



Submit comment on Update paper

Initiative: Generator deliverability challenges

[Comments as submitted into the CAISO's comment portal on January 4, 2023.]

1. Please provide your organizations comments on concerns regarding the current deliverability assessment methodology.

CalWEA is concerned that the CAISO's deliverability assessment methodology is unnecessarily conservative, thereby preventing a significant volume of wind, solar and energy storage capacity resources from obtaining the Transmission Planning Deliverability ("TPD") necessary to qualify as Resource Adequacy (RA) capacity. As a result, these resources that could otherwise provide Resource Adequacy (RA) capacity during all hours of significant reliability concern are being prevented from interconnecting to the CAISO system. Without a solution to this issue, California's mid-term reliability and clean energy goals are in jeopardy. Stated another way, these resources will be needed to meet the state's dual reliability and clean-energy goals. At a minimum, if a substantial number of resources are able to attain deliverability due to reforms implemented by the CAISO, these resources will help to create a competitive market as LSEs seek to meet their substantial mid-term reliability targets.

Importantly, plans for building additional transmission capacity that were adopted in the previous transmission planning cycle, and those that will be adopted in the current cycle, cannot be realized soon enough to interconnect the RA resources that CAISO will need to meet the state's reliability and clean energy goals prior to 2032. The good news, however, is that reforming the CAISO's deliverability assessment methodology can be timely achieved while keeping the grid reliable, buying CAISO the time it will need before new capacity becomes available. Furthermore, making more efficient use of the existing grid will reduce environmental impacts and substantially reduce costs to ratepayers by reducing transmission upgrade costs while increasing competition in the RA market.

2. Please provide your organizations comments on concerns regarding the timeliness and availability of deliverability.

Many developers, including most CalWEA members developing greenfield projects, whose projects were scheduled to come online in the next few years, have recently discovered that they will not be able to obtain a Transmission Plan Deliverability ("TPD") allocation that is necessary to qualify under the CPUC's RA program and, in turn, are unable to successfully commercialize the projects and proceed with development. This is a clear and concerning signal that available TPD capacity appears to be insufficient to meet the CPUC's 2026 clean-energy capacity goals, let alone its larger goals in the 2030 timeframe prior to when new transmission can become available. Without some prospect of the availability of TPD capacity, otherwise viable new developments are contemplating significant development delays or abandoning projects completely.

3. Please provide your organization’s comments on the path forward outlined in the update paper.

Regarding the proposed Track 1, CalWEA very much appreciates the opportunity that the CAISO is creating to review the current deliverability methodology and discuss whether modifications are warranted, commencing by the end of Q1 2023.

Regarding the proposed Track 2, CalWEA supports the CAISO’s ongoing consideration of whether changes to inputs and assumptions, and particularly dispatch assumptions, are warranted sooner rather than later. To that end, in addition to considering changes to offshore wind dispatch assumptions, we encourage the CAISO to reconsider its recently revised storage dispatch assumptions. We believe it would be useful for CAISO to address the three points that CalWEA made in our September 23, 2022, comments that we believe support further revisions to the storage dispatch assumptions.¹

Additionally, CAISO should not wait to modify its assumed dispatch conditions where all previously studied Variable Energy Resources (VERs) in a particular area are assumed to operate at levels higher than their Net Qualifying Capacity (“NQC”) levels granted by the CAISO and all VERs requesting deliverability in the same area are assumed to operate at levels higher than their Qualifying Capacity (“QC”) levels granted by the CPUC. Instead, CAISO should assume generation levels that are expected during the hour(s) of peak demand being studied in the HSN test. The use of expected peak-hour generation levels in the HSN test should converge with the NQC levels adopted by the CPUC in future years.² However, there is no need for CAISO to wait for the CPUC to adopt such an NQC methodology before assuming expected peak-hour production levels in the HSN deliverability test. CAISO’s current practice of using values that exceed current QCs for VERs requesting deliverability and NQCs for previously studied VERs is inappropriate because the system is designed to rely only on the NQCs of VERs, not more, to meet the peak scenario demand during the operating conditions that CAISO studies. Hence, CAISO should adjust, typically dial back, VERs’ dispatch levels to their QC or NQC levels in its deliverability assessment studies and TPD allocation processes and avoid allocating TPD capacity beyond what is required based on the QC or NQC level of the resource. In fact, such an approach would make the CAISO deliverability methodology consistent with those of PJM and MISO.³

¹ In CalWEA’s September 23, 2022, comments, CalWEA requested that the CAISO respond to three specific points: (1) that HE 18 should not have been moved to the low-risk SSN window; (2) that the SSN test is improperly aimed at local curtailment of supply resources, rather than system reliability; and (3) that assumed storage operations should reflect CAISO’s optimal/secure dispatch.

