

The ISO received comments on the topics discussed at the September 21-22, 2015 stakeholder meeting from the following:

1. AltaGas
2. Bay Area Municipal Transmission group (BAMx)
3. California Department of Water Resources (CDWR)
4. California Energy Storage Alliance (CESA)
5. California Public Utilities Commission (CPUC)
6. Imperial Irrigation District (IID)
7. LS Power Development
8. NextEra (NEET West)
9. Pacific Gas & Electric (PG&E)
10. Port of Oakland
11. Silicon Valley Power (SVP)
12. SolarCity
13. Southern California Edison (SCE)
14. TransCanyon

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

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

No	Comment Submitted	CAISO Response
1	AltaGas Submitted by: Chris Doyle	
1a	<p>Background: In October 2014, AltaGas Ltd. submitted a proposal to CAISO to modify their existing Blythe Energy Project (Blythe 1) 230 kV gen tie transmission line between Buck Blvd and Julian Hinds substations into a transmission network line. It should be noted that this line has a working rating of 1,482 MVA with an emergency rating of 2,002 MVA, making it the sixth heaviest 230 kV line in WECC.</p> <p>The networked configuration can be accomplished by looping the gen tie line into Colorado River 230 kV (Alt #1) substation or Red Bluff (Alt #2) or both (Alt #3).</p> <p>CAISO initial analysis concluded that the project has merit but additional analysis was needed. In April 2015, CAISO issued a detailed project schedule indicating possible approval by mid-September 2015.</p> <p>In July 2015, CAISO concluded their analysis. Further discussion concluded that Alternative #3 is the most attractive alternative economically and for reliability. Below is the existing configuration, Alternative 1, 2 and 3 configurations: [See Atlas comments for diagram].</p>	<p>The ISO does not agree with the statement “Further discussion concluded that Alternative #3 is the most attractive alternative economically and for reliability.”</p> <p>The ISO’s staff assessment as outlined in the September 21-22 Stakeholder Meeting slides is that:</p> <ul style="list-style-type: none"> - As explained in the posted ISO presentation materials and during the stakeholder meeting, proceeding with the Blythe Gen-tie Loop-in Project at this time without upgrading the 357 MVA-rated Julian Hinds–Mirage line appears problematic. - Among the three alternatives, Alternative 2 appears more attractive because it provides a source closer to load while at the same time having the least cost. Alternative 3 appears to be the least attractive option as it increases the cost of the project without providing material reliability benefits. - The ISO is considering deferring and revisiting the Project in the future when the need to upgrade or reconfigure the Julian Hinds–Mirage line is identified.
1b	<p>Alternative # 1 – Loop-in the exiting AltaGas 230 kV line through Colorado River Substation</p> <p>The Buck-Colorado River-Julian Hinds Loop-in alternative #1 consists of converting a portion of the existing Buck Blvd.-Julian Hinds 230 kV generation tie-line to a network facility by looping the line into Colorado River 230 kV bus. This creates a networked facility identified as Colorado River-Julian Hinds 230 kV, and a modified 230 kV gen-tie line identified as Buck-Colorado River.</p> <ul style="list-style-type: none"> □ Colorado River 230 kV Substation: Install all equipment necessary to Loop Buck Blvd. – Julian Hinds into the Colorado River 220 kV bus. □ Buck Blvd. – Colorado River and Colorado River – Julian Hinds 230 kV Transmission Line: Build approximately 0.4 miles of 230 kV transmission line to loop the line into Colorado River 230 kV bus. [See Atlas comments for diagram]. 	Your comment has been noted.
1c	Alternative # 2 – Loop-in the exiting AltaGas 230 kV line through Red Bluff	Your comment has been noted.

No	Comment Submitted	CAISO Response
	<p>The Buck-Red Bluff-Julian Hinds Loop-in alternative #2 consists of converting a portion of the existing Buck Blvd.-Julian Hinds 230 kV generation tie-line to a network facility by looping the line into Red Bluff 230kV bus. This creates a networked facility identified as Red Bluff-Julian Hinds 230 kV, and a modified 230 kV gen-tie line identified as Buck-Red Bluff.</p> <p>▫ Red Bluff 230 kV Substation: Install all equipment necessary to Loop Buck Blvd. – Julian Hinds into the Red Bluff 230 kV bus.</p> <p>▫ Buck Blvd. – Red Bluff and Red Bluff – Julian Hinds 230 kV Transmission Line: Build approximately 0.4 miles of 230 kV transmission line to loop the line into Red Bluff 230 kV bus [See Atlas comments for diagram].</p>	
1d	<p>Alternative # 3– Loop-in the exiting AltaGas 230 kV line through both Colorado River and Red Bluff This alternative would combine both Alternative 2 and 3 bus [See Atlas comments for diagram].</p>	Your comment has been noted.
1e	<p>Project cost under all three alternatives: The table below shows the estimated cost of the existing gen tie along with cost of looping-in the gen tie into Colorado River Substation or Red Bluff or both. The existing gen tie cost for alternative 2 was pro-rata reduced based on the actual mileage. [See Atlas comments for table]</p>	Your comment has been noted.
1f	<p>Summary of Economic analysis: Economic analysis using production cost modelling was performed by both CAISO and AltaGas/ZGlobal and shows a POSITIVE Benefit to Cost ratio and certainly above recent approved transmission projects. The table below is a summary of the results: [See Atlas comments for table] Note: AltaGas / ZGlobal economic analysis shows a higher economic benefit than CAISO since it includes benefits under extreme scenarios. In addition, we are working with CAISO and investigating a scenario where cost may be able to be reduced, this will increase the Benefit to Cost ratio proportionally.</p>	Your comment has been noted.
1g	<p>Specific Comments: AltaGas’ comments are specific to the ISO presentation on “Buck Blvd Gen-Tie loop-in project” (project). The following comments are mainly focused on the reliability benefits since we agree with all CAISO Economic analysis:</p>	<p>1. Your comment has been noted.</p> <p>2. The benefits of the project arising from reduction in N-0 overloads is taken into account in the economic analysis.</p>

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	<p>1. CAISO did an excellent job in evaluating the project in detail and organizing the results in an easily readable format. CAISO was also clear in identifying the existing system problems and how the project mitigates those, as well as situations under which the project makes things worse. AltaGas appreciates the CAISO Transmission Planning staff efforts and excellent analysis.</p> <p>2. While describing the positive impacts of the project, the ISO recognizes that the project reduces N-0 overloads which otherwise would be mitigated through congestion management (generally means generation dropping). This is a major benefit of the project because it applies 99% of the time while the system is operating under normal conditions. Curtailment of Blythe generation will no longer be necessary during normal operation.</p> <p>3. The ISO also recognizes the apparent reliability benefits under N-1 conditions. However, we would like to emphasize that the project provides significant benefits under N-1-1 conditions. Our internal study has revealed that the project eliminates overloads on some SCE/MWD transmission lines under at least 190 N-1-1 conditions. Most of these overloads occur on the Julian Hinds – Mirage circuit. Some examples follow: [see AtlaGas comments for table] We request from CAISO to update bullet #2 under “Positive Impacts of the Project” to include these N-1-1 benefits. See attached Excel table.</p> <p>4. A review of the negative impacts of the project raises some questions and clarifications. For example, Colorado River (CR) transformer is not overloaded under N-0 condition for Alt 2 or Alt 3. Red Bluff (RB) transformer is not listed in the Thermal Loading Results but Alt 3 will eliminate that overload as well.</p> <p>5. Similarly, outage of CR transformer does not cause overload under Alt2 or Alt3. Outage of RB transformer does not cause overload under Alt1. AltaGas requests that CAISO update the statements to match with the Thermal Loading Results.</p> <p>6. Under CAISO Item #3: CAISO stated that the Devers-Red Bluff #2 contingency causes a pre-project overload of Devers-Red Bluff #1 line. We believe that this is an existing problem. The project is actually lowering this overload by 3% (Alt 2 & Alt 3). J. Hinds- Mirage overload is only 101% which is marginal and does not warrant to be counted against the project.</p> <p>7. The Devers – Red Bluff N-2 contingency is a genuine double contingency for which the project makes things worse. This is the only contingency that the project produces negative results. We agree with CAISO assessment, however, we request from the</p>	<p>3. N-1/N-1 overloads are not uncommon in any part of the system if available system adjustments as allowed by the TPL standard are not performed after the initial contingency during simulations. The ISO simulations performed without system adjustment and RAS did identify numerous N-1/N-1 overloads some of which are alleviated by the project while others are aggravated by it. The table below provides the count of N-1/N-1 overloads in the raw contingency analysis output file obtained for the existing system and each alternative without modeling system adjustment and SPS action.</p> <table border="1" data-bbox="1150 586 1921 781"> <thead> <tr> <th colspan="4" data-bbox="1150 586 1921 662">Count of N-1/N-1 overloads without system adjustment or RAS in the 2024 SP Policy Case (Case #7)</th> </tr> <tr> <th data-bbox="1150 662 1404 735">Existing System</th> <th data-bbox="1404 662 1572 735">CR Option</th> <th data-bbox="1572 662 1743 735">RB Option</th> <th data-bbox="1743 662 1921 735">Double Loop in</th> </tr> </thead> <tbody> <tr> <td data-bbox="1150 735 1404 781">499</td> <td data-bbox="1404 735 1572 781">533</td> <td data-bbox="1572 735 1743 781">760</td> <td data-bbox="1743 735 1921 781">707</td> </tr> </tbody> </table> <p>ISO staff didn’t highlight most of these N-1/N-1 overloads in the comparison since the same element is overloaded under the first N-1 condition in most cases and in other cases the overloads can be mitigated in real time without impacting service to load. Due to these factors coupled with the infrequency of N-1/N-1 events, the impact of these N-1/N-1 overloads on reliability and the economic operation of the power system is considered low.</p> <p>4. The Project does increase N-0 loading on the AA banks at Colorado River (Alt 1), Red Bluff (Alt 2) or both (Alt 3) as shown in the table below. As a result, N-0 overload on the respective transformer will start occurring earlier than would otherwise occur as queued generators are interconnected.</p> <table border="1" data-bbox="1150 1263 1873 1469"> <thead> <tr> <th data-bbox="1150 1263 1369 1385" rowspan="2"></th> <th colspan="4" data-bbox="1369 1263 1873 1385">Red Bluff and Colorado River Transformer Loadings in 2016 OP Case, Case #4 (%)</th> </tr> <tr> <th data-bbox="1369 1385 1526 1430">Existing</th> <th data-bbox="1526 1385 1656 1430">Alt 1</th> <th data-bbox="1656 1385 1759 1430">Alt 2</th> <th data-bbox="1759 1385 1873 1430">Alt 3</th> </tr> </thead> <tbody> <tr> <td data-bbox="1150 1430 1369 1469">Colorado River</td> <td data-bbox="1369 1430 1526 1469">84%</td> <td data-bbox="1526 1430 1656 1469">103%</td> <td data-bbox="1656 1430 1759 1469">84%</td> <td data-bbox="1759 1430 1873 1469">100%</td> </tr> </tbody> </table>	Count of N-1/N-1 overloads without system adjustment or RAS in the 2024 SP Policy Case (Case #7)				Existing System	CR Option	RB Option	Double Loop in	499	533	760	707		Red Bluff and Colorado River Transformer Loadings in 2016 OP Case, Case #4 (%)				Existing	Alt 1	Alt 2	Alt 3	Colorado River	84%	103%	84%	100%
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	<p>CAISO to evaluate the overall reliability benefits. The project has clear N-0, N-1, N-1-1, voltage and economic benefits under normal conditions and hundreds of contingencies but fails only under one very infrequent N-2. The project is willing to pay for an SPS action that mitigates this one and very infrequent N-2.</p> <p>8. Devers-Valley N-2 contingency causes a pre-project overload of West of Devers circuits. The project is not aggravating overloading of those circuits. Applying existing Devers RAS back-up scheme also causes pre-project overload (132%). It seems like further evaluation is needed to find a successful mitigation plan to eliminate pre-project overloads. Until that is done it does not seem appropriate to count this double contingency against the project.</p> <p>9. AltaGas appreciates the ISO recognizing the voltage benefits, transient stability benefits and the project providing better voltage control under light load conditions (preventing high voltages).</p> <p>10. Regarding the short circuit impacts, the CAISO report says the project does not trigger circuit breaker upgrades; however, this is counted as a negative impact of the project?</p>	Red Bluff	69%	69%	85%	72%																		
<p>5. Outage of Colorado River transformer in Alt 1 or Red Bluff transformer in Alt 2 and Alt 3 did cause divergence or overload on the Julian Hinds–Mirage line as shown in the following excerpt from the slide presentation.</p>		<table border="1"> <thead> <tr> <th data-bbox="1136 500 1325 573">Cont.[Worst Cases]</th> <th data-bbox="1325 500 1499 573">Overload</th> <th data-bbox="1499 500 1619 573">Existing</th> <th data-bbox="1619 500 1738 573">Alt.1</th> <th data-bbox="1738 500 1858 573">Alt. 2</th> <th data-bbox="1858 500 1927 573">Alt. 3</th> </tr> </thead> <tbody> <tr> <td data-bbox="1136 573 1325 646">Col. River Tr. [1,4]</td> <td data-bbox="1325 573 1499 646">JH - Mirage</td> <td data-bbox="1499 573 1619 646"><100%</td> <td data-bbox="1619 573 1738 646">165%/NC</td> <td data-bbox="1738 573 1858 646"><100%</td> <td data-bbox="1858 573 1927 646"><100%</td> </tr> <tr> <td data-bbox="1136 646 1325 711">Red Bluff Tr. [1,1a,4,7]</td> <td data-bbox="1325 646 1499 711">JH - Mirage</td> <td data-bbox="1499 646 1619 711"><100%</td> <td data-bbox="1619 646 1738 711"><100%</td> <td data-bbox="1738 646 1858 711">148%/NC</td> <td data-bbox="1858 646 1927 711">109%</td> </tr> </tbody> </table>					Cont.[Worst Cases]	Overload	Existing	Alt.1	Alt. 2	Alt. 3	Col. River Tr. [1,4]	JH - Mirage	<100%	165%/NC	<100%	<100%	Red Bluff Tr. [1,1a,4,7]	JH - Mirage	<100%	<100%	148%/NC	109%
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<p>Note: NC=None convergence</p>																								
<p>6. As outlined in the presentation, what is considered an adverse impact of the Project with respect to Devers-Red Bluff #2 contingency is the reduction in the effectiveness of bypassing the series caps that is currently being used as a mitigation for the Devers–Red Bluff #1 overload in order to provide deliverability for area generators and the resulting need for a new RAS to trip the new bus breakers for the N-1 contingency.</p>		<p>7. Your comment has been noted.</p> <p>8. In the pre-project case the existing Blythe RAS addresses the overloading on Julian Hinds–Mirage following the action of the Devers RAS back-up scheme by simply dropping generation. In the post project case either the new networked facility or the new bus breakers need to be tripped to address voltage collapse and overload as dropping generation would not be adequate.</p> <p>9. Your comment has been noted.</p> <p>10. The short circuit impacts are considered adverse impacts because the Project increases short circuit levels. However, since the Project does not trigger any circuit breaker upgrades, this is not given much weight in the evaluation.</p>																						

