The ISO received comments on the topics discussed at the August 5, 2019 stakeholder call from the following:

1. 8minute Solar Energy
2. Avangrid Renewable
3. American Wind Energy Association - California (AWEA-California)
4. Bay Area Municipal Transmission group (BAMx)
5. California Wind Energy Association (CalWEA)
6. EDF-Renewables (EDF-R)
7. EDP Renewables North America LLC (EDPR NA)
8. First Solar
9. GLW
10. Golden State Clean Energy (GSCE)
11. Intersect Power
12. LSA
13. LS Power
14. NextEra
15. Pacific Gas & Electric (PG&E)
16. Southern California Edison (SCE)
17. San Diego Gas & Electric (SDG&E)
18. The Cities of Anaheim, Azusa, Banning, Colton, Pasadena and Riverside (Six Cities)
19. sPower

Copies of the comments submitted are located on the generation deliverability assessment page at:

http://www.caiso.com/informed/Pages/StakeholderProcesses/GenerationDeliverabilityAssessment.aspx

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

1. 8minute Solar Energy Submitted by: Ali Chowdhury		
No	**Comment Submitted**	**CAISO Response**
1a	**Comment Summary** 8minute Solar Energy (8minute Solar) appreciates the opportunity to provide comments on the CAISO's revised Deliverability Assessment Methodology incorporating 2018 Stakeholder comments. 8minute Solar notes a significant improvement in this revised document as compared to the one issued in 2018. However, 8minute solar observes that Solar-Battery Hybrid projects and Standalone Battery projects are not very well addressed in the current proposal. Specific comments and questions follow:	Please see the Draft Final Proposal and the more specific referrals in the subsequent responses below. The ISO considers these issues have been addressed.
1b	CAISO presentation on 8/5 Stakeholder meeting, Page 19, HSN Assumptions. The table is missing assumptions for Battery as well as Hybrids output. The SSN timings of 18-22 are the timings when batteries will kick in to maintain solar output to 100% level. How is CAISO planning to model Hybrid projects in the study base cases?	Please see section 4 of the Draft Final Proposal
1c	Page 20 of the same presentation: Will 20% exceedance level apply to hybrids also? If not, what output level will be modeled for hybrids?	Please see section 4 of the Draft Final Proposal
1d	Page 21 of the same presentation, SSN Assumptions, Hybrids and Standalone Batteries are missing in the table. What output level is CAISO considering for Hybrids?	Please see section 4 of the Draft Final Proposal
1e	Page 21, even though Pmax set to 50% exceedance for PV plant is a good assumption, it may not be accurate for Hybrid project which is committed to keep PV output to full 100% level for designated number of hours. What are CAISO thoughts on that?	Please see section 4 of the Draft Final Proposal
1f	How will Hybrid project be modeled under off-peak Deliverability Assessment?	Please see section 5.4 of the Draft Final Proposal
1g	Page 37 of the above presentation, Assumptions for Hybrid is missing. Page 37, since solar is modeled at 68%, would it not be better to use the remaining output to charge the battery if it is a Hybrid?	Please see section 5.4 of the Draft Final Proposal

No	Comment Submitted	CAISO Response
1h	While modeling for off-peak Deliverability Assessment, would it not be better to put battery of the Hybrid in the charge mode to add more load to the system and avoid generation surplus? This could also minimize or eliminate transmission overloads due to excessive generation?	Please see section 5.4 of the Draft Final Proposal
1i	Page 42, Steps to Mitigate Overloads: These are perfect common-sense steps to mitigate overloads. Would CAISO consider applying these steps in its Annual Transmission Plan studies, Reliability studies and other internal studies as well?	Specific study assumption depend on the specific study scenario being studied, but generally the ISO would follow these steps in the TPP studies.
1j	CAISO has mentioned CPUC's ELCC approach several times in this document. But it seems like CAISO is using 20% and 50% Exceedance levels in its On-Peak studies and a different level for off-peak studies. At what stage does CAISO use ELCC in its Deliverability Assessment?	Please see section 4 of the Draft Final Proposal. Please note that ELCC values are a cumulative impact of a range of outputs over a period of time, and do not represent a suitable dispatch level for deterministic tests based on allowing that range of outputs to be achieved to serve load.

2. Avangrid Renewables **Submitted by: Margaret Miller**		
No	**Comment Submitted**	**CAISO Response**
2a	Avangrid Renewables appreciates the opportunity to comment on the on the CAISO Generation Deliverability Assessment Straw Proposal. Avangrid Renewables supports the proposed changes to the deliverability methodology that will better align with the timing of critical system need and the CPUC's ELCC methodology. The existing deliverability assessment is overly conservative and is not reflective of current grid requirements. Avangrid Renewables recommends that modifications to the deliverability assessment be implemented as soon as possible and not be delayed if more discussions are ultimately needed to address curtailment concerns. Avangrid Renewables is not opposed to moving forward with modifying the deliverability methodology in tandem with a solution to address the increased risk of renewable generation curtailment. Either Option 4 or Option 5 as proposed by the CAISO could be feasible alternatives with some modifications.	Please see the Draft Final Proposal
2b	Avangrid Renewables outlines the following concerns and recommendations to the CAISO specific to these proposals: While the funding of off-peak or OPDS upgrades will be optional in the CAISO's interconnection process, it is likely that off takers will require the funding of these upgrades in contracts if Option 4 or especially Option 5 is adopted. Avangrid Renewables is not opposed to this requirement being shifted from the CAISO's interconnection process to the commercial side of the business. Ultimately, under Option 5 as currently proposed, it is likely that development projects would all end up with the same curtailment priority unless they elect to be energy only.	Please see section 4 of the Draft Final Proposal. For clarity, the proposal is considered to hold merit even if all generation seeks OPDS, as that results in the implications of minimizing excessive curtailment through interconnections at those locations being studied, and can be taken into account in procurement processes.
2c	Based on available data on the CAISO's website, it appears that CAISO engages in uneconomic adjustments infrequently. The CAISO has curtailed 5, 851 MWHs of self schedules to address local congestion year to date as compared to 386,345 MWHs local economic and 319,083 system economic. Going forward the market should provide incentives for resources to economically bid and move away from self-scheduling to the fullest extent	Please see section 4 of the Draft Final Proposal

No	Comment Submitted	CAISO Response
	possible so one would hope that the need for the CAISO to curtail selfschedules should decrease over time. That being said, it is unclear how much value the OPDS curtailment priority would really offer and whether it could create adverse incentives.	
2d	It seems flawed that new projects that have FCDS would have a lower curtailment priority than those that choose to fund additional OPDS upgrades considering that the OPDS upgrades will be small and not critical for deliverability.	Please see section 4 of the Draft Final Proposal. The purpose of the OPDS is more focused on the curtailment issue than on the ability of the resources to provide resource adequacy capacity at other times.
2e	It is unclear why Option 4 does not allow upgrades to be fully funded but Option 5 does. Under Option 4 and 5 developers must make an election to fund upgrades before costs are known.	Please see the Draft Final Proposal
2f	Considering the concerns described above, Avangrid proposes the following modifications to the proposals for consideration by the CAISO: • Adopt Option 4 and allow local network upgrades to be optional but fully funded. There would be no OPDS priority status. This is Avangrid Renewables preferred approach and would be the most effective in encouraging the correct market behavior and investments to mitigate curtailment. • Adopt Option 5 but allow FCDS projects to have curtailment priority in peak-hours and OPDS to have priority in off-peak hours. Only energy only projects would have a lower curtailment priority in all hours. • Lastly, under either Option 4 or 5 developers must be offered the flexibility to make a decision to fund optional upgrades after they have a reasonable estimate of costs.	Please see section 4 of the Draft Final Proposal

3. American Wind Energy Association-California (AWEA-California) Submitted by: Caitlin Liotiris		
No	**Comment Submitted**	**CAISO Response**
3a	**Comments:** AWEA-California appreciates the CAISO's continued work on developing updates to the Generation Deliverability Assessment Methodology ("methodology" or "deliverability methodology") and considering options to address the potential for increased curtailment that might result from changes to this methodology. While CAISO is not proposing to pursue the precise direction that AWEA-California advocated for in prior comments, we are encouraged by the direction that CAISO appears to be headed and look forward to continued participation in this initiative. While we support CAISO's general direction, we recommend some simplifications to ease the implementation burden and increase the likelihood of timely implementation of the new deliverability methodology. With the federal production and investment tax credits winding down, this is a crucial time for the CAISO to be able to accommodate incremental, clean-energy resources and it will be important for those additions to be capable of achieving Full Capacity Deliverability Status (FCDS). Moreover, system dynamics have changed substantially over the last several years and the deliverability methodology needs to reflect the changed system conditions to appropriately study deliverability within CAISO. For these reasons, AWEA-California has previously commented that the new methodology should be implemented expeditiously while also working to develop solutions to the potential for increased (or excessive) curtailment.	The ISO considers that these issues need to be addressed holistically, given the range of stakeholder input and the range of stakeholder interests expressed in those comments. The specific issue was the most pressing concern expressed by a number of stakeholders concerned with the implementation of the changes proposed to the "on peak" methodology.
3b	**AWEA-California Supports Option 5, *with Modifications that eliminate the proposed Off-Peak Deliverability Status* (OPDS)** Of the various Options presented by CAISO, AWEA-California believes that Option 5 may be the best approach to providing a path to mitigate excessive local curtailment while also providing developers (and offtakers) with additional information on expected levels of curtailment. While AWEA-California generally supports Option 5, we are concerned that the creation of the new OPDS interconnection service may unnecessarily complicate the implementation of	Please see the Draft Final Proposal.

No	Comment Submitted	CAISO Response
	the new deliverability methodology, without providing significant benefits to developers, offtakers, or the market. While AWEA-California was initially encouraged by the OPDS concept, upon further review, we believe its usefulness will be limited, that it may cause question/hesitation when proposed to FERC, and that it may overcomplicate or delay the new deliverability methodology proposal. After further reflection on the impacts of OPDS, AWEA-California now supports its elimination from Option 5. The implementation of OPDS would require the development of a number of details which, as we understand it, are not yet fully fleshed out by CAISO. Additionally, OPDS would create a "preferred" economic status for a certain set of generators (through implementation of a more negative penalty price for these self-schedules). While this concept may potentially be able to garner FERC approval, it is also likely to raise a number of questions and concerns. If OPDS is included with the new deliverability methodology proposal, those questions and concerns could unnecessarily delay implementation of the new deliverability methodology. At the same time OPDS has the potential to delay deliverability methodology changes, the commercial value of OPDS may be extremely limited. OPDS would only apply when the market operator runs out of effective economic bids and must make cuts to self-schedules. The priority curtailment status of OPDS resources would only apply when CAISO moves in to curtailment of self-schedules, which is relatively infrequently. Thus, the benefit of OPDS would be limited to those resources that choose to self-supply and would be expected to apply infrequently. Moreover, we expect that, from a commercial perspective, many offtakers will require generators they contract with to obtain OPDS. Current FCDS/PCDS resources would also be granted OPDS, making it likely that most resources in CAISO would have the OPDS designation. If virtually all generators have the same OPDS curtailment "priority", OPDS will become a distinction with little	

No	Comment Submitted	CAISO Response
	difference as all OPDS resources would be subject to curtailment when the market operator must cut self-schedules. For these reasons, we see little benefit in creating a somewhat complicated, new interconnection service status for OPDS resources. Instead of developing OPDS, CAISO should provide generators with the option to fund these local, off-peak deliverability network upgrades and receive full reimbursement for the upgrades. Even with reimbursement of these upgrades, developers are unlikely to fund them unless they are required to do so in a commercial contract or if they see substantial value in the ability of the upgrade to mitigate curtailment in the area.2 This construct will allow for some economic consideration by offtakers of whether these upgrades are necessary or not. Option 5, with the removal of the OPDS component, as recommended above, would provide a path to approval of local upgrades that could help mitigate excessive curtailment in local areas, helping to address some of curtailment concerns AWEA-California and other stakeholders have raised. Under Option 5, these upgrades would be optional and fully reimbursable. This construct allows for generators, and importantly the parties they are contracting with, to determine whether these local upgrades are necessary and beneficial. Option 5, with OPDS eliminated, will simplify the implementation and approval processes for the new deliverability methodology while still addressing some of the concerns that were raised about curtailment impacts. Thus, AWEA-California support Option 5 with OPDS eliminated.	
3c	**Off-Peak Deliverability Assessment Methodology** Under all of the options being considered in the Straw Proposal, CAISO is proposing to revise the existing off-peak deliverability assessment methodology. Given the anticipated use for these off-peak deliverability assessments, the proposed revisions seem appropriate. The off-peak studies would focus on system conditions that occur, not during typical system oversupply conditions, but during periods where local oversupply issues may cause increased curtailment. If these studies focused on system oversupply conditions, then would potentially cause the identification of upgrades which would not be useful in mitigating curtailment. But by focusing on conditions where solar generation is higher than the On-Peak studies, but	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	not as high as system oversupply, the Off-Peak Deliverability studies should be able to identify the local deliverability upgrades that would help to alleviate excessive curtailment that might occur due to local system constraints. AWEA-California support the general approach to off-peak deliverability assessments outlined by CASO in the Straw Proposal.	
3d	**If OPDS Must be Retained, it should be "Unbundled" from the Other Changes to the Deliverability Assessment Methodology** AWEA-California supports CAISO's proposal to move forward with the new deliverability methodology implementation concurrently with a revised Option 5 (that eliminates OPDS). AWEA-California believes this should be achievable on the timeline CAISO has outlined. As discussed above, AWEA-California supports removing the OPDS designation from Option 5. But, in the event CAISO believes that OPDS is critical to the success of this initiative and that development of the deliverability methodology cannot move forward without OPDS, we urge CAISO to further evaluate the concept and to structure this initiative (and future tariff filings) in such a way that the delay or rejection of OPDS will not cause delay/rejection of the new deliverability methodology. For instance, this may be accomplished by creating a separate tariff filing package for OPDS if CAISO feels OPDS must be retained.	Please see the Draft Final Proposal, and the earlier responses.
3f	**Curtailment Information** The provision of information on expected curtailment will be important to developers and should be a priority data point as CAISO develops more of the details on how the Off-Peak deliverability studies would be conducted and what information would be provided. AWEA-California understands that under a variety of the options, including Option 5, CAISO would provide information about "*how much renewable generation needs to be curtailed in order to mitigate the remaining overloads after the re-dispatch described above without the area network upgrades*."	For the off-peak area constraints, the study report will provide the location and an estimate of generation curtailment amount in lieu of any transmission upgrades to mitigate the overloads. Such information is based on the conditions studied in the off-peak deliverability assessment. Transmission constraint information will also be available from the on-peak deliverability studies, and the on-peak and off-peak interconnection reliability studies. Annualized figures would need to be based on production cost modeling, but this type of modeling is not feasible with the quantity of generation in the interconnection queue and with the timelines required by the tariff. The production cost modeling work for the economic planning study in the transmission

