The ISO received comments on the topics discussed at the April 18, 2018 stakeholder call from the following:

1. American Wind Energy Association California Caucus (ACC)
2. Bay Area Municipal Transmission group (BAMx)
3. Center for Energy Efficiency and Renewable Technologies (CEERT)
4. LS Power Development, LLC (LS Power)
5. National Grid
6. Natural Resources Defense Council (NRDC)
7. Northwest and Intermountain Power Producers Coalition (NIPPC)
8. Pacific Gas & Electric (PG&E)
9. PacifiCorp Transmission
10. Porter Ranch Neighborhood Council (PRNC)
11. Powerex Corp.
12. Puget Sound Energy (PSE)
13. San Diego Gas & Electric (SDG&E)
14. Seattle City Light (SCL)
15. Transmission Agency of Northern California (TANC)

Copies of the comments submitted are saved here:

http://www.caiso.com/planning/Pages/TransmissionPlanning/2018-2019TransmissionPlanningProcess.aspx

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

1. American Wind Energy Association California Caucus (ACC)
Submitted by: Danielle Osborn Mills

No	Comment Submitted	CAISO Response
1a	This Study Scope Should be the First Part of a Broader Effort ACC supports the California agencies in exploring various low carbon resource options to facilitate Aliso Canyon's potential phase out. The Study Scope provided by the CAISO offers a useful first step in the process. However, the scope of the current study is fairly narrow and, almost exclusively focused on hydro resources from the Pacific Northwest. Therefore, the study will not, on its own, provide sufficient information to determine if increased hydroelectric generation from the Pacific Northwest is the preferred method for supporting a phase out of Aliso Canyon. This is a laudable first step in considering Aliso Canyon phase out options, but the CAISO and other California agencies should ensure that a variety of resource options, from a various of locations are studied to help California in accessing the lowest cost, and most beneficial resources to support Aliso Canyon phase out. Before taking actions that require substantial investments, California agencies will need to study a number of possible options to help determine the best mix of generation and transmission to address Aliso Canyon phase out. It is likely that a mix of various resource types and geographic locations are best situated to achieve California's state policy goals in the most reliable and economical manner, while ensuring the greatest reduction in GHG emissions. Going forward, the California agencies and the CAISO should continue to explore other resources, such as regional wind, which may also be able to assist in transitioning to new, zero-emission resources following Aliso Canyon phase out. To the extent possible, the CAISO and other agencies should leverage previous study work in this evaluation. For instance, the resource assumptions and transmission additions studied for the CAISO's 50% RPS and ITP Study can be leveraged for use in a study that assumes Aliso Canyon phase out. These assumptions, once integrated and run through CAISO's models can help determine the benefits of regional wind. Similar studies should be performed for other resource and geographies which might be able to address Aliso Canyon phase out. To the extent possible, all studies should include the same methodology and valuation components - including quantification of the	The CAISO agrees with your comment on leveraging previous studies and therefore part of the study scope is to review previous studies. The CEC Staff also indicated that leveraging both previous studies and best available input data will afford the best insight to issues within scope. BPA indicated for the ISO to coordinate resource assumption with Northwest Intertie Owners (NWACI) and others to ensure accurate forecast of resources. The main focus of this study, as stated in the letter received from the CEC and CPUC, is transmission and how it can facilitate transfer of energy between Pacific Northwest and California. As stated in the letter, the insight gained from this informational study can be used to inform a broader assessment of Aliso Canyon Phase-Out options. The ISO will be utilizing the WECC Anchor Data Set (ADS) in the assessment. The ISO will inquire from Planning Regions in the Pacific Northwest (Columbia Grid and NTTG) if they have additional modelling enhancements to the WECC ADS with regards to resources in the Pacific Northwest. The California resources will be based on a CPUC portfolio developed through the Integrated Resource Plan proceedings. As noted in the comment, this study will provide one more piece of information, namely regarding the contribution Pacific Northwest Hydro may make, in addressing challenges in California. The study of a larger number of options to help determine the best mix of generation is beyond the scope of this study and is expected to be done through other procurement processes led by CPUC.

No	Comment Submitted	CAISO Response
	potential Resource Adequacy benefits - that the CAISO is proposing to use as part of this Special Study. ACC looks forward to future study efforts at the CAISO, and elsewhere, to further explore various strategies and replacement resources to reliably and cost effectively phase out Aliso Canyon. A comprehensive assessment should be undertaken before any substantial investment decisions are made to facilitate increased transfers from Pacific Northwest hydro.	
1b	Sensitivities for Additional Wind Wind energy frequently helps reduce the CAISO's total flexible capacity requirements (for example, see Table 4 of the CAISO's 2019 Local RA Needs study, which illustrates that wind reduces the need for flexible RA overall in most months)(Draft Flexible Capacity Needs Assessment for 2019, CAISO, April 2018, available at: http://www.caiso.com/Documents/2019DraftFlexibleCapacityNeedsAssessment.pdf). ACC believes that, in addition to northwest hydro, other diverse renewable resources (both existing and new) may also help support California's needs arising from Aliso Canyon phase out. For this study, CAISO has suggested that the base case will use the renewable resource assumptions contained in the Default Scenario. Additionally, CAISO has indicated it may run a sensitivity on the 42 MMT renewable resource portfolio. ACC suggests that, in addition to the 42 MMT scenario CAISO is considering, CAISO should also perform a study with additional renewable resources, especially incremental wind resources, in the Pacific Northwest. If additional transfer capability between California and the Pacific Northwest exists, it is likely that new (or repowered) wind generation in the Pacific Northwest may utilize some of that capacity. Therefore, ACC strongly supports an additional sensitivity as part of this Special Study with additional renewable resources in the Pacific Northwest, in addition to the sensitivity on California's 42 MMT renewable portfolio. As discussed below, CAISO will likely need to expand its stakeholder outreach to secure the information necessary to properly conduct this sensitivity	CEC staff n indicated that the Planning Region perspective with respect to Pacific Northwest resource assumptions should also be understood relative to the BPA coordination; to the extent possible, consistency across production simulation study assumptions and powerflow study assumptions should be reflected. The ISO will proceed as set out in the response to comment 1a above. The ISO will be conducting the assessment on the Default Scenario as advocated by CEC and CPUC. The ISO may conduct limited sensitivity studies on the 42 MMT Scenario. Any studies beyond that are beyond the scope of this study.
1c	**More Diverse Stakeholder Outreach should be Conducted** ACC appreciates that the CAISO is already working with a large group of stakeholders in developing the details of the study. These stakeholders include: CEC, CPUC, Bonneville Power Authority (BPA), Los Angeles Department of Water and Power (LADWP), and Southern California Edison (SCE) and many other utilities.	Considering the timeline for this informational study, the agreement with CEC and CPUC is to reach out to owners and operators of the AC and DC interties as part of a review group. The assumption is that CPUC portfolio and the generation information received from PNW entities through the development of the interregional coordination process ADS along with input from stakeholders would provide a

No	Comment Submitted	CAISO Response
	ACC encourages the CAISO to engage in more diverse outreach to stakeholders, particularly in the northwest. A more diverse set of stakeholders will be critical to providing additional input on potential hydro availability and in exploring future generation resources in the Pacific Northwest. For example, CAISO should engage with the Northwest Power and Conservation Council (NPCC) on a variety of topics including hydro availability and resource adequacy of the Northwest, which may influence the ability of the northwest to share resources with CAISO. CAISO should also engage existing generation owners and developers with existing and planned renewable facilities in the Pacific Northwest. In particular, CAISO should conduct outreach to generators with assets that will age over the study period to assess the potential for repowers (particularly with wind owners in BPA's territory). This stakeholder outreach can help develop a case of increased wind generation in the Pacific Northwest which can be used to conduct the sensitivity case ACC recommended above.	reasonable representation of resources in the PNW and California. Outreach to generation developers is not within the scope of this study. CEC staff indicated that outreach to generation developers is outside of the study scope. CEC staff also indicated that they will be willing to support the outreach efforts of PNW entities and agrees that the overall Pacific Northwest resource representation could benefit from engaging with stakeholders like NPCC.