No	Comment Submitted	CAISO Response
1h	<p>Closing Comments:</p> <ol style="list-style-type: none"> 1. AltaGas would like to remind the CAISO that this project is essentially built today and is therefore not subject to the development and execution risks normally associated with a proposed project. While SCE has stated that this project could take three years to complete, this is a standard answer and we are confident that this project could be completed in significantly less time. 2. As stated above the benefit cost ratio is superior to projects approved by the CAISO in recent memory. 3. The rating of the existing line and its proposed loop-in connections would likely provide greater transmission access to renewable energy projects in the area. Some of which have been placed on hold for economic reasons due to high interconnection costs. 4. AltaGas and our consultant ZGlobal are always available to discuss this project further should the need arise. 	<p>Your comments have been noted.</p>

No	Comment Submitted	CAISO Response
2	Bay Area Municipal Transmission group (BAMx) Submitted by: Robert Jenkins	
2a	<p><u>General Comments</u></p> <p><i>Preferred Resource Alternatives to Transmission or Conventional Generation Methodology</i></p> <p>BAMx supports the efforts to integrate the use of preferred resources into the planning process and structures. During the 2013-14 planning cycle, substantial progress was made in identifying the necessary characteristics for preferred resources to offset the need for transmission. Sample preferred resource development options provided by SCE were analyzed to determine their impact upon the need for transmission in the South Coast. Stakeholders were told to expect a greater application of the state policy with respect to favoring preferred resources in future planning cycles. Additionally, during the development of the latest revision to the CAISO planning standard, there was continued reference to the fact that restricting the non-consequential loss of load in high density metropolitan areas for level C events did not mean transmission would be needed to prevent the loss of load. There was also a specific reference to preferred resources as alternatives to load dropping and new transmission.</p> <p>Some preferred resources are best accounted for through netting against the load modeled in the base cases. In other situations, more explicit modeling of such preferred resources is necessary to understand their role in satisfying local needs and potentially deferring costly upgrades to the transmission system. BAMx is supportive of the explicit modeling of demand response and energy efficiency and is pleased to see explicit modeling of AAEE has been expanded to the PG&E area in this cycle.</p> <p>In order to achieve better uniformity in system modeling and clearer understanding of the potential for preferred resources to address reliability concerns, BAMx requests that the CAISO adopt and publish a standard modeling and identification practice for preferred resources. Also as a next step in building upon the program underway in the SONGS area, a joint CAISO, CPUC, and utility effort should be developed to target areas where more</p>	<p>Your comments have been noted.</p> <p>Regarding modeling, this comment should be reiterated in the development of the 2016-2017 study plan and will be taken into consideration at that time.</p> <p>Regarding preferred resources, the CAISO agrees that broad visibility of the reliance on preferred resources and non-transmission solutions can be a challenge to stakeholders as that information is dispersed through the transmission plan – and that we will look to improving the visibility of the role non-transmission solutions already play in the drafting of the 2015-2016 transmission plan.</p> <p>We consider that a new “joint effort” would be redundant to the existing planning and procurement measures already underway at this time especially given the level coordination of existing processes between the ISO, the CPUC and the CEC. We will consider the concern as we move forward in future cycles, however.</p>

No	Comment Submitted	CAISO Response
	<p>focused preferred resource development can be identified and implemented to further integrate resource and transmission planning.</p>	
2b	<p><u>CAISO Reliability Assessment Results</u></p> <p><u>Tesla-Metcalf-Moss Landing-Los Banos 500 kV Loop N-1-1 Performance</u> The Reliability Assessment identified potential reliability issues with the southern Bay Area associated with overlapping 500 kV outages. This is an important new finding in the 2015-16 Transmission Planning Process (TPP). The assessment identified long-term issues if all the Once-Through-Cooling (OTC) units at Moss Landing are shut down in their compliance year of 2020. However, if the two new combined cycle power blocks (Units 1 & 2) are available at 85% of their current capacity, the assessment concluded that the reliability concerns would be mitigated. It was noted that the plant owner has a compliance plan that would allow such operation for Units 1 & 2.</p> <p>There are similarities between the condition identified for the southern Bay Area and those of San Diego where overlapping 500 kV outages and the potential shut down of OTC units creates a potential risk for interruption to service for high density urban loads. While in this case there is a potential for the local generation to remain in operation, the status of such generation needs to be monitored closely. While the ability to operate is a necessary condition, it is not sufficient as the generation projects must be commercially viable.</p> <p>BAMx recommends that the amount of local generation required to maintain local reliability be coordinated with the CPUC Long Term Procurement Process and that both the permit and commercial status of the Moss Landing units be monitored closely. The outcome of the local procurement activities and the OTC compliance progress then must inform future transmission planning cycles</p>	<p>Your comments have been noted and the CAISO agrees that continuing to monitor the status of the generation is required.</p>
2c	<p><u>Buck Blvd Generation Tie Loop-In Project</u> BAMx supports the CAISO's assessment in regards to the Buck Blvd Generation Tie Loop-In Project that this appears to be a solution that creates as many, if not more, problems than it solves. The project would connect additional transmission capacity to Colorado River and/or Red Bluff where neither location has been identified as having a transmission capacity need in the TPP following the recent completion of the Colorado River-Devers-Valley 500 kV line. The constraint appears to be west of Julian Hinds, which the proposed project</p>	<p>Your comments have been noted.</p>

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	neither reinforces nor sufficiently relieves. Furthermore, the CAISO identifies that there are measures in place or proposed to address all current reliability issues.	
2d	<p><u>PTO Request Window Project Applications</u></p> <p><u>San Diego Gas and Electric (SDG&E) Valley Inland Power Link Resubmittal</u> Once again, SDG&E has proposed the Valley Inland Power Link, HVAC or HVDC transmission line to strengthen the connection between SCE and SDG&E, estimated in previous TPP cycles to cost \$1.2 Billion to \$4.4 Billion. This project is unnecessary. To again submit this project into the Request Window suggests that SDG&E believes that it will fail in its CPUC LTPP Track 4 procurement efforts.³ Even if this is SDG&E's Transmission Planning's position, such an assessment is premature until the SDG&E preferred and gas fired resource procurement results are reported. The CAISO's reliability assessment does <u>not</u> show a residual reliability need in Southern California. Furthermore, the justification presented by SDG&E (to meet reactive margins and dynamic reactive capability, renewable integration, reduce the risk of voltage collapse and improved voltage control) is inadequate to merit any serious consideration of approval of such a large expenditure in this planning cycle. Despite the CAISO's findings to the contrary, if these are long-term issues on the SDG&E system, there are much lower cost methods of improving reactive margin and voltage control that should be considered first.⁴ BAMx recommends that this proposal be rejected as both pre-mature and lacking sufficient consideration of lower cost alternatives.</p>	Your comments have been noted. The concerns expressed have been noted. The need for additional reinforcement was not identified in the initial reliability results posted by the ISO, and we will review the situation accordingly.
2e	<p><u>SDG&E SCR Reinforcement and Install 3rd Miguel Class 80 Bank</u> SDG&E not only proposes a third 500 kV connection into San Diego as described above, it also proposes to increase the capacity of the two existing connections through the SCR Reinforcement and the installation of a third Miguel 500/230 kV transformer. They were described by SDG&E at the stakeholder meeting as shorter-term alternatives compared to the longer term Valley-Inland Power Link. However, the SCR Reinforcement includes a new 230 kV line on a new right-of-way. As such, like the Valley-Inland Power Link, it would need to go through a full permitting process and be subject to similar development schedules.</p>	Your comments have been noted. The concerns expressed have been noted, and additional review of the reliability concerns and mitigation proposals is necessary.

