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| NPRR Number | [1239](https://www.ercot.com/mktrules/issues/NPRR1239) | NPRR Title | Access to Market Information |
| Date Posted | | July 2, 2024 | |
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| Requested Resolution | | Normal | |
| Nodal Protocol Sections Requiring Revision | | 3.19.3, Long-Term Constraint Competitiveness Test  4.4.9.4.1, Mitigated Offer Cap  4.5.3, Communicating DAM Results  5.3, ERCOT Security Sequence Responsibilities  5.5.1, Security Sequence  5.5.2, Reliability Unit Commitment (RUC) Process  5.7.4, RUC Make-Whole Charges  6.5.7.1.13, Data Inputs and Outputs for the Real-Time Sequence and SCED  6.5.7.6.2.1, Deployment of Regulation Service  6.5.9.5.1, Registration and Posting of BLT Points  8.1, QSE and Resource Performance Monitoring  8.1.2, Current Operating Plan (COP) Performance Requirements  8.5.1.2, Reporting  9.14.4, ERCOT Processing of Disputes  9.14.4.1.6, ADR  9.19, Default Uplift Invoices  11.5.1.2, TSP and/or DSP Load Data Posting/Availability  11.5.2.2, General Public Data Posting/Availability  12.3, MIS Administrative and Design Requirements | |
| Related Documents Requiring Revision/Related Revision Requests | | Nodal Operating Guide Revision Request (NOGRR) 266, Related to NPRR1239, Access to Market Information | |
| Revision Description | | This Nodal Protocol Revision Request (NPRR) moves from the Market Information System (MIS) Secure Area to the public ERCOT website reports that do not contain ERCOT Critical Energy Infrastructure Information (ECEII). ERCOT Staff analyzed reports in the MIS Secure Area, along with existing Protocols for posting requirements, and identified no ongoing basis for holding in the MIS Secure Area reports determined to contain only information for a market audience and not ECEII. | |
| 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 | | Reports that are not Protected Information in the MIS Secure Area are available to any registered Market Participant who requests a standard Digital Certificate from ERCOT, and paragraph (1)(j) of Protocol Section 1.3.1.2, Items Not Considered Protected Information, treats similarly requirements to post non-Protected Information on the ERCOT website or on the MIS Secure Area. This Revision Request moves reports that are not ECEII from the MIS Secure Area to the ERCOT website so the public can directly access reports that are not Protected Information without registering as a Market Participant and requesting ERCOT to issue a Digital Certificate, or without submitting an ERCOT Information Request.  Stakeholders may want to evaluate the value of producing the report in Section 6 that shows registration details of all registered Block Load Transfers. This NPRR proposes posting the report on the ERCOT website, though records suggest Market Participants haven’t opened the report since 2019.  Governor test results in Section 8 are not ECEII, and reports of test results are currently only generated as needed upon request. The proposed revision would continue the practice of producing the reports only upon request but post them on the ERCOT website. | |

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| Sponsor | |
| Name | Kim Rainwater |
| E-mail Address | [Kimberly.Rainwater@ercot.com](mailto:Kimberly.Rainwater@ercot.com) |
| Company | ERCOT |
| Phone Number | 512-225-7179 |
| Cell Number |  |
| Market Segment | Not Applicable |

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| **Market Rules Staff Contact** | |
| **Name** | Brittney Albracht |
| **E-Mail Address** | [Brittney.Albracht@ercot.com](mailto:Brittney.Albracht@ercot.com) |
| **Phone Number** | 512-225-7027 |

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| Proposed Protocol Language Revision |

***3.19.3 Long-Term Constraint Competitiveness Test***

(1) The Long-Term CCT process is executed once a year and provides a projection of Competitive Constraints for the month with the highest forecasted Demand in the following year.

(2) The Long-Term CCT performs analysis on a selected set of constraints.

(3) A constraint is classified as a Competitive Constraint for the monthly case if it meets all of the following conditions:

(a) The ECI is less than ECIT1 on the import side of the constraint;

(b) The constraint can be resolved by eliminating all Available Capacity for a Resource on the import side, except nuclear capacity and minimum-energy amounts of coal and lignite capacity, that is Managed Capacity for a DME during peak Load conditions; and

(c) There are negative Shift Factors corresponding to Electrical Buses with Available Capacity for a Resource that have an absolute value greater than or equal to SFP2.

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| ***[NPRR1182: Replace paragraph (c) above with the following upon system implementation:]***  (c) There are Shift Factors corresponding to Electrical Buses with Available Capacity for a Resource that can help resolve the constraint by increasing power injection or reducing power withdrawal that have an absolute value greater than or equal to SFP2. |

(4) Any constraint that is analyzed and does not meet the conditions in paragraph (3) above will be designated as a Non-Competitive Constraint for the monthly case.

(5) ERCOT shall update and post the list of Competitive Constraints identified by the Long-Term CCT on the ERCOT website. The list of Competitive Constraints shall be posted at least 30 days prior to the first of the year.

4.4.9.4.1 Mitigated Offer Cap

(1) Energy Offer Curves may be subject to mitigation in Real-Time operations under Section 6.5.7.3, Security Constrained Economic Dispatch, using a Mitigated Offer Cap (MOC). ERCOT shall construct an incremental MOC curve in accordance with Section 6.5.7.3 such that each point on the MOC curve is calculated as follows:

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| ***[NPRR1014: Replace paragraph (1) above with the following upon system implementation:]***  (1) Energy Offer Curves and Energy Bid/Offer Curves may be subject to mitigation in Real-Time operations under Section 6.5.7.3, Security Constrained Economic Dispatch, using a Mitigated Offer Cap (MOC). For Generation Resources, ERCOT shall construct an incremental MOC curve in accordance with Section 6.5.7.3 such that each point on the MOC curve is calculated as follows: |

MOC *q, r, h* = Max [GIHR *q, r* \* Max(FIP, WAFP *q, r, h*), (IHR *q, r* \* FPRC *q, r* + OM *q, r*) \* CFMLT *q, r*]

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| ***[NPRR1058 and NPRR1172: Replace the formula “MOC q, r, h” above with the following upon system implementation:]***  MOC *q, r, h* = Max [GIHR *q, r* \* Max(FIP, WAFP *q, r, h*), (IHR *q, r* \* FPRC *q, r* + OM *q, r*)] |

Where,

If a QSE has submitted an Energy Offer Curve on behalf of a Generation Resource and the Generation Resource has approved verifiable costs, then

FPRC *q, r* = Max(WAFP *q, r, h*, FIP + FA *q, r*) \* RTPERFIP *q, r* / 100 + FOP \* RTPERFOP *q, r* / 100

If a QSE has not submitted an Energy Offer Curve on behalf of a Generation Resource and the Generation Resource has approved verifiable costs, then

FPRC *q, r* = Max(WAFP *q, r, h*, FIP + FA *q, r*) \* GASPEROL *q, r* / 100 + FOP \* OILPEROL *q, r* / 100 + (SFP + FA *q, r*) \* SFPEROL *q, r* / 100

The above variables are defined as follows:

| Variable | Unit | Definition |
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| MOC *q, r, h* | $/MWh | *Mitigated Offer Cap per Resource*—The MOC for Resource *r*, for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train. |
| GIHR *q, r* | MMBtu/MWh | *Generic Incremental Heat Rate*—The generic, single-value, incremental heat rate. For Generation Resources with a Commercial Operations Date on or before January 1, 2004, the generic incremental heat rate shall be set to 10.5. For Generation Resources that have a Commercial Operations Date after January 1, 2004, this value shall be set to 14.5. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train. |
| IHR *q, r* | MMBtu/MWh | *Verifiable Incremental Heat Rate per Resource*—The verifiable incremental heat rate curve for Resource *r,* as approved in the verifiable cost process. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train. |
| FIP | $/MMBtu | *Fuel Index Price*—The natural gas index price as defined in Section 2.1, Definitions. |
| RTPERFIP *q, r* | none | *Fuel Index Price Percentage*—The percentage of natural gas used by Resource *r* to operate above LSL, as submitted with the energy offer curve. |
| FOP | $/MMBtu | *Fuel Oil Price*—The fuel oil index price as defined in Section 2.1. |
| RTPERFOP *q, r* | none | *Fuel Oil Price Percentage*—The percentage of fuel oil used by Resource *r* to operate above LSL, as submitted with the energy offer curve. |
| SFP | $/MMBtu | *Solid Fuel Price—*The solid fuel index price is $1.50. |
| FPRC *q, r* | $/MMBtu | *Fuel Price Calculated per Resource*—The calculated index price for fuel for the Resource based on the Resources fuel mix. Where for a Combined Cycle Train, the Resource r is a Combined Cycle Generation Resource within the Combined Cycle Train. |
| GASPEROL *q, r* | none | *Percent of Natural Gas to Operate Above LSL*—The percentage of natural gas used by Resource *r* to operate above LSL, as approved in the verifiable cost process. Where for a Combined Cycle Train, the Resource r is a Combined Cycle Generation Resource within the Combined Cycle Train. |
| OILPEROL *q, r* | none | *Percent of Oil to Operate Above LSL*—The percentage of fuel oil used by Resource *r* to operate above LSL, as approved in the verifiable cost process. Where for a Combined Cycle Train, the Resource r is a Combined Cycle Generation Resource within the Combined Cycle Train. |
| SFPEROL *q, r* | none | *Percent of Solid Fuel to Operate Above LSL*—The percentage of solid fuel used by Resource *r* to operate above LSL, as approved in the verifiable cost process. Where for a Combined Cycle Train, the Resource r is a Combined Cycle Generation Resource within the Combined Cycle Train. |
| FA *q, r* | $/MMBtu | *Fuel Adder*—The fuel adder is the average cost above the index price Resource *r* has paid to obtain fuel. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train. See the Verifiable Cost Manual for additional information. |
| OM *q, r* | $/MWh | *Variable Operations and Maintenance Cost above LSL*—The O&M cost for Resource *r* to operate above LSL, including an adjustment for emissions costs, as approved in the verifiable cost process. Where for a Combined Cycle Train, the Resource r is a Combined Cycle Generation Resource within the Combined Cycle Train. See the Verifiable Cost Manual for additional information. |
| CFMLT *q, r* | none | *Capacity Factor Multiplier*—A multiplier based on the corresponding monthly capacity factor as described in paragraph (1)(d) below. |
| ***[NPRR1058 and NPRR1172: Delete the variable “CFMLT q, r” above upon system implementation.]*** | | |
| WAFP *q, r, h* | $/MMBtu | *Weighted Average Fuel Price*—The volume-weighted average intraday, same-day and spot fuel price, the projected incremental fuel consistent with a fuel supply contract(s), or a combination of these two prices, submitted to ERCOT during the Adjustment Period for a specific Resource and specific hour within the Operating Day, as described in paragraph (1)(f) below.   |  | | --- | | ***[NPRR1177: Replace the definition above with the following on January 1, 2025:]***  *Weighted Average Fuel Price*—The volume-weighted average intraday, same-day and spot price of fuel submitted to ERCOT during the Adjustment Period for a specific Resource and specific hour within the Operating Day, as described in paragraph (1)(f) below. | |
| *q* | none | A QSE. |
| *r* | none | A Generation Resource. |
| *h* | none | The Operating Hour. |

(a) For a Resource contracted by ERCOT under paragraph (4) of Section 6.5.1.1, ERCOT Control Area Authority, ERCOT shall increase the O&M cost such that every point on the MOC curve is greater than the SWCAP in $/MWh.