2. Bay Area Municipal Transmission (BAMx) Submitted by: Kathleen Hughes		
No	Comment Submitted	CAISO Response
2a	BAMx generally supports the investigation of low cost/no cost methods of increasing the transmission system capability. This appears to be the focus of the short-term study. The study will focus on transfer capability under favorable system conditions. While this method is consistent with the WECC Path Rating Process, it is also helpful to understand how the transfer capability may be impacted by less favorable conditions, such as through the development of an operational nomogram. This would be valuable to understanding the full benefits of any proposed improvements.	This informational study will focus on the required transfer capacity and production simulation includes a nomogram for COI within the planning horizon.
2b	The long-term study will consider capital improvements to upgrade the either the Pacific AC and/or DC Intertie as well as other upgrades or third party proposals. This appears overly broad, possible due to ill-defined objectives. The general objective is to "Increase the Capacity of the AC and DC Intertie" sufficient to fully utilize the Pacific NW hydro resources. BAMx recommends that the study be phased where the first phase of the long term study would be to define the amount of transmission capacity that would be needed to fully utilize the Pacific NW hydro resources, after which a report to stakeholders would be informed of the findings. Based upon these findings, the subsequent study of increasing the AC or DC transmission capability could be better defined.(For example, the scope of the study would be expected to be much different if only 500 MW of additional transfer capability were found to be needed versus, say, 3000 MW. If the latter, the study could be structured to identify stages of increased capacity as the benefits of increased transfers are unlikely to be uniform over the entire range.) We understand that, appropriately, the CAISO has indicated that obtaining major Out-of-State (OOS) resources through the construction of new transmission should be dictated by interest from procuring entities as exhibited in resource plans of those entities as studied through the IRP process. BAMx presumes that this informational study is to better inform those processes. Otherwise BAMx does not understand why the CAISO dependency on the IRP would change when considering new transmission to obtain resources from the Northwest.	As stated in the study scope, the focus of the long term study is to identify the potential benefits of incrementally higher intertie transfer capacity through production simulation and power flow studies to support as needed to capture seasonal limitations and availability of resources. If the results of production simulation indicate the need for additional transfer capability studies beyond marginal improvements to existing facilities, this informational study may evaluate number of alternatives to increase the intertie capacity that could be utilized in other processes.
2c	The potential treatment of common corridor contingencies in study marks a change from past planning practices. While the current practice is to consider the simultaneous loss of the two Pacific AC Intertie 500 kV lines (N-2) in setting the Path Rating, the study scope raises the question of whether planning	The impact of conditionally credible contingencies on COI transfer capability will be preliminarily assessed as part of this informational study and presented in November stakeholder meeting.

No	Comment Submitted	CAISO Response
	studies should switch to considering this contingency as an extreme event except under certain conditions (such as imminent fire danger). BAMx generally supports such efforts to increase the utilization of the transmission system by better defining its limitations, but requests that the final informational study provide more background information concerning this potential change and, if uniformly applied, whether there may be opportunities for its application to other transmission paths.	
2d	BAMx also supports that this study being approached as informational only. It is helpful to understand the barriers to increased transfers and the options for pushing out such barriers. If major capital improvements are ultimately considered to increase inter-regional transfers, BAMx believes that such proposals should proceed a FERC Order 1000 compliant process to fully identify all potential beneficiaries.	The comment has been noted

3. Center for Energy Efficiency and Renewable Technologies (CEERT) Submitted by: Liz Anthony		
No	Comment Submitted	CAISO Response
3a	While this is a technical, engineering-based, information-only study, including a reasonable range of policy sensitivities would best identify the range of potential benefits from improved operation and coordination on the DC and AC interties.	The comment has been noted
3b	The proposed CAISO study is not the first time that expansion of the Pacific Intertie has been studied to increase trading of energy and capacity for the mutual benefit of California and the Pacific Northwest. The intertie is approximately fifty years old and has served this function for its entire lifetime. Assessments have been performed at least three times in the "modern era," once with the expansion of COI/COB built by the utilities that now form the Balancing Authority of Northern California, again with the expansion of Path 15 following the 2001 energy crisis, and most recently in 2009-2011 (Pacific Northwest-California: New Transmission Feasibility Assessment, Northwest–California Transmission Steering Committee, April 2011.) with the Pacific Northwest (PNW)-California Committee and its Transmission Utilization Group and Brownfield Optimization Group. Interests on both ends of the Intertie have seen the benefits of expanded N-S trading and cooperated to make the infrastructure investment to allow that to happen. This study is, once again, an important step to increased coordination between the Pacific Northwest and California, an essential component of delivering reliable, clean and affordable energy to both regions. CEERT, RNW, and NWEC view this study as a starting point to identify and guide further efforts to increased regional coordination along the West Coast. Several things are different this time. First, the dramatic change in California diurnal load shape due to the expansion of solar photovoltaics offers increased arbitrage opportunities between the regions. Second, the advent of fifteen minute scheduling and the emergence of the CAISO's Energy Imbalance Market including at least LADWP and SMUD in the South and PacifiCorp, Portland General Electric, Puget Sound Energy, Idaho Power, Powerex, and soon Seattle City Light, as well as potentially Bonneville Power Administration in the north offers the market infrastructure to increase actual trading volumes between these regions towards the physical transmission limits. With the advent of the proposed EIM Day Ahead Market Enhancements, the opportunity	The comment has been noted

No	Comment Submitted	CAISO Response
	to practice quasi or actual reserve sharing among the various Balancing Authorities is greatly enhanced.	
3c	• Increased coordination between Los Angeles Department of Water and Power (LADWP) and CAISO is critical to increased coordination between CAISO and the Pacific Northwest. Due to both the physical location of the DC intertie and the topology of the LA Basin, it can be argued that better coordination between CAISO and LADWP is critical in order to best facilitate increased coordination between the CAISO and the Pacific Northwest. In the response letter to Chair Weisenmiller and President Picker, LADWP announced their willingness to engage and inform the Informational Study(http://docketpublic.energy.ca.gov/PublicDocuments/18-IEPR-06/TN222885_20180305T163725_02232018_Response_Ltr_from_LADWP_re_Participation_in_Sensitivit.pdf) However, the Draft Study Scope is currently focused on limitations between CAISO and BPA and does not address barriers within the LA Basin. Identifying limitations between CAISO and LADWP in itself would likely result in displacement of gas in the LA Basin, along with enabling better coordination of the PDCI.	Studies assessing increased transfer capability on the PDCI include looking at limitations on the AC system out of the Sylmar substation which connects the LADWP system to the CAISO/SCE system. Increasing PDCI transfer capability could also require reinforcements in the PNW.
3d	• In order to displace gas burn in the LA Basin, and thus reduce dependence on Aliso Canyon, local resource adequacy value to the LA Basin must be determined, not simply generic system resource adequacy value. The Draft Study Scope currently seeks to address assigning resource adequacy value in the frame of system and flexible resource adequacy. While this is important to displace gas burn in the State as a whole, the study's principal objective is to displace gas burn in the LA Basin. The southern terminus of the PDCI is located in the LA Basin load pocket as defined by Kirchoff's Laws as well as the Aliso Canyon gas supply region, not simply the paper boundaries of the LADWP Balancing Authority. The potential expansion of the PDCI and the accompanying AC network to distribute the increased energy flows between the LADWP and CAISO BAs will create a new "virtual" local generator with full deliverability that does not draw on Aliso Canyon within the load pocket. The existence of the EIM with the DAM enhancements offers the contractual opportunity to monetize these benefits.	The comment has been noted.
3e	• The Information Study should rely on the 42 MMT scenario portfolio. The Draft Study Scope asks for stakeholder feedback on whether to use the 50% RPS portfolio or the 42 MMT portfolio transmitted from the California Public Utilities Commission Integrated Resource Planning process. The 42	The plan is to use Default scenario for this study and based on availability of time and resources a limited sensitivity with 42 MMT may be performed as well.

