts" and understands the CAISO's reluctance to use a less conservative estimate of the CEC's system wide studies.¹⁷ To alleviate the CAISO's concerns, ORA recommends the CAISO create an EE allocation methodology for local areas, similar to the way CAISO allocates load for local areas, in order to utilize the Mid AAEE scenario.</p>	<p>use in the 2014 LTPP and 2014-2015 TPP.</p>
13c	<p>The CAISO should clarify that it intends to use preferred resources as its first mode of mitigation when addressing problems identified in the Preferred Resources and Energy Storage Special Study (Preferred Resources Study).</p> <p><u>Background</u></p>	<p>The purpose of the ISO preferred resource analysis is to facilitate the development of preferred resources as alternatives to transmission and conventional generation.</p>

¹⁴ The Near-Term LCR models the 2015 and 2019 study years. The Long-Term LCR study models the 2024 study year. *Id.* at 33-34.

¹⁵ The Low-Mid AAEE scenario assumes a low level of EE and DR while the Mid-AAEE assumes a moderate level of EE and DR, consistent with levels of EE and DR expected to be online. The CAISO prefers to use the Low-Mid AAEE in local studies because local areas are more difficult to model and therefore more conservative modelling assumptions better account for anomalies which may occur due to local system requirements.

¹⁶ *Id.* at 22.

¹⁷ *Id.*

No	Comment Submitted	ISO Response
	<p>The CAISO's Preferred Resources Study will integrate preferred resources -- such as EE, Demand Response (DR), and energy storage -- into the reliability assessment.¹⁸ The CAISO intends 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.¹⁹ When considering preferred resources as mitigation measures, the CAISO will also examine whether the preferred resources have the performance attributes that qualify them as transmission mitigations.</p> <p><u>ORA's recommendations regarding the Preferred Resources Study</u></p> <p>ORA supports the CAISO's Preferred Resource Study, which will integrate preferred resources into its modeling efforts. Preferred resources should be included as other generation resources in the resource assumptions. However, since the CAISO considers these resources as mitigation alternatives rather than assumptions, ORA recommends the CASIO clarify that preferred resources will be considered as the primary solutions when mitigating problems identified by modeling.</p> <p>ORA recommends the CAISO also facilitate the full utilization of preferred resources by, among other things, modifying the CAISO market rules to remove any barriers to implementing preferred resources as transmission solutions. For example, some preferred resources have the capability of providing ancillary services such as ramping reserve, spinning reserve, or frequency response reserve. Therefore, the CAISO should remove market barriers in order to implement the existing technical capability of preferred resources and to fully utilize preferred resources as solutions to the identified problems.</p>	

¹⁸ *Id.* at 35.

¹⁹ *Id.* at 35-36.

No	Comment Submitted	ISO Response
14	Pacific Gas and Electric Submitted by: Mark Higgins	
14a	<p>Public Policy Objectives (Section 3.1)</p> <p>PG&E supports the CAISO’s inclusion of public policy objectives as factors that influence the transmission planning process. However, PG&E is unclear why the only public policy objective identified in this section is the 33% RPS. Examples of other public policy objectives that should be considered for inclusion:</p> <ul style="list-style-type: none"> • State Reliability Directives or Standards • Grid Security Directives or Standards • CPUC Storage Order / AB2514 	Please see responses below.
14b	<p>Reliability Assessments (Section 4)</p> <p>With reference to Section 4.6, Table 4-1 of the study plan, PG&E appreciates the CAISO’s inclusion of a Spring Peak system condition for the Northern California Bulk System assessment. However, since the Spring System condition is also critical for North Valley and Central Valley for any potential reliability issues, PG&E requests the CAISO to include the Spring Peak System condition assessment for the North Valley and Central Valley area as well.</p> <p>With reference to Section 4.9, specifically the Generation Retirement assumptions, PG&E agrees with the general assumption of resource retirement at an age 40 years or more. However, PG&E also recommends a “High QF Retirement” scenario similar to the LTPP high scenario be studied as part of this year’s planning process. This scenario will analyze any reliability impacts caused by QF’s potentially retiring at an age of 30 years. PG&E feels this is an important scenario to be considered as there is great uncertainty regarding the future for each one of these plants. While it is possible that some of these units could remain as market generation, it is important to fully understand the potential impacts created in certain pockets of the system in the event some of these units do retire.</p>	The ISO study plan is consistent with the Assigned Commissioner’s Ruling on assumptions scenarios and renewable portfolio standard for use in the 2014 LTPP and 2014-2015 TPP.

No	Comment Submitted	ISO Response
	<p>With reference to Table 4-3, PG&E would like to request clarity on the “Final Capacity, if Already Repowered or Under Construction” column of the table and how the information in the column should be used for OTC retirement assumption.</p> <p>With reference to Section 4.19, PG&E appreciates the CAISO’s effort to analyze the Voltage Stability and Reactive Power Margin Analysis for the areas that have voltage and reactive margin concerns. One area that needs to be fully analyzed for any voltage and reactive margin concerns is the Bay Area and it should be added to the study list.</p> <p>With respect to the baseline RPS portfolios described in Section 4.9, PG&E notes that the RPS Calculator only includes the under development contracts that are signed through annual RPS RFO or bilateral negotiation from the August 2013 PDSR. PG&E contracts that were signed through RAM and PV RFO were not included. PG&E previously noted this same exclusion in the 2013-2014 Transmission Planning Process. PG&E acknowledges that these contracts are accounted as a reduction through the Renewable Net Short (RNS). However, PG&E urges the CAISO to work with the CPUC to ensure that all signed, commercial contracts are incorporated into the baseline portfolios for transmission planning purposes, if those contract details were provided through the PDSR to the CPUC.</p> <p>Specifically, PG&E discovered the following discrepancies:</p> <ul style="list-style-type: none"> • 15 RAM projects (275 MW total) are in Aug PDSR but not included in the Calculator • 3 PV RFO projects (42 MW total) are in Aug PDSR but not included in the Calculator 	<p>Reference to specific areas of concern has been removed. ISO will strive to address all areas with voltage stability and reactive margin concerns.</p> <p>ISO is actively working with CPUC on correctly modeling of RPS portfolios as established by the CPUC.</p>
14c	<p>Demand Response Programs and Energy Storage (Section 4.17) With respect to storage (Section 4.17.3), PG&E supports the</p>	