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| ***[NPRR1008 and NPRR1014: Replace applicable portions of paragraph (a) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014:]***  (a) For a Resource contracted by ERCOT under paragraph (4) of Section 6.5.1.1, ERCOT Control Area Authority, ERCOT shall increase the O&M cost such that every point on the MOC curve is greater than the effective Value of Lost Load (VOLL) in $/MWh. |

(b) Notwithstanding the MOC calculation described in paragraph (1) above, the MOC for ESRs shall be set at the SWCAP. No later than December 31, 2023, ERCOT and stakeholders shall submit a report to TAC that includes a recommendation to continue the existing approach or a proposal to implement an alternative approach to determine the MOC for ESRs.

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| ***[NPRR1008 and NPRR1014: Replace applicable portions of paragraph (b) above with the following upon the system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014:]***  (b) Notwithstanding the MOC calculation described in paragraph (1) above, the MOC for ESRs shall be set at the RTSWCAP. No later than December 31, 2023, ERCOT and stakeholders shall submit a report to TAC that includes a recommendation to continue the existing approach or a proposal to implement an alternative approach to determine the MOC for ESRs. |

(c) For Quick Start Generation Resources (QSGRs) the MOC shall be adjusted in accordance with Verifiable Cost Manual Appendix 7, Calculation of the Variable O&M Value and Incremental Heat Rate used in Real Time Mitigation for Quick Start Generation Resources (QSGRs).

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| ***[NPRR1008 and NPRR1014: Insert applicable portions of paragraph (d) below upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014; and renumber accordingly:]***  (d) For On-line hydro Generation Resources not operating in Synchronous Condenser Fast-Response mode, the MOC shall be adjusted in accordance with Verifiable Cost Manual, Appendix 12, Calculation of the Variable O&M Value and Incremental Heat Rate used in Real Time Mitigation for On-Line Hydro Generation Resources not operating in Synchronous Condenser Fast-Response mode. |

(d) The multipliers for the MOC calculation above are as follows:

(i) 1.10 for Resources running at a ≥ 50% capacity factor for the previous 12 months;

(ii) 1.15 for Resources running at a ≥ 30 and < 50% capacity factor for the previous 12 months;

(iii) 1.20 for Resources running at a ≥ 20 and < 30% capacity factor for the previous 12 months;

(iv) 1.25 for Resources running at a ≥ 10 and < 20% capacity factor for the previous 12 months;

(v) 1.30 for Resources running at a ≥ 5 and < 10% capacity factor for the previous 12 months;

(vi) 1.40 for Resources running at a ≥ 1 and < 5% capacity factor for the previous 12 months; and

(vii) 1.50 for Resources running at a less than 1% capacity factor for the previous 12 months.

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| ***[NPRR1058 and NPRR1172: Delete paragraph (d) above upon system implementation and renumber accordingly.]*** |

(e) The previous 12 months’ capacity factor must be updated by ERCOT by the 20th day of each month using the most recent data for use in the next month. ERCOT shall post to the ERCOT website the capacity factor for each Resource before the start of the effective month.

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| ***[NPRR1058 and NPRR1172: Delete paragraph (e) above upon system implementation and renumber accordingly.]*** |

(f) During the Adjustment Period, a QSE representing a Resource may submit Exceptional Fuel Cost as a volume-weighted average fuel price for use in the MOC calculation for that Resource. To qualify as Exceptional Fuel Cost, the submission must meet the following conditions:

(i) For all Resources, the weighted average fuel price must exceed FIP for the applicable Operating Day, plus a threshold parameter value of $1/MMBtu, plus the applicable fuel adder. For Resources without approved verifiable costs, the fuel adder will be set to the default value assigned to Resources with approved verifiable costs, as defined in the Verifiable Cost Manual. The threshold parameter value in this paragraph shall be recommended by the Wholesale Market Subcommittee (WMS) and approved by the Technical Advisory Committee (TAC). ERCOT shall update the threshold value on the first day of the month following TAC approval unless otherwise directed by the TAC. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value.

(ii) Fixed cost (fees, penalties and similar non-gas costs) may not be included in the calculation of the weighted average fuel price.

(iii) The weighted average fuel price in paragraph (1) above must be a single value and based on the following fuel price options:

(A) A volume-weighted price considering all intra-day, same day, and spot fuel purchases for the Resource; or

(B) A projected fuel price for a Resource with a fuel supply contract(s) that also has submitted an Energy Offer Curve for the Operating Hour where the Energy Offer Curve is calculated as the incremental heat rate times the incremental fuel price plus Operations and Maintenance (O&M) cost; or

(C) A combination of the above two options.

A weighted average fuel price based on actual fuel purchases must be included in the calculation of the weighted average fuel price in paragraph (1) above. These must account for at least 10% of the total fuel volume burned by the applicable Resource for the hour for which the weighted average fuel price is computed. A projected incremental fuel price must be consistent with the terms of the fuel supply contract(s). A weighted average fuel price based on a combination of these options must meet the requirements described for each of the options. As noted in paragraph (l) below, the methodology used in the allocation of the cost and volume of fuel to the Resource for the hour is subject to validation by ERCOT.

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| ***[NPRR1177: Replace paragraph (iii) above with the following on January 1, 2025:]***  (iii) All intra-day, same day, and spot fuel purchases must be included in the calculation of the weighted average fuel price in paragraph (1) above. These must account for at least 10% of the total fuel volume burned by the applicable Resource for the hour for which the weighted average fuel price is computed. As noted in paragraph (l) below, the methodology used in the allocation of the cost and volume of purchased fuel to the Resource for the hour is subject to validation by ERCOT. |

(iv) Weighted average fuel prices must be submitted individually for each Operating Hour for which they are applicable. Values submitted outside of the Adjustment Period will be rejected and not used in the calculation of the MOC for the designated Operating Hour.

(v) A projected volume-weighted average fuel price must be consistent with the Energy Offer Curve for each Operating Hour for which they are applicable, and consistent with the signed and executed fuel supply contract(s) for each Resource.

(vi) An Exceptional Fuel Cost submitted based on projected fuel prices may not match with the actual volume-weighted average fuel price due to prospective costs and/or contractual costs.

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| ***[NPRR1177: Delete paragraphs (v) and (vi) above on January 1, 2025.]*** |

(g) ERCOT may notify the Independent Market Monitor (IMM) if a QSE submits an Exceptional Fuel Cost.

(h) The day following an Operating Day for which an Exceptional Fuel Cost is submitted, ERCOT shall post a report on the ERCOT website indicating the affected Operating Hours and the number of Resources for which a QSE submitted Exceptional Fuel Cost for a particular Operating Day.

(i) No later than 1700 Central Prevailing Time (CPT) on the 15th day following an Exceptional Fuel Cost submission, the submitting QSE shall provide ERCOT with the calculation of the weighted average fuel price, intraday or same-day fuel purchases, if applicable, and any available supporting documentation. Such information may include, but is not limited to, documents of the following nature: relevant contracts between the QSE or Resource Entity and fuel supplier, trade logs, transportation, storage, balancing and distribution agreements, calculation of the weighted average fuel price, or any other documentation necessary to support the Exceptional Fuel Cost price and volume for the applicable period(s).

(j) No later than 1700 Central Prevailing Time (CPT) on the 60th day following an Exceptional Fuel Cost submission, the submitting QSE shall provide ERCOT with all supporting documentation not previously provided to ERCOT. No supporting documentation will be accepted after the 60th day.

(k) The accuracy of submitted Exceptional Fuel Cost and the need for purchasing intraday or same-day gas must be attested to by a duly authorized officer or agent of the QSE representing the Resource. The attestation must be provided in a standardized format acceptable to ERCOT and submitted with the other documentation described in paragraph (i) above. An attestation for Exceptional Fuel Costs must state that the costs are accurate and variable, based on the dispatch of the Resource.

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| ***[NPRR1177: Replace paragraph (k) above with the following on January 1, 2025:]***  (k) The accuracy of submitted Exceptional Fuel Cost and the need for purchasing intraday or same-day gas must be attested to by a duly authorized officer or agent of the QSE representing the Resource. The attestation must be provided in a standardized format acceptable to ERCOT and submitted with the other documentation described in paragraph (i) above. |

(l) ERCOT will use the supporting documentation to validate the Exceptional Fuel Cost for the applicable period. Validation will include, but not be limited to, the cost and the quantity of purchased fuel, Resource-specific heat rates, and the methodology used in the allocation of the cost and volume of purchased fuel, if applicable, to the Resource for the applicable hour used in the weighted average fuel price calculation. In connection with the validation process ERCOT may request additional documentation or clarification of previously submitted documentation. Such requests must be honored within ten Business Days.

(m) At ERCOT’s sole discretion, submission and follow-up information deadlines may be extended on a case-by-case basis.

(n) The documentation described in paragraphs (i) through (l) above is only required for the hours for which Exceptional Fuel Costs were submitted and the Resource was subject to mitigation.

(o) For Resources submitting Exceptional Fuel Costs based on projected incremental fuel prices based on a contract(s) the QSE must submit to ERCOT all applicable fuel supply contracts at least ten Business Days in advance of submitting Exceptional Fuel Costs. ERCOT may, at any time, notify the QSE of any cost identified in the contract that is ineligible for inclusion in any Exceptional Fuel Cost submission. Upon receiving such notification, the QSE shall ensure that such cost is not included in any Exceptional Fuel Cost submission or in any Energy Offer Curve submission for any hours for which Exceptional Fuel Costs are submitted. The absence of any such notification shall not imply that such cost is eligible for inclusion in any Exceptional Fuel Cost submission or in any Energy Offer Curve submission.

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| ***[NPRR1177: Delete paragraphs (n) and (o) above on January 1, 2025.]*** |

4.5.3 Communicating DAM Results

(1) As soon as practicable, but no later than 1330 in the Day-Ahead, ERCOT shall notify the parties to each cleared DAM transaction (e.g., the buyer and the seller) of the results of the DAM as follows:

(a) Awarded Ancillary Service Offers, specifying Resource, MW, Ancillary Service type, and price, for each hour of the awarded offer;

(b) Awarded energy offers from Three-Part Supply Offers and from DAM Energy-Only Offers, specifying Resource (except for DAM Energy-Only Offers), MWh, Settlement Point, and Settlement Point Price, for each hour of the awarded offer;

(c) Awarded DAM Energy Bids, specifying MWh, Settlement Point, and Settlement Point Price for each hour of the awarded bid; and

(d) Awarded PTP Obligation Bids, number of PTP Obligations in MW, source and sink Settlement Points, and price for each Settlement Interval of the awarded bid.

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| ***[NPRR1008 and NPRR1014: Replace applicable portions of paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014:]***  (1) As soon as practicable, but no later than 1330 in the Day-Ahead, ERCOT shall notify the parties to each cleared DAM transaction (e.g., the buyer and the seller) of the results of the DAM as follows:  (a) Awarded Resource-Specific Ancillary Service Offers, specifying Resource, MW, Ancillary Service type, and price, for each hour of the awarded offer;  (b) Awarded Ancillary Service Only Offers, specifying MW, Ancillary Service type, and price, for each hour of the awarded offer;  (c) Awarded energy offers from Three-Part Supply Offers and from DAM Energy-Only Offers, specifying Resource (except for DAM Energy-Only Offers), MWh, Settlement Point, and Settlement Point Price, for each hour of the awarded offer;  (d) Awarded DAM Energy Bids, specifying MWh, Settlement Point, and Settlement Point Price for each hour of the awarded bid;  (e) Awarded Energy Bid/Offer Curves, specifying Resource, MWh, Settlement Point, and Settlement Point Price, for each hour of the awarded bid/offer; and  (f) Awarded PTP Obligation Bids, number of PTP Obligations in MW, source and sink Settlement Points, and price for each Settlement Interval of the awarded bid. |

(2) As soon as practicable, but no later than 1330, ERCOT shall post on the ERCOT website the hourly:

(a) Day-Ahead MCPC for each type of Ancillary Service for each hour of the Operating Day;

(b) DASPPs for each Settlement Point for each hour of the Operating Day;

(c) Day-Ahead hourly LMPs for each Electrical Bus for each hour of the Operating Day;

(d) Shadow Prices for every binding constraint for each hour of the Operating Day;

(e) Quantity of total Ancillary Service Offers received in the DAM, in MW by Ancillary Service type for each hour of the Operating Day;

(f) Energy bought in the DAM consisting of the following:

(i) The total quantity of awarded DAM Energy Bids (in MWh) bought in the DAM at each Settlement Point for each hour of the Operating Day; and

(ii) The total quantity of awarded PTP Obligation Bids (in MWh) cleared in the DAM that sink at each Settlement Point for each hour of the Operating Day.