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	<p>The SDG&E Request Window proposals are deficient in that they do not include an estimate of the cost of the SDG&E proposals. Such information is important so that the cost of local resource options identified in the current SDG&E procurement processes can be compared to the cost of expanded import capability. Further expansion of the San Diego import capability must be part of an integrated planning process that considers local supply options in order to assure the reliable supply of energy at a reasonable cost.</p>	
2f	<p><u>SDG&E Reinforcement of Southern 230 kV System</u> Similar to the other large proposals by SDG&E, this project lacks any cost information or consideration of alternatives. Also it was not clear from the scope of the proposed work whether the upgrades could be done on existing structures or if new structures would be needed (Miguel- Bay Blvd 230 kV). The CAISO's reliability assessment included a number of project alternatives; however, it is not clear how or whether any of these alternatives were considered. BAMx recommends withholding approval of this project in the current TPP cycle until an economic comparison of fully defined alternatives can be presented.</p>	<p>Costs have now been provided by SDG&E for all projects proposed by SDG&E and will be included in future presentations and reports provided to stakeholders during this planning process, as needed. The existing TL23042 Miguel-Bay Blvd 230 kV line is built in double-circuit structures. The major section of existing TL23026 Bay Blvd-Silvergate 230 kV line is underground and shares a utility duct bank with TL13815. The project scope of the SDG&E proposal would consist of adding two 230 kV lines by taking advantage of the double circuit structures and the existing duct bank currently containing TL13815, and along with re-configuring the existing 138 kV and 69 kV systems in the area. The ISO is working with SDG&E to verify the needs for the three CAISO-identified reliability concerns and investigate other potential alternatives including their system impact and cost estimates.</p>
2g	<p><u>SCE Big Creek Corridor Thyristor Control Series Capacitors (TCSC)</u> BAMx supports the overall approach of fully utilizing existing transmission capacity before considering new transmission lines requiring new rights-of-way. This proposal reflects one such approach and is represented as being superior in both performance and price to the two other flow control devices considered (SMART Wires Tower Routers and Phase Shifting Transformers). Another option that would increase the utilization of existing assets would be a connection between SCE Big Creek lines and the PG&E Helms or Kings River lines. BAMx recommends that SCE/PG&E connection also be considered. BAMx also recommends that whether the solution is TCSC devices or a new SCE/PG&E interconnection, any approved project should be subject to competitive solicitation.</p>	<p>Your comments have been noted. We are considering TCSC and other alternatives including SCE/PG&E connection as a potential long term mitigation solution. The eligibility of any transmission upgrade or addition is subject to the terms of the CAISO's tariff, and those decisions will be made after the mitigation is identified.</p>
2h	<p><u>PG&E High Voltage Mitigation Projects</u></p>	

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	<p>PG&E has proposed a series of nine projects to install a total of 1,275 MVARs of shunt reactors at a combined cost of \$156 million to \$231 million. As an initial observation, it is unclear why the high off-peak voltage problem has emerged. Most common causes of high voltages during load periods are the addition of new, lightly loaded transmission circuits, transmission reconfigurations, or significant changes in generation dispatch, especially unit commitment.⁵ Natural load growth can provide some mitigation of high system voltages. More investigation is needed as to the cause of the trend in high voltages to better understand as to whether such causes are temporal or indicative of a long-term change.</p> <p>BAMx supports PG&E's use of an Optimal Power Flow (OPF) tool to identify size and location of the proposed installations. However, like most tools, the inputs assumptions are critical.⁶ For example, PG&E notes that its distribution substation power factors have been leading, thereby contributing to the high voltage problem. The CAISO tariff includes load power factor requirements so that distribution systems do not overly burden the transmission system.⁷ PG&E should maintain the distribution power factors within the CAISO tariff requirements. and it should be verified that the optimal power flow base case assumptions are consistent with the CAISO tariff and whether further improvements to the distribution voltage control can serve as an alternative. Secondly, the generation unit commitment should be reviewed to assess whether the commitment reflects expected conditions. Committing fewer generation units reduces the voltage control on the system and can result in high off-peak voltages.</p>	<p>The voltage issues appear to be emerging through a combination of events, including some shift in power factors, some varying load conditions as increased renewable generation develops connected to the distribution system, and identification of new voltage limitations on existing equipment by the transmission owner, which must be respected.</p>
21	<p><u>PG&E Panoche-Oro Loma 115 kV Reconductoring Project (May 2022)</u> This project was submitted in the previously planning cycle. This project would reconductor 17 miles of 115 kV line between Panoche Junction and Oro Loma Substation. BAMx is pleased to see that the estimated cost has dropped by almost half compared to the prior estimate.</p> <p>As commented in the last planning cycle, the high loading on the Panoche-Oro Loma 115 kV appears to be due to the strength of Panoche with respect to Wilson, thereby causing a strong flow on the two 115 kV cross-valley circuits. The loss of the Panoche-Mendota 115 kV redirects heavy flows onto the</p>	<p>Your comments have been noted.</p> <p>The ISO does consider alternatives solutions before approving a project, however we consider that reconductoring Panoche-Oro Loma is an optimal comprehensive and long term solution that will strengthen</p>

No	Comment Submitted	CAISO Response
	<p>Panoche-Oro Loma 115 kV line. As noted in the last planning cycle, BAMx did a preliminary study of an alternative project that installs a series reactor on the Panoche to Oro Loma 115kV circuit as a means to avoid the overload. The reactor would limit the flow on the 115kV circuit. We believe that an appropriately sized reactor would solve the thermal overload and would not cause any voltage violations in the area. We encourage the CAISO to study this alternative.</p>	<p>reliability, increase capacity, and address the thermal concerns in the area. The alternative solution of a series reactor on the 115 kV system would re-direct the flow under certain conditions however may result in operational limitations under other system conditions which might trigger some additional issues both now and in the future as well as possibly causing unbalanced flows. A series reactor, depending on the size and potential other modifications on the existing transmission system, could possibly cost more than the proposed reconductoring option. For these reasons the ISO considers that reconductoring Panoche-OroLoma provides an optimal solution for this area.</p>

No	Comment Submitted	CAISO Response
3	California Department of Water Resources (CDWR) Submitted by: John Yarbrough and Aseem Bhatia	
3a	<p>1. During the presentation, the CAISO provided an updated to the Stakeholders that they are planning to perform a special study to assess the potential impacts of pending legislation that would increase the Renewable Portfolio Standard (RPS) to 50% by 2030 in the ongoing 2015-2016 TPP study cycle.</p> <ul style="list-style-type: none"> ○ CDWR supports CAISO's efforts in planning ahead to further understand the potential impacts of a 50% renewable portfolio on the transmission elements. CDWR would like to seek further verification if the CAISO is planning to integrate the results and findings from the previous study of over-generation scenarios within the CAISO Balancing Authority with this study. Additionally, CDWR would like to have an access to the study material and base case that will be used for this study. 	<p>The ISO is continuing to assess frequency response in the 2015-2016 TPP and will be presenting results in the draft plan of this special study. The study is based upon 33% RPS. In future planning cycles further assessment of the 50% RPS goal may be conducted.</p>
3b	<p>2. The CAISO, along with the Participating Transmission Owners (PTO) are planning to perform another study to analyze the high voltage circuit breakers that do not have adequate interrupting capability in their Balancing Authority.</p> <ul style="list-style-type: none"> ○ CDWR would like to further verify if the PTO's and the CAISO are planning to perform similar analysis on behalf of their interconnected customers' circuit breakers. 	<p>The PTOs will be assessing the fault current on the Bulk Electric System of the ISO controlled grid and if any of PTO's breakers are overstressed per the TPL-001-4. The PTOs will provide the short circuit modeling data upon request to them.</p>
3c	<p>3. CAISO identified the overloaded Metcalf 500/230kV transformers, peaked at 118% in PG&E's area, during a Category P6 outage. As a potential mitigation, CAISO recommended dropping Tracy pumps.</p> <ul style="list-style-type: none"> ○ CDWR would like to request more details about these pumps since there are several pumps within this area. 	<p>The ISO studies identified possible overload of one of the Metcalf 500/230 kV transformer banks in case of an outage of two parallel Metcalf 500/230 kV transformers under peak load conditions starting from the year 2020 (Category P6). Category 6 contingency allows system adjustments after the first outage. Mitigation measures after an outage of one of the Metcalf 500/230 kV transformers include dispatching all available generation in San Jose (Los Esteros peakers). If this measure appears not to be sufficient, some tripping of load in South San Jose area may be required. CAISO did not recommend</p>

No	Comment Submitted	CAISO Response
		<p>dropping Tracy pumps with this contingency. Tripping some of the Tracy pumps may be required to mitigate overload of one of the Tracy 500/230 kV transformers with an outage of the parallel transformer and the Tesla-Tracy 500kV line. However, for this Category P6 contingency, the highest loading was 108% under 2020 peak load conditions and not 118%. Opening the Tesla-Tracy 230 kV lines reduces loading on the transformer to 96%. If it appears that opening of the Tesla-Tracy 230 kV lines is not possible or not sufficient to eliminate the overload, then some of the Tracy pumps may need to be tripped. The ISO is continuing to assess the mitigation alternatives and will include in the draft transmission plan that will be posted in January 2016 for stakeholder comment.</p>
3d	<p>4. On September 22, SCE proposed the Big Creek Corridor project, which is comprised of two new 220kV lines north of Magunden to Rector Substations.</p> <ul style="list-style-type: none"> ○ CDWR recommends that the CAISO should take into account the local resources in assessing the need for transmission upgrades. 	<p>As a point of clarification, SCE has proposed as its preferred alternative the TCSC option described in their presentation materials.</p> <p>The CAISO is taking into account the existing local resources and is considering additional new Preferred Resources and Energy Storage as one of the potential mitigation solutions.</p>
3e	<p>5. Additionally, on September 22, SDG&E presented the proposed reliability projects in SDG&E's area.</p> <ul style="list-style-type: none"> ○ CDWR requests the approximate costs of all the reliability projects and other reinforcements presented by SDG&E. ○ SDG&E presented reinforcement of Southern 230 kV System Project, which includes adding a second 230kV line from Miguel to Bay Blvd and from Bay Blvd to Silvergate substation. CDWR requests a detailed project cost estimates and more details on the project design. ○ SDG&E resubmitted the Valley Inland Power Link project that has an in-service date of 2025 with an estimated cost between \$1.2 and \$4.4 Billion when the project was originally submitted in the 2014-2015 request window. SDG&E described this project as a comprehensive long term regional transmission solution for Southern California. CDWR notes that the cost of this proposed project is extremely high and 	<p>Your comments have been noted.</p> <p>Costs have been provided by SDG&E and will be included in future presentations and reports provided to stakeholders during this planning process.</p>