No	Comment Submitted	ISO Response
	<p>informational analyses CAISO has committed to developing during the 2014-2015 transmission planning process. PG&E believes these will be helpful in identifying areas where storage may provide benefits to the transmission system; however, PG&E believes the informational analysis needs to be accompanied by procedural and/or tariff changes to accommodate “dual use” storage assets (i.e. assets that act as market assets part of the time, and partially rate based transmission assets at other times). See Section 6.2 below for additional comment on this topic.</p> <p>With respect to the proposed methodology for inclusion of demand response resources in the 2014-2015 transmission planning process, PG&E supports the inclusion of existing “fast-response” demand response resources as discussed in the draft study plan to mitigate transmission constraints. PG&E encourages the CAISO to further develop methodologies and engage with stakeholders to understand how inclusion of demand response resources can be expanded to include non-“fast response” resources. These non-“fast-response” resources as a stand-alone resource or bundled with other resources may also have significant value in mitigating transmission reliability concerns.</p>	<p>The ISO will work with the state agencies and PTOs to determine how the remaining demand response resources could be accounted for in future planning cycles.</p>
14d	<p>San Francisco Peninsula Extreme Event Assessment (Section 6.1) PG&E supports the special study plan outlined by the CAISO for the San Francisco Peninsula. PG&E reiterates previous comments urging thorough and expedient completion of the studies identified resulting in a recommendation no later than the 2014-2015 transmission planning cycle.</p> <p>PG&E does not oppose a CAISO stakeholder working group (including relevant government agencies) as suggested by other stakeholders to provide input into the CAISO process, provided the scope of the working group is clear and does not impact the timing of the CAISO’s analysis and recommendation.</p>	<p>Thank you for the input.</p>
14e	<p>Preferred Resource and Storage Evaluation Technical Studies (Section 6.2)</p>	<p>The ISO expected input on the preferred resource information to be considered as alternatives and studied as part of the comments on this study plan. As</p>

No	Comment Submitted	ISO Response
	<p>PG&E supports the CAISO's movement to more fully consider the ability of non-conventional resources to mitigate identified deficiencies in local areas and strongly encourages the inclusion of non-conventional resources that offer a cost-effective and reliable alternative to conventional transmission. PG&E has been forthcoming in the planning process and provided extensive locational data to aid the CAISO in its planning process, and we strongly encourage the CAISO to consider that information in their unified planning assumptions.</p> <p>PG&E reiterates its comments on the draft 2013-2014 Transmission Plan, which state that:</p> <p>The CAISO should complete its stakeholder process for laying out the rules for non-conventional resources to meet transmission needs. Since stakeholders provided comments on the CAISO's White Paper on Non-Conventional Alternatives (http://www.caiso.com/Documents/Paper-Non-ConventionalAlternatives-2013-2014TransmissionPlanningProcess.pdf) issued on September 4, 2013, the CAISO has not provided further information or instructions to the stakeholders on key implementation issues. In the context of the State's Loading Order, the CAISO should adopt preferred resources if they can provide comparable reliability to the conventional approach in a more cost-effective manner consistent with PUC code section 454.5(C) which states that: <i>The electrical corporation shall first meet its unmet resource needs through all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible.</i> (http://www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=451-467)</p> <p>PG&E believes the CAISO needs to develop an expanded methodology to evaluate a broader range of benefits for non-conventional resources in the transmission planning process. The CAISO's current methodology of looking at non-conventional resources in the TPP only as non-wires solutions to meet NERC criteria creates an artificial barrier to entry for</p>	<p>indicated in the February 27th stakeholder presentation the ISO will work with the PTOs and state agencies for information on existing and future preferred resources. Stakeholders will be given an opportunity to provide comments on this information and analysis.</p> <p>Much of the preferred resource amounts that will be analyzed were already authorized in Track 1 and Track 4. Further opportunities for preferred resources to address local needs will be explored in the transmission planning process.</p>

No	Comment Submitted	ISO Response
	<p>such assets that can help address reliability issues, because their use case will be so limited as to make them uneconomic in all but the most unusual of cases.</p> <p>PG&E believes the CAISO needs to develop a methodology to study and accept “dual use” assets in the transmission system. This is particularly needed for storage resources. FERC Order 784 put in place the regulatory framework to allow multiple use storage assets through bifurcating rate recovered portions and wholesale market portions of the assets based on use, thus is clear that it is FERC’s intent to allow such flexibility. Moreover, the CPUC Storage Order explicitly contemplates dual use assets operating in California’s grid. But the intent of State and Federal regulators to enable dual use storage assets cannot be met without enabling procedures put in place at the CAISO.</p> <p>Storage and other non-conventional resources have the potential to provide significant system benefits to California’s grid, but in order those benefits to be realized at a reasonable cost to ratepayers, we must utilize those resources efficiently. Without the enablement of dual use assets, many of the potential system benefits of storage will either cost ratepayers more due to inefficient use cases for assets, or use of the benefits of the assets might fail to materialize at all.</p>	<p>Dual use assets will be considered by the ISO’s Reliability Services Initiatives.</p>
14f	<p>Policy-Driven 33% RPS Transmission Plan Analysis (Section 7)</p> <p>As noted in the Reliability Assessments section above, PG&E discovered that contracts that were signed through PG&E’s RAM and PV RFO did not appear to be included in the RPS Calculator provided by the CPUC. However, PG&E understands that these mandated program contracts are included as a reduction in the Renewable Net Short (RNS) calculation. PG&E nonetheless, urges the CAISO to work with the CPUC to ensure that all signed, commercial contracts are incorporated into the baseline portfolios for transmission planning purposes, if such contracts are available through the Project Development Status Report (PDSR) provided to the CPUC twice a year.</p>	<p>The ISO respectfully requests that all stakeholders, including PG&E participate in the CPUC portfolio development process and provide their input to that process.</p>

No	Comment Submitted	ISO Response
14g	<p>Economic Planning Study (Section 8) PG&E requests four economic studies be included as part of the CAISO 2014/15 TPP:</p> <p>1. Greater Fresno Area Study The CAISO approved a new Gates-Gregg 230 kV DCTL with one circuit strung in the 2012-2013 TPP. The operating date for this project is expected to be 2020.</p> <p>PG&E requests that a study of the Greater Fresno Area be undertaken in the 2014-2015 TPP to evaluate the merits of stringing the second circuit between Gates and Gregg as part of the initial installation versus stringing the second circuit in a future year. (A preliminary cost analysis shows that it would be less costly to string the second circuit as part of the initial installation.) Two options are suggested for consideration by the CAISO. Option 1 consists of stringing the second circuit and installing jumpers between the No.1 and No. 2 circuits such that the two circuits share common terminations at Gates and Gregg. Option 2 consists of stringing the second circuit and installing terminations for the second circuit at Gates and Gregg.</p> <p>The benefits and costs of stringing the second circuit as described above could be determined as follows: Task 1 consists of a power system analysis using the 2024 cases with Helms pumping to test the performance of each of the transmission options, listed above, and determine their incremental load serving capability using a define set of power flow cases. Task 2 consists of estimating the Helms flexible capacity and market benefits provided by the second circuit using the water analysis approach and data developed and relied upon in the 2012-13 TPP. Task 3 consists of an economic analysis comparing the benefits and costs of the potential transmission upgrades, with a focus on the most economic timing for the second circuit. The economic analysis would rely on both the most recent set of flexibility analysis posted by the CAISO for the LTPP and the Investigating a Higher RPS in California</p>	<p>Thank you for the input.</p>