(g) Energy sold in the DAM consisting of the following:

(i) The total quantity of awarded DAM Energy Offers (in MWh), from Three-Part Supply Offers and DAM Energy Only Offers, bought in the DAM at each Settlement Point for each hour of the Operating Day; and

(ii) The total quantity of awarded PTP Obligation Bids (in MWh) cleared in the DAM that source at each Settlement Point for each hour of the Operating Day.

(h) Aggregated Ancillary Service Offer Curve of all Ancillary Service Offers for each type of Ancillary Service for each hour of the Operating Day;

(i) Electrically Similar Settlement Points used during the DAM clearing process; and

(j) Settlement Points that were de-energized in the base case; and

(k) System Lambda.

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| ***[NPRR1008 and NPRR1014: Replace applicable portions of paragraph (2) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014:]***  (2) As soon as practicable, but no later than 1330, ERCOT shall post on the ERCOT website the hourly:  (a) Day-Ahead MCPC for each type of Ancillary Service for each hour of the Operating Day;  (b) DASPPs for each Settlement Point for each hour of the Operating Day;  (c) Day-Ahead hourly LMPs for each Electrical Bus for each hour of the Operating Day;  (d) Shadow Prices for every binding constraint for each hour of the Operating Day;  (e) Energy bought in the DAM consisting of the following:  (i) The total quantity of awarded DAM Energy Bids (in MWh) bought in the DAM at each Settlement Point for each hour of the Operating Day;  (ii) The total quantity of awarded PTP Obligation Bids (in MWh) cleared in the DAM that sink at each Settlement Point for each hour of the Operating Day; and  (iii) The total absolute value quantity of awards to bid portions of Energy Bid/Offer Curves (in MWh) cleared in the DAM at each Settlement Point for each hour of the Operating Day.  (f) Energy sold in the DAM consisting of the following:  (i) The total quantity of awarded DAM Energy Offers (in MWh), from Three-Part Supply Offers and DAM Energy Only Offers, bought in the DAM at each Settlement Point for each hour of the Operating Day;  (ii) The total quantity of awarded PTP Obligation Bids (in MWh) cleared in the DAM that source at each Settlement Point for each hour of the Operating Day; and  (iii) The total quantity of awards to offer portions of Energy Bid/Offer Curves (in MWh) cleared in the DAM at each Settlement Point for each hour of the Operating Day.  (g) Aggregated Ancillary Service Offer Curve of all Ancillary Service Offers (including both Resource-Specific Ancillary Service Offers and Ancillary Service Only Offers) for each type of Ancillary Service for each hour of the Operating Day;  (h) Electrically Similar Settlement Points used during the DAM clearing process;  (i) Settlement Points that were de-energized in the base case;  (j) System Lambda; and  (k) Ancillary Services sold in the DAM consisting of the total quantity of awarded Resource-Specific Ancillary Service Offers and Ancillary Service Only Offers, for each Ancillary Service for each hour of the Operating Day. |

(3) ERCOT shall monitor Day-Ahead MCPCs and Day-Ahead hourly LMPs for errors and if there are conditions that cause the price to be questionable, ERCOT shall notify all Market Participants that the DAM prices are under investigation as soon as practicable.

(4) ERCOT shall correct prices for an Operating Day when a market solution is determined to be invalid or invalid prices are identified in an otherwise valid market solution, accurate prices can be determined, and the impact of the price correction is significant. The following are some reasons that may cause an invalid market solution or invalid prices in a valid market solution.

(a) Data Input error: Missing, incomplete, or incorrect versions of one or more data elements input to the DAM application may result in an invalid market solution and/or prices.

(b) Software error: Pricing errors may occur due to software implementation errors in DAM pre-processing, DAM clearing process, and/or DAM post processing.

(c) Inconsistency with these Protocols or the Public Utility Commission of Texas (PUCT) Substantive Rules: Pricing errors may occur when specific circumstances result in prices that are in conflict with such Protocol language or the PUCT Substantive Rules.

(5) For purposes of a price correction performed prior to 1000 on the second Business Day after the Operating Day, the impact of a price correction is considered significant, as that term is used in paragraph (4) above, for the Operating Day when:

(a) The absolute value change to any single DAM Settlement Point Price at a Resource Node or Day-Ahead MCPC is greater than $0.05/MWh;

(b) The price correction would require ERCOT to change more than ten DAM Settlement Point Prices and Day-Ahead MCPCs; or

(c) The absolute value change to any DAM Settlement Point Price at a Load Zone or Hub is greater than $0.02/MWh.

(6) All DAM LMPs, MCPCs, and Settlement Point Prices are final at 1000 of the second Business Day after the Operating Day.

(a) However, after DAM LMPs, MCPCs, and Settlement Point Prices are final, if ERCOT determines that prices qualify for a correction pursuant to paragraph (4) above and that ERCOT will seek ERCOT Board review of such prices, it shall notify Market Participants and describe the need for such correction as soon as practicable but no later than 30 days after the Operating Day. Failure to notify Market Participants within this timeline precludes the ERCOT Board from reviewing such prices. However, nothing in this section shall be understood to limit or otherwise inhibit any of the following:

(i) ERCOT’s duty to inform the PUCT of potential or actual violations of the ERCOT Protocols or PUCT Rules and its right to request that the PUCT authorize correction of any prices that may have been affected by such potential or actual violations;

(ii) The PUCT’s authority to order price corrections when permitted to do so under other law; or

(iii) ERCOT’s authority to grant relief to a Market Participant pursuant to the timelines specified in Section 20, Alternative Dispute Resolution Procedure.

(b) Before seeking ERCOT Board review of prices, ERCOT will determine if the impact of the price correction is significant, as that term is used in paragraph (4) above, by calculating the potential changes to the DAM Settlement Statement(s) of any Counter-Party on the given Operating Day. ERCOT shall seek ERCOT Board review of prices if the change in DAM Settlement Statement(s) would result in the absolute value impact to any single Counter-Party, based on the sum of all original DAM Settlement Statement amounts of Market Participants assigned to the Counter-Party, to be greater than:

(i) 2% and also greater than $20,000; or

(ii) 20% and also greater than $2,000.

(c) The ERCOT Board may review and change DAM LMPs, MCPCs, or Settlement Point Prices if ERCOT gave timely notice to Market Participants and the ERCOT Board finds that such prices should be corrected for an Operating Day.

(d) In review of DAM LMPs, MCPCs, or Settlement Point Prices, the ERCOT Board may rely on the same reasons identified in paragraph (4) above to find that the prices should be corrected for an Operating Day.

(7) As soon as practicable, but no later than 1330, ERCOT shall make available the Day-Ahead Shift Factors for binding constraints in the DAM and post to the ERCOT website.

**5.3 ERCOT Security Sequence Responsibilities**

(1) ERCOT shall start the Day-Ahead Reliability Unit Commitment (DRUC) process at 1430 in the Day-Ahead.

(2) For each DRUC, ERCOT shall use a snapshot of Resource commitments taken at 1430 in the Day-Ahead for Reliability Unit Commitment (RUC) Settlement. For each Hourly Reliability Unit Commitment (HRUC), ERCOT shall use a snapshot of Resource commitments from each Qualified Scheduling Entity’s (QSE’s) most recently submitted Current Operating Plan (COP) before HRUC execution for RUC Settlement.

(3) For each RUC process, ERCOT shall:

(a) Execute the Security Sequence described in Section 5.5, Security Sequence, Including RUC, including:

(i) Validating Three-Part Supply Offers, defined in Section 4.4.9.1, Three-Part Supply Offers;

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| ***[NPRR1009 and NPRR1014: Replace item (i) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1009; or upon system implementation for NPRR1014:]***  (i) Validating Three-Part Supply Offers, defined in Section 4.4.9.1, Three-Part Supply Offers, Energy Bid/Offer Curves, defined in Section 4.4.9.7, Energy Bid/Offer Curve, and Ancillary Service Offers, defined in Section 4.4.7.2, Ancillary Service Offers; |

(ii) Reviewing the Resource commitment recommendations made by the RUC algorithm; and

(iii) Reviewing the list of Off-Line Available Resources having a start-up time of one hour or less;

(b) Post to the ERCOT website all Resources that were committed or decommitted by the RUC process including verbal RUC commitments and decommitments and Weekly Reliability Unit Commitment (WRUC) instructions;

(c) Post to the ERCOT website all active and binding transmission constraints (contingency and overloaded element pair information where available) used as inputs to the RUC;

(d) Issue Dispatch Instructions to notify each QSE of its Resource commitments or decommitments; and

(e) Post to the ERCOT website all Resources that were committed by the RUC process, including verbal RUC commitments, but were subsequently cancelled by the ERCOT Operator.

(4) ERCOT shall provide each QSE with the information necessary to pre-validate their data for DRUC and HRUC, including publishing validation rules for offers, bids, and trades.

***5.5.1 Security Sequence***

(1) The figure below highlights the key computational modules and processes that are used in the Security Sequence:



(2) The Security Sequence uses computational modules functionally similar to those used in Real-Time Sequence, however, the inputs into the Security Sequence are based on a snapshot of projected hourly system conditions and constraints rather than Real-Time data.

(3) The Security Sequence uses the status of all transmission breakers and switches (current status for the first hour and normal status for all other hours of Hourly Reliability Unit Commitment (HRUC) and normal status for all hours of Day-Ahead Reliability Unit Commitment (DRUC)), updated for approved Planned Outages for equipment out of service and returned to service for building a representation of the ERCOT Transmission Grid for each hour of the Reliability Unit Commitment (RUC) Study Period. The Network Topology Processor constructs a network model for each hour that must be used by the Bus Load Forecast to estimate the hourly Load for each transmission bus.

(4) The weather forecast obtained by ERCOT must be provided to the Dynamic Rating Processor to create weather-adjusted MVA limits for each hour of the RUC Study Period for all transmission lines and transformers that have Dynamic Ratings.

(5) ERCOT shall analyze base configuration, select n-1 contingencies and select n-2 contingencies under the Operating Guides. The Operating Guides must also specify the criteria by which ERCOT may remove contingencies from the list. ERCOT shall post to the Market Information System (MIS) Secure Area the standard contingency list, including identification of changes from previous versions before being used in the Security Sequence. ERCOT shall evaluate the need for Resource-specific deployments during Real-Time operations for management of congestion consistent with the Operating Guides.

(6) ERCOT shall also post to the MIS Secure Area any contingencies temporarily removed from the standard contingency list by ERCOT immediately after successful execution of the Security Sequence. ERCOT shall include the reason for removal of any contingency as soon as practicable but not later than one hour after removal.

(7) As part of the Network Security Analysis (NSA), for each hour of the RUC Study Period, ERCOT shall analyze all selected contingencies and perform the following:

(a) Perform full AC analysis of all contingencies;

(b) Monitor element and bus voltage limit violations; and

(c) Monitor transmission line and transformer security violations.

(8) As part of the NSA, if there is an approved Remedial Action Plan (RAP) available, it must be used before considering a Resource commitment.

(9) ERCOT shall review all security violations prior to RUC execution.

(10) All Remedial Action Schemes (RASs), Automatic Mitigation Plans (AMPs) and RAPs modeled in the Network Operations Model shall be included in the contingency analysis. The computational modules must enable ERCOT to analyze contingencies, including the effects of all RASs and AMPs included in the Network Operations Model.

