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| NPRR Number | [1190](https://www.ercot.com/mktrules/issues/NPRR1190) | NPRR Title | High Dispatch Limit Override Provision for Increased Load Serving Entity Costs |
| Date of Decision | June 13, 2024 |
| Action | Recommended Approval |
| Timeline  | Normal |
| Estimated Impacts | Cost/Budgetary: None Project Duration: Not applicable  |
| Proposed Effective Date | First of the month following Public Utility Commission of Texas (PUCT) approval |
| Priority and Rank Assigned | Not applicable |
| Nodal Protocol Sections Requiring Revision  | 3.8.1, Split Generation Resources6.6.3.6, Real-Time High Dispatch Limit Override Energy Payment  |
| Related Documents Requiring Revision/Related Revision Requests | None |
| Revision Description | This Nodal Protocol Revision Request (NPRR) adds a provision for recovery of a demonstrable financial loss arising from a manual High Dispatch Limit (HDL) override to reduce real power output, in the case when that output is intended to meet Qualified Scheduling Entity (QSE) Load obligations. |
| Reason for Revision |  [Strategic Plan](https://www.ercot.com/files/docs/2023/08/25/ERCOT-Strategic-Plan-2024-2028.pdf) Objective 1 – Be an industry leader for grid reliability and resilience [Strategic Plan](https://www.ercot.com/files/docs/2023/08/25/ERCOT-Strategic-Plan-2024-2028.pdf) Objective 2 - Enhance the ERCOT region’s economic competitiveness with respect to trends in wholesale power rates and retail electricity prices to consumers [Strategic Plan](https://www.ercot.com/files/docs/2023/08/25/ERCOT-Strategic-Plan-2024-2028.pdf) Objective 3 - Advance ERCOT, Inc. as an independent leading industry expert and an employer of choice by fostering innovation, investing in our people, and emphasizing the importance of our mission General system and/or process improvement(s) Regulatory requirements ERCOT Board/PUCT Directive*(please select ONLY ONE – if more than one apply, please select the ONE that is most relevant)* |
| Justification of Reason for Revision and Market Impacts | Section 6.6.3.6 currently allows for a QSE to file a timely dispute to recover a demonstrable financial loss stemming from a manual HDL override from the ERCOT Operator. In defining demonstrable financial losses, and in distinguishing these from opportunity costs which are not to be compensated, the current Protocol language allows for compensation for losses on Day-Ahead Market (DAM) obligations and on bilateral contracts that were affected by the HDL override. Non-Opt-In Entities (NOIEs) are bound by obligations to serve Load within their service territories, and generation supports this obligation in an arrangement akin to self-arrangement. When Security-Constrained Economic Dispatch (SCED)-dispatched generation would offset NOIE Load, and a manual HDL override reduces actual generation output, the NOIE incurs a concrete realized loss which is not an opportunity cost. The revised language would allow compensation for such a loss. The revision accounts for a compensable demonstrable financial loss when such loss is incurred by a NOIE due to ERCOT-instructed generation curtailment by an HDL override, and when revenue from that generation is regularly used to offset costs associated with serving that NOIE’s Load. Section 3.8.1 describes obligations of the Master QSE of any Split Generation Resource. The revision provides that a Master QSE shall communicate manual High Dispatch Limit override instructions to all other QSEs that represent the Split Generation Resource. Such instructions shall be received by the Master QSE only, but such instructions allow for a dispute process for each QSE to recoup financial losses due to the HDL override. The revision would support all QSEs in meeting necessary timelines for the efficient application of Section 6.6.3.6. |
| PRS Decision | On 8/10/23, PRS voted unanimously to table NPRR1190 and refer the issue to WMS. All Market Segments participated in the vote.On 5/9/24, PRS voted to recommend approval of NPRR1190 as amended by the 3/26/24 Reliant comments. There were four opposing votes from the Consumer (4) (Residential, OPUC, City of Eastland, Occidental) Market Segment and eight abstentions from the Cooperative (PEC), Independent Generator (4) (Jupiter Power, NextEra Energy, ENGIE, EDF Renewables), Independent Power Marketer (IPM) (2) (Tenaska, SENA), and Investor Owned Utility (IOU) (Linebacker Power) Market Segments. All Market Segments participated in the vote.On 6/13/24, PRS voted to endorse and forward to TAC the 5/9/24 PRS Report and 5/31/24 Impact Analysis for NPRR1190. There was one opposing vote from the Consumer (OPUC) Market Segment and two abstentions from the Consumer (Occidental) and IPM (DC Energy) Market Segments. All Market Segments participated in the vote. |
| Summary of PRS Discussion | On 8/10/23, one of the sponsors provided an overview of NPRR1190. Participants questioned whether alternative approaches to this issue might already exist, such as participation in the DAM, and requested additional review by WMS.On 5/9/24, participants noted the WMS endorsement of NPRR1190 as amended by the 3/26/24 Reliant comments. On 6/13/24, there was no discussion. |