No	Comment Submitted	CAISO Response
	AWEA-California seeks clarification from the CAISO on the information it is planning to provide regarding generation curtailment. It appears unlikely that CAISO will provide *annual* total curtailment figures and, instead, we expect CAISO would provide the MW of curtailment that would be needed, without area network upgrades, to mitigate overloads in the off-peak deliverability study case. CAISO should clarify, specifically, what curtailment information it proposes to supply as part of the Off-Peak deliverability studies. If, as AWEA-California believes to be the case, CAISO would only provide the MW curtailed in the off-peak deliverability assessment case, we ask CAISO to consider if it might be feasible to provide any incremental information on curtailments, such as annualized figures or figures under different load/resource conditions. These details do not need to be developed now, but should be developed as part of the implementation details and will be helpful in ensuring the market can react appropriately to expected curtailment impacts associated with the deliverability changes.	planning process provides information regarding potential annualized renewable curtailment with the quantities of renewable development in the renewable portfolios provided by the CPUC's IRP process.
3g	**Revised Transmission Limitations in the Integrated Resource Plan (IRP)** As CAISO is well aware, changes to the deliverability methodology will have wide ranging impacts, including (indirectly) affecting the portfolio selection that is part of the California Public Utilities Commission's (CPUC's) IRP. Specifically, CAISO provides the CPUC with information on the amount of FCDS and energy-only resources that could be interconnected in each renewable energy zone, based on the capacity of the current and already approved transmission system. These "transmission constraints" are a crucial modeling parameter that drive the selection of resources in RESOLVE, the tool used for IRP portfolio selection. Thus, the transmission capability assumptions affect the selection of the Reference System Plan which may be used by the CAISO in identifying policy-driven transmission needs in the Transmission Planning Process (TPP). The implementation of new deliverability methodology is likely to result in increased estimates of the resources that can be accommodated on existing and currently planned transmission in many renewable energy zones, which will significantly affect the resources selected by RESOLVE. It will be important for the CAISO to provide the CPUC with updated transmission constraint estimates	The current IRP is well underway and the opportunity to provide transmission capability information has passed for portfolio development for the 2020-21 transmission planning process. The proposed changes to the deliverability methodology still need to be discussed in at least one more stakeholder meeting and then need to be approved at an ISO Board meeting and finally need to be approved by FERC. Assuming implementation in studies conducted in 2020, then the proposed changes would be reflected in results provided to the CPUC in late 2020 for use in the 2021-2022 transmission planning cycle.

No	Comment Submitted	CAISO Response
	(based on the new deliverability methodology) as soon as possible, so that the portfolios developed in the IRP are more consistent with commercial expectations going forward. In order to account for the expected changes associated with the new deliverability methodology, AWEA-California and other parties have advocated for the CPUC to relax the transmission constraints in RESOLVE during the 2019-20 IRP modeling process. We encourage the CAISO to offer support for that approach at the CPUC going forward. Allowing the IRP to begin to account for the possibility of increased accommodation of renewable resources on existing transmission will be critical to ensuring that the portfolios which come out of the IRP, and are used by the CAISO to determine the necessary area network upgrades in the TPP, are more accurate. Timely implementation of this change at the CPUC will allow for development of more cost-effective renewables, which can take advantage of high level of the federal production and investment tax credit. For that reason, CAISO should support a relaxation of the transmission constraints currently used in RESOLVE in the 2019-20 IRP modeling exercise and portfolio development.	
3h	**Conclusion** AWEA-California generally supports the proposed direction CAISO has taken in the Straw Proposal and during the stakeholder meeting, but suggests streamlining the proposal by eliminating the addition of OPDS interconnection service. We look forward to working with the CAISO and other stakeholders as this initiative continues.	Please see the Draft Final Proposal and refer to above responses.

4. Bay Area Municipal Transmission (BAMx) Submitted by: Paulo Apolinario		
No	**Comment Submitted**	**CAISO Response**
4a	Introduction: The Bay Area Municipal Transmission group (BAMx)1 appreciates the opportunity to comment on the CAISO Deliverability Assessment Methodology Straw Proposal discussed during the August 5, 2019 stakeholder call. BAMx supports the CAISO having a separate Stakeholder process on its proposal to revise their deliverability methodology. Revisions are clearly needed to keep the CAISO studies correlated to the maximum extent with the implementation of the effective load carrying capability (ELCC) methodology being adopted by the CPUC in conformance with State law. The proposed solar and wind output assumptions for the revised on-peak deliverability assessment are expected to result in fewer transmission upgrades required for the generators to achieve Full Capacity Deliverability Status (FCDS). For purposes of modeling production levels, the CAISO proposes to not model resources at a production level lower than the average Qualifying Capacity (QC) number based on the ELCC methodology. However, these proposed solar and wind output assumptions do not adequately reflect the ELCC based QC values.2 Modeling the solar and wind output levels consistent with the ELCC based QC values should further minimize the excessive and unneeded transmission upgrades identified from the deliverability assessment in both the generation interconnection study process and TPP process. Therefore, BAMx urges the CAISO to retain the flexibility to revise the production levels, especially for the intermittent generators. For example, in the future, if the CAISO finds that the proposed assumption of setting the intermittent generators to 20% exceedance level during the selected hours to study the Highest System Need Scenario is not consistent with the ELCC based QC values, then it should be revised in consultation with the stakeholders BAMx believes that the CAISO proposal is headed in the right direction with its revisions to the deliverability methodology. It should provide a better indication of the capability of the existing transmission system to accommodate the renewables necessary to achieve California's policy goals. However, we are concerned that the CAISO's proposal to provide additional visibility/certainty regarding possible curtailment levels by enhancing the current off-peak	Please see the Draft Final Proposal and the responses provided above.

No	Comment Submitted	CAISO Response
	deliverability assessment as part of the Generation Interconnection Process (GIP) studies to address excessive curtailment is misdirected and will likely delay the implementation of the revisions to the deliverability methodology that is long overdue.	
4b	**Any Additional Studies Options Considered to Address Curtailment Concern within the GIP Should be for Information Only** The Straw Proposal seems to respond to the concerns about the deliverability methodology revisions leading to increasing levels of generation curtailment due to congestion. BAMx believes that the existing Transmission Economic Assessment Methodology (TEAM) provides a decent framework for that to be studied thoroughly, which would lead to transmission upgrades if they are economically justified. BAMx believes that TEAM is well suited to determine the need for any transmission additions that can be justified on the basis of reducing generation curtailments. This appears to be the exact type of application for why TEAM was developed. As we mentioned in our May 16th comments3, it is important to note that curtailment is not a resource adequacy (RA) issue for which the deliverability assessment is designed, but rather an operational issue. Since any increase in curtailments can be addressed by identifying needed policy and economic driven transmission upgrades in the Transmission Planning Process (TPP), we do not believe there is any need for such assessment in the GIP. Since the Straw Proposal has included only those options4 that perform curtailments studies within the GIP, BAMx supports Option 1 among them, which includes an informational off-peak deliverability assessment.5 The CAISO does not seem to recommend this option as "it would not facilitate the development of low-cost upgrades needed to address excessive curtailment.6" Although we agree that the interconnection customers are unlikely to have sufficient incentive to pursue merchant transmission upgrades identified in the GIP studies, if these upgrades are truly needed to address economic concerns associated with excessive renewable curtailment, then they would be approved as part of the economic assessment under the CAISO TPP. As the Straw Proposal points out, Option 1 would require minimal tariff changes and could be implemented with the least amount of effort relative to the other options. Therefore, BAMx views Option 1 to be the only reasonable option among the	Please see the Draft Final Proposal. As described in the proposal, the informational off-peak study information provided in earlier interconnection studies has not been effective in deterring interconnection customers from siting in locations that result in excessive curtailment. Directly assigning local transmission upgrades to interconnection projects as proposed in Option 5 is a stronger incentive for generators to site in locations that don't trigger such upgrades unless the upgrades are low cost. However, if the cost of the low-cost upgrades are not refunded then the generators are not likely to fund the upgrades and existing generators in the area would then experience excessive congestion until the upgrades can be developed through the transmission planning process. Directly assigning the transmission upgrades to the generators allows this cost to be accurately considered in the procurement process and results in procurement decisions that are in the ratepayer's interest.

No	Comment Submitted	CAISO Response
	options outlined in the Straw Proposal to study curtailment concerns within the GIP. The CAISO Straw Proposal appears to be leaning towards the following two options to address the curtailment concern within the GIP. Option 4: Optional off-peak local network upgrades (OLNU) with reimbursement cap; and Option 5: Optional off-peak deliverability status service with mandatory local off-peak transmission upgrades. BAMx believes that any off peak deliverability status (OPDS) upgrade including a local deliverability network upgrade (LDNU) triggered by an interconnecting customer (IC) needs to be paid by that IC, unless it is also identified to be needed for the renewable portfolios studied under the CAISO TPP. Since Option 4 and Option 5 allow for partial and full reimbursement to new generators triggering any OPDS upgrades, respectively, we oppose both these options. Departing from cost causation principals would lead to decisions that are not in CAISO ratepayers best interests. While opposing both, BAMx considers that Option 4 is less problematic than Option 5 as Option 4's treatment is limited to local upgrades to avoid excessive curtailment beyond oversupply curtailment. Furthermore, under Option 4, the upgrade costs will be reimbursable to the ICs with a reimbursement limit. However, BAMx notes that the Straw Proposal lacks clarity in terms of how a reimbursement limit would be determined under Option 4. Option 5: Optional off-peak deliverability status service with mandatory local off-peak transmission upgrades. BAMx believes that any off peak deliverability status (OPDS) upgrade including a local deliverability network upgrade (LDNU) triggered by an interconnecting customer (IC) needs to be paid by that IC, unless it is also identified to be needed for the renewable portfolios studied under the CAISO TPP. Since Option 4 and Option 5 allow for partial and full reimbursement to new generators triggering any OPDS upgrades, respectively, we oppose both these options. Departing from cost causation principals would lead to decisions that are not in CAISO ratepayers best interests.	

No	Comment Submitted	CAISO Response
	While opposing both, BAMx considers that Option 4 is less problematic than Option 5 as Option 4's treatment is limited to local upgrades to avoid excessive curtailment beyond oversupply curtailment. Furthermore, under Option 4, the upgrade costs will be reimbursable to the ICs with a reimbursement limit. However, BAMx notes that the Straw Proposal lacks clarity in terms of how a reimbursement limit would be determined under Option 4. BAMx finds Option 5 to be the most problematic option that is meant to determine the OPDS upgrades that would be built at the CAISO ratepayer's expense. There are several issues with Option 5. Under this Option, the IC electing the OPDS gets a higher scheduling priority over non-OPDS resources in the market. This concept is a stark departure from the CAISO's operations tradition that does not distinguish between the full capacity or energy only generators for scheduling priority. Although a concept of off-peak deliverability already exists in the CAISO tariff, a change in scheduling priority would constitute a significant change to the CAISO tariff and could be challenged at FERC. One such challenge would be the likely discriminatory treatment against the existing energy only deliverability status (EODS) generators under Option 5. If BAMx understands correctly, the new full capacity deliverability status (FCDS) or EODS ICs with OPDS (by potentially making an upfront payment towards the OPDS upgrade) will not get scheduling priority over the existing FCDS (or PDS) generators. However, they would get priority over the existing EODS generators. Under Option 5, there is no opportunity for the existing EODS to achieve OPDS. Similarly, a new FCDS resource paying for on-peak deliverability status will be at a relative disadvantage to the OPDS resource in terms of scheduling priority given that the OPDS curtailment priority applies during all periods, not just off-peak, and under all conditions. Another discriminatory aspect of the OPDS resource receiving scheduling/curtailment priority for all periods is that it would receive priority even during the oversupply hours, which by definition are not the hours when renewable curtailments are caused due to lack of transmission. The proposals like Options 4 and 5 that provide ratepayer funding to transmission upgrades identified in the GIP gives us a sense of déjà vu. Prior to the implementation of Generator Interconnection and Deliverability Allocation Procedures (GIDAP) study processes, billions of dollars of area delivery	

No	Comment Submitted	CAISO Response
	network upgrades (ADNUs) were approved as part of the GIP without any stakeholder review to accommodate primarily solar FCDS resources. These resources have very little RA value now and are expected to have even lower RA value moving forward given their low QCs based on the ELCC methodology. Essentially, large-scale historical ADNUs identified within the GIP are being paid by the CAISO ratepayers even though those upgrades have proven to be of little economic value. Some may argue that those ADNUs albeit not very valuable from the RA standpoint provide congestion and/or renewable curtailment relief. However, no economic analysis was performed to justify those ADNUs in the approval process. So, the GIP-driven CAISO ratepayers-funded upgrades have been of very little value to them. Some may claim that such an outcome could not be foreseen but this is an example of why the developers of new generation projects should be the ones to take such risks-not CAISO ratepayers. Although the CAISO anticipates that only some low-cost LDNUs (versus high-cost ADNUs) will be needed to address the off-peak deliverability status to avoid large-scale renewable curtailments, it is possible that these multiple LDNUs approved as part of GIP without any economic assessment will add up and the CAISO ratepayers would ultimately bear those expenses. In summary, if proposals like Option 4 or Option 5 are implemented, we would be repeating the same mistakes that were made in the pre-GIDAP era. BAMx appreciates the CAISO's intentions to holistically address the resource adequacy aspect of deliverability assessment and related economic aspect of renewable curtailments. However, BAMx is concerned that the fundamental flaws as well as the contentious issues, such as the dispatch priority element under Option 5, may delay implementation of the new deliverability methodology. Therefore, we urge the CAISO to implement their proposed methodology as soon as possible while continuing to assess the curtailment concern within the GIP.	
4c	**Conclusion** BAMx would encourage the CAISO to implement their proposed methodology without any further delay by considering the study within the GIP to address curtailment risk as information only at this time.	Please see the Draft Final Proposal and refer to earlier responses.

5. California Wind Energy Association (CalWEA) Submitted by: Nancy Rader and Dariush Shirmohammadi		
No	**Comment Submitted**	**CAISO Response**
5a	**Summary and Recommendations** The California Wind Energy Association (CalWEA) appreciates the opportunity to comment on the California Independent System Operator's (CAISO) Generator Assessment Methodology Revisions paper ("Revisions Paper") of July 29, 2019. The Revisions Paper starts by summarizing the description of the deliverability assessment methodology that CAISO developed in 2018 and then discusses a number of informational and "active" mitigation measures for the potential transmission congestion that may result from the implementation of this new methodology. The Revisions Paper correctly explains that the deliverability assessment process is intended to accurately determine the NQC (RA capacity contribution) of wind and solar resources and, hence, addresses system reliability concerns. The Revisions Paper then acknowledges that the potential transmission congestion that is contemplated to occur under the new deliverability assessment methodology could increase the curtailment of wind and solar resources, thereby creating a commercial concern. At the stakeholder meeting of 8/5/2019, CAISO additionally clarified that unless and until an active measure to mitigate the contemplated transmission congestion (generation curtailments) is fully developed and incorporated into the GIP process, the CAISO will not implement its new deliverability assessment methodology.	Please see the Draft Final Proposal. The ISO does not agree with the characterizations set out in the comment, as the ISO sees the issues fundamentally linked and that it is necessary to reasonably address a key concern expressed in its consultation process in order to move forward successfully with approval and implementation of this holistic proposal.
5b	For reasons that we will explain below, CalWEA strongly recommends that the CAISO promptly implement its new deliverability assessment methodology for the Transmission Plan Deliverability (TPD) allocation process for Cluster 11 (slated after November of 2019) and for Phase 2 studies for Cluster 12 in mid-year 2020. CalWEA also recommends that the CAISO implement the following process in order to evaluate and mitigate the contemplated transmission congestion which may be associated with the implementation of the new deliverability assessment methodology: 1. Starting with Phase 2 studies for Cluster 11, CAISO should use the system condition noted in the Revisions Paper for its Off-Peak Deliverability Assessment ("OPDA"). CAISO should also report, in the Phase 2 study results reports, not only the OPDA-identified overloaded facilities and upgrades but also, for OPDA upgrades, all resources that	Please see the Draft Final Proposal and earlier responses.