(11) ERCOT may deselect certain contingencies known to cause errors or that otherwise result in inconclusive study output in the RUC. On continued de-selection of contingencies, ERCOT shall prepare an analysis to determine the cause of the error. ERCOT may use information from the Day-Ahead processes as decision support during the Hour-Ahead processes. ERCOT shall post to the ERCOT website any contingencies deselected by ERCOT and must include the reason for removal as soon as practicable, but not later than one hour after deselection.

5.5.2 Reliability Unit Commitment (RUC) Process

(1) The RUC process recommends commitment of Generation Resources, to match ERCOT’s forecasted Load including Direct Current Tie (DC Tie) Schedules, subject to all transmission constraints and Resource performance characteristics. The RUC process takes into account Resources already committed in the Current Operating Plans (COPs), Resources already committed in previous RUCs, Off-Line Available Resources having a start-up time of one hour or less, and Resource capacity already committed to provide Ancillary Service. The formulation of the RUC objective function must employ penalty factors on violations of security constraints. The objective of the RUC process is to minimize costs based on the Resource costs described in paragraphs (5) through (9) below. For all hours of the RUC Study Period within the RUC process, Quick Start Generation Resources (QSGRs) with a COP Resource Status of OFFQS shall be considered as On-Line with Low Sustained Limit (LSL) at zero MW. QSGRs with a Resource Status of OFFQS shall only be committed by ERCOT through a RUC instruction in instances when a reliability issue would not otherwise be managed through Dispatch Instructions from Security-Constrained Economic Dispatch (SCED). For On-Line ESRs, the Hour Beginning Planned State of Charge (SOC) values provided in the COP for a given hour are discounted to ensure sufficient SOC is preserved to meet Ancillary Service Resource Responsibilities, as reflected in the COP. Any remaining SOC on the ESR will be considered available for energy dispatch by RUC while respecting the Minimum State of Charge (MinSOC) and Maximum State of Charge (MaxSOC) values provided in the COP.

(2) The RUC process can recommend Resource decommitment. ERCOT may only decommit a Resource to resolve transmission constraints that are otherwise unresolvable. Qualifying Facilities (QFs) may be decommitted only after all other types of Resources have been assessed for decommitment. In addition, the HRUC process provides decision support to ERCOT regarding a Resource decommitment requested by a Qualified Scheduling Entity (QSE).

(3) ERCOT shall review the RUC-recommended Resource commitments and the list of Off-Line Available Resources having a start-up time of one hour or less to assess feasibility and shall make any changes that it considers necessary, in its sole discretion. During the RUC process, ERCOT may also review and commit, through a RUC instruction, Combined Cycle Generation Resources that are currently planned to be On-Line but are capable of transitioning to a configuration with additional capacity. ERCOT may deselect Resources recommended in DRUC and in all HRUC processes if in ERCOT’s sole discretion there is enough time to commit those Resources in the future HRUC processes, taking into account the Resources’ start-up times, to meet ERCOT System reliability. After each RUC run, ERCOT shall post the amount of capacity deselected per hour in the RUC Study Period to the ERCOT website. A Generation Resource shown as On-Line and available for SCED dispatch for an hour in its COP prior to a DRUC or HRUC process execution, according to Section 5.3, ERCOT Security Sequence Responsibilities, will be considered self-committed for that hour. For purpose of Settlement, snapshot data will be used as specified in paragraph (2) of Section 5.3. ERCOT shall issue RUC instructions to each QSE specifying its Resources that have been committed as a result of the RUC process. ERCOT shall, within one day after making any changes to the RUC-recommended commitments, post to the ERCOT website any changes that ERCOT made to the RUC-recommended commitments with an explanation of the changes.

(4) A QSE shall notify the ERCOT Operator of any physical limitation that impacts its Resource’s ability to start that is not reflected in the Resource’s COP or the Resource’s startup time, minimum On-Line time, or minimum Off-Line time. The following shall apply:

(a) If a Resource receives a RUC Dispatch Instruction that it cannot meet due to a physical limitation described in paragraph (4) above, the QSE representing the Resource shall notify the ERCOT Operator of the inability to fully comply with the instruction and shall comply with the instruction to the best of the Resource’s ability. If the QSE has provided the ERCOT Operator notice of that limitation at least seven days prior to the Operating Day in which the instruction occurs, the QSE shall be excused from complying with the portion of the RUC Dispatch Instruction that it could not meet due to the identified limitation.

(b) If a QSE provides notice pursuant to paragraph (a) above of a physical limitation that will delay the RUC-committed Resource’s ability to reach its LSL in accordance with a RUC Dispatch Instruction, ERCOT shall extend the RUC Dispatch Instruction so that the Resource’s minimum run time is respected. However, if the Resource will not be available in time to address the issue for which it received the RUC instruction, ERCOT may instead cancel the RUC Dispatch Instruction.

(5) A QSE shall be excused from complying with any portion of a RUC Dispatch Instruction that it could not meet due to a physical limitation that was reflected, at the time of the RUC Dispatch Instruction, in the Resource’s COP, startup time, minimum On-Line time, or minimum Off-Line time.

(6) To determine the projected energy output level of each Resource and to project potential congestion patterns for each hour of the RUC, ERCOT shall calculate proxy Energy Offer Curves based on the Mitigated Offer Caps (MOCs) for the type of Resource as specified in Section 4.4.9.4, Mitigated Offer Cap and Mitigated Offer Floor, for use in the RUC. Proxy Energy Offer Curves are calculated by multiplying the MOC by a constant selected by ERCOT from time to time that is no more than 0.10% and applying the cost for all Generation Resource output between High Sustained Limit (HSL) and LSL. The intent of this process is to minimize the effect of the proxy Energy Offer Curves on optimization.

(7) ERCOT shall use the RUC process to evaluate the need to commit Resources for which a QSE has submitted Three-Part Supply Offers and other available Off-Line Resources in addition to Resources that are planned to be On-Line during the RUC Study Period. All of the above commitment information must be as specified in the QSE’s COP. For available Off-Line Resources with a cold start time of one hour or less that have not been removed from special consideration under paragraph (9) below pursuant to paragraph (4) of Section 8.1.2, Current Operating Plan (COP) Performance Requirements, the Startup Offers and Minimum-Energy Offer from a Resource’s Three-Part Supply Offer shall not be used in the RUC process.

(8) ERCOT shall create Three-Part Supply Offers for all Resources that did not submit a Three-Part Supply Offer, but are specified as available but Off-Line, excluding Resources with a Resource Status of EMR, in a QSE’s COP. For such Resources, excluding available Off-Line Resources with a cold start time of one hour or less that have not been removed from special consideration under paragraph (9) below pursuant to paragraph (4) of Section 8.1.2, ERCOT shall use in the RUC process 100% of any approved verifiable Startup Cost and verifiable minimum-energy cost or if verifiable costs have not been approved, the applicable Resource Category Generic Startup Offer Cost and the applicable Resource Category Generic Minimum-Energy Offer Cost as described specified in Section 4.4.9.2.3, Startup Offer and Minimum-Energy Offer Generic Caps, registered with ERCOT. Also, for Settlement purposes, ERCOT shall use any approved verifiable Startup Costs and verifiable minimum-energy cost for such Resources, or if verifiable costs have not been approved, the applicable Resource Category Generic Startup Offer Cost and Generic Minimum-Energy Offer Cost.

(9) For all available Off-Line Resources having a cold start time of one hour or less and not removed from special consideration pursuant to paragraph (4) of Section 8.1.2, ERCOT shall scale any approved verifiable Startup Cost and verifiable minimum-energy cost or if verifiable costs have not been approved, the applicable Resource Category Generic Startup Offer Cost and the applicable Resource Category Generic Minimum-Energy Offer Cost as specified in Section 4.4.9.2.3 for use in the RUC process.

The above parameter is defined as follows:

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| **Parameter** | **Unit** | **Current Value\*** |
| 1HRLESSCOSTSCALING | Percentage | Maximum value of 100% |
| \* The current value for the parameter(s) referenced in this table above will be recommended by the Technical Advisory Committee (TAC) and approved by the ERCOT Board. ERCOT shall update parameter value(s) on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value. | | |

(10) The RUC process must treat all Resource capacity providing Ancillary Service as unavailable for the RUC Study Period, unless that treatment leads to infeasibility (i.e., that capacity is needed to resolve some local transmission problem that cannot be resolved by any other means). If an ERCOT Operator decides that the Ancillary Service capacity allocated to that Resource is infeasible based on ERCOT System conditions, then, ERCOT shall inform each affected QSE of the amount of its Resource capacity that does not qualify to provide Ancillary Service, and the projected hours for which this is the case. In that event, the affected QSE may, under Section 6.4.9.1.2, Replacement of Infeasible Ancillary Service Due to Transmission Constraints, either:

(a) Substitute capacity from Resources represented by that QSE;

(b) Substitute capacity from other QSEs using Ancillary Service Trades; or

(c) Ask ERCOT to replace the capacity.

(11) Factors included in the RUC process are:

(a) ERCOT System-wide hourly Load forecast allocated appropriately over Load buses;

(b) Transmission constraints – Transfer limits on energy flows through the electricity network;

(i) Thermal constraints – protect transmission facilities against thermal overload;

(ii) Generic constraints – protect the transmission system against transient instability, dynamic instability or voltage collapse;

(c) Planned transmission topology;

(d) Energy sufficiency constraints;

(e) Inputs from the COP, as appropriate;

(f) Inputs from Resource Parameters, including a list of Off-Line Available Resources having a start-up time of one hour or less, as appropriate;

(g) Each Generation Resource’s Minimum-Energy Offer and Startup Offer, from its Three-Part Supply Offer;

(h) Any Generation Resource that is Off-Line and available but does not have a Three-Part Supply Offer;

(i) Forced Outage information; and

(j) Inputs from the eight-day look ahead planning tool, which may potentially keep a unit On-Line (or start a unit for the next day) so that a unit minimum duration between starts does not limit the availability of the unit (for security reasons).

(12) The HRUC process and the DRUC process are as follows:

(a) The HRUC process uses current Resource Status for the initial condition for the first hour of the RUC Study Period. All HRUC processes use the projected status of transmission breakers and switches starting with current status and updated for each remaining hour in the study as indicated in the COP for Resources and in the Outage Scheduler for transmission elements.

(b) The DRUC process uses the Day-Ahead forecast of total ERCOT Load including DC Tie Schedules for each hour of the Operating Day. The HRUC process uses the current hourly forecast of total ERCOT Load including DC Tie Schedules for each hour in the RUC Study Period.

(c) The DRUC process uses the Day-Ahead weather forecast for each hour of the Operating Day. The HRUC process uses the weather forecast information for each hour of the balance of the RUC Study Period.

(13) A QSE that has one or more of its Resources RUC-committed to provide Ancillary Services must increase its Ancillary Service Supply Responsibility by the total amount of RUC-committed Ancillary Service quantities. The QSE may only use a RUC-committed Resource to meet its Ancillary Service Supply Responsibility during that Resource’s RUC-Committed Interval if the Resource has been committed by the RUC process to provide Ancillary Service, or the Resource is a Combined Cycle Generation Resource that was RUC-committed to transition from one On-Line configuration to a different configuration with additional capacity. For cases in which the commitment was to provide Ancillary Service, the QSE shall indicate the exact amount and type of Ancillary Service for which it was committed as the Resource’s Ancillary Service Resource Responsibility and Ancillary Services Schedule for the RUC-Committed Intervals for both telemetry and COP information provided to ERCOT. Upon deployment of the Ancillary Services, the QSE shall adjust its Ancillary Services Schedule to reflect the amounts requested in the deployment.

