# Memorandum

**To:** ISO Board of Governors

**From:** Keith Casey, Vice President, Market and Infrastructure Development

**Date:** November 6, 2019

**Re:** **Decision on Deliverability Methodology Revisions**

---

***This memorandum requires Board action***

## EXECUTIVE SUMMARY

The ISO's deliverability assessment methodology was developed for generation interconnection study purposes and is used for resource adequacy purposes to assess the sufficiency of transmission such that generation resources can be relied upon to provide reliable capacity when most needed. The ISO last modified the existing methodology in 2009, and it has largely remained unchanged since its initial development in 2004. Given the significant changes in the composition of the existing generation fleet and the further changes anticipated over the forecast horizon, the ISO proposes revisions to adapt the study assumptions to changing system conditions that affect or drive when resource adequacy resources are needed the most.

The addition of large amounts of solar resources (grid-connected and behind-the-meter) have resulted in reducing the resource adequacy value of grid-connected solar resources. Therefore, the deliverability assessment methodology needs to be revised to reflect the changing contribution of solar to meeting system needs. In 2018, the CPUC replaced the exceedance-based Qualifying Capacity calculation for wind and solar with an Effective Load Carrying Capability approach to account for the growth of renewable energy resources. The incremental reliability benefit of adding more solar hits a saturation point after enough capacity is installed. Additional solar resources provide a much lower incremental reliability benefit to the system than the initial solar resources, because their output profile ceases to align with the peak hour of demand on the transmission system which has shifted to later in the day due to the proliferation of behind-the-meter solar. As a result, there is a reduced need for transmission upgrades to support deliverability of additional solar resources for resource adequacy purposes.

In response to this change, the ISO began this initiative to revise the on-peak deliverability methodology assumptions. At the same time, generation developers noted that the existing deliverability study process, combined with the "full capacity

deliverability status" conferred on resources meeting those requirements, was the one mechanism available and relied upon by developers to ensure that generation would not be exposed to excessive curtailment due to transmission limitations. Although transmission upgrades to deliver renewable energy reliably and economically are evaluated and approved through the ISO transmission planning process, concerns remain with the ability of the transmission planning process to identify on a timely basis the upgrades to facilitate generation development, especially local transmission upgrades that depend on the exact point of interconnection of the future generation. Therefore, the ISO initiative considered both modifications to the deliverability methodology to address requirements at peak system need, and to renewable energy delivery during hours outside of the summer peak load period to ensure some minimal level of protection to otherwise potentially unlimited curtailment.

The existing tariff requires the ISO to perform an on-peak deliverability study to ensure system needs are met at periods of greatest need, as well as an informational off-peak deliverability study. The ISO proposes revisions to the off-peak deliverability assessment to make it a binding study and to identify transmission upgrades needed to avoid excessive renewable curtailment. The changes to the on-peak and off-peak deliverability assessments will require tariff amendments and modifications to the business practice manuals.

Finally, the ISO proposes to create a one-time modification to its transmission deliverability allocation process for the upcoming 2020 cycle. The one-time process will supplant all current rules regarding transmission deliverability allocation and will allow for additional projects in the ISO interconnection queue to be eligible for transmission deliverability. The one-time process will end with this one cycle, and the ISO will revert to the current tariff transmission deliverability allocation process thereafter.

Management recommends the following motion:

> ***Moved, that the ISO Board of Governors approves the proposed deliverability methodology revisions, as described in the memorandum dated November 6, 2019; and***
>
> ***Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposed deliverability methodology revisions, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed tariff amendment.***

## DISCUSSION AND ANALYSIS

To address the changing needs of the ISO system, Management proposes three changes to the deliverability assessment scenarios used in its resource interconnection study process. The on-peak deliverability assessment will consist of two scenarios and

the off-peak deliverability assessment will consist of one scenario. Each of these is discussed in turn.

**Changes to on-peak deliverability assessment scenarios**

The primary objective of this proposal is to align the renewable resource output levels used in on-peak deliverability assessments with the later peak load periods now being experienced on the ISO system. Additional solar resources provide a much lower incremental reliability benefit to meeting peak system needs because the peak hour of demand on the transmission system has shifted to later in the day due to the proliferation of behind-the-meter solar. To assess on-peak deliverability, Management proposes to use both a "high system need scenario" and a "secondary system need" scenario.