No	Comment Submitted	CAISO Response
	would experience curtailments -- plus some indicator of the level of curtailment -- in the event the upgrades re not implemented. At a minimum, the shift factor of the resource with respect to overloaded facilities should be identified. 2. In parallel with the above informational measure, CAISO should work on developing a detailed "active" curtailment management solution through a stakeholder process. In that regard, a methodology in line with Option 5 of the Revisions Paper offers a promising starting point.	
5c	**Discussion** The CAISO and CPUC staff have identified a potential near-term reliability crisis due to a forecasted scarcity of RA capacity. In addition to the imminent retirement of many of the state's thermal resources, a principal contributor to this reliability crisis is the fact that CAISO's peak daily load has shifted to evening hours when more than 17 GW of in-front-of and behind-the-meter solar resources are fully or partially unable to meet the demand. As a result of this load shift, existing solar resources with FCDS deliverability status have seen their RA capacity value diminish to about half its previous value, a fact recognized by the CPUC's relatively new ELCC methodology for determining wind and solar RA capacity value. Under these circumstances, it is necessary that the CAISO's deliverability assessment methodology recognize that this reduction in RA capacity of FCDS solar resources will free up transmission system deliverability capacity that is no longer needed by these existing resources. In turn, this will allow additional solar and wind resources to gain FCDS deliverability status and contribute to resolving the state's RA capacity shortage. Implementing the CAISO's proposed new deliverability assessment methodology will accomplish this.	The ISO notes that there is already over 10,000 MW of generation in the ISO queue with Full Capacity Deliverability Status that could be developed to meet future RA needs.
5d	CalWEA is concerned that should CAISO decide to indefinitely postpone the implementation of its new deliverability assessment methodology, CAISO will become a contributor to the RA capacity shortage problem. A decision to postpone implementation will lead to two potentially undesirable outcomes:	The CAISO is targeting an implementation date of January 2020

No	Comment Submitted	CAISO Response
	1. A large amount of thermal generation capacity that is on the verge of retirement, for regulatory or commercial reasons, will get re-contracted to provide the needed RA capacity; and 2. Existing FCDS solar resources will add storage to their facilities in order to transfer the transmission deliverability capacity that they no longer need to that storage, rather than release the capacity for use by new renewable resources that seek to acquire FCDS deliverability status and offer RA capacity. The result of such activity would be to limit competition in the RPS market to the detriment of California ratepayers. Moreover, resources paired with storage are typically not operated for the benefit of the grid but rather to maximize the resource's PPA revenues.	
5e	In regards to generation curtailment that may occur due to the implementation of the new CAISO deliverability assessment methodology, such an outcome would only come about if resource development and procurement communities in California fail to conduct proper due diligence related to the methodology's reforms and incorrectly conflate the concept of deliverability for the purpose of obtaining FCD status with actual transmission congestion and resource curtailment. Such an outcome is highly unlikely since the resource development community (particularly its investment arm) and load serving entities have already become quite sensitive to transmission congestion and for commercial purposes will avoid resource development/procurement in areas where serious congestion issues may arise. To facilitate such analysis, CalWEA recommends that the CAISO provide ample information about the potential for transmission congestion and curtailments by expanding its OPDA process as follows: 1. Use the OPDA study scenario discussed in the Revisions Paper; 2. Clearly identify every transmission facility (line, transformer, switch, etc.) that is overloaded in the OPDA, including the condition of overload (normal/contingency); 3. Clearly identify whether the contingency overload is modeled in the CAISO real-time congestion management protocols and system;	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	4. Clearly identify all resources whose shift factor on the overloaded transmission facilities exceeds 5% and publish the said shift factor; and 5. To the extent possible, provide the level of curtailment of individual resources in the absence of the OPDA-identified upgrades, preferably using a production simulation study. CalWEA submits that the aforementioned information will virtually ensure that no development of resources will occur where levels of curtailment would be unacceptable in the absence of the needed OPDA upgrades.	
5f	Finally, CalWEA recommends that CAISO begin the stakeholder process to develop an active curtailment management process starting with Option 5 of the Revisions Paper as such a solution.	Please see the Draft Final Proposal

6.	EDF-Renewables (EDF-R) Submitted by: Ian Kearney	
No	**Comment Submitted**	**CAISO Response**
6a	EDF-Renewables (EDF-R) appreciates the opportunity to comment on the CAISO's Straw Proposal (Proposal) in the Deliverability Assessment Methodology initiative. The Proposal includes several thoughtful changes in response to earlier stakeholder comments; this submittal suggests additional revisions that would make the proposed framework more cohesive and complete. EDF-R's comments are summarized below and explained further in the remainder of this document. **Initiative process:** CAISO's plan to move Deliverability Assessment changes forward together with congestion-mitigation measures is a good one and should be retained. However, unless the CAISO adopts EDF-R's simpler proposal for funding off-peak Congestion Mitigation Upgrades (CMUs), or otherwise amends the proposed options as EDF-R recommends, then critical details for the package will require additional consideration, and an October-November CAISO Board decision instead of September is a more realistic target.	Please see the Draft Final Proposal. The ISO has shifted to targeting the November Board of Governors meeting while also seeking to implement in 2020.
6b	**On-Peak Deliverability Assessment** **Scenario definitions:** The CAISO should clarify the High System Need (HSN) and Secondary System Need (SSN) scenario definitions, and how they might change over time. **VER output:** There is a fundamental disconnect between CAISO's focus on only certain hours in determining Variable Energy Resources (solar and wind) deliverability and the CPUC's use of an all-hours method to determine the Resource Adequacy (RA) values for these resources. The CAISO should consider further methodology revisions to help resolve this inconsistency. **SSN results:** The CAISO should explain why Local Delivery Network Upgrades (LDNUs) cannot be identified in the SSN scenario or assigned in the interconnection-study process.	Please see section 4 of the Draft Final Proposal
6c	**Off-Peak Deliverability Assessment:** Under EDF-R's simple proposal, CMU funding for both deliverable and Energy-Only (EO) projects would be:	FERC Order 2003 requires that an energy only interconnection service be offered to interconnection customers, and making Delivery Network

No	Comment Submitted	CAISO Response
	Mandatory (though not required for Full or Partial Capacity Deliverability Status (FCDS or PCDS)), based on a "hold-harmless" policy requiring new generation to fund CMUs to mitigate their congestion impacts (similar to on-peak assessment requirements); and **Fully reimbursable** (same as Option 5), since preservation of RPS capability serves a "Policy-Driven" purpose. CAISO-proposed Options 4 or 5 will likely not effectively mitigate congestion from new generation projects in their current form, and their complexities are likely to delay the package. In particular, Option 4 reimbursement limits and free-rider issues, and Option 5 Off-Peak Deliverability Status (OPDS) provisions, raise issues that need more time to resolve, if it is possible to resolve them. Thus, the HSN and SSN definitions in the Proposal, and associated VER output and other metrics, may not be those used in the 2020 Reassessment (when the CAISO proposes to first apply the new method) or in later analyses. The next proposal version should clarify this process, for example: • How CPUC LOLE figures would be used to define the HSN and SSN study hours; How or whether the definitions might be updated to incorporate the 2019 Summer Assessment results and/or future Summer Assessments; and/or How and when these scenario definitions would change over time.	upgrades mandatory for energy-only interconnection service is not allowed.
6d	**Reliability issues** There is a fundamental disconnect between the CAISO's proposal to focus on only certain hours in determining Variable Energy Resources (solar and wind) deliverability and the way in which these resources actually count for RA. Specifically, the CPUC's Electric Load Carrying Capacity (ELCC) counting methodology for VERs assigns much higher values to these resources than the CAISO's proposed dispatch in the HSN scenario (where LDNUs would be identified and assigned), and examines all hours of the year. It assumes that all their output is deliverable in all hours when they are producing, and it considers	Please see the Draft Final Proposal. The proposed study assumptions are based on system conditions during summer peak hours that reserve capacity is below 6% and every MW of available capacity is needed. The need for resources during the off-peak period for resource adequacy purposes is much less critical than for the on-peak period and is not precisely quantifiable with available power system tools. In addition, stakeholder feedback almost unanimously rejected the notion of requiring off-peak deliverability for resource adequacy purposes.

No	Comment Submitted	CAISO Response
	that these resources will operate at 100% of capability in some hours and at 0% in others. By contrast, the CAISO's methodology would study these resources at much lower levels, based on only the HSN peak-flow times on the grid. When resources are found to be deliverable in those few hours, at those very low dispatch levels, there is no guarantee that they would be deliverable in any other hours of the year or at higher dispatch levels, potentially undermining the foundation and basis for the ELCC figures. In other words, if VERs are not deliverable in the hours assumed in the ELCC methodology, they may not provide the reliability to load that the ELCC methodology assumes that they can. The Off-Peak Deliverability Assessment could partly fill that gap, at least on a "snapshot" basis. However, unless off-peak upgrades are mandatory, the problem will still exist.	
6e	**SSN-identified upgrades** The Secondary System Need (SSN) would only identify ADNUs to be considered in the TPP, and not additional LDNUs that would be assigned to new generation like other LDNUs in the interconnection study process. The Proposal defines the SSN scenario as follows: The secondary system need scenario represents when the capacity shortage risk will increase if the intermittent generation while producing at a significant output level is not deliverable. If the addition of a resource will cause a deliverability deficiency determined based on a deliverability test under the secondary system need scenario, and is not identified in the highest system need scenario, then the constraint can be classified as an Area Deliverability Constraint following the classification guidelines in the BPM for the Generator Interconnection and Deliverability Allocation Procedures. (p.18) If a deliverability constraint is identified in this scenario, but that constraint is largely local under the LDNU definition, it is not clear why it would automatically be considered an Area Deliverability Constraint (and thus considered only in the TPP). In the next proposal version, the CAISO should either make the treatment for LDNUs identified in both scenarios the same or explain why SSN-identified LDNUs would be treated different from HSN-identified LDNUs.	Please see section 4 of the Draft Final Proposal
6f	**Enhanced Off-Peak Deliverability Assessment** **General comments & recommended approach**	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	EDF-R agrees with the Proposal that this analysis should include both FCDS/PCDS and EO generation, because the primary purpose of this assessment should be congestion analysis and mitigation. (The next proposal version should state that explicitly.) In addition, EDF-R agrees that CMUs should not be required for RA deliverability, since they are not technically needed for deliverability in the most critical HSN/SSN hours. However, EDF-R recommends that the CAISO fundamentally change and simplify its approach to funding CMUs identified in this assessment, to include just two elements: **CMU funding should be mandatory**. CAISO should adopt a "hold-harmless" policy that requires new generation to fund CMUs identified in this assessment to mitigate congestion impacts on existing and earlier-queued generation. These upgrades would not be required for Full or Partial Capacity Deliverability Status (FCDS or PCDS) but should nevertheless be required for interconnection of both deliverable and energy-only projects. **CMU costs should be fully reimbursable.** CMUs would be specifically identified to prevent operational impairment of existing/earlier-queued, largely renewable generation projects, and thus would serve a policy purpose to maintain the state's ability to meet Renewables Portfolio Standards (RPS). Essentially, then, these upgrades should be considered equivalent to Policy-Driven upgrades in the TPP and reimbursable through the Transmission Access Charge (TAC). Moreover, the CAISO has not specified a methodology to determine a reasonable off-peak reimbursement limit. The current Reliability Network Upgrade (RNU) reimbursement limit was determined using a percentage of historic RNU costs and (per recent changes) will be escalated over time. The CAISO has no similar history for congestion-related off-peak NUs.	
6g	**Comments on specific CAISO-proposed options** Options 4 and 5 are incompatible with EDF-R's recommended framework described above. Most notably, both options are optional, and that optionality applies only to new generators, so there is no assurance that existing/earlier-queued generators will not be impaired and no recourse for them to avoid that	Please see section 4 of the Draft Final Proposal

No	Comment Submitted	CAISO Response
	outcome. Both options have many other shortcomings as well, including those listed below. (These problems apply to both options unless otherwise indicated.) **Voluntary, applicable only to new projects:** Upgrades would not be built if new projects elect not to fund, so harm to existing/earlier-queued projects would not be mitigated. **Free-rider problem (Option 4):** Projects in the cluster-study group that elect not to fund get the same benefit as those that elect to fund. **OPDS conceptual problems (Option 5):** The proposed Off-Peak Deliverability Status, with higher scheduling/curtailment priority in all hours and under all conditions, is inconsistent with several CAISO policies. Conceptual problems that should be addressed include the following: **Lack of equity:** Projects in the study cluster funding off-peak upgrades would get scheduling/curtailment priority, but projects funding on-peak upgrades (at least as important) would not; in fact, EO/OPDS projects would get priority over FCDS/non-OPDS projects in the same cluster, even in on-peak hours (where FCDS projects funded upgrades). In fact, the CAISO has always maintained that funding on-peak upgrades could and/or should not carry any operational scheduling or curtailment priority. The Option 5 proposal demonstrates that the CAISO has the capability, at least, to provide such priorities. **Reduced economic bidding incentives:** Scheduling/curtailment priority would only apply to self-schedules, i.e., OPDS would be worthless if a resource submits economic bids (e.g., at $0 to avoid negative market-clearing prices), and potentially undermine CAISO efforts to increase VER economic bids. (For example, receipt of OPDS would increase incentives to all operating and higher-queued FCDS projects to submit self-schedules.) **Unduly large scope:** OPDS priority applies even where curtailments have nothing to do with local transmission constraints or congestion (e.g., system-wide over-supply conditions).	