(14) A QSE with a Resource that is not a Reliability Must-Run (RMR) Unit or has not received an Outage Schedule Adjustment (OSA) that has been committed in a DRUC or HRUC process may opt out of the RUC Settlement (or “buy back” the commitment) by setting the COP status of the RUC-committed Resource to ONOPTOUT for the first hour of a contiguous block of RUC-Committed Hours in the Opt Out Snapshot. All the configurations of the same Combined Cycle Train shall be treated as the same Resource for the purpose of creating the block of RUC-Committed Hours. A RUC-committed Combined Cycle Generation Resource may opt out of the RUC Settlement by setting the COP status of any Combined Cycle Generation Resource within the same Combined Cycle Train as the RUC-committed Resource to ONOPTOUT for the first hour of a contiguous block of RUC-Committed Hours in the Opt Out Snapshot. A Combined Cycle Generation Resource that is RUC-committed from one On-Line configuration in order to transition to a different configuration with additional capacity may opt out of the RUC Settlement following the same rule for RUC-committed Combined Cycle Generation Resources described above. A QSE that opts out of RUC Settlement forfeits RUC Settlement for the affected Resource for a given block of RUC Buy-Back Hours. A QSE that opts out of RUC Settlement treatment must make the Resource available to SCED for all RUC Buy-Back Hours. All hours in a contiguous block of RUC-Committed Hours that includes the RUC Buy-Back Hour shall be considered RUC Buy-Back Hours. If a contiguous block of RUC-Committed Hours spans more than one Operating Day and a QSE wishes to opt out of RUC Settlement for the RUC-Committed Hours in the second or subsequent Operating Day, the QSE must set its COP status to ONOPTOUT for the first hour of the first Operating Day in the Opt Out Snapshot of the first Operating Day.

(15) ERCOT shall, as soon as practicable, post to the ERCOT website a report identifying those hours that were considered RUC Buy-Back Hours, along with the name of each RUC-committed Resource whose QSE opted out of RUC Settlement.

(16) A Resource that has a Three-Part Supply Offer cleared in the Day-Ahead Market (DAM) and subsequently receives a RUC commitment for the Operating Hour for which it was awarded will be treated as if the telemetered Resource Status was ONOPTOUT for purposes of Section 6.5.7.3, Security Constrained Economic Dispatch, and Section 6.5.7.3.1, Determination of Real-Time On-Line Reliability Deployment Price Adder.

(17) A Resource that has self-committed for an Operating Hour after the RUC Snapshot was taken but before the RUC commitment has been communicated through an XML message for that RUC process and that Operating Hour is included in a block of RUC-committed hours for that RUC process will be treated as if the Resource Status was ONOPTOUT for purposes of Section 6.5.7.3, Section 6.5.7.3.1, Operating Reserve Demand Curve (ORDC) calculations, and RUC Settlement for the entire block of RUC-committed hours. A QSE that has a Resource that meets these conditions must make the Resource available to SCED for the entire block of RUC-committed hours. ERCOT will send the QSE a notification stating the Operating Day and block of hours for which this occurred.

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| ***[NPRR1009, NPRR1032, and NPRR1204: Replace applicable portions of Section 5.5.2 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1009 and NPRR1204; or upon system implementation for NPRR1032:]***  ***5.5.2 Reliability Unit Commitment (RUC) Process***  (1) The RUC process recommends commitment of Generation Resources, to match ERCOT’s forecasted Load including Direct Current Tie (DC Tie) Schedules and RUC Ancillary Service Demand Curves (ASDCs), subject to all transmission constraints and Resource performance characteristics. The RUC process takes into account Resources already committed in the Current Operating Plans (COPs), Resources already committed in previous RUCs, and Off-Line Available Resources having a start-up time of one hour or less. For On-Line Energy Storage Resources (ESRs), using RUC duration requirements for energy and Ancillary Services, RUC-projected dispatch for energy and Ancillary Service in one interval shall respect the ESR’s minimum and maximum State of Charge (SOC) values from the COP, while incorporating any adjustments under paragraph (18)(d) below. In addition, using the Ancillary Service Deployment Factors and their respective deployment duration requirements, the SOC required to support these dispatch levels for energy and Ancillary Services will match as closely as possible the difference between the adjusted COP values of the next interval’s Hour Beginning Planned SOC and the current interval’s Hour Beginning Planned SOC. The formulation of the RUC objective function must employ penalty factors on violations of security constraints and violations of ESR COP Hour Beginning Planned SOC. The objective of the RUC process is to minimize costs based on the Resource costs described in paragraphs (10) through (14) below. ESR energy dispatch costs and Ancillary Service Offer costs are not included in the RUC objective function.  (2) ERCOT shall create an ASDC for each Ancillary Service for use in RUC. ERCOT shall post the ASDCs to the ERCOT website as soon as practicable after any change to the ASDCs.  (3) ERCOT shall post the following Ancillary Service Deployment Factor data on the ERCOT website:  (a) Following each execution of RUC, ERCOT shall post the Ancillary Service Deployment Factors used by that RUC process for each hour in the RUC Study Period;  (b) No later than 0600 in the Day-Ahead for each Operating Day, ERCOT shall post the Ancillary Service Deployments Factors that are projected to be used in the RUC process for that Operating Day; and  (c) Following each month, ERCOT shall post the average, minimum, and maximum Ancillary Service Deployment Factors used in the RUC process by type of Ancillary Service and hour of the day for the month.  (4) For all hours of the RUC Study Period within the RUC process, Quick Start Generation Resources (QSGRs) with a COP Resource Status of OFFQS shall be considered as On-Line with Low Sustained Limit (LSL) at zero MW. QSGRs with a Resource Status of OFFQS shall only be committed by ERCOT through a RUC instruction in instances when a reliability issue would not otherwise be managed through Dispatch Instructions from Security-Constrained Economic Dispatch (SCED).  (5) In addition to On-Line qualified Resources, the RUC engine shall consider a COP Resource status of OFFQS for QSGRs that are qualified for ERCOT Contingency Reserve Service (ECRS), as being eligible to provide ECRS constrained by the Ancillary Service capability in the COP.  (6) In addition to On-Line qualified Resources, the RUC engine shall consider a COP Resource Status of OFFQS for QSGRs that are qualified for Non-Spinning Reserve (Non-Spin), as being eligible to provide Non-Spin constrained by the Ancillary Service Capability in the COP. The RUC engine shall also consider a COP Resource Status of OFF (Off-Line but available for commitment in the DAM and RUC) for a Resource that is qualified for Non-Spin, as being eligible to provide Non-Spin constrained by the Ancillary Service capability in the COP.  (7) The RUC process can recommend Resource decommitment. ERCOT may only decommit a Resource to resolve transmission constraints that are otherwise unresolvable. Qualifying Facilities (QFs) may be decommitted only after all other types of Resources have been assessed for decommitment. In addition, the HRUC process provides decision support to ERCOT regarding a Resource decommitment requested by a Qualified Scheduling Entity (QSE).  (8) ERCOT shall review the RUC-recommended Resource commitments and the list of Off-Line Available Resources having a start-up time of one hour or less to assess feasibility and shall make any changes that it considers necessary, in its sole discretion. During the RUC process, ERCOT may also review and commit, through a RUC instruction, Combined Cycle Generation Resources that are currently planned to be On-Line but are capable of transitioning to a configuration with additional capacity. ERCOT may deselect Resources recommended in DRUC and in all HRUC processes if in ERCOT’s sole discretion there is enough time to commit those Resources in the future HRUC processes, taking into account the Resources’ start-up times, to meet ERCOT System reliability. After each RUC run, ERCOT shall post the amount of capacity deselected per hour in the RUC Study Period to the ERCOT website. A Generation Resource shown as On-Line and available for SCED dispatch for an hour in its COP prior to a DRUC or HRUC process execution, according to Section 5.3, ERCOT Security Sequence Responsibilities, will be considered self-committed for that hour. For purpose of Settlement, snapshot data will be used as specified in paragraph (2) of Section 5.3.  (9) ERCOT shall issue RUC instructions to each QSE specifying its Resources that have been committed as a result of the RUC process. ERCOT shall, within one day after making any changes to the RUC-recommended commitments, post to the ERCOT website any changes that ERCOT made to the RUC-recommended commitments with an explanation of the changes.  (10) ERCOT shall use the RUC process to evaluate the need to commit Resources for which a QSE has submitted Three-Part Supply Offers and other available Off-Line Resources in addition to Resources that are planned to be On-Line during the RUC Study Period. All of the above commitment information must be as specified in the QSE’s COP. For available Off-Line Resources with a cold start time of one hour or less that have not been removed from special consideration under paragraph (16) below pursuant to paragraph (4) of Section 8.1.2, Current Operating Plan (COP) Performance Requirements, the Startup Offers and Minimum-Energy Offer from a Resource’s Three-Part Supply Offer shall not be used in the RUC process.  (11) ERCOT shall create Three-Part Supply Offers for all Resources that did not submit a Three-Part Supply Offer, but are specified as available but Off-Line, excluding Resources with a Resource Status of EMR, in a QSE’s COP. For such Resources, excluding available Off-Line Resources with a cold start time of one hour or less that have not been removed from special consideration under paragraph (14) below pursuant to paragraph (4) of Section 8.1.2, ERCOT shall use in the RUC process 100% of any approved verifiable Startup Cost and verifiable minimum-energy cost or if verifiable costs have not been approved, the applicable Resource Category Generic Startup Offer Cost and the applicable Resource Category Generic Minimum-Energy Offer Cost as described specified in Section 4.4.9.2.3, Startup Offer and Minimum-Energy Offer Generic Caps, registered with ERCOT. Also, for Settlement purposes, ERCOT shall use any approved verifiable Startup Costs and verifiable minimum-energy cost for such Resources, or if verifiable costs have not been approved, the applicable Resource Category Generic Startup Offer Cost and Generic Minimum-Energy Offer Cost.  (12) A QSE shall notify the ERCOT Operator of any physical limitation that impacts its Resource’s ability to start that is not reflected in the Resource’s COP or the Resource’s startup time, minimum On-Line time, or minimum Off-Line time. The following shall apply:  (a) If a Resource receives a RUC Dispatch Instruction that it cannot meet due to a physical limitation described in paragraph (5) above, the QSE representing the Resource shall notify the ERCOT Operator of the inability to fully comply with the instruction and shall comply with the instruction to the best of the Resource’s ability. If the QSE has provided the ERCOT Operator notice of that limitation at least seven days prior to the Operating Day in which the instruction occurs, the QSE shall be excused from complying with the portion of the RUC Dispatch Instruction that it could not meet due to the identified limitation.  (b) If a QSE provides notice pursuant to paragraph (a) above of a physical limitation that will delay the RUC-committed Resource’s ability to reach its LSL in accordance with a RUC Dispatch Instruction, ERCOT shall extend the RUC Dispatch Instruction so that the Resource’s minimum run time is respected. However, if the Resource will not be available in time to address the issue for which it received the RUC instruction, ERCOT may instead cancel the RUC Dispatch Instruction.  (13) A QSE shall be excused from complying with any portion of a RUC Dispatch Instruction that it could not meet due to a physical limitation that was reflected, at the time of the RUC Dispatch Instruction, in the Resource’s COP, startup time, minimum On-Line time, or minimum Off-Line time.  (14) To determine the projected energy output level of each Resource and to project potential congestion patterns for each hour of the RUC, ERCOT shall calculate proxy Energy Offer Curves based on the Mitigated Offer Caps (MOCs) for the type of Resource as specified in Section 4.4.9.4, Mitigated Offer Cap and Mitigated Offer Floor, for use in the RUC. Proxy Energy Offer Curves are calculated by multiplying the MOC by a constant selected by ERCOT from time to time that is no more than 0.10% and applying the cost for all Generation Resource output between High Sustained Limit (HSL) and LSL. The intent of this process is to minimize the effect of the proxy Energy Offer Curves on optimization. For ESRs, energy dispatch costs are not considered in determining projected energy output levels.  (15) ERCOT shall calculate proxy Ancillary Service Offer Curves for use in RUC based on validated Ancillary Service Offers as specified in Section 4.4.7.2, Ancillary Service Offers. For all Resources that do not have a valid Ancillary Service Offer but are qualified to provide an Ancillary Service, ERCOT shall create an Ancillary Service Offer Curve for use in RUC as described in Section 6.5.7.3, Security Constrained Economic Dispatch. Proxy Ancillary Service Offer Curves for use in RUC are calculated by multiplying the Ancillary Service Offer by a constant selected by ERCOT from time to time that is no more than 0.1%, and are extended between the HSL and LSL. Notwithstanding the presence or absence of a proxy Ancillary Service Offer, Ancillary Service provision in RUC shall be limited by the Resource’s Ancillary Service capabilities as reflected in the COP. For ESRs, Ancillary Service Offer costs are not considered in determining projected Ancillary Service awards.  (16) For all available Off-Line Resources having a cold start time of one hour or less and not removed from special consideration pursuant to paragraph (4) of Section 8.1.2, ERCOT shall scale any approved verifiable Startup Cost and verifiable minimum-energy cost or if verifiable costs have not been approved, the applicable Resource Category Generic Startup Offer Cost and the applicable Resource Category Generic Minimum-Energy Offer Cost as specified in Section 4.4.9.2.3 for use in the RUC process.  The above parameter is defined as follows:   |  |  |  | | --- | --- | --- | | **Parameter** | **Unit** | **Current Value\*** | | 1HRLESSCOSTSCALING | Percentage | Maximum value of 100% | | \* The current value for the parameter(s) referenced in this table above will be recommended by the Technical Advisory Committee (TAC) and approved by the ERCOT Board. ERCOT shall update parameter value(s) on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value. | | |   (17) Factors included in the RUC process are:  (a) ERCOT System-wide hourly Load forecast allocated appropriately over Load buses;  (b) ERCOT’s Ancillary Service Plans in the form of ASDCs;  (c) Transmission constraints – Transfer limits on energy flows through the electricity network;  (i) Thermal constraints – protect transmission facilities against thermal overload;  (ii) Generic constraints – protect the transmission system against transient instability, dynamic instability or voltage collapse;  (d) Planned transmission topology;  (e) Energy sufficiency constraints, including RUC duration requirements for energy and Ancillary Services;  (f) Inputs from the COP, as appropriate;  (g) Inputs from Resource Parameters, including a list of Off-Line Available Resources having a start-up time of one hour or less, as appropriate;  (h) Each Generation Resource’s Minimum-Energy Offer and Startup Offer, from its Three-Part Supply Offer;  (i) Any Generation Resource that is Off-Line and available but does not have a Three-Part Supply Offer;  (j) Forced Outage information;  (k) Inputs from the eight-day look ahead planning tool, which may potentially keep a unit On-Line (or start a unit for the next day) so that a unit minimum duration between starts does not limit the availability of the unit (for security reasons); and  (l) Ancillary Service Deployment Factors.  (18) The HRUC process and the DRUC process are as follows:  (a) The HRUC process uses current Resource Status for the initial condition for the first hour of the RUC Study Period. All HRUC processes use the projected status of transmission breakers and switches starting with current status and updated for each remaining hour in the study as indicated in the COP for Resources and in the Outage Scheduler for transmission elements.  (b) The DRUC process uses the current hourly forecast of total ERCOT Load including DC Tie Schedules up to the physical rating of the DC Tie for each hour of the Operating Day. The HRUC process uses the current hourly forecast of total ERCOT Load including DC Tie Schedules up to the physical rating of the DC Tie for each hour in the RUC Study Period.  (c) The DRUC process uses the Day-Ahead weather forecast for each hour of the Operating Day. The HRUC process uses the weather forecast information for each hour of the balance of the RUC Study Period.  (d) For the HRUC, DRUC, and Weekly Reliability Unit Commitment (WRUC) processes, a feasibility check on the COP submitted Hour Beginning Planned SOC will be performed. This check may adjust the Hour Beginning Planned SOC used in the RUC process. The feasibility check looks sequentially across all intervals in the RUC Study Period to validate whether a particular interval’s COP Hour Beginning Planned SOC is achievable from the previous interval. If it is not feasible, then RUC will adjust the Hour Beginning Planned SOC to the closest achievable value.  (19) A QSE with a Resource that is not a Reliability Must-Run (RMR) Unit or has not received an Outage Schedule Adjustment (OSA) that has been committed in a DRUC or HRUC process may opt out of the RUC Settlement (or “buy back” the commitment) by setting the COP status of the RUC-committed Resource to ONOPTOUT for the first hour of a contiguous block of RUC-Committed Hours in the Opt Out Snapshot. All the configurations of the same Combined Cycle Train shall be treated as the same Resource for the purpose of creating the block of RUC-Committed Hours. A RUC-committed Combined Cycle Generation Resource may opt out of the RUC Settlement by setting the COP status of any Combined Cycle Generation Resource within the same Combined Cycle Train as the RUC-committed Resource to ONOPTOUT for the first hour of a contiguous block of RUC-Committed Hours in the Opt Out Snapshot. A Combined Cycle Generation Resource that is RUC-committed from one On-Line configuration in order to transition to a different configuration with additional capacity may opt out of the RUC Settlement following the same rule for RUC-committed Combined Cycle Generation Resources described above. A QSE that opts out of RUC Settlement forfeits RUC Settlement for the affected Resource for a given block of RUC Buy-Back Hours. A QSE that opts out of RUC Settlement treatment must make the Resource available to SCED for all RUC Buy-Back Hours. All hours in a contiguous block of RUC-Committed Hours that includes the RUC Buy-Back Hour shall be considered RUC Buy-Back Hours. If a contiguous block of RUC-Committed Hours spans more than one Operating Day and a QSE wishes to opt out of RUC Settlement for the RUC-Committed Hours in the second or subsequent Operating Day, the QSE must set its COP status to ONOPTOUT for the first hour of that the first Operating Day in the Opt Out Snapshot of the first Operating Day.  (20) ERCOT shall, as soon as practicable, post to the ERCOT website a report identifying those hours that were considered RUC Buy-Back Hours, along with the name of each RUC-committed Resource whose QSE opted out of RUC Settlement.  (21) A Resource that has a Three-Part Supply Offer cleared in the Day-Ahead Market (DAM) and subsequently receives a RUC commitment for the Operating Hour for which it was awarded will be treated as if the Resource Status was ONOPTOUT for purposes of Section 6.5.7.3 and Section 6.5.7.3.1, Determination of Real-Time Reliability Deployment Price Adders.  (22) A Resource that has self-committed for an Operating Hour after the RUC Snapshot was taken but before the RUC commitment has been communicated through an XML message for that RUC process and that Operating Hour is included in a block of RUC-committed hours for that RUC process will be treated as if the Resource Status was ONOPTOUT for purposes of Section 6.5.7.3, Section 6.5.7.3.1, Operating Reserve Demand Curve (ORDC) calculations, and RUC Settlement for the entire block of RUC-committed hours. A QSE that has a Resource that meets these conditions must make the Resource available to SCED for the entire block of RUC-committed hours. ERCOT will send the QSE a notification stating the Operating Day and block of hours for which this occurred. |