No	Comment Submitted	CAISO Response
	<p>recommends the CAISO to continue to explore more cost effective alternatives in evaluating the need for this project.</p>	
<p>3f</p>	<p>6. Lastly, CDWR encourages the CAISO's modeling team to fully utilize existing transmission capacity when modeling future renewable generation locations and energy amounts injected onto the grid. Building new transmission projects to allow renewable generators full capacity rights generally results in transmission lines being underutilized and will drive up the CAISO High Voltage TAC rate when compared to using existing transmission lines.</p> <p>CDWR believes the planning process, which includes inputs, studies, and results need to be consistent with the guiding principles of transparency, Stakeholder participation, and clarity. CDWR appreciates CAISO's attempt to apply these principles in the current planning process and looks forward to CAISO's responses to these comments/questions.</p>	<p>Your comments have been noted. The CAISO's planning process is coordinated with state agencies, and in particular, with the CPUC in regard to the future needs of generation resources.</p>

No	Comment Submitted	CAISO Response
4	California Energy Storage Alliance (CESA) Submitted by: Alex Morris	
4a	<p>CESA appreciates the opportunity to comment on the 2015-2016 Transmission Planning Process (“TPP”) September stakeholder meeting.</p> <p>The 2015-2016 TPP has forged new ground via its consideration of new grid resources and non-transmission resources in the TPP. CESA applauds the CAISO for looking at non-transmission alternatives as potential solutions to several of the reliability issues the CAISO identified in Southern California Edison and San Diego Gas & Electric territories.</p> <p>CESA recognizes that the true test of non-wires alternatives being treated on a level playing field with traditional wires solutions will be when the IOUs or third parties actually propose a non-wires project as the preferred solution. While CESA was disappointed that neither SCE nor SDG&E proposed new or distributed storage as an alternative to new transmission infrastructure, the fact that non-wires alternatives are part of the discussion is a step in the right direction.</p> <p>Many challenges remain for storage to be fairly evaluated. The most critical barrier remains for the ISO and the CPUC to develop a methodology to enable partial rate recovery – or some other form of market-based value to be delivered to such DERs – when DERs provide reliability benefits. Recognizing the interplay between CAISO, FERC, and CPUC rules in resolving these barriers, CESA suggests ongoing collaboration on benefits and the provision of services in DRP and IDSR proceedings at the CPUC.</p> <p>CESA hopes that non-wires alternatives will be proposed as preferred solutions by IOUs in the next TPP cycle – or by third party developers in the current cycle – so that stakeholders will have an opportunity to gain insight into how such non-wires alternatives will be compared to traditional wires solutions when selecting preferred alternatives. Regardless of whether a non-wires solution emerges as the preferred solution to a reliability issue in the 2015-2016 TPP</p>	Your comments have been noted.

No	Comment Submitted	CAISO Response
	cycle, a key CAISO goal should be to continually improve transparency around how non-wires alternatives are considered in the TPP.	

No	Comment Submitted	CAISO Response
5	California Public Utilities Commission Submitted by: Keith White	
5a	<p><i>1. The CAISO Should Demonstrate the Implications of Alternative Ways of Identifying Required Characteristics of Preferred and Storage Resources, and Should Clarify the Impact of Modeled PV Additions on High Voltages.</i></p> <p>The CPUC Staff seek clarification of the implications of identifying required characteristics of preferred resources (for mitigating reliability risks) on a general versus situation-specific basis. Early in the September 21-22 stakeholder meeting, it was noted that the CAISO is considering and apparently has received recommendations regarding this question.</p> <p>Situation-specific requirements may offer potential for more cost-effective (tailored) investment and procurement to address specific reliability risks, whereas general, more uniform requirements may offer signals to developers, buyers and regulators that are simpler, more universal and/or more stable over time. Thus, it would be valuable for the CAISO to demonstrate the implications of identifying such characteristics in a general versus situation-specific manner, which could inform planning and procurement. Furthermore, while there has been emphasis on the ability of preferred resources and storage to mitigate reliability risks in the Los Angeles Basin and San Diego areas, the desired characteristics for such resources to mitigate reliability risks in other parts of the CAISO-operated grid should also be examined, particularly where there is potential to avoid significant transmission investments.</p> <p>CPUC Staff note that Table 4-6 in the 2015-2016 TPP Final Study Plan indicates assumed MW amounts of preferred resources plus storage in the Los Angeles Basin and San Diego areas that are lower than the minimum amounts authorized in the CPUC's Track 1 and 4 decisions, whereas there is considerable time for further procurement especially by the 10-year planning horizon. We request clarification regarding the amounts of such resources to be modeled as available to mitigate reliability issues, and recommend that for 10-year studies at least the minimum authorized amounts be assumed. We also look forward to CAISO's assessment of the role of two levels of existing "repurposed" demand response (DR) to mitigate identified reliability risks.</p>	<p>Your comments have been noted. The ISO will consider expanding the preferred resources section of the study plan for the next planning cycle to include, to the extent possible, draft minimum required characteristics of preferred resources and energy storage for stakeholder input. The requirements in different areas may vary significantly due to differences in the limiting contingencies affecting each area as well as the load profile and other resources in the area. To consider the implications of more generic resources being developed and applied on a universal basis, versus more location-specific requirements, the ISO would require stakeholder input on the type of generic characteristics that stakeholders believe should be relied upon in lieu of more location-specific requirements. We look forward to receiving more input on this issue.</p> <p>The Track 1 and 4 preferred resource base assumptions shown in Table 4-6 for the Los Angeles Basin are based on SCE's procurement proposal as submitted to the CPUC for approval as baseline assumptions in the studies. The reason for using SCE's submitted procurement to the CPUC as the baseline assumptions was to reflect the public vetting process for consideration and selection of the resources that are least cost best fit for the CPUC approval for Power Purchase and Tolling Agreements. The ISO will use the results of the</p>

No	Comment Submitted	CAISO Response
	<p>Lastly, we request clarification of the role of modeled PV resource additions, particularly distributed and behind-the-meter, in contributing to modeled high voltages.</p>	<p>current and future reliability assessment and long-term LCR studies to determine whether additional resources should be procured. For SDG&E, the amount of preferred resources and energy storage assumptions summarized in Table 4-6 of the ISO Final Study Plan were based on the minimum authorized amounts from the CPUC D. 14-03-004 and D.14-02-016 as known at the time of the posting of the Final Study Plan. These assumptions were made prior to the CPUC D.15-05-051 that conditionally approved SDG&E's Application for PPTA with Carlsbad Energy Center, which was issued after the posting of the ISO Final Study Plan for the current planning cycle. The ISO will update future studies with the latest CPUC Decisions on the LTPP Tracks 1 and 4 for SCE and SDG&E in the next planning cycle, and to the extent that potential additional resources are needed, will utilize the CPUC authorized procurements to determine and inform if the additional resources could mitigate identified reliability concerns as potential mitigation options.</p> <p>The distributed and behind the meter PV generation is currently modeled as embedded in the load as a net load. With the increasing penetration of PV identified in the preliminary 2015 IEPR energy and demand forecast the ISO will be doing more detailed assessment of this in the 2016-2017 planning cycle. The high voltages in the PG&E area are related to existing conditions with lower levels of distributed or behind the meter PV generation currently installed.</p>
5b	<p>2. Infrastructure Needs Should Not be Triggered by Sensitivity Cases Having No Additional Achievable Energy Efficiency (AAEE).</p> <p>CPUC Staff recommend and request clarification that grid investments would not be triggered by study results for scenarios containing no AAEE. We would remind the CAISO that the CEC load forecast has a track record of trending higher than actual recorded load. So looking at a no AAEE case is a doubling of conservatism.</p>	<p>The "no AAEE" sensitivity cases were not developed as a base case, and therefore is not expected to be relied upon as the primary driver of a transmission upgrade barring other extenuating circumstances.</p> <p>The use of the CEC load forecast has been coordinated through the development of the study plan and the coordination efforts between the CPUC, the CEC and the ISO. Any additional concerns regarding those</p>

No	Comment Submitted	CAISO Response
		forecast assumptions should be communicated to the CEC and raised in the development of the study plan.
5c	<p>3. <i>The Relationship Between Regional and Interregional Transmission Project Evaluation Requires Clarification and Perhaps Refinement.</i></p> <p>A summary of the “interregional” (among the CAISO and other western transmission planning regions) transmission planning and project evaluation process developed pursuant to FERC Order 1000 was presented at the September 21 meeting. The summary indicated that west-wide stakeholder meetings will occur in approximately February of each year within a biennial interregional planning cycle, and that a window for transmission project submissions will close by March 31 of every even-numbered year. CPUC Staff request clarification of whether and how an “interregional” transmission project might be submitted and evaluated via the interregional process versus via the CAISO’s regional (internal) planning process, or via both processes. For example, could a project be submitted simultaneously in both ways (regional and interregional), or could it be submitted via one route and, if not successful, be then submitted via the other route? The Delaney-Colorado River and Harry Allen-Eldorado projects recently approved via the CAISO’s regional planning process would have qualified as “interregional” under the new interregional process. It appears that the relationship between regional and interregional project evaluations is not yet fully resolved or at least not yet fully explained, and clarification or refinement is needed.</p>	<p>The CAISO is in the process of revising its BPM for the Transmission Planning Process to include the interregional coordination portion of Order 1000 and expects to include the revised BPM in the CAISO’s BPM change management process in December of this year.</p> <p>Order 1000 provides for a “regional” process and “interregional” coordination; as such, there is no standalone “interregional” planning and study process per se. The common tariff language adopted by all four Planning Regions provides for interregional coordination to inform the Planning Region’s regional process where a determination of “benefit” is made in those regional plans. A project that terminates in two or more Relevant Planning Regions is defined as an Interregional Transmission Project (ITP) and must be submitted into each of the Relevant Planning Region’s regional processes for consideration in their regional plans.</p>
5d	<p>4. <i>The CAISO Should Clearly State in Planning Standards and Elsewhere that Non- Wires Measures Including Preferred Resources May Substitute for “System Reinforcements” as Reliability Solutions, and Should Clarify the Time Horizon Over Which Controlled Load Shedding May be Allowed as a “Gap-Bridging” Measure Pending Long-Term Solutions.</i></p> <p>Early in the September 21, 2015 TPP meeting the CAISO summarized recent revisions to transmission planning standards, as applied in the TPP. Under the CAISO’s recently adopted revisions to its own Transmission Planning Standards, planned (“nonconsequential”) load shedding is not allowed as a long-term mitigation option in high density urban load areas,¹ under contingency</p>	<p>The CAISO’s expectation is that the timeline over which a gap-bridging measure should be allowed is the time necessary to develop and implement the long term solution, which can vary on a case by case basis depending on the nature of the long term solution and the risks posed by the short term measure. This is not meant to be an artificial means to avoid ever addressing the longer term solution.</p>