No	Comment Submitted	CAISO Response
	MMT portfolio is most appropriate for this study as it is the likely policy-driven outcome and gives a more accurate portrait of the benefits of coordination with the Pacific Northwest. In a similar vein, while the current LADWP IRP scenario that yields a 60% RPS by 2030 may be the appropriate base case for LADWP, a sensitivity that postulates significant incremental progress towards the announced Los Angeles goal of 100% Renewable Energy should be run as a sensitivity.	CEC staff indicated that the CEC-CPUC letter set to "requesting a specific sensitivity case be included in the 2018-2019" TPP and that the "sensitivity is directly responsive to California's statutory directives for carbon reduction and is consistent with the … 2017 IEPR … and the CPUC's Reliability Base Case submittal."
3f	• A sensitivity including likely E-W transmission buildout in the Northwest should be included. The likely build-out of new transmission from the east in the Pacific Northwest to allow imports of Montana and Wyoming wind across the Cascades to serve PNW load centers along the coast offers the potential ability to create a strong parallel E-W path to the Intertie. Construction of some combination of the Boardman-to-Hemingway, Gateway, MISTI and SWIP North projects, most of which would serve the increased E-W flows for PNW clean energy goals would dramatically increase redispatch options to mitigate loop flows during transmission contingencies and reliably increase Path ratings on the Intertie and the Paths that feed it. A sensitivity of likely transmission build out should be included to fully assess the range of potential transfer capabilities between the Pacific Northwest and California.	The near-term study will focus on the existing transmission system and resources while the long-term production simulation study will take into account the long term plans within the region. CEC staff notes that the Planning Region perspective with respect to Pacific Northwest transmission assumptions should also be understood relative to the BPA coordination; to the extent possible, consistency across production simulation study assumptions and powerflow study assumptions should be reflected Please also see the response to comment 1a.
3g	• At minimum, a sensitivity with regional clean energy build out meeting overall Washington and Oregon policy goals, not simply Bonneville Power Administration and other NW hydro supplier needs should be included. In addition to utilizing a portfolio in alignment with California clean energy policy goals, it would be valuable to include a resource portfolio for the Pacific Northwest in alignment with Washington and Oregon's clean energy policy goals. While the study appears singularly focused on the value of the Northwest's hydro system, and in particular the Bonneville Power Administration system, inclusion of expected regional clean energy buildout, especially in the 2028 scenarios, would change: 1) the flexibility of the hydro system due to greater non-hydro energy and capacity 2) the timing of hydro availability 3) utilization within the Northwest's transmission system and flows over the intertie.	Please see response to comment 1a.

No	Comment Submitted	CAISO Response
	While there is not a single, up to date, authoritative resource for Washington and Oregon's anticipated aggregate portfolios, it could be valuable to utilize the portfolios developed for other studies on the Pacific Northwest such as utility IRPs and the assessments by the NW Power and Conservation Council (Two studies, that have built up least-cost clean energy portfolio additions for the NW and found increased exports over the intertie and periods of oversupply and curtailment, include: PGP NW Carbon Study: http://www.publicgeneratingpool.com/e3-carbon-study/ NW Planning and Conservation Council's "35% RPS Scenario." See Chapter 15 of the Council's 7th Power Plan at: https://www.nwcouncil.org/media/7149924/7thplanfinal_chap15_resourcestratanalysis.pdf)	

4. LS Power Development, LLC (LS Power) Submitted by: Sandeep Arora		
No	Comment Submitted	CAISO Response
4a	**General Comment:** As LS Power has previously stated in its comments to CAISO staff and Letter to CAISO Board (http://www.caiso.com/Documents/PublicCommentLetter_LSPower_EconomicStudies_TPP-Mar16_2018.pdf), one area where improvements should be made in 2018/19 Transmission Planning Process (TPP) is to implement modelling enhancements to properly capture intertie congestion, particularly along the California Oregon Intertie (COI). This is even more relevant in the context of this study and we recommend that CAISO staff take this as a high priority task under the 2018/19 Transmission Plan. As reported by CAISO Department of Market Monitoring (DMM), PACI interface has seen congestion costs between $50 to $147 mm every year since 2011 (As per 2013 & 2016 CAISO DMM Annual Reports on Market Issues & Performance, Section 8, Table 8.1, PACI & NOB congestion combined was approximately $75mm in 2016, $50 mm in 2015, $147mm in 2014, $62mm in 2013, $144mm in 2012, $74mm in 2011. http://www.caiso.com/Documents/2016AnnualReportonMarketIssuesandPerformance.pdf http://www.caiso.com/Documents/2013AnnualReport-MarketIssue-Performance.pdf). Not capturing this in planning studies results in substantial cost to ratepayers. This new Study cannot provide accurate results without properly capturing the economic congestion that takes place on the PACI/NOB interfaces in the base model for the Study. This will allow the Study to provide a comprehensive evaluation that collectively addresses all issues at this interface including the inherent need to alleviate the documented congestion.	CEC staff indicated that the congestion issues are within scope. The ISO will assess the real-time versus day-ahead congestion on COI to determine if the congestion is due to market or physical limitation as part of this study.
4b	Further, as CAISO performs this study it should take a holistic approach in reviewing options for improving transfer capability between the Pacific Northwest & California. While some options may offer short term limited benefits and others may offer long term reliability, economic and policy benefits, all of this should be considered as CAISO concludes its recommendations on the study. Greenfield projects such as the Southwest Intertie Project - North (SWIP-North), which LS Power has submitted for economic evaluation in the past TPP cycles and 2018/19 TPP should be considered as a solution for improving the transfer capability. SWIP-North reduces COI & Path 26 flows by ~300 MW or more, based on the WECC Path Rating study work conducted by LS Power. Further, based on CAISO's analysis done under the Transmission Planning Process, CAISO found that SWIP-North reduces congestion hours on	The comment has been noted. Please see response to comment 2b.

No	Comment Submitted	CAISO Response
	COI by 39%. In addition, this project offers a 1000 MW new transmission capacity path between Idaho Power/PacifiCorp and CAISO, which should allow additional available generation capacity in the Pacific Northwest to transact with California and vice versa.	
4c	**(1) CAISO should include one additional stakeholder review before initiating the Study** LS Power appreciates CAISO staff seeking stakeholder input on the draft Study scope document that outlines the potential scope at a high level. However, we recommend that an additional opportunity be provided to stakeholders for inputs before CAISO begins the Study work. Per CAISO's proposed schedule, a Final scope document will be released on May 1, 2018, and then draft CAISO studies will be made available in November 2018 for stakeholder review. We recommend that an additional stakeholder input opportunity be provided after CAISO further develops its thinking on the study approach. While the Scoping document is helpful in laying out the Objectives and Assumptions of this Study, it is missing some key details on the Study Methodology. We appreciate that CAISO and the Study Team may need additional time to further develop these details on the Study Methodology, and therefore it is in the best interest of CAISO and all stakeholders to review and comment on the detailed Study Methodology prior to embarking on the actual Study work. We recommend that once the detailed Study Methodology is drafted, that updated document should be posted by CAISO and another round of stakeholder review be conducted. A few areas where more details should be provided are listed below. Section 4.1 of the Scoping document: a) Which alternatives to increase transfer capacity on COI and PDCI will be analyzed and how? b) How will upgrades to the existing system be compared with new transmission alternatives? c) How will AC vs DC alternatives be compared? d) As alternatives are analyzed, how will reliability and economic benefits quantified? How will the Day Ahead Scheduling congestion be incorporated into the analysis? Will any potential future policy benefits of alternatives also be captured? e) Use of study tools: Can Gridview/Plexos be used for capturing scheduling congestion, or will any other tools need to be used such as Power System	The ISO may consider additional stakeholder meetings beyond what has been identified and will inform stakeholders as required.