***5.7.4 RUC Make-Whole Charges***

(1) All QSEs that were capacity-short in each RUC will be charged for that shortage, as described in Section 5.7.4.1, RUC Capacity-Short Charge. If the revenues from the charges under Section 5.7.4.1 are not enough to cover all RUC Make-Whole Payments for a Settlement Interval, then the difference will be uplifted to all QSEs on a Load Ratio Share (LRS) basis, as described in Section 5.7.4.2, RUC Make-Whole Uplift Charge.

(2) On a monthly basis, within ten days after the Initial Settlement of the last day of the month has been completed, ERCOT shall post on the ERCOT website the total RUC Make-Whole Charges and RUC Clawback Payment Amounts, by Settlement Interval, by QSE capacity-shortfall and by amount uplifted.

***6.5.7.1.13 Data Inputs and Outputs for the Real-Time Sequence and SCED***

(1) Inputs: The following information must be provided as inputs to the Real-Time Sequence and SCED. ERCOT may require additional information as required, including:

(a) Real-Time data from TSPs including status indication for each point if that data element is stale for more than 20 seconds;

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| ***[NPRR857: Replace paragraph (a) above with the following upon system implementation and satisfying the following conditions: (1) Southern Cross provides ERCOT with funds to cover the entire estimated cost of the project; and (2) Southern Cross has signed an interconnection agreement with a TSP and the TSP gives ERCOT written notice that Southern Cross has provided it with: (a) Notice to proceed with the construction of the interconnection; and (b) The financial security required to fund the interconnection facilities:]***  (a) Real-Time data from TSPs and DCTOs including status indication for each point if that data element is stale for more than 20 seconds; |

(i) Transmission Electrical Bus voltages;

(ii) MW and MVAr pairs for all transmission lines, transformers, and reactors;

(iii) Actual breaker and switch status for all modeled devices; and

(iv) Tap position for auto-transformers;

(b) State Estimator results (MW and MVAr pairs and calculated MVA) for all modeled Transmission Elements;

(c) Transmission Element ratings from TSPs;

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| ***[NPRR857: Replace paragraph (c) above with the following upon system implementation and satisfying the following conditions: (1) Southern Cross provides ERCOT with funds to cover the entire estimated cost of the project; and (2) Southern Cross has signed an interconnection agreement with a TSP and the TSP gives ERCOT written notice that Southern Cross has provided it with: (a) Notice to proceed with the construction of the interconnection; and (b) The financial security required to fund the interconnection facilities:]***  (c) Transmission Element ratings from TSPs and DCTOs; |

(i) Data from the Network Operations Model:

(A) Transmission lines – Normal, Emergency, and 15-Minute Ratings (MVA); and

(B) Transformers and Auto-transformers – Normal, Emergency, and 15-Minute Ratings (MVA) and tap position limits;

(ii) Data from QSEs:

(A) Generator Step-Up (GSU) transformers tap position;

(B) Resource HSL (from telemetry); and

(C) Resource LSL (from telemetry); and

(d) Real-Time weather, from Wind-powered Generation Resources (WGRs), and where available from TSPs or other sources. ERCOT may elect to obtain other sources of weather data and may utilize such information to calculate the dynamic limit of any Transmission Element.

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| ***[NPRR857: Replace paragraph (d) above with the following upon system implementation and satisfying the following conditions: (1) Southern Cross provides ERCOT with funds to cover the entire estimated cost of the project; and (2) Southern Cross has signed an interconnection agreement with a TSP and the TSP gives ERCOT written notice that Southern Cross has provided it with: (a) Notice to proceed with the construction of the interconnection; and (b) The financial security required to fund the interconnection facilities:]***  (d) Real-Time weather, from Wind-powered Generation Resources (WGRs), and where available from TSPs, DCTOs, or other sources. ERCOT may elect to obtain other sources of weather data and may utilize such information to calculate the dynamic limit of any Transmission Element. |

(2) ERCOT shall validate the inputs of the Resource Limit Calculator as follows:

(a) The calculated SURAMP and SDRAMP are each greater than or equal to zero; and

(b) Other provision specified under Section 3.18, Resource Limits in Providing Ancillary Service.

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| ***[NPRR1010: Delete paragraph (2) above upon system implementation of the Real-Time Co-Optimization (RTC) project and renumber accordingly.]*** |

(3) Outputs for ERCOT Operator information and possible action include:

(a) Operator notification of any change in status of any breaker or switch;

(b) Lists of all breakers and switches not in their normal position;

(c) Operator notification of all Transmission Element overloads detected from telemetered or State-Estimated data;

(d) Operator notification of all Transmission Element security violations; and

(e) Operator summary displays:

(i) Transmission system status changes;

(ii) Overloads;

(iii) System security violations; and

(iv) Base Points.

