

ISO New England has identified an issue with the real-time dispatch of generation. The initial conditions for each time interval for the real-time dispatch software that produces Desired Dispatch Points (DDPs) for generators are based on the latest Energy Management System (EMS) State Estimator solution. The EMS State Estimator solution utilizes, among other things, field telemetry as an input. Field telemetry inherently has a degree of error, and one of the reasons for using a State Estimator is that its solution minimizes these errors across the entire system.

The ISO's State Estimator (as described in Market Rule 1 and Manual 11) is an application that has been in use successfully for a number of years. The Estimator is the primary security analysis tool that deals with the recognition of and management of transmission related system operations. In this context, the small anomalies in differences between generator telemetered data and estimated generator outputs that the State Estimator identifies has not been an issue. With the implementation of SMD and LMPs, the requirement to simultaneously manage transmission and generation dispatch with a complete and consistent set of data has placed a higher level of importance on all aspects of the Estimator solution. As such, the small deviations between generator telemetry and the results produced by the State Estimator have become more significant.

Under SMD, the real-time dispatch software does not constrain the dispatch to the operating limits if the generator's actual output is not within the operating limits. The Lead Participant/Designated Entity is responsible for maintaining the operating limits through redeclarations to the ISO, and is also responsible for maintaining operation within those operating limits.

What we have observed with the SMD software are instances where the State Estimator solution will, at times, produce values that may differ from the generator's output as measured by field telemetry. If the State Estimator solution is outside the generator's operating limits (i.e., greater than EcoMax or less than EcoMin), and operation at these values would otherwise be economic, the use of these values by the dispatch software may result in DDPs that are inconsistent with the generator's operating limits. This problem is not an issue when the DDP produced by the dispatch software is within operating limits.

The ISO has recognized the importance of this issue and is in the process of devising a permanent solution. This solution may require additional metering requirements, calibration standards and audits of field telemetry as well as a number of software changes or business process changes with the generator Designated Entities. The ISO will be working with Participants to assess potential solutions as they are identified.

As an interim solution, we recommend that when a generator receives a DDP that is greater than the EcoMax, that the generator instead operate at EcoMax.

We also recommend that when a generator receives a DDP that is less than the EcoMin, that the generator instead operate at EcoMin. Please note that operating limits must reflect the physical capability of the generator (unless self-scheduling), and a redeclaration may be the appropriate remedy in certain situations as described in the examples below.

As a part of this interim solution, the ISO will be monitoring the real time application of the “Not Following DDP” flags and ensuring that the flags are set appropriately for the dispatch instructions issued. Generators that receive DDPs that are above or below operating limits and continue to operate at the appropriate limit will not be penalized for not following dispatch instructions. The “Not following DDP” flags may continue to be seen on the RIG in these instances, but will be removed prior to the settlement process. This is similar to the approach for excess generation as described in Manual 11, in the last paragraph of Section 2.5.16.2.

Examples:

General Assumptions:

EcoMin = 100MW	Offer price at EcoMin is \$40/MW
EcoMax = 200 MW	Offer price at EcoMax is \$70/MW.

Case A:

Actual output per telemetry = 200 MW
State Estimated Solution = 204 MW
Ex-ante nodal price at the generator node = \$80/MWHr

In this case, the UDS solution would produce a DDP of 204 MW because, based on the State Estimated value, the generator is operating above its EcoMax and a DDP back to EcoMax would make the unit less economic relative to the ex-ante nodal dispatch rate.

Based on the interim solution, this generator should operate in this example at 200 MW or redeclare the EcoMax to 204 MW if the generator is physically capable of operation at 204 MW.

Case B:

Actual output per telemetry = 103 MW
State Estimated Solution = 96 MW
Ex-ante nodal price at the generator node = \$30/MWHr

In this case, the UDS solution would produce a DDP of 96 MW because, based on the State Estimated value, the generator is operating below its EcoMin and a DDP back to EcoMin would make the unit more uneconomic relative to the ex-ante nodal dispatch rate.

Based on the interim solution, this generator should operate in this example at 100 MW or redeclare the EcoMin to 103 MW if physically unable to operate below 103 MW.

Please note if this generator had submitted a self-schedule and was in this condition, that the rules require the generator to operate at the self-schedule or EcoMin, and a redeclaration would not be allowed in this case.