

Off-Peak Deliverability Assessment Methodology

Purpose

Wind generation has a production profile with large amounts of production during the off-peak period which occurs during hours when customer demand is lowest. While the On-Peak Deliverability Assessment will ensure that the wind generation can be delivered during the on-peak period, it is not an adequate test for ensuring the deliverability of the wind generation during the off-peak period. The Off-Peak Deliverability Assessment is intended to supplement the On-Peak Deliverability Assessment to ensure that generation with uncontrollable energy production profiles that include a substantial amount of production during the off-peak period will generally be deliverable during all periods of the year. This study is required by Section 6.3.2.2 of the new GIPR LGIP.

Tariff Excerpt

6.3.2.2 Off-Peak Deliverability Assessment.

The CAISO, in coordination with the applicable Participating TO(s), shall perform an Off-Peak Deliverability Assessment for Interconnection Customers selecting Full Capacity Deliverability Status in their Interconnection Requests to determine Delivery Network Upgrades in addition to those identified in the On-Peak Deliverability Assessment, if any, for a Group Study or individual Phase I Interconnection Study that includes one or more Location Constrained Resource Interconnection Generators (LCRIG), where the fuel source or source of energy for the LCRIG substantially occurs during off-peak conditions. Delivery Network Upgrades will be identified under this Section to ensure that the full maximum megawatt electrical output of each proposed new LCRIG or the amount of megawatt increase in the generating capacity of each existing LCRIG as listed by the Interconnection Customer in its Interconnection Request, whether studied individually or as a Group Study, is deliverable to the aggregate of Load on the CAISO Controlled Grid under the Generation dispatch conditions studied. The methodology for the Off-Peak Deliverability Assessment will be published on the CAISO Website or, if applicable, included in a CAISO Business Practice Manual.

At the CAISO's discretion, an additional Off-Peak Deliverability Assessment may be performed to estimate the MW of deliverable generation capacity from the LCRIG studied individually or from the Group Study if the highest cost, or any other, Delivery Network Upgrade component were removed from the preliminary Delivery Network Upgrade plan. This information is provided to allow Interconnection Customers to address at the Results Meeting potential modifications under LGIP Section 6.7.2 or change the Interconnection Request's Full Capacity Deliverability Status for purposes of financing under LGIP Section 12.3.1.

The cost of all Delivery Network Upgrades identified in the Off-Peak Deliverability Assessment as part of Phase I Interconnection Study shall be estimated in accordance with LGIP Section 6.4. The estimated costs of Delivery Network Upgrades identified in the Off-Peak Deliverability Assessment shall be assigned to each Interconnection Request included in the Group Study or studied individually based on the flow impact of each such LCRIG on the Delivery Network Upgrades as determined by the Generation distribution factor methodology set forth in the Off-Peak Deliverability Assessment methodology.

Overview

During the off peak load period, CAISO system load is between 40% to 60% of summer peak load. As a result, only the lowest cost generation is online and dispatched above their minimum output. The off-peak deliverability study should reflect this reality. In addition, because replacement generation is practically always available during the off-peak, even low cost generation that has a controllable fuel source should be reduced without regard to marginal economic cost in order to mitigate transmission constraints found during the analysis. However, generation that does not have a controllable fuel source (e.g. wind and solar) should be assumed to be running at its expected output during the analysis.

- A review of wind production data indicates that wind generation can produce at its maximum nameplate capacity for a large number of hours during the off-peak load period.
- Saturday, Sunday and Holidays are typically considered to be within the off-peak load period.

A review of solar generation production data indicates that solar generation can produce near its nameplate capacity for a large number of hours during the weekend portion of the off-peak load period.

Off-Peak Deliverability Base Case Modeling Assumptions:

Basic scenario: Spring weekend approximately 12:00 PM with high hydro conditions.

Alternate scenario: Fall off-peak import conditions from Arizona to California.

- Wind generation at its maximum nameplate output
- Solar generation at 85% of its nameplate output
- System load level at ~50% of peak
- Hydro generation at its high hydro dispatch level for the spring off-peak load period
- Gas fired combustion turbines off-line
- Gas fired combined cycle units at minimum load or off-line
- QF's at historical output for off-peak period
- Imports at average historical flows for off-peak period
 - Average over at least a one month period
 - Load level between 45% to 60% of annual peak
 - Select period with highest flows
- Model Delivery and Reliability Network Upgrades identified in the On-Peak deliverability assessment and reliability assessment respectively.
- Only forced transmission outages will be considered.

Study Procedures:

- Dispatchable generation that relieves constraints should be dispatched to relieve identified constraints, unless the same generation also exacerbates other identified constraints.

- For each identified thermally constrained facility, identify LCRIF IC's that have a DFAX¹ of 5% or greater on that facility or a Flow Impact of greater than 5% of the facility. These LCRIF IC's will be linked to this constraint and related upgrades for cost allocation purposes.
- If the delivery of output from proposed new generation projects results in voltage or stability problems under generation dispatch scenarios consistent with this procedure, then these problems must be mitigated in order to ensure the deliverability of these new generation projects.

¹ DFAX is primarily a characteristic of the network model. Since the network model in the on-peak case and the off-peak case is identical, the DFAX's previously calculated using the summer peak case can be used for the off-peak case as well. In addition, any Delivery Network Upgrades identified in the Off-Peak Deliverability Assessment will be subsequently modeled in the on-peak case and DFAXs on the additional upgrades will be calculated.