(4) Every hour, ERCOT shall post on the MIS Secure Area, except where otherwise stated in this Section 6.5.7.1.13(4), the following information:

(a) Status of all breakers and switches used in the NSA except breakers and switches connecting Resources to the ERCOT Transmission Grid;

(b) All binding transmission constraints and the contingency or overloaded element pairs that caused such constraint; and

(c) On the ERCOT website, Shift Factors, including Private Use Network Settlement Points, by Resource Node, Hub, Load Zone, and DC Tie.

(5) Sixty days after the applicable Operating Day, ERCOT shall post on the ERCOT website, the following information:

(a) Hourly transmission line flows and voltages from the State Estimator, excluding transmission line flows and voltages for Private Use Networks; and

(b) Hourly transformer flows, voltages and tap positions from the State Estimator, excluding transformer flows, voltages, and tap positions for Private Use Networks.

(6) Notwithstanding paragraph (5) above, ERCOT, in its sole discretion, shall release relevant State Estimator data less than 60 days after the Operating Day if it determines the release is necessary to provide complete and timely explanation and analysis of unexpected market operations and results or system events including, but not limited to, pricing anomalies, recurring transmission congestion, and system disturbances. ERCOT’s release of data under this paragraph shall be limited to intervals associated with the unexpected market or system event as determined by ERCOT. The data release shall be made available simultaneously to all Market Participants.

(7) Every hour, ERCOT shall post on the ERCOT website, the sum of ERCOT generation, and flow on the DC Ties, all from the State Estimator.

(8) After every SCED run, ERCOT shall post to the ERCOT website the sum of the HDL and the sum of the LDL for all Generation Resources On-Line and Dispatched by SCED.

(9) Sixty days after the applicable Operating Day, ERCOT shall post to the ERCOT website the summary LDL and HDL report from paragraph (8) above and include instances of manual overrides of HDL or LDL, including the name of the Generation Resource and the type of override.

(10) No sooner than sixty days after the applicable Operating Day, ERCOT shall provide to the appropriate TAC subcommittee instances of manual overrides of HDL or LDL, including the name of the Generation Resource, the reason for the override, and, as applicable, the cost as calculated in Section 6.6.3.6, Real-Time High Dispatch Limit Override Energy Payment.

(11) After every SCED run, ERCOT shall post to the MIS Certified Area, for any QSE, instances of a manual override of the HDL or LDL for a Generation Resource, including the original and overridden HDL or LDL.

**6.5.7.6.2.1 Deployment of Regulation Service**

(1) ERCOT shall deploy Reg-Up and Reg-Down necessary to maintain ERCOT System frequency to meet NERC Control Area and other Control Area performance criteria as specified in these Protocols and the Operating Guides.

(2) Reg-Up is a deployment or recall of a deployment referenced to the Resource’s Base Point in response to a change (up or down) in ERCOT System frequency to maintain the target ERCOT System frequency within predetermined limits according to the Operating Guides.

(3) Reg-Down is a deployment or recall of a deployment referenced to the Resource’s Base Point in response to a change (up or down) in ERCOT System frequency to maintain the target ERCOT System frequency within predetermined limits according to the Operating Guides.

(4) These requirements also apply to the deployment or recall of a deployment of Reg-Up and Reg-Down:

(a) Deployment or recall of a deployment must be accomplished through use of an automatic signal from ERCOT to each QSE provider of Reg-Up and Reg-Down.

(b) ERCOT shall minimize Reg-Up and Reg-Down energy as much as practicable in each SCED cycle.

(c) ERCOT shall settle energy provided by Reg-Up and Reg-Down at the Resource’s Settlement Point Price.

(d) ERCOT shall integrate the control signal sent to providers of Reg-Up and shall calculate the amount of energy deployed by Reg-Up in each Settlement Interval.

(e) ERCOT shall integrate the control signal sent to providers of Reg-Down and shall calculate the amount of energy deployed by Reg-Down in each Settlement Interval.

(f) ERCOT shall calculate for each LFC cycle the amount of regulation that each Resource is expected to provide at that instant in time. The expected amount must be averaged over each SCED interval. The actual generation from telemetry must also be averaged over each SCED interval.

(5) Every day, ERCOT shall post to the ERCOT website the total amount of deployed Reg-Up and Reg-Down energy in each Settlement Interval of the previous day.

(6) For each Resource providing Reg-Up or Reg-Down, the implied ramp rate in MW per minute is the total amount of Regulation Service awarded divided by five.

(7) Each QSE providing Reg-Up or Reg-Down and ERCOT shall meet the deployment performance requirements specified in Section 8, Performance Monitoring.

(8) ERCOT shall issue Reg-Up and Reg-Down deployment Dispatch Instructions over ICCP. Those Dispatch Instructions must contain the change in MW output requested of the QSE assuming all Resources are at their Updated Desired Base Point issued by LFC.

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| ***[NPRR1010: Replace paragraph (8) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]***  (8) ERCOT shall issue Reg-Up and Reg-Down deployment Dispatch Instructions over ICCP. Those Dispatch Instructions must contain the change in MW output requested of the Resource.  (9) Reg-Up and Reg-Down Dispatch Instructions shall be included as a component of a Resource’s UDSP.  (10) Upon the receipt of new Base Points and Ancillary Service awards from SCED, LFC will reset Regulation Service instructions to zero. |

***6.5.9.5.1 Registration and Posting of BLT Points***

(1) The necessary Market Participant registration, agreements, metering, and ERCOT Settlement systems, as applicable, must be in place before implementation of any BLT. At its sole discretion, ERCOT may exclude a BLT of ten MW or less from the Network Operations Model and associated telemetry requirements.

(2) ERCOT may require any size of BLT that has been deployed in accordance with Section 6.5.9.5.2, Scheduling and Operation of BLTs, to be in the Network Operations Model with required telemetry if ERCOT determines it is warranted due to the length of time deployed.

(3) BLTs that transfer Load from the ERCOT Control Area to a non-ERCOT Control Area are treated as generation and Load by ERCOT and assigned a Resource ID and, if in a NOIE territory, an ESI ID unless the Load is in a NOIE territory and the NOIE has not registered the BLT for Settlement pursuant to paragraph (1)(g) of Section 6.5.9.5, Block Load Transfers between ERCOT and Non-ERCOT Control Areas. The ERCOT Control Area TSP or DSP associated with the BLT Point has the responsibility for registering the BLT and the creation and maintenance of BLT Resource IDs for Settlement purposes. For any BLT that a NOIE has registered for Settlement, the NOIE shall designate NOIE metering point(s), a Resource Entity, and a QSE for Settlement purposes. For BLTs occurring on TSP or DSP systems open to Customer Choice, the non-ERCOT Control Area Entity receiving the transferred Load shall designate a registered Resource Entity and acknowledge a QSE for Settlement purposes in accordance with Section 16.5, Registration of a Resource Entity. The ERCOT Control Area TSP or DSP must complete the applicable BLT registration form. This BLT registration form along with the metering design and data documentation is the basis for establishing the ERCOT data model of the BLT and associated metering points for Settlement as applicable.

(4) BLTs that transfer Load from a non-ERCOT Control Area to the ERCOT Control Area are treated as a non-competitive wholesale Load by ERCOT and assigned an ESI ID unless the BLT is in a NOIE territory and the NOIE has not registered the BLT for Settlement. The ERCOT Control Area TSP or DSP associated with the BLT Point has the responsibility for registering the BLT and the creation and maintenance of BLT ESI IDs. Customers connected to the ERCOT System do not require an ESI ID separate from the assigned BLT ESI ID. The TSP or DSP that registers the BLT Point shall provide the ESI ID associated with the BLT to ERCOT. For BLTs occurring on NOIE TSP or DSP systems, the NOIE may designate NOIE metering point(s), an LSE, and a QSE for Settlement purposes. Load associated with NOIE BLTs that do not have an LSE or QSE for Settlement purposes will be reflected in the NOIE’s 4-Coincident Peak (4-CP) calculation. For BLTs occurring on TSP or DSP systems open to Customer Choice, the non-ERCOT Control Area Entity shall designate a registered ERCOT LSE and acknowledge a QSE for Settlement purposes in accordance with Section 16.3, Registration of Load Serving Entities.

(5) A “BLT Point” is the metering point for a BLT Resource ID or for a BLT ESI ID.

(6) ERCOT shall post the registration details of all registered BLTs to the ERCOT website.

**8.1 QSE and Resource Performance Monitoring**

(1) ERCOT shall develop a Technical Advisory Committee (TAC)- and ERCOT Board-approved Qualified Scheduling Entity (QSE) and Resource monitoring program to be included in the Operating Guides. Nothing in this Section changes the process for amending the Operating Guides. The metrics developed by ERCOT and approved by TAC and the ERCOT Board must include the provisions of this Section.

(2) Each QSE and Resource shall meet performance measures as described in this Section and in the Operating Guides.

(3) ERCOT shall monitor and post the following categories of performance:

(a) Real-Time data, for QSEs:

(i) Telemetry performance

(b) Regulation control performance, for QSEs and as applicable, Resource-specific performance (see also Section 8.1.1, QSE Ancillary Service Performance Standards);

(c) Hydro responsive testing for Generation Resources, on the ERCOT website;

(d) Supplying and validating data for generator models, as requested by ERCOT, for Generation Resources;

(e) Outage scheduling and coordination, for QSEs and Resources;

(f) Resource-specific Responsive Reserve (RRS) performance for QSEs and Resources, on the ERCOT website;

(g) Resource-specific Non-Spinning Reserve (Non-Spin) performance, for QSEs and Resources, on the ERCOT website;

(h) Resource-specific ERCOT Contingency Reserve Service (ECRS) performance for QSEs and Resources, on the ERCOT website ;

(i) Outage reporting, by QSEs for Resources;

(j) Current Operating Plan (COP) metrics, for QSEs, on the ERCOT website; and

(k) Day-Ahead Reliability Unit Commitment (DRUC) and Hourly Reliability Unit Commitment (HRUC) commitment performance by QSEs and Generation Resources, on the ERCOT website.

***8.1.2 Current Operating Plan (COP) Performance Requirements***

(1) Each QSE representing a Resource must submit a COP in accordance with Section 3.9, Current Operating Plan (COP).

(2) For each QSE, ERCOT shall post on the ERCOT website for each month the number, by Operating Hour, of valid COP failures to meet the provisions of paragraphs (3) and (4) of Section 3.9.2, Current Operating Plan Validation, for Ancillary Service Resource Responsibilities contained in the QSE’s COP used for the DRUC and each HRUC during the Operating Day. QSEs shall have no more than three hours during an Operating Day or 74 hours during a month that contains COP Ancillary Service Resource Responsibility validation failures.

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| ***[NPRR1011: Delete paragraph (2) above upon system implementation of the Real-Time Co-Optimization (RTC) project and renumber accordingly.]*** |

(3) For each QSE, ERCOT shall post on the ERCOT website for each month the number of Operating Hours during which a Reliability Unit Commitment (RUC)-committed QSE Resource, not Off-Line as the result of a Forced Outage, failed to be On-Line and released to SCED for deployment within the first 15 minutes of the RUC-Commitment Hour. QSEs shall have no more than three hours during an Operating Day and no more than 74 hours during a month that contains one or more of these events.