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| **Opinions** |
| Credit Review | ERCOT Credit Staff and CFSG have reviewed NPRR1190 and do not believe that it requires changes to credit monitoring activity or the calculation of liability. |
| Independent Market Monitor Opinion | To be determined |
| ERCOT Opinion | ERCOT supports approval of NPRR1190. |
| ERCOT Market Impact Statement | ERCOT Staff has reviewed NPRR1190 and believes the market impact for this NPRR provides QSEs an additional opportunity to recover demonstrable financial losses stemming from an HDL override under certain conditions that previously were not allowed. |

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| Sponsor |
| Name | Alicia Loving, David Kee, Jose Gaytan, Russell Franklin, Ashley Cotton  |
| E-mail Address | Alicia.Loving@austinenergy.com, DEKee@cpsenergy.com, jose.gaytan@dmepower.com, rfranklin@gpltexas.org, acotton@geus.org  |
| Company | Austin Energy, CPS Energy, Denton Municipal Electric, Garland Power and Light, Greenville Electric Utility System (Joint Sponsors) |
| Phone Number | 512-322-6188 |
| Cell Number | 917-697-5723, 210-667-5206, 512-431-4597, 469-442-7430, 903-453-3825 |
| Market Segment | Municipal |

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| **Market Rules Staff Contact** |
| **Name** | Cory Phillips |
| **E-Mail Address** | cory.phillips@ercot.com |
| **Phone Number** | 512-248-6464 |

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| **Comments Received** |
| Comment Author | **Comment Summary** |
| WMS 090723 | Requested PRS continue to table NPRR1190 for further review by the Wholesale Market Working Group (WMWG) |
| Residential Consumer 111723 | Proposed edits to narrow the scope of NPRR1190 |
| Reliant 120423 | Proposed edits to expand NPRR1190 to include QSEs rather than only NOIEs  |
| ERCOT 030424 | Responded to prior commenters and provided some context for how the current Section 6.6.3.6 language functions |
| Reliant 032624 | Provided additional edits to add a QSE attestation rather than requiring them to submit contracts |
| ERCOT 032724 | Provided additional clarifying edits to the 11/17/23 Residential Consumer comments |
| WMS 050224 | Endorsed NPRR1190 as amended by the 3/26/24 Reliant comments |

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| **Market Rules Notes** |

Please note the baseline Protocol language in the following sections has been updated to reflect the incorporation of the following NPRRs into the Protocols:

* NPRR1185, HDL Override Payment Provisions for Verbal Dispatch Instructions (incorporated 11/1/23)
	+ Section 6.6.3.6
* NPRR1186, Improvements Prior to the RTC+B Project for Better ESR State of Charge Awareness, Accounting, and Monitoring (incorporated 5/1/24)
	+ Section 3.8.1

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| Proposed Protocol Language Revision |

***3.8.1 Split Generation Resources***

(1) When a generation meter is split, as provided for in Section 10.3.2.1, Generation Resource Meter Splitting, two or more independent Generation Resources must be created in the ERCOT Network Operations Model according to Section 3.10.7.2, Modeling of Resources and Transmission Loads, to function in all respects as Split Generation Resources in ERCOT System operation. A Combined Cycle Train may not be registered in ERCOT as a Split Generation Resource. A Distribution Generation Resource (DGR) or Distribution Energy Storage Resource (DESR) may not be registered in ERCOT as a Split Generation Resource.