No	Comment Submitted	CAISO Response
	<p>categories P1 through P7 as recently defined by NERC. However, the CAISO's Planning Standards also provide that controlled load shedding may be allowed in dense urban areas on short-term basis "to bridge the gap between real-time operations and the time when system reinforcements are built."² The CAISO's planning standards and application of those standards via studies should make it explicitly clear that non-wires measures including preferred resources may substitute for "system reinforcements" as acceptable solutions. We further request that the CAISO clarify the time horizon over which controlled load shedding may be considered as a "gap-bridging" measure.</p>	
5e	<p>5. <i>The CAISO Should Clarify How the Frequency Response Studies Will Inform the Frequency Response Initiative.</i></p> <p>The CAISO is pursuing an initiative on provision and compensation of frequency response. CPUC Staff request clarification of how the ongoing frequency response studies mentioned in the September 21 TPP presentation will inform the frequency response initiative, including not only the need for frequency response but also the potential roles of different sources in providing that response. For example, if conventional sources are encouraged to provide primary frequency response such as via operational positioning and compensation, then how great is the residual need to obtain frequency response from nonconventional sources, under what scenarios? CPUC Staff would also like to learn if the frequency response studies will be presented at the November TPP meeting, or at a later time.</p>	<p>The frequency response initiative is intended to explore and propose market product changes necessary to support compliance of the BAL-003-1 standard which establishes a balancing areas responsibility for meeting its frequency response obligation with a compliance date of December 1, 2016, the frequency response initiative will guide operational practices of the existing fleet. The frequency response studies discussed in the transmission planning process are being considered in that initiative. Please refer to Frequency Response initiative http://www.aiso.com/informed/Pages/StakeholderProcesses/FrequencyResponse.aspx</p>
5f	<p>6. <i>PG&E's Proposal for Grid-Based Voltage Controls Should be Considered in the Context of Projected Trend in High Voltage Issues Across CAISO Study Cases plus Prospects for Increased Generator-Based Reactive Power Capability.</i></p> <p>To address high voltages being observed under low load conditions, PG&E is proposing to deploy multiple shunt reactors with an overall estimated cost of roughly \$200 million. It is unclear and should be reported how these high voltage issues are projected to increase or decrease under the different 5- and 10-year reliability study scenarios analyzed by the CAISO. Additionally, reactive</p>	<p>The ISO is continuing to assess the mitigation for the high voltage issues identified and will be including in the draft transmission plan in January 2016. The high voltage conditions in the light load or off-peak conditions identified are typically when generation is off-line due to the loading conditions and do not provide or absorb vars. Part of the high</p>

No	Comment Submitted	CAISO Response
	<p>power capability and voltage regulation by generators and storage could significantly increase in the future, as is being considered in the CAISO's present initiative on "Reactive Power Requirements and Financial Compensation." CPUC Staff request if and how the cost-effectiveness tradeoff between generator/storage-based reactive controls versus grid-based reactive controls such as proposed by PG&E3 is being fully accounted for.</p> <p>The preliminary reliability assessment identified one situation in northern California where need to mitigate a modeled reliability violation may arise due to qualifying facility (QF) retirement. Additionally, the Oakland area sensitivity study identified a potential need to mitigate reliability violations modeled to occur only if local generation not currently planned to retire should in fact retire. CPUC staff appreciates efforts now and in the future to proactively identify and communicate situations where existing resources, especially those having uncertain futures, are important for avoiding reliability risks and/or significant infrastructure investment.</p> <p>Lastly, preferred resources were not listed among mitigation options for some PG&E areas, and CPUC Staff request clarification whether preferred resources are being considered as applicable mitigation options for all areas or only for certain (which?) areas.</p>	<p>voltage concern is also due to identification of new voltage limitations on existing equipment by the transmission owner, which might need mitigation in the near-term.</p> <p>Your comment has been noted.</p> <p>The ISO does consider preferred resources as potential mitigation. Within the PG&E area, additional mitigation alternative were not identified as required in most; however preferred resources are being considered as potential mitigation East Bay area currently under review.</p>
5g	<p>7. For the SCE Area, the CAISO Should Provide Information Regarding the Effectiveness of Preferred Resources in Mitigating the Modeled Lugo-Victorville Overload, and Regarding the Effect of Alternative Hydro Assumptions on Big Creek Corridor Mitigation Needs.</p> <p>Preliminary reliability study results were stated to indicate that thermal overload on the Lugo-Victorville 500 kV line under an N-1-1 contingency (and under N-1 starting in 2025) under 1-in-10 year peak load conditions would not be adequately mitigated by the maximum amount of Los Angeles Basin preferred resources and storage assumed to be available per planning assumptions.</p>	<p>Your comments have been noted.</p> <p>The following table provides information regarding effectiveness of preferred resources in mitigating the overload identified on the Lugo-Victorville line in the Metro Area study. The approximate amount of preferred resources that would be needed to mitigate this problem can be extrapolated from the table. Given a total of 2586 MW of PR&ES was utilized to bring the N-1/N-1 loading from 149% to 124% in the high CEC load forecast case, roughly 2500 MW of additional preferred</p>

No	Comment Submitted	CAISO Response																																						
	<p>CPUC Staff request that the CAISO report what level of preferred resources (e.g., assuming the same mix) would be required to mitigate this problem. For the Big Creek Corridor, transmission overloads were modeled by both CAISO and SCE to occur under 1-in-5 summer peak loads, for a sensitivity study that limited Big Creek hydro generation to reflect observed low production under recent extreme drought conditions. SCE's proposed solution is to install four Thyristor Controlled Series Capacitors (TCSC) with an estimated cost of \$113 million, which were modeled to reduce by 324 MW the amount of required local (including Big Creek) generation. Local distributed energy resources (DER) would have approximately full (MW-per-MW) effectiveness and could delay the need for larger transmission investments if combined with TCSC. SCE's studies were stated to assume 250 MW of Big Creek hydro generation, and CPUC Staff request information on how much the TCSC investment and/or other needed mitigation measures would be reduced</p> <ol style="list-style-type: none"> 1. if assuming 343 MW of Big Creek hydro generation, representing the lowest (by far) average level observed over summer peak hours period in recent years;4 and 2. if assuming whatever higher level (above 343 MW) of Big Creek hydro generation might reasonably (under drought conditions) be achievable for the <i>very highest load hours for a 1-in-5 year stress case, i.e., not on an average basis for all summer peak hours.</i> 	<p>resources or an equivalent amount of firm load drop would be needed to bring the loading to 100% of the line rating. Similarly, roughly an additional 600 MW of resources or equivalent amount of load drop is needed to bring the N-1/N-1 loading in the 2025 SP baseline case from 127% to 100%. The additional resource/load drop estimates in both cases do not include the 1140 MW of repurposed existing DR that is in the high DR scenario described on page 34 of the 2015-2016 TPP study plan.</p> <table border="1" data-bbox="1150 540 1913 834"> <thead> <tr> <th rowspan="2">Worst Contingency</th> <th rowspan="2">Category</th> <th colspan="8">Loading (%)</th> </tr> <tr> <th>2025 SP, no PR&ES other than AAEE</th> <th>W/ PR&ES, no DR</th> <th>W/ PR&ES incl. 200 MW repurposed DR</th> <th>W/ PR&ES incl. 1140 MW repurposed DR</th> <th>2025 SP High CEC Load, no PR&ES other than AAEE</th> <th>W/ PR&ES, no DR</th> <th>W/ PR&ES incl. 200 MW repurposed DR</th> <th>W/ PR&E incl. 1140 MW repurposed DR</th> </tr> </thead> <tbody> <tr> <td>Eldorado-Lugo 500 kV</td> <td>P1 (L-1)</td> <td>100%</td> <td>91%</td> <td>N/A</td> <td>N/A</td> <td>115%</td> <td>107%</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Eldorado-Lugo 500 kV & Eldorado-Mohave or Mohave-Lugo 500 kV</td> <td>P6 (L-1/L-1)</td> <td>127%</td> <td>N/A</td> <td>115%</td> <td>105%</td> <td>149%</td> <td>N/A</td> <td>135%</td> <td>124%</td> </tr> </tbody> </table> <p>The above assessment is based on the SCE Metro area study scenarios. It is to be noted that while the highest magnitude of overload was observed in the Metro area high CEC load sensitivity scenario, the SCE Bulk partial (or evening) peak baseline scenario resulted in higher baseline N-1 and N-1/N-1 overloads compared to the Metro Area baseline case due to the unavailability of solar generation.</p> <p>For Big Creek sensitivity study, we assumed 1-in-10 summer peak load. 250 MW is the minimum generation required with TCSC, which includes hydro and other existing local resources.</p> <p>We are performing multiple hydro output scenarios. In real-time, we have experienced several instances with Big Creek area generation lower than 250 MW during summer peak hours.</p> <p>In addition, we are looking into whether we can manage hydro generation during high load conditions as suggested.</p>	Worst Contingency	Category	Loading (%)								2025 SP, no PR&ES other than AAEE	W/ PR&ES, no DR	W/ PR&ES incl. 200 MW repurposed DR	W/ PR&ES incl. 1140 MW repurposed DR	2025 SP High CEC Load, no PR&ES other than AAEE	W/ PR&ES, no DR	W/ PR&ES incl. 200 MW repurposed DR	W/ PR&E incl. 1140 MW repurposed DR	Eldorado-Lugo 500 kV	P1 (L-1)	100%	91%	N/A	N/A	115%	107%	N/A	N/A	Eldorado-Lugo 500 kV & Eldorado-Mohave or Mohave-Lugo 500 kV	P6 (L-1/L-1)	127%	N/A	115%	105%	149%	N/A	135%	124%
Worst Contingency	Category	Loading (%)																																						
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No	Comment Submitted	CAISO Response
5h	<p>8. Cost Estimates and Other Information Including Analytic Basis for In-Service Dates and Preferred Resource Assumptions Should be Provided for SDG&E- Proposed Reliability Solutions.</p> <p>Reliable cost estimates should be provided for SDG&E-proposed solutions (transmission investments) particularly if being considered by the CAISO for inclusion in the Transmission Plan. The analytic basis of stated “Need” or “In-Service” dates for these solutions should be identified. Differences between the SDG&E and CAISO reliability study cases in terms of loads, resources, and the scenarios and contingencies studied should be identified, since there appear to be differences in assessment of needs.</p> <p>SDG&E and/or CAISO should provide a reliable cost estimate for the SDG&E-proposed Valley-Inland transmission project, and CPUC Staff request clarification if a previous estimate of \$1.6 to \$4 billion⁵ reflecting designs ranging from overhead alternating current (AC) to full underground direct current (DC) is still applicable. Given that a presentation prepared for the CAISO’s Imperial County Transmission Consultation based on a report prepared for the California Energy Commission identifies this project in an overhead AC configuration as among the most challenging to site among various LA Basin-San Diego bulk transmission expansion possibilities,⁶ is the lower cost AC overhead alternative considered to be realistic in terms of siting and permitting? CPUC Staff also call attention to the fact that the CAISO via the TPP and elsewhere, and the CPUC via the LTPP proceeding and elsewhere, continue to assess wires vs. conventional resources vs. preferred resources (and storage) local reliability options, considering time horizons over which decisions may be needed.</p> <p>CPUC Staff understand that the CAISO will analyze various mitigation options for reliability standard violations identified in preliminary reliability assessment results for the SDG&E area. We request clarification if that analysis will include the minimum CPUC- authorized (under Tracks 1 and 4) 200 MW of preferred and storage resources in this area that was reflected in study assumptions for the 2014-2015 TPP,⁷ since Table 4-6 of the 2015-16 TPP Study Plan indicates only 107 MW of such resources. It is also unclear and should be disclosed what</p>	<p>The CAISO has provided preliminary need analysis and information regarding potential mitigation to be considered. The purpose of this meeting was to solicit preliminary input from stakeholders. More detailed information will be provided in subsequent stakeholder meetings and further stakeholder input will be solicited, prior to making a final recommendation.</p>

No	Comment Submitted	CAISO Response
	amounts and types of preferred resources were included in SDG&E's studies upon which proposed reliability transmission projects were based.	

