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| NPRR Number | [856](http://www.ercot.com/mktrules/issues/NPRR856) | NPRR Title | Treatment of OFFQS Status in Day-Ahead Make Whole and RUC Settlements |
| Date of Decision | June 14, 2018 |
| Action | Recommended Approval |
| Timeline  | Normal |
| Proposed Effective Date | Upon system implementation |
| Priority and Rank Assigned | Priority – 2018; Rank – 2230 |
| Nodal Protocol Sections Requiring Revision  | 2.1, Definitions4.6.2.3, Day-Ahead Make-Whole Settlements5.6.2, RUC Startup Cost Eligibility5.7.4.1.1, Capacity Shortfall Ratio Share |
| Related Documents Requiring Revision/Related Revision Requests | None |
| Revision Description | This Nodal Protocol Revision Request (NPRR) provides language for accurate Reliability Unit Commitment (RUC) and Day-Ahead make-whole Settlement of Quick Start Generation Resources (QSGRs). |
| Reason for Revision |  Addresses current operational issues. Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/news/presentations/2013/ERCOT%20Strat%20Plan%20FINAL%20112213.pdf) or directed by the ERCOT Board). Market efficiencies or enhancements Administrative Regulatory requirements Other: (explain)*(please select all that apply)* |
| Business Case | Startup Costs are not eligible for RUC Make-Whole Payments for QSGRs with a Current Operating Plan (COP) and a telemetered Resource Status of OFFQS. This NPRR incorporates language that allows these Qualified Scheduling Entities (QSEs) to be considered for Startup Cost eligibility in the RUC Make-Whole Payment under this scenario.This NPRR clarifies that for Day-Ahead make-whole Settlement purposes, the OFFQS status is currently considered an On-Line status and will be considered an Off-Line status after system implementation.This NPRR also clarifies that the OFFQS Resource Status is considered an On-Line status for purposes of the RUC Capacity-Short Charge.  |
| Credit Work Group Review | ERCOT Credit Staff and the Credit Work Group (Credit WG) have reviewed NPRR856 and do not believe that it requires changes to credit monitoring activity or the calculation of liability. |
| PRS Decision | On 12/14/17, PRS unanimously voted to table NPRR856 and refer the issue to WMS. All Market Segments were present for the vote. On 5/10/18, PRS unanimously voted to recommend approval of NPRR856 as amended by the 5/3/18 WMS comments. All Market Segments were present for the vote.On 6/14/18, PRS unanimously voted to endorse and forward to TAC the 5/10/18 PRS Report and Impact Analysis for NPRR856 with a recommended priority of 2018 and rank of 2230. All Market Segments were present for the vote. |
| Summary of PRS Discussion | On 12/14/17, there was no discussion.On 5/10/18, there was no discussion.On 6/14/18, there was no discussion. |

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| Market Segment | Not applicable |

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| **Comments Received** |
| Comment Author | **Comment Summary** |
| WMS 011118 | Requested PRS continue to table NPRR856 for further review by WMS |
| ERCOT 040918 | Proposed edits to maintain the current definition of QSE-Committed Interval until the system implementation of NPRR856 |
| WMS 050318 | Endorsed the 4/9/18 ERCOT comments with a clarifying edit to the proposed definition of QSE-Committed Interval |

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| Market Rules Notes |

None

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| Proposed Protocol Language Revision |

**2.1 DEFINITIONS**

**Qualified Scheduling Entity (QSE)-Committed Interval**

A Settlement Interval for which the QSE for a Resource has committed the Resource without a RUC instruction to commit it.

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| ***[NPRR856: Replace the above definition “Qualified Scheduling Entity (QSE)-Committed Interval” with the following upon system implementation:]*****Qualified Scheduling Entity (QSE)-Committed Interval**A Settlement Interval for which the QSE for a Resource has committed the Resource without a RUC instruction to commit it. For Settlement purposes, a Resource with a Current Operating Plan (COP) Resource Status of OFFQS will not be considered as QSE-committed for the Settlement Interval unless that interval has been committed due to a Day-Ahead Market (DAM) award for energy. |

**4.6.2.3 Day-Ahead Make-Whole Settlements**

(1) A QSE that has a Three-Part Supply Offer cleared in the DAM is eligible for a Day-Ahead Make-Whole Payment startup cost compensation, if, for the Resource associated with the offer:

(a) The generator’s breakers were open, as indicated by a telemetered Resource status of Off-Line, for at least five minutes during the Adjustment Period for the beginning of the DAM commitment;

(b) The generator’s breakers were closed, as indicated by a telemetered Resource status of On-Line, for at least one minute during the DAM commitment period; and

(c) The breaker open-close sequence, as indicated by the On-Line/Off-Line sequence from the telemetered Resource status, for which the QSE is eligible for startup cost compensation in the DAM or Reliability Unit Commitment (RUC) for the previous Operating Day does not qualify in meeting the criteria in items (a) and (b) above.

(d) The breaker open-close sequence for which the QSE is eligible for startup cost compensation in an earlier DAM commitment period within the same Operating Day does not qualify in meeting the criteria in items (a) and (b) above.

(2) Notwithstanding the eligibility criteria described in paragraph (1) above, a Resource will not be eligible for Day-Ahead Make-Whole Payment Startup Cost compensation if the Resource was considered by the DAM as not having a cost to start due to the DAM commitment period being contiguous with a self-committed hour, as described in Section 4.4.9.1, Three-Part Supply Offers.

(3) A QSE that has a Three-Part Supply Offer cleared in the DAM is eligible for Day-Ahead Make-Whole Payment energy cost compensation in a DAM-committed Operating Hour, if, for the Resource associated with the offer the generator’s breakers were closed, as indicated by a telemetered Resource Status of On-Line, for at least one minute during the DAM-committed Operating Hour.

(4) The Day-Ahead Make-Whole Payment guarantees the QSE that the total payment received from the DAM for a DAM-committed Resource is not less than the total cost calculated based on the Startup Cap, the Minimum Energy Cap, and the Energy Offer Curve capped by the Energy Offer Curve Cap defined under Section 4.4.9.3.3, Energy Offer Curve Caps for Make-Whole Calculation Purposes.

(5) If a Generation Resource is eligible for startup or energy cost compensation in the Day-Ahead Make-Whole payment, then Ancillary Service revenue from the hours committed in the DAM will be included in its make-whole calculation for that Resource.

 (6) For purposes of this Section 4.6.2.3, the telemetered Resource Status of OFFQS shall be considered as On-Line.

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| ***[NPRR856: Replace paragraph (6) above with the following upon system implementation:]***(6) For purposes of this Section 4.6.2.3, the telemetered Resource Status of OFFQS shall be considered as Off-Line. |

***5.6.2 RUC Startup Cost Eligibility***

(1) For purposes of this Section 5.6.2, all contiguous RUC-Committed Hours are considered as one RUC instruction. For each Resource, only one Startup Cost is eligible per block of contiguous RUC-Committed Hours.

(2) For a Resource’s Startup Costs in the Operating Day, per RUC instruction, to be included in the calculation of the RUC guarantee for that Operating Day, all the criteria below must be met:

(a) According to the Current Operating Plan (COP) and Trades Snapshot for the RUC process that committed the Resource, the Resource must not be QSE-committed in the Settlement Interval immediately before the designated start hour or after the last hour of the RUC instruction;

(b) A later RUC instruction or QSE commitment must not connect the designated start hour or last hour of the RUC instruction to a block of QSE-committed Intervals that was QSE-committed before the RUC instruction was given, according to the COP and Trades Snapshot for the RUC process that committed the Resource;

(c) The generation breakers must have been open, as indicated by a telemetered Resource Status of Off-Line, for at least five minutes during the six hours preceding the first RUC-Committed Hour; and

(d) The generation breakers must have been closed, as indicated by a telemetered Resource Status of On-Line, for at least one minute during the RUC commitment period or after the determined five-minute open breaker, as indicated by a telemetered Resource Status of Off-Line, in the six hours preceding the first RUC-Committed Hour.