No	Comment Submitted	ISO Response
	cases to test and evaluate the impact of a second line on flexibility need and or renewable curtailment.	
14h	<p>2. Central California Study PG&E requests that a study of the Tesla/Tracy – Los Banos area including potential Path 15 improvements.</p> <p>The Western Area Power Administration is currently moving forward with environmental review and early permitting of a proposed Tracy-Los Banos 500 kV or 230 kV transmission line to serve the Bureau of Reclamation pumping loads in the Los Banos area. PG&E believes it is critically important for the CAISO to conduct an economic study in the 2014/15 TPP to identify benefits associated with additional transmission from Tracy/Tesla area to Los Banos. Western has indicated as part of the Tracy – Los Banos project public outreach that they would consider upgrading the planned project to accommodate needs of Western and its customers as well as the CAISO and PG&E’s customers. This is a fleeting opportunity. CAISO study results for upgrades in this area are needed in 2014/15 TPP to determine if it is appropriate for Western to upgrade their planned project to accommodate CAISO/PG&E customer needs in addition to their own.</p> <p>Further, PG&E suggests the CAISO studies in 2014/15 consider the enhanced benefits when combining upgrades in the Tesla/Tracy- Los Banos area with relatively minor upgrades needed south of Los Banos (in combination with the Tracy-Los Banos line) to support a Path 15 rating increase of 300 MW to 1000 MW (depending on the results of production simulations). For example, a 300 MW increase might be achieved with relatively low-cost upgrades in the Gates area (in addition to the Tracy-Los Banos line); and a 1000 MW increase might be achieved with more significant upgrades of the Los Banos-Gates-Midway 500 kV path (in addition to the Tracy-Los Banos line).</p>	Please see ISO responses above to similar comments from Duke-ATC on this project proposal.
14i	<p>3. Path 26 Study The 2013-2014 TPP showed that Path 26 would experience congestion</p>	As indicated in the last transmission plan, the ISO will continue to monitor the potential for economic driven transmission expansion for Path 26.

No	Comment Submitted	ISO Response
	<p>in ~8% of the hours in 2018 and ~5% of the hours in 2023 based on the assumptions in the production simulations. PG&E proposes that a study be undertaken in the 2014-2025 TPP to re-estimate the congestions levels on Path 26.</p> <p>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, or other alternatives as indicated by production simulations and power flow studies.</p>	
14j	<p>4. North of Tesla Area Study PG&E requests an economic study for North of Tesla area be undertaken in the 2014-2015 TPP.</p> <p>Previous studies conducted by the CAISO have identified a reduction in the COI import capability during certain system conditions following the termination of the California Department of Water Resources (CDWR) Comprehensive Agreement which requires participation in the 500 kV COI RAS in December 2014 .</p> <p>PG&E appreciates the CAISO's recognition of the Table Mountain – Tesla Transmission project submitted by PG&E into the 2013/14 TPP request window. This project was submitted as a conceptual plan that requires further evaluation. PG&E supports the CAISO's position on the need to continue to study upgrades required in the North of Tesla Area in the future in order to preserve COI's existing import capability and to avoid curtailment on existing resources as well as avoid potential impact of any new resources that may be connected to the transmission system north of the Tesla substation.</p> <p>In addition, overloading of the Table Mountain 500/230 kV transformer was seen in the energy market resulting in approximately \$38 million of congestion in 2012. Economic studies performed by the CAISO in the 2013-2014 TPP did not indicate congestion on this transformer in 2018</p>	<p>The ISO will consider this request in its ranking of economic study requests.</p>

No	Comment Submitted	ISO Response
	<p>and 2023. However, it is likely those findings were due to the average or expected conditions that were assumed in the 2013-2014 TPP study. As such, PG&E requests that the 2014-15 study consider a broader range of operating conditions and potentially use additional analytic tools to quantify the economic benefits attributable to reduced congestion and greater availability of Northern California hydro-generation and intertie imports. The benefits could include load following and ancillary service market benefits among others.</p> <p>PG&E encourages the CAISO consider transmission upgrades in the study area to provide economic benefit. The transmission upgrades would include: a combination of transmission upgrades and any necessary modifications of the 500 kV Remedial Action Scheme.</p>	
14k	<p>PG&E recommends that the Economic Studies Consider a Broad Range of Operating Conditions</p> <p>For both the Central California Study and the Path 26 Study, PG&E recommends that the CAISO Consider a Broad Range of Operating Conditions. Because production simulation models are designed to utilize normative assumptions regarding load, hydro conditions, thermal resource outages, and other variables in order to produce reasonable, mid-range estimates of resource dispatch and prevailing power flows, analysis that relies on such models is generally suitable for long term economics but not to identify many operating issues in the near-term or longer-term. These operating issues occur during extreme events such as very high output of wind, solar and hydro resources combined with very low load conditions and may be manifested in increased congestion on Path 15 and Path 26.</p> <p>The two studies referred to above (LTPP integration and High RPS) found material integration issues in stress cases in 2022 and substantial over generation in 2030. Both studies assume no transmission congestion within the CAISO BA. Imposing some simple transmission related constraints along the I-5 corridor, is likely to exacerbate the over</p>	Please see ISO responses above to similar comments from Duke-ATC.

No	Comment Submitted	ISO Response
	<p>generation problem in Southern California and improve the economics of investing in path upgrades. PG&E would be happy to work with the CAISO to transform these single BA no transmission constraint cases into zonal models to quantify the benefits of alternative upgrade plans.</p> <p>The economic evaluation may include values for avoided generation curtailment, incremental availability ancillary services and/or ramping capability created by additional transfer capability across Path 15 and Path 26.</p>	

No	Comment Submitted	ISO Response
15	Powers Engineering Submitted by: Bill Powers	
15a	<p>II. DISCUSSION</p> <p>A. The substantial LCR need based on the Sunrise Powerlink/SWPL N-1-1 contingency modeled by CAISO can be eliminated by re-classifying the N-1-1 as a Category D event and using the standard G-1/N-1 planning contingency</p> <p>CAISO models the sequential N-1-1 loss of the 500 kV Sunrise Powerlink and 500 kV Southwest Powerlink (“SWPL”) in SDG&E territory as the critical contingency. The Local Capacity Requirement (“LCR”) procurement allocations recommended by ISO for SCE and SDG&E are based on this N-1-1 contingency. However, when it was in SDG&E’s interest in 2007 to re-classify the simultaneous loss (“N-2”) of the Sunrise Powerlink and SWPL from a generic, deterministic Category C5 contingency to a very low probability Category D event that does not require mitigation, it did so.¹ See Attachment A, “SDG&E Performance Category Upgrade Request for Imperial Valley - Miguel 500 kV (SWPL) and Imperial Valley - Central 500 kV (Sunrise Powerlink) Double Line Outage Probability Analysis.”² SDG&E’s concluding statement in its WECC-approved probabilistic analysis is, “Based on the preceding information, the analysis performed is sufficient enough to move the performance criteria for the double line outage of Imperial Valley – Miguel (SWPL) and Imperial Valley – Central (Sunrise Powerlink) from Category C to Category D.”</p> <p>It was critical for SDG&E to demonstrate in 2007 that the construction of the \$2 billion Sunrise Powerlink transmission line³ would enhance grid reliability in SDG&E territory and not undermine it. For that reason SDG&E carried-out the WECC-approved probabilistic procedure to conclusively demonstrate that the Sunrise Powerlink/SWPL N-2 was a Category D event. WECC approved the reclassification of the Sunrise Powerlink/SWPL N-2 from Category C to Category D in April 2008. See Attachment C. The California Public Utility Commission (“CPUC”)</p>	<p>The ISO will be hosting a separate stakeholder process to address these comments.</p> <p>The outage of the 500 kV Sunrise Powerlink and 500 kV with the system manually readjusted, followed by the loss of Southwest Powerlink (“SWPL”) is by definition a NERC category C contingency. This is a non-simultaneous outage of both circuits. NERC does not consider simultaneous common corridor line outages to be category C contingencies.</p> <p>However, WECC requires that simultaneous common corridor 500 kV line outages also be considered as Category C contingencies if they meet the definition of adjacent circuits, but WECC also has an exception process as described in Powers Engineering comments. The WECC exception process does not apply to NERC defined category C outages.</p>