No	Comment Submitted	CAISO Response
6	Imperial Irrigation District (IID) Submitted by: Carl Stills	
6a	<p>Section I: IID proposed suspension of transmission upgrades on the “S” line:</p> <p>The ISO’s action last year in decreasing additional deliverability from the IID BA from 938 MW to zero has negatively impacted the market for new renewable development in the IID BAA. This reduction in IID MIC coming after IID had already commenced construction of the ISO approved Path 42 upgrades (at a cost of over \$30 million) was shocking. The decrease of the IID MIC will not allow IID to recover its costs for those upgrades. The ISO’s actions in virtually shutting down renewable energy development in one of the most impoverished areas of the State is not only a gross disservice to the IID and the people of the Imperial Valley (already suffering a 27% unemployment rate), it constitutes a dereliction of ISO’s duty to California. By suffocating renewable energy development in the IID BAA, the ISO is depriving California of vast amounts of geothermal and solar power located within the State, under the governance of people thirsting to produce and export that power. ISO’s actions, already indefensible, became even more intolerable in light of California’s decision to boost renewables to 50%. Where better to obtain that power than the IID BAA? IID went forward with costly upgrades to Path 42 in reliance on ISO assurances only to face betrayal when ISO slashed the IID MIC from 1400 MW to 462 MW, a 938 MW reduction. Accordingly, IID insists upon written assurances from CAISO that any upgrades to the “S” line will <i>increase</i>, and not decrease, IID’s MIC at the IV substation intertie. Pending receipt of such assurances and specification of the amount of MIC increase, IID is left with little option but to suspend such “S” line upgrades in order to avoid further stranded investments.</p>	<p>The CAISO disagrees with Imperial Irrigation District’s characterization of the CAISO’s planning activities and denies allegations made by IID.</p> <p>Regarding IID’s recently provided cases and assumptions, it is too late in the CAISO’s 2015-2016 planning cycle to incorporate new base cases. As IID is aware, the CAISO finalized the development of the study plan and base cases for analysis in this planning cycle in Q1 and early Q2 of 2015 utilizing, among other input, information provided by IID. The CAISO will base the 2015-2016 transmission plan results on that information. The CAISO, however, will note in the 2015-2016 transmission plan the changes communicated by IID in its comments. The CAISO also requests that IID clarify whether it desires the CAISO to utilize these recently submitted base cases in developing the CAISO’s 2016-2017 transmission plan, or whether IID intends to submit different base cases for consideration.</p> <p>The CAISO will continue to coordinate its planning activities with IID. The CAISO will also work with IID to coordinate any operational concerns, which IID should raise with the appropriate CAISO operations contacts, not through the transmission planning process.</p>
6b	<p>Section II - Interaction between IID “S” and ISO SWPL 500kv line:</p> <p>In light of the suspension of the IID transmission upgrade on several lines including the “S” line, IID has made the assumptions described below in regard to its system. We ask the ISO to utilize these new IID assumptions regarding IID facilities in all its 2015 -2016 Transmission Planning studies, including deliverability and calculation of IID MIC.</p>	

No	Comment Submitted	CAISO Response
	<p>Assume:</p> <p>a. that IID has entered into three long term point to point Transmission Service Agreements (TSA) and has sold a total of 190 MWs of transmission capacity on the IID – ISO SDGE intertie, or the "S" Line in the direction of El Centro to Imperial Valley 230kv sub. The 190 MW TSA was in effect starting 2015 and will continue to 2035. The users of the new TSA are paying IID for transmission capacity in accordance with the IID Tariff.</p> <p>b. that the ISO limits the SWPL line in all its Transmission Planning studies in accordance with ISO Procedure #7820. Under that procedure, SWPL Flow = 796 MW.¹</p> <p>As stated above, the flow of the SWPL line is highly dependent on the transmission availability of the IID "S" line. For instance, if the IID "S" line is fully subscribed from El Centro to the Imperial Valley Sub, then the SWPL flow would be nearly zero.</p> <p>Recently, IID has received two requests, totaling 150 MW, to acquire long term point to point Transmission Service Agreements from El Centro to the Imperial Valley 230kv. If IID grants an additional 150 MW, this will result in a total of 340 MW ²of exports from IID to ISO SDGE intertie through the "S" line. The result would significantly impact the SWPL flow, and in fact, limit the SWPL flow to 241 MW.</p> <p>The impact of the loss of the SWPL line, as we all witnessed during the September 8, 2011 outage remains a critical contingency to both BAAs. Although the SWPL line is not in the IID BAA, the loss of the SWPL line represents the single worst contingency for IID BAA. Therefore, IID wishes to</p>	

¹ For years the IID has voiced a concern that the ISO has relied on IID Transmission Capacity, specifically on the "S" line, to flow energy on the SWPL with zero compensation. This action concurrently resulted in blocking IID's connected renewable generation from utilizing IID's own lines to export to the ISO. For instance, the ability for the ISO to flow 796 MW can only be achieved by relying on 215 MW on IID "S" line capacity. IID requests that ISO advise its Scheduling Coordinator that 27% of the SWPL flow would require obtaining IID transmission capacity reservation and payment to IID.

² IID 230KV "S" Line links IID BAA to SGDE and the CAISO BAA. The normal rating of the line is 370 MW and its emergency rating is 405 MW.

No	Comment Submitted	CAISO Response
	<p>work with the CAISO to ensure reliability to both BAA's. As stated in ISO Procedure # 7820, 27% of the SWPL line flow depends on IID's "S" line available capacity. IID finds itself in an unenviable position where the users of SWPL do not compensate IID for the use of its transmission capacity on the "S" line, while other users of the "S" line are paying for transmission capacity on the same "S" line.</p> <p>IID have re-submitted twelve bases cases to CAISO that include the suspension of IID upgrades. The summary of the assumptions and major flows on the summer peak 2017 case are as follow:</p> <p>The Tables below summarizes the three cases:</p> <p>Case #1. IID April 2015 submission to CAISO</p> <p>Case #2. Summary of CAISO summer reliability case for 2016</p> <p>Case #3 Summary of Revised IID Summer Peak case for 2017 [See IID comments for tables]</p>	
6c	<p>We understand that it may be late for the CAISO to modify IID assumptions to reflect the suspension of the IID upgrades. We appreciate CAISO taking into account the circumstances under which IID have suspended these upgrades. These circumstances are layout in Section I. The CAISO changes in IID BAA MIC are the primary reason for IID suspension of its proposed upgrades and thus IID changes should be incorporated in CAISO 2015-2016 planning cycle.</p> <p>Furthermore, We have re-submitted the twelve revised base cases to CAISO, which will reflect the suspension of IID's "S" line and other upgrades, the increased exports on the "S" line, and enforcing ISO operating procedures on the SWPL line.</p>	

No	Comment Submitted	CAISO Response
7	LS Power Submitted by: Sandeep Arora	
7a	Preliminary Reliability Studies: CAISO's Preliminary reliability analysis for the Northern California Bulk system shows several Basecase & Contingency overload issues on the Bulk Transmission System. CAISO's proposed mitigation for these issues is to either reduce generation and/or reduce COI flows. Also, several small local transmission upgrades are also being considered to address these issues. LS Power recommends CAISO to consider the need of a major transmission upgrade that addresses these issues, rather than relying on piece meal solutions or reducing generation and/or COI flows. As LS Power has previously submitted, its SWIP North 500 kV transmission project provides a major parallel path to COI & Path 26 and hence relieves several reliability issues identified.	The ISO will consider these comments in reviewing the Economic Study considerations. Given the interregional coordination process now in place and the expectation that a SWIP North project would reasonably have benefits for parties outside of the CAISO, the CAISO expects that the interregional process will provide the appropriate coordination process for ensuring the project is properly studied. That process calls for projects to be submitted into the regional processes of both of the involved planning regions.
7b	Economic Studies: LS Power had submitted an economic study request for CAISO for the 2015/16 Transmission Plan for CAISO to study congestion on CAISO's intertie with the Pacific Northwest; as well as to evaluate the economic, reliability, and incremental Energy Imbalance Market (EIM) benefits of the transmission solution proposed – SWIP North 500 kV project. LS Power understands that CAISO is currently working on performing economic studies. CAISO's preliminary Reliability Studies suggest that under certain contingency conditions COI flows may need to be reduced and brought within the nomogram limits. While this may solve the term reliability issues, but reducing flows on a major intertie will likely limit the economic benefits that CAISO, PAC and other future EIM entities can experience. Adding a new transmission project, such as SWIP North, should not only help reduce this transmission bottleneck but also should also allow more economic intertie transfers. If CAISO plans to address Bulk System reliability issues via generation curtailment and/or reductions in COI flows, this is an "Economic Loss", and should be factored into CAISO's Economic analysis.	See above.
7c	Policy Studies, 50% RPS Study LS Power understands that CAISO will be presenting its policy study findings at the November stakeholder meeting. Policy studies historically focused on a 33% RPS portfolio. In addition to these policy studies, LS Power understands that CAISO will also be looking at the impact of higher renewable targets on transmission. To achieve the 50% RPS goal, an additional 15,000 MW of	Your comment has been noted.

No	Comment Submitted	CAISO Response
	<p>renewables will be needed in CAISO. Over-generation & Renewable curtailments will undoubtedly become a much bigger concern if additional renewables are integrated without transmission upgrades. Geographic diversity of resources will likely play a much bigger role in helping address some of the over-generation and curtailment issues. WECC-wide regional participation to manage over-generation and help California balance its system will be important in meeting 50% RPS goals.</p> <p>Stronger interties and increased transmission capacity between WECC transmission systems will be an integral part of the solution to meet California's 50% renewables policy goal. California's investment in renewables will only be partially realized if the solution to over-generation is curtailment. Increased transmission and intertie capability will facilitate the EIM and transmission system integration that CAISO is pursuing to minimize curtailments, costs and improve reliability in a 50% RPS grid. For instance, several states in the West peak 1-2 hours ahead of California. If this diversity can be properly utilized, this will help minimize renewable curtailments in California and other states in the West. In order to integrate these neighboring systems and enable alternate peak renewable resources to reach California, current transmission bottlenecks will need to be addressed.</p> <p>We understand that CAISO will not be proposing any new transmission solutions for 50% integration as part of this cycle, but CAISO should still keep this future new transmission need in mind as it reviews and approves transmission projects under the current planning cycle. Projects such as SWIP North, which will open up transfer capabilities and improve system integration between several transmission systems in the West and CAISO, will play a major role in helping California achieve its incremental policy goals.</p>	

No	Comment Submitted	CAISO Response
8	NextEra Submitted by: Edina Bajrektarević	
8a	<p>Reliability Assessments</p> <p>The CAISO analyzes the need for transmission upgrades and additions in accordance with NERC Standards, WECC regional criteria , and CAISO planning standards and reliability criteria. The "Reliability Assessments" encompasses several technical studies (including but not limited to power flow, transient, and voltage stability studies) as discussed during the CAISO stakeholder meeting on September 21, 2015. The 2015-2016 transmission plan spans a 10-year planning horizon and is conducted to ensure the CAISO-controlled grid is in compliance with all applicable reliability standards across the 2016-2025 planning horizon. NEET West observed that implementation of the new NERC standards, specifically TPL-001-41, had a significant effect on the study process, the presentation of results, as well as introduction of new study requirements. The new study requirements resulted in several new reliability issues (thermal, voltage, and transient stability) that NEET West recommends to be carefully evaluated within the context of broader planning input assumptions, and proposed incumbent and non-incumbent transmission solutions.</p>	<p>Your comment has been noted. The CAISO transmission planning process is designed to consider broader input assumptions and all stakeholder proposed solutions.</p>
8b	<p>Policy Assessments</p> <p>With FERC's approval of the CAISO's revised TPP in December 20102, the revised TPP created a category of transmission additions and upgrades to enable the CAISO to plan for and approve new transmission projects needed to support state or federal public policy requirements and directives. The impetus for the "policy-driven" category was the recognition that California 's renewable energy goal would drive the development of substantial amounts of new renewable supply resources over the next decade, which in turn would drive the majority of new transmission needed in the same time frame. NEET West appreciates all of the work done by the CAISO to improve upon the current TPP while continuing to support the public policy objectives. Specific to the 2015-2016 TPP planning cycle, the overarching public policy objective is the state's mandate for 33% renewable energy by 2020 that could lead to the identification and approval of policy-driven transmission elements in the CAISO's 2015-2016 transmission plan.</p>	<p>Your comment has been noted.</p>