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| ***[NPRR1186: Replace paragraph (1) above with the following upon system implementation:]***(1) When a generation meter is split, as provided for in Section 10.3.2.1, Generation Resource Meter Splitting, two or more independent Generation Resources must be created in the ERCOT Network Operations Model according to Section 3.10.7.2, Modeling of Resources and Transmission Loads, to function in all respects as Split Generation Resources in ERCOT System operation. A Combined Cycle Train may not be registered in ERCOT as a Split Generation Resource. A Distribution Generation Resource (DGR) or Distribution Energy Storage Resource (DESR) may not be registered in ERCOT as a Split Generation Resource. An Energy Storage Resource (ESR) may not be registered in ERCOT as a Split Generation Resource.  |

(2) Each Qualified Scheduling Entity (QSE) representing a Split Generation Resource shall collect and shall submit to ERCOT the Resource Parameters defined under Section 3.7, Resource Parameters, for the Split Generation Resource it represents. The parameters provided must be consistent with the parameters submitted by each other QSE that represents a Split Generation Resource from the same Generation Resource. The parameters submitted for each Split Generation Resource for limits and ramp rates must be according to the capability of the Split Generation Resource represented by the QSE. Startup and shutdown times, time to change status and number of starts must be identical for all the Split Generation Resources from the same Generation Resource submitted by each QSE. ERCOT shall review data submitted by each QSE representing Split Generation Resources for consistency and notify each QSE of any errors.

(3) Each Split Generation Resource may be represented by a different QSE. The Resource Entities that own or control the Split Generation Resources from a single Generation Resource must designate a Master QSE. Each QSE representing a Split Generation Resource must comply in all respects to the requirements of a Generation Resource specified under these Protocols.

(4) The Master QSE shall:

(a) Serve as the Single Point of Contact for the Generation Resource, as required by Section 3.1.4.1, Single Point of Contact;

(b) Provide real-time telemetry for the total Generation Resource, as specified in Section 6.5.5.2, Operational Data Requirements;

(c) Receive Verbal Dispatch Instructions (VDIs) from ERCOT, as specified in Section 6.5.7.8, Dispatch Procedures; and

(d) Within five Business Days, notify all other QSEs that represent the Split Generation Resource when the Resource received an High Dispatch Limit (HDL) override instruction.

(5) Each QSE is responsible for representing its Split Generation Resource in its Current Operating Plan (COP). During the Reliability Unit Commitment (RUC) Study Periods, any conflict in the Resource Status of a Split Generation Resource in the COP is resolved according to the following:

(a) If a Split Generation Resource has a Resource Status of OUT for any hour in the COP, then any other QSEs’ COP entries for their Split Generation Resources from the same Generation Resource are also considered unavailable for the hour;

(b) If the QSEs for all Split Generation Resources from the same Generation Resource have submitted a COP and at least one of the QSEs has an On-Line Resource Status in a given hour, then the status for all Split Generation Resources for the Generation Resource is considered to be On-Line for that hour, except if any of the QSEs has indicated in the COP a Resource Status of OUT.

(6) Each QSE representing a Split Generation Resource shall update its individual Resource Status appropriately.

(7) Each QSE representing a Split Generation Resource may independently submit Energy Offer Curves and Three-Part Supply Offers. ERCOT shall treat each Split Generation Resource offer as a separate offer, except that all Split Generation Resources in a single Generation Resource must be committed or decommitted together.

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| ***[NPRR1007: Replace paragraph (7) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]***(7) Each QSE representing a Split Generation Resource may independently submit Energy Offer Curves, Ancillary Service Offers, and Three-Part Supply Offers. ERCOT shall treat each Split Generation Resource offer as a separate offer, except that all Split Generation Resources in a single Generation Resource must be committed or decommitted together. |

(8) Each QSE submitting verifiable cost data to ERCOT shall coordinate among all owners of a single Generation Resource to provide individual Split Generation Resource data consistent with the total verifiable cost of the entire Generation Resource. ERCOT may compare the total verifiable costs with other similarly situated Generation Resources to determine the reasonability of the cost.