The high system need scenario represents conditions when a capacity shortage is most likely to occur. In this scenario, the system reaches peak demand with low solar output. The highest system need hours are hours ending 18 to 22 in the summer months. If the addition of a resource under this scenario causes a deliverability deficiency determined based on a deliverability test, then the constraint will be classified as either a local constraint requiring mandatory transmission or an area constraint with optional transmission upgrades.

The secondary system need scenario represents conditions when the capacity shortage risk will increase if the renewable generation, when producing at a significant output level, is not deliverable. In this scenario, the system load is modeled to represent the peak gross consumption level (i.e., total electricity consumption including consumption served by behind-the-meter resources) and solar output is modeled at a significantly higher output than in the high system need scenario. The secondary system need hours are hours ending 15 to 17 in the summer months. If the addition of a resource under this scenario causes a deliverability deficiency determined based on a deliverability test and the limiting transmission constraint is not identified in the high system need scenario, then the constraint can be classified as an area constraint with optional transmission upgrades.

**Changes to off-peak deliverability assessment scenarios**

Under the proposed changes to the on-peak deliverability assessment methodology, solar resources will be modeled at a much lower output level, which should significantly reduce the need for transmission upgrades to support their deliverability status for resource adequacy purposes. However, assessing relatively low solar output in the early evening periods means that the on-peak deliverability study alone would no longer provide assurance against excessive curtailment that developers have come to rely on from the current on-peak deliverability methodology.

While transmission upgrades to deliver renewable energy reliably and economically are evaluated and approved through the ISO transmission planning process, there is a concern with the ability of the ISO's transmission planning process to identify the upgrades timely enough for generation development, especially local transmission upgrades that depend on the exact point of interconnection of the future generation. Policy-driven upgrades identified in the transmission planning process are based on the renewable portfolio assumptions provided by the CPUC through their integrated resource planning process. However, the portfolios only consist of generic generation amounts by technology and within identified transmission zones. The portfolios are effective at identifying large area transmission upgrades such that the need for the upgrade is not affected by the exact generation project locations within the transmission zone. The need for local transmission upgrades is affected by which generation project locations are ultimately built-out, so the transmission plan can only identify the need for local transmission upgrades once the actual generation project locations have been contracted with and approved by the CPUC. Unfortunately, this can result in the local transmission projects going into service many years after the generation project is in-service and experiencing excessive curtailment.

To address this concern, Management proposes revisions to its interconnection study methodology for off-peak deliverability that will result in directly assigning local transmission upgrades to generation projects seeking off-peak deliverability assurance. This results in the creation of a new service option, referred to as Off-Peak Deliverability Status. This approach will allow the cost of these local transmission upgrades to be considered in the procurement process and proceed in parallel with the development of the generation project. The ISO transmission planning process will, however, still be relied on to comprehensively identify larger and more costly transmission upgrades needed to avoid larger area renewable curtailment.

Interconnection customers will have the option to request Off-Peak Deliverability Status in order for their generation project to be included in the off-peak deliverability assessment. Off-Peak Deliverability Status will provide a scheduling priority in both the day-ahead and the real time market by continuing to allow self-scheduling for new renewable energy resources that select Off-Peak Deliverability Status, but not for new renewable energy resources that do not. The self-scheduling remains available to existing resources and new non-renewable energy resources that select Full Capacity Deliverability Status. Currently, a resource can self-schedule in the real-time market up to its day-ahead award; this feature will remain in place for all resources, regardless of whether they have Off-Peak Deliverability Status, Full Capacity Deliverability Status or not.

**One-time change to the transmission planning deliverability allocation process**

The new deliverability assessment methodology should make a substantial amount of existing transmission capacity available to interconnection customers and should enable many of them to achieve full capacity deliverability status. At the same time, the ISO is

projecting a significant generating capacity shortfall for meeting peak system needs beginning in 2021. Addressing this shortfall will require expedited generation development to ensure the reliable operation of the ISO controlled grid. Additionally, solar developers and load serving entities are seeking to accelerate development of new solar projects to take advantage of the higher federal investment tax credits that will sunset in 2022. In light of these facts, the ISO proposes to create a one-time modification to its transmission deliverability allocation process for the upcoming 2020 cycle. The one-time process will supplant all current rules regarding transmission deliverability allocation and will allow for additional "energy only" projects in the ISO interconnection queue to be eligible for transmission deliverability. The one-time process will end with this one cycle, and the ISO will revert to the current tariff transmission deliverability allocation process thereafter.