² Presently, the CPUC’s QC values for VERs are statistical expectations for production from VERs achieved over many hours, not necessarily during times of potential resource shortfalls (HSN scenario). In the future, however, under its new “24 hourly” Resource Adequacy framework, the CPUC is moving to establish QC values that reflect expected generation levels during the hour of potential resource shortfall of each month. The CPUC is currently considering various “exceedance” approaches, or facsimiles thereof, to set those expected generation levels.

³ See table below.

Regarding the proposed Track 3 to explore whether “some sort of transitional relief would be appropriate, particularly when delays to network upgrades impact resource development,” CalWEA supports such an effort, but suggests that this be addressed within the first track.

4. Please provide your organizations comments on the proposed next steps.

CalWEA provides the following comments and feedback on the CAISO’s December 12, 2022, update paper on Deliverability Challenges for the CAISO’s consideration as it prepares its first issue paper for the new stakeholder proceeding. In preparing these comments, CalWEA reviewed the deliverability study methodologies of PJM and MISO, which are summarized in the table below.⁴

CalWEA Summary of On-Peak Deliverability Study Methodologies

OPD Study	CAISO	PJM	MISO	Notes
Study scenarios	HSN and SSN	HSN	HSN	CAISO uses an additional study scenario (SSN) which impedes deliverability allocation to most candidate resources systemwide
Study area	Study area selected based on resources with greater than 5% DFAX (distribution factor) or flow impact on constraint flow-gates	>5% DFAX	>5% DFAX	CAISO includes more expansive set of resources in the study area which impedes deliverability allocation to some candidate resources depending on the study area
System conditions	N-0, N-1 & select N-2	N-0 & N-1	N-0 & N-1	CAISO studies include the much more restrictive N-2 system conditions to some candidate resources in most study areas
Dispatch level	Dispatch level for VERs using CAISO’s own exceedance approach for VERs, not VERs’ Qualifying Capacity (QC) as determined by PUC	VERs’ QC	VERs’ QC – also allows VERs to select capacity level	CAISO dispatch levels for VERs are typically greater than the VERs’ QCs, especially in the SSN scenario which can impede deliverability allocation to some candidate resources systemwide

- a. **CAISO should place any discussion of NERC Standard TPL-001, relating to N-2 contingencies and extreme event contingencies, in its proper context.** The TPL-001 standard is one of NERC’s Transmission System Planning Performance Requirements and does not apply to generation deliverability studies.

The TPL-001 requirement is aimed at preventing loss of “non-consequential” load if a single, or certain double, transmission element outages occur in the system (e.g., two major line outages, simultaneously or sequentially, N-2). To determine whether load loss would occur under such outage conditions, NERC translates load loss into violations of various operating criteria, namely line overloads or voltage limit violations. When transmission element outage(s) occur and supply capacity is reduced to parts or all the system, line overloads or

⁴ PJM’s Deliverability Study Methodology can be found at: [PJM Manual 14B: PJM Region Transmission Planning Process](#). MISO’s methodology can be found at: <https://www.misoenergy.org/legal/business-practice-manuals/> (navigate to BPM 015-Generation Interconnection, Appendix C).

voltage violations can occur which must be corrected by dropping load to correct the operating criteria violations. Thus, the criteria violations are simply a proxy for loss of load, which TPL-001 is aimed at avoiding.

In generation deliverability studies, operating criteria violations can be mitigated simply by reducing some of the generation whose deliverability is being studied. Such a reduction will not lead to loss of load since the system is planned to have significantly more generation (at least 15% more generation) than total system demand throughout the CAISO balancing area. Hence, attempting to tie generation deliverability studies to the TPL001 standard by discussing violations of operating criteria is incorrect and misleading.

- b. **CAISO should consider the methodologies used by PJM and MISO (which cover more than half the country).** There are no NERC or FERC standards, or even guidelines, regarding deliverability study methodology and requirements; thus, methodologies have typically been developed by system operators. In that regard, CAISO's deliverability assessment methodology, originally inspired by the PJM approach, has departed substantially from those of its fellow system operators in several important areas. We discuss the approaches of PJM and MISO below, as summarized the table below.

Low-risk vs. high-risk system conditions. Deliverability studies are focused on loss of generation, not loss of load. CAISO is reasonably concerned that loss of generation could lead to loss of load; however, this concern is only valid during times of high system need (i.e., evening summer hours, which is anticipated to remain the high-risk period for many years for California⁵). Indeed, the CAISO paper notes (at p. 4) that the purpose of the deliverability analysis is to ensure the availability of sufficient resources “under stressed system conditions.” This is the only time that all RA resources are potentially needed to meet the demand (and, in addition, operating reserves are available); many fewer resources are needed during low-risk hours outside of this time frame. Therefore, CAISO should consider, in the stakeholder process, whether it should apply only a high system need (HSN) test and drop its test for low-risk hours (such as the secondary system need, SSN, test) for the on-peak-deliverability assessment. This would make CAISO's approach consistent with the deliverability assessment methodologies of both PJM and MISO, which study only one scenario that is equivalent to HSN.