No	Comment Submitted	CAISO Response
	Optimizer (PSO)? Our understanding is that Gridview/Plexos do not have the capability to model contract paths, hence cannot capture scheduling constraints. Section 4.5 of the document: f) CAISO proposes to use Production cost simulation to "determine how much excess hydro resources are available in the PNW to either provide energy to California or be used as resource shaping". It is unclear if CAISO will attempt to address the Day Ahead scheduling congestion that has been reported to be between $50mm to $147mm every year since 2011 for PACI & NOB interfaces. Absent capturing this congestion, the study will likely show similar results as shown under economic studies done for the last several Transmission Planning cycles, undermining the key objective of the Study to improve transfer capability. g) The CPUC/CEC letter to CAISO asks CAISO to "*Explore the costs and benefits of potential increases to AC and DC intertie capacity with the Pacific Northwest, considering a range of options as well as assessing downstream impacts to transmission within California".* How will the downstream impacts to transmission within California be assessed? If the Existing Transfer Capability for COI is increased by 300 MW, will Path 26 (500 kV transmission path connecting Northern to Southern California) also need to be increased by at least 300 MW so benefits of COI increase can be achieved in Southern California to facilitate Aliso Canyon retirement? If this were to be the case, does it make sense to build a new transmission project that parallels both COI and Path 26 and provides more benefits including inherent policy and reliability benefits? We recommend that CAISO provide additional details and seek stakeholder input through either another release of this Scoping document or issue a Study Plan that clearly demonstrates in more detail the Study will be performed. We further recommend that, when available, CAISO post any power flow base cases and production cost simulation models that will be used for this Study in the same manner that it posts models for the TPP Reliability analysis.	
4d	**(2) Renewable Generation Assumption for the Study** In response to CAISO's request for feedback under Section 3.6.1 of the Scoping document, we recommend the use of the 42 MMT case for this Study. This is the case CAISO will be using for Policy study for 2018/19 TPP and given that this Study is aimed at achieving economic and policy benefits, the 42 MMT	Please see response to comment 3e.

No	Comment Submitted	CAISO Response
	case is appropriate. Further, we recommend that as CAISO develops transmission upgrade recommendations through this Study, it not only captures the economic benefits but also the potential for incremental policy benefits that such transmission upgrades can provide.	
4e	**(3) Conditional credibility treatment of common corridor outages** In the Scoping document CAISO mentions that it may reconsider current treatment of the contingency of two of the COI lines as an Extreme Contingency, similar to how CAISO Operations has begun viewing this under certain conditions. LS Power recommends that this conditional credibility criterion should not be used for planning purposes. In light of changes made recently to the NERC SOL methodology, while it may be reasonable to use this criterion for the Operating horizon, it would not be prudent to use this for planning purposes simply because it is impossible to predict or even reasonably project whether the underlying conditions behind treating these outages as P6 vs P7 will actually materialize.	The impact of conditionally credible contingencies on COI transfer capability will be preliminarily assessed as part of this informational studies and presented in November stakeholder meeting. If study results show significant benefit, further evaluations and WECC process changes are required before the ISO can begin planning the bulk system on the basis of a conditional credible contingency approach.

5. National Grid Submitted by: Henry Tilghman		
No	Comment Submitted	CAISO Response
5a	General Comments The Pacific Northwest has significant amounts of existing and potential zero carbon energy generating resources that could help California meets its energy policy goals. At the same time, the Pacific Northwest has significant potential for very attractive large-scale energy projects that can bank bulk surplus energy from California and return it to California consumers later in the day.	The comment has been noted.
5b	Generation Resource Assumptions National Grid is currently developing two pumped hydro storage projects in the Northwest strategically located in the high-voltage grid (i.e. AC and DC Interties). The 400-MW Swan Lake Pumped Storage Project is a "closed loop" project consisting of three 131-MW variable-speed pump-turbines generators that will interconnect at Malin Substation of the Pacific AC Interties that could be operational as soon as 2024. The 1200-MW Goldendale Energy Storage Project is a proposed " closed-loop" pumped storage project with three 400-MW variable-speed pump-turbines generators near the John Day Dam at the top of the AC and DC Interties that could be operational in 2028. National Grid is disappointed that the proposed study will consider generation resource additions in California (i.e. 40GW of solar by 2030) based on the CPUC IRP; but will not fully consider the future generating mix in the Pacific Northwest. The study appears to consider a static view of only existing hydropower marketed by Bonneville Power Administration from the Lower Columbia River. While hydropower from the dams on the Lower Columbia is carbon-free, operation from those resources is increasingly limited by environmental constraints intended to protect salmon and the other multiple uses of the system including flood control and navigation. Additionally, there is limited storage potential in the reservoirs on the Lower Columbia. While the proposal recognizes planned coal retirements in the Northwest, it should also consider new generation resources likely to be added to the Northwest capacity supply in the study timeframe.	Please see the response to comment 1a.
5c	National Grid encourages the study team to work with the Northwest Power and Conservation Council, utilities in the EIM footprint and generation project developers to identify a likely future mix of generation resources for the Pacific Northwest that is fully consistent with the carbon policy goals of Oregon and Washington. In the event the study team declines to consider the future	The CEC staff indicated that the Planning Region perspective with respect to Pacific Northwest resource assumptions should also be understood relative to the BPA coordination; to the extent possible, consistency across production simulation study assumptions and

No	Comment Submitted	CAISO Response
	resource mix of generation in the Northwest, National Grid encourages future studies which will consider the incremental benefits associated with additional flexible generation and storage located near the Celilo Converter Station, John Day and Malin Substations in enhancing reliability and flexible transfer capability of the AC and DC Interties as well as absorbing surplus generation and facilitating transfers of energy between the Pacific Northwest and California.	powerflow study assumptions should be reflected. The CEC staff indicated that they will be willing to support the outreach efforts of PNW entities and agrees that the overall Pacific Northwest resource representation could benefit from engaging with stakeholders like NPCC. Please see response to comment 1a regarding how resources will be modelled in this study.
5d	National Grid recognizes the value in making very conservative assumptions with regard to potential generation additions in the Pacific Northwest in this initial study. Hopefully, the study report will underscore for readers that any benefits resulting from the increased transfers between California and the Northwest are conservative. Any additional investment in modern, highly flexible "closed-loop" pumped hydro storage and generation would yield additional benefits to both California and the Northwest and expand the seasons when those benefits are available as well as multiply the benefits by increasing utilization of the high voltage transmission system for more effective coordination of regional low-carbon resources and flexible resources and storage. National Grid would be happy to provide technical data and other cooperation with the study team for this or future studies.	The comment has been noted.

6. Natural Resources Defense Council (NRDC) Submitted by: Julia s. Prochnik		
No	**Comment Submitted**	**CAISO Response**
6a	Increased coordination between Los Angeles Department of Water and Power (LADWP) and CAISO is critical to efficient use of system resources between CAISO and the Pacific Northwest.	
6b	The Draft Study Scope asks for stakeholder feedback on whether to use the 50% RPS portfolio or the 42 MMT portfolio transmitted from the California Public Utilities Commission Integrated Resource Planning process. The 42 MMT portfolio is most appropriate for this study as it is a policy-driven sensitivity and give a more accurate portrait of the benefits of coordination with the Pacific Northwest. We would also consider a sensitivity study and compare them side by side.	Please see response to comment 3e.
6c	In addition to utilizing a portfolio in alignment with California clean energy policy goals, it would be valuable to include a resource portfolio for the Pacific Northwest in alignment with Washington and Oregon's clean energy policy goals. While the study appears singularly focused on the value of the Northwest's hydro system, inclusion of expected clean energy buildout, especially in the 2028 scenarios, would change 1) the flexibility of the hydro system due greater non-hydro energy and capacity 2) the timing of hydro availability and 3) congestion within the Northwest's transmission system.	Please see response to comment 1a.

7. Northwest and Intermountain Power Producers Coalition (NIPPC) Submitted by: Robert Kahn		
No	Comment Submitted	CAISO Response
7a	NIPPC encourages the study team to consider generation resource additions likely to be added in the Northwest within the study timeframe. NIPPC hopes the study plan will consider renewable energy generation resource additions in the Northwest and resources capable of storing surplus renewable energy generation — specifically pumped hydro and compressed air storage projects.	Please see response to comment 1a.
7b	While the proposed study will help identify the transmission upgrades and operational process enhancements needed to support flexible transfers between California and the Pacific Northwest, NIPPC notes that there will still be policy barriers limiting transfers between the Pacific Northwest and California. Among these policy barriers are carbon accounting, CAISO export fees and BPA's short-term Southern Intertie rates. NIPPC recommends that the policy makers in the Northwest and California begin discussions to identify and eliminate the policy obstacles to increased transfers between the regions.	CEC staff indicated their supports for development of an issues/barriers list that clearly describes each identified issue, or barrier, and assesses whether the issue has been well studied within the study scope or needs further study / policy discussion.