7. Submitted by: EDP Renewables North America LLC ("EDPR")

No	Comment Submitted	CAISO Response
7a	EDP Renewables North America LLC ("EDPR") appreciates the opportunity to comment on the CAISO Deliverability Assessment Methodology Straw Proposal ("Straw Proposal"). EDPR supports the proposed changes to the deliverability methodology because they improve alignment with the CA PUC's ELCC methodology and because of the underlying shift in the timing of the critical system need. As the CAISO is aware, the critical system resource adequacy need has greatly shifted into the evening ramp hours. The deliverability methodology should be changed, as staff has proposed in this Straw Proposal, to more accurately reflect resource dispatch and deliverability during the critical system hours.	Please see the Draft Final Proposal
7b	Timing and Process: EDPR appreciates and supports adopting the deliverability methodology change on the schedule proposed by staff in the Straw Proposal. It is critical that this stakeholder process move forward in a timely manner that will allow the deliverability methodology changes to be approved by the Board and by FERC in time for the ISO to incorporate those changes into the 2020 Transmission Plan Deliverability ("TPD") allocations. Concerns about curtailment and questions about curtailment mitigation options are important and evolving topics but should not be allowed to delay the broadly supported changes to the deliverability methodology itself. We discuss these larger issues in more detail below.	Please see the Draft Final Proposal
7c	Discussion: EDPR appreciates that the ISO is wrestling with increasing curtailments at the system, area, and local levels. These are obviously important issues for renewable energy developers and we agree that the system is evolving and changes may have to be made to address curtailment. The solutions to curtailment issues are likely to be multifaceted, coming from commercial development of storage, ISO transmission expansion, interconnection upgrades, new market rules, demand response and continued regionalization. This stakeholder process considering improvements to the deliverability methodology will not be able to fully address this complex issue. For that reason, we view any decisions made in this stakeholder process as part of an	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	evolving discussion and market design. Similarly, it is important to note that the deliverability methodology is not determinative of the expected curtailment in a local area. Projects that choose Energy Only will have the exact same curtailment impact as FCDS resources and so the primary question in this stakeholder process should remain whether or not a deliverability methodology that focuses on the period of critical system need (ELCC based methodology) is a more accurate representation of deliverable capacity contribution during the critical system need. The implications of not adopting the proposed change to the deliverability methodology are also worth considering. One implication is that less solar projects will be awarded FCDS because the current exceedance-based methodology focuses on a dispatch level and associated hours that no longer represent the period of critical system need (even though solar projects do provide some effective load carrying capability during portions of this new critical period). Less FCDS for solar decreases competition in that market and is not in the consumer's interest. From an environmental perspective, this lack of competition increases the need for obtaining RA resources from conventional resources such as natural gas power plants, which will ultimately make achieving the state's clean energy goals more difficult. Another implication of not aligning the deliverability methodology with the ELCC measures are study results that continue to identify costly upgrades built to deliver RA during hours of peak gross consumption and greater solar generation, even though those hours no longer identify the greatest system need. This status quo is also not in the best interest of consumers. The proposed changes to the deliverability methodology itself clearly have merit and there appears to be no debate that this proposal is a more accurate approach to assessing deliverability during critical system hours, as compared to the exceedance-based methodology. EDPR does not believe that the evolving concerns over curtailment should slow the adoption and implementation of this broadly supported change to the deliverability methodology	
7d	Curtailment Mitigation Options: EDPR believes that it is too early to discount the natural commercial reaction we can anticipate in response to potential increased curtailment in certain local areas. If the addition of a new generator in a specific local area is studied and	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	shown to substantially increase curtailment in that area, that project will have a more difficult time gaining financing and will likely not proceed, regardless of what deliverability methodology is being used. Considering that nearly half of the new resources in the ISO's queue are hybrid storage resources and that storage may be added to existing resources, the ISO should also anticipate this type of natural response to increased local curtailment. For these reasons, EDPR is most comfortable at this time moving forward with the change to the deliverability methodology under Option 1, where the CAISO would conduct an "informational" off-peak deliverability assessment. If such an assessment can provide affected parties meaningful analysis of expected curtailments the industry can incorporate it into their development plans and the funding of additional upgrades. With the following caveats, EDPR is also not opposed to moving forward with changing the deliverability methodology in tandem with some of the new concepts outlined by staff in Options 4 and 5. Our view is that solutions centered around self-scheduling ("Off-Peak Deliverability Status (OPDS)") or merchant CRRs are less desirable. EDPR believes that solutions centered around providing additional information on expected curtailment and identifying appropriate upgrades that are reimbursable will more effectively attract the investment and market behavior necessary to mitigate curtailment in the long run. Option 5, without the OPDS concept, is also supportable for EDPR. Given the merits and importance of moving forward with the changes to the deliverability methodology itself in a timely manner, EDPR also would not oppose a decision from ISO staff to move forward with a OPDS. However, If the ISO does move forward with an option that includes the OPDS concept, we respectfully request the ISO do so under a filing structure that ensures the timely implementation of the deliverability methodology change, regardless of how long it takes to refine and gain approvals for the OPDS concept.	

8. First Solar
Submitted by: Vladimir Chadliev

No	Comment Submitted	CAISO Response
8a	First Solar provides these comments in response to CAISO's July 29, 2019 Deliverability Assessment Methodology Revisions Straw Proposal. We appreciate CAISO's responsiveness to stakeholders and the thought and creativity that went into the straw proposal. In particular, CAISO's recognition of the concerns about excessive curtailment risk is important. The proposal for the off-peak deliverability assessment with a new off-peak deliverability status and scheduling priority is a promising solution to the concerns we and others expressed about the change in on-peak deliverability methodology causing undue impacts on congestion and curtailment. First Solar believes that the fifth option presented in the Straw Proposal is the superior option for a number of reasons. We agree with the CAISO that the on-peak deliverability assessment methodology should be deployed in tandem with the off-peak deliverability assessment methodology. If the two are bifurcated and the onpeak deliverability methodology implemented before the solution to the curtailment risk, First Solar is concerned about a potential mismatch in timing. We urge CAISO to evaluate the options available under its transmission planning and generation interconnection processes to perform the new on-peak deliverability assessment and remove upgrades not needed to meet peak sale hours while providing study results from the off-peak deliverability assessment so project developers can make those decisions and financial commitments at the same time. A transitional process may be required to address the timing issues and existing queue clusters. First Solar supports maintaining the timeline suggested in the Straw Proposal. We believe it is important that implementation commence no later than the 2020 reassessment study. We support the use of potential tools, like a one-off transitional process, to achieve this timeline.	Please see the Draft Final Proposal
8b	First Solar supports CAISO moving forward with the revised on-peak and off-peak deliverability assessment framework and the new off-peak deliverability status service with mandatory local off-peak transmission upgrades, with the following additions:	Please see section 4 of the Draft Final Proposal

No	Comment Submitted	CAISO Response
	1) Further information about why the OPDS option provides the incentive for project developers to elect the option and fund the local upgrades. 2) A process for existing energy-only projects in the queue to receive the first opportunity to be allocated the incremental deliverability that results from the shift in on-peak methodology. 3) A process for existing energy-only projects to elect off-peak deliverability status, fund the off-peak local network upgrades and receive the market scheduling priority. 4) A plan to assess all projects with deliverability for impacts on local congestion rather than assuming that these projects have addressed excessive curtailment via upgrades designed to meet peak needs, before OPDS is allocated to these projects.	
8c	**Revised On-Peak Deliverability Assessment Methodology** First Solar supports CAISO's on-peak deliverability assessment methodology. We agree that for purposes of planning the transmission grid to support reliability during the new peak sale hours, using data that represents the actual output of resources capable of supporting the grid during these hours is appropriate. For this reason, First Solar supports CAISO's decision to use summer assessment data at this time. <u>Energy-only projects:</u> Energy-only projects should be provided a one-time opportunity to seek deliverability under the new methodology before the additional deliverability is made available to new interconnection customers. We urge CAISO to develop a transitional process to allow energy-only projects to be studied and afford them the opportunity to obtain an allocation of the incremental increase in deliverability that may be available due to the revised methodology. CAISO knows how much deliverability was available for allocation during the last cycle, making it possible to establish a "base case" or set point to measure the incremental change in available deliverability. If the new methodology shows an incremental increase in availability, eligible energy-only projects	Please see section 4 of the Draft Final Proposal. The Energy Only projects have opportunities to receive TPD allocation as specified in the CAISO tariff Appendix DD for the TPD allocation process. The TPD allocation process was very recently updated through a lengthy stakeholder process and set Energy-Only projects to a lower priority getting the allocation. Deviating from that process would result in different winners and losers and would require revisiting many of the same discussions with all the same stakeholders.

No	Comment Submitted	CAISO Response
	should be given the first chance to compete for a TPD allocation according to queue cluster order. We suggest that projects that have already made their Phase II postings should be eligible for allocation of incremental deliverability. We have confidence given CAISO's experience designing transitional processes over time, as it has reformed its generation interconnection and transmission planning processes, that the team can design an effective process for this one-time transitional opportunity for energy-only projects. We also assume that the process could be run concurrently with the regular process for reviewing and allocating TP deliverability. This is an equitable way of managing the transition to the new deliverability methodology where, due to the shift in assumptions, additional deliverability may be available for allocation. Energy-only projects that are in good standing, have made financial commitments and investments to develop current projects and are further along towards achieving commercial operation to support state policy goal should have the opportunity to receive these allocations prior to the incremental deliverability being made available to new interconnection customers. This also benefits state policy goals because it allows projects that are much further along in their development and permitting process to be more competitive in new solicitations where deliverability remains an important component of obtaining a power purchase agreement in California.	
8d	**Proposed Off-Peak Deliverability Assessment & OPDS** First Solar supports the concept of the off-peak deliverability assessment. We are very intrigued by the new off-peak deliverability status proposal and think it could be a very innovative way to address local congestion risk and provide incentive to developers to fund the local upgrades to mitigate congestion and curtailment. We are already seeing curtailment associated with localized "crowding" of solar development. With the policy goals pushing additional renewable development in the state, we see this new framework as a promising way to address local congestion, improve the economic certainty for renewable project developers and support GHG reduction goals.	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	Additional data is needed to evaluate the OPDS solution First Solar supports a framework that provides options rather than mandates. However, we do not feel that we have sufficient information today to evaluate the OPDS option and make an informed decision to conclude it will be effective. We are concerned that if it does not provide sufficient incentive the solution will not work to mitigate excessive congestion. We request that the CAISO provide additional data and examples illustrating the impact of scheduling priority on curtailment in the next version of the straw proposal so that stakeholders can evaluate the benefits of OPDS. If the incentive is not sufficient, it is possible that the off-peak local network upgrades should be mandatory to mitigate the impact on existing projects and to provide the infrastructure to support California's GHG reduction goals. Because there are a lot of stakeholder questions about the OPDS option, we urge CAISO to issue a revised straw proposal and allow stakeholders one more round of comments before presenting a final draft proposal. Doing this while maintaining the schedule to implement the new methodology (both onpeak and off-peak) by the 2020 reassessment timeframe is important. While we recognize this presents scheduling challenges, we urge CAISO to establish a process that allows for more vetting while maintaining the plan for summer 2020 implementation. If the timeline is too aggressive, we urge CAISO to consider an interim solution that would preserve the ability to move forward while maintaining the opportunity to mitigate for the curtailment and congestion risk. Energy-only projects should be allowed the opportunity to elect OPDS. Current energy-only projects should be provided a one-time opportunity to elect OPDS. This could be done during a transitional process or coordinated with the fall affidavit cycle. Providing energy-only projects with the opportunity to fund the upgrades that will mitigate local curtailment and allow these projects to receive the scheduling priority along with new projects entering the queue is a reasonable way to provide balance and equity between older-queued customers and those just entering the queue. It also benefits California policy by reducing congestion and curtailment associated with growing numbers of energy-only projects.	

No	Comment Submitted	CAISO Response
8e	**Conclusion** First Solar appreciates the opportunity to engage with stakeholders, the CPUC and the CAISO in reforming the deliverability framework to address shifting grid dynamics. It is a challenging and exciting opportunity to design a planning and interconnection process that supports reliability and policy goals at the same time. Providing certainty via a framework that allows developers to finance projects and make sound risk assessments in making significant financial commitments is critical for the developing the fleet of renewable projects needed to support California policy goals. In addition, managing a shifting methodology while providing for an equitable way to address earlier-queued energy-only projects is an important element of the framework. We applaud the CAISO team's hard work, innovation and ingenuity, and we look forward to continuing to engage in this initiative.	Please see the Draft Final Proposal

9. GridLiance West LLC (GLW)
Submitted by: Jody Holland

No	Comment Submitted	CAISO Response
9a	GridLiance West LLC (GLW) commends CAISO's efforts to conduct an open stakeholder process for its proposal to modify the Generation Deliverability Assessment Methodology. GLW appreciates the opportunity to provide comments on the Straw Proposal presented during the August 5, 2019 stakeholder call. The proposed changes are beneficial because they more correctly represent the reliability conditions on the grid and when the peak deliverability needs should be assessed given the changing net load profile of the CAISO. We know that it is important to address transitional impacts, and we hope that the CAISO can do so expeditiously.	Please see the Draft Final Proposal