N-1 vs. N-2. Similarly, CAISO should consider whether to abandon its N-2 assumption for its on-peak-deliverability assessment. An N-2 condition is an extremely rare operating condition; assuming that such a condition would coincide with the HSN (or SSN) scenario and with a lack of sufficient generation capacity in other parts of the system to meet the peak scenario demand, is simply inconsistent with any system operating experience.⁶

⁵ The high-system-need test will evolve as high-risk periods evolve, so there is no need to anticipate other periods that may, someday, become high-risk as suggested on p. 5 of the paper (“It (is) necessary to consider the ability of the transmission system to deliver generation to load during a broader range of conditions as opposed to focusing exclusively on an examination of peak load conditions”).

⁶ For example, an N-2 condition was not present during the stressed system conditions experienced in August 2020 and September 2022, nor were there any unusual dispatch conditions or extensive resource curtailments.

Again, abandoning the N-2 condition for the on-peak-deliverability assessment would make CAISO's approach consistent with PJM's and MISO's methodologies,⁷ none of which study N-2 for their deliverability (capacity designation) studies.

CAISO should elaborate on the December paper's discussion of a contingency analysis involving loss of the Windhub transmission lines. CalWEA generally supports limiting deliverability from specific resource pockets that are in a corner of the system; however, the purpose of CAISO's reference to this special condition is not clear.

Dispatch assumptions. As discussed under 3 above, CAISO should also revisit its dispatch assumptions, which are also incongruous with those of PJM and MISO as noted above and in the table below.

Assumed study area. CAISO includes a more expansive set of resources in a study area than do the other system operators. These assumptions of each system operator are summarized in the table below.

Local constraint areas. The CAISO's paper notes a concern that CalWEA has previously raised, that resources in local constrained areas are deemed as unable to provide local capacity if they cannot (under the current methodology) deliver into areas of the grid outside of the locally constrained area. CAISO states (at p. 4) that there have been no cases where such a situation has driven network upgrades between local capacity areas. Likely not, because no generator could afford to pay for such upgrades; however, many resources, that could have been developed to meet local capacity needs, potentially in competition with existing local capacity resources, have not been built as a result. As a result, we propose, CAISO and stakeholders consider, in the upcoming process, whether resources in locally constrained load areas should be qualified to provide RA capacity in the local area (only) but not allowed to provide system RA capacity, hence freeing existing RA resources in the constrained area to provide RA capacity to LSEs all over the system.

5. Please provide any additional comments you have on the deliverability challenges.

- a. **Curtailment Concerns.** CAISO and stakeholders should consider whether significant generator curtailments would occur if the SSN test were to be eliminated. The Queue contains hundreds of proposed stand-alone storage and storage/solar projects, widely dispersed across the CAISO grid. CalWEA believes that deliverability reforms would allow storage to be built in high-congestion resource areas that would address curtailment under SSN and other operating scenarios. This natural solution can be tested in a production simulation studies by CAISO (or its consultant) as part of the TPP process. Any needed economic upgrades identified by the SSN test, can planned for, and constructed in that fashion.

⁷ The CAISO's December paper (at p. 6) erroneously states that PJM and MISO assume an N-2 condition. This is not an issue of different study processes or terminology.

b. **CAISO resource constraints.** CalWEA understands that CAISO is resource-constrained due to staffing shortages. However, adopting the deliverability reforms proposed above will immediately reduce the CAISO's workload in the following ways:

- Using NQC rather than the CAISO exceedance figures for VERs' dispatch eliminates the need to evaluate exceedance numbers particularly as the migration to 24-hourly RA framework continues;
- Eliminating the SSN scenario will reduce one component of CAISO's deliverability assessment methodology;
- Eliminating the N-2 study condition will reduce another component of CAISO's deliverability assessment methodology; and
- Providing stakeholders with clarity on deliverability and a path forward will reduce the number of individual discussion requests CAISO receives from interconnection customers.

In conclusion, CalWEA believes that any challenges related to studying and implementing deliverability reforms will prove well worth the effort, since increasing the availability of TPD capacity will be essential to cost-effectively achieving the state's twin goals of ensuring reliability while reducing greenhouse gases. Moreover, such reforms will add new resources to the grid (including many dispatchable storage resources), which will alleviate the challenges that the CAISO has faced during extreme weather events in recent years.