No	Comment Submitted	ISO Response
	<p>assumption when it approved the Sunrise Powerlink in 2008 was that it would add 1,000 MW of reliability to meet the SDG&E LCR under a G-1, N-1 reliability standard. This is also the position that ISO steadfastly maintained throughout the Sunrise Powerlink proceeding – the new transmission line would add 1,000 MW of reliability in SDG&E territory.</p> <p>With the use of a Sunrise Powerlink/SWPL N-1-1 critical contingency without any analysis of the probability of an N-1-1 actually occurring, and two analyses demonstrating a substantially similar N-2 event involving these same two transmission lines is a Category D event, ISO adopts the de facto position in its current transmission planning powerflow modeling that the addition of the \$2 billion Sunrise Powerlink leaves the Southern California grid more vulnerable, and more in need of additional LCR resources, than it was prior to the \$2 billion transmission line being built.</p> <p>WECC has determined that the Sunrise Powerlink/SWPL N-2 is meets the criteria for Category D based on its probabilistic assessment of double outages in common corridors throughout the West. The WECC probabilistic analysis included “simultaneous” outages up to 10 minutes apart. See the WECC summary of this probabilistic analysis in Attachment C.</p> <p>It is the opinion of Powers Engineering that a full probabilistic analysis of the N-1-1 contingency would lead to its re-categorization as a Category D contingency, resulting in a significantly reduced LCR need in both SCE and SDG&E territories. This would likely save ratepayers billions of dollars that they would have otherwise had to spend on unnecessary capacity that would have provided them with no meaningful reliability benefit.</p> <p>There should be little difference in the probability of an N-2 or an N-1-1 involving the same two transmission lines. For example, The Utility</p>	

No	Comment Submitted	ISO Response
	<p>Ratepayer Network (TURN) observed in its November 2013 opening brief in the California Public Utilities Commission Track 4 Long-Term Procurement Proceeding, <i>“While it may be theoretically conceivable that an N-1-1 outage would have a higher probability than an N-2 outage, TURN is not aware of any evidence in the record to support basing the Commission’s own decision on such a theoretical possibility.”</i>⁴ California ratepayers would be best served by a neutral party conducting the standard WECC approved probabilistic analysis of the likelihood of a Sunrise Powerlink/SWPL N-1-1. It is the opinion of Powers Engineering that this probabilistic analysis would demonstrate the Sunrise Powerlink/SWPL N-1-1 is a Category D event.</p>	
15b	<p>B. Numerous deterministic Category C contingencies have been re-categorized as Category D contingencies following application of WECC-approved probabilistic analysis</p> <p>WECC has approved the re-classification of many deterministic Category C contingencies that were reclassified as Category D contingencies following application of the WECC-approved probabilistic analysis, as shown in Table 1.5 This includes the Sunrise Powerlink/SWPL N-2 in 2008. The Sunrise Powerlink/SWPL Category C5 was reclassified a Category D under the new WECC common corridor guideline approved in 2012. (Please see Power Engineers comments for table)</p> <p>III. CONCLUSION</p> <p>The use of the specific Southwest Powerlink/SWPL N-1-1 limiting contingency by CAISO drives the SCE and SDG&E procurement authorizations currently proposed by the CPUC. The N-1-1 contingency has not been vetted by ISO or the CPUC as reasonable and would be re-classified as a Category D contingency if evaluated using the WECC-approved probabilistic procedure.</p>	Please see response immediately above.

No	Comment Submitted	ISO Response
16	San Diego Gas and Electric Submitted by: Fidel Castro	
16a	<p>1) WECC Cases used</p> <p>a. SDG&E is using the following WECC cases for the 2014/2015 TPP. (Please see SDG&E's comments for details)</p>	<p>ISO has changed Table 4-2 in order to replace the 2023 HS1-S with the newer WECC base case 2024 HS1.</p> <p>The ISO suggests that the 2022 LA1-S it is a more preferred starting case for Summer Off-Peak studies due to more appropriate load and resource pattern across the western interconnection. Also for 2015 and 2016 Summer Peak conditions starting from a 2015 HS3-S would be preferred over a 2014 HSS4.</p>
16b	<p>a. To avoid overloads and reduce 138kV congestion at Sycamore Substation, for years 2015 & 2016 SDG&E is modeling the 230kV Fanita Junction Reconfiguration. When the 'Sycamore to Penasquitos 230kV' line is in-service in June 2017, this temp configuration will return to its normal configuration.</p>	<p>The ISO will model the existing SDG&E 230 kV system configuration including the Fanita Junction Reconfiguration in the 2015 base case, and model the new SDG&E 230 kV system configuration after the 'Sycamore to Penasquitos 230kV' line is in-service in June 2017.</p>
16c	<p>1) Generation</p> <p>a. The Carlsbad units, will be modeled at a total of 520 MW starting in year 2018. The existing Encina gens will be modeled on-line through year 2017 and off-line thereafter.</p> <p>b. Pio Pico is being modeled starting in year 2015 with 309 MW. With this project, we are also modeling the 3 ohm reactor on TL23040 – intended to reduce fault current in CFE and closing-in the Miguel taps creating a Miguel to Otay Mesa (TL23042) and a three terminal line, Miguel to Otay Mesa to Sycamore (TL23041).</p> <p>c. The Cabrillo Units (Kearny Peakers, Miramar GT1 & GT2 and El Cajon GT) are retired in 2015.</p> <p>d. Renewable generation is being modeled only if the generator has a signed/approved PPA and Interconnection Agreement.</p>	<p>The changes have been incorporated in Table A2-1 of the study plan.</p> <p>a) Thank you for the input.</p> <p>b) Pio Pico Plant should be represented with best available technical information and likely be modeled based on the CPUC's Assigned Commissioner Ruling on the planning assumptions for 2014-15 TPP. .</p> <p>c) The Cabrillo units are required for system reliability and may retire only after plans are in service to eliminate all deficiencies in the following sub-areas: San Diego, Mission and Miramar. ISO does not believe that 2015 is a realistic date.</p> <p>d) The ISO will give PTOs a specific list of renewable projects, and the first year to be modeled in the base cases conform with section 4.9 of the study plan.</p>
16d	<p>1) Forecast</p> <p>a. The CEC California Energy and Demand Forecast used for 2014-</p>	<p>The ISO encourages SDG&E to model assumptions that are consistent with the</p>