10. Golden State Clean Energy (GSCE)
Submitted by: Daniel Kim

No	Comment Submitted	CAISO Response
10a	Golden State Clean Energy (GSCE) provides the following comments on the CAISO's deliverability assessment methodology straw proposal dated July 29, 2019, and the stakeholder meeting held on August 5, 2019. **I. Introduction** GSCE very much appreciates the CAISO's work on this topic, not only in opening last year's proposed new deliverability assessment to the stakeholder process, but also in being considerate of stakeholders' comments submitted in this initiative. We recognize that CAISO identified a need to improve its deliverability assessment methodology to conform to the new peak timeframe, and we laud CAISO's efforts here to balance that need with the desire to address the consequences of the methodology changes. GSCE believes there are some remaining issues to discuss before this methodology change is ready to implement, but we are optimistic that these issues can be addressed in a timely manner while simultaneously addressing the on- and off-peak deliverability assessment methodology together as a package.	Please see the Draft Final Proposal
10b	**II. Comments** Need for holistic development of the on- and off-peak assessment GSCE does not believe the methodology changes to the on- and off-peak assessment should be separated; we strongly oppose implementing the new on-peak assessment first while further policy development of the off-peak assessment occurs. The timing of this initiative remains a concern as CAISO targets its September Board meeting, but GSCE appreciates the desire to bring these changes into effect for the 2020 reassessment. If any room exists for a last, quick stage of policy development to refine and clarify the consensus approach to the off-peak assessment methodology while maintaining the ability to incorporate results in the 2020 reassessment, GSCE believes the new methodology will be better for this additional vetting. Despite our desire for some additional vetting, we believe the CAISO has greatly improved this proposal by adding the critically required off-peak deliverability assessment. For that reason, GSCE sees no need to break this initiative into separate tracks or to delay implementation of the off-peak	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	assessment to more quickly implement the new on-peak methodology. The offpeak assessment responds to concerns over excessive curtailment, and Option 5 (discussed below) provides the correct approach and incentive that should give developers the ability to make choices to mitigate curtailment. GSCE does not think the proposed off-peak assessment is a panacea for California's long-term transmission needs to deliver renewables and meet the State's aggressive GHG reduction goals. Nonetheless, the off-peak assessment provides an implementable approach to address curtailment concerns in a more immediate timeframe for generation developers, and we think CAISO is right to improve the deliverability assessment methodology as a holistic initiative. If CAISO were to develop the off-peak assessment more slowly and after the new on-peak methodology is implemented, we believe this would significantly jeopardize the State's progress in meeting its GHG reduction goals and create inequitable treatment of generators already in the queue. There is potential for higher market prices and additional GHG emissions as a result of the on-peak assessment changes if they are not simultaneously mitigated by an off-peak assessment. Further, GSCE is concerned that by separating the on- and off-peak assessment, projects with newly allocated deliverability will not be responsible for addressing the congestion and curtailment impacts they create, and therefore, it would be difficult to retroactively require those same projects to later take responsibility for their impacts.	
10c	Option 5 is preferred GSCE is optimistic that an off-peak deliverability assessment can provide some optionality to developers who have concerns about excessive curtailment. While we continue to support process improvements to identifying policy driven transmission upgrades and other long-term transmission solutions, the off-peak assessment provides some remedy within the scope of this initiative. Out of all the proposed options the CAISO analyzed for the off-peak assessment, GSCE supports Option 5 as the most feasible for both developers and the overall market because it provides the most balanced incentive considering CAISO's goals of addressing lack of deliverability and excessive renewable curtailment.	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	GSCE believes Option 5 is the only option that will truly incentivize developers to make voluntary upgrades, which is what will determine how affective the off-peak assessment will be at addressing curtailment of renewable resources. With Option 5, the generator interconnection process provides a timeframe to assess and address potential curtailment that more realistically aligns with developers' decision-making timeframe. In contrast, the TPP is too uncertain and utilizes a timeframe that poses too much risk to developers. OPDS also appears a fair incentive that some developers surely will want to take advantage of, and it seems that OPDS can be implemented smoothly because it works within CAISO's current prioritization regime. OPDS may be a critical attribute for renewables in future marketing and contracting. GSCE agrees with CAISO's assessment of the options, *i.e.*, the first four do not sufficiently address excessive curtailment. Timing, as just mentioned, is one aspect that must work within generator development timelines to provide a workable solution for individual projects. Further, a lack of incentive may result in there being functionally no off-peak mitigation at all. Finally, we are mindful of the shift in policy that this represents from a focus on upgrades for deliverability to upgrades driven by relieving congestion and mitigating curtailment. We believe that California policy offers significant support for embedding these upgrades in the generator interconnection process. The GHG reduction goals and CPUC assumptions on the amount of energy-only projects needed to meet these State policies clearly contemplate dramatically more solar being constructed in California. If these investments, which as CAISO notes ultimately are paid for by ratepayers, become more costly because they strand the megawatts from production, it will make achieving the RPS and GHG reduction goals more challenging and lead to higher electric costs for consumer.	
10d	Existing resources with deliverability should be grandfathered in to OPDS GSCE supports CAISO's position that existing FCDS resources should receive OPDS status. That is because existing FCDS resources have paid for upgrades to support deliverability during a timeframe that likely covers at least a portion of	Please see section 4 of the Draft Final Proposal

No	Comment Submitted	CAISO Response
	the off-peak deliverability upgrades that will be identified in CAISO's new studies. Energy-only projects in the queue should be given a one-time option to obtain FCDS under the new proposed rules and have the opportunity to select OPDS. Since the shift in methodology arguably creates additional deliverability, we urge the CAISO to develop a methodology to allow existing energy-only projects to compete for an allocation of the "new" deliverability that will be available when CAISO changes its on-peak deliverability assessment methodology. Offering energy-only projects this opportunity in advance of newly interconnecting projects is the most equitable way to address the additional deliverability that is created due to the change in methodology. Similarly, energy-only projects should be given an opportunity to elect to be studied for OPDS. So many factors go into why a project may have elected to fund deliverability upgrades in the past, and this more focused and localized opportunity to fund upgrades to get the OPDS and scheduling priority should be offered on a one-time basis to current energy-only projects.	
10e	Off-peak assessment and OPDS implementation issue—prioritization level. We request that the CAISO provide additional detail around the priority level afforded OPDS and some details of how it would work. We do support the CAISO moving forward with the OPDS proposal as part of the reform package but request additional detail behind the CAISO's thinking that the incentive it presents will encourage voluntary payment for the local upgrades identified in the off-peak studies. For example, CAISO could provide a couple of scenarios illustrating the effect of the OPDS priority to provide stakeholders a better understanding what type of load and generation conditions might be present in days where having OPDS made the difference in protecting a project from curtailment.	Please see the Draft Final Proposal
10f	GSCE would like to thank CAISO for their efforts in this initiative. We believe the potential impact of the new on-peak methodology on renewable generation in California could be problematic and are encouraged by the creative thinking behind the CAISO's proposed solution.	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	Projects in the current queue have already made significant investment in transmission upgrades to support the State's GHG reduction goals, and the State will continue to need renewables to be developed to meet its RPS requirements. In light of those concerns, we feel the straw proposal has made a significant step to address curtailment, and the new off-peak study process with the local upgrades and OPDS option appears to be an effective solution to helping limit excessive curtailment of these resources.	

11. Intersect Power (Intersect)
Submitted by: Susan Schneider

No	Comment Submitted	CAISO Response
11a	Intersect Power (Intersect) appreciates the opportunity to offer these comments on the CAISO's Straw Proposal (Proposal) in the Deliverability Assessment Methodology initiative. Intersect's comments focus on the process for this initiative. CAISO's plan to move Deliverability Assessment changes forward together with congestion-mitigation measures is a good one and should be retained. The Proposal includes several thoughtful changes in response to earlier stakeholder comments, and Intersect is in the process of reviewing and analyzing the concepts it contains. However, critical details for the package are still unresolved, and it is obvious that the initiative requires considerable additional work before it is ready to proceed to a Draft Final Proposal and a September Board decision. It will not be helpful for the CAISO to proceed with a package that still contains major unresolved issues and does not have significant stakeholder consensus.	Please see the Draft Final Proposal. The ISO believes the adjustments made largely address the concerns expressed.
11b	**On-Peak Deliverability Assessment** **Scenario definitions:** High System Need (HSN) and Secondary System Need (SSN) scenario definitions, and how they might change over time. **VER output:** Apparent contradictions between the Deliverability Assessment methodology (focus on only peak hours, with low VER output) and the CPUC method for determining the Resource Adequacy (RA) values that resources actually count for (8760 analysis with output averaging far more than the CAISO analysis).	Please see section 4 of the Draft Final Proposal
11c	**Off-Peak Deliverability Assessment** **Option 4:** Reimbursement limits and free-rider problems. **Option 5:** Many issues with the proposed Off-Peak Deliverability Status (OPDS), including equity with those paying for on-peak upgrades, impact on	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	VER submission of economic bids, and overall impact on CAISO markets. The concept is interesting but not yet well-defined and coherent. **Other ideas:** The Proposal encourages submission of stakeholder comments and ideas about the new ideas it contains, but there would be little opportunity for the CAISO and other stakeholders to analyze and consider any such input.	
11d	In conclusion, Intersect urges the CAISO not to rush this initiative to conclusion before its important elements are carefully considered and then rationally decided. At a minimum, the process should allow for a Revised Straw Proposal, where the CAISO can modify and better define its proposals based on stakeholder input on the many concepts in the Proposal.	Please see the Draft Final Proposal

12. Large-scale Solar Association (LSA)
Submitted by: Susan Schneider

No	Comment Submitted	CAISO Response
12a	The Large-scale Solar Association (LSA) appreciates the opportunity to comment on the CAISO's Straw Proposal (Proposal) in the Deliverability Assessment Methodology initiative. The Proposal includes several thoughtful changes in response to earlier stakeholder comments; this submittal suggests additional revisions to make the proposed framework more cohesive and complete. LSA's comments are summarized below and explained further in the remainder of this document.	Please see the Draft Final Proposal
12b	**Initiative process:** CAISO's plan to move Deliverability Assessment changes forward together with congestion-mitigation measures is a good one and should be retained. However, critical details for the package are still unresolved, especially with respect to the treatment of Network Upgrades (NUs) triggered by the new enhanced Off-Peak Deliverability Assessment. LSA agrees with CalWEA that implementation of the new methodology should take place as soon as possible. Even so, it will not be helpful for the CAISO to proceed with a package that still contains major unresolved issues. Thus, LSA would recommends that the CAISO do the following, in order of preference: **Provide sufficient information in the upcoming Draft Final Proposal** for stakeholders (and the CAISO Board) to fully understand and assess the proposal. **Delay Board consideration of the proposal until the next regular Board meeting**, presumably in November, and streamline or expedite internal CAISO processes so that does not delay planned implementation of the new study methodology in the 2020 Reassessment. **Split the initiative into two parallel parts** – implementation of the new study methodology for in the 2020 Reassessment, and continuation of this initiative to	Please see the Draft Final Proposal. The schedule has been extended to target the November Board of Governors meeting, and commence implementation in 2020.

No	Comment Submitted	CAISO Response
	address the unresolved Off-Peak Deliverability Assessment and treatment of the triggered NUs – if and only if the required information cannot be provided before September but a delay of Board consideration to November would delay the study-methodology implementation.	
12c	**On-Peak Deliverability Assessment** **Scenario definitions:** The CAISO should clarify the High System Need (HSN) and Secondary System Need (SSN) scenario definitions, and how they might change over time. **VER output:** LSA does not disagree with CAISO's proposal generally, including the proposed Variable Energy Resource (VER) dispatch levels. However, CAISO should do more to reconcile the apparent contradictions between the Deliverability Assessment methodology and the CPUC method for determining the Resource Adequacy (RA) values that resources actually count for. **SSN results:** CAISO should explain why Local Delivery Network Upgrades (LDNUs) cannot be identified in the SSN scenario or assigned in the interconnection-study process.	Please see section 4 of the Draft Final Proposal
12c	**Off-Peak Deliverability Assessment:** As noted above, this element of the Proposal contains many new ideas and requires further consideration. LSA supports the voluntary nature of the funding options offered, but the Proposal does not contain enough information to determine whether the incentives they contain are sufficient to ensure that these upgrades are actually built (so congestion can be mitigated). In particular, Option 4 reimbursement limits and Option 5 Off-Peak Deliverability Status (OPDS) provisions raise issues that should be addressed.	Please see section 4 of the Draft Final Proposal
12d	**On-Peak Deliverability Assessment** **Scenario definitions** The proposed hours studied under each scenario are based in the Proposal on the "Unloaded Capacity Margin" metric (<6%) in the CAISO's 2018 Summer	The CAISO utilized the loss of load hours from the CPUC monthly LOLE summary to corroborate the information being used from the CAISO summer assessment.

No	Comment Submitted	CAISO Response
	Assessment. However: (1) the CAISO now has information from the 2019 Summer Assessment; and (2) more importantly, the CAISO stated at the stakeholder meeting that it wants to use "Loss of Load Expectation" (LOLE) figures from the CPUC's ELCC analyses for these definitions but did not explain how or when. Thus, the HSN and SSN definitions in the Proposal, and the associated VER output and other metrics, may not be those that would be used in the 2020 Reassessment (and later analyses). For example, it's not clear: • How CPUC LOLE figures would be used to define the HSN and SSN study hours; • How or whether the definitions might be updated to incorporate the 2019 Summer Assessment results and/or future Summer Assessments; and/or • How and when these scenario definitions would change over time. Thus, the CAISO should cover all these questions in the next proposal version.	
12e	**Potential reliability issues** There is a fundamental disconnect between the CAISO's proposal to focus on only certain hours in determining VER deliverability and the way in which these resources actually count for RA. Specifically, the CPUC's Electric Load Carrying Capacity (ELCC) counting methodology for VERs assigns much higher values to these resources than the CAISO's proposed dispatch in the HSN scenario (where LDNUs would be identified and assigned). The ELCC methodology examines all hours of the year in determining VER RA value, essentially assuming that they are deliverable in every hour. By contrast, the CAISO's methodology would study these resources based on only the HSN peak-flow times on the grid, at much lower output levels. When CAISO finds resources to be deliverable in those HSN hours, at those very low dispatch levels, there is no study finding about whether they would be deliverable in all of the other hours of the year, potentially undermining the basis for the ELCC figures. If VERs are not deliverable in all hours assumed in the ELCC	Please see section 4 of the Draft Final Proposal.

No	Comment Submitted	CAISO Response
	methodology, they may not provide the reliability needed to serve load for which they are counted. The Off-Peak Deliverability Assessment seems intended to partly fill that gap, i.e., if resources are deliverable in both the On- and Off-Peak Assessments, then they could safely be assumed to be deliverable in all or most hours of the year. However, unless off-peak upgrades are actually constructed, then this disconnect would remain.	
12f	**SSN-identified upgrades** It is not clear why the Secondary System Need (SSN) scenario cannot identify additional LDNUs that would be assigned to new generation in the interconnection study process, like other LDNUs. Instead, only ADNUs from this analysis would be identified, and that would only be considered in the TPP. The Proposal defines this scenario as follows: The secondary system need scenario represents when the capacity shortage risk will increase if the intermittent generation while producing at a significant output level is not deliverable. If the addition of a resource will cause a deliverability deficiency determined based on a deliverability test under the secondary system need scenario, and is not identified in the highest system need scenario, then the constraint can be classified as an Area Deliverability Constraint following the classification guidelines in the BPM for the Generator Interconnection and Deliverability Allocation Procedures. (p.18) If a deliverability constraint is identified in this scenario, but that constraint is largely local under the LDNU definition, it is not clear why it would automatically be considered an Area Deliverability Constraint (and thus considered only in the TPP). In the next proposal version, the CAISO should either make the treatment for LDNUs identified in either scenario the same or explain why SSN-identified LDNUs would be treated different from HSN-identified LDNUs.	Please see section 4 of the Draft Final Proposal
12g	**Enhanced Off-Peak Deliverability Assessment** **General comments & recommended approach** LSA agrees with the following general principles reflected in the Proposal:	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	This assessment should include both FCDS/PCDS and EO generation, because the primary purpose of this assessment should be congestion analysis and mitigation. (The next proposal version should state that explicitly.) **Funding of these NUs should not be required for RA deliverability**, since they are not needed for deliverability in the most critical HSN/SSN hours. **Funding of these NUs should be voluntary.** However, the viability of this voluntary approach depends on providing potential participants with sufficient incentives, and removing disincentives, such that they will elect to fund the NUs, and it's not clear that either of the options offered have such features. Otherwise, the identified upgrades will not be constructed, even where warranted, and the additional congestion resulting from the new on-peak methodology will not be mitigated. In addition, LSA requests that the CAISO provide better definition of "Off-Peak" hours, as that term is used for this assessment, and how that definition might change over time. Are off-peak hours simply all the hours not covered by the HSN or SSN definitions, or is there some other method proposed for defining them?	
12h	**Comments on specific CAISO-proposed options** Both Options 4 and 5 suffer from significant inherent and/or potential flaws. These options require additional consideration and modification to be viable, and other options should be considered as well. Non-viable "options" are simply window-dressing that will not resolve the congestion-mitigation problems inherent in the new on-peak assessment methodology. (One example in the CAISO tariff today is GIDAP Option B, which (to LSA's knowledge) has yet to produce funding of a single additional NU.) As noted above, LSA has concerns that both options contain insufficient incentives for developers to elect them, and both may have significant disincentives discouraging such elections. Both options also require developers to make funding decisions before they know the cost to their projects. The current FCDS framework at least allows conversion to Energy Only at various stages in the study and development	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	process once developers learn of their project costs, but that flexibility is not specified for either option offered here. At a minimum, developers should have the ability to elect not to fund these upgrades once they have a reasonable estimate of allocated share (post-Phase II for Option 4, post-Phase I for Option 5). Other concerns with Options 4 and 5 are discussed below. **Option 4** The most significant problems with Option 4 relate to the "free rider" problem discussed above and the reimbursement limits. There is no real way to mitigate the free-rider problem under this voluntary structure, i.e., projects not electing to fund identified NUs would receive the same congestion-mitigation benefit as those not electing to fund. However, the reimbursement limits would exacerbate this inequity, since they would increase the net cost to funding participants. Moreover – depending on the limits adopted – they could serve as a major disincentive for funding these NUs and may make this entire option non-viable. LSA believes that funding of off-peak NUs should be reimbursable in any case. The Proposal added the entire off-peak upgrade approach in order to address concerns that considering such upgrades in the TPP would lead to lengthy delays that could not be tolerated in the project-development process. These upgrades are thus effectively the equivalent of TPP Policy-Driven upgrades. The NUs would be specifically identified to prevent significant operational impairment of existing/earlier-queued, largely renewable generation projects, and they would be dropped later through the annual Reassessment process if no longer needed for that purpose. They would therefore serve a "policy-driven" purpose, to maintain the state's ability to meet Renewables Portfolio Standards (RPS), and should be reimbursable as such. Finally, the CAISO has not specified a methodology to determine a reasonable off-peak reimbursement limit. The current Reliability Network Upgrade (RNU) reimbursement limit was determined using a percentage of historic RNU costs and (per recent changes) will be escalated over time. The CAISO has no similar history for congestion-related off-peak NUs.	