8. Pacific Gas and Electric (PG&E)
Submitted by: Matt Lecar

No	Comment Submitted	CAISO Response
8a	PG&E would like to note a couple of concerns. First, in order for greater reliance on PNW hydro to substitute for local Southern California gas-fired generation, CAISO must first determine that there are sufficient hydro resources available (and not otherwise under contract) during the same time of the year when the gas balancing constraints would most likely be in effect without Aliso Canyon, which is to say, during the winter, when Core Gas usage typically peaks. PG&E notes that the PNW as a region is a predominantly winter-peaking electric system. Furthermore, hydro availability is typically greatest during the spring run-off season (depending on hydrological conditions). PG&E is therefore concerned that the PNW hydro resources may be less available at precisely the time of year when Southern California would need additional flexible resources, absent Aliso.	Please see response to comment 2b.
8b	Moreover, to the extent additional flexible resources are available at the right time of year, and the Study identifies a set of options to increase transfer capacity and deliver this energy into Southern California, the Study itself will not provide an economic benchmark against which to judge the cost-effectiveness of this approach. While the current Special Study is for information only, PG&E notes that, before approving any project in the TPP, CAISO will need to classify it as either Policy-Driven or Economic. The designation of a TPP project as "Policy" implies that there would first need to be a clearly stated California policy preference for meeting Southern California's future balancing needs using, preferentially, out-of-state renewable resources. To PG&E's knowledge, no such statement has yet been made. In the absence of a State policy preference supporting this approach, CAISO should evaluate the economics of the PNW intertie option against other potentially more cost-effective alternatives, such as other transmission options; siting new, in-basin flexible resources; and increasing electric transfer capacity with other, more proximate in-state or out-of-state resource regions that may be able to provide the desired flexible characteristics.	Please see response to comment 2b.
8c	PG&E looks forward to participating and engaging in this study process as a potential affected system.	The comment has been noted.

9. PacifiCorp Transmission
Submitted by: Bill Shemley

No	Comment Submitted	CAISO Response
9a	[There wasn't] any mention of Path 76 in your scope of studied Paths. Path 76 is part of the COI nomogram and is part of the current 4800 MW (N-S) path rating. To a lesser extent, Path 25 is another transmission path between Oregon & California	All the paths including Path 76 that will be potentially impacted in the study will be listed in the final scope.

10. Porter Ranch Neighborhood Council (PRNC)
Submitted by: Issam Najm

No	Comment Submitted	CAISO Response
10a	Slide 4 states that "The Study will be done for a 10 year horizon". In 2017, Governor Brown asked the California Energy Commission to develop a plan towards the closure of the Aliso Canyon facility within 10 years. As you know, this was the impetus behind the request from the CEC and CPUC for the inclusion of the study in the CAISO 2018-2019 TPP. Considering our community grave concern regarding the continued presence of the gas operation in our backyard, and its adverse impact on the health and wellbeing of the community, we urge you to work towards a 3 year horizon for the completion of the work.	The CEC staff indicated that this study will support and inform the Aliso Canyon issues and recognize that the Governor's request set a 10 year time frame in 2017. To the extent that this study reveals information supporting some plan for expedited closure, then other Aliso Canyon proceedings (including the primary proceeding at the CPUC) will benefit from such findings.

11. Powerex Corp. Submitted by: Mike Benn		
No	Comment Submitted	CAISO Response
11a	Powerex believes that closer interregional coordination and trade represents a highly cost-effective and efficient path for California to achieve its environmental objectives, allowing California consumers to avoid or defer significant investment in new in-state resources.(*See* Comments of Powerex Corp. on *Electricity 2030: Trends and Tasks for the Coming Years* discussion paper. *Available at:* http://www.caiso.com/Documents/Comments-DraftISOBoardVisionPaper.pdf (pp. 142-158). And while appropriate commercial structures that equitably share both the investment and production cost savings of greater inter-regional coordination will be required in order to bring such arrangements to fruition, there is no question that the inter-regional transmission infrastructure provides the critical backbone for the associated transfers. The Draft Scope can therefore help identify what specific aspects of the transmission system are likely to limit the extent of beneficial inter-regional arrangements between California and the Northwest region, and hence identify opportunities for transmission investments with positive net benefits.	The comment has been noted.
11b	Enabling Intra-hour Scheduling on the PDCI Powerex strongly supports the Draft Scope examining the benefits of enabling 15-minute scheduling on the PDCI and believes that this functionality is long overdue. FERC Order No. 764, which requires transmission providers to offer 15-minute scheduling, was issued over four years ago and the lack of 15-minute scheduling makes the transmission service available on the PDCI outdated compared to the rest of the industry. As a practical matter, limiting schedules on the PDCI to hourly granularity effectively renders the PDCI unavailable for use in the CAISO's 15-minute and 5-minute real-time market processes, including to support EIM transfers. The lack of intra-hour scheduling on the PDCI is particularly regrettable given the nature of the resources in the Northwest—which are ideally-suited for providing services on an intra-hour basis—and the PDCI's connection directly into Southern California, where most of the state's solar generation is located. Powerex understands that the incremental investment necessary to enable 15-minute scheduling on the PDCI may be quite modest. In November 2016, BPA completed a $448 million upgrade (https://www.bpa.gov/news/newsroom/Pages/BPA-strengthens-backbone-of-West-Coast-transmission.aspx) to its portion of the PDCI, including modernizing the northern converter station at Celilo. This major investment, which was funded by BPA's transmission customers taking service on its	The CAISO will study whether or not sub-hourly scheduling capability on the PDCI might help to mitigate Aliso Canyon retirement and other RA requirements. BPA has indicated that they will contribute their own initial scoping document to inform the TPP study. BPA also indicated that they will need to coordinate with the other co-owners and the joint operators to inform any additional technical analyses and conclusions, which will be done according to BPA's internal work prioritization and timelines, which may or may not align with CAISO's TPP timelines. The CAISO's study can identify potential system enhancements on the PDCI south of Nevada-Oregon Border that may be required in order to achieve the sub-hourly scheduling capability.

No	Comment Submitted	CAISO Response
	Southern Intertie (which includes the PDCI), creates an opportunity to substantially increase the usefulness of the PDCI if BPA, LADWP and CAISO (and their ratepayers) make limited coordinating upgrades on this facility.	
11c	Increase Dynamic Transfer Limit on AC Interties The AC Interties support 15-minute scheduling over the full amount of the available capacity of the facilities. In addition, a portion of that capacity is available to be scheduled on a dynamic basis. This latter capability enables resources located outside of the CAISO balancing authority area ("BAA") to provide spinning reserve, provide regulation, and participate in the CAISO's 5-minute Real-Time Dispatch. The dynamic scheduling functionality enhances the value of the transmission facilities by enabling a wider range of services to be delivered on those paths. Currently, the limit on dynamic schedules on the COI is 400 MW. The Draft Scope would study the potential to increase this limit and the benefits of doing so. Powerex supports studying the potential for increasing the dynamic transfer limit on the COI. Powerex believes, however, that such a study must focus not only on the value of an increased limit, but, critically, on the ability of transmission customers to rely on the full amount of the dynamic transfer limit actually being available during real-time operations. It is not uncommon, for example, for dynamic schedules on the COI to be "crimped" or effectively frozen at a level lower than the current 400 MW limit as a result of other conditions on the grid. This exposes transmission customers to significant financial consequences from being suddenly unable to respond to a market dispatch instruction, even though their offers were within their allocated dynamic scheduling rights. Powerex therefore suggests that the Draft Scope focus on the potential to increase the "firm" dynamic transfer limit. More specifically, the Draft Scope should assess the dynamic limit that can be relied upon by customers on a day-ahead basis without being "crimped" or otherwise restricted within the hour. A higher nominal dynamic limit that is subject to frequent reductions or restrictions is unlikely to offer genuine benefits as it may actually reduce market efficiency compared to a lower nominal limit that is highly reliable.	BPA has indicated that the dynamic transfer capability (DTC) on the COI is currently limited to 400 MW. BPA has studied its capabilities of increasing DTC to 600 MW and are moving forward with implementing this change. BPA will distribute these study results to inform the CAISO TPP evaluation this year. The CAISO will assess the benefits of going beyond 600 MW and any potential requirements on the ISO controlled grid.
11d	Increase Transfer Capacity of AC and DC Interties Powerex generally supports studying the potential benefits of increasing the transfer capability on the AC and DC interties. However, Powerex believes that any such analysis must be carefully designed in order to provide meaningful	The CEC staff indicated that they generally agree with these observations. The CEC staff notes that the Planning Region perspective with respect to Pacific Northwest resource / transmission