No	Comment Submitted	ISO Response
	2024 was LSE and BA Tables Mid Demand Baseline-Low Mid AEEE dated December 2013. In addition, SDG&E is modeling NOAEE loads for years 2016, 2019 and 2024.	study plan or provide information supporting more reasonable assumptions.
16e	1) Imports a. SDG&E's import assumption is 3350MW for all study years. The import assumption is based from a Grid Operation Study incorporating SCE's two generators conversion to Synchronous Condensers (SC) at Huntington Beach (HB) and capacitor* additions at four substations. (Please see SDG&E's comments for details)	Thank you for the comment.

No	Comment Submitted	ISO Response
17	Southern California Edison Submitted by: Garry Chinn, Shashi Pandey and Karen Shea	
17a	<p>SCE appreciates participating in the CAISO's 2014-2015 Transmission Planning Process. SCE has review the Draft Study Plan and appreciates the opportunity to provide clarifying comments on the CAISO's February 27, 2014 stakeholder meeting.</p> <p>Below is an update of SCE's load allocation flowchart providing the bus names of several municipalities located within SCE's service territory. (Please see SCE's comments for flowchart)</p> <p>The WECC seed cases selected by SCE are provided in the table below. (Please see SCE's comments for table)</p>	<p>We have updated the SCE load allocation flow chart in the study plan.</p> <p>We understand SCE started working on the selected WECC seed cases before the draft study plan was issued. Going forward the ISO would like to coordinate the selection of WECC seed cases among PTOs. Note also that, the ISO has updated Table 4-2 with a newly release 2024 HS1 case that should replace the old 2023 HS1-S. As in regards to the 2016 and 2024 summer off-peak studies the ISO will evaluate SCEs need for conditions with Southern California load higher than light summer or lower load that what a light autumn case would provide.</p>
17b	<p>SCE requests CAISO to confirm that its Local Capacity Studies for the reliability needs under the CPUC 2014 LTPP phase will only be run with the 33% 2024 RPS with Low - Mid AAEE load representations, as noted in the CAISO 2014-2015 TPP Study Plan and its 2014-2015 Transmission Planning Stakeholder Meeting Presentations on February 27, 2014.</p>	<p>The ISO will follow the load assumptions specified in the study plan.</p>

No	Comment Submitted	ISO Response
18	The Nature Conservancy Submitted by: Erica Brand	
18a	<p>2. The Study Plan should better incorporate and address land-use planning</p> <p>The CEC's 2013 <i>Integrated Energy Policy Report</i> (IEPR) identifies the need for California to better synchronize the planning and permitting processes for renewable generation and the power lines needed to bring that generation to market³. The IEPR recommends: "In the longer term, identifying preferred development areas for renewable resources and then planning the transmission to serve those areas could alleviate issues with the current unsynchronized approach and encourage renewable development that minimizes impacts on California's environment. The key to overcoming the synchronization challenge is to develop a long-term transmission plan for preferred renewable generation zones."⁴</p> <p>It is the Conservancy's position that the best path forward for California is an energy future that uses landscape-scale planning to <i>first</i> identify preferred areas of least-impact for development and then strategically plans transmission investments in these areas for timely development and delivery of renewable energy.</p> <p>Both California and the federal government have recognized the benefits of identifying low impact areas for renewable energy development and have invested significantly in planning efforts to create zones for renewable energy development. The Bureau of Land Management's ("BLM") Solar Energy Program, and the state and federal Desert Renewable Energy Conservation Plan ("DRECP") are both examples of landscape-scale planning for energy. Critical to the success of getting renewable energy developed in zones is ensuring that these areas are adequately studied and then are prioritized for transmission investments that may be required. This is a key building block in the foundation of comprehensive energy planning.</p> <p>Improving the planning assumptions and renewable resource portfolios used the 2014-2015 Study Plan, by integrating landscape-scale planning</p>	<p>Conceptually, the ISO agrees with this approach. The coordination with state agencies in the development by the CPUC of renewable generation portfolios is the key step in ensuring alignment, and we encourage broad participation in that process.</p>

No	Comment Submitted	ISO Response
	<p>principles and active planning efforts (e.g., DRECP and BLM Western Solar Program), appropriately and with the right weighting, is an essential part of improving this coordination.</p> <p>We are concerned that the Study Plan does not adequately address how the 2014-2015 Transmission Planning Process will further and improve the integration of land-use planning.</p>	
18b	<p>3. Observations and Recommendation</p> <p>The 33% Renewable Portfolio Standard (“RPS”) Transmission Assessment is heavily driven by procurement decisions. All four renewable resource portfolios recommended for study in the 2014-2015 Transmission Planning Process (“TPP”) give added weight to the “commercial interest” metric in the RPS Calculator⁵. The environmental methodology - where land-use planning is currently captured - has just a 10% weighting in the “commercial interest” metric. We question if this weight is significant enough to ensure that the geographic areas identified as zones, and in study as Development Focus Areas (“DFAs”), are analyzed in the 33% RPS Transmission Assessment. In our comments to the California Public Utilities Commission, we have urged the Commission to create an environmentally-constrained scenario for comparative analysis (Appendix A).</p> <p>The draft Study Plan does not mention landscape-scale planning efforts that have been approved, or are in development, including the BLM Western Solar Program and DRECP, respectively. The planning horizon of the draft Study Plan (2015-2024) falls squarely within the timeframe in which the DRECP should join the BLM Western Solar Program in active implementation. The DRECP intends to plan for renewable energy development in the California deserts through at least 2040. If transmission upgrades take around seven years to build, this transmission planning effort will only begin to benefit the implementation of the DRECP in 2021. We are concerned that if transmission investments to DRECP DFAs are not addressed in this cycle of the transmission plan, this omission will perpetuate the disconnect between land-use, generation and transmission planning. The CAISO should work</p>	<p>The ISO recommends that all stakeholders, including SCE to participate in the CPUC portfolio development process and provide their input to that process.</p>

No	Comment Submitted	ISO Response
	<p>with other agencies (e.g., California Energy Commission) and stakeholders to proactively plan for transmission to the DRECP. The following are our recommendations to start this important effort.</p> <ul style="list-style-type: none"> • Recommendation: The CAISO should catalyze a special study to analyze the DRECP Development Focus Areas when the draft DRECP is released in mid-2014. A special study could provide valuable information that will support ongoing planning for the DRECP. It is important for DRECP stakeholders to have information about transmission availability and capacity within the geographic vicinity of the DFAs to understand what capacity current exists, and if there are areas that have a potential to be underserved or areas that may have constraints; this information is valuable to informing ongoing planning efforts. • Recommendation: If a special study is not feasible, the 2014-2015 Study Plan should, at a minimum, describe and outline the process and timeline for how the CAISO will integrate the DRECP into the 2014-2015 Transmission Planning Process, when documents are released later this year. • Recommendation: We also encourage thinking creatively and ambitiously about broader collaborative efforts between the energy (e.g., CAISO, CPUC) and Renewable Energy Action Team (e.g., California Energy Commission) agencies to address transmission to the DRECP. • Recommendation: Through the Transmission Planning Standards process, the CAISO should consider establishing a policy for addressing land-use planning efforts in the ISO transmission planning process. 	