(3) Notwithstanding paragraphs (2)(c) and (2)(d) above, the QSE of a RUC-committed Resource may submit a Settlement dispute for a Resource’s Startup Costs in the Operating Day, per RUC instruction, to be included in the calculation of the RUC guarantee for that Operating Day if the startup time for the RUC-committed Resource is greater than six hours. The dispute is subject to verification and approval by ERCOT based on the criteria below:

(a) The generation breakers must have been open, as indicated by a telemetered Resource Status of Off-Line, for at least five minutes between the time the QSE is notified of the RUC instruction and the first RUC-Committed Hour;

(b) The generation breakers must have been closed, as indicated by a telemetered Resource Status of On-Line, for at least one minute during the RUC commitment period or after the five-minute open breaker determined in item (a) above;

(c) The breaker open-close sequence from items (a) and (b) above does not make the Resource eligible for Startup Cost compensation in the Day-Ahead Market (DAM) or for any other contiguous block of RUC-Committed Hours; and

(d) The startup time used to process the dispute will be the startup time considered by the ERCOT Operator at the time the RUC instruction was issued.

(4) Notwithstanding the eligibility criteria described in paragraph (2) above, the QSE of a RUC-committed Quick Start Generation Resource (QSGR) may submit a Settlement dispute for a Resource’s Startup Costs in the Operating Day, per RUC instruction, to be included in the calculation of the RUC guarantee for that Operating Day if the start is found not eligible due to COP and/or Real-Time telemetry use of Resource Status OFFQS. The dispute is subject to verification and approval by ERCOT. The verification process will utilize the criteria described in paragraph (2) above with the OFFQS Resource Status considered as Off-Line.

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| ***[NPRR856: Replace paragraph (4) above with the following upon system implementation:]***(4) For purposes of this Section 5.6.2, the telemetered Resource Status of OFFQS shall be considered as Off-Line. |

***5.7.4.1.1 Capacity Shortfall Ratio Share***

(1) In calculating the amount short for each QSE, the Wind-powered Generation Resource Production Potential (WGRPP), as described in Section 4.2.2, Wind-Powered Generation Resource Production Potential, for a Wind-powered Generation Resource (WGR), or the PhotoVoltaic Generation Resource Production Potential (PVGRPP), as described in Section 4.2.3, PhotoVoltaic Generation Resource Production Potential, for a PhotoVoltaic Generation Resource (PVGR), at the time of RUC execution, shall be considered the available capacity of the WGR or PVGR when determining responsibility for the corresponding RUC charges, regardless of the Real-Time output of the WGR or PVGR. Therefore, the HASLSNAP variable used below shall be equal to the WGRPP and PVGRPP described above.

(2) In calculating the amount short for each QSE, the QSE must be given a capacity credit for non-Intermittent Renewable Resources (IRRs) that were given notice of decommitment within the two hours before the Operating Hour as a result of the RUC process by setting the HASLSNAP and HASLADJ variables used below equal to the HASLSNAP value for the Resource immediately before the decommitment instruction was given.

(3) In calculating the short amount for each QSE, if the High Ancillary Service Limit (HASL) for a Resource was credited to the QSE during the RUC snapshot but the Resource experiences a Forced Outage within two hours before the start of the Settlement Interval, then the HASL for that Resource is also credited to the QSE in the HASLADJ.

(4) In calculating the short amount for each QSE, if the DCIMPSNAP was credited to the QSE during the RUC snapshot but the entire Direct Current Tie (DC Tie) experiences a Forced Outage within two hours before the start of the Settlement Interval, then the DCIMPSNAP is also credited to the QSE in the DCIMPADJ.

(5) For Combined Cycle Generation Resources, if more than one Combined Cycle Generation Resource is shown On-Line in its COP for the same Settlement hour, then the provisions of paragraph (6)(a) of Section 3.9.1, Current Operating Plan (COP) Criteria, apply in the determination of the On-Line Combined Cycle Generation Resource for that Settlement hour.

(6) The capacity shortfall ratio share of a specific QSE for a particular RUC process is calculated, for a 15-minute Settlement Interval, as follows:

RUCSFRS*ruc,i,q* = RUCSF*ruc,i,q* / RUCSFTOT*ruc,i*

Where:

RUCSFTOT*ruc,i* = RUCSF*ruc,i,q*

(7) The RUC Shortfall in MW for one QSE for one 15-minute Settlement Interval is:

RUCSF*ruc,i,q* = Max (0, Max (RUCSFSNAP *ruc,q,i*, RUCSFADJ *ruc,q,i*) – RUCCAPCREDIT *q,i,z*)

(8) The RUC Shortfall in MW for one QSE for one 15-minute Settlement Interval, as measured at the snapshot, is:

RUCSFSNAP *ruc,q,i* = Max (0, ((RTAML *q,p,i* \* 4) +  RTDCEXP *q, p, i* – RUCCAPSNAP *ruc,q,i*))

(9) The amount of capacity that a QSE had according to the RUC snapshot for a 15-minute Settlement Interval is:

RUCCAPSNAP *ruc,q,i* = HASLSNAP*q,r,h* + (RUCCPSNAP*q,h* – RUCCSSNAP*q,h*) + (DAEP*q,p,h* –DAES*q,p,h*) + (RTQQEPSNAP*q,p,i* – RTQQESSNAP*q,p,i*) +  DCIMPSNAP *q, p, i*

(10) The RUC Shortfall in MW for one QSE for one 15-minute Settlement Interval, as measured at Real-Time, but including capacity from IRRs as seen in the RUC snapshot, is:

RUCSFADJ *ruc,q,i* = Max (0, ((RTAML*q,p,i*) \*4) +  RTDCEXP *q, p, i* – (HASLSNAP *ruc, q, r, h* + RUCCAPADJ*q,i*))

(11) The amount of capacity that a QSE had in Real-Time for a 15-minute Settlement Interval, excluding capacity from IRRs, is:

RUCCAPADJ*q,i* = HASLADJ*q,r,h* + (RUCCPADJ*q,h* – RUCCSADJ*q,h*) + (DAEP*q,p,h* – DAES*q,p,h*) + (RTQQEPADJ*q,p,i* – RTQQESADJ*q,p,i*) +  DCIMPADJ *q, p, i*

The above variables are defined as follows:

| **Variable** | **Unit** | **Definition** |
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| RUCSFRS*ruc,i,q* | none | *RUC Shortfall Ratio Share*—The ratio of the QSE’s capacity shortfall to the sum of all QSEs’ capacity shortfalls, for the RUC process, for the 15-minute Settlement Interval. |
| RUCSF*ruc,i,q* | MW | *RUC Shortfall*—The QSE *q*’s capacity shortfall for the RUC process for the 15-minute Settlement Interval. |
| RUCSFTOT*ruc,i* | MW | *RUC Shortfall Total*—The sum of all QSEs’ capacity shortfalls, for a RUC process, for a 15-minute Settlement Interval. |
| RUCSFSNAP*ruc,*q*,i* | MW | *RUC Shortfall at Snapshot*—The QSE *q*’s capacity shortfall according to the snapshot for the RUC process for the 15-minute Settlement Interval. |
| RUCSFADJ*ruc,q,i* | MW | *RUC Shortfall at Adjustment Period*—The QSE *q*’s Adjustment Period capacity shortfall, including capacity from IRRs as seen in the snapshot for the RUC process, for the 15-minute Settlement Interval. |
| RUCCAPCREDIT*q,i,z* | MW | *RUC Capacity Credit by QSE*—The capacity credit resulting from capacity paid through the RUC Capacity-Short Amount for the 15-minute Settlement Interval. |
| RTAML*q,p,i* | MWh | *Real-Time Adjusted Metered Load*—The QSE *q*’s Adjusted Metered Load (AML) at the Settlement Point *p* for the 15-minute Settlement Interval. |
| RUCCAPSNAP*ruc,q,i* | MW | *RUC Capacity Snapshot at time of RUC*—The amount of the QSE’s calculated capacity in the COP and Trades Snapshot for a 15-minute Settlement Interval.  |
| HASLSNAP*q,r,h* | MW | *High Ancillary Services Limit at Snapshot*—The HASL of the Resource *r* represented by the QSE *q*, according to the COP and Trades Snapshot for the RUC process for the hour that includes the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train. |
| RTDCEXP *q, p* | MW | *Real-Time DC Export per QSE per Settlement Point*—The aggregated DC Tie Schedule through DC Tie *p* submitted by QSE *q* that is under the Oklaunion Exemption as an exporter from the ERCOT Region, for the 15-minute Settlement Interval. |
| DCIMPADJ *q, p* | MW | *DC Import per QSE per Settlement Point*—The approved aggregated DC Tie Schedule submitted by QSE *q* as an importer into the ERCOT System through DC Tie *p* according to the Adjustment Period snapshot, for the 15-minute Settlement Interval. |
| DCIMPSNAP *q, p* | MW | *DC Import per QSE per Settlement Point*—The approved aggregated DC Tie Schedule submitted by QSE *q* as an importer into the ERCOT System through DC Tie *p*, according to the snapshot for the RUC process for the hour that includes the 15-minute Settlement Interval. |
| RUCCPSNAP*q,h* | MW | *RUC Capacity Purchase at Snapshot*—The QSE *q*’s capacity purchase, according to the COP and Trades Snapshot for the RUC process for the hour that includes the 15-minute Settlement Interval. |
| RUCCSSNAP*q,h* | MW | *RUC Capacity Sale at Snapshot*—The QSE *q*’s capacity sale, according to the COP and Trades Snapshot for the RUC process for the hour that includes the 15-minute Settlement Interval. |
| RUCCAPADJ*q,i* | MW | *RUC Capacity Snapshot during Adjustment Period*—The amount of the QSE’s calculated capacity in the RUC according to the COP and Trades Snapshot, excluding capacity for IRRs, at the end of the Adjustment Period for a 15-minute Settlement Interval |
| HASLADJ*q,r,h* | MW | *High Ancillary Services Limit at Adjustment Period*—The HASL of a non-IRR *r* represented by the QSE *q*, according to the Adjustment Period snapshot, for the hour that includes the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.  |
| RUCCPADJ*q,h* | MW | *RUC Capacity Purchase at Adjustment Period*—The QSE *q*’s capacity purchase, according to the Adjustment Period COP and Trades Snapshot for the hour that includes the 15-minute Settlement Interval. |
| RUCCSADJ*q,h* | MW | *RUC Capacity Sale at Adjustment Period*—The QSE *q*’s capacity sale, according to the Adjustment Period COP and Trades Snapshot for the hour that includes the 15-minute Settlement Interval. |
| DAEP*q,p,h* | MW | *Day-Ahead Energy Purchase*—The QSE *q*’s energy purchased in the DAM at the Settlement Point *p* for the hour that includes the 15-minute Settlement Interval. |
| DAES*q,p,h* | MW | *Day-Ahead Energy Sale*—The QSE *q*’s energy sold in the DAM at the Settlement Point *p* for the hour that includes the 15-minute Settlement Interval. |
| RTQQEPSNAP*q,p,i* | MW | *QSE-to-QSE Energy Purchase by QSE by point*—The QSE *q*’s Energy Trades in which the QSE is the buyer at the delivery Settlement Point *p* for the 15-minute Settlement Interval, in the COP and Trades Snapshot. |
| RTQQESSNAP*q,p,i* | MW | *QSE-to-QSE Energy Sale by QSE by point*—The QSE *q*’s Energy Trades in which the QSE is the seller at the delivery Settlement Point *p* for the 15-minute Settlement Interval, in the COP and Trades Snapshot. |
| RTQQEPADJ*q,p,i* | MW | *QSE-to-QSE Energy Purchase by QSE by point*—The QSE *q*’s Energy Trades in which the QSE is the buyer at the delivery Settlement Point *p* for the 15-minute Settlement Interval, in the last COP and Trades Snapshot at the end of the Adjustment Period for that Settlement Interval. |
| RTQQESADJ*q,p,i* | MW | *QSE-to-QSE Energy Sale by QSE by point*—The QSE *q*’s Energy Trades in which the QSE is the seller at the delivery Settlement Point *p* for the 15-minute Settlement Interval, in the last COP and Trades Snapshot at the end of the Adjustment Period for that Settlement Interval. |
| *q* | none | A QSE. |
| *p* | none | A Settlement Point. |
| *r* | none | A Generation Resource that is QSE-committed or planning to operate as a Quick Start Generation Resource (QSGR) for the Settlement Interval as shown by the Resource Status of OFFQS in the COP and Trades Snapshot and/or Adjustment Period snapshot; or RUC-decommitted for the Settlement Interval (subject to paragraphs (1) and (2) above). |
| *z* | none | A previous RUC process for the Operating Day. |
| *i* | none | A 15-minute Settlement Interval. |
| *h* | none | The hour that includes the Settlement Interval *i*.  |
| *ruc* | none | The RUC process for which this RUC Shortfall Ratio Share is calculated. |