No	Comment Submitted	CAISO Response
	insight into the potential benefits of upgrades. Given the high capital costs of transmission expansion projects, such an investment is likely only warranted if it enables not only production cost savings, but if it enables additional investment cost savings by avoiding or deferring the need for California ratepayers to fund new in-state resources. Critically, however, enabling additional investment cost savings requires that the expansion of transmission capacity be reliable during periods of critical demand in California. Powerex currently sees two barriers that need to be more fully examined and addressed before this can be achieved. First, enabling California to realize investment cost savings by relying on arrangements with external resources requires a reliable transmission path from the external resource all the way to load in California. This requires not only capacity on the CAISO-controlled segments of the AC and DC interties, but also on the segments owned or operated by other transmission service providers (*e.g.,* BPA) as well as on the upstream transmission systems between John Day or Big Eddy and the locations of the external resources providing service to California. During summer periods with high California demand, the BPA transmission system upstream of the AC and DC interties can become constrained through the I-5 corridor and particularly across the South of Alston constraint. These conditions are currently relieved through re-dispatch arrangements, which are an efficient and cost-effective solution on a stand-alone basis, but they effectively mean that there is no ability for hydro resources (which are located almost entirely north of this constraint) to provide additional RA capacity to California. Powerex therefore believes that increasing investment savings to California will not occur if only the CAISO-controlled downstream segments of the AC and DC interties are expanded. Rather, achieving increased investment savings will require increasing the full source-to-sink transfer capability between the Northwest region and California, which in turn will require a coordinated strategy between CAISO and other regional transmission service providers. The second barrier to unlocking additional investment cost savings to California can arise if imports become the most severe single contingency for the CAISO BAA. Indeed, CAISO has recently identified this to occur under high volumes of import schedules over the DC intertie. Under such conditions, each additional megawatt of imports requires an additional megawatt of contingency reserve,	assumptions should also be understood relative to the BPA coordination; to the extent possible, consistency across production simulation study assumptions and powerflow study assumptions should be reflected. The CEC staff also indicated that assessment of the Resource Adequacy rules (both at the CPUC and the CAISO) is within scope. The ISO will work with CEC and CPUC to assess Resource Adequacy rules. Please see response to comment 1a.

No	Comment Submitted	CAISO Response
	effectively negating any investment cost savings that could otherwise be realized. Both of the above barriers need to be considered in any evaluation of the benefits from expanding the transfer capacity on the CAISO-controlled segments of the AC and DC interties. Absent a comprehensive approach that increases the transfer capability on the full source-to-sink path between Northwest resources and California, expansion of the CAISO-controlled segments may deliver on production cost savings, but fail to enable the most significant investment savings that are likely necessary to warrant such an upgrade. Powerex also notes that increasing the source-to-sink transfer capability between the Northwest region and California, on its own, will not enable the significant investment cost savings that are possible through increased inter-regional coordination and transactions. The Draft Scope contemplates two specific types of inter-regional arrangements that might be pursued: 1. Northwest hydro resources could provide committed capacity on a forward basis to meet peak California load (*i.e.,* providing Resource Adequacy ("RA") including Flexible RA); 2. Northwest hydro resources could provide "resource shaping" services by receiving surplus California solar output during the middle of the day and providing a comparable quantity of energy during California's evening net load ramp. Powerex agrees that both of these types of arrangements have the potential to provide significant value to California consumers by avoiding or deferring substantial investments in new in-state resources. It is important to recognize, however, that both types of arrangements are currently possible given the existing capacity of the AC and DC interties, but they occur only to a very limited extent. As discussed in the section below, Powerex believes that one of the primary impediments to greater procurement of RA capacity from Northwest hydro resources is CAISO's existing framework for allocating intertie capacity to support RA contracts, which strands large volumes of existing import capability and makes it unavailable to California load-serving entities that wish to procure RA from external resources. In the case of "resource shaping" services, such arrangements are unlikely to occur unless there is a long-term contract under which a Northwest hydro system can undertake the advanced system planning	

No	Comment Submitted	CAISO Response
	necessary to ensure that storage, generating capacity, and transmission service is available to support the associated energy transfers. Again, it does not appear that a lack of physical transmission capacity is the primary obstacle to such arrangements. Instead, it is the lack of an appropriate framework through which California entities can procure those clean, "battery-like" services and the associated investment savings can be appropriately recognized.	
11e	Assigning RA Value to Firm Zero-Carbon Imports or Transfers The stakeholder presentation indicated that this aspect of the Draft Scope is under discussion with the California Energy Commission and the California Public Utilities Commission ("CPUC") "to further define the scope."5 Powerex believes additional clarification on what is intended by this study topic would be beneficial. Resources located outside of the CAISO BAA can already provide RA capacity, and CAISO is currently conducting a stakeholder process that, among other things, is expected to develop a framework for such external resources to provide Flexible RA as well. It is thus unclear what is meant by "assigning resource adequacy value to imports." Nevertheless, Powerex supports the Draft Scope evaluating the "extent to which system capacity and flexibility needs can be met by increased utilization of existing capability and potential increased capability." In particular, Powerex urges the Draft Scope to analyze not only the potential amount of capacity and flexibility needs that *could* be met from external resources, but to also compare this potential level to the actual amount of RA provided by external resources. Previous reports by the CPUC indicate that the amount of system RA procured from external resources represents only a fraction of the import transmission capability into California, and the Draft Scope should explore the reasons for this low level of utilization. Powerex specifically recommends that the Draft Scope examine the Maximum Import Capability ("MIC") mechanism, which allocates intertie capability to California LSEs on a load-ratio share, and hence establishes the maximum amount of system RA that each LSE can procure from external resources. The MIC is allocated without regard to actual RA procurement, however. This frequently leads to intertie space being allocated to LSEs that do not use it to support RA contracts, but rather hold it as a "costless option", thus "stranding" import capability and rendering it unavailable to LSEs, particularly new and smaller LSEs, that *do* wish to procure RA from external resources. Until and unless the MIC process is reformed to allow existing transmission capacity to be made available to LSEs that wish to procure system	As approved by FERC, MIC (Maximum Import Capability) is allocated on a load share ratio because the TAC (Transmission Access Charge) is paid by all LSEs (Load Serving Entities) on a load share ratio. The ISO posts a list with all owners of MIC allocation at: http://www.caiso.com/Documents/2018HoldersImportCapability.pdf . The current process allows for transfer of RA (Resource Adequacy) MIC allocations among LSEs as described under Tariff 40.4.6.2.2.2 and all FERC required data is posted here: http://www.caiso.com/Documents/2018AdditionalBi-LateralTransfersofImportCapability.pdf . LSEs are encouraged to contact the owners of the MIC allocation for the BG (Branch Group) of their choice to see if a transaction to transfer that MIC allocation can be achieved.

No	Comment Submitted	CAISO Response
	RA from external resources, California consumers are unlikely to realize RA-related benefits from either the current transmission capacity or from any expansion to that capacity.	

12. Puget Sound Energy (PSE)
Submitted by: George Marshal
Laura Hatfield

No	Comment Submitted	CAISO Response
12a	Puget Sound Energy, Inc. ("PSE") encourages CAISO to coordinate with parties to include other transmission asset owners and capacity owners of both the Pacific DC Intertie ("PDCI") and California-Oregon Intertie ("COI") as well as regional entities in the Northwest Planning Region such as ColumbiaGrid and NTTG consistent with CAISO's FERC approved Tariff. PSE is aware of several meetings that have occurred to date to discuss the Informational Study and encourages future meetings include the AC intertie owners and capacity owners as well as the Northwest Planning Regions.	CAISO is planning to involve the owners and operator of the AC and DC interties to review the study assumptions, methodology, and results of this informational study which is to be based on WECC ADS case which incorporates information on the other planning regions' long term plans.