No	Comment Submitted	CAISO Response
8c	<p><i>50% Renewable Energy Goal for 2030</i></p> <p>During the 2015-2016 TPP planning cycle, the CAISO will perform a special study to provide information regarding the potential need for public policy-driven transmission additions or upgrades to support a state 50% renewable energy goal. NEET West understands that the CAISO is performing this study for information purposes only and that the results will not be used to support a need for policy-driven transmission in the 2015-2016 planning cycle. However, in order to reach a 50% RPS goal, an additional 15,000 MW of renewables will be needed in CAISO. NEET West strongly believes that the 50% RPS Special Study provides an opportunity to conduct analysis to investigate impacts of higher RPS targets that would drive the majority of new transmission needed in the future. The study provides a great opportunity to explore challenges and transmission system issues, including potential congestion and congestion-related curtailments that may be encountered at higher renewable penetrations without a formal planning process.</p>	<p>Your comment has been noted.</p>
8d	<p>Economic Assessments</p> <p>In addition to the public policy-driven and reliability assessments, the CAISO will also perform Economic Planning Studies as part of the current planning cycle to identify potential congestion and propose mitigation plans. The study will quantify the economic benefits for the CAISO customers based on Transmission Economic Assessment Methodology (TEAM). The Economic Planning Study will conduct hourly analysis for the year 2020 (the 5th planning year) and 2025 (the 10th planning year) through production simulation. transmission investments. This approach will ultimately ensure greater reliability and will provide benefits beyond just meeting local energy and reliability needs.</p> <p>The CAISO invited stakeholders to submit transmission project proposals (in solving specific reliability problems as identified in the CAISO TPP 2015-2016 cycle) before the request window closes on October 15th. NEET West suggests that CAISO considers inclusion of a comprehensive criterion on how best to rank the various proposed transmission project benefits when compared to the proposed incumbent transmission solutions. In addition, NEET West also suggests that CAISO presents its study findings in a way that clearly demonstrates identified reliability benefits of a particular proposed transmission project.</p>	<p>The CAISO practice is to consider and clearly document all significant benefits of a transmission project when evaluating it as an economically driven project.</p>

No	Comment Submitted	CAISO Response
8e	<p>Projects Eligible for Competitive Solicitation NEET West encourages CAISO to maximize competitive solicitation opportunities in the 2015-2016 transmission plan. Each proposed project should be carefully evaluated to determine its merits for inclusion in the competitive solicitation process.</p>	<p>The ISO appreciates the support for the competitive solicitation process. However, the ISO's recommended mitigations are developed based on the best overall solution in the public interest. Consideration such as who would ultimately build the project, or whether the project is eligible or not for competitive solicitation, is not a consideration in selecting the preferred mitigation.</p>

No	Comment Submitted	CAISO Response
9	Pacific Gas & Electric (PG&E) Submitted by: Marco Rios and Brad Wetstone	
9a	Northern California Bulk Assessment PG&E supports the CAISO's findings for the Bulk System Assessment. During the stakeholder meeting, the CAISO discussed the thermal overload findings resulting from the P6 overlapping outage of the Tesla-Metcalf 500 kV & Moss Landing-Los Banos 500 kV lines. PG&E strongly recommends that a long term solution be developed to address the reliability issues resulting from this overlapping contingency so that service reliability to PG&E's customers will not be adversely impacted. A potential long term solution could be in the form of a new source into the Bay Area to mitigate the expected overloads in the south Bay Area. PG&E encourages the CAISO to continue to monitor Moss Landing Power Plant's OTC compliance schedule and to fully study the issue as part of the 2016-2017 TPP cycle so that a comprehensive long term solution for the area can be developed.	Your comment has been noted.
9b	East Bay Area Sensitivity Assessment PG&E recognizes that the CAISO's main objective for this sensitivity study is to identify the potential long-term reliability needs in the East Bay Area without the local generation (i.e., Oakland Units 1-3) being available and potentially without reliance on the existing local Special Protection Schemes (SPSs), consistent with CAISO's Transmission Planning Standards. PG&E commends the CAISO for its thorough and insightful study, as well as for identifying a wide range of potential alternatives to mitigate the concerns. PG&E requests that CAISO develop a process and timeline for making a final recommendation on the preferred mitigation alternative so that implementation of the mitigation can be initiated in a timely manner. A timely decision on a comprehensive plan is critical given the reliance on the aging local generation and it will ensure long term reliability for electric customers in the East Bay Area.	The ISO is continuing to assess the mitigation alternatives for the East Bay area and will be documenting the findings of the assessment in the draft transmission plan in January 2016.
9c	Gas –Electric Coordination in Transmission Planning Reliability Studies At the September 22nd stakeholder meeting, the CAISO stated that its "...transmission planning studies will focus on the gas supply impact concerns to the reliability of the transmission system in the LA Basin and San Diego areas in this planning cycle." PG&E is interested in these studies because gas supply issues in southern California can impact PG&E's gas and electric customers. It	Your comment has been noted.

No	Comment Submitted	CAISO Response
	<p>is important that gas-electric coordination weigh the various aspects of energy supply and demand now and in the future.</p> <p>As a preliminary matter, a longer-term view of demand for gas-fired generation must be considered within the context of market incentives and evolving federal and state energy legislative and regulatory initiatives. With an overall movement to decarbonize the California economy, including plans to generate electricity using renewable resources with natural gas acting as a transition fuel, it is important to consider the impact of such developments on gas asset owners. Efforts to decarbonize the economy should consider proper incentives to encourage flexibility for gas utilities to meet increasingly diverse electric demands.</p> <p>While the CAISO study is looking initially at the reliability of gas supply coming into the Los Angeles Basin and San Diego areas, there should also be consideration of the ability to move gas within the Basin and San Diego areas. This could be done by identifying currently constrained and forecast constrained systems 5 to 10 years out which have or may impact gas supply to electric generators. Additionally, the study should address planned gas system safety and maintenance work 3-5 years out within the Basin and San Diego areas, including potential pressure reductions, that has the potential to limit gas supply to electric generators.</p> <p>As part of the electric – gas coordination study, PG&E suggests CAISO closely consider the California Gas Report which is produced in even numbered years by the California gas and electric utilities.¹ The 2014 California Gas Report presents a comprehensive outlook for natural gas requirements and supplies for California through the year 2035. The Report reviews all gas customer classes including electric generation.</p> <p>PG&E also suggests CAISO incorporate the ongoing findings produced by California gas utilities regarding gas facility adequacy. In D.06-09-039, the CPUC determined that it was “comfortable with the total amount of firm backbone [gas] transmission capacity on both the PG&E and SoCal Gas systems.” To ensure that the utilities monitor the adequacy of their backbone capacity, the CPUC requires each utility to make biennial advice letter filings to</p>	

No	Comment Submitted	CAISO Response
	<p>demonstrate that they have adequate backbone capacity consistent with the showings made in the decision.</p> <p>PG&E also demonstrates the adequacy of its backbone transmission capacity holdings to serve core and electric customers in PG&E's Gas Transmission and Storage Rate Case Applications and Bundled Procurement Plan proceedings, each submitted to the CPUC.² For bundled electric customers, PG&E arranges intrastate backbone transmission capacity according to its Electric Portfolio Gas Supply Plan (GSP). This GSP was approved in PG&E's Bundled Procurement Plan by the CPUC in D.12-01-033.</p> <p>In addition to gas backbone transmission capacity, all of PG&E's local gas transmission systems are designed to provide adequate capacity for Core customers under all weather conditions including extremely cold weather. For noncore customers, including electric generation customers, PG&E's Cold Winter Day (CWD) design criterion ensures adequate capacity to meet all estimated demands.</p>	

No	Comment Submitted	CAISO Response
10	Port of Oakland Submitted by: Nicolas Procos	
10a	<p>The Port is proud of its role in supporting state and local environmental objectives and has made significant investments in efforts that reduce greenhouse gas and other localized emissions. In particular, the Port has installed infrastructure to support ships plugging into the local electric grid and shutting off their auxiliary engines, otherwise known as shorepower. While the Port is pleased with the results so far, there is much work to be done and at full utilization the Port is anticipating a large increase in demand and electric usage in the seaport area. In addition, the redevelopment of the former Oakland Army Base is progressing and will add significant loads to the area when complete. The Port is eager to partner with state & local agencies and the private sector to meet the Governor's electrification goals, and many of the Port's current efforts incorporate electrification whenever possible.</p> <p>The Port is preparing an electric master plan for the seaport area, and while the neighboring bulk transmission system is beyond the scope of the electric master plan, the Port's distribution system and the neighboring transmission system are intertwined. Based on the documents provided at the September 21st 2015-16 Transmission Planning Process stakeholder meeting, the Port has the following comments and suggestions for inclusion in the scope of the 2016 TPP:</p> <ol style="list-style-type: none"> 1. The Port is pleased the CAISO is reviewing different scenarios, including the no local generation scenario. In particular, the Dynegy Oakland power plant is of advanced age and is the only generating unit in the state under a Reliability Must Run contract. Continued reliance on these units does not seem practical. The CAISO studies reveal issues on the transmission system in the Oakland area without these and other local generators. The Port supports both wire and non-wire options to address these deficiencies, though all options must take into account many factors, including the Port's commitment to environmental and air quality improvements. 	<p>Your comment has been noted.</p>