No	Comment Submitted	ISO Response
19	Transmission Agency of Northern California Submitted by: Rin Helzerman	
19a	Accurate System Modeling In its previous comments, TANC noted there were several inaccuracies in the modeling of facilities in northern California in the TTP studies. TANC understands scheduled in-service dates for system additions/upgrades can change and encourages all parties to carefully review and update, as necessary, the data for their facilities as modeled in the Western Electricity Coordinating Council (WECC) base cases and the cases used by the CAISO for its TPP studies. Maximizing the accuracy of the transmission system model in the TPP studies will help to assure stakeholders that the CAISO results in this planning phase accurately reflect the true nature of reliability, deliverability, and economics of the entire CAISO-controlled transmission system.	The ISO has provided responses to the previous comments with respect to the base cases. The ISO agrees that the accuracy of the base cases is important and will be posting the base cases as a part of the TPP for stakeholders. The latest information for in-service dates of previously approved projects is used in the development of the base cases.
19b	Mitigations to the Loss of the California Department of Water Resources Remedial Action Scheme TANC would appreciate a closer look at the potential mitigation solutions that would be available to offset the loss of the California Department of Water Resources (CDWR) Remedial Action Scheme (RAS). The 2013-2014 transmission planning process identified several reliability issues due to the loss of the RAS and noted there were several potential options for mitigating these impacts; however, the primary mitigation solution discussed in the draft Transmission Plan was the curtailment of flows over the California-Oregon Interties (COI). We recommend that the CAISO give considerable attention to examining all the possible alternatives to the reliability issues raised from the loss of the CDWR RAS that does not entail limiting flows over a vital transmission path between California and the Pacific Northwest.	The ISO will be conducting the assessments of the 2014-2015 TPP based upon the CDWR RAS not being in-service. The studies will assess if there are any reliability, policy or economic needs which require mitigation and will assess potential alternatives to for the identified needs.
19c	Economic Study Variations to Cost Model As TANC has previously noted, Path 66 congestion in the previous planning studies has differed considerably from the historical congestion that has been seen. We continue to be concerned that the economic analysis is too narrow in its focus and does not properly	The ISO considers historical congestion as one of the data inputs for consideration in the need for future transmission expansion.

No	Comment Submitted	ISO Response
	<p>identify more potentially possible and reasonable future scenarios. A scenario which addresses the high level of congestion on Path 66 that has historically been the case should be a consideration. If the CAISO will continue to use the economic study methodology as in the past without consideration of historical congestion, then TANC requests an explanation of why such an approach is adequate and how historical congestion along Path 66 is actually being mitigated in the future.</p>	

No	Comment Submitted	ISO Response
20	TransWest Express LLC Submitted by: David Smith	
20a	<p>Studies Performed by Other Entities</p> <p>An Economic Planning Study¹ recently released by the National Renewable Energy Laboratory (NREL) and attached to these comments provided an economic assessment of a new 730-mile, 3,000 MW high voltage direct current (HVDC) transmission solution to access Wyoming wind resources. The CA/WY Study found significant economic benefits to consumers. The benefit-to-cost ratios for was calculated to be 2.2 with a range between 1.6 and 3.6 depending on various sensitivities calculated by NREL as guided by a Technical Review Committee made up of Californian and Western transmission planning experts. This CA/WY Study was sponsored by the Wyoming Infrastructure Authority in part to supplement TransWest's request to the ISO to perform such a study. TransWest submits the attached CA/WY Study to the ISO for consideration in the development of the Transmission Plan in accordance with Section 24.3.4.2 of the Tariff.</p> <p>The CA/WY Study examined four hypothetical renewable portfolios, compared them in pairs where the Wyoming wind portfolio included the building of the transmission solution and calculated the comparative benefits from pursuing the CA/WY portfolio is greater than the cost for the transmission solution under a wide range of sensitivities. The analysis relied on a benefit to-cost analysis and used elements from the ISO's Transmission Economic Assessment Methodology (TEAM). The Study Report identifies several Study Limitations and potential Future Analyses that may be considered in the future. The basis for the TransWest Study Request below is for the ISO to consider the CA/WY Study and address several of these limitations and any other improvements the ISO may desire.</p> <p>NREL released a separate study² that looked into the Western market conditions in a future time frame after existing RPS policy goals have been reached. This study was based on work NREL performed for the</p>	<p>The ISO recommends that all stakeholders, including TransWest Express to participate in the CPUC portfolio development process and provide this input to that process.</p>

No	Comment Submitted	ISO Response
	<p>Western Governors' Association. This Post RPS Study found that Wyoming wind resources supplying the Desert Southwest market states of California, Nevada and Arizona to be the Highest Value Regional Resource Paths in the Post RPS timeframe.</p>	
<p>20b</p>	<p>2013-2014 TPP Economic Planning Studies The ISO 2013-2014 revised Transmission Plan includes an overview of the five High Priority Studies conducted in last year's TPP. Three of these studies found that the path upgrades considered, Midway – Vincent 500 kV #4, PDCI 500 MW upgrade and North Gila – Imperial Valley 500 kV #2, to be “uneconomic”. The benefit-to-cost ratios for these three projects ranged from 0.03, 0.12 to 0.65. TransWest notes that all three of path upgrades were the subject of High Priority Economic Planning Studies in the 2012-2013 TPP were they were found to be uneconomic in essentially the same range of ratios as in the 2013-2014 Transmission Plan. Given the ISO's extensive work load and the amount of work to analyze these High Priority Economic Planning Studies, TransWest suggests that these same Path Upgrades should not considered as High Priority Studies as the 2013-2014 Transmission Plan outlines unless the circumstances materially change.</p> <p>TransWest commends the ISO for utilizing cost-based assumptions to reflect how an efficient market would operate for assessing long term transmission investments. The use of instant market data, which is often quite biased, used on other planning processes is not appropriate for these Economic Planning Studies. TransWest does note one study limitation within the economic assessment of the two out-of-state transmission projects found to be economic in the 2013-2014 Transmission Plan. The implied assumption that only gas generation plants would utilize the incremental import capacity may be overly optimistic in this analysis particularly given the value renewable energy resource's place on full deliverability status. The limited full deliverability capacity made available by these upgrades may be more sought after by renewable resource</p>	<p>The limited full deliverability capacity made available by these upgrades may be more sought after by renewable resource developers seeking long term interconnection status than by gas generation plants. Using this capacity for renewable resources is considered in the Economic Planning Studies. It is assumed that renewable resources will not develop unless they are procured and those procurement contracts are approved. This approval would be assumed to consider the opportunity cost of using the transmission for the renewable delivery instead of the gas generation delivery. Therefore, the decision would indicate that the alternative use of the transmission is at least as valuable as the use assumed in the original economic justification analysis.</p>