13. San Diego Gas & Electric (SDG&E)
Submitted by: Jan Strack
Brad Carter

No	Comment Submitted	CAISO Response
13a	Aliso Canyon The study scope is unclear as to the assumptions for gas availability from the Aliso Canyon gas storage facility. The study scope should be augmented with a clear description of how the Aliso Canyon gas storage facility availability is assumed to affect the availability of gas-fired generation. SDG&E notes that these assumptions could affect the availability of dispatchable gas-fired generation as well as non-dispatchable gas-fired generation (e.g., Combined Heat and Power (CHP) facilities) during certain time periods and under certain weather conditions. Clearly listing how much generation capacity will be available or lost due to a complete closure of the Aliso Canyon storage facility in 10 years, will also provide a good idea on the amount of low carbon electricity exchange that might be needed between the Pacific Northwest and California.	Please see response to comment 1a.
13b	Default vs. 42 MMT Scenario Since California's government is pushing for ever higher GHG reduction goals it is very useful to create a study case using a constraint close to an upper limit for emissions reduction. Accordingly, the 42MMT Scenario and its RPS additions will be the most analytically valuable.	Please see response to comment 3e.
13c	Maximum Simultaneous Imports Table 3 of the study scope indicates the "San Diego Import" is 2850 MW. if the 2850 MW is still considered a current value, SDG&E is unclear as to the cut-plane for the "San Diego Import," and what the critical contingency condition and limiting element is that establishes this number. The study scope should reference the source for this number. Based on the most recent LCR study, the 2850 MW voltage stability limit (IROL) does not bind the San Diego sub area anymore but a thermal limit around the Suncrest to Sycamore 230 kV lines does. Also, looking at CAISO and SDG&E's operating procedures (GIP2005 and CAISO 7820), the SDG&E import cut-plane is now combined with the CENACE cut-plane in a bigger cut-plane titled the SDG&E/CENACE import cut-plane. SDG&E encourages CAISO planning to review SDG&E's IROL value and cut-planes.	The 2850 MW SOL (System Operating Limit) for San Diego Import is based on a study performed during the 2013-2014 Transmission Planning cycle in a supplemental SOL study. The CAISO plans to update that analysis in this year's planning cycle.
13d	Southern California Import Transmission (SCIT) Nomogram	The ISO plans to update its analysis of the SCIT SOL in the planning horizon this year.

No	Comment Submitted	CAISO Response
	Table 3 of the study scope specifies that SCIT will be modeled at 17,870 MW. SDG&E understands that the SCIT nomogram is being retired and should no longer be considered a potential limitation on imports into the southern California area.	
13e	Production Cost Modeling Section 4.1 of the study scope indicates that one of the four studies will be based on "Increasing PDCI rating from 3220 MW N-S to a maximum of 3800 MW N-S." This study will "Identify…the impact that this would have on the amount of RMR thermal generation commitment." SDG&E believes the impact on "RMR thermal generation commitment" should be established through the use of comparative production cost modeling cases. Production cost modeling can account for the numerous factors that determine the hours of a year that it is economic to commit thermal generators, including thermal generators that may be subject to an RMR contract. The study scope should be clarified as to how "RMR thermal generation commitment" will be determined.	A detailed generation commitment benefit analysis of increasing the PDCI to 3800 MW would not be performed until high level costs of the option have been reviewed and results indicate that the analysis is warranted.
13f	Resource Adequacy The study scope at section 4.4 indicates that the study will "Assigning Resource Adequacy (RA) Value to Imports" by "Develop[ing] a bounding case that assumes maximal utilization of existing infrastructure." SDG&E notes that this approach is consistent with the approach SDG&E has long-advocated for establishing Maximum Import Capability (MIC) on existing interties. MIC on existing interties – which is the measure of RA that can be counted from areas outside the CAISO Balancing Authority – is currently based on historical imports during peak load periods. The RA proposal described in the study scope appears to contemplate a forward-looking study-based approach for determining MIC on the existing intertie. SDG&E supports the forward-looking study-based approach for establishing MIC and believes it would be informative if the study scope were augmented with language explaining why the CAISO has apparently revised its approach for purposes of the instant study.	The ISO is not proposing to revise the methodology for determining MIC at this time. The magnitude and stress pattern for the MIC was derived through a FERC technical conference where the best approximation of future use was based on highest schedules on intertie when load is above 90% in the last 2 years. The process ended in a FERC technical conference because technically there was no agreement among stakeholders in what pattern to stress the existing over 42800 MW of non-simultaneous intertie by intertie operating transfer capability (OTC) into a single simultaneous ~15,000 MW MIC. Furthermore, currently the ISO does a forward looking MIC to assure than all state and federal policy goals are met.
13g	Economic Dispatch of Pacific Northwest (PNW) Hydroelectric Resources Section 4.5 states that "Production cost simulation will be used to identify congestion under different hydro scenarios (base, low, and high) in the long term and quantify the production cost benefits of increasing the transfer capability." It is unclear from this statement what assumptions the will be used to model the extent to which hydroelectric generation capacity in the PNW will	The CEC staff indicated that this issue quite complex and that this study will not address all aspects of the issue. It seems likely that information from this study will prove a valuable foundation for future study efforts in relevant proceedings and processes.

No	Comment Submitted	CAISO Response
	be economically dispatched against prevailing Locational Marginal Prices (LMPs). A key determinant of the magnitude of congestion-related costs absent an upgrade of transfer capability between the PNW and California, is the extent to which the owners of PNW hydro resources are willing to sell hydroelectric energy to California and the extent to which PNW load serving entities are willing to purchase electricity from California. If transactions between the PNW and California were based strictly on economic criteria, SDG&E believes power flows between the PNW and California would be higher than what has been historically observed and there would have been more instances of congestion on those transmission paths. Accordingly, to establish whether an increase in transfer capability would materially reduce costs for consumers, it is necessary to first establish a baseline assumption as to how PNW entities will respond to price signals absent upgrades of PNW-California transfer capability. The study scope should explain how this issue will be addressed.	Please see response to comment 7b for policy-related issues/barriers.
13h	North of Encina and Miguel Congestion Attention should be paid in the study to the congestion around the Miguel Substation and north of Encina Substation. Retiring the Aliso Canyon storage facility may exacerbate south to north flows through the SDG&E system from the Imperial Valley area, where there is an abundance of renewable resources. Evaluation of the congestion in these areas should also be tied to other qualitative benefits related to other benefits related to flowing Low Carbon Electricity between the Pacific Northwest and California.	Please see response to comment 1a.
13i	Minor Upgrade Cost Caps The study objective (section 2) indicates that "minor upgrades may be considered for approval especially if they are beneficial in baseline studies." SDG&E notes that SDG&E and CAISO submitted as part of the 2017/2018 TPP process a basket of projects (less than $70M) that can potentially facilitate the transfer of low carbon energy between the PNW and California. It would be nice if the CAISO could establish a firm Cost Cap on upgrades it might consider through this cycle/phase I study.	If the study identifies minor upgrades that prove to be beneficial from an economic or reliability standpoint, the ISO will present those upgrades and their benefits to stakeholders for their feedback as part of the TPP process.
13j	Interregional Transmission Coordination As SDG&E noted on the April _, 2018 stakeholder call, the PNW-California study contemplated by the study scope provides an opportunity to engage several, if not all, of the Western Planning Regions (WPRs) in a joint study of	The comment has been noted

No	Comment Submitted	CAISO Response
	interregional transmission. LADWP is a member of WestConnect and BPA is a member of Columbia Grid. Additionally, entities with ownership or entitlements to existing transfer capability between the PNW and California include SCE (a CAISO member) and PacificCorp (a member of Northern Tier Transmission Group (NTTG)). In SDG&E's opinion, a collaborative study effort among the WPRs would represent a significant step forward in realizing the benefits that FERC envisioned when it enacted FERC order 1000. Even if the CAISO chooses not to work directly with the WPRs (as the CAISO indicated during the stakeholder call), SDG&E recommends that the CAISO's analysis carefully assess the relative costs and benefits to each WPR of upgrading transfer capability between the PNW and California. SDG&E believes all four WPRs would be directly affected by an increase in transfer capability. This assessment would provide a basis upon which potential project sponsors for any upgrades could approach each of the WPRs with a request for interregional transmission cost allocation pursuant to FERC Order 1000 provisions.	