(4) ERCOT shall post on the ERCOT website for each QSE for each month the number of Operating Hours during which a RUC-committed Resource with a cold start time of one hour or less, not Off-Line as the result of a Forced Outage, failed to be On-Line and released to SCED (has reached its physical LSL) within its cold start time by the start of the Operating Hour for which it was RUC-committed. Any Resource with more than one occurrence during a month whereby the cold start time is not met shall be removed from special consideration pursuant to paragraph (7) of Section 5.5.2, Reliability Unit Commitment (RUC) Process, for a period of 90 days, beginning with the next Operating Day following the second occurrence within a month.

**8.5.1.2 Reporting**

(1) Each Resource Entity shall conduct applicable Governor tests on each of its Generation Resources and ESRs as specified in the Operating Guides. The Resource Entity shall provide test results and other relevant information to ERCOT. ERCOT shall make these results available to the Transmission Service Providers (TSPs) and upon request on the ERCOT website.

(2) Generation Resource and ESR Governor modeling information required in the ERCOT planning criteria must be determined from actual Generation Resource or ESR testing described in the Operating Guides. Within 30 days of ERCOT’s request, the results of the latest test performed must be supplied to ERCOT and the connected TSP.

(3) Each QSE shall inform ERCOT as soon as practical when notified by its On-Line Generation Resource, ESR, SOTG, or SOTSG of the Governor being out-of-service. The QSE shall supply related logs to ERCOT upon request.

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| ***[NPRR995: Replace paragraph (3) above with the following upon system implementation:]***  (3) Each QSE shall inform ERCOT as soon as practical when notified by its On-Line Generation Resource, ESR, SOTG, SOTSG, or SOTESS of the Governor being out-of-service. The QSE shall supply related logs to ERCOT upon request. |

(4) If a Generation Resource or ESR trips Off-Line during a disturbance, as defined by the North American Electric Reliability Corporation (NERC), while providing Primary Frequency Response, the QSE shall report the cause of the failure to ERCOT as soon as the cause has been identified.

***9.14.4 ERCOT Processing of Disputes***

(1) ERCOT shall process disputes in accordance with this Section, Section 9.14.2, Notice of Dispute, and the required data in Section 9.14.3, Contents of Notice.

(2) If ERCOT requires additional data to resolve the dispute, ERCOT shall send the Settlement Statement Recipient or Invoice Recipient a list of the required additional data within seven Business Days of the date the dispute was filed. The Settlement Statement Recipient or Invoice Recipient shall respond with the entire set of required data within five Business Days of ERCOT’s request or by a date agreed upon by ERCOT and the Market Participant that is no later than eight Business Days prior to the posting of the True-Up Settlement Statement for the disputed Operating Day. If ERCOT does not receive the data within that time frame, ERCOT shall deny the dispute.

(3) On each Business Day, ERCOT shall issue an aggregated Settlement and billing dispute resolution report on the ERCOT website containing information related to all disputes that are not yet closed or that have been closed recently. Additionally, on each Business Day and for each Settlement Statement Recipient or Invoice Recipient, ERCOT shall issue a report on the MIS Certified Area containing the status of each submitted dispute. The report shall identify the disputed charge type(s), status of the dispute, resolution and resolution date, if applicable, and a financial impact in dollars of the dispute as submitted by disputing Entity.

(4) ERCOT shall make all reasonable attempts to complete all RTM Settlement and billing disputes submitted within 15 Business Days of the issuance of the RTM Initial Statement in time for inclusion on the RTM Final Statement for the relevant Operating Day.

(5) All complete disputes of the DAM received within ten Business Days after ERCOT posts that day’s DAM Settlement Statement shall be included in a Resettlement of the DAM Operating Day under Section 9.2.5, DAM Resettlement Statement.

(6) For Settlement and billing disputes requiring complex research or additional time for resolution, ERCOT shall notify the Invoice Recipient or Settlement Statement Recipient of the length of time expected to research and resolve those disputes and, if ERCOT grants a portion or all of the dispute, ERCOT shall post the necessary adjustments on the next available Settlement Statement for the Operating Day.

(7) Settlement Statement Recipients or Invoice Recipients have the right to proceed to the ADR process in Section 20, Alternative Dispute Resolution Procedure and Procedure for Return of Settlement Funds, for filed disputes that cannot be resolved through the Settlement and billing dispute process outlined in Section 9.14, Settlement and Billing Dispute Process.

(8) All complete disputes of the CRR Market received within ten Business Days after ERCOT posts that day’s CRR Settlement Statement shall be resolved as soon as practicable.

***9.14.4.1.6 ADR***

(1) Requests for ADR shall be considered Protected Information in accordance with paragraph (1)(ff) of Section 1.3.1.1, Items Considered Protected Information, and Section 20, Alternative Dispute Resolution Procedure and Procedure for Return of Settlement Funds. As soon as practicable after ERCOT receives a written request for ADR pursuant to Section 20.4, Initiation of ADR Proceedings, ERCOT shall post a Settlement and billing dispute status of “ADR” to the aggregated Settlement and billing dispute resolution report on the ERCOT website. The dispute will remain in the ADR status as long as the Market Participant has an active ADR. At the end of the ADR process, ERCOT shall post a Settlement and billing dispute status of “Closed” to the aggregated Settlement and billing dispute resolution report on the ERCOT website.

**9.19 Partial Payments by Invoice Recipients**

(1) If at least one Invoice Recipient owing funds does not pay its Settlement Invoice in full (short-pay), ERCOT shall follow the procedure set forth below:

(a) ERCOT shall make every reasonable attempt to collect payment from each short-paying Invoice Recipient prior to four hours preceding the close of the Bank Business Day Central Prevailing Time (CPT) on the day that payments by ERCOT are due to be paid to applicable Invoice Recipient(s).

(b) ERCOT shall draw on any available Financial Security pledged to ERCOT by each short-paying Invoice Recipient that did not pay the amount due under paragraph (a) above. If the amount of any such draw is greater than the amount of the short-paying Invoice Recipient’s cash collateral held in excess of that required to cover its Total Potential Exposure (TPE) (“Excess Collateral”), then a draw on available security for a short-paying Invoice Recipient shall be considered a Late Payment for purposes of Section 16.11.6, Payment Breach and Late Payments by Market Participants. ERCOT may, in its sole discretion, hold up to 5% of Financial Security of each short-paying Invoice Recipient and use those funds to pay subsequent Settlement Invoices as they become due. Any funds still held will be applied to unpaid Invoices in conjunction with the default uplift process outlined in Section 9.19.1, Default Uplift Invoices.

(c) ERCOT shall offset or recoup any amounts owed, or to be owed, by ERCOT to a short-paying Invoice Recipient against amounts not paid by that Invoice Recipient, and ERCOT shall apply the amount offset or recouped to cover short pays by that Invoice Recipient. ERCOT may, in its sole discretion, hold credit Invoices and use those funds to pay subsequent Settlement Invoices as they become due. Any funds still held will be offset or recouped against unpaid Invoices in conjunction with the default uplift process outlined in Section 9.19.1.

(d) If, after taking the actions set forth in paragraphs (a), (b) and (c) above, ERCOT still does not have sufficient funds to pay all amounts that it owes to Settlement Invoice Recipients in full, ERCOT shall deduct any applicable administrative fees as specified in Section 9.16, ERCOT System Administration and User Fees, payments for Reliability Must-Run (RMR) Services, and the Congestion Revenue Right (CRR) Balancing Account (CRRBA) from the amount received or collected and then reduce payments to all Settlement Invoice Recipients owed monies from ERCOT. The reductions must be based on a pro rata basis of monies owed to each Settlement Invoice Recipient, to the extent necessary to clear ERCOT’s accounts on the payment due date to achieve revenue neutrality for ERCOT. ERCOT shall provide to all Market Participants payment details on all short pays and subsequent reimbursements of short pays. Details must include the identity of each short-paying Invoice Recipient and the dollar amount attributable to that Invoice Recipient, broken down by Invoice numbers. In addition, ERCOT shall provide the aggregate total of all amounts due to all Invoice Recipients before applying the amount not paid on the Settlement Invoice.

(e) If sufficient funds continue to be unavailable for ERCOT to pay all amounts in full to short-paid Entities for that Settlement Invoice and the short-paying Entity is not complying with a payment plan designed to enable ERCOT to pay all amounts in full to short-paid Entities, ERCOT shall uplift short-paid amounts through the Default Uplift process described below in Section 9.19.1 and Section 9.19.2, Payment Process for Default Uplift Invoices.

(f) When ERCOT enters into a payment plan with a short-pay Invoice Recipient, ERCOT shall post to the ERCOT website:

(i) The short-pay plan;

(ii) The schedule of quantifiable expected payments, updated if and when modifications are made to the payment schedule; and

(iii) Invoice dates to which the payments will be applied.

(g) To the extent ERCOT is able to collect past due funds owed by a short-paying Invoice Recipient before the default uplift process defined in Section 9.19.1, ERCOT shall allocate the collected funds to the earliest short-paid Invoice for that short-paying Invoice Recipient. ERCOT shall use its best efforts to distribute collected funds quarterly by the 15th Business Day following the end of a calendar quarter for a short paying Entity when the cumulative amount of undistributed funds held exceed $50,000 on a pro rata basis of monies owed. Subsequently collected funds that have not previously been distributed will be applied against unpaid Invoices in conjunction with the uplift process outlined in Section 9.19.1.

(h) To the extent ERCOT is able to collect past due funds owed by a short-paying Invoice Recipient, after the default uplift process defined in Section 9.19.1, ERCOT shall allocate the collected funds using the same allocation method as in the default uplift process. ERCOT shall use its best efforts to distribute subsequently collected funds quarterly by the 15th Business Day following the end of a calendar quarter for a short paying Entity when the cumulative amount of undistributed funds held exceed $50,000.

**11.5.1.2 TSP and/or DSP Load Data Posting/Availability**

(1) ERCOT shall post on the ERCOT website the following information, consistent with the requirements in Section 1.3, Confidentiality:

(a) ERCOT will post TSP and/or DSP Load plus allocation of Distribution Losses, Transmission Losses, and UFE, by TSP and/or DSP.

(b) ERCOT will make the aforementioned data for each Settlement run type available to Market Participants within 48 hours of finalizing the data for Settlement Statements.

(c) ERCOT will post a monthly report including TSP and/or DSP 15-minute interval Load data for each Operating Day adjusted to exclude Block Load Transfers (BLTs) or Direct Current Tie (DC Tie) exports.

**11.5.2.2 General Public Data Posting/Availability**

(1) The following general market information will be posted on the ERCOT website:

(a) Total generation;

(b) Total Adjusted Meter Load (AML); and

(c) Total Wholesale Storage Load (WSL).

(2) ERCOT will make the aforementioned data for each Settlement run type available to Market Participants via the MIS Certified Area within 48 hours of finalizing the data for Settlement statements.

**12.3 MIS Administrative and Design Requirements**

(1) The Market Information System (MIS) must comply with the administrative and design requirements specified as follows:

(a) ERCOT shall ensure that all Market Participants have access to the ERCOT MIS on a nondiscriminatory basis.

(b) The MIS must, at a minimum, provide all information required under any regulations of the Public Utility Commission of Texas (PUCT) or other Governmental Authorities.

(c) The ERCOT website must include, consistent with the requirements in Section 1.3, Confidentiality, any available information that may be used by a Qualified Scheduling Entity (QSE) to estimate or verify bills for all ERCOT-provided settlements.

(d) On the ERCOT website, ERCOT shall provide, consistent with the requirements in Section 1.3, the methodology and data to independently reproduce information contained in the MIS related to the operation of the ERCOT market.

(e) The MIS must include security measures to safeguard ERCOT Critical Energy Infrastructure Information (ECEII) and protect the confidentiality of Protected Information as required by these Protocols.

(f) The MIS must comply with industry standards for commercial websites, including query and search functionality.

(g) The MIS must provide easy navigation based on the posting list described in paragraph (4) of Section 12.2, ERCOT Responsibilities, above for document retrieval. This navigability must include hyperlinks between listings and the MIS posted information.