No	Comment Submitted	CAISO Response
	Option 5 LSA's concerns about Option 5 revolve largely around the proposed Off-Peak Deliverability Status (OPDS) provisions and whether this is the best way to incent off-peak NU funding elections. This element of the CAISO's proposal is interesting, but considerable additional information is needed before stakeholders (and the CAISO Board) can determine whether it offers net benefits. Generally speaking, before adopting such a significant change to its markets, the CAISO should perform research and studies to determine the net impacts, so that decision has a reasonable basis and considers all relevant factors. LSA's concerns specific to this option, and some suggestions about how to resolve them, are summarized below. **Equity between projects funding on-peak and off-peak upgrades:** The Proposal would provide scheduling/curtailment priority, in both on- and off-peak hours, to projects funding off-peak upgrades, even though NUs identified in the on-peak assessment are arguably more important for reliability. For example, a project funding on-peak upgrades for FCDS but electing not to fund off-peak upgrades would have a lower operational priority, in all hours, than an Energy Only project funding only off-peak upgrades. Moreover, the CAISO has always maintained that funding on-peak upgrades could and/or should not carry any operational scheduling or curtailment priority. The Option 5 proposal demonstrates that the CAISO has the capability, at least, to provide such priorities. Therefore, the CAISO should consider whether it would make more sense to give: (1) Projects funding on-peak upgrades the proposed scheduling/curtailment priority in on-peak hours; and (2) projects funding off-peak upgrades scheduling/curtailment priority in off-peak hours. **Scope of OPDS priority:** OPDS scheduling/curtailment priorities would apply regardless of the nature of the constraints causing scheduling or operational limitations, i.e., even where curtailments have nothing to do with local transmission constraints or congestion (e.g., system-wide over-generation conditions). In fact, projects may choose to pay for off-peak upgrades for reasons unrelated to local constraints but in order to avoid over-generation curtailments.	

No	Comment Submitted	CAISO Response
	Impact on bidding behavior: The proposed OPDS would provide scheduling/curtailment priority only for self-schedules, i.e., projects submitting economic bids (which the CAISO has sought to promote, e.g., for market-efficiency purposes) would get no benefit from OPDS. This is true, not only for new projects, but also existing FCDS/PCDS projects, which would also receive OPDS. This is a disincentive to submit economic bids and may cause changes in bidding behavior. **Modeling implications:** The addition of OPDS raises questions about how the CAISO will model OPDS projects in other analyses as well, e.g., the portfolio-based UCAP analyses under consideration in the RA Enhancements Initiative. The CAISO has established practices for modeling FCDS and EO projects, but it is not clear whether or how its modeling practices would change, for example, for FCDS/non-OPDS or EO/OPDS projects. **Off-taker considerations:** Election of OPDS would generally occur before project PPA acquisition, and there is no indication at this time whether off-takers would consider OPDS to be sufficiently valuable to justify paying any premium for projects that have it.	

13. LS Power
Submitted by: Sandeep Arora

No	Comment Submitted	CAISO Response
13a	**Equitable treatment for Transmission Planning Deliverability (TPD) Allocation:** CAISO's proposed change to the deliverability study methodology is expected to reduce the need for new transmission for new interconnection projects to attain deliverability. The new methodology is expected to create thousands of MWs of additional deliverability in various CAISO load pockets. If CAISO continues to use its existing rules for TPD allocation, this will inadvertently favor new interconnection applications to the disadvantage of existing "Energy Only" projects. As written, the existing CAISO rules will allocate newly available deliverability to interconnection projects that have recently entered the queue and are currently either in the study process or in parked mode; while Energy Only projects that have been in the queue longer will not be eligible for allocation of new deliverability despite their advanced status. Most of these Energy Only projects had requested Full Capacity Deliverability Status at the time they were in study process or parked mode but had to convert to Energy Only due to lack of available deliverability because of the existing deliverability methodology. As shown in Table 1, when conducting TPD allocation, CAISO allocates deliverability to projects based on Allocation Groups. If CAISO continues to use this Allocation methodology after new deliverability becomes available, Energy Only projects that may have a LGIA executed but not yet achieved Commercial Operation will not get anything allocated, vs. a recent Cluster project which may still be in study process (or parked mode) will get 100% of the allocation. We recommend that CAISO develop an exception to the allocation rules when new deliverability becomes available such that more advanced projects have a fair chance in attaining the newly available deliverability. This one time allocation should be based on milestones a project has achieved, such as PPA, LGIA execution and not based on whether a project is in study stage/parked or if it already converted to Energy Only. We understand that the allocation rules were previously developed through another stakeholder process and we are not recommending to change these rules on a permanent basis. However, the impacts of the TPD deliverability methodology will inadvertently lead to CAISO	Please see section 4 of the Draft Final Proposal. The TPD allocation process was very recently updated through a lengthy stakeholder process. Deviating from that process would result in different winners and losers and would require revisiting many of the same discussions with all the same stakeholders.

<table>
<tr><th>No</th><th>Comment Submitted</th><th>CAISO Response</th></tr>
<tr><td></td><td>picking winners (early development projects) and losers (advanced development projects) if this “one time” exception to the allocation rules is not developed.

Table 1: CAISO’s TPD Allocation Groups (source: CAISO BPM)
<table>
<tr><th>Allocation Group</th><th>Project/Capacity Status</th><th>Commercial Status</th><th>Can Build DNUs for Allocation?</th><th>Allocation Rank</th></tr>
<tr><td>1</td><td>Study/Parking Process</td><td>Executed or regulator-approved PPA requiring FCDS or interconnection customer is a LSE serving its own load</td><td>Yes</td><td>Allocated 1st</td></tr>
<tr><td>2</td><td>Study/Parking Process</td><td>Shortlisted in a RFO/RFP</td><td>Yes</td><td>Allocated 2nd</td></tr>
<tr><td>3[1]</td><td>Study Process (Following Ph. II Only,)[2]</td><td>Proceeding without a PPA</td><td>Yes</td><td>Allocated 3rd</td></tr>
<tr><td>4</td><td>Converted to Energy Only, or Energy Only projects that achieved commercial operation</td><td>Executed or regulator-approved PPA requiring FCDS</td><td>No</td><td>Allocated 4th</td></tr>
<tr><td>5</td><td>Converted to Energy Only, or Energy Only projects that achieved commercial operation</td><td>Shortlisted in a RFO/RFP</td><td>No</td><td>Allocated 5th</td></tr>
<tr><td>6</td><td>Converted to Energy Only</td><td>Commercial operation achieved</td><td>No</td><td>Allocated 6th</td></tr>
<tr><td>7</td><td>Energy Only</td><td>Commercial operation achieved</td><td>No</td><td>Allocated 7th</td></tr>
</table></td><td></td></tr>
<tr><td>13b</td><td>2) Off-peak Deliverability Assessment Options:
In response to stakeholder concern that less transmission will lead to more congestion especially during Off Peak hours, CAISO proposed five options for Off Peak Deliverability assessment. CAISO is leaning towards proceeding with either Option 4 or 5.

Option 4 will show Optional off-peak Local Network Upgrades (OLNU) that a project can fund as local transmission upgrades and then get reimbursed for a portion and get CRRs for the rest. While this option has some merits, it may lead to CAISO developing several local transmission upgrade solutions and will not create an opportunity to develop a robust regional solution through TPP which maybe more economical & effective solution. Further, developing more</td><td>Please see the Draft Final Proposal</td></tr>
</table>

No	Comment Submitted	CAISO Response
	projects as local solutions could potentially reduce the need for regional projects that have greater scale and can gain economic benefit from a competitive solicitation, thereby further reducing ratepayer burden. For these reasons, we do not support Option 4. Option 5 requires CAISO to change the self scheduling priority for a few generators such that a curtailment/dispatch priority will be provided based on deliverability status. This is a huge shift from current practice where deliverability status does not come into play in CAISO's markets. The implications of this change could be very broad and this could have potentially detrimental impacts on existing generators, imports and even EIM participants. Implementation of an Option like this without understanding its impacts is not prudent. We do not support CAISO implementing Option 5. We understand the concern some stakeholders have with additional renewable curtailment due to less transmission, but we believe this is an "economic" issue and not a "reliability" issue. We understand that there may be a need to address this issue but we believe this should be addressed only through CAISO's TPP process and not through the GIP process. Therefore, we recommend CAISO to revert to its original proposal as outlined in the Issue Paper.	
13c	**3) Implementation Timeline** We recommend that CAISO work expeditiously to address the remaining issues in this initiative, including the issue of allocation of newly available deliverability and file the new deliverability methodology with FERC at its earliest such that it can be quickly implemented. We commend CAISO staff on its efforts on this initiative and look forward to continuing to work with CAISO and stakeholders to resolve remaining issues.	Please see the Draft Final Proposal, and the responses above.

14. NextEra Energy Resources, LLC (NextEra)
Submitted by: Grant Rosenblum

No	Comment Submitted	CAISO Response
14a	NextEra Energy Resources, LLC (NextEra) appreciates the opportunity to comment on the California ISO's (CAISO) effort to update the deliverability assessment methodology. Much of the August 5th stakeholder meeting focused on concerns that curtailment of renewable resources would be exacerbated by the reduction in transmission infrastructure needed to award variable energy resources Full Capacity Deliverability Status (FCDS) under the proposed new deliverability assessment and on whether coupling a solution to that consequence constitutes a necessary precondition to implementing the updated methodology. NextEra believes the controversy largely amounts to fighting a past battle, rather than concentrating our collective gaze on future challenges. The present issue arises because the updated deliverability assessment proposes modeling significantly reduced dispatch levels for variable generators, which will lessen the need for new transmission infrastructure. However, the CAISO noted in its hybrid resources stakeholder process that 42% of all projects in the latest queue involve generation coupled with storage. That trend will only accelerate. The result will be a probable future in which hybrid low-carbon resources, whether single resource ID or dual ID configurations, will be studied at or relatively near their interconnection injection capacity limit. For this and other reasons, NextEra believes the two elements can, and should, proceed independently and sequentially. In short, NextEra generally supports the CAISO adopting an updated deliverability assessment methodology, subject to additional refinements set forth below, and subsequently proceeding with a more rigorous examination of potential solutions to California's growing curtailment challenge. As the CAISO acknowledges, any such solution involving application of penalty prices or a new transmission service is likely to be complex, should be properly understood, and must properly balance the interests of ratepayers and both past and future generators, as well as consider the impact of technological innovation.	Please see the Draft Final Proposal, and the responses above.

No	Comment Submitted	CAISO Response
14b	**NextEra Conditionally Supports Moving Forward with Adoption of the Revised Deliverability Assessment Methodology** Consistent with the comments of stakeholders considering this matter last year, NextEra agrees that changes occurring on California's electric system warrant the CAISO capturing a broader range of study scenarios than currently done under the on-peak deliverability assessment. NextEra further finds value in utilizing an assessment that allows for greater availability of Transmission Plan Deliverability (TPD) allocation for new resources that should result from the declining qualifying capacity values of variable energy resources, especially solar, due to the adoption by the CPUC of an Effective Load Carrying Capacity (ELCC) methodology. Similarly, identifying fewer transmission upgrades to support FCDS reduces a project's commercial risk and contracting complexity. But those interests must be balanced against the effectiveness of the deliverability assessment to preserve system reliability and not unduly harm the commercial interest of existing generators. In light of these considerations, NextEra respectfully questions some of the proposed assumptions underlying the revised deliverability assessment. Although a gross simplification, ELCC looks at 8760 hours and is an average of multiple probabilistic outcomes. Thus, to the extent the CAISO's deliverability snap-shot ignores the performance of resources over a significant number of hours and therefore fails to identify infrastructure needed to make those resources deliverable in those hours, the level of reliability resulting from the transmission system's capability will be less than that assumed by the CPUC's ELCC analysis. That mismatch should be reasonably minimized. Here, for example, the CAISO proposes to use a "50% exceedance level" under the Secondary System Need scenario due to "mild risk of capacity shortage." But the mild capacity shortage risk is, in part, due to the high probability of output of variable generation during the period covered by that scenario. Moreover, while the snapshot does not match the hours of greatest curtailment risk, it more closely conforms to those instances than the High System Need scenario. Accordingly, selecting a lower exceedance level to determine generator dispatch, particularly for the Secondary System Scenario, e.g. 20% or 30%, would seem to correspond sufficiently to the ELCC and partially mitigate the concerns over curtailment.	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	The CAISO presentation at slide 25 states that the "GIP may identify LDNU/ADNUs in in the primary system need scenario and ADNUs in the secondary system need scenario." NextEra recommends that the Secondary System Need scenario also identify LDNUs. Expanding the scope of DNUs that can be identified in either scenario will similarly serve as a bridge to addressing curtailment risk. Absent adoption of this recommendation, NextEra requests further explanation of the rationale for the distinction. Given the prevalence of hybrid resources in the queue, NextEra also recommends the CAISO specify, to the extent currently possible given the status of CPUC review, how those resources will be studied under the two deliverability scenarios. For dual resource ID configurations, NextEra assumes that the storage resource will be fully credited to its nameplate capacity, consistent with CPUC counting criteria, during the High System Need scenario, but it is not clear how storage will be addressed in the Secondary System Need scenario when there is more of a likelihood of charging. Greater clarification would be appreciated. It is also assumed that treatment of single resource ID configurations will be more fully addressed in the pending hybrid resource stakeholder process and at the CPUC.	
14c	**NextEra Recommends Further Evaluation of Potential Solutions to Renewable Resource Curtailment Prior to Adopting the Significant Market Change Included in the Current Proposal** Curtailment of renewable generation is a problem in California, and it will become increasingly so as the State advances towards its carbon reduction goals. However, NextEra believes it is unnecessary to address these curtailment issues by rushing fundamental changes to the CAISO market structure through transmission planning without methodically vetting the consequences among the various effected constituent groups. Simply put, NextEra appreciates the CAISO's efforts to respond to legitimate concerns of the renewable development community, but requests more time be given to evaluating the various options and proposals put forth. As an initial matter, solutions should be commensurate with the problem and cognizant of who currently bears the cost of the problem as well as who would bear the cost of any solution.	Please see the Draft Final Proposal, and the responses above.