**6.6.3.6** **Real-Time High Dispatch Limit Override Energy Payment**

(1) If ERCOT directs a reduction in a Generation Resource’s real power output by employing a manual High Dispatch Limit (HDL) override, or issues a Verbal Dispatch Instruction (VDI) to a Generation Resource to adjust its operation to produce the same effect, and the reduction causes the QSE to suffer a demonstrable financial loss, the QSE may be eligible for a Real-Time High Dispatch Limit Override Energy Payment, as calculated below, upon providing documented proof of that loss. In order to qualify for this payment the QSE must:

(a) Have complied with ERCOT Dispatch Instructions to reduce real power output;

(b) Have either received a SCED Base Point equal to the Resource’s HDL override value or received a SCED Base Point less than the Resource’s output level at the time of the instruction but greater than or equal to the instructed operating level specified in the VDI, during the 15-minute Settlement Interval;

(c) Have incurred a demonstrable financial loss (excluding lost opportunity costs) caused by the HDL override associated with one of the following:

(i) Variable cost components of DAM obligations;

(ii) QSEs representing Generation Resources in their portfolio with an HDL override for a Resource with a bilateral contract to sell energy at its Resource Node; or

(iii) Incremental costs incurred by a QSE in the Real-Time Market (RTM) to serve its Load if the HDL override for a Resource in the same QSE portfolio as the Load, causes the QSE to be short energy compared to its Load for the intervals affected by the HDL override; and

(d) File a timely Settlement and billing dispute in accordance with Section 9.14, Settlement and Billing Dispute Process, including the following items:

(i) An attestation signed by an officer or executive with authority to bind the QSE;

(ii) The dollar amount and calculation of the financial loss by Settlement Interval;

(iii) An explanation of the nature of the loss and how it was attributable to the HDL override or equivalent VDI issued by ERCOT; and

(iv) Sufficient documentation to support the QSE’s calculation of the amount of the financial loss.

(2) Notwithstanding the attestation requirement described in paragraph (1)(d) above, for QSEs filing a demonstrable financial loss per paragraph (1)(c)(iii) above, the attestation must also state that the Resource with the HDL override was serving the Load in the same QSE portfolio as the Resource, at the time the HDL override was issued.

(3) ERCOT may request additional supporting documentation or explanation with respect to the submitted materials within 15 Business Days of receipt. Additional information requested by ERCOT must be provided by the QSE within 15 business days of ERCOT’s request. ERCOT will provide Notice of its acceptance or rejection of the claim for the High Dispatch Limit Override Energy Payment within 15 Business Days of the updated submission.

(4) The Energy Offer Curve used to calculate the Real-Time High Dispatch Limit Override Energy Payment will be the most recent valid Energy Offer Curve received by ERCOT that was effective for the disputed interval(s) when the HDL override or equivalent VDI was issued. If no curve exists for the interval being disputed, ERCOT will use the most recent valid Energy Offer Curve received before the HDL override or equivalent VDI was issued for an interval prior to the disputed interval(s).

The payment shall be calculated as follows:

**HDLOEAMT *q, r, p, i* = (-1) \* Min {HDLOAL *q, r, p, i*, Max(0, ((RTSPP *p, i* – RTRSVPOR *i* – RTRDP *i* – RTEOCOST *q, r, i*) \* HDLOQTY *q, r, p, i* ))}**

Where:

HDLOQTY *q, r, p, i* = Max(0, (¼ (HDLOBRKP *q, r, p, i* – AVGHDL *q, r, p, i*)))

HDLOBRKP *q, r, p, i* = Min(AVGHASL *q, r, p, i* , HDLOBRKPCP *q, r, p, i* )

The above variables are defined as follows:

| **Variable** | **Unit** | **Definition** |
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| HDLOAL ***q, r, p, i*** | $ | *High Dispatch Limit override attested losses*—The financial loss to the QSE due to the HDL override as attested by the QSE in accordance with paragraph (1)(d) above. |
| HDLOEAMT ***q, r, p, i*** | $ | *High Dispatch Limit override energy amount per QSE per Generation Resource*—The payment to QSE *q* for an ERCOT-issued HDL override or equivalent VDI for Generation Resource *r* at Settlement Point *p* for the 15-minute Settlement Interval *i*. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| HDLOBRKP ***q, r, p, i*** | MW | *High Dispatch Limit override break point per QSE per Resource*—The point on the Energy Offer Curve corresponding to the lesser of the AVGHASL or the interception between the RTSPP of the Generation Resource *r* represented by QSE *q* minus the Real-Time Reserve Price for On-Line Reserves and the Real-Time On-Line Reliability Deployment Price and the Energy Offer Curve of Generation Resource *r* represented by QSE *q*, for the 15-minute Settlement Interval *i*. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| AVGHDL ***q, r, p, i*** | MW | *Average High Dispatch Limit per QSE per Settlement Point per Resource*—The time-weighted average of all 4-second HDL values calculated by the Resource Limit Calculator, subject to the maximum of the manual HDL override or equivalent VDI and the telemetered output or consumption, for the Generation Resource or Controllable Load Resource *r* represented by QSE *q* at Settlement Point *p* within the 15-minute Settlement Interval *i*.  For a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.  |
| AVGHASL ***q, r, p, i*** | MW | *Average High Ancillary Service Limit per QSE per Settlement Point per Resource*—The time-weighted average High Ancillary Service Limit (HASL) calculated every four seconds by the Resource Limit Calculator for the Generation Resource or Controllable Load Resource *r* represented by QSE *q* at Settlement Point *p* within the 15-minute Settlement Interval *i*.  For a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train. In the case of a VDI that is equivalent to an HDL override, this value is set equal to the HASL of Generation Resource or Controllable Load Resource *r* at the time that the VDI is issued to the QSE. |
| HDLOBRKPCP*q, r, p, i* | MW | *High Dispatch Limit override break point at clearing price per QSE per Resource*—The MW value on the Energy Offer Curve corresponding to the Real-Time Settlement Point Price of Generation Resource *r* represented by QSE *q* at Settlement Point *p* minus the Real-Time Reserve Price for On-Line Reserves and the Real-Time On-Line Reliability Deployment Price. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| RTEOCOST *q, r, i* | $/MWh | Real-Time Energy Offer Curve Cost Cap—The Energy Offer Curve Cost Cap for Resource *r* represented by QSE *q*, for the Resource’s generation above the LSL for the Settlement Interval *i*. See Section 4.4.9.3.3, Energy Offer Curve Cost Caps. Where for a Combined Cycle Train, the Resource *r* is the Combined Cycle Train. |
| HDLOQTY *q, r, p, i* | MWh | *High Dispatch Limit override quantity per QSE per Generation Resource—*The difference between the HDLOBRKP and the AVGHDL due to an ERCOT-issued HDL override or equivalent VDI for Generation Resource *r* represented by QSE *q* at Settlement Point *p* for the 15-minute Settlement Interval *i*. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| RTSPP *p, i* | $/MWh | *Real-Time Settlement Point Price per Settlement Point*—The Real-Time Settlement Point Price at Settlement Point *p*, for the 15-minute Settlement Interval *i*. |
| RTRSVPOR *i* | $/MWh | *Real-Time Reserve Price for On-Line Reserves*⎯The Real-Time Reserve Price for On-Line Reserves for the 15-minute Settlement Interval *i*. |
| RTRDP *i* | $/MWh | *Real-Time On-Line Reliability Deployment Price* ⎯The Real-Time price for the 15-minute Settlement Interval *i*, reflecting the impact of reliability deployments on energy prices that is calculated from the Real-Time On-Line Reliability Deployment Price Adder. |
| *q* | none | A QSE. |
| *r* | none | A Generation Resource. |
| *p* | none | A Resource Node Settlement Point. |
| *i* | none | A 15-minute Settlement Interval. |

(5) The total compensation to each QSE for an HDL override for the 15-minute Settlement Interval is calculated as follows:

**HDLOEAMTQSETOT *q, i*  = HDLOEAMT *q, r, p, i***

The above variables are defined as follows:

| **Variable** | **Unit** | **Definition** |
| --- | --- | --- |
| HDLOEAMT *q, r, p, i* | $ | *High Dispatch Limit override energy amount per QSE per Generation Resource*—The payment to QSE *q* for an ERCOT-issued HDL override or equivalent VDI for Generation Resource *r* at Settlement Point *p* for the 15-minute Settlement Interval *i*. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| HDLOEAMTQSETOT *q, i* | $ | *High Dispatch Limit override energy amount QSE total per QSE*—The total of the energy payments to QSE *q* as compensation for HDL overrides for this QSE for the 15-minute Settlement Interval *i*. |
| *q* | none | A QSE. |
| *r* | none | A Generation Resource. |
| *p* | none | A Resource Node Settlement Point. |
| *i* | none | A 15-minute Settlement Interval. |