No	Comment Submitted	ISO Response
	<p>developers seeking long term interconnection status than by gas generation plants. Using this capacity for renewable resources would likely impact the economic assessment of these projects, yet the potential for this use is not considered in the Economic Planning Studies.</p> <p>These important attributes should be applied to future Economic Planning Studies conducted by the ISO. The ISO should also consider addressing the study limitation in future studies.</p>	
20c	<p>Analysis of potential Policy Implementation and Changes</p> <p>The Draft Study Plan identifies the overarching public policy objective is the state's mandate for 33% renewable energy by 2020. The ISO conducts analysis to ensure sufficient transmission is identified and recommended for approval of policy-driven transmission elements in the ISO's 2014-2015 Transmission Plan. The process developed to identify these policy-driven transmission elements are well established and involve coordination between the ISO and the CPUC and CEC on alternative portfolios that all meet this 33% RPS level. The TPP analysis for the public-driven category has reached a degree of stability as the portfolios provided by the CPUC and CEC have been largely become stable as well and the identified transmission elements, which are currently in the process of being permitted or constructed.</p> <p>Several entities are now turning their focus to examine more aggressive renewable energy levels. The CA/WY Study and the Post RPS Study cited above all look at the economics and of renewable resource deployments beyond the 33% by 2020 RPS public policy. California agencies are also focusing more and more in their respective processes at broader expansion of renewable supply. The 40% by 2024 RPS scenario included in the 2014 LTPP scope is good example of these more aggressive scenarios being considered.</p> <p>The Draft Study Plan includes the following statement within the Section 3.1 Public Policy Objectives:</p>	<p>The ISO recommends that all stakeholders, including TransWest Express participate in the CPUC portfolio development process and provide this input to that process.</p>

No	Comment Submitted	ISO Response
	<p><i>It was also recognized that new transmission needed to support the state's renewable energy goal would most likely not meet the criteria for two predominant transmission categories of reliability and economic projects. [Emphasis added]</i></p> <p>While this may be true with the policy-driven transmission projects to meet the 33% by 2020 RPS, TransWest believes that transmission solutions to meet the needs of the ISO in the future, particularly out-of-state transmission projects, can and should meet the criteria for economic projects. The benefits to consumers should outweigh the cost to consumers to invest in transmission infrastructure.</p> <p>The two out-of-state economic projects from the 2013-2014 Transmission Plan demonstrate that the ISO can apply cost-based market assumptions and arrive at a determination if the overall costs to consumers can be reduced by certain transmission investments. In the case of the two projects from the 2013-2014 Transmission Plan, the ISO examined non-renewable resources in one location versus non-renewable resources in another location and examined the both the energy and capital costs of these resources to assess the economics. The ISO did not examine renewable resources from these two locations and assumed only non-renewables would utilize this line. This study limitation could be easily addressed in the same manner the ISO used to derive the other parameters in the study.</p> <p>The CA/WY Study in particular demonstrates how an economic analysis that compares various renewable resource portfolios would be organized to follow the ISO's TEAM. The CA/WY Study may use different values for several parameters, however the approach is consistent with the one taken by the ISO and we would expect the ISO would arrive at similar findings through full implementation of TEAM.</p> <p>TransWest believes it is prudent for the ISO to conduct economic analysis of the Wyoming Wind alternative portfolio for a 40% by 2024</p>	

No	Comment Submitted	ISO Response
	<p>RPS scenario as a High Priority, Economic Planning Study in the final 2014-2015 TPP Study Plan due to:</p> <p>A. Recent studies, in particular the NREL CA/WY Study, provide data that strongly suggests Wyoming wind resources delivered by an HVDC transmission solution offer an economic alternative over the business-as-usual alternative at renewable resource penetration levels above the 33% by 2020 RPS,</p> <p>B. The 2013-2014 Transmission Plan includes results for several proposed project upgrades that have very poor to poor economics over a two year planning cycle that should not be considered as High Priority for re-examination unless circumstances change,</p> <p>C. The 2013-2014 Transmission Plan includes two out-of-state proposed transmission solutions that provide a similar framework for utilizing cost-based market assumptions comparing the business as usual versus a transmission upgrade solution to provide an economic assessment,</p> <p>D. The stated policy objective in the Draft Study Plan is limited to the 33% by 2020 RPS,</p> <p>E. The CPUC and other entities are looking at potential impacts and implementation plans with higher renewable resource levels including a 40% by 2024 RPS,</p> <p>F. The ISO is the most appropriate of the California agencies to examine the potential economics of such large out-of-state, inter-regional transmission infrastructure, and</p> <p>G. These large transmission projects take years to develop and build and require proactive analysis to allow policy makers flexibility to consider various policy options that may impact the markets.</p>	
20d	<p>Study Request</p> <p>TransWest requests the ISO to review, consider and improve upon the California – Wyoming Grid Integration Study, Phase 1-Economic Analysis study conducted by NREL as an Economic Planning Study in the final 2014-2015 TPP Study Plan. TransWest requests the ISO to analyze the potential network transmission facilities intended to access an out-of-state Energy Resource</p>	Please see responses above.

No	Comment Submitted	ISO Response
	<p>Area (ERA) in south-central Wyoming within a 40% by 2024 RPS scenario.</p> <p>TransWest is making this request due the reasons cited above and would ask the ISO to consider the request with respect to our understanding that such economic request are in keeping with the Tariff in particular Section 24.3.4.1 and the definition of an ERA as it applies to out-of-state areas considered for economic analysis that requires the CAISO Governing Board to determine whether the ERA is appropriate. TransWest encourages the ISO to consider the information provided above, however TransWest does not wish to limit the viability this Study Request based on this singular and narrow reading of the tariff and asks the ISO to consider how to get such an Economic Planning Study conducted in the 2014-2015 TPP. The new information contained in the CA/WY Study should provide compelling evidence that the ISO should designate this Study Request as a High Priority Study in the final 2014-2015 TPP Study Plan.</p>	
20e	<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 40% by 2024 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> <p>The CA/WY Wind Study found that the bulk of the comparative cost savings between the two alternative portfolios were associated with the fixed costs associated with capital investments for renewable resources and transmission assets. The assumptions and calculations of the comparative fixed costs was the largest driver in the economic assessment. These comparative costs are heavily in favor of the CA/WY wind portfolio. The sensitivities around these fixed cost</p>	Please see responses above.