No	Comment Submitted	CAISO Response
	It is not entirely clear whether the CAISO, or any party to these discussions, fully understands the scope of how the cost of curtailments are presently borne. The CAISO correctly recognizes that supporting deliverability of renewable resources to reduce curtailment largely involves an economic decision or policy-driven concern, rather than satisfying a reliability concern. That cost can be estimated from a societal standpoint by valuing, among other potential items, the lost energy and environmental attributes and increased capital investments. However, depending on the underlying commercial arrangements, who actually bears that cost may be different. For instance, many legacy contracts with the investor-owned utilities involve an allocation of the risk of curtailment with the resource owner taking an initial "bucket" of hours and the utility ratepayers assuming responsibility for any curtailment that exceeds that level. There is further the critical distinction between "economic" and "reliability" curtailment, with the former being more frequently compensated. These issues were likely a matter of negotiation and, it could be, but is not necessarily true, that the developer accounted for the risk of realization of full curtailment in the underlying energy cost. The point is that in some cases load already bears that cost and it may be prudent to devise a solution that allows that constituency to determine when and how additional costs are spent to alleviate the problem. Alternatively, it could be that generators bear the cost, but additional consideration is needed. However, at a minimum, the CAISO can ensure more market clarity and efficient administration of contracts by clearly delineating what constitutes an economic or a reliability curtailment. Reliability curtailments should reflect extreme conditions on the system that do not involve routine congestion management, including Exceptional Dispatch. Further, in addition to the many complex questions regarding the impact various options may have on bidding behavior, potential anti-competitive behavior, siting and interconnection incentives, etc, there are foundational considerations of how the options impact the development of other market solutions, such as storage. Does increasing the output of renewable resources during periods of local congestion increase the probability of over generation? If so, was that the	

No	Comment Submitted	CAISO Response
	most efficient solution? NextEra does not have answers to these questions. But they do seem to warrant careful assessment by all impacted parties and for this reason, NextEra recommends further vetting before going beyond selection of Option 1, an option which was not recommended by the CAISO.	

15. Pacific Gas and Electric Company (PG&E)
Submitted by: Simon OPu

No	Comment Submitted	CAISO Response
15a	Pacific Gas and Electric Company (PG&E) offers the following comments on the California Independent System Operator's (CAISO) Deliverability Assessment Methodology Straw Proposal. PG&E supports CAISO's effort to revisit the study scenarios for assessing deliverability given the evolving needs of a system with increasing levels of intermittent resources. However, PG&E urges CAISO to extend its timeline for this initiative and consider additional stakeholder meetings before finalizing its proposal. Based on the straw proposal, PG&E does not think the proposal will be ready to be taken to the Board of Governors meeting in September. PG&E believes there are still a myriad of cascading effects that have not yet been fully considered and more time is necessary for CAISO to properly engage with all the relevant stakeholders in order to work through these issues. PG&E offers comments to highlight some of the unresolved issues, and they can be summarized as follows: 1. PG&E is concerned that there is misalignment between the new deliverability assessment methodology and the RA NQC methodology. 2. CAISO should quantify the magnitude of the trade-offs between renewable curtailment versus fewer transmission delivery network upgrades. 3. PG&E would like to offer a list of questions that CAISO should consider and clarify in the next iteration of its proposal.	Please see section 4 of the Draft Final Proposal
15b	<u>1. PG&E is concerned that there is misalignment between the new deliverability assessment methodology and the RA NQC methodology</u>. PG&E understands that the evolving energy landscape necessitates a relook at the CAISO's methodology for assessing deliverability. However, the same factors driving the need for such relook also require the CAISO to ensure that there is alignment between the different processes. PG&E is concerned that the current proposal put forth by the CAISO has not fully considered how those different processes overlap and that misalignment may have unintended consequences. PG&E urges the CAISO to reconsider submitting this initiative to the CAISO Board of Governors so that all the relevant stakeholders, including the CAISO, can better understand the cascading effects.	With the addition of large amounts of behind the meter solar PV generation the peak load hour (peak sales) has shifted to later in the day when system connected solar resource production is well below maximum output. As a result of this, the ISO is revising its deliverability methodology assumptions. In addition, for the same reason, the ISO recently revised its LCR study assumptions as shown in the 2020 LCR Study Manual:

No	Comment Submitted	CAISO Response
	From PG&E's current understanding of the proposal, there appears to be misalignment between three key processes: 1) Generation Interconnection Process (GIP), 2) the annual Transmission Planning Process (TPP), and 3) the Local Capacity Technical Study. In an effort to better illustrate our own confusion on how these different inter-related processes overlap, PG&E constructed a table to outline the modeling assumption that would be used in these processes. Since we wanted to focus on the methodology and the assumptions used rather than the specifics of the methodology itself, we focused on solar dispatch in PG&E's area. PG&E requests that the CAISO provide a similar chart to ensure alignment of the assumptions in these studies and consider closer collaboration with the CPUC ELCC that establishes the counting methodology for renewable resources. PG&E also requests that the CAISO provide a venue for more stakeholders to fully understand and engage on how these processes overlap to ensure integration among these studies. Ultimately, PG&E understands there is value in studying the peak consumption period and the peak sales period—especially given that the CAISO system has increasing levels of intermittent generation. There is merit in considering both periods and PG&E believes the CAISO should ensure alignment between these processes in its final proposal.	http://www.caiso.com/Documents/2020LocalCapacityRequirementsFinalStudyManual.pdf On page 6 of the manual under "Generation Modeled" the following statement is made: "Generation resources shall be dispatch up to the latest available net qualifying capacity ***not to exceed historical (projected for new resources) output values at the time of the managed peak load*** in the local area for purposes of the 2020 Technical Study." The bolded and italicized part ensures that solar production levels accurately reflect their expected output during the peak sales hours also referred to as the managed peak load. The table that PG&E included in their comment is does not accurately represent the ISO's assumptions. It indicates that solar dispatch in the LCR studies are based on production during HE 15-17. However, the ISO solar dispatch in LCR studies is based on the output values at the time of the managed peak load which is more likely to be later in the day when the solar production much lower. The changes proposed to the deliverability methodology for the summer peak load period would look at two different scenarios as described in the Final Straw Proposal paper. The main focus of those scenarios is on the hours later in the day during the peak sales, which is similar to the LCR studies, so there is no inconsistency. Also, the deliverability study is primarily for system resource adequacy purposes when MW production due to the diversity of resource production across the ISO system is counted towards meeting the need. This additional MW production is not counted towards meeting LCR needs because diversity in a localized area is much smaller than across a large area. The TPP study assumptions are shown in the table 3.11.2 in the 2019-2020 TPP study plan: http://www.caiso.com/Documents/Final2019-2020StudyPlan.pdf

	Current Deliverability	New Deliverability Assessment	Local Capacity Technical Studies	TPP
Summer Load Assessment Period	HE15-17	HE18-22 (HSN) HE15-17 (SSN)	HE15-17	HE15-17
FTM-PV	92% (Exceedance)	10% (HSN) 55.6% (SSN)	up to ELCC 44.8%	up to ELCC 44.8%
BTM-PV	(System) Mid AAPV - %? (Local) Low AAPV - %?	%? (HSN) %? (SSN)	(System) Mid AAPV - %? (Local) Low AAPV - %?	(System) Mid AAPV - %? (Local) Low AAPV - %?

No	Comment Submitted	CAISO Response
		Again, PG&E's table does not accurately reflect the ISO's assumptions. The peak load hour is different for each of the different local areas in that table and shifts to later in the day in later years. However, this is consistent with the LCR methodology assumptions.
15c	2. The CAISO should quantify the magnitude of the trade-offs between renewable curtailment versus fewer transmission delivery network upgrades. PG&E appreciates the CAISO's acknowledgement that the current proposal will effectively lead to fewer transmission upgrades, but it will also result in increased level of renewable curtailment. The CAISO claims that this tradeoff is not an issue, because "ratepayers ultimately reimburse generators for delivery network upgrades through the CAISO's transmission access charge."1 PG&E thinks it is important for the CAISO to conduct preliminary studies to evaluate the magnitude of those tradeoffs. 3. PG&E would like to offer a list of questions that CAISO should consider and clarify in the next iteration of its proposal. PG&E would like to thank the CAISO for the amount of work it has already done in developing this proposal. However, PG&E thinks additional work is needed. PG&E provides the following list of additional questions and requests the CAISO to answer and clarify in its next proposal. • • How will OPDS apply to storage devices? • Can the CAISO provide additional clarity on if the deliverability upgrades identified in the secondary system scenario are needed for a resource to obtain full deliverability status? • • Can the CAISO consider an OPDS analysis process for existing resources that could mitigate excessive curtailment within the TPP? • • Can the CAISO provide more detail on the merits to permitting interconnecting resources with the option to fund OPDS upgrades when they may be the sole cause of the future congestion constraint to existing resources?	Please see the Draft Final Proposal

16. Southern California Edison (SCE)
Submitted by: Tony Velarde

No	Comment Submitted	CAISO Response
16a	Southern California Edison (SCE) appreciates the CAISO considering revisions to the deliverability study assumptions used in the existing methodology, given the significant changes in the composition of the existing generation fleet since the CAISO's previous modifications in 2009 and the further changes anticipated over the forecast horizon. SCE supports the proposed changes contained in the CAISO's Deliverability Assessment Methodology Revisions Straw Proposal posted on July 29, 2019 and recommends that such proposed revisions be implemented as soon as possible and applied immediately to the resources in the existing interconnection queue. The proposed revisions are needed to align the deliverability studies to the resource capacity needed for the identified critical periods: a) Highest system need scenario, during the summer hours ending 18 to 22 when capacity shortage is most likely to occur; b) Secondary system need scenario, during the summer hours ending 15 to 17 when the capacity shortage risk will increase if the intermittent generation is not deliverable while producing at a significant output level; and c) An additional Off-peak deliverability assessment (not under oversupply conditions) to address curtailment of renewable resources due to transmission constraints. SCE recommends that any refinements to the revised deliverability assessment methodology in response to concerns of resource developers regarding curtailments could be reviewed after the revisions have been implemented in the next studies and specific issues have been identified.	Please see the Draft Final Proposal, and the responses above.

17. San Diego Gas & Electric (SDG&E)
Submitted by: Jan Strack & Habibou Maiga

No	Comment Submitted	CAISO Response
17a	**Introduction** SDG&E agrees that it is timely to reevaluate the CAISO's existing deliverability assessment methodology. Grid conditions have changed significantly since the initial development of the methodology in 2004. The methodology needs to be changed to consider the ability of intermittent resources to deliver power during peak demand conditions that have shifted later in the day. With the increased levels of Behind-The-load-Meter (BTM) generation, peak load hours now include hours-ending 1500 through 2200. SDG&E therefore supports the introduction of a "Secondary System Need Scenario" in addition to the existing "Highest System Need Scenario." SDG&E understands there are concerns with local transmission-related renewable resource curtailment during the "non-summer peak period."1 However, SDG&E finds that these concerns are really economic issues that involve determining the tradeoffs between the cost of potential transmission upgrades and the value of foregone Renewable Energy Credits (RECs) as well as the cost of injecting energy onto the grid when Locational Marginal Prices (LMPs) are low or negative. Accordingly, SDG&E does not believe Resource Adequacy (RA) deliverability is implicated during the "non-summer period" and does not believe that deliverability changes applicable to the non-summer peak period are needed.	Please see the Draft Final Proposal
17b	**SDG&E Supports Enhancing the Off-Peak Deliverability Assessment** The CAISO presents five options relative to the "non-summer peak period." SDG&E supports Option 1 which involves "updating study assumptions for the off-peak deliverability assessment such that the results provide a meaningful indication of curtailment due to transmission constraints."2,3 (page 10) The CAISO's annual Transmission Planning Process (TPP) would perform analysis to determine whether it would be economic to expand transmission in order to reduce resource curtailments. If the CAISO determines such expansion was economic, the CAISO Board of Governors could authorize Transmission Access Charge (TAC) cost recovery for such upgrades. Option 1 is fully consistent with the CAISO's "reliability through markets" principle. It allows Interconnecting Customers (IC) to 1) have information on	Please see the Draft Final Proposal, and the responses above.

No	Comment Submitted	CAISO Response
	transmission-constrained generation pockets that may be subject to high levels of curtailment, and 2) manage the risks of curtailment, if the IC decides to move forward with its project, by submitting price/quantity offers into the CAISO markets that reflect the IC's own assessment of its variable cost structure (e.g., variable operations and maintenance (O&M) costs and opportunity costs such as foregone renewable energy credits (REC) revenues). Option 1 avoids the inefficiencies associated with administratively-set offer prices. It also allows interconnecting generators to make their own decisions as to whether it makes economic sense to propose and pay for merchant transmission expansion beyond that which the CAISO may approve in its TPP. This approach ensures that CAISO consumers would not be obligated to fund transmission expansion beyond that which the CAISO has fully vetted through an economic study and approved in its TPP.4 **SDG&E Does Not Support Options which Mandate that Interconnecting Generators Fund or Pay For Transmission Upgrades, or that Obligate CAISO Consumers to Pay for Transmission Upgrades, that would Reduce Curtailment During the "Non-Summer Peak Period."** Option 2 would *mandate* that interconnecting generators fund Local Delivery Network Upgrades (LDNUs) that reduce curtailment during the non-summer peak periods, in order to achieve Full Capacity Deliverability Status (FCDS) during summer peak periods. SDG&E sees no advantage for such a mandatory requirement since the risk of supply-shortages is low during the non-summer peak period. Moreover, ultimate payment responsibility for these LDNUs would rest with CAISO consumers. Outside of the CAISO's TPP process, there is no basis for determining that the benefits provided to CAISO consumers by these LDNUs, would offset the costs paid by CAISO consumers. SDG&E does not support this option as it mixes reliability issues tied to possible supply shortages during summer peak periods, to economic issues tied to curtailments during non-summer peak periods. While Option 3 would unbundle the off-peak deliverability network upgrade requirements from the on-peak network upgrade requirements for resource adequacy purposes, it would allow interconnecting generators to *choose* to fund a transmission upgrade. The interconnecting generator's payment obligation	

No	Comment Submitted	CAISO Response
	"would be capped" (page 11) and would be refunded with CRRs. This essentially means that CAISO consumers are *obligated* to pay for the upgrade costs in excess of the cap. Unless the CAISO's TPP finds that such local or system-wide transmission upgrades are cost-effective, SDG&E does not believe CAISO consumers should pay for the upgrades. SDG&E does not support this option. Option 4 would also allow interconnecting generators to *choose* to fund a "local" transmission upgrade, but CAISO consumers would be obligated to pay for these upgrades up to a "reimbursement cap." (page 11) As with Option 3, SDG&E does not believe CAISO consumers should pay for transmission upgrade costs for which there is no CAISO TPP-based evidence that such upgrades are cost-effective for CAISO consumers. Under Option 5, a generator electing Off-Peak Deliverability Status (OPDS) would be *mandated* to fund upgrades (up to a cap) that mitigate the local constraint during the non-summer peak period. CAISO consumers would be *obligated* to pay for these local upgrades. Option 5 also "introduces a new concept to the CAISO's markets: giving curtailment/dispatch priority based on deliverability statuses." The CAISO explains that "an interconnection customer selecting 'Off-peak Deliverability Status' would be curtailed after a generator that does not have that status." (page 12) As with Options 2, 3 and 4, SDG&E does not believe CAISO consumers should be required to pay for transmission upgrades which have not been determined by the CAISO's TPP to be cost-effective. Additionally, SDG&E believes this new concept will introduce market inefficiency in as much as it relies on administratively-set offer pricing in order to give effect to the curtailment/dispatch priority. Market efficiency is maximized when generators participate in the CAISO markets via price/quantity offers that reflect each generator's own assessment of its variable cost structure – which may include the opportunity costs associated with possible curtailment. SDG&E does not support Option 5.	
17c	**The Methodology Used to Assess the Output Level of Intermittent Resources Should be Consistent Across all Scenarios Studied.** While SDG&E supports the need to revise the on-peak deliverability methodology, SDG&E has some concerns regarding the numerous production	Please see section 4 of the Draft Final Proposal, and the responses above.