14. Seattle City Light (SCL) Submitted by: Stefanie Johnson		
No	Comment Submitted	CAISO Response
14a	The capacity and costs of the NWACI are shared among a number of entities in a complex contractual arrangement of asset owners and capacity owners, representing both jurisdictional and non-jurisdictional entities. City Light is one of several entities that owns capacity rights on BPA's share of the NWACI. We echo comments previously provided by BPA stating that any studies addressing capabilities of the COI and the NWACI require coordination not only with BPA, but also the other NWACI asset owners and BPA's capacity owners.	Please see response to comment 12a.

15. Transmission Agency of Northern California (TANC) Submitted by: Gary Farmer		
No	Comment Submitted	CAISO Response
15a	1. Stakeholder Access to Base Case Data: Stakeholders need to have the ability to review the data inputs included in the base case modeling scenarios for both the Production Cost Models ("PCM") and the Power Flow analyses. TANC requests that the Final Scoping Document provides clear instructions on how stakeholders can (1) obtain the underlying base case data sets and (2) provide comments or corrections to CAISO.	The final base cases will be posted on the ISO's market participant portal (MPP) along with the preliminary study results.
15b	2. Clarifying Production Cost and Power Flow Analyses: TANC understands that the Informational Study will utilize both PCM and Power Flow analyses as part of its evaluation. The Study Scope and Stakeholder Slides do not clearly delineate the studies and data that will be used in (1) the PCM analyses and (2) the Power Flow analyses. TANC requests CAISO's Final Scoping Document clearly explain the inputs and modeling assumptions in each analysis.	The comment has been noted.
15c	3. Operating Procedures and COI Northern CA Hydro Nomogram: The Study Scope notes that Path 66 will be modeled to the applicable seasonal nomogram (Section 3.7, Table 3, footnote 11), and incorporating existing Operating Procedures (Section 3.8) in the model. These modeling constraints might be appropriate for parts of the Informational Study, but would be problematic in reaching the objectives intended for the AC and DC capacity increase portion of the study. (Because the existing Operating Procedures and seasonal nomograms are in place to protect the limiting facilities on the system, the objectives towards identifying critical facilities and evaluating "key options to increase transfer ratings of the AC and DC Intertie" would be placed at a disadvantage.) It is understood that the language in Section 3.7 and 3.8 was likely not intended for the AC and DC increase capacity study. For the sake of clarity however, TANC requests that additional detail be added to these sections that specifies that Operating Procedures and seasonal nomograms related to the Northwest AC Intertie, COI and the PDCI will not be included in the Power Flow base cases and PCM's used in the AC and DC capacity increase study.	The study scope will be clarified to indicate that existing operating procedures primarily apply to analysis of the existing system.
15d	4. Energy and Demand Forecasts Sensitivity: The Study Scope notes that the Informational Study will use 2017/2018 IEPR inputs for Energy and Demand Forecasts (Section 3.5.1). TANC requests that the Informational Study also includes a sensitivity analysis using the IEPR's	To be consistent with other TPP bulk system studies and with the IRP process, the 1-in-5 weather year, mid demand baseline with mid AAEE and mid AAPV load forecast will be used for this informational study.

No	Comment Submitted	CAISO Response
	"High" case. (Specifically, TANC recommends using the IEPR forecast with 1-5 Temperature; High Demand Baseline; Low AAEE; and Low AAPV. (See http://www.energy.ca.gov/2017_energypolicy/documents/, filename: TN222580_20180216T093956_LSE_and_BA_Tables_High_Baseline_Demand_Low_AAEEAAPV_Revised_CCA.xlsx)	
15e	5. Inputs for Conducting High North-to-South Flow Scenario: The Study Scope does not indicate which seasonal CA load conditions and approximate hour that are to be modeled in the Power Flow base cases related to this analysis. As these studies are also related to the dynamic transfer capability study, it is unclear whether these studies will be performed for an early evening peak load hour when the PV generating resources within the state are no longer available (which likely does not correspond to the overall peak demand hour represented in the load forecast when PV resources are available). TANC requests that further detail be provided in the Study Scope pertaining to the system conditions modeled in the Power Flow cases as it pertains to seasonal loads, operating hour, and in-state renewable generation output. TANC also recommends that the CEC's "high" Energy and Demand Forecast is used for this analysis.	The comment has been noted.
15f	6. Renewable Generation Scenario and Treatment of Pacific Northwest Wind Resources: In Section 3.6.1 of the study scope, input is requested from the stakeholders for recommendations on the renewable generation assumptions to be used in the Informational Study. TANC agrees that the Default Scenario is the more appropriate scenario for this study and is most consistent with the CEC request letter. With an increase transfer capacity between the PNW and CA, however, additional power from wind facilities in the PNW could be imported into CA which would support initiatives towards reducing statewide GHG emissions. TANC requests that the PNW wind resources be included in the Resource Adequacy ("RA") study with the PNW hydro resources. With the additional accounting of the PNW wind resources, the analysis should more comprehensively evaluate how higher PNW import capabilities could assist CA reduce statewide GHG emissions.	CEC staff indicated that a PNW wind-focused study would be out of scope, but agrees that aspects of the Resource Adequacy portion of the study should address opportunities from a "GHG free" resource perspective. Please see response to comment 1a regarding how resources will be modelled in this study.
15g	7. Updating Regions Around CAISO: The Study Scope (Section *3.5.1)* notes that "the latest generation, load and network topology of BPA and LADWP systems will also be used…". TANC requests that CAISO also use the latest information for other BA systems in CA	The comment has been noted

No	Comment Submitted	CAISO Response
	and the Pacific Northwest because the generation, load and network topology in these areas impact the usage of COI.	
15h	8. Historical COI Congestion and Modeling Enhancements: TANC requests that CAISO explain in the Final Scoping Document whether the Informational Study will incorporate modeling enhancements to improve accuracy with historical system conditions, in particular congestion on the COI. As part of this explanation, TANC requests information on whether the Informational Study will incorporate additional constraints to reflect items such as intertie transfer capability and contractual limits on transmission flows.	As part of this informational study, the existing congestion on COI due to either physical or market limitations will be further assessed.
15i	9. Near-Term Analyses: The Study Scope (Section 3.10.1) discusses two scenarios for the near-term analysis; one focused on flows from North to South and the other on flows from South to North. Given the broad scope of the Information Study and potentially large amount of analytical work necessary to complete the analysis, TANC recommends that the Informational Study focuses on the North to South flows analysis for the Near-Term study. This would provide additional time to evaluate key options that might be used in the near-term which would address the reliability concerns caused by the expected displaced generation with the shutdown of the Aliso Canyon Natural Gas Storage facility. The importance of the North to South transfer capability in the near-term is echoed in the CEC/CPUC's letter requesting the Informational Study, where they note that "it is time-critical that we act now to evaluate key options to increase transfer ratings of the AC and DC Intertie and assess what role these systems can play in displacing generation whose reliability is tied to Aliso Canyon."	The main focus of the AC system study will be the North to South flow direction. The first step in the AC system South to North analysis is to review congestion on the existing paths and determine if addressing operational issues to increase the South to North transfer would be justifiable. Given the significant operational derate on the PDCI in the South to North direction, the study will assess the reasons for the derate, and the potential for low cost options to restore at least an incremental amount of the previous South to North transfer capability on the PDCI.
15j	10. Clarifying Miscellaneous Items in Study Scope: a. The Study Scope (Section 4.1) uses the term "AC intertie increase philosophy" without any further details. TANC requests CAISO clarify or define the term "AC intertie increase philosophy." b. Table 3 row 3 in the Study Scope, the Summer Peak Scenario is listed to also include a study with the PDCI transfers at -3,100 MW. Is this correct or was the intended scenario Winter Peak?	The comment has been noted and is addressed in final scope.