No	Comment Submitted	ISO Response
	<p>drivers, including assumptions about future resource capital costs, federal tax policy and potential California transmission deferral proved to be larger drivers than the next two largest drivers, capacity valuation and production costs. The comparative Capacity (or Resource Adequacy) valuation was found to be an order of magnitude smaller than the fixed capital cost driver and in favor of the CA portfolio. The comparative production cost driver was found to be about half of the Capacity valuation driver and in favor of the CA/WY wind portfolio.</p> <p>The CA/WY Study had several study limitations that the ISO should consider within its own Economic Planning Study. These study limitations included reconciliation with transmission associated with the CA portfolio, a comparative assessment of the operational integration benefits/costs, potential downstream transmission needs and potential transmission project phasing alternatives.</p> <p><u>California transmission within the CPUC's RPS Calculator</u> NREL identified over \$2.5 billion in estimated capital costs for transmission projects within the RPS Calculator associated with the two base cases. The ISO may be able to help determine whether any of these transmission projects could be deferred if the out-of-state transmission solution was approved. The CA/WY Study included sensitivities where either none or all of the related California transmission solutions identified with the base case was deferred.</p> <p><u>Operational Integration Benefits</u> The difference in production costs between the two cases is a comparatively small driver because both cases feature the same amount of very low operating cost renewable resources. The difference in the portfolios is the type and location of the renewable resources. Production cost differences may capture some of the comparative differences in operating costs, however detailed operational integration cost analysis would likely provide a more accurate assessment of the relative benefits. Wyoming wind's high capacity factor and day-time output profile, which is not correlated with typical PV solar outputs mid-</p>	

No	Comment Submitted	ISO Response
	<p>day ramp cycle, would very likely result in complementing the California resources by providing both technology and geographical diversity. The ISO should consider what the flexible capacity needs would be for each portfolio and include the difference as a benefit (or negative benefit if the California portfolio is lower cost) in the economic assessment.</p> <p><u>Downstream transmission Upgrades and Capacity Benefits</u> The CA/WY Study did not account for the potential downstream transmission needs to integrate a 3,000 MW transmission project or portion of a 3,000 MW project (see below) into the ISO system. Production cost analysis did not uncover congestion on these downstream transmission paths indicating that transmission upgrades may not be necessary for energy-only integration into the ISO system. Given that the relatively low Net Qualifying Capacity of the Wyoming wind resources, TransWest suggests the ISO should first determine the available downstream capacity (similar to the process used for the two out-of-state Economic Planning Studies in the 2013-2014 Transmission Plan) and then calculate the CA/WY wind portfolio's capacity valuation based on that amount of downstream capacity. Given the difference in capital cost drivers and the Capacity valuation drivers, it is unlikely that the WY wind resources would want to trigger transmission upgrades to secure a higher Capacity value in the economic assessment.</p> <p><u>Alternative Project Phasing and Configurations</u> The CA/WY Study looked a single transmission project configuration consisting of a 730-mile, 3,000 MW, HVDC transmission line between south-central Wyoming and southeastern Nevada. The CA/WY Wind Study utilized transmission cost data developed for the WECC Transmission Expansion Planning Policy Committee to determine the transmission project costs. The estimated capital cost for this project is \$3 billion.</p> <p>A 3,000 MW transmission solution connected to Wyoming's high capacity wind resources would deliver approximately 12,000 GWh/yr. This is a rather sizeable amount of energy for the California market to</p>	

No	Comment Submitted	ISO Response
	<p>integrate in even a three year span once the project was completed. Given the very favorable economic assessment for a 3,000 MW HVDC transmission solution, it would be prudent (and not very difficult) for the ISO to look at two alternative 1,500 MW (6,000 GWh/yr) configurations.</p> <p>The first alternative configuration would include an initial HVDC mono-pole build-out, which could be upgraded by installing the additional equipment (Pole2) at the terminals when additional capacity was needed. The second alternative configuration could include a 1,500 MW, 500 kV AC configuration.</p> <p>TransWest estimates the capital cost of this initial 730 mile, 1,500 MW, mono-pole HVDC transmission solution at \$2.1 billion. The estimate to complete the project is an additional \$1.0 billion. TransWest estimates the capital cost of a 730 mile, 1,500 MW 500 kV AC transmission solution at \$3.0 billion. The benefits for each of these 1,500 MW projects would be on the order of one half of the benefits for the full 3,000 MW transmission solution. The phased HVDC approach has a lower initial capital cost plus a lower build-out cost than the 500 kV AC project at this long (730 mile) distance. Both of these configurations are likely to also have positive benefit-to-cost ratios with the mono-pole HVDC solution having higher values than the 500 kV AC project.</p> <p>TransWest has conducted similar internal economic planning analysis and has worked with other organizations that have conducted very similar Economic Planning Studies. TransWest is available to assist the ISO. The ISO also may also wish to contact the authors of the CA/WY Wind Study or members of the Technical Review Committee to get further insight and discuss potential future analysis to refine and improve upon work performed by the NREL team and the Technical Review Committee.</p>	

No	Comment Submitted	ISO Response
21	Westlands Solar Park Submitted by: Joshua L. Martin	
21a	<p>The Westlands Solar Park appreciates the CAISO's work in developing the draft study plan for the 2014-15 TPP. We believe that this study cycle will be a critical time to begin the preparation for planning for a post 33 percent renewable mandate and to move towards the goal of de carbonizing the grid in order to tackle global greenhouse gas emissions and the combat the ominous threat of global climate change.</p> <p>While these comments are focused on the draft study plan for the 2014-15 TPP we believe it is necessary to point out that the CAISO cannot begin planning towards a post 33 percent renewable future if it continues to base the renewable planning assumptions on only commercial viability. The definition of planning is the "the act or process of making a plan to achieve or do something" and the CAISO cannot plan based on only signals from the companies that want to build renewable energy. The process of planning for a post 33 percent world needs to be conducted by the government and policymakers and specifically through the CAISO's annual transmission planning process, the CEC IEPR, and the CPUC's LTPP since these are the existing mechanisms the state has developed for integrating, procuring and planning for renewable energy in California.</p> <p>We ask the CAISO, in this planning cycle, to engage with the Governor's Office, the CPUC, and the CEC on re-establishing a new stakeholder process to chart a plan for what California should be striving and planning for in a post 33 percent renewable paradigm.</p>	<p>The ISO recommends that all stakeholders, including Westlands Solar Park participate in the CPUC portfolio development process and provide this input to that process.</p>

No	Comment Submitted	ISO Response
22	Radback Energy Submitted by: Bryan Bertacchi	
22a	The Oakley Project should remain included in the study process. CCGS has a fully developed CEC approved project with financing in place. We have a contract with PG&E. We are confident the project will be built and come on line in a timely manner. The status of any sort of contract is not a criteria to exclude projects from the study. If this indeed is a criteria, then the length and period of contracts for ALL projects should be reviewed in detail and ALL of those projects should be evaluated for elimination/inclusion from the planning database for those periods.	The ISO will be conducting the studies in the 2014-2015 TPP with Oakley off-line in the base case. The ISO will also conduct sensitivity studies with the Oakley generating station on-line.