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| ***[NPRR1010: Replace Section 6.6.3.6 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]*****6.6.3.6 Real-Time High Dispatch Limit Override Energy Payment** (1) If ERCOT directs a reduction in a Generation Resource’s real power output by employing a manual High Dispatch Limit (HDL) override, or issues a Verbal Dispatch Instruction (VDI) to a Generation Resource to adjust its operation to produce the same effect, and the reduction causes the QSE to suffer a demonstrable financial loss, the QSE may be eligible for a Real-Time High Dispatch Limit Override Energy Payment, as calculated below, upon providing documented proof of that loss. In order to qualify for this payment the QSE must:(a) Have complied with ERCOT Dispatch Instructions to reduce real power output;(b) Have either received a SCED Base Point equal to the Resource’s HDL override value or received a SCED Base Point less than the Resource’s output level at the time of the instruction but greater than or equal to the instructed operating level specified in the VDI, during the 15-minute Settlement Interval;(c) Have incurred a demonstrable financial loss (excluding lost opportunity costs) caused by the HDL override associated with one of the following:(i) Variable cost components of DAM obligations;(ii) QSEs representing only Generation Resources in their portfolio with an HDL override for a Resource with a bilateral contract to sell energy at its Resource Node;; or(iii) Incremental costs incurred by a QSE in the Real-Time Market (RTM) to serve its Load if the HDL override for a Resource in the same QSE portfolio as the Load, causes the QSE to be short energy compared to its Load; and(d) File a timely Settlement and billing dispute in accordance with Section 9.14, Settlement and Billing Dispute Process, including the following items: (i) An attestation signed by an officer or executive with authority to bind the QSE;(ii) The dollar amount and calculation of the financial loss by Settlement Interval;(iii) An explanation of the nature of the loss and how it was attributable to the HDL override or equivalent VDI issued by ERCOT; and (iv) Sufficient documentation to support the QSE’s calculation of the amount of the financial loss.(2) Notwithstanding the attestation requirement described in paragraph (1)(d) above, for QSEs filing a demonstrable financial loss per paragraph (1)(c)(iii) above, the attestation must also state that the Resource with the HDL override was serving the Load in the same QSE portfolio as the Resource, at the time the HDL override was issued.(3) ERCOT may request additional supporting documentation or explanation with respect to the submitted materials within 15 Business Days of receipt. Additional information requested by ERCOT must be provided by the QSE within 15 Business Days of ERCOT’s request. ERCOT will provide Notice of its acceptance or rejection of the claim for the High Dispatch Limit Override Energy Payment within 15 Business Days of the updated submission. (4) The Energy Offer Curve used to calculate the Real-Time High Dispatch Limit Override Energy Payment will be the most recent valid Energy Offer Curve received by ERCOT that was effective for the disputed interval(s) when the HDL override or equivalent VDI was issued. If no curve exists for the interval being disputed, ERCOT will use the most recent valid Energy Offer Curve received before the HDL override or equivalent VDI was issued for an interval prior to the disputed interval(s).(5) The amount recoverable under this section shall be offset by any Ancillary Service Imbalance revenues received by the QSE that the QSE would not have earned had ERCOT not issued an HDL override. The payment shall be calculated as follows: **HDLOEAMT *q, r, p, i* = (-1) \* Min {HDLOAL *q, r, p, i*, Max(0, ((RTSPP *p, i* – RTRDP *i* – RTEOCOST *q, r, i* ) \* HDLOQTY *q, r, p, i* ))}**Where:HDLOQTY *q, r, p, i* = Max(0, (¼ (HDLOBRKP *q, r, p, i* – AVGHDL *q, r, p, i*)))HDLOBRKP *q, r, p, i* = Min(AVGHSL *q, r, p, i*, HDLOBRKPCP *q, r, p, i* )The above variables are defined as follows:

| **Variable** | **Unit** | **Definition** |
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| HDLOAL ***q, r, p, i*** | $ | *High Dispatch Limit override attested losses*—The financial loss to the QSE due to the HDL override as attested by the QSE in accordance with paragraph (1)(d) above. |
| HDLOEAMT ***q, r, p, i*** | $ | *High Dispatch Limit override energy amount per QSE per Generation Resource*—The payment to QSE *q* for an ERCOT-issued HDL override or equivalent VDI for Generation Resource *r* at Settlement Point *p* for the 15-minute Settlement Interval *i*. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| HDLOBRKP ***q, r, p, i*** | MW | *High Dispatch Limit override break point per QSE per Resource*—The point on the Energy Offer Curve corresponding to the lesser of the AVGHSL or the interception between the RTSPP of the Generation Resource *r* represented by QSE *q* minus the Real-Time Reliability Deployment Price for Energy and the Energy Offer Curve of Generation Resource *r* represented by QSE *q*, for the 15-minute Settlement Interval *i*. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| AVGHDL ***q, r, p, i*** | MW | *Average High Dispatch Limit per QSE per Settlement Point per Resource*—The time-weighted average of all 4-second HDL values calculated by the Resource Limit Calculator, subject to the maximum of the manual HDL override or equivalent VDI and the telemetered output or consumption, for the Generation Resource or Controllable Load Resource *r* represented by QSE *q* at Settlement Point *p* within the 15-minute Settlement Interval *i*.  For a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.  |
| AVGHSL ***q, r, p, i*** | MW | *Average High Sustained Limit per QSE per Settlement Point per Resource*—The time-weighted average High Sustained Limit (HSL) for the Generation Resource or Controllable Load Resource *r* represented by QSE *q* at Settlement Point *p* within the 15-minute Settlement Interval *i*.  For a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train. In the case of a VDI that is equivalent to an HDL override, this value is set equal to the HSL of Generation Resource or Controllable Load Resource *r* at the time that the VDI is issued to the QSE. |
| HDLOBRKPCP*q, r, p, i* | MW | *High Dispatch Limit override break point at clearing price per QSE per Resource*—The MW value on the Energy Offer Curve corresponding to the Real-Time Settlement Point Price of Generation Resource *r* represented by QSE *q* at Settlement Point *p* minus the Real-Time Reliability Deployment Price for Energy. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| RTEOCOST *q, r, i* | $/MWh | *Real-Time Energy Offer Curve Cost Cap—*The Energy Offer Curve Cost Cap for Resource *r* represented by QSE *q*, for the Resource’s generation above the Low Sustained Limit (LSL) for the Settlement Interval *i*. See Section 4.4.9.3.3, Energy Offer Curve Cost Caps. Where for a Combined Cycle Train, the Resource *r* is the Combined Cycle Train. |
| HDLOQTY *q, r, p, i* | MWh | *High Dispatch Limit override quantity per QSE per Generation Resource—*The difference between the HDLOBRKP and the AVGHDL due to an ERCOT-issued HDL override or equivalent VDI for Generation Resource *r* represented by QSE *q* at Settlement Point *p* for the 15-minute Settlement Interval *i*. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| RTSPP *p, i* | $/MWh | *Real-Time Settlement Point Price per Settlement Point*—The Real-Time Settlement Point Price at Settlement Point *p*, for the 15-minute Settlement Interval *i*. |
| RTRDP *i* | $/MWh | *Real-Time Reliability Deployment Price* *for Energy*⎯The Real-Time price for the 15-minute Settlement Interval *i*, reflecting the impact of reliability deployments on energy prices that is calculated from the Real-Time Reliability Deployment Price Adder for Energy. |
| *q* | none | A QSE. |
| *r* | none | A Generation Resource. |
| *p* | none | A Resource Node Settlement Point. |
| *i* | none | A 15-minute Settlement Interval. |

(6) The total compensation to each QSE for an HDL override for the 15-minute Settlement Interval is calculated as follows:**HDLOEAMTQSETOT *q, i*  = HDLOEAMT *q, r, p, i***The above variables are defined as follows:

| **Variable** | **Unit** | **Definition** |
| --- | --- | --- |
| HDLOEAMT *q, r, p, i* | $ | *High Dispatch Limit override energy amount per QSE per Generation Resource*—The payment to QSE *q* for an ERCOT-issued HDL override or equivalent VDI for Generation Resource *r* at Settlement Point *p* for the 15-minute Settlement Interval *i*. For a combined cycle Resource, *r* is a Combined Cycle Train. |
| HDLOEAMTQSETOT *q, i* | $ | *High Dispatch Limit override energy amount QSE total per QSE*—The total of the energy payments to QSE *q* as compensation for HDL overrides for this QSE for the 15-minute Settlement Interval *i*. |
| *q* | none | A QSE. |
| *r* | none | A Generation Resource. |
| *p* | none | A Resource Node Settlement Point. |
| *i* | none | A 15-minute Settlement Interval. |

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