The principle difference between the one-time process and the current process is that the one-time process will allow any interconnection customer with a completed Phase II study that is still an active project in the interconnection queue to seek deliverability by representing that it elects to proceed without a Power Purchase Agreement, and will be subject to the restrictions described in Section 8.9.2.2 of Appendix DD going forward. Regardless of what queue cluster the interconnection customer is in, any interconnection customer selecting this option will be allocated transmission planning deliverability last, meaning that the previous allocation group three will now be allocation group seven, and groups previously four, five, six, and seven will move up. Allocation groups one and two are unchanged. In addition, to the extent there is insufficient transmission deliverability to allocate among an allocation group, Management propose to modify the existing point scoring method for determining allocation priority by adding the project's commercial operation date as a fourth scoring category. Under this proposed change, projects with earlier commercial dates will receive a higher point score.

## POSITIONS OF THE PARTIES

The ISO first proposed possible revisions to the on-peak generation deliverability assessment methodology in the 2018-2019 transmission planning process meeting on November 16, 2018. The ISO then held a stakeholder call on December 18, 2018 to offer a more in-depth review of the proposed revisions. Stakeholders' written comments were generally supportive of the proposed changes, but raised various concerns regarding impacts to other processes and existing generation and recommended that the ISO take more time to address these concerns. The ISO considered those comments and decided to reconsider the proposed revisions through a broader stakeholder initiative and to continue to apply the current methodology in studies required by the Generation Interconnection and Deliverability Allocation Procedures for Cluster 11 phase II and Cluster 12 phase I efforts. The ISO posted an issue paper and started the stakeholder initiative on April 25. The first stakeholder call was held on May 2, 2019 to garner additional stakeholder input needed to develop a straw proposal that addresses the comments provided on the proposed on-peak generation deliverability methodology revisions. The ISO reviewed comments to the issue paper and then

developed the straw proposal on July 29 that further clarified the on-peak deliverability methodology revision and introduced an off-peak deliverability methodology revision to address stakeholders' concerns. Additional stakeholder meetings were held on August 5, October 4, and November 4 to review the straw proposal, draft final proposal, and revised draft final proposal. The ISO reviewed all comments, resulting in this refined final proposal.

The ISO believes that most stakeholder concerns have been addressed, and carefully considered two remaining issues where there is not consensus. First, some stakeholders who desire to see the benefits of the revised on-peak deliverability methodology sought to have the ISO move forward only with the on-peak deliverability methodology and defer the off-peak concerns, to reduce the risk of delayed implementation. Second, some stakeholders expressed concerns on providing any level of curtailment protection via the generation interconnection process study process, rather than exclusively dealing with the risk of congestion in the transmission planning process.

Both of these concerns are in conflict with the views expressed by the majority of project developers who support addressing the off-peak deliverability risk now and in a more effective manner than could be accomplished through leaving it entirely to the ISO transmission planning process.

While most stakeholders are generally supportive of the proposed changes, a number of them raised various more detailed concerns or questions that could not be fully addressed in the limited time available to develop this proposal. In order for these proposed changes to take effect for the next deliverability reassessment study that occurs early next year, Management will need to file these proposed changes, pending Board approval, to FERC by the end of this year. The majority of stakeholders strongly support having these changes go into effect early next year. The ISO nonetheless intends to continue to address stakeholders' concerns and clarify outstanding issues through the development of the draft tariff revisions and revised on-peak and off-peak deliverability assessment methodology papers the ISO will include with its ultimate FERC filing.

## CONCLUSION

Management recommends that the Board approve the revisions proposed in this memorandum. These revisions are generally supported by stakeholders and were refined to address many of their comments and concerns throughout the stakeholder process. The proposed modifications will continue to improve the ISO's ability to efficiently interconnect generation resources needed to meet California's ambitious renewable energy and environmental goals.