<p>2. The Port is concerned about the overreliance on Special Protection Schemes (SPS) and other mechanisms that contemplate dropping load under certain circumstances. The issues in the East Bay are not new, and the CAISO has adopted new planning standards that phase out the use of SPS in high density urban areas. The Port is eager to see meaningful proposals that will eliminate the reliance on SPS's in the East Bay.</p> <p>3. The Port is supportive of a detailed East Bay reliability study like the one that was done for the San Francisco Peninsula. The East Bay is susceptible to similar disasters such as earthquakes and is an important economic driver for the Bay Area and the state. It is critical to have a long-term vision of the development of the electric infrastructure in the East Bay. Also as the East Bay is a heavily developed area, such plans should recognize that improvements to the electric system might be a lengthy process. While small incremental improvements may be available to the existing system, such improvements are best viewed as temporary relief while advancing a long-term vision.</p> <p>The Port and its neighbors have been supporting the buildout of the statewide transmission system for many years by paying the Transmission Access Charge. The Port is eager to see improvements in the East Bay that will improve reliability for the Port and the businesses and residents in the East Bay. The Port is committed to efforts that result in local air quality improvements, promote local job growth, and further the state and Governor's transportation sector electrification goals.</p>	
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No	Comment Submitted	CAISO Response
11	<p>Silicon Valley Power Submitted by: Joyce Kinnear and Albert Saenz</p>	
11a	<p>SVP is in the process of installing a 230 kV Phase Shifting Transformer (PST) located at the SVP Switching Station (SSS) adjacent to PG&E's Los Esteros Substation in San Jose. The PST will be electrically located in series with the SVP single 230kV interconnection circuit and in parallel with its remaining five 115kV interconnection circuits. The PST will be operated in such a manner to increase the power imported across the 230kV interconnection with PG&E. SVP has been working with both PG&E and the CAISO to coordinate its development of this project.</p> <p>SVP is pleased to see that the SVP PST model has been included in 2015-16 base cases. As the PST operation will impact the power flow distribution in the South Bay area, it is important for the transmission assessment to reflect the expected operation of the PST. Upon reviewing the posted reliability base cases, the flow on the PST in each of the base cases is as follows: [See SVP comments for table].</p> <p>SVP is concerned that the PST flows in the Greater Bay Area (GBA) summer peak cases is too low. As part of the development of the PST project, PG&E prepared, with SVP input, coordinated planning studies as prescribed under its TO Tariff. Based upon such coordinated planning studies, it was determined that the PST could operate up to 350 MW during the summer peak hours. System Operating Limits (SOLs) will be established through SVP operating procedures coordinated with PG&E to maintain the power flows following the identified critical system contingencies within the capability of the NRS-Scott #1 115 kV circuit.</p> <p>Therefore SVP requests that the CAISO transmission system assessments for the planning horizon reflect the PST operation at 350 MW for the summer peak period.</p>	<p>Your comment has been noted.</p> <p>ISO will perform additional studies with the SVP PST flow set at 350 MW and will report any incremental reliability issues, if identified, in the draft Transmission Plan in January 2016. At this point ISO has performed study with 350 MW PST flow in the 2025 summer peak case and found no additional reliability concerns in the GBA local transmission system.</p> <p>PST flow will be set at 350 MW in GBA summer peak cases for future TPP cycles.</p>

No	Comment Submitted	CAISO Response
12	SolarCity Submitted by: Andy Schwartz	
12a	<p>SolarCity appreciates the opportunity provided by the CAISO as part of the 2015-2016 Transmission Planning Process (TPP) for developers to submit alternative proposals to the ones presented in the September stakeholder meeting. We also appreciate the steps the CAISO has taken to advance the TPP by the identification and consideration of non-transmission alternatives as potential solutions to several of the reliability issues identified by the CAISO in the Southern California Edison and San Diego Gas & Electric areas. Notably, neither utility proposed solutions that included non-transmission alternatives, such as aggregations of distributed energy resources (DERs), to these reliability problems.</p> <p>In light of the utility proposals, SolarCity would like to submit an alternate technical proposal to solve the reliability issues identified by the CAISO, as well as alternative proposals for line section overvoltages identified in Pacific Gas and Electric's Fresno region where DERs could be a mitigation solution. However, the information publicly supplied by the CAISO and the three investor-owned utilities (IOUs) is insufficient in scope and detail to support a quality technical proposal.</p> <p>SolarCity's power system engineering team has identified the following list of technical specifications that are required at a minimum in order for SolarCity to develop a sufficiently robust technical proposal comparable to those submitted by the three IOUs. If this information is not available to potential developers, developers will be unable to supply alternate technical proposals on par with the rigor of traditional transmission infrastructure investments proposed by the three IOUs. This practically guarantees continued reliance on traditional solutions, potentially leaving significant value on the table that would otherwise be accessed were a more robust set of solutions and alternatives, including non-wires options available for consideration.</p>	<p>Your comment has been noted and the ISO will be looking into the increasing penetration of distributed and behind the meter PV generation in the 2016-2016 TPP based upon the 2015 IEPR energy and demand forecast. The high voltage conditions is an existing issue on the system as identified primarily on the 230 kV system where the reactors have been proposed. The ISO is continuing to assess the mitigation alternatives and will include recommendations in the draft transmission plan in January 2016 for stakeholder comment.</p>

No	Comment Submitted	CAISO Response
	<p>SolarCity's Suggested List of Technical Specifications</p> <ul style="list-style-type: none"> • Project size Examples of this include the required MWs deferred or the required VARs to be provided. <p>Required completion date of project</p> <ul style="list-style-type: none"> • Operation requirements <ul style="list-style-type: none"> ○ Time of day ○ Months required ○ Speed of response required ○ Duration of response ○ Etc. • Electrical location of the project This would ideally include the transmission model of the area requiring the solution, but it may be sufficient to provide information regarding the surrounding grid conditions necessary to determine how to integrate the alternative solution. • Geographical location of the project This would include information regarding the region in which the solution would be provided. • Additional limitations or constraints that an alternative solutions would need to consider. Examples of this include space limitations at the substation or communication requirements. <p>Given the unavailability of this data, SolarCity is unable to submit a technical alternate proposal at this time, despite our desire to do so. As a starting point, SolarCity encourages the CAISO to initiate a stakeholder process to identify the types of information that third parties would need to be able to develop robust alternatives that address identified needs on the bulk power system. Such a stakeholder effort should also consider the rules governing the</p>	

No	Comment Submitted	CAISO Response
	<p>dissemination of that information. We look forward to the opportunity to engage the CAISO, the three IOUs, the CPUC, and other stakeholders in the future regarding ways to improve the current process to facilitate the competitive development of feasible alternative proposals developed by third-parties may be submitted in this or other future TPPs.</p>	

No	Comment Submitted	CAISO Response
13	Southern California Edison Submitted by: Garry Chinn and Daniel Donaldson	
13a	<p>SCE supports CAISO’s findings¹ which demonstrate that although the Proposed Project provides some reliability benefits, it also creates additional problems requiring subsequent mitigation. One problem caused by the Proposed Project is a thermal overload of the Colorado River AA Bank under normal operating conditions and divergence under N-1 conditions². This was identified in the CAISO Policydriven case containing heavy renewable output. The Proposed Project would result in increased curtailment of resources in the area and accelerate the need for an additional AA bank at Colorado River to address this overload.</p> <p>Another problem caused by the Proposed Project is the introduction of a voltage deviation violation under simultaneous loss of the Devers – Red Bluff No.1& 2 500kV transmission lines³. Addressing this contingency would require a new RAS and modification to existing area Remedial Action Schemes (RAS) adding complexity and additional curtailment exposure. The Devers – Red Bluff N-2 contingency would first trigger the Colorado River Corridor (CRC) RAS tripping 1400 MW of generation. Next, the new RAS which the Project Sponsor is seeking to implement, would open circuit breakers and return the system to its existing configuration. An overload would remain on the Julian Hinds – Mirage 230 kV line following these actions. Then the existing Blythe RAS, which protects the Julian Hinds – Mirage 230 kV line, would be triggered tripping additional generation.</p> <p>Due to the number of generation projects in the CAISO process requesting interconnection to the Colorado River and Red Bluff substations, recent studies identified a limitation on the number of arming points available in the CRC RAS. Modifications required by the Proposed Project would include a need for additional arming points to monitor the new line created by the Proposed Project and to add generation at Buck Blvd into the RAS. This may adversely impact those generation projects seeking interconnection in the region.</p>	<p>Your comments have been noted.</p>

No	Comment Submitted	CAISO Response
	<p>Furthermore, the Proposed Project is intended to address numerous N-1-1 contingencies involving the Julian Hind – Mirage 230 kV transmission line. These contingencies are currently being addressed by a combination of Operating Procedures and the existing Blythe RAS4. Although the Proposed Project does provide increased voltage support and stability under normal operating conditions, the Blythe RAS as well as Operating Procedure 119 would still be required to address additional N-1-1 contingencies not mitigated by the proposed project.</p>	

No	Comment Submitted	CAISO Response
14	TransCanyon Submitted by: Jason Smith and Bob Smith	
14a	<p>TransCanyon is supportive and in agreement with both the reliability study results and the potential mitigation solutions developed by the CAISO and the PTOs. TransCanyon offers the following specific comments and recommendations:</p> <p>1. TransCanyon recommends the CAISO maintain a priority of providing frequent updates on the success of any plans to implement any of its preferred resources and traditional gas fired peaking resources in the LA Basin/San Diego Area. We encourage the CAISO to continue to study and refine potential transmission alternatives as reliability back up plans in the event that preferred resources or traditional peaking resources do not materialize.</p>	<p>Your comments have been noted. The ISO is working with other California state agencies (i.e., the CPUC, CEC, Air Resources Board, State Water Resources Control Board) to monitor the development of all resources, including preferred resources, as well as transmission upgrades that were identified and approved to meet Southern California reliability due to the retirement of San Onofre Nuclear Generating Station and the once-through-cooled generation that needs to comply with the SWRCB's Policy on OTC plants. The ISO, through its annual transmission planning process, updates its studies for intermediate and long-term local capacity requirements in the LA Basin and San Diego areas based on updates of available and anticipated resources, as well as progress on approved transmission upgrades for these two areas. In the events that resources or transmission upgrades are anticipated to be delayed or do not materialize, the ISO will update its long-term as well as intermediate term LCR studies inform the state energy agencies and the stakeholders. The ISO will work with the state agencies, as well as stakeholders, to identify potential backup plans in the event required resources and/or transmission upgrades experience delays or do not materialize.</p>
14b	<p>2. TransCanyon supports the CAISO continued special study of the 50% RPS recognizing that the California Governor will most likely sign into law the recently passed SB 350 requiring the utilities to provide 50% of their retail energy sales with renewable resources by 2030.</p>	<p>Your comment has been noted.</p>
14c	<p>3. TransCanyon understands and agrees with the CAISO decision to revisit the need for some previously approved transmission projects given the time that has passed and changes in assumptions since those transmission projects were determined to be needed. We understand the CAISO is considering waiting on project approval until project permitting needs to start. We recommend the CAISO balance this decision with the understanding that the projected timeline for the permitting process is often shorter than the actual time required. Given these considerations, based on current timelines we</p>	<p>The CAISO agrees that the timing of a project approvals needs to allow for sufficient time for transmission projects to be put into service.</p>

No	Comment Submitted	CAISO Response
	recommend the CAISO plan on 18 months for construction, 44 months for permitting and 12 months for the competitive selection process. Combined, these lead times suggest the CAISO make a decision no later than six years prior to the needed in service date of the project.	
14d	4. TransCanyon recommends that the CAISO continue to assess the reliability implications of the retirement of aging gas fired power plants in the Oakland Area and solidify the potential transmission projects solutions to these reliability concerns.	Your comment has been noted.
14e	5. Based on the historical meteorological facts, TransCanyon agrees that the future scenario of significantly reduced hydro availability in the SCE Big Creek area is a very real possibility and recommends the CAISO evaluate potentially more effective mitigations beyond the thyristor controlled series compensation solution recommended by SCE which has limited effect on mitigating the N-1 overloads.	Your comments have been noted. We are considering TCSC and other alternatives including the various proposed SCE/PG&E connection alternatives as a potential long term mitigation solution.
14f	6. TransCanyon recommends that the CAISO take the reliability concerns identified in the SDG&E area very seriously in light of recent load shedding events in that area precipitated by outages of local generators. We recommend that the CAISO approve the specific transmission reinforcements recommended by SDG&E.	The CAISO is reviewing the recent event.