No	Comment Submitted	CAISO Response
	level methodologies used by the CAISO. For instance, a proposed 20% exceedance production level for wind and solar resources is used during the highest system need scenario (during the early evening hours) but a proposed 50% exceedance level is used during the secondary system need scenario (during the late afternoon hours). SDG&E does not understand the logic for using different exceedance percentages during these two time periods. Furthermore, although the proposal explains why using an average Effective Load Carrying Capacity (ELCC) probabilistic approach is not viable for deliverability assessments, the solar output value for only the SDG&E area will be based on average ELCC value. Finally, for the off-peak scenario, the proposal introduces the concept of "production level under which 90% of the annual energy is produced set the outputs to be tested in the off-peak deliverability assessment." This approach is also different from the exceedance or ELCC previously discussed. SDG&E recommends that more explanations be provided in the revised straw proposal on why several methodologies are needed. SDG&E continues to advocate for consistency across the CPUC and the CAISO when it comes to how a resource value is determined.	

18. Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California (Six Cities)
Submitted by: Bonnie Blair, Meg McNaul & Thompson Coburn LLP

No	Comment Submitted	CAISO Response
18a	In response to the CAISO's request, the Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California (collectively, the "Six Cities") provide their comments on the Straw Proposal in the Deliverability Assessment Methodology Revisions initiative. As discussed below, the Six Cities do not support the aspects of the Straw Proposal related to the evaluation and mitigation of curtailment risk resulting from the revised assumptions the CAISO proposes to use in the deliverability assessments. As explained in their prior comments, however, the Six Cities do not object to the revised assumptions themselves, including, specifically, the CAISO's proposal to study deliverability according to a highest system need scenario and a secondary system need scenario. The Six Cities reiterate their request for information from the CAISO regarding the expected impacts of the revised deliverability study assumptions on Resource Adequacy qualifications and requirements. The Six Cities' principal concerns with the Straw Proposal are related to the "nonsummer peak scenario" (or off-peak) deliverability assessments that the CAISO proposes to perform as part of the resource interconnection process. Although the Six Cities do not inherently object to the CAISO performing studies in order to provide information to interconnecting resources about potential curtailment risks,1 the CAISO's preferred approaches (particularly "Option 4" and "Option 5") for assigning the costs of any resulting local network upgrades have not been fully fleshed out. In particular, the CAISO's proposals to allocate the costs of such upgrades to transmission customers do not appear to be justified. Certainly absent further details regarding these proposals, the Six Cities do not support either of these options. As an initial matter, it is not clear why interconnection customers should have the discretion to impose on transmission customers the costs of network upgrades whose primary purpose is to avoid adverse economic consequences (*i.e.*, curtailment) to interconnecting resources. For example, the CAISO proposes under Option 4 that Off-Peak Local Network Upgrades ("OLNUs") funded by interconnection customers will be reimbursable to the funding customer up to an unspecified cap, while under the Option 5 scenario, OLNUs will be fully reimbursable. If an interconnection customer wishes to avoid what it	Please see the Draft Final Proposal, and the responses above.

No	Comment Submitted	CAISO Response
	may deem to be excessive levels of curtailment, then the customer should be responsible for the cost of funding upgrades to achieve that result.2 Is there data that would illuminate the scope of the anticipated curtailment and the potential impact to consumers? *See, e.g.*, Straw Proposal at 7 (noting that "renewable generation curtailment *could* increase which would ultimately directly or indirectly increase costs for consumers *to some extent*") (emphasis added). With respect to Option 5, the Six Cities are unclear as to the basis for the CAISO's proposal to assign self-scheduling priority to interconnecting resources that elect to initially fund OLNUs when, again, those OLNUs are reimbursable. Why is the CAISO providing a scheduling priority for resources that are not ultimately bearing the costs of the OLNUs, but are merely providing up-front financing? A scheduling priority along the lines of what the CAISO proposes would make more sense in the context of OLNUs that are not reimbursed by transmission customers.	
18b	In addition to these concerns, the Six Cities have questions relating to several aspects of the CAISO's Straw Proposal: OLNU Cost Caps: With respect to the cost caps for OLNUs proposed as part of Options 3 – 5, the CAISO suggests that the caps will be established at the lower of the Phase I and Phase II studies. However, the CAISO also proposes that in Phase I, each interconnection customer will be assigned the full cost of the OLNUs, while at Phase II, the costs of the OLNUs will be allocated.3 Unless the CAISO identifies significantly more (or more costly) OLNUs between Phase I and Phase II, the cap for individual interconnection customers is likely to be established in the Phase II studies, even if a subsequent reassessment results in a higher allocation. Is this the CAISO's intention and, if so, why are the OLNU cost caps not set at the higher of the Phase I and Phase II results? Or is it the CAISO's intention to apply the cap to the aggregate OLNU cost as between Phase I and Phase II, but not to provide interconnection customer-specific caps? Finally, how will OLNU costs in excess of the cap be allocated?	Please see the Draft Final Proposal. Details for establishing cost caps in the Phase I and Phase II studies and how they are applied are provided in the proposal, and are similar to how cost caps are established and applied for other network upgrades in the existing GIDAP.

No	Comment Submitted	CAISO Response
	Option 4 Reimbursement Cap: According to the CAISO's stakeholder presentation (at slide 31), adopting a reimbursement cap will "protect rate-payers and motivate prudent decision[s] by the ICs." How will the CAISO determine what level of reimbursement cap will accomplish this? Will the cap be set as a fixed $/MW or will the cap be set as a percentage (*i.e.*, 50%) of the interconnection customers' OLNU cost? Option 5 Scheduling Priority: In general, the scheduling priority concept within Option 5 requires further development, including with respect to the following: • How will the proposed scheduling priority be implemented? • What scheduling priority will existing resources have? • What will be the curtailment priority for resources that have funded OLNUs relative to other types of self-schedules? • How will the CAISO decide on curtailment levels among resources having equal scheduling priority? Does the CAISO expect to see an increase in self-schedules as a result of its proposal and, if so, is this result desirable? Additionally, as noted above and in their previous comments, stakeholders would also benefit from information regarding the potential impacts on the level of Net Qualifying Capacity for resources as a result of the change in deliverability assessment. What are the expected effects of potential increased congestion on resource adequacy resources, especially existing resources?	
18c	In light of the foregoing questions and concerns, the CAISO's goal of issuing a Draft Final Proposal to present to the CAISO Board of Governors during its September meeting appears to be unrealistic. The changes the CAISO is proposing, particularly with respect to OLNUs, are complicated and likely will entail significant tariff revisions, particularly related to interconnection procedures. The Six Cities also urge the CAISO to consider the impact of its proposals in this initiative on other pending and recently completed initiatives, including Resource Adequacy Enhancements and the 2018 Interconnection	Please see the Draft Final Proposal, and the responses above.

No	Comment Submitted	CAISO Response
	Process Enhancements. These issues will require appropriate time to carefully evaluate, and, by failing to take adequate time to consider these issues now, the CAISO may increase the likelihood that stakeholders will be compelled to protest the CAISO's not-fully-vetted proposal and tariff revisions when they are filed at FERC. To thoroughly address the proposal to create a new category of network upgrades and the related cost allocation, which is potentially contentious, it likely will be necessary for the CAISO to extend the timeframe for completion of this initiative.	

19. SPower
Submitted by: Susan Schneider

No	Comment Submitted	CAISO Response
19a	SPower appreciates the opportunity to comment on the CAISO's Straw Proposal (Proposal) in the Deliverability Assessment Methodology initiative. The Proposal includes several thoughtful changes in response to earlier stakeholder comments, and this submittal suggests additional revisions that would improve that proposed framework. SPower's comments below focus on the initiative process and timing, and on the proposed enhanced Off-Peak Deliverability Assessment.	Please see the Draft Final Proposal
19b	***Initiative process & timing*** CAISO's plan to move Deliverability Assessment changes forward in a single package, together with congestion-mitigation measures, is a good one and should be retained. However, critical details for the package are still unresolved, especially with respect to the treatment of Network Upgrades (NUs) triggered by the new enhanced Off-Peak Deliverability Assessment. The CAISO is planning to proceed to the Draft Final Proposal after this Straw Proposal, in order to take a final proposal to the Board in September; however, the process requires more deliberate consideration of these features, e.g., in a Revised Straw Proposal and then possible Board consideration in October. Rather than proceed before the proposal is ready, the CAISO should seek ways to expedite its internal processes to accommodate a more reasonable and complete stakeholder process.	Please see the Draft Final Proposal, and the responses above.
19c	***Enhanced Off-Peak Deliverability Assessment*** SPower agrees with the following general principles reflected in the Proposal: • **This assessment should include both FCDS/PCDS and EO generation**, because the primary purpose of this assessment should be congestion analysis and mitigation. (The next proposal version should state that explicitly.) • **Funding of these NUs should not be required for RA deliverability**, since they are not needed for deliverability in the most critical HSN/SSN hours.	Please see section 4 of the Draft Final Proposal, and the responses above.

No	Comment Submitted	CAISO Response
	Funding of these NUs should be voluntary. However, the viability of this voluntary approach depends on providing potential participants with sufficient incentives, and removing disincentives, such that they will elect to fund the NUs, and it's not clear that either of the options offered have such features. Otherwise, the identified upgrades will not be constructed, even where warranted, and the additional congestion resulting from the new on-peak methodology will not be mitigated. This means that this funding should: (1) Include benefits not available to those not electing to fund the NUs, to avoid "free rider" problems; and (2) be reimbursable. These positions are explained further below. Of the two options offered in the Proposal – Option 4 and Option 5 – Option 5 comes closest to meeting these criteria but, as described below, some revisions are needed to rationalize the proposed Off-Peak Deliverability Status (OPDS). In addition, CAISO should give some consideration to the required timing for electing off-peak upgrade funding, and perhaps adding flexibility to the developer decision-making process. Both Options 4 and 5 require developers to make funding decisions before they know the cost to their projects. The current FCDS framework at least allows conversion to Energy Only at various stages in the study and development process once developers learn their project costs, but that flexibility is not specified for either option offered here. At a minimum, developers should have the ability to elect not to fund these upgrades once they have a reasonable estimate of allocated share (post-Phase II for Option 4, post-Phase I for Option 5).	
19d	**Benefits to funding projects** Option 4 suffers from an obvious "free rider" problem, i.e., projects electing not to fund the off-peak upgrades would receive the same congestion-relief benefits as those electing to fund them. With no obvious benefits from funding (and with the funding deterrents described below), there is no strong incentive to fund, potentially making this option non-viable. The OPDS provisions under Option 5 offer an obvious incentive to fund. However, SPower believes that this element should be modified before it is	Please see section 4 of the Draft Final Proposal. A different mechanism for accomplishing the scheduling priority has been proposed, and this mechanism is more targeted than the original proposal.

No	Comment Submitted	CAISO Response
	finalized, to make it more equitable between projects funding on-peak upgrades and those funding off-peak upgrades. The Proposal would provide scheduling/curtailment priority, in both on- and off-peak hours, to projects funding off-peak upgrades, though NUs identified in the on-peak assessment are arguably more important for system reliability than off-peak upgrades. For example, under the CAISO's proposal, projects funding on-peak upgrades for FCDS but electing not to fund off-peak upgrades would have lower self-schedule priorities , in all hours, than Energy Only projects funding only off-peak upgrades. More interestingly, the CAISO has always maintained that funding on-peak upgrades could not and/or should not carry any operational scheduling or curtailment priority, though many market participants have advocated such priorities over the years. The Option 5 proposal demonstrates that the CAISO has the capability, at least, to provide such priorities, and SPower strongly supports implementation of this fair and equitable principle. Therefore, SPower believes that it would make more sense for the CAISO to do the following: (1) Give projects funding on-peak upgrades (FCDS/PCDS projects) the proposed scheduling and curtailment priority in on-peak hours; and (2) Give projects funding off-peak upgrades scheduling and curtailment priority in off-peak hours.	
19e	**Deterrents to funding projects** The proposed (but unspecified) reimbursement limits under Option 4 would exacerbate the free-rider problem, since they would increase the net cost to funding participants. Moreover – depending on the limits adopted – they could serve as a major disincentive for funding these NUs and, together with the free-rider problem, may make that option non-viable, as noted above. sPower believes that funding of off-peak NUs should be reimbursable in any case, i.e., that provision should be added to Option 4 if it is chosen and retained in Option 5 if it is chosen.	Please see the Draft Final Proposal

No	Comment Submitted	CAISO Response
	These upgrades are thus effectively the equivalent of TPP Policy-Driven upgrades (though they are addressed here due to stakeholder concerns about delays with TPP consideration). The off-peak NUs would be specifically identified to prevent significant operational impairment of existing/earlier-queued, largely renewable generation projects, and they would be dropped later through the annual Reassessment process if no longer needed for that purpose. They would therefore serve a "policy-driven" purpose, to maintain the state's ability to meet Renewables Portfolio Standards (RPS), and should be reimbursable as such. Finally, the CAISO has not specified a methodology to determine a reasonable off-peak reimbursement limit. The current Reliability Network Upgrade (RNU) reimbursement limit was determined using a percentage of historic RNU costs and (per recent changes) will be escalated over time. The CAISO has no similar history for congestion-related off-peak NUs.	